SYSTEM MCQs COLLECTION

NSCT Prep

Free MCQ Practice for NSCT Test Preparation

Web Development

1530 Multiple Choice Questions

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This dataset is created and compiled by Muhammad Abdullah Awais

Easy Questions

510 questions

Q1. What does HTML stand for?

A. Hyper Transfer Markup Language
B. High Tech Modern Language
C. Home Tool Markup Language
D. Hyper Text Markup Language

Answer: D

Q2. Which language is primarily used for styling web pages?

A. HyperText Markup
B. JavaScript Logic
C. Python Scripting
D. Cascading Styles

Answer: D

Q3. What is a web browser?

A. Software that displays web pages
B. A system for managing databases
C. A tool for compiling source code
D. A backend application framework

Answer: A

Q4. Which of the following is a web browser?

A. Google Chrome
B. Apache HTTP
C. MySQL Shell
D. Node.js CLI

Answer: A

Q5. What does URL stand for?

A. Uniform Reference Locator
B. Uniform Resource Locator
C. Universal Resource Locator
D. Universal Reference Link

Answer: B

Q6. Which language adds interactivity to web pages?

A. HTML markup
B. JavaScript
C. SQL queries
D. CSS styling

Answer: B

Q7. What is a website?

A. A single standalone web page
B. A program that runs web servers
C. A plugin installed in browsers
D. A collection of related web pages

Answer: D

Q8. What is the role of a web server?

A. To browse and view the internet
B. To write and compile source code
C. To design visual page layouts
D. To store and serve web pages

Answer: D

Q9. Which file extension is used for HTML files?

A. .py
B. .html
C. .js
D. .css

Answer: B

Q10. What is front-end development?

A. Configuring the network settings
B. Managing and querying databases
C. Building the user-visible interface
D. Programming logic on the server

Answer: C

Q11. What does HTTP stand for?

A. Hyper Text Transport Protocol
B. High Tech Transfer Protocol
C. Hyper Text Transfer Protocol
D. Home Transfer Text Protocol

Answer: C

Q12. What is a client in web architecture?

A. The web server that hosts content
B. The database that stores records
C. The network cable carrying signals
D. The device or browser making requests

Answer: D

Q13. What is the default port for HTTP?

A. Port 443
B. Port 21
C. Port 8080
D. Port 80

Answer: D

Q14. What does DNS stand for?

A. Dynamic Network Server
B. Data Network Service
C. Digital Naming Standard
D. Domain Name System

Answer: D

Q15. Which HTTP method is used to retrieve data from a server?

A. POST
B. DELETE
C. PUT
D. GET

Answer: D

Q16. What is an IP address?

A. A human-readable domain website name
B. A server-side scripting language for web
C. A software application like a web browser
D. A numerical label assigned to each device

Answer: D

Q17. What does the status code 200 mean in HTTP?

A. OK (Success)
B. Not Found Error
C. Redirect Response
D. Internal Server Error

Answer: A

Q18. What is the role of a web server in the client-server model?

A. To store only the user password data
B. To forward requests to other clients
C. To process requests and send responses
D. To display web pages to the end user

Answer: C

Q19. Which protocol is used for sending emails?

A. SMTP
B. DNS
C. HTTP
D. FTP

Answer: A

Q20. What is a web API?

A. An interface for applications to communicate
B. A CSS framework for responsive design
C. A relational database management system
D. An HTML element used for page layout

Answer: A

Q21. Which HTML tag is used to create a paragraph?

A. <pg>
B. <para>
C. <p>
D. <text>

Answer: C

Q22. What is the correct HTML tag for the largest heading?

A. <head> tag
B. <heading>
C. <h6> tag
D. <h1> tag

Answer: D

Q23. Which HTML tag is used to create a hyperlink?

A. <a>
B. <url>
C. <link>
D. <href>

Answer: A

Q24. Which attribute specifies the URL in an anchor tag?

A. href
B. url
C. link
D. src

Answer: A

Q25. What is the correct HTML tag for inserting an image?

A. <photo>
B. <image>
C. <pic>
D. <img>

Answer: D

Q26. Which HTML tag creates an unordered list?

A. <list>
B.
C.
D.

Answer: B

Q27. What does the <br> tag do?

A. Creates a border
B. Makes text bigger
C. Creates bold text
D. Inserts a line break

Answer: D

Q28. Which HTML tag makes text bold?

A. Only the <b> tag
B. Only the tag
C. The <bold> tag only
D. Both <b> and

Answer: D

Q29. What is the root element of an HTML document?

A. <html>
B. <head>
C. <doctype>
D. <body>

Answer: A

Q30. Which tag defines a table row in HTML?

A. <td> tag
B. <tr> tag
C. <th> tag
D. <table> tag

Answer: B

Q31. What does CSS stand for?

A. Colorful Style Sheets
B. Computer Style Sheets
C. Creative Style System
D. Cascading Style Sheets

Answer: D

Q32. Which CSS property changes the text color?

A. text-color
B. color
C. font-color
D. fg-color

Answer: B

Q33. How do you select an element with the ID 'header' in CSS?

A. #header
B. header
C. .header
D. *header

Answer: A

Q34. Which CSS property sets the background color?

A. color-property
B. back-color-css
C. background-color
D. bgcolor-attr

Answer: C

Q35. How do you select elements with the class 'active' in CSS?

A. active
B. *active
C. #active
D. .active

Answer: D

Q36. Which property changes the font size?

A. text-font
B. text-size
C. font-size
D. text-style

Answer: C

Q37. What is the correct CSS syntax to change font to Arial?

A. text-font: Arial;
B. font-family: Arial;
C. family-font: Arial;
D. font: Arial;

Answer: B

Q38. Which property adds space inside an element's border?

A. padding
B. spacing
C. margin
D. gap

Answer: A

Q39. Which property adds space outside an element's border?

A. spacing
B. margin
C. padding
D. outer-space

Answer: B

Q40. How do you add a comment in CSS?

A. <!-- comment -->
B. /* comment */
C. // comment
D. # comment

Answer: B

Q41. What is CSS Flexbox?

A. A JavaScript library for DOM element manipulation
B. A CSS keyframe animation type for effects
C. A third-party CSS framework for styling pages
D. A layout model for one-dimensional rows or columns

Answer: D

Q42. Which CSS property creates a flex container?

A. display: flex
B. flex: true
C. layout: flex
D. container: flex

Answer: A

Q43. What is CSS Grid?

A. A JavaScript grid plugin for data tables
B. A third-party CSS component library
C. A replacement exclusively for HTML tables
D. A two-dimensional layout for rows and columns

Answer: D

Q44. Which property defines grid columns?

A. column-template
B. grid-template-columns
C. display-columns
D. grid-columns

Answer: B

Q45. What is a media query in CSS?

A. A query for fetching database records
B. A technique applying styles based on device traits
C. An HTML element for embedding external content
D. A JavaScript API for browser feature detection

Answer: B

Q46. Which property controls the direction of flex items?

A. flex-align
B. flex-direction
C. flex-orient
D. flex-flow

Answer: B

Q47. What does justify-content do in Flexbox?

A. Distributes space between items along main axis
B. Sets the font family for text inside items
C. Aligns items along the cross axis vertically
D. Changes the text alignment within flex items

Answer: A

Q48. What is a CSS transition?

A. A JavaScript event triggered by user action
B. A smooth change between CSS property values
C. An HTML animation tag for visual effects
D. A page redirect to a new URL location

Answer: B

Q49. Which property creates a CSS animation?

A. transition
B. animation
C. motion
D. animate

Answer: B

Q50. What does align-items do in Flexbox?

A. Sets item width
B. Aligns items along the main axis
C. Aligns items along the cross axis
D. Changes item order

Answer: C

Q51. Which keyword declares a variable in JavaScript?

A. variable
B. var
C. declare
D. let

Answer: B

Q52. What is the correct way to write a single-line comment in JavaScript?

A. <!-- comment -->
B. /* comment */
C. // comment
D. # comment

Answer: C

Q53. Which operator is used for strict equality in JavaScript?

A. ===
B. ==
C. =
D. !=

Answer: A

Q54. What does console.log() do?

A. Creates a modal dialog box on screen
B. Outputs a message to the browser console
C. Logs the user into a website account
D. Creates a new log file on disk

Answer: B

Q55. Which data type represents true or false?

A. Number
B. Undefined
C. String
D. Boolean

Answer: D

Q56. How do you create a function in JavaScript?

A. create myFunc() {}
B. def myFunc() {}
C. func myFunc() {}
D. function myFunc() {}

Answer: D

Q57. What is an array in JavaScript?

A. An ordered collection of values
B. A type of reusable function
C. A single primitive value in memory
D. A CSS property declaration

Answer: A

Q58. How do you write an if statement in JavaScript?

A. if (x > 5) {}
B. if x > 5 {}
C. when (x > 5) {}
D. if x > 5 then

Answer: A

Q59. Which method adds an element to the end of an array?

A. add()
B. insert()
C. append()
D. push()

Answer: D

Q60. What does the typeof operator return?

A. The CSS type selector for an HTML element
B. A string indicating the data type of a value
C. The file type extension of a source file
D. The element type in an HTML document

Answer: B

Q61. What is a Promise in JavaScript?

A. A looping construct for iterating over arrays
B. A type of variable for storing constant values
C. A guarantee of optimal performance metrics
D. An object representing an async operation result

Answer: D

Q62. What keyword makes a function asynchronous?

A. defer
B. await
C. promise
D. async

Answer: D

Q63. What does the await keyword do?

A. Stops the program from running permanently
B. Pauses async execution until a Promise settles
C. Creates a timed delay between code statements
D. Waits for CSS stylesheets to fully load

Answer: B

Q64. What is the spread operator in JavaScript?

A. The ... operator expanding iterables into elements
B. The => operator for defining arrow function bodies
C. The ** operator for exponentiation calculations
D. The -> operator for creating arrow function syntax

Answer: A

Q65. What is an arrow function?

A. A function that draws arrow graphics on canvas
B. A built-in math function for calculations
C. A recursive function that calls itself repeatedly
D. A shorter syntax for writing functions using =>

Answer: D

Q66. What does fetch() do in JavaScript?

A. Makes HTTP requests to retrieve network resources
B. Downloads files directly to the local disk
C. Imports CSS files into a JavaScript module
D. Fetches DOM elements by their CSS selectors

Answer: A

Q67. What is a JavaScript module?

A. A debugging tool for inspecting runtime state
B. A browser plugin for extending functionality
C. A testing framework for unit test execution
D. A file that exports and imports reusable code

Answer: D

Q68. Which keyword is used to export from a module?

A. output
B. export
C. module
D. send

Answer: B

Q69. What is the rest parameter in JavaScript?

A. A sleep function that pauses code execution
B. Syntax (...args) collecting remaining arguments
C. A default parameter value for function calls
D. A parameter specifically for REST API calls

Answer: B

Q70. What is try...catch used for?

A. Testing CSS styles in the browser
B. Importing modules from external files
C. Handling errors and exceptions in code
D. Creating loops that iterate over data

Answer: C

Q71. What is React?

A. A CSS framework for responsive page design
B. A relational database management system tool
C. A server-side backend application framework
D. A JavaScript library for building user interfaces

Answer: D

Q72. What is a component in React?

A. A reusable piece of UI with its own logic
B. A server route for handling requests
C. A CSS class for styling HTML elements
D. A database table for storing records

Answer: A

Q73. What is Vue.js?

A. A video player for streaming content
B. A testing tool for browser automation
C. A CSS library for animation effects
D. A progressive framework for building UIs

Answer: D

Q74. What is Angular?

A. A distributed version control system tool
B. A CSS grid system for page layout design
C. A TypeScript-based web framework by Google
D. A NoSQL document-oriented database system

Answer: C

Q75. What is JSX?

A. A new standalone programming language
B. A CSS preprocessor like Sass or Less
C. A syntax extension for HTML-like code in JS
D. A JSON alternative data exchange format

Answer: C

Q76. What are props in React?

A. Database properties for configuring schemas
B. Browser settings for rendering preferences
C. Data passed from parent to child components
D. CSS properties applied to styled elements

Answer: C

Q77. What is state in React?

A. A geographical US state name string value
B. An object holding data that triggers re-renders
C. A CSS state like hover or focus pseudo-class
D. A server state for managing session data

Answer: B

Q78. What is npm?

A. A server-side programming language runtime
B. Node Package Manager for managing dependencies
C. A CSS framework for responsive web design
D. A relational database management system

Answer: B

Q79. What does npm install do?

A. Installs CSS styles into browser cache
B. Installs dependencies from package.json
C. Installs a new browser on the system
D. Installs a new operating system update

Answer: B

Q80. What is a Single Page Application (SPA)?

A. A mobile app built with native platform-specific tools
B. A static HTML page with no interactive features at all
C. A web app that loads once and dynamically updates content
D. A website containing only a single paragraph of text

Answer: C

Q81. What is a server?

A. A computer providing services to clients
B. A type of relational database system
C. A CSS framework for styling web layouts
D. A web browser for viewing internet pages

Answer: A

Q82. What is Node.js?

A. A JavaScript runtime on V8 for server-side code
B. A CSS preprocessor for advanced styling
C. A NoSQL document-oriented database system
D. A frontend JavaScript UI framework library

Answer: A

Q83. What is an API endpoint?

A. A CSS selector for targeting page elements
B. A database connection string configuration
C. The final termination point of an API
D. A specific URL where an API receives requests

Answer: D

Q84. What is Express.js?

A. A frontend library for building user interfaces
B. A CSS framework for responsive page layouts
C. A minimal web application framework for Node.js
D. A NoSQL database for document-based storage

Answer: C

Q85. What is a database?

A. An organized collection of structured data
B. A CSS file for styling web page elements
C. A web server for hosting application files
D. A programming language for writing scripts

Answer: A

Q86. What does CRUD stand for?

A. Create, Read, Update, Delete
B. Compile, Run, Upload, Debug
C. Connect, Retrieve, Upload, Download
D. Cache, Route, Update, Deploy

Answer: A

Q87. What is middleware in backend development?

A. Software between request and response for processing
B. A CSS framework for building page component layouts
C. A frontend component for rendering user interfaces
D. A type of relational database engine system

Answer: A

Q88. What is JSON?

A. A relational database management system tool
B. JavaScript Object Notation for data interchange
C. A CSS extension for advanced style features
D. A server-side programming language runtime

Answer: B

Q89. What is a route in backend development?

A. A URL pattern mapped to a handler function
B. A database query for fetching records
C. A CSS path for selecting nested elements
D. A physical network cable routing path

Answer: A

Q90. What is the purpose of a package.json file?

A. To store database records in JSON format
B. To configure CSS preprocessor build steps
C. To style web pages with CSS declarations
D. To define project metadata and dependencies

Answer: D

Q91. What is server-side rendering?

A. A database operation for aggregating records
B. A CSS technique for optimizing visual layout
C. Rendering CSS on the server before delivery
D. Generating HTML on the server before sending it

Answer: D

Q92. Which language is commonly used for server-side programming?

A. HTML
B. Python
C. CSS
D. SVG

Answer: B

Q93. What is PHP?

A. A relational database management system
B. A CSS framework for responsive web layouts
C. A server-side scripting language for web dev
D. A JavaScript library for building interfaces

Answer: C

Q94. What is Django?

A. A CSS framework for responsive component design
B. A NoSQL database for storing document collections
C. A high-level Python web framework for rapid dev
D. A JavaScript library for building front-end UIs

Answer: C

Q95. What is a template engine?

A. A database tool for managing schema migrations
B. A JavaScript framework for reactive UI development
C. Software combining templates with data for HTML
D. A CSS generator for building style sheets

Answer: C

Q96. What is the purpose of a controller in server-side MVC?

A. To control the browser rendering engine
B. To control CSS styles of page elements
C. To handle requests, process data, and respond
D. To control the database schema directly

Answer: C

Q97. What is a server-side session?

A. Data stored on server to maintain user state
B. A database backup for disaster recovery
C. A CSS animation effect with keyframes
D. A JavaScript variable in the global scope

Answer: A

Q98. What is Flask?

A. A JavaScript runtime built on V8 engine
B. A CSS container element for layouts
C. A NoSQL database for document storage
D. A lightweight Python web framework for apps

Answer: D

Q99. What is a request object in server-side programming?

A. A database query for retrieving record sets
B. A CSS class for styling specific elements
C. An object containing incoming HTTP request data
D. A JavaScript event fired by user interactions

Answer: C

Q100. What does npm start typically do?

A. Starts CSS compilation for the build process
B. Opens a browser window to the application URL
C. Creates a new project with boilerplate code
D. Runs the start script in package.json for server

Answer: D

Q101. What is MySQL?

A. A CSS framework for responsive web page layouts
B. A web server for hosting application endpoints
C. An open-source relational database management system
D. A JavaScript library for building web interfaces

Answer: C

Q102. What is MongoDB?

A. A NoSQL document database storing JSON-like data
B. A CSS framework for building styled components
C. A web server for serving static content files
D. A SQL relational database using table schemas

Answer: A

Q103. What does SQL stand for?

A. Simple Query Language
B. Structured Query Language
C. Server Query Logic
D. Standard Question Language

Answer: B

Q104. Which SQL command retrieves data?

A. RETRIEVE
B. FETCH
C. GET
D. SELECT

Answer: D

Q105. What is a primary key?

A. The first column created in a database table
B. A password used for database authentication
C. A unique identifier for each record in a table
D. A foreign key linking to another related table

Answer: C

Q106. What SQL command inserts new data?

A. CREATE INTO
B. ADD INTO
C. INSERT INTO
D. PUT INTO

Answer: C

Q107. What is a table in a relational database?

A. A JavaScript object for storing key-value pairs
B. A CSS grid for laying out page components
C. An HTML table element for displaying data
D. A structured collection of rows and columns

Answer: D

Q108. What is PostgreSQL?

A. A CSS preprocessor for advanced style features
B. An advanced open-source relational database system
C. A JavaScript framework for building web apps
D. A web browser for viewing internet content

Answer: B

Q109. What SQL command deletes data?

A. DESTROY
B. DELETE
C. DROP DATA
D. REMOVE

Answer: B

Q110. What is a database schema?

A. The structure defining data organization and relations
B. An HTML template for rendering dynamic page content
C. A JavaScript object for storing config data
D. A CSS layout blueprint for page structure

Answer: A

Q111. What is HTTPS?

A. HTTP with encryption using TLS/SSL for security
B. A database protocol for encrypted connections
C. A faster version of HTTP for static content
D. A programming language for server applications

Answer: A

Q112. What is a password hash?

A. A one-way transformation into a fixed-length string
B. A password hint for helping users remember
C. A password reset link sent via email notification
D. An encrypted password stored with a cipher key

Answer: A

Q113. What is XSS (Cross-Site Scripting)?

A. A JavaScript framework for building secure apps
B. A CSS extension for adding custom properties
C. A vulnerability where malicious scripts are injected
D. A database attack targeting stored procedures

Answer: C

Q114. What is a firewall?

A. A NoSQL database for storing security records
B. A JavaScript library for client-side validation
C. A CSS border property for styling elements
D. A system monitoring and controlling network traffic

Answer: D

Q115. What is authentication?

A. A JavaScript function for data validation
B. The process of verifying a user's identity
C. A CSS technique for styling form elements
D. Authorizing access to protected resources

Answer: B

Q116. What is a cookie in web security?

A. A CSS property for styling decorated elements
B. A small data piece stored for session management
C. A browser game for entertainment purposes
D. A JavaScript variable stored in local memory

Answer: B

Q117. What does SSL stand for?

A. Secure Socket Layer
B. Simple Security Layer
C. Secure Server Link
D. Server Side Logic

Answer: A

Q118. What is a CAPTCHA?

A. A test distinguishing humans from automated bots
B. A type of database for storing user accounts
C. A JavaScript function for validating form data
D. A CSS framework for building secure page layouts

Answer: A

Q119. What is two-factor authentication (2FA)?

A. Using two passwords for login authentication
B. Using two browsers for testing compatibility
C. Having two accounts for backup and recovery
D. A method requiring two forms of identification

Answer: D

Q120. Why should user input be validated?

A. To improve SEO ranking in search engine results
B. To improve CSS styling across different browsers
C. To speed up the database query execution time
D. To prevent malicious data and protect against attacks

Answer: D

Q121. What is web performance optimization?

A. A CSS framework for building optimized page layouts
B. A JavaScript library for animation performance
C. Making websites look visually better with design
D. Techniques to make websites load and respond faster

Answer: D

Q122. What is caching?

A. Storing data copies for faster subsequent access
B. A type of database for key-value storage
C. A payment method for online transactions
D. A CSS property for visual element styling

Answer: A

Q123. What is image compression?

A. Permanently deleting images from the server
B. Reducing image file size while keeping quality
C. A JavaScript function for image manipulation
D. A CSS filter for applying visual image effects

Answer: B

Q124. What is minification?

A. A CSS technique for reducing selector specificity
B. Making fonts smaller on the rendered page
C. Removing unnecessary characters without changing function
D. A database optimization for reducing table sizes

Answer: C

Q125. What is lazy loading?

A. A database query that runs in the background
B. A CSS animation with a slow timing function
C. Deferring non-critical resource loading until needed
D. Loading pages intentionally at a slower speed

Answer: C

Q126. What is a CDN used for in web performance?

A. A database network for distributed data storage
B. Creating dynamically generated HTML pages
C. Distributing content across global servers for speed
D. A CSS framework for building responsive layouts

Answer: C

Q127. Why are large images bad for web performance?

A. They look bad on high-resolution displays
B. They break CSS layouts on mobile devices
C. They increase page load time and bandwidth use
D. They cause JavaScript runtime errors in browsers

Answer: C

Q128. What is page load time?

A. A server uptime metric for availability
B. The time to write the application code
C. The total time for a web page to fully load
D. A CSS duration for transition animations

Answer: C

Q129. What does the async attribute do on a script tag?

A. Makes CSS load asynchronously in parallel
B. Downloads script without blocking HTML parsing
C. Makes the script execute synchronously in order
D. Delays the script loading permanently from page

Answer: B

Q130. What is browser caching?

A. Storing resources locally for faster repeat access
B. A JavaScript method for storing session data
C. A CSS property for caching computed style values
D. A browser plugin for extending capabilities

Answer: A

Q131. What is unit testing?

A. Testing individual functions of code in isolation
B. Testing the entire application end to end
C. Testing only the database layer and queries
D. Testing CSS styles across different browsers

Answer: A

Q132. What is a bug in software?

A. A planned feature in the software design
B. A CSS property that is incorrectly applied
C. An error in code causing unexpected behavior
D. A computer virus that damages system files

Answer: C

Q133. What is the browser developer console used for?

A. Writing CSS styles for page elements
B. Managing database records and schemas
C. Debugging JavaScript and inspecting elements
D. Designing web page visual layouts

Answer: C

Q134. What is console.log() used for in debugging?

A. Creating a user activity log in the database
B. Outputting values to the console for inspection
C. Sending logs to the remote server for storage
D. Creating log files on the server disk

Answer: B

Q135. What is a test case?

A. Conditions to verify a feature works correctly
B. A computer case for housing hardware
C. A CSS container for grouping styled elements
D. A JavaScript class for creating object types

Answer: A

Q136. What is manual testing?

A. Testing with reference to user documentation
B. Testing only the documentation for accuracy
C. Testing performed using automated tools
D. Testing software by hand without automation

Answer: D

Q137. What does a breakpoint do in debugging?

A. Pauses code execution at a specific line for inspection
B. Breaks the code permanently so it stops running
C. Breaks the CSS layout causing elements to misalign
D. Creates a responsive breakpoint for media queries

Answer: A

Q138. What is the Network tab in browser DevTools for?

A. Managing network configuration settings in browser
B. Creating network topology diagrams for documentation
C. Connecting to WiFi network for internet access
D. Monitoring HTTP requests, responses, and their timing

Answer: D

Q139. What is regression testing?

A. Re-testing features after changes to check nothing broke
B. Testing CSS regression across different browsers
C. Testing database regression after schema updates
D. Testing a feature for the very first time

Answer: A

Q140. What is a linter?

A. A debugger for stepping through code execution
B. A CSS framework for responsive page layouts
C. A testing framework for automated unit testing
D. A tool analyzing code for errors and style violations

Answer: D

Q141. What is web hosting?

A. A service making a website accessible on the internet
B. A database service for storing application records
C. A CSS framework for building web page layouts
D. A JavaScript library for reactive user interfaces

Answer: A

Q142. What is a domain name?

A. A server name assigned during initial configuration
B. A database name for identifying data collections
C. A human-readable address used to access a website
D. A numerical IP address for server identification

Answer: C

Q143. What is FTP?

A. A CSS framework for styled web page components
B. File Transfer Protocol for transferring files over networks
C. A JavaScript function for processing user form data
D. A database query for retrieving and filtering records

Answer: B

Q144. What is GitHub Pages?

A. A database service for cloud-based data storage
B. A social media platform for sharing content
C. A free static site hosting service from GitHub
D. A JavaScript framework for building web apps

Answer: C

Q145. What is a production environment?

A. A coding environment for writing application code
B. A testing environment for verifying bug fixes
C. The live environment where users access the application
D. A staging environment for pre-release validation

Answer: C

Q146. What does deploy mean in web development?

A. To write application source code in an IDE
B. To debug code and find programming errors
C. To make an application accessible on a server
D. To test code for correctness and reliability

Answer: C

Q147. What is Netlify?

A. A JavaScript framework for building web applications
B. A cloud platform for deploying sites and serverless
C. A CSS framework for building responsive web layouts
D. A NoSQL database for storing document collections

Answer: B

Q148. What is a staging environment?

A. The production server running the live application
B. A development computer for writing application code
C. A CSS staging area for previewing style changes
D. A pre-production environment mirroring production

Answer: D

Q149. What is version control?

A. A database version for tracking schema migrations
B. A CSS versioning system for managing style updates
C. Controlling which browser version users run
D. A system tracking and managing code changes over time

Answer: D

Q150. What is a build process?

A. Transforming source code into optimized deploy files
B. Building HTML pages manually without any tools
C. A CSS compilation step for preprocessing styles
D. Building a physical server room infrastructure

Answer: A

Q151. What is a Web API?

A. A JavaScript variable for storing temporary data
B. An interface allowing software to communicate via HTTP
C. A CSS framework for building styled web layouts
D. A NoSQL database for storing document records

Answer: B

Q152. What is JSON used for in Web APIs?

A. Storing CSS variables for theming and customization
B. Styling web pages with CSS declarations and rules
C. A lightweight data format for client-server exchange
D. Creating HTML elements for dynamic page rendering

Answer: C

Q153. What is a GET request?

A. Getting database access for read operations
B. Getting CSS styles for an HTML element
C. An HTTP request that retrieves data without modifying
D. Getting HTML templates from the server cache

Answer: C

Q154. What is a POST request?

A. An HTTP request sending data to create a resource
B. Posting database queries for batch execution
C. Posting CSS updates to a remote style server
D. Posting content on a social media platform

Answer: A

Q155. What is an API key?

A. A physical key for server room access control
B. A CSS key for targeting specific styled elements
C. A unique identifier used to authenticate API requests
D. A keyboard shortcut for developer tool actions

Answer: C

Q156. What does REST stand for?

A. Remote Execution of Server Tasks
B. Real-time Event Streaming Technology
C. Responsive State Transition
D. Representational State Transfer

Answer: D

Q157. What is an API response?

A. Data sent back by server after processing a request
B. A CSS file for styling page components
C. An HTML page always returned from the server
D. A JavaScript function for handling async events

Answer: A

Q158. What is Postman used for?

A. Managing database records through a visual tool
B. Sending physical mail through the postal service
C. Testing and debugging APIs by sending requests
D. Writing CSS stylesheets for web page elements

Answer: C

Q159. What is an HTTP status code?

A. A JavaScript error code thrown during execution
B. A database error code from failed query operations
C. A numerical code indicating the result of a request
D. A CSS class name applied to styled elements

Answer: C

Q160. What is a query parameter in a URL?

A. A CSS query for selecting styled page elements
B. A key-value pair after ? to send data with requests
C. A database query for filtering stored records
D. A JavaScript query for searching DOM tree nodes

Answer: B

Q161. What is TypeScript?

A. A CSS preprocessor for advanced style syntax
B. A typed superset of JavaScript compiling to JS
C. A new unrelated programming language for web
D. A database language for structured query access

Answer: B

Q162. What is a package manager?

A. A database manager for schema and migration control
B. A CSS framework for responsive component-based design
C. A tool automating installing and managing dependencies
D. A delivery service for shipping physical packages

Answer: C

Q163. What is Sass/SCSS?

A. A database language for writing structured queries
B. A web server for hosting static and dynamic content
C. A JavaScript library for building reactive interfaces
D. A CSS preprocessor adding variables, nesting, mixins

Answer: D

Q164. What is a linter?

A. A CSS animation for transition visual effects
B. A database tool for query optimization and profiling
C. A testing framework for automated unit test execution
D. A tool analyzing code to flag errors and enforce standards

Answer: D

Q165. What is Git?

A. A NoSQL database for storing document collections
B. A CSS framework for building responsive layouts
C. A web browser for viewing internet content
D. A distributed version control system for code

Answer: D

Q166. What is a code formatter?

A. A CSS beautifier for styling elements only
B. A database formatter for prettifying query output
C. A JavaScript compiler for transpiling modern syntax
D. A tool automatically formatting code to consistent style

Answer: D

Q167. What is Tailwind CSS?

A. A utility-first CSS framework with low-level classes
B. A database tool for managing schema migrations
C. A testing framework for end-to-end browser tests
D. A JavaScript framework for building user interfaces

Answer: A

Q168. What is a component library?

A. A CSS file for global application style definitions
B. A book library for reading documentation offline
C. A collection of pre-built reusable UI components
D. A JavaScript runtime for executing server code

Answer: C

Q169. What is Markdown?

A. A JavaScript library for DOM manipulation events
B. A lightweight markup language for formatted text
C. A database query language for structured access
D. A CSS framework for responsive component styling

Answer: B

Q170. What is an environment variable?

A. A variable set outside the app configuring behavior
B. A CSS variable defined with custom property syntax
C. A database field for storing record attribute values
D. A JavaScript global variable accessible from any scope

Answer: A

Q171. What does CSS stand for?

A. Colorful Style Sheets
B. Cascading Style Sheets
C. Computer Style Sheets
D. Creative Style Systems

Answer: B

Q172. What is the purpose of a text editor in web development?

A. To write and edit source code
B. To compile server-side programs
C. To manage database table records
D. To browse and navigate websites

Answer: A

Q173. Which protocol is used to load web pages?

A. HTTP protocol
B. FTP protocol
C. SSH protocol
D. SMTP protocol

Answer: A

Q174. What is a web page?

A. A database query statement
B. A server configuration file
C. A single document on the web
D. A network routing protocol

Answer: C

Q175. What does a back-end developer do?

A. Designs the visual user interface
B. Creates graphic assets for the site
C. Writes server-side application logic
D. Tests the browser compatibility only

Answer: C

Q176. Which tool is used to inspect web page elements?

A. Terminal emulator
B. Browser DevTools
C. Package installer
D. Database manager

Answer: B

Q177. What is a hyperlink?

A. A styling rule for text decoration
B. A script that validates user input
C. A method for storing session data
D. A clickable reference to another page

Answer: D

Q178. What is the main function of DNS?

A. To validate HTML page structure
B. To encrypt data during transfer
C. To compile source code on servers
D. To translate domain names to IPs

Answer: D

Q179. What does IDE stand for?

A. Internal Data Encryption
B. Integrated Development Environment
C. Interactive Design Editor
D. Internet Development Engine

Answer: B

Q180. Which language is used for web page structure?

A. JavaScript
B. HTML markup
C. Python lang
D. Cascading SS

Answer: B

Q181. What does HTTP stand for?

A. Hyper Terminal Text Program
B. HyperText Transfer Protocol
C. High Transfer Text Protocol
D. Home Text Transfer Protocol

Answer: B

Q182. What is an IP address?

A. A programming language for building web applications
B. A unique numerical label for devices on a network
C. A type of database used to store website content
D. A visual design tool for creating page mockup files

Answer: B

Q183. What is the default port number for HTTP?

A. Port 443
B. Port 80
C. Port 25
D. Port 21

Answer: B

Q184. What does HTTPS add to HTTP?

A. Encryption via SSL/TLS
B. Faster data transfer
C. Database connectivity
D. Image optimization

Answer: A

Q185. What is a client in client-server architecture?

A. The device that stores all website data files
B. The protocol that encodes data for safe transfer
C. The cable that connects computers on a network
D. The software that requests resources from servers

Answer: D

Q186. Which HTTP method is used to retrieve data?

A. DELETE method
B. POST method
C. PUT method
D. GET method

Answer: D

Q187. What is a web host?

A. A browser extension for ad blocking
B. A language for scripting web pages
C. A service that stores website files
D. A tool for debugging CSS layouts

Answer: C

Q188. What does a 404 status code mean?

A. Resource not found
B. Server internal error
C. Redirect to new URL
D. Successful request

Answer: A

Q189. What is bandwidth in web context?

A. The number of users currently accessing a specific web server
B. The maximum data transfer rate of a network connection link
C. The visual width of a web page displayed in the browser window
D. The total storage space available on a web hosting server disk

Answer: B

Q190. What is latency in networking?

A. The delay before data transfer begins between two endpoints
B. The maximum number of connections a server can handle at once
C. The total storage capacity available on a remote file server
D. The encryption strength used to protect data during transfers

Answer: A

Q191. Which HTML tag creates a paragraph?

A.
 tag
B. tag
C. tag
D. <p> tag

Answer: D

Q192. What does the <a> tag create?

A. An image element
B. A paragraph block
C. A table row item
D. A hyperlink element

Answer: D

Q193. Which attribute specifies the URL in an anchor tag?

A. type attribute
B. alt attribute
C. src attribute
D. href attribute

Answer: D

Q194. What is the purpose of the <head> element?

A. To display the main visible content of the page
B. To contain metadata and links to external resources
C. To create a navigation menu across the top of site
D. To define a footer section at the bottom of a page

Answer: B

Q195. Which tag is used for the largest heading?

A. <h6> tag
B. <h2> tag
C. <h3> tag
D. <h1> tag

Answer: D

Q196. What does the <img> tag do?

A. Generates a table layout
B. Inserts an image element
C. Creates a hyperlink to page
D. Defines a text paragraph

Answer: B

Q197. Which HTML tag creates a line break?

A. <lb> tag
B.
 tag
C. <hr> tag
D. <nl> tag

Answer: B

Q198. What is the purpose of the <title> tag?

A. To add a tooltip on hover state
B. To set the browser tab title text
C. To display a heading on the page
D. To create bold text in the body

Answer: B

Q199. Which tag creates an unordered list?

A. tag
B. tag
C. tag
D. <dl> tag

Answer: B

Q200. What does the <body> tag contain?

A. Visible content of the page
B. Page metadata and style links
C. Server configuration settings
D. External script file references

Answer: A

Q201. Which CSS property changes text color?

A. background-color
B. border
C. color
D. font-size

Answer: C

Q202. How do you select an element by its ID in CSS?

A. Using a hash prefix
B. Using a dot prefix
C. Using an at symbol
D. Using a tilde prefix

Answer: A

Q203. Which property sets the background color?

A. font-color
B. text-background
C. color property
D. background-color

Answer: D

Q204. What does the font-size property control?

A. The size of the text characters shown
B. The weight or boldness of the text
C. The spacing between lines of text
D. The font family used for the element

Answer: A

Q205. How do you add a CSS comment?

A. /* comment text */
B. # comment text here
C. <!-- comment here -->
D. // comment text here

Answer: A

Q206. Which property controls element width?

A. width
B. size
C. length
D. height

Answer: A

Q207. What value makes text bold?

A. text-weight: bold
B. text-style: bold
C. font-weight: bold
D. font-style: bold

Answer: C

Q208. Which property adds space inside an element's border?

A. border property
B. padding property
C. spacing property
D. margin property

Answer: B

Q209. How do you select all paragraph elements?

A. #p selector
B. p selector
C. *p selector
D. .p selector

Answer: B

Q210. Which property controls text alignment?

A. text-position
B. align-text
C. font-align
D. text-align

Answer: D

Q211. What does a media query do in CSS?

A. Embeds media files like videos
B. Creates multimedia animations
C. Applies styles based on conditions
D. Queries a media database server

Answer: C

Q212. What CSS property creates a flexible container?

A. display: flex
B. display: table
C. display: inline
D. display: block

Answer: A

Q213. What unit is relative to the viewport width?

A. cm unit
B. em unit
C. vw unit
D. px unit

Answer: C

Q214. What does the flex-direction property control?

A. The direction of flex items
B. The color of flex items
C. The opacity of container
D. The border of flex items

Answer: A

Q215. What is CSS Grid used for?

A. Adding animations to pages
B. Creating two-dimensional layouts
C. Validating form input fields
D. Styling text fonts and colors

Answer: B

Q216. What does the gap property do in Grid?

A. Sets the grid background color
B. Sets the font size of grid text
C. Sets spacing between grid items
D. Sets the border of grid items

Answer: C

Q217. What is a breakpoint in responsive design?

A. A screen width where the layout changes its presentation style
B. A point where the code stops executing during debugging mode
C. A network point where data packets are inspected for threats
D. A JavaScript error that breaks the page rendering completely

Answer: A

Q218. What does justify-content do in flexbox?

A. Removes all padding and margin from the flex container element
B. Aligns items vertically along the cross axis of the container
C. Changes the font justification to monospaced character spacing
D. Aligns items horizontally along the main axis of the container

Answer: D

Q219. What is the rem unit relative to?

A. Root element font size
B. Device pixel density
C. Parent element font size
D. Viewport total height

Answer: A

Q220. What does align-items do in flexbox?

A. It sets the text alignment for content inside each flex item child
B. It aligns flex items along the cross axis of the flex container
C. It defines the number of items that can fit on a single flex row
D. It adds animated alignment transitions between flex item positions

Answer: B

Q221. What keyword declares a variable that can be reassigned?

A. const keyword
B. final keyword
C. var keyword
D. let keyword

Answer: D

Q222. What is the result of typeof null in JavaScript?

A. 'boolean' val
B. 'object' type
C. 'undefined'
D. 'null' string

Answer: B

Q223. Which operator checks strict equality?

A. === operator
B. != operator
C. = operator
D. == operator

Answer: A

Q224. What does console.log() do?

A. Outputs to the console
B. Sends data to server
C. Writes to a log file
D. Displays an alert box

Answer: A

Q225. How do you write a single-line comment?

A. <!-- comment -->
B. # comment here
C. // comment here
D. /* comment */

Answer: C

Q226. What is an array in JavaScript?

A. A CSS property for arranging page elements
B. A function that processes text strings only
C. A single numeric value stored in memory
D. An ordered collection of values in a list

Answer: D

Q227. What does the push() method do to an array?

A. Adds an element to end
B. Removes the last element
C. Sorts elements in order
D. Reverses array elements

Answer: A

Q228. What is a function in JavaScript?

A. A reusable block of code that performs a task
B. A network protocol for exchanging data between nodes
C. A database query that retrieves stored information
D. A CSS selector that targets specific HTML elements

Answer: A

Q229. What value does a variable have before assignment?

A. zero value
B. undefined
C. null value
D. empty string

Answer: B

Q230. Which method converts a string to a number?

A. parseInt() method
B. toString() method
C. concat() method
D. stringify() method

Answer: A

Q231. What is a Promise in JavaScript?

A. A guaranteed synchronous operation result value
B. A CSS animation timing function for elements
C. A method for declaring global variables only
D. An object representing a future async outcome

Answer: D

Q232. What keyword makes a function asynchronous?

A. defer keyword
B. await keyword
C. yield keyword
D. async keyword

Answer: D

Q233. What does the await keyword do?

A. Pauses async function execution until a Promise settles
B. Creates a new thread for parallel processing of data
C. Stops all JavaScript execution on the current web page
D. Delays code execution by a specific number of milliseconds

Answer: A

Q234. What is the DOM?

A. A database object model for SQL queries
B. A design optimization module for CSS
C. A disk operating mechanism for files
D. A document object model for web pages

Answer: D

Q235. What does JSON stand for?

A. JavaScript Object Notation
B. Joint System Object Network
C. JavaScript Oriented Namespace
D. Java Standard Object Naming

Answer: A

Q236. What is an arrow function?

A. A shorter syntax for writing function expressions
B. A function that draws arrows on a canvas element
C. A special function that handles keyboard arrow keys
D. A function that only works with array operations

Answer: A

Q237. What is the purpose of try-catch?

A. To test network speed before loading page resources
B. To test CSS styles before applying them to elements
C. To handle errors gracefully without crashing the code
D. To catch mouse click events on specific HTML elements

Answer: C

Q238. What does the fetch API do?

A. Makes network requests to get or send data
B. Retrieves CSS styles from a stylesheet file
C. Downloads and installs browser plugin extensions
D. Fetches DOM elements by their class name value

Answer: A

Q239. What is localStorage?

A. A CSS property for element positioning
B. Client-side persistent key-value storage
C. A method for caching DNS query results
D. Server-side database for user data

Answer: B

Q240. What is an event listener?

A. A function that waits for and responds to a specific event trigger
B. A CSS property that detects hover and focus states on an element
C. A server that listens for incoming network connections from clients
D. A debugging tool that records all console output to a log file

Answer: A

Q241. What is React primarily used for?

A. Server-side database management
B. Operating system development work
C. Network protocol implementation
D. Building user interface components

Answer: D

Q242. What is a component in frontend frameworks?

A. A database table configuration file
B. A reusable piece of user interface
C. A CSS file that styles a single page
D. A server route handler for requests

Answer: B

Q243. What is Vue.js?

A. A mobile operating system app
B. A database query language spec
C. A backend server framework
D. A progressive frontend framework

Answer: D

Q244. What does Angular use for templates?

A. Python template syntax
B. Ruby ERB template files
C. Enhanced HTML with directives
D. Plain JavaScript strings

Answer: C

Q245. What is JSX in React?

A. A JSON schema extension for validation
B. A CSS preprocessor for React styles
C. A JavaScript testing framework tool
D. A syntax extension mixing HTML with JS

Answer: D

Q246. What is state in a frontend framework?

A. Data that determines how a component renders and behaves
B. The geographic location of the server hosting the application
C. The CSS styling applied to an element at any given moment
D. The HTTP status code returned by the server for each request

Answer: A

Q247. What is npm used for?

A. Managing JavaScript packages
B. Running database migrations
C. Compiling TypeScript to JS
D. Styling web page elements

Answer: A

Q248. What is a Single Page Application?

A. An app that works only on single monitor setup
B. A website with only one paragraph
C. A web page that disables all user scrolling
D. An app that updates without full page reloads

Answer: D

Q249. What is the virtual DOM?

A. A database for storing HTML template files
B. A lightweight copy of the real DOM tree
C. A physical server that stores DOM data
D. A CSS framework for virtual reality pages

Answer: B

Q250. What is Svelte?

A. A compiler-based frontend framework
B. A backend REST API framework tool
C. A CSS animation library for web pages
D. A database migration utility script

Answer: A

Q251. What is a server in web development?

A. A computer that serves resources
B. A browser extension for debugging
C. A CSS framework for styling
D. A front-end layout component

Answer: A

Q252. What is an API?

A. A database management system tool
B. An interface for software communication
C. A visual design tool for web pages
D. A type of web browser extension

Answer: B

Q253. What does REST stand for?

A. Remote Execution Server Tool
B. Real-time Event Stream Technology
C. Representational State Transfer
D. Responsive Element Style Template

Answer: C

Q254. What is a database used for?

A. Creating user interface layouts
B. Compiling source code files
C. Storing and retrieving data
D. Styling web page elements

Answer: C

Q255. What is Node.js?

A. A CSS preprocessor tool
B. A browser testing framework
C. A JavaScript server runtime
D. A database query language

Answer: C

Q256. What is a route in backend development?

A. A URL pattern mapped to a handler
B. A database table relationship link
C. A network cable connecting servers
D. A CSS path for animation movement

Answer: A

Q257. What does CRUD stand for?

A. Compile, Run, Upload, Deploy
B. Cache, Route, Update, Debug
C. Create, Read, Update, Delete
D. Connect, Render, Update, Drop

Answer: C

Q258. What is middleware in backend development?

A. The physical hardware between client and server machines in the network
B. Software that processes requests between receiving and sending response
C. The CSS styles applied between two animation keyframes in a transition
D. A database layer that sits between the raw data files and the queries

Answer: B

Q259. What is Express.js?

A. A database query builder
B. A CSS animation library
C. A frontend testing suite
D. A Node.js web framework

Answer: D

Q260. What format is commonly used for API responses?

A. HTML format
B. XML format
C. CSV format
D. JSON format

Answer: D

Q261. What is server-side rendering?

A. Compiling JavaScript into machine code on the server for faster speed
B. Rendering CSS animations on the server before sending them to client
C. Processing database queries on the client side instead of the server
D. Generating HTML on the server before sending it to the browser client

Answer: D

Q262. What is PHP primarily used for?

A. Mobile app development
B. Desktop GUI applications
C. Server-side web scripting
D. Database engine creation

Answer: C

Q263. What is a session in web development?

A. A JavaScript testing framework function
B. A CSS animation sequence that plays once
C. A way to store user data across requests
D. A type of database join operation query

Answer: C

Q264. What is a cookie?

A. A small data piece stored in the browser
B. A CSS property for styling form inputs
C. A server configuration file for caching
D. A database table for user preferences

Answer: A

Q265. What does MVC stand for?

A. Managed-Virtual-Cache
B. Main-View-Component
C. Model-View-Controller
D. Module-Variable-Class

Answer: C

Q266. What is a template engine?

A. A tool that generates CSS from design files automatically
B. A tool that combines templates with data to produce HTML output
C. A tool that creates database schemas from visual diagram models
D. A tool that compiles TypeScript into standard JavaScript code

Answer: B

Q267. What is Django?

A. A database management system
B. A CSS preprocessor language
C. A JavaScript runtime environment
D. A Python-based web framework

Answer: D

Q268. What is Ruby on Rails?

A. A database visualization platform
B. A Ruby-based web framework tool
C. A CSS grid framework for layouts
D. A JavaScript package manager app

Answer: B

Q269. What is a request-response cycle?

A. The process of compiling source code and deploying it to a production box
B. The cycle of backing up and restoring database records on a fixed schedule
C. The time it takes CSS to render on screen after being parsed by browser
D. A client sends a request and the server returns a corresponding response

Answer: D

Q270. What does a web framework provide?

A. Only visual design tools for creating page mockups and wireframes easily
B. Hardware drivers for connecting web servers to network switch devices
C. Pre-built tools and structure for building web applications efficiently
D. Browser extensions that enhance the user experience of any website

Answer: C

Q271. What is SQL?

A. A server configuration format
B. A JavaScript testing framework
C. A styling language for web pages
D. A language for managing databases

Answer: D

Q272. What is a primary key in a database?

A. The main index for text search
B. The first column in every table
C. The password for database access
D. A unique identifier for each row

Answer: D

Q273. What does SELECT do in SQL?

A. Creates new database tables
B. Deletes specified records
C. Updates existing row values
D. Retrieves data from tables

Answer: D

Q274. What is MongoDB?

A. A CSS styling framework
B. A JavaScript build tool
C. A relational SQL database
D. A NoSQL document database

Answer: D

Q275. What is a table in a relational database?

A. A JavaScript data structure for key-value pairs used in code
B. A CSS property that creates grid-like layouts on web page elements
C. A collection of related data organized in rows and columns format
D. A server configuration file that maps URLs to handler functions

Answer: C

Q276. What does INSERT do in SQL?

A. Removes rows from a table
B. Adds new rows to a table
C. Searches for text patterns
D. Modifies existing row data

Answer: B

Q277. What is a foreign key?

A. A temporary key generated during database backup process
B. A field that references a primary key in another table
C. A key used to encrypt database files for security
D. A key that allows foreign users to access the database

Answer: B

Q278. What is MySQL?

A. A relational SQL database
B. A CSS preprocessor tool
C. A JavaScript framework
D. A NoSQL document store

Answer: A

Q279. What does UPDATE do in SQL?

A. Modifies existing data in the database table rows
B. Deletes the entire database from the server storage
C. Creates a new table in the database schema file
D. Retrieves all records matching a specified condition

Answer: A

Q280. What is PostgreSQL?

A. A command-line tool for managing server deployment pipelines
B. An advanced open-source relational database management system
C. A frontend CSS framework for web layout design styling
D. A JavaScript library for building user interface components

Answer: B

Q281. What is HTTPS?

A. A CSS styling standard
B. HTTP with TLS encryption
C. A faster version of HTML
D. A database access protocol

Answer: B

Q282. What is a password hash?

A. A one-way encrypted form of password
B. A method for generating passwords
C. A visible password shown on screen
D. A type of password recovery email

Answer: A

Q283. What is XSS?

A. A database query optimizer
B. A server-side language tool
C. Cross-site scripting attack
D. A CSS framework for styling

Answer: C

Q284. What is a firewall?

A. A JavaScript error handling method
B. A CSS property for styling borders
C. A database backup recovery process
D. A system that filters network traffic

Answer: D

Q285. What does SSL stand for?

A. System Security Level
B. Server Side Language
C. Secure Sockets Layer
D. Standard Style Library

Answer: C

Q286. What is two-factor authentication?

A. Logging in from two different devices at the same time for redundancy
B. Using two different browsers to log in to the same account simultaneously
C. Creating two separate passwords for a single user account on the site
D. Requiring two forms of identity verification for accessing an account

Answer: D

Q287. What is a CAPTCHA used for?

A. To style form input fields
B. To verify a user is human
C. To encrypt form submissions
D. To speed up page loading

Answer: B

Q288. What is malware?

A. A CSS animation framework
B. A type of web server software
C. A database storage format
D. Software designed to cause harm

Answer: D

Q289. What is phishing?

A. A process for optimizing database queries for faster execution time
B. A performance testing method for measuring page load speed metrics
C. A technique for compressing images to reduce file size on servers
D. A fraudulent attempt to obtain sensitive information by deception

Answer: D

Q290. What is encryption?

A. Creating backup copies of important files on the server
B. Deleting sensitive data from the database permanently
C. Compressing files to reduce their storage size on disk
D. Converting data into an unreadable format for protection

Answer: D

Q291. What is page load time?

A. Time to write the page code
B. Time to deploy the page code
C. Time for a page to fully display
D. Time for DNS to resolve domain

Answer: C

Q292. What does minification do?

A. Encrypts the source code files
B. Adds comments to the code
C. Compiles code to machine code
D. Removes unnecessary characters

Answer: D

Q293. What is caching?

A. Encrypting data in the database
B. Storing data for faster future access
C. Deleting old files from server
D. Compiling code before deployment

Answer: B

Q294. What does image compression do?

A. Converts images to HTML format
B. Adds metadata to image files
C. Increases image resolution quality
D. Reduces image file size for web

Answer: D

Q295. What is lazy loading?

A. Slowing down the server to reduce power usage
B. Loading resources only on the server side cache
C. Deferring resource loading until they are needed
D. Loading all resources immediately on page start

Answer: C

Q296. What does a CDN help with?

A. Writing server code
B. Database management
C. Code compilation speed
D. Faster content delivery

Answer: D

Q297. What is browser caching?

A. Encrypting browser data for privacy and security use
B. Compiling web pages into native apps for offline use
C. Deleting browser history to free up disk space now
D. Storing web resources locally in the browser for reuse

Answer: D

Q298. What does the defer attribute do on a script tag?

A. It loads the script after HTML parsing is complete first
B. It delays the script execution by a fixed time in seconds
C. It defers CSS loading until after JavaScript execution
D. It prevents the script from running in production builds

Answer: A

Q299. What is bandwidth?

A. The maximum file size a server can store on disk
B. The number of pages a website has in its sitemap
C. The visual width of a web page layout in pixels
D. The data transfer capacity of a network connection

Answer: D

Q300. What is a performance bottleneck?

A. A CSS property that controls animation speed on a page
B. A feature that limits the overall performance of a system
C. A tool used to measure the speed of a web application
D. A server configuration for limiting maximum user connections

Answer: B

Q301. What is unit testing?

A. Testing network connectivity and speed
B. Testing individual components in isolation
C. Testing the user interface visual layout
D. Testing the entire application end to end

Answer: B

Q302. What is a bug in software?

A. A planned software enhancement
B. A CSS styling improvement idea
C. An error or defect in the code
D. A feature request from the user

Answer: C

Q303. What is the purpose of the browser console?

A. To design database table structures
B. To view logs, errors, and run JavaScript
C. To create new web pages from templates
D. To manage web server configurations

Answer: B

Q304. What does a linter do?

A. It removes lint from clothing images
B. It generates test cases from source
C. It compresses files for deployment
D. It checks code for style and errors

Answer: D

Q305. What is debugging?

A. Deploying code to production
B. Finding and fixing code errors
C. Writing documentation for code
D. Adding new features to software

Answer: B

Q306. What is a test case?

A. A special case statement in JavaScript switch expressions
B. A container for storing test data in the database table
C. A set of conditions to verify expected software behavior
D. A type of briefcase used by quality assurance engineers

Answer: C

Q307. What tool is commonly used for JavaScript testing?

A. Nginx server
B. MySQL server
C. Photoshop
D. Jest framework

Answer: D

Q308. What is a breakpoint in debugging?

A. A network point where data packets are split for transfer
B. A point in code where execution pauses for inspection work
C. A CSS property that breaks text into multiple lines on page
D. A screen width where the responsive layout changes its form

Answer: B

Q309. What is integration testing?

A. Testing individual functions completely isolated from others
B. Testing the application under extreme load conditions only
C. Testing how different modules or components work together
D. Testing CSS integration with HTML elements on the web page

Answer: C

Q310. What is a test suite?

A. A single test case for one function
B. A collection of related test cases
C. A CSS framework for test pages
D. A hotel suite for QA team members

Answer: B

Q311. What is deployment in web development?

A. Writing the initial source code for a new feature in the application
B. Designing the user interface mockups in a visual design tool app
C. Making a website available on a server for users to access online
D. Testing the application for bugs before releasing it to the public

Answer: C

Q312. What is a domain name?

A. A server-side scripting language
B. A database management system tool
C. A human-readable web address name
D. A CSS layout framework for grids

Answer: C

Q313. What does FTP stand for?

A. File Transfer Protocol
B. Front Template Page
C. Full Type Platform
D. Fast Text Processing

Answer: A

Q314. What is shared hosting?

A. Hosting where you own the entire physical server exclusively for your site
B. Hosting where multiple websites share a single server and its resources
C. Hosting where files are shared across multiple CDN edge server locations
D. Hosting where developers share code through version control repositories

Answer: B

Q315. What is a SSL certificate?

A. A certificate showing a website passed all accessibility compliance tests
B. A certification for web developers from an accredited training institution
C. A license required to operate a web hosting business in certain countries
D. A digital certificate that enables HTTPS encryption for a website domain

Answer: D

Q316. What is GitHub Pages?

A. A backend API framework tool
B. A static site hosting service
C. A CSS component library app
D. A database hosting service

Answer: B

Q317. What is a VPS?

A. Virtual Private Server
B. Variable Processing System
C. Visual Page Styling
D. Virtual Protocol Service

Answer: A

Q318. What does DNS do?

A. Compiles JavaScript for production use
B. Translates domain names to IP addresses
C. Styles web page elements with colors
D. Creates database tables automatically

Answer: B

Q319. What is cloud hosting?

A. Hosting in a weather station
B. Hosting through email services
C. Hosting files on a local computer
D. Hosting on virtual cloud servers

Answer: D

Q320. What is Netlify used for?

A. Hosting and deploying web applications
B. Writing server-side Python programs
C. Managing SQL databases for web apps
D. Creating mobile applications for iOS

Answer: A

Q321. What is a REST API?

A. A database query language spec
B. A CSS framework for styling
C. A JavaScript testing framework
D. An API following REST principles

Answer: D

Q322. What HTTP method retrieves data?

A. DELETE method
B. PUT method
C. POST method
D. GET method

Answer: D

Q323. What is JSON used for in APIs?

A. Exchanging data between client and server systems
B. Styling web page elements with colors and fonts
C. Compiling JavaScript code for production deployment
D. Creating database tables and defining their schemas

Answer: A

Q324. What does an API endpoint represent?

A. A JavaScript variable type name
B. A CSS selector targeting elements
C. A database table column value
D. A specific URL for a resource

Answer: D

Q325. What HTTP method creates a new resource?

A. GET method
B. DELETE method
C. PUT method
D. POST method

Answer: D

Q326. What is an API key?

A. A database encryption algorithm name
B. A CSS property for keyboard events
C. A token for authenticating API requests
D. A physical key for server room access

Answer: C

Q327. What does HTTP status 200 mean?

A. OK / Success
B. Unauthorized
C. Not found
D. Server error

Answer: A

Q328. What is a request header?

A. A database table column header
B. The first line of HTML on a page
C. A CSS header styling property
D. Metadata sent with an HTTP request

Answer: D

Q329. What does CORS stand for?

A. Cache Optimized Resource Store
B. Cross-Origin Resource Sharing
C. Central Origin Response System
D. Client Object Request Service

Answer: B

Q330. What is a webhook?

A. A CSS animation hook for elements
B. An automated HTTP callback notification
C. A JavaScript debugging hook method
D. A hook for hanging server cables

Answer: B

Q331. What is a Progressive Web App?

A. A web app that requires progressive download of all assets before loading
B. A web app that only works on desktop computers and not on mobile devices
C. A web app with native-like features such as offline support and installability
D. A web app that progressively removes features as more users access the site

Answer: C

Q332. What is TypeScript?

A. A CSS preprocessor for styling
B. A database query language spec
C. A server hosting platform tool
D. A typed superset of JavaScript

Answer: D

Q333. What is a static site generator?

A. A tool that generates dynamic server-rendered pages on every request received
B. A tool that creates static CSS styles without any responsive design support
C. A tool that builds HTML pages at build time from templates and data sources
D. A tool that generates static IP addresses for web server hosting purposes

Answer: C

Q334. What is a headless CMS?

A. A CMS with no user interface for content editors or administrators to use
B. A CMS that only supports headless browser testing and not content editing
C. A CMS that runs without a server and stores content in browser storage
D. A CMS that provides content via APIs without a fixed presentation layer

Answer: D

Q335. What is serverless computing?

A. Computing without any servers involved in the entire application stack
B. Computing that only works when the server is completely turned off today
C. Running code in cloud functions without managing server infrastructure
D. A deployment model where code runs directly in the user browser client

Answer: C

Q336. What is WebAssembly?

A. A JavaScript framework for building web applications with assembly patterns
B. A binary format for running compiled code in the browser at near-native speed
C. A new CSS layout system for assembling web page components together
D. A server-side assembly language for writing high-performance API endpoints

Answer: B

Q337. What is a monorepo?

A. A server configuration where all services run on one physical machine only
B. A single repository containing multiple related projects or packages together
C. A database that stores all data in a single table without any relationships
D. A single repository containing only one small microservice application code

Answer: B

Q338. What is Jamstack?

A. Java, Angular, and MongoDB for building enterprise web applications stack
B. JavaScript, APIs, and Markup for building modern web applications stack
C. jQuery, Apache, and MariaDB for building traditional web application stack
D. JSON, AJAX, and MySQL for building data-driven web applications stack

Answer: B

Q339. What is a design system?

A. A system for automatically generating web page designs from text descriptions
B. A tool for designing database schemas using visual drag-and-drop interfaces
C. A CSS framework that generates design tokens from Figma files automatically
D. A collection of reusable components and guidelines for consistent user interfaces

Answer: D

Q340. What are web components?

A. Server-side components that generate HTML on the server before sending
B. Components built exclusively using React or Vue frontend framework libraries
C. CSS animation components that add visual effects to web page elements
D. Custom reusable HTML elements using native browser APIs and standards

Answer: D

Q341. What is a domain name in web development?

A. A human-readable address for a website
B. A programming language for servers
C. A type of database management system
D. A tool for editing HTML files

Answer: A

Q342. Which of the following is an example of a markup language?

A. Python
B. Java
C. HTML
D. C++

Answer: C

Q343. What is the purpose of JavaScript in web development?

A. To structure web page content
B. To define database schemas
C. To add interactivity and dynamic behavior
D. To manage server hardware

Answer: C

Q344. What is the purpose of an SSL certificate on a website?

A. To speed up JavaScript execution
B. To encrypt data transmitted between the browser and the server
C. To store user passwords
D. To compress CSS files

Answer: B

Q345. What is a search engine?

A. A tool that finds and displays web pages based on user queries
B. A server that stores website files
C. A programming language for building websites
D. A device that connects computers to the internet

Answer: A

Q346. Which file extension is commonly used for CSS files?

A. .html
B. .js
C. .css
D. .php

Answer: C

Q347. What is the World Wide Web?

A. A system of interlinked hypertext documents accessed via the internet
B. A type of programming language
C. A hardware component inside computers
D. A local network connecting two computers

Answer: A

Q348. What does a text editor do in web development?

A. Compiles code into machine language
B. Allows developers to write and edit code
C. Hosts websites on the internet
D. Manages database records

Answer: B

Q349. What is an internet browser's primary function?

A. To compile programming languages
B. To render and display web pages
C. To store website databases
D. To write server-side code

Answer: B

Q350. What is the difference between the internet and the World Wide Web?

A. They are the same thing
B. The internet is the network infrastructure while the web is a service that runs on it
C. The web is a type of hardware device
D. The internet only supports email

Answer: B

Q351. What is a server in web architecture?

A. A computer that provides resources or services to other computers
B. A type of web browser
C. A CSS framework
D. A programming language

Answer: A

Q352. What is a URL used for?

A. To style web pages
B. To locate and access a specific resource on the web
C. To compile JavaScript
D. To manage database tables

Answer: B

Q353. What does the status code 500 indicate in HTTP?

A. Successful request
B. Page not found
C. Internal server error
D. Redirect to another page

Answer: C

Q354. What is a request in the client-server model?

A. Data sent from the client to the server asking for a resource or action
B. A CSS rule applied to a web page
C. A JavaScript function call
D. A database table definition

Answer: A

Q355. What is a response in the client-server model?

A. A CSS animation effect
B. Data sent from the server back to the client after processing a request
C. A type of JavaScript variable
D. A method of creating HTML elements

Answer: B

Q356. What protocol does HTTPS use for encryption?

A. FTP
B. TLS/SSL
C. SMTP
D. DNS

Answer: B

Q357. What is the default port for HTTPS?

A. 80
B. 21
C. 443
D. 8080

Answer: C

Q358. What does the HTTP DELETE method do?

A. Creates a new resource
B. Retrieves data from the server
C. Removes a specified resource
D. Updates part of a resource

Answer: C

Q359. What is a domain name system (DNS) record?

A. An entry in a DNS database that maps a domain to information like an IP address
B. A JavaScript variable declaration
C. A CSS property for fonts
D. An HTML form element

Answer: A

Q360. What is the purpose of an HTTP header?

A. To display visible content on the page
B. To provide metadata about the request or response
C. To create database connections
D. To compile source code

Answer: B

Q361. What does the <!DOCTYPE html> declaration do?

A. It creates a new paragraph
B. It declares the document type as HTML5
C. It adds a comment to the page
D. It links a CSS stylesheet

Answer: B

Q362. Which HTML tag is used for creating a numbered list?

A.
B.
C.
D. <dl>

Answer: B

Q363. What is the purpose of the <hr> tag in HTML?

A. To create a heading
B. To insert a horizontal rule (line)
C. To make text italic
D. To add a hyperlink

Answer: B

Q364. Which HTML tag is used to display an image?

A. <picture>
B. <photo>
C. <img>
D. <image>

Answer: C

Q365. What does the tag do in HTML?

A. Creates a line break
B. Emphasizes text, typically displayed in italics
C. Makes text bold
D. Adds a hyperlink

Answer: B

Q366. Which attribute specifies the source of an image in the <img> tag?

A. href
B. link
C. src
D. url

Answer: C

Q367. What is the purpose of the <footer> tag in HTML5?

A. To create a navigation menu
B. To define the footer section of a document or section
C. To insert a form
D. To add a heading

Answer: B

Q368. Which HTML element is used to define a table header cell?

A. <td>
B. <th>
C. <tr>
D. <thead>

Answer: B

Q369. What does the <header> tag represent in HTML5?

A. The main content area
B. Introductory content or a group of navigational aids
C. A form input field
D. A table column

Answer: B

Q370. Which tag is used to create a text input field in a form?

A. <textarea>
B. <input>
C. <select>
D. <button>

Answer: B

Q371. Which CSS property controls the size of text?

A. text-size
B. font-weight
C. font-size
D. text-height

Answer: C

Q372. What does the display: block property do?

A. Hides the element
B. Makes the element take up the full width available
C. Makes the element inline
D. Removes the element from the page

Answer: B

Q373. How do you apply CSS styles directly to an HTML element?

A. Using an external stylesheet
B. Using the style attribute on the element
C. Using a JavaScript file
D. Using a server-side script

Answer: B

Q374. Which property changes the background image of an element?

A. bg-image
B. background-image
C. image-bg
D. back-img

Answer: B

Q375. What does the border property do in CSS?

A. Adds space inside the element
B. Creates a line around the element
C. Changes the text color
D. Sets the element's width

Answer: B

Q376. Which CSS property makes text italic?

A. text-decoration
B. font-weight
C. font-style
D. text-transform

Answer: C

Q377. What does the color property in CSS affect?

A. The background color of an element
B. The text color of an element
C. The border color
D. The shadow color

Answer: B

Q378. How do you link an external CSS file to an HTML document?

A. Using the <style> tag
B. Using the <link> tag in the <head> section
C. Using the <script> tag
D. Using the <css> tag

Answer: B

Q379. Which CSS property sets the height of an element?

A. size
B. height
C. tall
D. length

Answer: B

Q380. What is a CSS class selector?

A. A selector that targets elements by their tag name
B. A selector that targets elements by a class name using a dot prefix
C. A selector that targets elements by their ID
D. A selector that targets all elements

Answer: B

Q381. What is a CSS animation?

A. A way to gradually change CSS property values over time
B. A method for compressing images
C. A server-side rendering technique
D. A type of HTML element

Answer: A

Q382. What does the flex-grow property do?

A. Shrinks a flex item
B. Specifies how much a flex item should grow relative to other items
C. Sets the item's fixed width
D. Changes the flex direction

Answer: B

Q383. What does the grid-gap property do in CSS Grid?

A. Adds padding inside grid items
B. Sets the space between grid rows and columns
C. Changes the grid background color
D. Defines the number of grid columns

Answer: B

Q384. What is a CSS transform?

A. A way to change an element's shape, size, or position visually
B. A method for loading CSS files
C. A type of CSS variable
D. A database operation

Answer: A

Q385. What does the overflow: hidden property do?

A. Shows all content regardless of size
B. Clips content that exceeds the element's boundaries
C. Adds a scrollbar to the element
D. Makes the element transparent

Answer: B

Q386. What does the vh unit represent in CSS?

A. Virtual height of the parent element
B. One percent of the viewport height
C. The height of the HTML element
D. A fixed pixel value

Answer: B

Q387. What is the purpose of the z-index property in CSS?

A. To set the font size
B. To control the stacking order of overlapping elements
C. To change the text color
D. To set the element width

Answer: B

Q388. What does the flex-shrink property control?

A. How much a flex item grows
B. How much a flex item shrinks relative to other items when space is limited
C. The direction of flex items
D. The gap between flex items

Answer: B

Q389. What does the grid-template-rows property define?

A. The number of columns in a grid
B. The sizes and structure of the grid rows
C. The gap between grid items
D. The alignment of grid items

Answer: B

Q390. What is a CSS gradient?

A. A type of HTML element
B. A smooth transition between two or more colors used as a background
C. A JavaScript animation technique
D. A method for compressing CSS files

Answer: B

Q391. What is a string in JavaScript?

A. A number value
B. A sequence of characters enclosed in quotes
C. A boolean value
D. An HTML element

Answer: B

Q392. What does the + operator do with two numbers in JavaScript?

A. Subtracts them
B. Concatenates them as strings
C. Adds them together
D. Multiplies them

Answer: C

Q393. What is a for loop used for in JavaScript?

A. Declaring variables
B. Repeating a block of code a specified number of times
C. Defining functions
D. Creating objects

Answer: B

Q394. What does the length property return on an array?

A. The first element
B. The last element
C. The number of elements in the array
D. The data type of the array

Answer: C

Q395. What is an object in JavaScript?

A. A type of loop
B. A collection of key-value pairs
C. A CSS selector
D. A type of comment

Answer: B

Q396. What does the return statement do in a function?

A. Logs a message to the console
B. Ends the function execution and returns a value to the caller
C. Creates a new variable
D. Starts a loop

Answer: B

Q397. What is the purpose of the else keyword in JavaScript?

A. To declare a variable
B. To provide an alternative block of code when the if condition is false
C. To create a loop
D. To define a function

Answer: B

Q398. How do you declare a constant in JavaScript?

A. Using the var keyword
B. Using the let keyword
C. Using the const keyword
D. Using the constant keyword

Answer: C

Q399. What does the pop() method do to an array?

A. Adds an element to the beginning
B. Removes and returns the last element
C. Sorts the array
D. Reverses the array

Answer: B

Q400. What is a boolean value in JavaScript?

A. A text string
B. A decimal number
C. A value that is either true or false
D. An array of numbers

Answer: C

Q401. What is the purpose of the setTimeout() function?

A. To repeat code indefinitely
B. To execute a function after a specified delay in milliseconds
C. To stop all JavaScript execution
D. To create a new variable

Answer: B

Q402. What is the setInterval() function used for?

A. To run a function only once
B. To repeatedly execute a function at specified time intervals
C. To clear all timers
D. To pause JavaScript execution

Answer: B

Q403. What does the map object store in JavaScript?

A. Only string values
B. Key-value pairs where keys can be any type
C. Only number values
D. Only boolean values

Answer: B

Q404. What is the purpose of the catch block in error handling?

A. To throw new errors
B. To handle and respond to errors that occur in the try block
C. To prevent all errors
D. To log messages to the console

Answer: B

Q405. What does the finally block do in error handling?

A. It replaces the catch block
B. It executes code after try and catch regardless of whether an error occurred
C. It prevents errors from happening
D. It only runs when there is no error

Answer: B

Q406. What is a callback function?

A. A function that is never called
B. A function passed as an argument to another function to be executed later
C. A function that returns HTML
D. A function that only works with arrays

Answer: B

Q407. What is the difference between let and const?

A. They are identical keywords
B. let allows reassignment while const does not allow reassignment after initialization
C. const is faster than let
D. let cannot be used in loops

Answer: B

Q408. What does the typeof operator return for an array?

A. 'array'
B. 'object'
C. 'list'
D. 'collection'

Answer: B

Q409. What is template literal syntax used for?

A. Creating HTML templates
B. Embedding expressions inside strings using backticks and ${} syntax
C. Defining CSS templates
D. Creating database templates

Answer: B

Q410. What does the spread operator (...) do when used with an array?

A. Deletes the array
B. Expands the array elements into individual values
C. Sorts the array
D. Reverses the array

Answer: B

Q411. What is the purpose of a frontend framework?

A. To manage database connections
B. To provide structure and tools for building user interfaces efficiently
C. To handle server-side routing
D. To compress images

Answer: B

Q412. What is a prop in frontend frameworks?

A. A CSS property
B. Data passed from a parent component to a child component
C. A database query
D. A server configuration

Answer: B

Q413. What is component-based architecture?

A. A server deployment strategy
B. Building UIs from small, reusable, self-contained pieces called components
C. A database schema design
D. A CSS layout method

Answer: B

Q414. What is Next.js used for?

A. Managing databases
B. Building React applications with server-side rendering and static generation
C. Styling web pages
D. Testing JavaScript code

Answer: B

Q415. What is the purpose of routing in a frontend framework?

A. To style elements
B. To navigate between different pages or views within the application
C. To manage database connections
D. To compile JavaScript

Answer: B

Q416. What is Nuxt.js?

A. A CSS framework
B. A framework built on top of Vue.js for server-side rendering and static generation
C. A database management tool
D. A testing library

Answer: B

Q417. What is a template in frontend frameworks?

A. A database schema
B. The markup that defines the visual structure of a component
C. A server configuration file
D. A build tool

Answer: B

Q418. What is event handling in frontend frameworks?

A. Sending emails
B. Responding to user interactions like clicks, input changes, or form submissions
C. Managing server events
D. Processing database queries

Answer: B

Q419. What is conditional rendering in frontend frameworks?

A. Rendering CSS conditions
B. Showing or hiding UI elements based on conditions in the application state
C. Conditionally loading databases
D. Applying conditional server rules

Answer: B

Q420. What is a lifecycle method in a component?

A. A CSS animation phase
B. A function that runs at specific stages of a component's existence such as mounting, updating, or unmounting
C. A database migration step
D. A server restart procedure

Answer: B

Q421. What is an API route in a backend application?

A. A CSS selector path
B. A URL pattern that maps to a specific handler function on the server
C. A JavaScript import path
D. A database table name

Answer: B

Q422. What is the purpose of environment variables in backend development?

A. To style web pages
B. To store configuration values like API keys and database URLs outside the codebase
C. To create HTML elements
D. To define CSS variables

Answer: B

Q423. What is a database connection string?

A. A CSS selector
B. A string containing the information needed to connect to a database, including host, port, and credentials
C. An HTML attribute
D. A JavaScript string method

Answer: B

Q424. What is the purpose of a controller in the MVC pattern?

A. To render CSS styles
B. To handle incoming requests, process them, and return appropriate responses
C. To store data in the database
D. To create HTML templates

Answer: B

Q425. What is a model in the MVC pattern?

A. A CSS layout model
B. The component responsible for data management, business logic, and database interaction
C. An HTML template
D. A routing mechanism

Answer: B

Q426. What is the purpose of a view in the MVC pattern?

A. To manage the database
B. To present data to the user in a formatted output
C. To handle routing
D. To process API requests

Answer: B

Q427. What is a backend framework?

A. A CSS grid system
B. A software tool that provides structure and utilities for building server-side applications
C. A browser extension
D. A frontend testing library

Answer: B

Q428. What does the HTTP POST method do?

A. Retrieves a resource
B. Submits data to the server to create a new resource
C. Deletes a resource
D. Updates part of a resource

Answer: B

Q429. What is a status code in the 4xx range?

A. A successful response
B. A server error
C. A client error indicating the request was invalid or unauthorized
D. A redirect response

Answer: C

Q430. What is npm used for in backend development?

A. To style web pages
B. To manage packages and dependencies for Node.js projects
C. To create databases
D. To design user interfaces

Answer: B

Q431. What is a request handler in server-side programming?

A. A CSS class
B. A function that processes incoming HTTP requests and sends back responses
C. An HTML element
D. A database table

Answer: B

Q432. What is middleware in Express.js?

A. A CSS preprocessor
B. Functions that execute during the request-response cycle with access to request and response objects
C. A database middleware layer
D. A frontend component

Answer: B

Q433. What is the purpose of a response status code?

A. To style the response
B. To indicate the result of the server's attempt to process the request
C. To create database entries
D. To compile JavaScript

Answer: B

Q434. What is a REST endpoint?

A. A CSS property
B. A specific URL path on a server that accepts HTTP requests for a particular resource
C. A JavaScript function
D. A database connection point

Answer: B

Q435. What is the purpose of the response body in HTTP?

A. To set HTTP headers
B. To contain the actual data being sent back to the client, such as HTML, JSON, or files
C. To define the URL
D. To establish database connections

Answer: B

Q436. What is Node.js primarily used for?

A. Styling web pages
B. Running JavaScript on the server side to build scalable network applications
C. Creating CSS animations
D. Managing databases visually

Answer: B

Q437. What is the purpose of routing in server-side applications?

A. To style navigation menus
B. To map incoming request URLs and methods to specific handler functions
C. To route database queries
D. To manage CSS imports

Answer: B

Q438. What is a JSON response?

A. A CSS format
B. Data sent from the server formatted as a JavaScript Object Notation string
C. An HTML template
D. A database query result only

Answer: B

Q439. What is the purpose of a static file server?

A. To generate dynamic content
B. To serve unchanging files like images, CSS, and JavaScript directly to clients
C. To manage database connections
D. To process form submissions

Answer: B

Q440. What is an error handler in server-side applications?

A. A CSS error page
B. A function that catches and processes errors, returning appropriate error responses to clients
C. A JavaScript lint rule
D. A database recovery tool

Answer: B

Q441. What is a database record?

A. A CSS rule
B. A single entry or row in a database table containing related data
C. An HTML element
D. A JavaScript variable

Answer: B

Q442. What is the purpose of the WHERE clause in SQL?

A. To create a new table
B. To filter results based on specified conditions
C. To sort query results
D. To join two tables

Answer: B

Q443. What is a collection in MongoDB?

A. A CSS class collection
B. A group of related documents, similar to a table in relational databases
C. An array in JavaScript
D. A set of HTML elements

Answer: B

Q444. What does the ORDER BY clause do in SQL?

A. Creates a new order
B. Sorts the query results based on one or more columns
C. Orders database tables
D. Reorders table columns

Answer: B

Q445. What is the purpose of the LIMIT clause in SQL?

A. To limit database size
B. To restrict the number of rows returned by a query
C. To limit the number of tables
D. To limit column types

Answer: B

Q446. What is a document in MongoDB?

A. A text file
B. A JSON-like record that stores data as field-value pairs
C. A CSS stylesheet
D. An HTML page

Answer: B

Q447. What does the DELETE statement do in SQL?

A. Removes the entire database
B. Removes one or more rows from a table based on a condition
C. Deletes a column from a table
D. Removes an index

Answer: B

Q448. What is the purpose of the GROUP BY clause in SQL?

A. To group CSS styles
B. To group rows with the same values in specified columns, often used with aggregate functions
C. To group database tables
D. To create column groups

Answer: B

Q449. What is SQLite?

A. A CSS framework
B. A lightweight, file-based relational database that requires no separate server process
C. A JavaScript library
D. An HTML template engine

Answer: B

Q450. What does the UPDATE statement do in SQL?

A. Creates a new table
B. Modifies existing data in one or more rows of a table
C. Updates the database software
D. Changes the table name

Answer: B

Q451. What is the purpose of a strong password?

A. To make logging in faster
B. To make unauthorized access difficult by using a complex combination of characters
C. To improve website performance
D. To style user profiles

Answer: B

Q452. What is a security vulnerability?

A. A CSS layout issue
B. A weakness in a system that can be exploited by attackers to gain unauthorized access or cause harm
C. A JavaScript error
D. A slow database query

Answer: B

Q453. What does the HTTPS padlock icon in a browser indicate?

A. The website loads faster
B. The connection between the browser and server is encrypted
C. The website has no bugs
D. The website uses CSS

Answer: B

Q454. What is a security patch?

A. A CSS design pattern
B. A software update that fixes a known security vulnerability
C. A JavaScript library
D. A database backup

Answer: B

Q455. What is social engineering in the context of security?

A. A web development technique
B. Manipulating people into divulging confidential information or performing actions that compromise security
C. A CSS framework
D. A database design method

Answer: B

Q456. What is the purpose of logging out of a web application?

A. To clear the CSS cache
B. To end the user session and prevent unauthorized access to the account
C. To delete the user account
D. To clear the browser history

Answer: B

Q457. What is a denial-of-service (DoS) attack?

A. A CSS rendering technique
B. An attack that overwhelms a server with excessive traffic to make it unavailable to legitimate users
C. A JavaScript debugging method
D. A database indexing technique

Answer: B

Q458. Why should software and libraries be kept up to date?

A. To change the website design
B. To patch known security vulnerabilities and protect against recently discovered threats
C. To improve CSS performance
D. To add more JavaScript features

Answer: B

Q459. What is the purpose of an access control list (ACL)?

A. To control CSS access
B. To define which users or systems are allowed or denied access to specific resources
C. To manage database access speed
D. To control HTML rendering

Answer: B

Q460. What is data backup important for in web security?

A. To style web pages
B. To ensure data can be recovered in case of attacks, hardware failures, or accidental deletion
C. To speed up the website
D. To create new databases

Answer: B

Q461. What is website performance?

A. The visual design of a website
B. How quickly a website loads and responds to user interactions
C. The number of pages on a website
D. The programming language used

Answer: B

Q462. Why do large files slow down a website?

A. Large files improve performance
B. Large files take longer to download over the network, increasing page load time
C. Large files are more secure
D. Large files use less bandwidth

Answer: B

Q463. What is the purpose of compressing images for the web?

A. To increase image quality
B. To reduce file size so images load faster without significantly impacting visual quality
C. To change the image format
D. To add filters to images

Answer: B

Q464. What is a content delivery network (CDN) used for?

A. Creating website content
B. Delivering website content from servers geographically closer to users for faster loading
C. Managing databases
D. Writing CSS styles

Answer: B

Q465. What does code minification do?

A. Makes code easier to read
B. Removes whitespace, comments, and shortens variable names to reduce file size
C. Adds comments to code
D. Encrypts the code

Answer: B

Q466. What is render time in web performance?

A. The time to write code
B. The time the browser takes to display content on the screen after receiving the data
C. The time to deploy a website
D. The time to create a database

Answer: B

Q467. Why is reducing HTTP requests important for performance?

A. More requests make a site faster
B. Each request adds network overhead, so fewer requests mean faster page loads
C. Requests improve security
D. Requests have no impact on speed

Answer: B

Q468. What is the purpose of using responsive images?

A. To make images move on the page
B. To serve appropriately sized images based on the device screen size, avoiding unnecessarily large downloads
C. To add image filters
D. To create image slideshows

Answer: B

Q469. What does the term 'above the fold' mean in web performance?

A. A CSS folding technique
B. The content visible on screen without scrolling, which should load as quickly as possible
C. A JavaScript function
D. A database technique

Answer: B

Q470. What is the impact of web fonts on page performance?

A. Web fonts have no impact
B. Custom web fonts add extra file downloads that can delay text rendering
C. Web fonts make pages load faster
D. Web fonts reduce file size

Answer: B

Q471. What is automated testing?

A. Testing done by a human tester
B. Using software to run tests automatically and compare results to expected outcomes
C. A type of CSS animation
D. A database backup method

Answer: B

Q472. What is a test assertion?

A. A CSS declaration
B. A statement that checks whether a specific condition is true in a test
C. A JavaScript variable
D. A database constraint

Answer: B

Q473. What is a test runner?

A. A CSS preprocessor
B. A tool that executes test files and reports the results
C. A database migration tool
D. An HTML validator

Answer: B

Q474. What is the purpose of the describe block in testing?

A. To describe CSS properties
B. To group related test cases together under a descriptive label
C. To describe database tables
D. To describe HTML elements

Answer: B

Q475. What is the purpose of the it or test function in testing?

A. To iterate over arrays
B. To define an individual test case with a description and test logic
C. To create CSS iterations
D. To iterate database records

Answer: B

Q476. What is an expected value in testing?

A. A CSS expected property
B. The correct result that a test verifies the actual output against
C. A database expected row
D. An HTML expected element

Answer: B

Q477. What is a test failure?

A. A CSS rendering error
B. When the actual output of code does not match the expected result in a test assertion
C. A server crash
D. A database timeout

Answer: B

Q478. What does the term 'green test' mean?

A. A test with green CSS styling
B. A test that passes, indicating the code behaves as expected
C. A test for environmental websites
D. A test that runs slowly

Answer: B

Q479. What is the Elements panel in browser DevTools used for?

A. To write JavaScript code
B. To inspect and modify the HTML structure and CSS styles of a web page in real time
C. To manage databases
D. To run automated tests

Answer: B

Q480. What is a smoke test?

A. A test for browser smoke effects
B. A basic test that verifies the most critical functionality works, ensuring the application is stable enough for further testing
C. A performance stress test
D. A CSS animation test

Answer: B

Q481. What is continuous integration (CI)?

A. A CSS integration method
B. The practice of automatically building and testing code every time changes are pushed to the repository
C. A database integration technique
D. An HTML template system

Answer: B

Q482. What is continuous deployment (CD)?

A. Continuously designing CSS
B. Automatically deploying code to production after it passes all tests in the CI pipeline
C. Continuously deleting files
D. Continuously creating databases

Answer: B

Q483. What is a build process in web development?

A. Building HTML elements manually
B. The automated process of transforming source code into optimized production-ready files
C. Building database tables
D. Building CSS manually

Answer: B

Q484. What is the difference between development, staging, and production environments?

A. They are all the same
B. Development is for coding, staging is for pre-release testing, and production serves real users
C. Only production is important
D. Staging replaces production

Answer: B

Q485. What is Vercel used for?

A. Writing CSS
B. Deploying and hosting web applications, particularly those built with Next.js and other frontend frameworks
C. Managing databases
D. Testing JavaScript

Answer: B

Q486. What is the purpose of a .gitignore file?

A. To ignore CSS files
B. To specify files and directories that Git should not track, like node_modules and environment files
C. To ignore HTML files
D. To ignore all JavaScript files

Answer: B

Q487. What is a deployment pipeline in web development?

A. A physical pipe for network cables
B. An automated sequence of steps that builds, tests, and deploys code to production
C. A tool for managing CSS stylesheets
D. A method for compressing image files

Answer: B

Q488. What does the npm build command typically do?

A. Builds a database
B. Compiles and bundles the application's source code into optimized production-ready files
C. Builds CSS from scratch
D. Builds HTML templates

Answer: B

Q489. What happens during a typical deployment workflow?

A. CSS files are manually uploaded
B. Code is built, tested, and published to a server so users can access the updated application
C. Databases are deleted and recreated
D. HTML files are emailed to users

Answer: B

Q490. What is the purpose of a CDN in deployment?

A. To create databases
B. To distribute static assets across global servers for faster delivery to users worldwide
C. To compile code
D. To manage version control

Answer: B

Q491. What is an API in simple terms?

A. A CSS framework
B. A set of rules that allows different software applications to communicate with each other
C. A JavaScript library
D. A database management tool

Answer: B

Q492. What is a request body in an API call?

A. The visual body of a web page
B. The data sent along with an API request, typically in JSON format
C. The HTML body element
D. A CSS body selector

Answer: B

Q493. What does an API response contain?

A. Only HTML content
B. The data returned by the server, typically including a status code, headers, and a response body
C. Only CSS styles
D. Only JavaScript code

Answer: B

Q494. What is the purpose of the Authorization header in API requests?

A. To authorize CSS styles
B. To send authentication credentials like tokens or API keys to prove the requester's identity
C. To authorize HTML elements
D. To authorize database access

Answer: B

Q495. What is a path parameter in a REST API URL?

A. A CSS path property
B. A variable embedded in the URL path that identifies a specific resource, like /users/123
C. A file system path
D. A database path

Answer: B

Q496. What does the HTTP PUT method do in a REST API?

A. Retrieves a resource
B. Replaces an entire existing resource with the provided data
C. Creates a new database
D. Deletes a resource

Answer: B

Q497. What is the Content-Type header used for?

A. To set the page title
B. To specify the format of the data in the request or response body, such as application/json
C. To define CSS content
D. To specify HTML content

Answer: B

Q498. What is the purpose of the HTTP status code 201?

A. Resource not found
B. A new resource was successfully created
C. Server error
D. Redirect to another page

Answer: B

Q499. What tool is commonly used to test API endpoints?

A. A CSS editor
B. Postman or similar API testing tools
C. An image editor
D. A database viewer

Answer: B

Q500. What is the difference between a query parameter and a path parameter?

A. They are identical
B. Path parameters identify specific resources in the URL path while query parameters filter or modify the response and appear after a question mark
C. Query parameters are faster
D. Path parameters are optional

Answer: B

Q501. What is Vite used for in modern web development?

A. Managing databases
B. A fast build tool and development server that uses native ES modules for quick startup
C. Styling web pages
D. Testing JavaScript code

Answer: B

Q502. What is ESLint used for?

A. Styling web pages
B. Analyzing JavaScript code for potential errors and enforcing coding standards
C. Managing databases
D. Creating HTML templates

Answer: B

Q503. What is the purpose of Prettier in modern development?

A. To make images prettier
B. To automatically format code according to consistent style rules, eliminating formatting debates
C. To improve database performance
D. To create prettier HTML

Answer: B

Q504. What is a headless CMS in modern web development?

A. A CMS without a database backend
B. A content management system that provides content via APIs without a built-in frontend
C. A CMS that only supports text content
D. A CMS that runs without a server

Answer: B

Q505. What is a package.json file used for?

A. To package CSS files
B. To define project metadata, dependencies, scripts, and configuration for Node.js projects
C. To package HTML files
D. To define database packages

Answer: B

Q506. What is GitHub Actions used for?

A. Styling GitHub pages
B. Automating workflows like testing, building, and deploying code directly from a GitHub repository
C. Managing databases on GitHub
D. Creating GitHub themes

Answer: B

Q507. What is a .env file used for?

A. To style environments with CSS
B. To store environment-specific configuration variables like API keys and database URLs
C. To define HTML environments
D. To create JavaScript environments

Answer: B

Q508. What is Storybook used for in modern web development?

A. Creating digital storybooks
B. Developing, documenting, and testing UI components in isolation outside the main application
C. Managing server stories
D. Creating database stories

Answer: B

Q509. What is the purpose of a code formatter?

A. To format database records
B. To automatically apply consistent formatting rules to code, ensuring uniform style across a project
C. To format CSS colors
D. To format HTML templates

Answer: B

Q510. What is pnpm?

A. A CSS preprocessor
B. A fast, disk-space-efficient package manager that uses a content-addressable store to share packages
C. A JavaScript framework
D. A database tool

Answer: B

Medium Questions

510 questions

Q511. What is the difference between static and dynamic websites?

A. Static sites load faster but always have fewer total features
B. Static sites rely on databases while dynamic ones do not
C. Dynamic sites are completely unable to use HTML markup
D. Static sites have fixed content while dynamic sites generate it

Answer: D

Q512. Which technology stack is referred to by the term MERN?

A. MongoDB, Express, React, Node.js
B. MySQL, Express, React, Node
C. MariaDB, Ember, React, Nginx
D. MongoDB, Electron, Redux, Node.js

Answer: A

Q513. What is the purpose of a domain name?

A. To compile JavaScript code for production
B. To store website files on a server
C. To provide a human-readable web address
D. To encrypt website data during transfer

Answer: C

Q514. What does IDE stand for in web development?

A. Internal Data Exchange
B. Integrated Development Environment
C. Internet Development Engine
D. Interactive Design Editor

Answer: B

Q515. Which of the following is a version control system?

A. Docker
B. Jenkins
C. Webpack
D. Git

Answer: D

Q516. What is responsive web design?

A. Designing websites for one single device
B. Designing websites that adapt to screen sizes
C. Designing websites that include animations
D. Designing websites that respond very quickly

Answer: B

Q517. What is the role of a back-end developer?

A. Designing the visual user interface
B. Creating front-end CSS animations
C. Testing cross-browser compatibility
D. Managing server-side logic and data

Answer: D

Q518. What is a CMS?

A. Central Monitoring Service
B. Client Module Setup
C. Code Management System
D. Content Management System

Answer: D

Q519. Which protocol is used for secure communication on the web?

A. HTTPS
B. FTP
C. HTTP
D. SMTP

Answer: A

Q520. What is a wireframe in web development?

A. A type of client-side JavaScript framework
B. A server-side configuration settings file
C. A basic visual guide for web page layout
D. A CSS grid system for responsive design

Answer: C

Q521. What is the difference between HTTP and HTTPS?

A. HTTPS delivers content more quickly
B. HTTPS encrypts data using TLS/SSL
C. HTTP provides stronger security features
D. There is no practical difference at all

Answer: B

Q522. Which HTTP status code indicates a resource was not found?

A. 200
B. 500
C. 404
D. 301

Answer: C

Q523. What is a RESTful API?

A. An API built solely with the React library
B. An API that always requires authentication
C. An API that exclusively uses GET requests
D. An API that follows REST design constraints

Answer: D

Q524. What is the purpose of the HTTP POST method?

A. To retrieve existing data from a resource
B. To submit data for processing by the server
C. To delete a specific resource from storage
D. To update only the HTTP request headers

Answer: B

Q525. What is a proxy server?

A. A specialized type of relational database
B. A redundant backup server for data recovery
C. An intermediary server between client and target
D. A domain name resolution DNS server system

Answer: C

Q526. What is latency in web architecture?

A. The total download size of a given web page
B. The processing speed of the server CPU
C. The number of concurrent users currently online
D. The delay between a request and a response

Answer: D

Q527. Which HTTP header specifies the content type of a response?

A. Cache-Control
B. Content-Type
C. Accept-Type
D. Authorization

Answer: B

Q528. What does a CDN do?

A. Manages relational database connections
B. Compiles source code into machine language
C. Distributes content across global servers
D. Designs web page layouts automatically

Answer: C

Q529. What is WebSocket used for?

A. Managing relational database schemas and queries
B. Full-duplex real-time client-server communication
C. Applying visual styles to web page elements
D. Compressing files to reduce transfer size

Answer: B

Q530. What is the purpose of the HTTP PUT method?

A. To update or replace a resource at a URL
B. To delete an existing resource completely
C. To retrieve existing data from a resource
D. To establish a new connection to a server

Answer: A

Q531. What is the purpose of the <meta> tag?

A. To provide metadata about the document to browser
B. To link external CSS files to the HTML document
C. To display visible metadata on the page directly
D. To create a navigation menu within the header area

Answer: A

Q532. Which HTML5 tag is used for navigation links?

A. <links> element
B. <nav> element
C. <navigation> tag
D. <menu> element

Answer: B

Q533. What is the difference between and ?

A. They are identical in every behavior
B. is not able to contain any text
C. is inline, is block-level
D. is block-level, is inline

Answer: D

Q534. Which attribute provides alternative text for an image?

A. label
B. desc
C. title
D. alt

Answer: D

Q535. What is the purpose of the <form> tag?

A. To create a form for user input
B. To format and style text content
C. To create a page footer section
D. To add mathematical formulas

Answer: A

Q536. Which input type creates a checkbox?

A. type='checkbox'
B. type='box'
C. type='check'
D. type='tick'

Answer: A

Q537. What is the purpose of the action attribute in a form?

A. To apply CSS styles to the form
B. To specify where form data is sent
C. To validate the form input fields
D. To add a JavaScript event handler

Answer: B

Q538. Which HTML5 element is used for self-contained content like a blog post?

A. <article>
B.
C. <section>
D. <aside>

Answer: A

Q539. What does target='_blank' do in an anchor tag?

A. Closes the current browser tab
B. Opens the link in a new tab
C. Downloads the linked file
D. Opens the link in the same tab

Answer: B

Q540. Which tag embeds a video in HTML5?

A. <embed>
B. <movie>
C. <video>
D. <media>

Answer: C

Q541. What is the CSS Box Model?

A. A responsive layout framework for components
B. A model of content, padding, border, margin
C. A 3D modeling technique for page effects
D. A CSS animation model for element transitions

Answer: B

Q542. What is the difference between display: none and visibility: hidden?

A. display: none only hides text content but keeps the element
B. visibility: hidden removes elements from the document flow
C. display: none removes from flow; visibility: hidden keeps space
D. They behave identically in every rendering situation

Answer: C

Q543. Which CSS property is used to float an element?

A. position
B. align
C. float
D. display

Answer: C

Q544. What does position: relative do?

A. Makes element fixed on scroll
B. Positions element relative to the viewport
C. Positions element relative to its normal position
D. Removes element from document flow

Answer: C

Q545. What is specificity in CSS?

A. The algorithm determining which CSS rule applies when multiple match
B. The order in which CSS properties are declared
C. The speed at which the browser renders CSS styles
D. The total number of CSS files loaded on the page

Answer: A

Q546. Which CSS pseudo-class applies when the user hovers over an element?

A. :focus
B. ::hover
C. :hover
D. :active

Answer: C

Q547. What is the z-index property used for?

A. Setting the zoom level of an element
B. Setting the total width of an element
C. Creating 3D visual effects on elements
D. Controlling the stack order of elements

Answer: D

Q548. What does box-sizing: border-box do?

A. Sets the box model back to the content-box
B. Adds a shadow effect around the element box
C. Includes padding and border in total dimensions
D. Removes the border from around the element

Answer: C

Q549. Which selector targets the first child element?

A. :first
B. ::first-child
C. :first-child
D. :child(1)

Answer: C

Q550. What is the inherit value in CSS?

A. A reserved keyword in the JavaScript language
B. Takes the same computed value as parent element
C. A CSS variable declared with a custom property
D. Resets the property to its initial default value

Answer: B

Q551. What is the difference between Flexbox and Grid?

A. They behave identically in all layout situations
B. Flexbox was introduced after Grid in the spec
C. Flexbox is one-dimensional, Grid is two-dimensional
D. Grid is designed exclusively for table layouts

Answer: C

Q552. What does grid-template-areas do?

A. Creates content for individual grid items
B. Defines named grid areas for placing items
C. Creates decorative borders around grid cells
D. Sets the color scheme for the grid layout

Answer: B

Q553. What is a CSS pseudo-element?

A. An HTML5 semantic element like header or footer
B. A fake HTML element added via JavaScript
C. A keyword styling a specific part of an element
D. A JavaScript component for building interfaces

Answer: C

Q554. What is the fr unit in CSS Grid?

A. A frequency measurement unit for media queries
B. A font ratio measurement unit for sizing
C. A fraction of available space in the container
D. A frame rate measurement unit for animations

Answer: C

Q555. How do you create a responsive breakpoint for tablets?

A. @responsive (tablet)
B. @tablet { max-width }
C. @breakpoint (tablet)
D. @media (max-width: 768px)

Answer: D

Q556. What does flex-wrap: wrap do?

A. Creates a decorative border around all items
B. Prevents items from wrapping to new lines
C. Wraps the text content within each flex item
D. Allows flex items to wrap onto multiple lines

Answer: D

Q557. What is the gap property in CSS Grid?

A. A gap in browser support for older versions
B. A grid rendering error in certain browsers
C. Sets the spacing between grid rows and columns
D. The outer margin space around the entire grid

Answer: C

Q558. What does @keyframes define in CSS?

A. Key events handled in JavaScript listeners
B. The stages of a CSS animation sequence
C. Keyboard shortcut bindings for the browser
D. Database primary and foreign key definitions

Answer: B

Q559. What is the object-fit CSS property?

A. A flexbox property for controlling item alignment
B. Specifies how an image resizes to fit its container
C. A grid alignment property for placing grid items
D. Fits text content into its parent containers

Answer: B

Q560. What is a mobile-first design approach?

A. Using only mobile-specific CSS frameworks
B. Designing websites for desktop screens first
C. Designing for small screens first then enhancing
D. Designing websites for mobile devices only

Answer: C

Q561. What is the difference between let and var?

A. var has block scope; let has function scope
B. let has block scope; var has function scope
C. They are identical in scoping behavior
D. let is significantly slower in performance

Answer: B

Q562. What is a closure in JavaScript?

A. A type of loop for iterating over arrays
B. A built-in method to end a running program
C. A method for closing the browser window
D. A function accessing its outer scope variables

Answer: D

Q563. What is the purpose of the 'this' keyword?

A. Refers to the previously declared variable value
B. Refers to the current CSS style being applied
C. Refers to the object executing current function
D. Creates a new object instance in current scope

Answer: C

Q564. What is hoisting in JavaScript?

A. Moving declarations to the top of their scope
B. Uploading files from the client to the server
C. Raising and throwing runtime error exceptions
D. Lifting DOM elements higher in the page layout

Answer: A

Q565. What is the difference between null and undefined?

A. undefined always indicates a runtime error occurred
B. They are identical in meaning and behavior
C. null is intentional absence; undefined means not assigned
D. null is for numbers; undefined is for string values

Answer: C

Q566. What does the map() method do on an array?

A. Creates a geographic map data visualization
B. Sorts the array elements in ascending order
C. Creates a new array by applying a function to each item
D. Maps array indices to their corresponding values

Answer: C

Q567. What is event bubbling in JavaScript?

A. A CSS animation effect using keyframe transitions
B. A memory leak issue caused by circular references
C. Creating animated bubble visual effects on screen
D. When an event on a child propagates up through parents

Answer: D

Q568. What is the purpose of JSON.parse()?

A. Compresses JSON data to reduce its file size
B. Creates a new JSON file on the server disk
C. Converts a JSON string into a JavaScript object
D. Validates JSON syntax for correctness and errors

Answer: C

Q569. What is template literal syntax in JavaScript?

A. Using single quotes around string literals
B. Using double quotes around string values
C. Using the + operator for concatenation
D. Using backticks with ${} for interpolation

Answer: D

Q570. What is destructuring in JavaScript?

A. Permanently deleting JavaScript objects from memory
B. Unpacking values from arrays or objects into variables
C. Breaking code into smaller modules and files
D. Removing DOM elements from the document tree

Answer: B

Q571. What is Promise.all() used for?

A. Running multiple promises and waiting for all
B. Creating a sequential promise chain
C. Resolving only a single individual promise
D. Canceling all pending promises at once

Answer: A

Q572. What is the difference between Promise.all() and Promise.allSettled()?

A. Promise.allSettled() also fails immediately on rejection
B. Promise.all() is always slower in execution speed
C. Promise.all() fails on rejection; allSettled() waits for all
D. They are identical in their behavior

Answer: C

Q573. What is optional chaining (?.) in JavaScript?

A. Safely accesses nested properties without errors
B. A ternary operator for conditional expressions
C. A loop syntax for iterating over object entries
D. A regex operator for pattern matching in strings

Answer: A

Q574. What is the nullish coalescing operator (??)?

A. A ternary for inline conditional expressions
B. Returns right operand when left is null/undefined
C. A logical OR for boolean expressions
D. A strict equality check comparing type and value

Answer: B

Q575. What is a Proxy in JavaScript?

A. A web proxy server for routing network traffic
B. An object wrapping another to intercept operations
C. A network library for making HTTP request calls
D. A design pattern used only in OOP code contexts

Answer: B

Q576. What is the purpose of Object.entries()?

A. To merge multiple objects into a combined one
B. To return an array of [key, value] pairs
C. To create new entries within an object literal
D. To check if a specific object reference exists

Answer: B

Q577. What is a Set in JavaScript?

A. A type of map for key-value pair storage
B. An array method for modifying element order
C. A function to set values on object properties
D. A collection of unique values with no duplicates

Answer: D

Q578. What is dynamic import in JavaScript?

A. Using import() to load modules on demand at runtime
B. Importing CSS styles dynamically at runtime
C. Importing all application modules simultaneously
D. A feature exclusive to the Webpack bundler tool

Answer: A

Q579. What is the for...of loop used for?

A. Iterating over the keys of an object
B. Executing queries against a database
C. A C-style for loop with index counters
D. Iterating over values of iterable objects

Answer: D

Q580. What does Object.assign() do?

A. Compares two objects for deep structural equality
B. Assigns type annotations to JavaScript objects
C. Creates a deep copy of all nested objects
D. Copies enumerable own properties to a target (shallow)

Answer: D

Q581. What is the Virtual DOM in React?

A. A browser API for accessing device hardware and sensors
B. A lightweight copy of the real DOM for efficient updates
C. A virtual reality feature for immersive web experiences
D. A hidden HTML element that is invisible to the end user

Answer: B

Q582. What is React's useState hook?

A. A database hook for managing query results
B. A function adding state to functional components
C. A CSS hook for applying dynamic styles
D. A routing hook for handling URL navigation

Answer: B

Q583. What is the useEffect hook used for?

A. Creating CSS effects through JavaScript manipulation
B. Performing side effects like data fetching in components
C. Managing component state with reactive data binding
D. Adding visual effects like shadows and gradients

Answer: B

Q584. What is Vue's reactivity system based on?

A. Manual DOM manipulation with vanilla JavaScript
B. JavaScript Proxies that track and trigger updates
C. Web Workers running in separate background threads
D. CSS variables with automatic browser recalculation

Answer: B

Q585. What is Angular's two-way data binding?

A. CSS binding between stylesheets and HTML elements
B. A database connection pool for managing active queries
C. Changes in model automatically update the view and vice versa
D. Server-client binding for real-time data synchronization

Answer: C

Q586. What is React Router?

A. A server framework for building backend APIs
B. A library for handling navigation in React apps
C. A CSS router for switching between stylesheets
D. A physical network router for internet traffic

Answer: B

Q587. What is a Higher-Order Component (HOC) in React?

A. A component rendering at the top of a page
B. A function that takes and returns an enhanced component
C. A CSS wrapper element for styling child elements
D. A parent component wrapping all child components

Answer: B

Q588. What is Vuex/Pinia used for in Vue?

A. Managing CSS styles across Vue applications
B. Centralized state management for Vue applications
C. Managing database connections in Vue projects
D. Server-side routing configuration for Vue apps

Answer: B

Q589. What is the purpose of Angular's NgModule?

A. A CSS module for scoped component styling
B. A testing module for automated browser tests
C. A class organizing components, directives, and services
D. A database module for connection management

Answer: C

Q590. What is Next.js?

A. A testing tool for automated end-to-end browser tests
B. A NoSQL document-oriented database management tool
C. A CSS framework for responsive web design layouts
D. A React framework supporting SSR and static generation

Answer: D

Q591. What is the difference between SQL and NoSQL databases?

A. SQL is designed exclusively for web apps only
B. They are identical in data model and usage
C. NoSQL is always faster in every situation
D. SQL uses tables with schemas; NoSQL uses flexible models

Answer: D

Q592. What is RESTful routing?

A. A CSS routing system for navigating style sheets
B. Organizing endpoints around resources via HTTP methods
C. A database query method for retrieving records
D. Random URL patterns without any convention

Answer: B

Q593. What is authentication vs authorization?

A. Authentication verifies identity; authorization controls access
B. Authentication controls access; authorization verifies identity
C. Neither is required for modern web application security
D. They are the same process with different names

Answer: A

Q594. What is an ORM?

A. A testing tool for automated browser tests
B. Object-Relational Mapping for querying via objects
C. A CSS framework for responsive page layouts
D. A type of relational database engine

Answer: B

Q595. What is the purpose of environment variables?

A. To store config values like API keys outside code
B. To create and render HTML elements dynamically
C. To style web pages with dynamic CSS rules
D. To define CSS variables for theming support

Answer: A

Q596. What is a session in web development?

A. A server-side mechanism storing user data across requests
B. A CSS class applied to styled HTML elements
C. A database table for persisting application records
D. A JavaScript function for handling user interactions

Answer: A

Q597. What is rate limiting?

A. Limiting the speed of CSS animations
B. Limiting the page load speed for mobile users
C. Restricting API requests a client can make per period
D. Limiting the total size of a database instance

Answer: C

Q598. What is the MVC pattern?

A. A JavaScript library for DOM manipulation tasks
B. A type of database for NoSQL document storage
C. A CSS framework for responsive styling layouts
D. Model-View-Controller, separating data and logic

Answer: D

Q599. What is a webhook?

A. A CSS hook for attaching dynamic styles
B. A database trigger running stored procedures
C. A JavaScript hook for managing component state
D. An HTTP callback sending data on events

Answer: D

Q600. What is the purpose of CORS middleware?

A. To style HTTP responses with CSS formatting
B. To handle CORS headers allowing cross-domain requests
C. To log errors for debugging server-side issues
D. To compress data for faster network transfer

Answer: B

Q601. What is the difference between SSR and CSR?

A. They are identical in every rendering aspect
B. SSR generates HTML on server; CSR generates in browser
C. CSR is always faster in initial page load performance
D. SSR is unable to use any JavaScript on the page

Answer: B

Q602. What is a REST controller?

A. A component handling HTTP requests for REST endpoints
B. A database controller for managing query execution
C. A sleep controller for pausing execution
D. A CSS component for building styled page layouts

Answer: A

Q603. What is server-side validation?

A. Validating HTML syntax for standards compliance
B. Validating CSS on the server for correctness
C. Checking browser compatibility for CSS features
D. Checking data on server to ensure requirements

Answer: D

Q604. What is the purpose of a .env file?

A. To define HTML entities for special character display
B. To style web pages with dynamic CSS variables
C. To store environment-specific config like API keys
D. To configure CSS preprocessor compilation options

Answer: C

Q605. What is a cron job?

A. A scheduled task running automatically at intervals
B. A database backup run at a specific time point
C. A JavaScript timeout for delaying code execution
D. A CSS animation timer for scheduling effects

Answer: A

Q606. What is the purpose of logging in server-side applications?

A. Displaying logs visually in the browser console
B. Recording events and errors for debugging and monitoring
C. Creating log files that track CSS style changes
D. Logging into user accounts through authentication

Answer: B

Q607. What is SSR hydration?

A. A database operation for replicating table data
B. A CSS technique for fluid responsive layout design
C. Attaching JS event handlers to server-rendered HTML
D. Adding water to servers for cooling systems

Answer: C

Q608. What is a reverse proxy in server-side programming?

A. A database proxy for managing connection pools
B. A backwards web server that inverts requests
C. A CSS preprocessor for compiling style files
D. A server forwarding requests to backend servers

Answer: D

Q609. What is the purpose of body parsing middleware?

A. To parse CSS files for style extraction
B. To parse HTML body elements for rendering content
C. To parse database queries for execution planning
D. To extract and parse HTTP request bodies into objects

Answer: D

Q610. What is the difference between stateless and stateful server-side apps?

A. Stateless is always better for every use case scenario
B. Stateless apps store no session data; stateful apps maintain it
C. Stateful apps are completely unable to scale horizontally
D. They are identical in session management behavior

Answer: B

Q611. What is a foreign key?

A. A column linking two tables via another primary key
B. A key imported from another country or locale
C. An encrypted key used for securing data at rest
D. A backup key for recovering lost database records

Answer: A

Q612. What is database indexing?

A. Creating structures that speed up data retrieval
B. Numbering database rows in sequential order
C. Organizing files on disk for better storage
D. A CSS technique for ordering layout elements

Answer: A

Q613. What is a JOIN in SQL?

A. A JavaScript method for merging arrays together
B. Combining multiple CSS files into a single bundle
C. A string concatenation operator for joining text
D. A clause combining rows from tables based on columns

Answer: D

Q614. What is the difference between INNER JOIN and LEFT JOIN?

A. LEFT JOIN returns only the matching rows from both sources
B. They are identical in their result sets
C. INNER JOIN includes NULL values from non-matching entries
D. INNER returns matches only; LEFT returns all left rows plus matches

Answer: D

Q615. What is database normalization?

A. Normalizing CSS values for cross-browser consistency
B. Formatting JSON data for human-readable pretty output
C. Making data look normal in the display output
D. Organizing data to reduce redundancy via normal forms

Answer: D

Q616. What is an ODM?

A. A JavaScript operator for object comparison
B. A CSS framework for responsive layout design
C. A type of relational database engine
D. Object-Document Mapper for objects and NoSQL docs

Answer: D

Q617. What is a transaction in databases?

A. A CSS transition for animating property changes
B. A data transfer between server and client machines
C. A sequence of operations treated as a single unit
D. A financial payment between two bank accounts

Answer: C

Q618. What are ACID properties?

A. A type of document-oriented database engine system for storing data
B. A security protocol for encrypting network traffic between services
C. Atomicity, Consistency, Isolation, Durability for reliable transactions
D. A chemistry concept related to pH levels

Answer: C

Q619. What is Redis commonly used for?

A. As a primary database for all application data
B. As an in-memory store for caching and sessions
C. As a CSS preprocessor for compiling styles
D. As a web server for hosting static content

Answer: B

Q620. What is SQL injection?

A. A vulnerability where malicious SQL is inserted into queries
B. A database optimization technique for faster lookups
C. A JavaScript technique for dynamically building queries
D. Injecting CSS styles into SQL query statements

Answer: A

Q621. What is CSRF (Cross-Site Request Forgery)?

A. An attack tricking users into actions on authenticated sites
B. A CSS framework for building styled web components
C. A JavaScript error caused by invalid syntax in code
D. A database attack targeting table join vulnerabilities

Answer: A

Q622. How is CSRF typically prevented?

A. Disabling JavaScript execution in the browser
B. Using anti-CSRF tokens to verify request origin
C. Using CSS styles to hide form submission buttons
D. Using longer and more complex user passwords

Answer: B

Q623. What is Content Security Policy (CSP)?

A. A database policy for query execution permissions
B. A JavaScript policy for variable access control
C. A CSS policy for restricting style inheritance
D. An HTTP header restricting which resources load

Answer: D

Q624. What is JWT (JSON Web Token)?

A. A database token for authenticating query access
B. A compact self-contained token for secure data transfer
C. A CSS token for custom property values
D. A JavaScript variable for storing session data

Answer: B

Q625. What is the principle of least privilege?

A. Disabling all non-essential application features
B. Giving admin access to every application user
C. Granting users only the minimum needed permissions
D. Using the simplest possible password for accounts

Answer: C

Q626. What is input sanitization?

A. Compressing HTML to reduce the total page size
B. Formatting JSON data for consistent key ordering
C. Removing or encoding dangerous characters from input
D. Cleaning CSS code by removing unused selectors

Answer: C

Q627. What is CORS and why is it a security concern?

A. A JavaScript library for making HTTP request calls
B. Cross-Origin Resource Sharing; misconfiguration exposes data
C. A CSS framework for cross-browser styling consistency
D. A NoSQL database system for document-based storage

Answer: B

Q628. What is a brute force attack?

A. A CSS technique for overriding existing style rules
B. Systematically trying all possible password combinations
C. A physical attack on server hardware infrastructure
D. A network protocol for secure data transmission

Answer: B

Q629. What is the purpose of the HttpOnly cookie flag?

A. To encrypt the cookie data using symmetric encryption
B. To prevent JavaScript from accessing the cookie
C. To make cookies only work over HTTP connections
D. To make the cookie persistent across browser sessions

Answer: B

Q630. What is OWASP?

A. A web framework for building server applications
B. A CSS standard for defining stylesheet specifications
C. A relational database system for enterprise apps
D. The Open Web Application Security Project guidelines

Answer: D

Q631. What is the difference between FCP and LCP?

A. LCP measures only the first pixel painted on screen
B. FCP is always slower than LCP in page loading time
C. FCP is when first content appears; LCP is when largest renders
D. They are identical metrics measuring the same event

Answer: C

Q632. What is code splitting?

A. Breaking JavaScript bundles into on-demand chunks
B. Dividing CSS files into smaller partial imports
C. Database partitioning for distributing table rows
D. Splitting HTML files across different server endpoints

Answer: A

Q633. What is the purpose of loading='lazy' on images?

A. To defer loading off-screen images until scrolled to
B. To load images using CSS background properties
C. To compress images for smaller file sizes
D. To slow down image rendering on the page

Answer: A

Q634. What is GZIP compression?

A. A JavaScript minifier for reducing bundle sizes
B. A CSS compression tool for minifying stylesheets
C. Image compression for reducing file sizes
D. A server-side method reducing transferred file sizes

Answer: D

Q635. What are Core Web Vitals?

A. A CSS framework for building optimized page layouts
B. A testing tool for measuring code quality metrics
C. Google metrics for UX: LCP, INP, and CLS scores
D. Core JavaScript functions built into the language

Answer: C

Q636. What is render-blocking CSS?

A. CSS that blocks images from loading on page
B. CSS that blocks JavaScript from executing code
C. CSS preventing rendering until fully downloaded
D. CSS that blocks individual element visibility

Answer: C

Q637. What is prefetching?

A. A CSS property for preloading font resources
B. A JavaScript fetch method for making API requests
C. Fetching data from databases in advance
D. Loading resources in advance the user will likely need

Answer: D

Q638. What is Cumulative Layout Shift (CLS)?

A. A CSS layout property for element positioning
B. A database migration for moving records between tables
C. A metric measuring unexpected visual shifts during loading
D. A JavaScript shift operation for bitwise manipulation

Answer: C

Q639. What is the purpose of a service worker in performance?

A. To minify JavaScript bundles for production
B. To manage CSS stylesheets and style rules
C. To compress images for reduced file sizes
D. To cache assets and serve them offline for speed

Answer: D

Q640. What is tree shaking?

A. A CSS technique for optimizing selector performance
B. Removing tree images from web page content
C. Eliminating unused code from JavaScript bundles
D. A database optimization for removing unused indexes

Answer: C

Q641. What is integration testing?

A. Testing CSS integration across page components
B. Testing only the user interface visual appearance
C. Testing individual functions in complete isolation
D. Testing how multiple modules work together as a group

Answer: D

Q642. What is end-to-end (E2E) testing?

A. Testing from start to finish of the codebase
B. Testing exclusively the backend server logic only
C. Testing the complete application from user perspective
D. Testing only a single API endpoint in isolation

Answer: C

Q643. What is Jest?

A. A JavaScript testing framework for unit and integration tests
B. A web server for hosting test environments and staging
C. A database tool for testing query performance and accuracy
D. A CSS framework for responsive web design

Answer: A

Q644. What is Cypress used for?

A. API testing only without any browser interaction
B. End-to-end testing of web apps in a real browser
C. CSS processing and compilation of style files
D. Database testing for query performance and accuracy

Answer: B

Q645. What is mocking in testing?

A. Making fun of poorly written source code
B. Creating fake implementations to isolate tested code
C. A debugging method tracking variable value changes
D. A CSS technique simulating dynamic state changes

Answer: B

Q646. What is code coverage?

A. Covering code with explanatory inline comments
B. A security feature for protecting sensitive source code files
C. A metric measuring what percentage of code tests execute
D. A CSS overlay property for stacking visual layer elements

Answer: C

Q647. What is Test-Driven Development (TDD)?

A. Writing tests before code, then implementing to pass
B. Developing tests after all code is fully written
C. A debugging technique for tracing execution flow
D. A testing framework for running automated test suites

Answer: A

Q648. What is a test suite?

A. A hotel suite used for testing software
B. A debugging tool for inspecting test output data
C. A collection of related test cases grouped together
D. A CSS test framework for visual regression testing

Answer: C

Q649. What is snapshot testing?

A. Comparing current output against a stored reference
B. A database backup for point-in-time recovery
C. A version control feature for branching code
D. Taking screenshots of the application pages

Answer: A

Q650. What is the purpose of assertion libraries?

A. To assert database values match expected outputs
B. To create assertions within HTML for validation
C. To provide methods verifying expected code results
D. To assert CSS values match the design mockups

Answer: C

Q651. What is CI/CD?

A. A JavaScript library for building interactive web interfaces
B. A CSS framework for rapid web development workflow
C. Continuous Integration and Deployment with automated testing
D. A relational database system for web application data

Answer: C

Q652. What is Docker?

A. A platform for running apps in isolated containers
B. A database tool for managing data migrations
C. A JavaScript runtime for server-side execution
D. A CSS framework for building grid-based layouts

Answer: A

Q653. What is a container in deployment?

A. A CSS container element for grouping content
B. A JavaScript object for storing config values
C. A database container for grouping related tables
D. A standalone package with everything to run an app

Answer: D

Q654. What is the purpose of a Dockerfile?

A. To document CSS style guidelines for the team
B. To configure a database connection and schema
C. To define instructions for building a Docker image
D. To create documentation for the project codebase

Answer: C

Q655. What is AWS?

A. Amazon Web Services, a cloud platform for hosting
B. A CSS framework for responsive web design layouts
C. A JavaScript library for building user interfaces
D. A web browser for viewing internet content

Answer: A

Q656. What is the difference between PaaS and IaaS?

A. PaaS provides a platform; IaaS provides raw infrastructure
B. PaaS provides infrastructure; IaaS provides platforms
C. They are identical in their service model
D. IaaS provides a platform for application deployment

Answer: A

Q657. What is an SSL/TLS certificate?

A. A JavaScript license for commercial software distribution
B. A CSS certification for web design professionals
C. A certificate enabling HTTPS by authenticating the server
D. A database certificate for verifying data integrity

Answer: C

Q658. What are environment variables used for in deployment?

A. Defining CSS variables for different color schemes
B. Styling web pages with environment-specific themes
C. Creating HTML elements for different layout contexts
D. Storing config values like API keys per environment

Answer: D

Q659. What is a reverse proxy in deployment?

A. A testing tool for simulating server-side behavior
B. A CSS technique for reversing element rendering order
C. A backwards server that inverts incoming requests
D. A server forwarding requests with load balancing and SSL

Answer: D

Q660. What is a rollback in deployment?

A. Reverting to a previous version when deploy fails
B. Rolling back CSS changes to a previous version
C. A database operation for undoing transaction changes
D. A JavaScript method for reverting variable values

Answer: A

Q661. What is the difference between REST and GraphQL?

A. REST uses fixed endpoints; GraphQL uses one for exact data
B. They are identical in data fetching approach
C. GraphQL is always faster than REST in every scenario
D. REST is a newer technology than GraphQL overall

Answer: A

Q662. What is API rate limiting?

A. Restricting requests a client can make per time period
B. Limiting the available API features and endpoints
C. Limiting the number of available API endpoints
D. Limiting the maximum API response payload size

Answer: A

Q663. What is API versioning?

A. A JavaScript version number for runtime environments
B. Updating CSS versions for browser compatibility
C. A database version for tracking schema migrations
D. Managing API versions for backward compatibility

Answer: D

Q664. What is OAuth used for with Web APIs?

A. Delegated authorization for third-party app access
B. A CSS framework for responsive web page layouts
C. A JavaScript library for building authentication forms
D. A database protocol for encrypted connection management

Answer: A

Q665. What is a webhook?

A. A CSS hook for attaching dynamic style rules
B. A JavaScript event listener for DOM interactions
C. A database trigger firing on record changes
D. A callback URL receiving HTTP POST on events

Answer: D

Q666. What is pagination in APIs?

A. A JavaScript page event for tracking navigation
B. Dividing large result sets into smaller pages
C. Page layout and formatting for print media
D. A CSS page break controlling print output layout

Answer: B

Q667. What is HATEOAS in REST?

A. A database concept for relating tables together
B. A CSS framework for building grid layouts
C. Responses include links to related resources
D. A JavaScript pattern for managing app state

Answer: C

Q668. What is API documentation?

A. Writing CSS comments for code documentation
B. Database documentation for schema design decisions
C. Detailed descriptions of endpoints and parameters
D. HTML documentation for browser compatibility

Answer: C

Q669. What is the purpose of request headers in API calls?

A. Database headers for defining column schema types
B. Providing metadata like auth tokens and content type
C. Styling the request with CSS formatting rules
D. Creating HTML headers for page title and navigation

Answer: B

Q670. What is a RESTful resource?

A. A server resource like CPU or memory allocation
B. A CSS resource like a stylesheet or font file
C. A JavaScript resource loaded via script elements
D. An entity identified by URL manipulated via HTTP

Answer: D

Q671. What is a monorepo?

A. A type of database for centralized data storage
B. A CSS methodology for organizing style declarations
C. Multiple related projects stored in one repository
D. A single repository for one individual project

Answer: C

Q672. What is Jamstack?

A. A music stack for audio processing applications
B. An architecture using JavaScript, APIs, and Markup
C. A CSS framework for building styled web components
D. A database stack for managing data storage layers

Answer: B

Q673. What is a headless CMS?

A. A CMS providing content via API without a frontend
B. A CSS framework for headless browser rendering
C. A CMS without advanced content management features
D. A CMS without a header section in the layout

Answer: A

Q674. What is Web Assembly (WASM)?

A. A binary format enabling near-native browser performance
B. A JavaScript engine for parsing and executing scripts
C. A web framework for server-side rendering pages
D. A CSS assembler for compiling stylesheet syntax

Answer: A

Q675. What is the purpose of ESLint?

A. Managing databases through a graphical admin interface
B. Compiling JavaScript into optimized machine code
C. Minifying CSS files for reduced production bundle sizes
D. Analyzing JavaScript to find problems and enforce standards

Answer: D

Q676. What is Prettier?

A. A testing framework for automated end-to-end testing
B. A CSS framework for responsive web design layouts
C. An opinionated code formatter enforcing consistent style
D. A database tool for formatting query output results

Answer: C

Q677. What is a design system?

A. A testing framework for running automated test suites
B. A CSS file for global application styling needs
C. A database schema for normalized table structure design
D. A comprehensive set of reusable components and guidelines

Answer: D

Q678. What is Storybook?

A. A CSS framework for styling web page component layouts
B. A tool for building and documenting UI components in isolation
C. A book reading app for digital publications
D. A database tool for visual query builder access and management

Answer: B

Q679. What is a micro-frontend architecture?

A. A component library for sharing reusable UI element sets
B. A small frontend with limited feature scope overall
C. Independently deployable micro apps composing the frontend
D. A CSS grid layout for building responsive page designs

Answer: C

Q680. What is Deno?

A. A modern JS/TS runtime with built-in security and TypeScript
B. A dinosaur-themed web application framework library
C. A CSS preprocessor for compiling advanced style syntax
D. A NoSQL database for document-based data storage systems

Answer: A

Q681. What distinguishes a full-stack developer from a front-end developer?

A. Full-stack only handles database design and server administration
B. Front-end developers also write all the server-side application code
C. Full-stack developers exclusively focus on mobile app development work
D. Full-stack works on both client and server sides of applications

Answer: D

Q682. What is the purpose of version control in web development?

A. To track changes and enable collaboration among developers
B. To validate HTML and CSS against web standard guidelines
C. To minify and compress files for better site performance
D. To automatically deploy code to production servers quickly

Answer: A

Q683. Which of the following best describes a Content Management System?

A. A tool for writing and compiling programming language code
B. A framework for building real-time communication applications
C. A platform for creating and managing digital content easily
D. A service for monitoring web server performance and uptime

Answer: C

Q684. What is the role of a package manager in web development?

A. To host and serve static web pages on a remote cloud server
B. To encrypt and secure data transmitted between client nodes
C. To install, update, and manage project dependency libraries
D. To design responsive layouts for mobile devices and tablets

Answer: C

Q685. What does the term responsive web design mean?

A. Websites that only function properly on the latest browser versions
B. Websites that respond to voice commands from the user quickly
C. Websites that automatically adapt layout to different screen sizes
D. Websites that load within two seconds on any connection speed

Answer: C

Q686. What is the purpose of a wireframe in web development?

A. To outline the basic structure and layout of a page visually
B. To define the database schema for back-end data persistence
C. To compress images for faster loading times on web servers
D. To encrypt user authentication tokens stored in the browser

Answer: A

Q687. Which LAMP stack component serves as the web server?

A. Linux operating system
B. PHP scripting lang
C. MySQL data storage
D. Apache HTTP server

Answer: D

Q688. What does the term single-page application refer to?

A. An app that dynamically rewrites the page without full reloads
B. A website that contains only one static HTML landing page total
C. A web app that can only be accessed on a single device at once
D. A site designed exclusively for mobile phone portrait view only

Answer: A

Q689. What is the main benefit of using a CSS preprocessor?

A. It replaces JavaScript entirely for adding interactivity logic
B. It automatically generates accessible HTML from plain text input
C. It eliminates the need for any media queries in responsive work
D. It adds variables, nesting, and functions to standard CSS code

Answer: D

Q690. What is web accessibility primarily concerned with?

A. Ensuring websites are usable by people with various disabilities
B. Optimizing search engine rankings through keyword meta tag usage
C. Preventing unauthorized access to web server admin panel areas
D. Making websites load faster on slow network connections today

Answer: A

Q691. What is the difference between HTTP GET and POST methods?

A. GET encrypts data automatically while POST sends it in plain text
B. GET retrieves data via URL while POST submits data in the body
C. GET is used only for images while POST is used only for text data
D. GET sends data in the body while POST appends it to the URL path

Answer: B

Q692. What is the purpose of an HTTP status code in the 3xx range?

A. To report that the server encountered an internal processing error
B. To signal that the requested resource has moved or needs redirect
C. To confirm that the client request was malformed or unauthorized
D. To indicate a successful operation completed without any errors

Answer: B

Q693. What role does TCP play in web communication?

A. It ensures reliable ordered delivery of data between two hosts
B. It encrypts all data packets before they leave the sender device
C. It compresses image files to reduce bandwidth usage on transfers
D. It assigns human-readable names to numerical server IP addresses

Answer: A

Q694. What is the purpose of a CDN in web architecture?

A. To write server-side code for dynamic page generation logic
B. To provide database replication between primary and backup nodes
C. To manage version control repositories for development teams
D. To distribute content across servers closer to end users globally

Answer: D

Q695. What does a reverse proxy server do?

A. It sits before origin servers and forwards client requests to them
B. It directly serves web pages to the user browser without caching
C. It translates domain names into IP addresses for DNS resolution
D. It compiles source code into executable binaries on the server

Answer: A

Q696. What is the purpose of the HTTP OPTIONS method?

A. To describe the communication options available for a resource
B. To upload a new file or document to the server storage location
C. To establish a persistent WebSocket connection with the server
D. To delete a specified resource from the server permanently today

Answer: A

Q697. What does stateless mean in the context of HTTP?

A. The client must re-authenticate for every single page navigation
B. Each request is independent and carries no memory of prior ones
C. The server cannot store any files on its local disk permanently
D. The connection between client and server is never encrypted once

Answer: B

Q698. What is the role of a load balancer in web architecture?

A. To encrypt all stored database records using advanced hash algorithms
B. To minify JavaScript files before serving them to client browsers
C. To distribute incoming traffic across multiple backend server nodes
D. To automatically generate SSL certificates for domain name hosting

Answer: C

Q699. What is the difference between HTTP/1.1 and HTTP/2?

A. HTTP/1.1 supports server push while HTTP/2 completely removed it
B. HTTP/2 removes support for HTTPS and only allows plain HTTP usage
C. HTTP/2 requires a different port number than HTTP/1.1 for access
D. HTTP/2 introduces multiplexing allowing multiple parallel requests

Answer: D

Q700. What is a WebSocket and how does it differ from HTTP?

A. WebSocket is a one-way protocol that only allows server to client data
B. WebSocket replaces TCP entirely with a new custom transport protocol
C. WebSocket enables persistent two-way communication between endpoints
D. WebSocket only works with static HTML pages and cannot handle JSON

Answer: C

Q701. What is the difference between the and elements?

A. can only contain text while can contain any HTML element
B. is deprecated in HTML5 while is the recommended replacement
C. is block-level and is inline in default display behavior
D. is inline and is block-level in default display behavior

Answer: C

Q702. What is the purpose of semantic HTML elements like <article> and <section>?

A. They enable JavaScript functionality without writing any script code
B. They provide meaning to content structure for accessibility and SEO
C. They replace all div elements and are required for valid HTML5 pages
D. They apply automatic CSS styling without needing any stylesheet rules

Answer: B

Q703. What does the required attribute do on a form input element?

A. It automatically formats the input data into proper currency notation
B. It sets a default placeholder text value inside the input field area
C. It prevents the form from submitting until the field has been filled
D. It hides the input field until the user clicks a reveal toggle button

Answer: C

Q704. How does the <picture> element differ from a standard <img> tag?

A. It automatically applies image filters like blur and grayscale effects
B. It creates an image gallery carousel with built-in navigation controls
C. It provides multiple sources for responsive image selection by browser
D. It only supports SVG format images and cannot display any raster type

Answer: C

Q705. What is the purpose of the data-* attribute in HTML5?

A. To automatically bind JavaScript event handlers to specific elements
B. To define database connection strings directly within HTML elements
C. To store custom data private to the page or application on elements
D. To encrypt sensitive user information within the DOM tree structure

Answer: C

Q706. What does the <template> element do in HTML5?

A. It defines email templates for automated notification sending tasks
B. It holds client-side content not rendered until activated by scripts
C. It applies a predefined visual theme to the entire web page document
D. It creates a reusable server-side component for backend rendering

Answer: B

Q707. What is the role of the <meta charset='UTF-8'> tag?

A. It sets the background color of the web page to a default value
B. It links an external font library to the current page for styling
C. It defines the viewport width for mobile responsive design layouts
D. It specifies the character encoding used for the HTML document text

Answer: D

Q708. What is the difference between the and <b> tags?

A. indicates semantic importance while <b> is only visual bold
B. Both tags are completely identical with no semantic differences at all
C. is deprecated in HTML5 and <b> is the recommended replacement
D. <b> indicates importance while is only for visual bold style

Answer: A

Q709. What attribute makes an input field read-only but still submittable?

A. readonly attribute
B. disabled attribute
C. hidden attribute
D. required attribute

Answer: A

Q710. What is the purpose of the <fieldset> and <legend> elements in forms?

A. They group related form controls and provide a caption for the group
B. They add animated transitions between different form sections on page
C. They create dropdown menus and label each option with descriptive text
D. They define hidden input fields that store session token values only

Answer: A

Q711. What is the difference between margin and padding?

A. Padding is inside the border while margin is outside the border area
B. Padding is only for horizontal spacing while margin is only vertical
C. Margin only applies to inline elements while padding applies to blocks
D. Margin is inside the border while padding is outside the border area

Answer: A

Q712. What does the z-index property control in CSS?

A. The stacking order of positioned elements along the depth axis shown
B. The rotation angle of an element around its central transformation point
C. The zoom level of the element when displayed in the browser viewport
D. The horizontal position of an element relative to its parent container

Answer: A

Q713. How does CSS specificity determine which styles are applied?

A. Only important declarations are considered and all others are ignored
B. Styles are applied in the order they appear in the HTML source code
C. Inline styles, IDs, classes, and elements are weighted in that order
D. The last stylesheet linked in the head always overrides all previous

Answer: C

Q714. What is the CSS box model composed of?

A. Font, color, background, and shadow properties of text elements
B. Header, content, sidebar, and footer sections of a webpage layout
C. Flexbox, grid, float, and position layout mechanisms for styling
D. Content, padding, border, and margin layers around every element

Answer: D

Q715. What does the position: absolute property do?

A. Positions element relative to its nearest positioned ancestor element
B. Positions element relative to the browser viewport scrolling along
C. Positions element in normal document flow with offset adjustments
D. Positions element at a fixed spot that ignores scrolling movements

Answer: A

Q716. What is the difference between display: none and visibility: hidden?

A. display: none removes from flow while visibility: hidden keeps the space
B. display: none only works on block elements while visibility works on all
C. display: none hides but keeps space while visibility: hidden removes it
D. Both properties work identically and there is no difference between them

Answer: A

Q717. How do CSS transitions work?

A. They animate property changes smoothly over a specified time duration
B. They only work with JavaScript and cannot be triggered by CSS alone
C. They require keyframe definitions for every single property animation
D. They instantly change property values without any animation effect shown

Answer: A

Q718. What is the purpose of the CSS calc() function?

A. To compute the specificity score of a given CSS selector expression
B. To count the number of child elements inside a parent container block
C. To perform mathematical calculations to determine CSS property values
D. To calculate page load time and display it inside a status bar area

Answer: C

Q719. What does the overflow property control?

A. The order in which overlapping positioned elements stack on the page
B. The speed at which CSS transitions animate between two style states
C. The maximum number of characters shown in a text input field element
D. How content that exceeds its container dimensions is handled and shown

Answer: D

Q720. What is a CSS pseudo-class?

A. A CSS property that generates content before or after element content
B. A keyword added to selectors specifying a special state of an element
C. A class that is defined in JavaScript rather than in the CSS stylesheet
D. A method for importing styles from one stylesheet into another one used

Answer: B

Q721. How does the minmax() function work in CSS Grid?

A. It sets the minimum and maximum font size for responsive text typography
B. It calculates the minimum and maximum viewport size for media queries
C. It computes the smallest and largest margin values for element spacing
D. It defines a size range with minimum and maximum values for grid tracks

Answer: D

Q722. What is the purpose of the grid-template-areas property?

A. It automatically generates grid lines based on the content size of items
B. It defines the total number of grid items that can be placed in a grid
C. It sets background images for specific areas within the grid container
D. It creates named grid areas for intuitive layout placement of elements

Answer: D

Q723. How does the flex shorthand property work?

A. It sets the flexibility of the container rather than individual flex items
B. It combines flex-wrap, flex-flow, and flex-direction into one property
C. It combines flex-grow, flex-shrink, and flex-basis into one declaration
D. It controls the visual order of flex items without changing DOM sequence

Answer: C

Q724. What is the difference between auto-fit and auto-fill in CSS Grid?

A. auto-fill expands items to fill space while auto-fit keeps empty tracks
B. auto-fill requires explicit row counts while auto-fit calculates them all
C. auto-fit only works with fixed pixel values while auto-fill uses percents
D. auto-fit expands items to fill space while auto-fill keeps empty tracks

Answer: D

Q725. How do CSS transforms affect the document flow?

A. Transforms cause all sibling elements to reposition around the changed one
B. Transforms visually change elements without affecting document flow at all
C. Transforms remove the element entirely from the normal document flow
D. Transforms only work when the element has position absolute or fixed set

Answer: B

Q726. What is the purpose of the clamp() function in CSS?

A. It clamps scroll position to prevent users from scrolling past content
B. It limits the number of CSS animations that can run at the same time
C. It restricts the number of flex items that appear on a single row line
D. It sets a value that scales between a minimum and maximum with preferred

Answer: D

Q727. How does the order property work in flexbox?

A. It defines the rendering priority determining which items paint on top
B. It sets alphabetical sorting order for text content within flex items
C. It specifies the order in which CSS transitions are applied to each item
D. It changes the visual order of flex items without altering the DOM order

Answer: D

Q728. What is the aspect-ratio property used for?

A. To control the animation speed ratio between different keyframe points
B. To set the ratio of padding to margin for consistent element spacing
C. To define the ratio between font size and line height in text blocks
D. To maintain a width-to-height ratio for an element automatically in CSS

Answer: D

Q729. How does the place-items shorthand work in Grid?

A. It sets the placement algorithm to either sparse or dense packing mode
B. It combines align-items and justify-items into a single declaration used
C. It positions grid items at specific pixel coordinates on the web page
D. It places items outside the grid container in an overflow hidden region

Answer: B

Q730. What is the difference between grid-column and grid-area?

A. grid-area is deprecated and grid-column is the recommended replacement
B. grid-area only works with named areas while grid-column works with lines
C. grid-column sets column placement while grid-area sets full area placement
D. grid-column is for flexbox while grid-area is exclusively for CSS Grid

Answer: C

Q731. What is the difference between let and var in JavaScript?

A. let is used for numbers only while var works with all data type values
B. let cannot be reassigned while var allows reassignment of the variable
C. let is function-scoped while var is block-scoped in JavaScript code
D. let is block-scoped while var is function-scoped in JavaScript code

Answer: D

Q732. What is hoisting in JavaScript?

A. Moving DOM elements to the top of the page during initial rendering
B. Moving declarations to the top of their scope during the compile phase
C. Raising the priority of event listeners above other queued callbacks
D. Uploading JavaScript files to a remote server for production hosting

Answer: B

Q733. What is the difference between == and === in JavaScript?

A. == coerces types before comparison while === checks type and value both
B. == is used for strings while === is used for numbers and boolean values
C. == compares only types while === compares only values of the operands
D. == is deprecated in modern JavaScript while === is the only valid option

Answer: A

Q734. What is a callback function in JavaScript?

A. A function that is called automatically when the page finishes loading
B. A function passed as argument to another function for later execution
C. A function that calls itself recursively until a condition is satisfied
D. A function that returns another function as its computed return value

Answer: B

Q735. How does the ternary operator work?

A. It creates three variables at once using a single declaration statement
B. It evaluates a condition and returns one of two values based on result
C. It performs three separate operations on an array simultaneously today
D. It loops through an array exactly three times for processing elements

Answer: B

Q736. What is destructuring assignment in JavaScript?

A. Deleting properties from an object permanently from the memory storage
B. Removing elements from arrays by overwriting them with undefined values
C. Extracting values from arrays or objects into distinct variables easily
D. Converting complex objects into simple primitive values automatically

Answer: C

Q737. What does the spread operator do?

A. It expands an iterable into individual elements in function calls or arrays
B. It distributes network requests evenly across multiple server endpoints
C. It removes duplicate values from an array and returns a new unique set
D. It creates a deep copy of nested objects including all inner references

Answer: A

Q738. What is the purpose of template literals in JavaScript?

A. To allow embedded expressions and multiline strings using backtick syntax
B. To define strict type templates for validating function parameter values
C. To create reusable HTML templates that are rendered on the server side
D. To generate PDF templates from HTML content for download by site users

Answer: A

Q739. How does the map() array method work?

A. It filters array elements and returns only those that match a condition
B. It modifies the original array in place by replacing each element value
C. It creates a geographical map visualization from array coordinate data
D. It creates a new array by applying a function to each element of source

Answer: D

Q740. What is the difference between null and undefined?

A. null is an intentional empty value while undefined means no value assigned
B. null is used only for objects while undefined is used only for primitives
C. null triggers an error when accessed while undefined is silently ignored
D. null is a declared variable with no value while undefined is not declared

Answer: A

Q741. What is the difference between Promise.all and Promise.allSettled?

A. Promise.all waits for all but allSettled only waits for the first result
B. Promise.all runs promises sequentially while allSettled runs them parallel
C. Promise.all rejects on first failure while allSettled waits for all outcomes
D. Promise.all only works with two promises while allSettled handles any count

Answer: C

Q742. How does event delegation work in JavaScript?

A. It assigns separate event handlers to every individual child element node
B. It delegates event processing to a separate web worker thread for speed
C. It attaches a single handler to a parent to handle events from children
D. It automatically prevents default browser behavior for all fired events

Answer: C

Q743. What is the purpose of the Symbol primitive type?

A. To generate Unicode emoji characters for display in user interface text
B. To create mathematical symbols for complex equation calculations in code
C. To create unique identifiers that avoid property name collisions in objects
D. To define currency symbols for formatting monetary values on web pages

Answer: C

Q744. How does the async iterator protocol work with for-await-of?

A. It limits the iteration count based on available system memory resources
B. It runs multiple for loops in parallel across different threads at once
C. It allows asynchronous iteration over streams of data with await support
D. It converts synchronous iterators into cached versions for faster access

Answer: C

Q745. What is the Proxy object used for in JavaScript?

A. To create a network proxy for routing HTTP requests through a server
B. To create backup copies of objects for undo functionality in the editor
C. To define custom behavior for fundamental object operations like get/set
D. To convert JavaScript objects into XML format for SOAP API integration

Answer: C

Q746. What is the difference between Object.freeze and Object.seal?

A. freeze makes objects immutable forever while seal makes them temporary
B. freeze is for arrays only while seal is for plain objects exclusively used
C. freeze prevents all changes while seal allows modifying existing properties
D. freeze works in strict mode only while seal works in any execution mode

Answer: C

Q747. How does the AbortController work with fetch requests?

A. It converts fetch responses into readable streams for large file handling
B. It automatically retries failed fetch requests up to three times in a row
C. It batches multiple fetch requests into a single network call for speed
D. It provides a way to cancel in-flight fetch requests using abort signals

Answer: D

Q748. What is the purpose of generators in JavaScript?

A. They automatically generate documentation from JavaScript source code
B. They compile JavaScript into machine code for better runtime performance
C. They generate random numbers for use in cryptographic security functions
D. They create functions that can pause and resume execution using yield

Answer: D

Q749. How does the MutationObserver API work?

A. It monitors CSS style mutations and prevents unauthorized modifications
B. It observes network requests and mutates their headers before sending
C. It tracks variable mutations and logs them for debugging purposes only
D. It watches for changes to the DOM tree and triggers callbacks for them

Answer: D

Q750. What is a WeakRef and when would you use it?

A. A weak reference to an object that does not prevent garbage collection
B. A reference to a CSS variable that resolves at runtime when accessed
C. A reference to a DOM element that automatically updates when it moves
D. A reference counted pointer similar to those in C++ or Rust languages

Answer: A

Q751. How does React's reconciliation algorithm work?

A. It replaces the complete DOM with a new version on each state update call
B. It diffs the virtual DOM against the previous version and patches changes
C. It uses web workers to rebuild the DOM tree in a background thread process
D. It compares the entire DOM tree node by node on every single render cycle

Answer: B

Q752. What is the purpose of React hooks?

A. To hook into browser APIs that are not available in standard JavaScript
B. To add state and lifecycle features to functional components without classes
C. To create HTTP endpoint hooks for RESTful API communication with servers
D. To connect React components to external CSS stylesheet files for styling

Answer: B

Q753. How does two-way data binding work in Angular?

A. Binding only works for string values and not numbers or boolean data types
B. Data flows only from the template to the component class using event calls
C. Data is bound at compile time and cannot be updated after initial render
D. Changes in model automatically reflect in view and vice versa in real time

Answer: D

Q754. What is Vue's reactivity system based on?

A. Manual DOM manipulation with document query selector calls in components
B. Server-sent events that push data changes from backend to the frontend
C. Proxy-based observation that tracks dependencies and triggers re-renders
D. Polling intervals that check for data changes every fixed time interval

Answer: C

Q755. What is the difference between controlled and uncontrolled components in React?

A. Controlled components are server-rendered while uncontrolled are client-only
B. Controlled components are class-based while uncontrolled are function-based
C. Controlled components manage form data via state while uncontrolled use DOM
D. Controlled components use Redux while uncontrolled use local component state

Answer: C

Q756. What is the purpose of a state management library like Redux?

A. To manage the state of network connections and retry failed API call requests
B. To handle database state synchronization between client and server layers
C. To manage CSS state transitions and animations across all the components
D. To manage shared application state in a predictable centralized store object

Answer: D

Q757. How does server-side rendering differ from client-side rendering in frameworks?

A. SSR requires WebSocket connections while CSR uses standard HTTP request calls
B. SSR only works with Angular while CSR is exclusive to React and Vue frameworks
C. SSR generates HTML on the server for faster initial load and better SEO results
D. SSR generates HTML on the client while CSR generates it on the server side

Answer: C

Q758. What is lazy loading in the context of frontend frameworks?

A. Deferring component or module loading until they are actually needed on page
B. Loading CSS styles lazily after all JavaScript has finished executing first
C. Slowing down animations intentionally to create a relaxed user experience
D. Delaying all network requests until the user explicitly clicks a load button

Answer: A

Q759. What is the purpose of Angular's dependency injection system?

A. To automatically inject error handling code into every component method call
B. To inject HTML content from external files into Angular template directives
C. To inject CSS styles directly into component templates without stylesheets
D. To provide services and dependencies to components without manual creation

Answer: D

Q760. What are React Server Components and how do they differ from client components?

A. Server components only work in development mode and are removed in production
B. Server components run on client with server-like APIs for database access
C. Server components are deprecated and replaced by client-only rendering now
D. Server components render on server and send serialized output to the client

Answer: D

Q761. What is the difference between SQL and NoSQL databases?

A. NoSQL databases cannot handle relational data while SQL handles everything
B. SQL is only for small datasets while NoSQL is only for large datasets used
C. SQL databases are always faster than NoSQL for every possible query type
D. SQL databases use tables with schemas while NoSQL uses flexible data models

Answer: D

Q762. What is the purpose of an ORM in backend development?

A. To map database records to objects in code without writing raw SQL queries
B. To manage real-time messaging between connected WebSocket client users
C. To optimize CSS rendering in server-side rendered pages for performance
D. To orchestrate multiple microservices into a single deployment pipeline

Answer: A

Q763. How does JWT authentication work?

A. The client sends username and password with every single request it makes
B. The server generates a new unique URL for each authenticated user session
C. The server issues a signed token containing claims that the client stores
D. The server stores session data in a database and sends a session cookie

Answer: C

Q764. What is the purpose of environment variables in backend applications?

A. To define CSS custom properties that change based on the user environment
B. To determine the operating system type for conditional CSS style loading
C. To store configuration values that change between deployment environments
D. To set the browser viewport dimensions for responsive testing of layouts

Answer: C

Q765. What is rate limiting and why is it important?

A. Controlling the speed at which database queries execute on the server side
B. Setting a maximum file upload size for requests sent to the server endpoint
C. Limiting the CSS animation frame rate to improve browser performance speed
D. Restricting the number of API requests a client can make in a time period

Answer: D

Q766. How does connection pooling improve database performance?

A. It compresses database query results before sending them to the application
B. It distributes database queries equally across all available server hardware
C. It reuses existing database connections instead of creating new ones each time
D. It pools CSS connections to share stylesheets across multiple page views

Answer: C

Q767. What is the purpose of input validation on the server side?

A. To verify that client-side JavaScript is properly minified before caching
B. To ensure incoming data meets expected formats and prevents malicious input
C. To check that image files are in the correct resolution for display on page
D. To validate that CSS selectors match existing HTML elements in the document

Answer: B

Q768. What is the difference between authentication and authorization?

A. Authentication verifies identity while authorization checks access permissions
B. Authentication checks permissions while authorization verifies identity first
C. Authentication is for APIs only while authorization is for web pages exclusively
D. Authentication uses tokens while authorization exclusively uses session cookies

Answer: A

Q769. What is GraphQL and how does it differ from REST?

A. GraphQL requires WebSocket connections while REST uses standard HTTP methods
B. GraphQL lets clients request exactly the data they need with a single query
C. GraphQL only supports read operations while REST supports full CRUD actions
D. GraphQL is a database language while REST is an API architecture style used

Answer: B

Q770. What is the purpose of logging in backend applications?

A. To measure the length of CSS animations and report their duration in logs
B. To create visual log-shaped decorations on the user interface of the website
C. To record application events and errors for monitoring and debugging needs
D. To generate automatic documentation from source code comment annotations

Answer: C

Q771. How does server-side caching improve application performance?

A. It caches user passwords on the server to speed up authentication checks
B. It stores JavaScript bundle files on CDN edge nodes for faster delivery
C. It caches CSS files in the browser to avoid downloading them every visit
D. It stores computed results in memory to avoid repeated expensive operations

Answer: D

Q772. What is the difference between stateful and stateless server architectures?

A. Stateful servers retain client data between requests while stateless do not
B. Stateful servers are always faster because they remember all previous data
C. Stateless servers cannot use databases while stateful servers require them
D. Stateful is for REST APIs only while stateless is for GraphQL APIs exclusively

Answer: A

Q773. How does server-side form validation complement client-side validation?

A. Server validation runs first and client validation is applied after server
B. Server validation replaces client validation entirely making it unnecessary
C. Server validation ensures security since client validation can be bypassed
D. Server validation is only needed for file uploads and not for text inputs

Answer: C

Q774. What is the purpose of an application server versus a web server?

A. Application servers are for mobile apps while web servers are for websites only
B. Web servers are deprecated and application servers have replaced them entirely
C. Web servers handle HTTP requests while app servers execute business logic also
D. Application servers only serve static files while web servers handle all logic

Answer: C

Q775. How do server-side redirects differ from client-side redirects?

A. Server redirects happen via HTTP status codes while client uses JavaScript
B. Client redirects are more secure because they happen within the browser
C. Server redirects are slower because they require a full page reload always
D. Server redirects only work with POST requests while client works with GET

Answer: A

Q776. What is the purpose of a task queue in server-side applications?

A. To handle time-consuming tasks asynchronously outside the request cycle
B. To queue CSS animations for smooth rendering on the server-side components
C. To organize database migration tasks in the order they should be executed
D. To schedule automated browser tests to run sequentially on a CI pipeline

Answer: A

Q777. How does server-side pagination work for large datasets?

A. It loads all records into memory then splits them into pages on the server
B. It caches the entire dataset in the browser and paginates using JavaScript
C. It fetches only a subset of records per request using offset and limit values
D. It creates separate database tables for each page of results automatically

Answer: C

Q778. What is the role of a reverse proxy like Nginx in server deployments?

A. It provides a graphical user interface for managing database tables easily
B. It converts server-side code into client-side JavaScript for the browser
C. It reverses the order of HTTP headers to confuse potential attackers today
D. It sits in front of servers handling load balancing, SSL, and static files

Answer: D

Q779. What is the purpose of database migrations in server-side development?

A. To move the database server to a different physical location or data center
B. To manage incremental changes to database schema in a version-controlled way
C. To migrate data from SQL databases to NoSQL databases for better performance
D. To create daily backup copies of the database for disaster recovery purposes

Answer: B

Q780. How do background jobs differ from synchronous request handling?

A. Background jobs process tasks outside the request cycle without blocking it
B. Background jobs run on the client side while synchronous handlers run on server
C. Background jobs run immediately within the request cycle blocking the response
D. Background jobs only handle database operations and not any other task types

Answer: A

Q781. What is database normalization and why is it important?

A. It normalizes CSS values to consistent units across all stylesheet files
B. It organizes data to reduce redundancy and improve data integrity in tables
C. It converts all database text fields to normalized Unicode encoding formats
D. It equalizes query execution times so all queries run at the same speed

Answer: B

Q782. How do database indexes improve query performance?

A. They create visual index pages for the database administrator interface
B. They automatically optimize SQL queries by rewriting them more efficiently
C. They create data structures that allow the database to find rows faster
D. They compress database tables to reduce the overall storage requirements

Answer: C

Q783. What is the difference between INNER JOIN and LEFT JOIN?

A. INNER JOIN returns matching rows while LEFT JOIN includes unmatched left rows
B. INNER JOIN is faster but less accurate while LEFT JOIN is slower but precise
C. INNER JOIN returns all rows while LEFT JOIN returns only matching ones
D. INNER JOIN is for two tables while LEFT JOIN works with three or more tables

Answer: A

Q784. What is a database transaction and what properties does it have?

A. A financial transaction record stored in the database for accounting use
B. A scheduled task that runs database maintenance operations periodically
C. A log entry recording each time a user accesses the database connection
D. A unit of work with ACID properties ensuring reliability and consistency

Answer: D

Q785. How does connection pooling benefit database-driven web applications?

A. It distributes connections equally across all tables in the database schema
B. It pools multiple databases into a single virtual database for unified access
C. It creates a pool of pre-compiled SQL queries for faster execution speed
D. It maintains reusable connections reducing overhead of creating new ones each time

Answer: D

Q786. What is the purpose of database views?

A. To create virtual tables from queries for simplified data access and security
B. To display database tables in a graphical user interface for administrators
C. To store compressed backups of database tables for disaster recovery use
D. To provide real-time visualization charts of database performance metrics

Answer: A

Q787. What is the difference between SQL and NoSQL databases?

A. SQL databases are free while NoSQL databases always require paid commercial licenses
B. SQL uses structured schemas and tables while NoSQL uses flexible data models
C. SQL databases cannot scale while NoSQL databases scale infinitely with ease
D. SQL is only for small applications while NoSQL is only for enterprise projects

Answer: B

Q788. What is an ORM and how does it simplify database interaction?

A. It maps database tables to code objects enabling queries without raw SQL usage
B. It organizes REST methods into a standardized naming convention for APIs
C. It manages database backups by scheduling them at regular time intervals daily
D. It monitors database performance and reports optimization recommendations to devs

Answer: A

Q789. What is the purpose of stored procedures in SQL databases?

A. To save precompiled SQL code on the server for reuse and performance gains
B. To store JavaScript procedures that run in the browser before page loading
C. To store CSS procedures for server-side rendering of styled web page content
D. To archive old database records in compressed format for long-term storage

Answer: A

Q790. How does Redis differ from traditional relational databases?

A. Redis only supports read operations while relational databases support writes
B. Redis is an in-memory key-value store optimized for speed and caching needs
C. Redis requires strict schemas while relational databases are schema-flexible
D. Redis stores all data on disk while relational databases use in-memory only

Answer: B

Q791. How does CSRF attack work and how can it be prevented?

A. CSRF intercepts network traffic between client and server to modify data
B. CSRF brute-forces user passwords by trying common combinations repeatedly
C. CSRF exploits stored XSS to steal cookies from authenticated user sessions
D. CSRF tricks authenticated users into making unintended requests using tokens

Answer: D

Q792. What is SQL injection and how is it prevented?

A. SQL injection inserts malicious SQL through input fields prevented by parameterization
B. SQL injection overloads the database server with excessive query requests at once
C. SQL injection exploits weak passwords to gain direct database admin access rights
D. SQL injection inserts CSS into database queries to alter page styling output

Answer: A

Q793. What is the purpose of Content Security Policy headers?

A. To restrict which sources of content the browser is allowed to load safely
B. To define the content type of the HTTP response body sent to the client
C. To set the content encoding for compressing response data before transfer
D. To specify the content language for automatic translation of web page text

Answer: A

Q794. How does the SameSite cookie attribute improve security?

A. It encrypts cookie values so they cannot be read by client-side JavaScript
B. It forces cookies to expire after a single use preventing session replay attacks
C. It restricts cookies to same-site requests reducing CSRF attack vulnerability
D. It limits cookie storage to a maximum of one kilobyte for security purposes

Answer: C

Q795. What is the principle of least privilege in web security?

A. Giving administrators the highest level of access to all system resources
B. Providing equal access levels to all users regardless of their actual role
C. Granting only the minimum permissions necessary to perform required tasks
D. Restricting all users from accessing any system resources by default only

Answer: C

Q796. How does CORS work and why is it important?

A. CORS controls which origins can access resources preventing unauthorized access
B. CORS caches origin responses to reduce the number of server requests needed
C. CORS encrypts all cross-origin requests to protect data during transmission
D. CORS compresses resources to reduce bandwidth and improve page load speed

Answer: A

Q797. What is the purpose of input sanitization?

A. To clean user input by removing or escaping potentially harmful characters
B. To format input data for visually appealing display in the user interface
C. To validate that input matches a specific data type before database storage
D. To compress input data to reduce the payload size of form submission data

Answer: A

Q798. What is a brute force attack?

A. An attack that tries all possible combinations to guess passwords or keys
B. An attack that floods the server with traffic to make it unavailable to users
C. An attack that intercepts data in transit between the client and the server
D. An attack that exploits a known vulnerability in the server operating system

Answer: A

Q799. How does rate limiting help prevent security attacks?

A. It limits the size of HTTP response bodies to prevent data exfiltration attacks
B. It limits the CSS animation frame rate to prevent browser resource exhaustion
C. It restricts the number of database columns that can be queried simultaneously
D. It restricts request frequency from a single source to prevent abuse and attacks

Answer: D

Q800. What is the purpose of security headers like X-Frame-Options?

A. To specify the maximum number of iframes allowed on a single web page view
B. To set the visual frame and border styling for the web page layout design
C. To define the frame rate for CSS animations and JavaScript timer intervals
D. To prevent clickjacking by controlling whether a page can be framed by others

Answer: D

Q801. What are Core Web Vitals and why are they important?

A. They are Google metrics measuring loading, interactivity, and visual stability
B. They are CSS properties that control the visual appearance of web page text
C. They are server health metrics measuring CPU and memory usage of web servers
D. They are JavaScript functions that validate form data before submission occurs

Answer: A

Q802. How does code splitting improve web application performance?

A. It splits the database into multiple tables for faster query execution speed
B. It divides server code into microservices for independent deployment of each
C. It splits CSS into multiple files that load sequentially one after another
D. It breaks code into smaller chunks loaded on demand reducing initial bundle size

Answer: D

Q803. What is the critical rendering path?

A. The sequence of steps the browser takes to convert HTML, CSS, JS to pixels
B. The path data takes through the network from server to client browser device
C. The path a user follows through a website to complete a conversion goal task
D. The route HTTP requests take through load balancers to reach the origin server

Answer: A

Q804. How does tree shaking reduce bundle size?

A. It removes duplicate database records to reduce storage and query overhead
B. It prunes old log entries from the server to free up storage disk space use
C. It eliminates dead code and unused exports from the final JavaScript bundle
D. It removes unused CSS classes from stylesheets during the build compilation

Answer: C

Q805. What is the purpose of preloading and prefetching resources?

A. To load critical resources early or fetch future resources in idle time ahead
B. To download and install browser plugins required by the web page for function
C. To pre-validate form data on the server before the user submits the form
D. To preview web pages before navigating to them in the browser tab interface

Answer: A

Q806. How does HTTP caching work with Cache-Control headers?

A. Cache-Control headers define which HTTP methods are allowed for each resource
B. Cache-Control headers control the maximum number of concurrent HTTP connections
C. Cache-Control headers specify how and how long browsers and CDNs cache resources
D. Cache-Control headers encrypt cached data to prevent unauthorized access today

Answer: C

Q807. What is render-blocking and how can it be avoided?

A. Database locks that block writes avoided by using optimistic concurrency control patterns
B. Elements that block user scrolling avoided by removing fixed position CSS properties
C. Resources that block initial render avoided by async scripts and critical CSS inlining
D. Server processes that block response avoided by using asynchronous database queries

Answer: C

Q808. How does image format selection affect web performance?

A. SVG is the best format for photographs while JPEG is best for vector graphics use
B. PNG is always the smallest format and should be used for all web image content
C. Modern formats like WebP and AVIF offer better compression than JPEG and PNG today
D. All image formats perform identically with no difference in file size or quality

Answer: C

Q809. What is the purpose of a service worker for performance optimization?

A. To compile JavaScript code into machine code for faster execution on the client
B. To cache resources and serve them offline improving load times on repeat visits
C. To run CSS animations in a separate thread for smoother visual performance output
D. To distribute server workload across multiple threads for parallel request handling

Answer: B

Q810. How does DNS prefetching improve page load performance?

A. It caches the entire web page at the DNS level for instant loading on next visit
B. It compresses DNS queries to reduce the bandwidth used during name resolution
C. It prefetches all images on a page before the user scrolls down to view them
D. It resolves domain names to IP addresses early reducing DNS lookup latency overall

Answer: D

Q811. What is the difference between unit testing and end-to-end testing?

A. Unit tests are for backend code only while end-to-end tests are for frontend code only
B. Unit tests verify individual components while E2E tests verify complete user workflows
C. Unit tests run in production while end-to-end tests run only in development environments
D. Unit tests are automated while end-to-end tests can only be performed manually today

Answer: B

Q812. What is test-driven development and how does it work?

A. Tests are driven by user feedback collected through surveys after each deployment
B. Tests are written after the feature is complete to verify correctness of the code
C. Tests are written before the code and the code is written to make them pass first
D. Tests are automatically generated from documentation without developer involvement

Answer: C

Q813. What is mocking in testing and why is it useful?

A. Creating fake visual mockups of web page designs for client presentation review
B. Mocking the server response time to test how the frontend handles slow networks
C. Creating duplicate databases for testing queries without affecting production data
D. Replacing real dependencies with simulated objects for isolated unit testing work

Answer: D

Q814. How does code coverage measurement help in testing?

A. It calculates the physical storage space required to store all test result files
B. It counts the number of developers who have reviewed the code before deployment
C. It measures the percentage of code executed during tests identifying untested areas
D. It measures how much of the codebase is covered by documentation comments today

Answer: C

Q815. What is snapshot testing and when is it useful?

A. Recording network request snapshots for offline testing of API integrations work
B. Creating snapshots of database state before and after running migration scripts
C. Taking screenshots of web pages and comparing them manually for visual changes
D. Capturing component output and comparing against stored reference for regressions

Answer: D

Q816. What is the purpose of continuous integration in testing?

A. To continuously monitor production servers and restart them when tests fail today
B. To continuously integrate new CSS styles into the existing stylesheet files daily
C. To automatically run tests on every code change ensuring quality before merging
D. To integrate third-party testing tools into the development environment manually

Answer: C

Q817. How does Cypress differ from Selenium for web testing?

A. Cypress runs in the browser with native access while Selenium uses remote drivers
B. Cypress only supports unit testing while Selenium supports all types of testing
C. Cypress requires Python while Selenium only works with Java programming language
D. Cypress is a server-side testing tool while Selenium tests only client-side code

Answer: A

Q818. What is regression testing?

A. Testing new features that are being developed for the first time in the sprint
B. Reducing the number of test cases by removing redundant or obsolete ones today
C. Verifying that existing functionality still works after code changes are made
D. Testing the application by reverting to a previous version of the codebase

Answer: C

Q819. What is the testing pyramid and what does it recommend?

A. Many UI tests at top, fewer integration in middle, fewest unit tests at bottom
B. Only end-to-end tests are needed because they cover all lower levels automatically
C. Equal numbers of unit, integration, and end-to-end tests across all three levels
D. Many unit tests at the base, fewer integration in the middle, fewest E2E on top

Answer: D

Q820. What is the purpose of accessibility testing?

A. To verify that the website is usable by people with various disabilities needs
B. To verify that the website source code is accessible through view-source option
C. To test whether the website can be accessed from different geographic regions
D. To test how fast the website loads on different network connection speed levels

Answer: A

Q821. What is the difference between continuous integration and continuous deployment?

A. CI is for frontend code only while CD handles backend deployment pipeline exclusively
B. CI deploys code to production while CD runs tests and merges code into the main branch
C. CI requires manual approval while CD runs automatically without any human intervention
D. CI merges code and runs tests while CD automatically deploys passing code to production

Answer: D

Q822. What is a Docker container and how does it help deployment?

A. A CSS container element that wraps other elements for layout and styling purposes
B. A physical container that stores server hardware in a data center facility rack
C. A lightweight isolated environment that packages an app with all its dependencies
D. A database container that stores related tables together for organized data access

Answer: C

Q823. What is the purpose of a reverse proxy in deployment?

A. To reverse engineer the deployment process for rollback to a previous version
B. To sit before application servers handling load balancing, SSL, and caching tasks
C. To create a proxy copy of the production database for development testing use
D. To reverse the order of CSS rules applied to elements for specificity overrides

Answer: B

Q824. What is a deployment pipeline?

A. A pipeline that transfers database records from staging to production environments
B. A physical network cable that connects development machines to production servers
C. An automated process that builds, tests, and deploys code through defined stages
D. A logging pipeline that streams application logs to a monitoring dashboard view

Answer: C

Q825. How does blue-green deployment reduce downtime?

A. It colors the deployment logs blue for success and green for errors encountered
B. It deploys to both environments simultaneously and picks the faster one to serve
C. It maintains two identical environments switching traffic to reduce deployment risk
D. It uses blue and green colored servers to visually distinguish environments easily

Answer: C

Q826. What is infrastructure as code and why is it important?

A. Creating infrastructure diagrams using code for documentation purposes exclusively
B. Building physical server infrastructure using 3D printing from code specifications
C. Writing CSS that defines the visual infrastructure layout of web page elements used
D. Managing infrastructure through code files enabling version control and repeatability

Answer: D

Q827. What is the purpose of environment variables in deployment?

A. To define the physical environment like temperature where servers are housed today
B. To set environment-specific font sizes for development versus production display
C. To store configuration that varies between environments without code changes needed
D. To set CSS custom properties that change based on the user browser environment

Answer: C

Q828. What is a container registry?

A. A registry of physical shipping containers used for server hardware delivery tasks
B. A repository for storing and distributing container images like Docker Hub service
C. A system that registers new CSS container queries for responsive component design
D. A database that registers all running containers on a single host machine system

Answer: B

Q829. How does canary deployment work?

A. It uses canary-colored warning messages to alert users about upcoming changes ahead
B. It gradually rolls out changes to a small subset of users before full deployment
C. It deploys to a canary server that only team members can access for final testing
D. It deploys the entire application to all users simultaneously with no phased rollout

Answer: B

Q830. What is the purpose of health checks in deployed applications?

A. To monitor the physical health of server hardware like CPU temperature and disk state
B. To verify that application components are running correctly and able to serve traffic
C. To check the health of developers working on the application project regularly
D. To validate that HTML passes W3C health standards for accessibility compliance test

Answer: B

Q831. What is the difference between PUT and PATCH HTTP methods?

A. PUT is idempotent while PATCH is not and cannot be safely retried on failure
B. PUT replaces the entire resource while PATCH partially updates specific fields
C. PUT creates a new resource while PATCH deletes an existing resource from server
D. PUT is for files only while PATCH works with JSON data responses exclusively

Answer: B

Q832. How does API versioning help maintain backward compatibility?

A. It tracks how many times each API endpoint has been called for billing usage
B. It creates version backups of the API database for disaster recovery purposes
C. It allows multiple API versions to coexist so old clients continue to function
D. It versions the CSS stylesheets used in API documentation pages for consistency

Answer: C

Q833. What is the purpose of API rate limiting?

A. To restrict API responses to a fixed number of records per database query
B. To control request frequency preventing abuse and ensuring fair resource usage
C. To limit the number of API endpoints that can be created in a single project
D. To limit the CSS animation frame rate for API loading spinner components

Answer: B

Q834. How does pagination work in REST APIs?

A. It splits API request payloads across multiple HTTP connections for parallelism
B. It creates separate HTML pages for each API response sent to the client browser
C. It automatically paginates database tables into fixed-size partitions for storage
D. It returns data in smaller chunks using offset, limit, or cursor-based approaches

Answer: D

Q835. What is the purpose of API documentation tools like Swagger?

A. To automatically generate CSS styles for API response rendering in browsers
B. To provide interactive documentation for exploring and testing API endpoints
C. To generate client-side JavaScript code from server-side API handler functions
D. To create database documentation from SQL schema definitions automatically

Answer: B

Q836. How do WebSockets differ from REST APIs for real-time communication?

A. WebSockets require API keys while REST APIs use session cookies for authentication
B. WebSockets only support text data while REST APIs support all content type formats
C. WebSockets maintain persistent bidirectional connections unlike REST request-response
D. WebSockets use HTTP request-response while REST uses persistent connections only

Answer: C

Q837. What is the purpose of HATEOAS in REST API design?

A. To hash API tokens using advanced encryption standards for security purposes
B. To include hypermedia links in responses enabling clients to discover actions
C. To hate on APIs that don't follow REST principles by logging warning messages
D. To handle asynchronous task execution and observe API server health metrics

Answer: B

Q838. What is an API gateway and what functions does it serve?

A. A single entry point that handles routing, authentication, and rate limiting tasks
B. A tool that generates API code from visual gateway diagrams designed by teams
C. A physical gateway device that connects API servers to the internet backbone
D. A database gateway that translates API calls into SQL queries automatically used

Answer: A

Q839. How does OAuth 2.0 work for API authorization?

A. It requires users to share their passwords directly with third-party applications
B. It delegates authorization using access tokens without sharing user credentials
C. It only works for social media APIs and cannot be used for other API services
D. It encrypts all API responses using a shared secret key between both parties

Answer: B

Q840. What is the purpose of idempotency in API design?

A. To ensure that making the same request multiple times produces the same result
B. To identify duplicate API endpoints and remove them from the server routing table
C. To verify that API request parameters match the expected data types precisely
D. To ensure API responses always contain identical formatting and structure layout

Answer: A

Q841. How does server-side rendering differ from static site generation?

A. SSR generates static files while SSG renders pages dynamically per request
B. SSR only works with React while SSG works with all frontend frameworks used
C. SSR and SSG are identical concepts with no practical differences between them
D. SSR renders pages on each request while SSG pre-builds pages at build time

Answer: D

Q842. What is the purpose of a build tool like Vite or Webpack?

A. To bundle, transform, and optimize source code for production deployment use
B. To build physical server infrastructure from configuration code specifications
C. To build database schemas from visual entity relationship diagram models only
D. To construct CSS layouts from wireframe sketches using AI image recognition

Answer: A

Q843. What is the purpose of feature flags in modern web development?

A. To add visual flag icons to features that are new or recently updated for users
B. To mark CSS features that are not supported in older browsers for fallback use
C. To enable or disable features dynamically without deploying new code versions
D. To flag code that contains bugs for prioritized fixing by the development team

Answer: C

Q844. How does edge computing benefit modern web applications?

A. It sharpens the visual edges of images displayed on the web page for clarity
B. It caches database queries at the edge of the database cluster for faster reads
C. It processes requests at network edge locations closer to users reducing latency
D. It adds decorative edge borders to web page components for visual enhancement

Answer: C

Q845. What is the purpose of a design token in design systems?

A. A physical token given to designers to access the design tool application suite
B. A database token that authorizes access to the design system API documentation
C. A cryptocurrency token used to purchase premium design assets and templates
D. A named value storing design decisions like colors and spacing for consistency

Answer: D

Q846. How do monorepos benefit large-scale web development teams?

A. They automatically generate documentation for all projects in the repository
B. They force all projects to use the same programming language and framework only
C. They enable code sharing, atomic changes, and unified tooling across projects
D. They eliminate the need for any version control branching strategies entirely

Answer: C

Q847. What is the difference between a library and a framework?

A. Libraries are free and open source while frameworks always require paid licenses
B. A library is larger than a framework and includes more features out of the box
C. A library is called by your code while a framework calls your code via inversion
D. Libraries only work in browsers while frameworks work on both server and client

Answer: C

Q848. What is the purpose of a CI/CD pipeline in modern web development?

A. To create interactive and creative designs for web page user interface layouts
B. To continuously inspect and clean database records for data quality maintenance
C. To continuously integrate CSS changes with HTML changes for consistent styling
D. To automate building, testing, and deploying code changes reliably and quickly

Answer: D

Q849. How does incremental static regeneration work?

A. It regenerates static pages in the background after a revalidation period expires
B. It incrementally adds new CSS styles to static pages without rebuilding them all
C. It regenerates all static pages from scratch on every single user request received
D. It generates static pages incrementally one at a time during the build process

Answer: A

Q850. What is the purpose of a component library like Shadcn or Material UI?

A. To store compiled JavaScript components in a shared library for runtime loading
B. To create a library catalog of all API endpoints for developer documentation use
C. To provide pre-built accessible UI components for consistent application styling
D. To compile custom HTML elements into web components for cross-framework sharing

Answer: C

Q851. What is the role of a web framework in development?

A. It replaces the need for HTML entirely
B. It provides pre-built tools and structure to speed up development
C. It is only used for mobile app development
D. It manages internet service provider connections

Answer: B

Q852. What is the purpose of developer tools in modern browsers?

A. To create new websites automatically
B. To inspect, debug, and profile web pages in real time
C. To replace the need for a code editor
D. To manage web hosting accounts

Answer: B

Q853. What is a web application compared to a traditional website?

A. A web application is always built with Python
B. A web application provides interactive functionality beyond static content
C. A web application cannot use HTML
D. A web application runs without a browser

Answer: B

Q854. What is the MEAN stack?

A. MongoDB, Express, Angular, Node.js
B. MySQL, Ember, Apache, Nginx
C. Markdown, ESLint, AWS, Netlify
D. MongoDB, Electron, Ansible, NPM

Answer: A

Q855. What is cross-browser compatibility?

A. A tool for compressing images
B. Ensuring a website works correctly across different web browsers
C. A method for encrypting web traffic
D. A framework for building mobile apps

Answer: B

Q856. What is the purpose of a favicon on a website?

A. To improve server performance
B. To display a small icon in the browser tab representing the site
C. To encrypt user data
D. To validate form inputs

Answer: B

Q857. What does the term 'deployment' mean in web development?

A. Writing the initial HTML code
B. Making a website available on a live server for public access
C. Installing a text editor
D. Creating a database backup

Answer: B

Q858. What is a progressive web application?

A. A desktop-only application
B. A web app that uses modern APIs to deliver native-like experiences
C. A website that only works in Chrome
D. A server-side rendering technique

Answer: B

Q859. What is the purpose of semantic versioning in web projects?

A. To style web pages
B. To communicate the nature of changes in software releases using major.minor.patch format
C. To compress JavaScript files
D. To manage DNS records

Answer: B

Q860. What is the difference between a library and a framework in web development?

A. They are identical concepts
B. A library provides specific functions you call, while a framework controls the overall flow of your application
C. A framework is always smaller than a library
D. Libraries only work on the server side

Answer: B

Q861. What is the purpose of a load balancer in web architecture?

A. To compress images on the server
B. To distribute incoming network traffic across multiple servers
C. To write JavaScript code
D. To manage DNS records

Answer: B

Q862. What is the difference between a forward proxy and a reverse proxy?

A. They are the same thing
B. A forward proxy acts on behalf of clients while a reverse proxy acts on behalf of servers
C. Forward proxies are faster
D. Reverse proxies are only used for caching

Answer: B

Q863. What is the role of caching in web architecture?

A. To permanently delete old data
B. To store frequently accessed data closer to the user to reduce latency and server load
C. To encrypt data in transit
D. To create new database tables

Answer: B

Q864. What is the role of DNS in web architecture?

A. To style web pages
B. To translate human-readable domain names into IP addresses that computers use to locate servers
C. To compress HTTP responses
D. To manage database connections

Answer: B

Q865. What is the purpose of the HTTP PATCH method?

A. To delete a resource entirely
B. To retrieve all resources
C. To apply partial modifications to a resource
D. To create a new resource from scratch

Answer: C

Q866. What is a content delivery network (CDN)?

A. A tool for writing HTML code
B. A geographically distributed network of servers that delivers content from the nearest location to the user
C. A type of programming language
D. A database management system

Answer: B

Q867. What is the difference between synchronous and asynchronous communication in web architecture?

A. They are identical approaches
B. Synchronous blocks until a response is received while asynchronous allows other operations to continue
C. Synchronous is always faster
D. Asynchronous cannot be used with HTTP

Answer: B

Q868. What does a status code in the 2xx range indicate?

A. Client error
B. Server error
C. Successful request
D. Redirect

Answer: C

Q869. What is the role of an API gateway in a distributed system?

A. To store static files
B. To act as a single entry point that routes requests to appropriate backend services
C. To write CSS styles
D. To manage version control

Answer: B

Q870. What is the purpose of the HTTP Cache-Control header?

A. To define the page title
B. To specify caching directives for both requests and responses
C. To set the content language
D. To redirect users to a different page

Answer: B

Q871. What is the difference between the <section> and <article> elements?

A. They are identical elements
B. A section groups related content while an article represents self-contained, independently distributable content
C. Section is for navigation only
D. Article cannot contain headings

Answer: B

Q872. What is the purpose of the autocomplete attribute on form inputs?

A. To validate the input value
B. To allow browsers to suggest previously entered values for the field
C. To make the input read-only
D. To add placeholder text

Answer: B

Q873. What does the <datalist> element do in HTML5?

A. Creates a data table
B. Provides a predefined list of suggestions for an input element
C. Defines a database connection
D. Generates a numbered list

Answer: B

Q874. What is the difference between the <script> tag placed in <head> versus at the end of <body>?

A. There is no difference
B. Scripts in <head> may block HTML parsing while scripts before </body> allow the page to render first
C. Scripts in <head> execute slower
D. Scripts in <body> cannot access the DOM

Answer: B

Q875. What is the purpose of the <main> element in HTML5?

A. To create a sidebar
B. To represent the dominant content of the body, unique to the document
C. To define a footer
D. To embed external content

Answer: B

Q876. What does the pattern attribute do on an input element?

A. It sets the input's visual style
B. It specifies a regular expression that the input value must match for validation
C. It creates a placeholder text
D. It disables the input field

Answer: B

Q877. What is the difference between the <link> and <a> tags?

A. They are interchangeable
B. <link> defines relationships between the document and external resources while <a> creates clickable hyperlinks
C. <link> is used for images
D. <a> is only for email links

Answer: B

Q878. What is the role of the <noscript> element in HTML?

A. To remove JavaScript from the page
B. To provide alternative content for users whose browsers do not support or have disabled JavaScript
C. To add comments to code
D. To optimize images

Answer: B

Q879. What does the loading attribute on images and iframes control?

A. The image resolution
B. Whether the resource is loaded immediately or deferred until it nears the viewport
C. The image format
D. The image border style

Answer: B

Q880. What is the purpose of the <output> element in HTML5 forms?

A. To create a text input
B. To display the result of a calculation or user action
C. To submit the form
D. To define form labels

Answer: B

Q881. What is the difference between relative and absolute units in CSS?

A. There is no difference
B. Relative units like em and % scale based on context while absolute units like px have a fixed size
C. Absolute units are always larger
D. Relative units only work in flexbox

Answer: B

Q882. What does the position: fixed property do?

A. Positions the element relative to its parent
B. Positions the element relative to the browser viewport, staying in place during scrolling
C. Removes the element from the document flow
D. Makes the element invisible

Answer: B

Q883. What is the purpose of the CSS opacity property?

A. To set the element's border width
B. To control the transparency level of an element
C. To change the font weight
D. To set the z-index

Answer: B

Q884. How does the CSS cascade determine which styles are applied?

A. Styles are applied randomly
B. Styles are resolved based on specificity, source order, and importance
C. Only the last stylesheet wins
D. Only inline styles are applied

Answer: B

Q885. What does the text-decoration property control?

A. The font size of text
B. Decorative lines on text such as underline, overline, or line-through
C. The text alignment
D. The letter spacing

Answer: B

Q886. What is the purpose of the CSS transform property?

A. To change an element's color
B. To apply 2D or 3D transformations like rotate, scale, skew, or translate to an element
C. To set the element's position
D. To add a border

Answer: B

Q887. What is the difference between position: sticky and position: fixed?

A. They behave identically
B. Sticky toggles between relative and fixed based on scroll position while fixed always stays relative to the viewport
C. Sticky only works on images
D. Fixed does not work in modern browsers

Answer: B

Q888. What does the CSS line-height property control?

A. The width of a line
B. The vertical space between lines of text
C. The number of lines visible
D. The horizontal spacing of characters

Answer: B

Q889. How do CSS pseudo-elements like ::before and ::after work?

A. They create new HTML elements in the DOM
B. They insert generated content before or after an element's actual content using CSS alone
C. They modify JavaScript events
D. They add attributes to HTML tags

Answer: B

Q890. What is the purpose of the CSS outline property?

A. To set the background color
B. To draw a line outside the element's border without affecting layout
C. To add inner padding
D. To change the font style

Answer: B

Q891. What is the difference between align-items and align-content in Flexbox?

A. They are identical properties
B. align-items aligns items within each line while align-content aligns the lines themselves within the container
C. align-items only works horizontally
D. align-content is deprecated

Answer: B

Q892. How does the CSS grid auto-placement algorithm work?

A. Items are always placed manually
B. The browser automatically places grid items in the next available cell following row or column order
C. Items are placed randomly
D. Auto-placement only works with flexbox

Answer: B

Q893. What does the CSS will-change property do?

A. Forces an immediate style change
B. Hints to the browser about which properties will change, allowing it to optimize rendering in advance
C. Changes the element's content
D. Prevents any style changes

Answer: B

Q894. How does the CSS repeat() function work in Grid layouts?

A. It repeats the entire grid layout
B. It repeats a track pattern a specified number of times, simplifying grid-template definitions
C. It creates animation loops
D. It duplicates HTML elements

Answer: B

Q895. What is the difference between a CSS transition and a CSS animation?

A. They are the same thing
B. Transitions require a trigger and animate between two states while animations can run independently with multiple keyframes
C. Transitions are more complex
D. Animations cannot loop

Answer: B

Q896. What does the CSS filter property allow?

A. Filtering HTML elements from the DOM
B. Applying visual effects like blur, brightness, contrast, and grayscale to elements
C. Filtering network requests
D. Sorting CSS selectors

Answer: B

Q897. How does the CSS place-items shorthand work?

A. It positions items using absolute coordinates
B. It sets both align-items and justify-items in a single declaration
C. It creates new grid items
D. It removes items from the layout

Answer: B

Q898. What is the purpose of the CSS shape-outside property?

A. To clip an element's visible area
B. To define a shape around which inline content wraps
C. To create border radius
D. To define grid areas

Answer: B

Q899. What does the CSS writing-mode property control?

A. The font family
B. Whether text flows horizontally or vertically and the direction of block flow
C. The text color
D. The font size

Answer: B

Q900. How does the CSS backdrop-filter property differ from filter?

A. They are identical
B. backdrop-filter applies effects to the area behind the element while filter applies effects to the element itself
C. backdrop-filter only works on images
D. filter is deprecated

Answer: B

Q901. What is the difference between a function declaration and a function expression?

A. They are identical
B. Function declarations are hoisted and can be called before their definition while function expressions are not hoisted
C. Function expressions are faster
D. Function declarations cannot accept parameters

Answer: B

Q902. What does the filter() method do on an array?

A. Sorts the array elements
B. Creates a new array with elements that pass a test provided by a callback function
C. Removes all elements
D. Reverses the array order

Answer: B

Q903. What is scope in JavaScript?

A. The visual appearance of code
B. The region of code where a variable is accessible and can be referenced
C. The speed at which code executes
D. The number of lines in a file

Answer: B

Q904. What is the purpose of the reduce() method on arrays?

A. To reduce the array's length by one
B. To execute a reducer function on each element, accumulating a single result value
C. To delete duplicate elements
D. To sort elements in descending order

Answer: B

Q905. What is type coercion in JavaScript?

A. Manually changing a variable's type
B. The automatic conversion of values from one type to another during operations
C. A method for creating new data types
D. A way to validate form inputs

Answer: B

Q906. What is the difference between the forEach() and map() array methods?

A. They are identical
B. forEach() executes a function on each element without returning a new array while map() returns a new array of transformed elements
C. forEach() is faster
D. map() modifies the original array

Answer: B

Q907. What is the switch statement used for in JavaScript?

A. Declaring variables
B. Evaluating an expression against multiple case values and executing the matching block
C. Creating loops
D. Defining functions

Answer: B

Q908. What is the purpose of the Object.keys() method?

A. To lock an object's properties
B. To return an array of an object's own enumerable property names
C. To delete all properties from an object
D. To merge two objects together

Answer: B

Q909. What does the concat() method do with arrays?

A. Removes elements from an array
B. Merges two or more arrays into a new array without modifying the originals
C. Sorts the array
D. Finds a specific element

Answer: B

Q910. What is short-circuit evaluation in JavaScript?

A. A way to speed up code execution
B. When logical operators stop evaluating as soon as the result is determined
C. A method for handling errors
D. A type of loop optimization

Answer: B

Q911. What is the purpose of the async iterator protocol in JavaScript?

A. To iterate over synchronous arrays faster
B. To enable asynchronous iteration with for-await-of loops over data that arrives over time
C. To create CSS animations
D. To manage database cursors

Answer: B

Q912. What is the difference between a shallow copy and a deep copy in JavaScript?

A. They are the same operation
B. A shallow copy copies only top-level properties while a deep copy recursively copies all nested objects
C. Shallow copies are always faster
D. Deep copies only work with arrays

Answer: B

Q913. How does the nullish coalescing assignment operator (??=) work?

A. It always assigns the right-hand value
B. It assigns the right-hand value only if the left-hand variable is null or undefined
C. It checks for falsy values
D. It throws an error if the variable is null

Answer: B

Q914. What is the purpose of the queueMicrotask() function?

A. To create a new thread
B. To schedule a callback to run as a microtask, executing before the next macrotask
C. To queue network requests
D. To manage CSS transitions

Answer: B

Q915. What is the purpose of the Promise.race() method?

A. To run promises sequentially
B. To return a promise that resolves or rejects as soon as the first promise in the iterable settles
C. To cancel all pending promises
D. To merge promise results

Answer: B

Q916. How do private class fields declared with # differ from underscore convention?

A. They are the same approach
B. Private fields with # are truly inaccessible from outside the class while underscore is just a naming convention
C. Underscore fields are more private
D. Hash fields are slower

Answer: B

Q917. What is the purpose of the globalThis object?

A. To create global CSS styles
B. To provide a standard way to access the global object across different JavaScript environments
C. To manage global state in React
D. To define global HTML templates

Answer: B

Q918. What does the Promise.any() method do?

A. Waits for all promises to reject
B. Returns a promise that resolves with the first fulfilled promise, ignoring rejections unless all reject
C. Cancels all promises
D. Returns all results in order

Answer: B

Q919. What is the purpose of the structuredClone() function?

A. To clone HTML elements
B. To create a deep copy of a value using the structured clone algorithm, supporting complex types like Map, Set, and Date
C. To clone CSS styles
D. To duplicate event listeners

Answer: B

Q920. What is optional chaining (?.) and how does it prevent errors?

A. It creates optional function parameters
B. It safely accesses nested properties by returning undefined instead of throwing an error if a reference is nullish
C. It chains CSS selectors
D. It makes all variables optional

Answer: B

Q921. What is the difference between client-side and server-side state management?

A. They are identical
B. Client-side state is managed in the browser while server-side state persists data across sessions and users on the server
C. Client-side state is always faster
D. Server-side state cannot use databases

Answer: B

Q922. How does the virtual DOM optimization work in React?

A. It replaces the real DOM entirely
B. React compares a virtual representation with the previous version and applies only the minimal necessary changes to the real DOM
C. It creates a copy of the CSS styles
D. It preloads all images

Answer: B

Q923. What is the purpose of the useRef hook in React?

A. To manage CSS references
B. To hold a mutable reference that persists across renders without causing re-renders when changed
C. To create database references
D. To reference external APIs

Answer: B

Q924. What is the Composition API in Vue 3 and how does it improve code organization?

A. It creates CSS compositions
B. It allows grouping related logic by concern using composable functions instead of scattering it across options
C. It composes database queries
D. It manages file compositions

Answer: B

Q925. What is the purpose of code splitting in frontend frameworks?

A. To split CSS files
B. To break application code into smaller bundles loaded on demand, improving initial load performance
C. To split database tables
D. To divide server instances

Answer: B

Q926. What are React context and when should it be used?

A. A CSS context property
B. A way to pass data through the component tree without prop drilling, best for infrequently changing global data
C. A database context manager
D. A server execution context

Answer: B

Q927. How does Angular's template-driven forms approach differ from reactive forms?

A. They are identical approaches
B. Template-driven forms use directives in templates for simple forms while reactive forms use programmatic control for complex validation
C. Template-driven forms are always better
D. Reactive forms cannot validate input

Answer: B

Q928. What is the purpose of error boundaries in React?

A. To create CSS borders
B. To catch JavaScript errors in child components and display fallback UI instead of crashing the whole application
C. To handle network errors
D. To manage database errors

Answer: B

Q929. What is hydration in the context of server-side rendered applications?

A. Adding water effects to the UI
B. The process of attaching event handlers and state to server-rendered HTML on the client side
C. Compressing server responses
D. Loading CSS stylesheets

Answer: B

Q930. What is the difference between static site generation (SSG) and server-side rendering (SSR)?

A. They are identical
B. SSG generates HTML at build time while SSR generates HTML on each request at runtime
C. SSG requires more server resources
D. SSR cannot use caching

Answer: B

Q931. What is the purpose of input validation on the backend?

A. To style form elements
B. To ensure incoming data meets expected formats and constraints, preventing malicious or invalid data from being processed
C. To create HTML forms
D. To manage CSS classes

Answer: B

Q932. How do JWT tokens work for stateless authentication?

A. They store session data on the server
B. They encode user claims into a signed token that the server validates without storing session state
C. They replace passwords entirely
D. They only work with SQL databases

Answer: B

Q933. How does middleware chaining work in Express.js?

A. Middleware functions run in parallel
B. Each middleware calls next() to pass control to the next function in the chain, allowing sequential processing of requests
C. Middleware replaces routing
D. Middleware only works with databases

Answer: B

Q934. What is rate limiting in backend applications?

A. Limiting CSS animations
B. Restricting the number of requests a client can make within a time period to prevent abuse
C. Limiting database size
D. Restricting the number of HTML elements

Answer: B

Q935. What is the purpose of pagination in API responses?

A. To style page numbers
B. To divide large result sets into smaller pages, reducing response size and improving performance
C. To create PDF documents
D. To manage page routing

Answer: B

Q936. What is the difference between a relational and a document database?

A. They store data identically
B. Relational databases use structured tables with schemas while document databases store flexible JSON-like documents
C. Relational databases are always faster
D. Document databases cannot be queried

Answer: B

Q937. What is the purpose of hashing passwords before storing them?

A. To make passwords shorter
B. To convert passwords into irreversible fixed-length strings so the original password cannot be recovered if the database is compromised
C. To encrypt database connections
D. To compress storage space

Answer: B

Q938. What is the purpose of CORS middleware in a backend application?

A. To compress responses
B. To configure which origins, methods, and headers are allowed for cross-origin requests to the API
C. To create database connections
D. To manage server logging

Answer: B

Q939. What is the purpose of database seeding?

A. To delete all data
B. To populate a database with initial or test data for development or testing purposes
C. To encrypt database records
D. To compress database tables

Answer: B

Q940. What is the difference between structured and unstructured logging in backend systems?

A. They are the same approach
B. Structured logging outputs logs as parseable data formats like JSON while unstructured logging outputs freeform text
C. Structured logging is slower
D. Unstructured logging is more searchable

Answer: B

Q941. What is the purpose of request body parsing in server-side applications?

A. To parse CSS files
B. To extract and convert data from the HTTP request body into a usable format like JSON or form data
C. To parse HTML templates
D. To parse database queries

Answer: B

Q942. How do server-side sessions maintain user state across requests?

A. They store all data in the URL
B. They store a session ID in a cookie and keep session data on the server, associating requests with stored state
C. They modify HTML files
D. They use CSS custom properties

Answer: B

Q943. What is the difference between a web server and an application server?

A. They are identical
B. A web server handles static content and HTTP while an application server executes business logic and dynamic content
C. Web servers are faster
D. Application servers cannot serve HTML

Answer: B

Q944. What is the purpose of request rate limiting middleware?

A. To limit CSS rendering speed
B. To restrict the number of requests per client within a time window to prevent abuse and protect server resources
C. To limit database query speed
D. To slow down page rendering

Answer: B

Q945. How does server-side caching reduce database load?

A. It deletes old database records
B. It stores frequently accessed data in memory so repeated requests are served from cache instead of querying the database
C. It compresses database files
D. It indexes all database columns

Answer: B

Q946. How do background job processors like BullMQ work in Node.js applications?

A. They replace all server routing
B. They use Redis-backed queues to offload time-consuming tasks to separate worker processes for asynchronous execution
C. They only process CSS files
D. They replace database queries

Answer: B

Q947. What is the difference between cookie-based and token-based authentication?

A. They are identical
B. Cookie-based auth stores session IDs in cookies managed by the browser while token-based auth sends tokens in request headers
C. Cookie-based is always more secure
D. Token-based cannot expire

Answer: B

Q948. What is the purpose of webhook endpoints in server-side applications?

A. To create CSS hooks
B. To receive real-time event notifications from external services via HTTP POST requests
C. To hook into database events
D. To manage JavaScript event listeners

Answer: B

Q949. What is the purpose of file upload handling in server-side applications?

A. To upload CSS files
B. To process multipart form data containing files, validating and storing them securely
C. To upload database backups
D. To transfer HTML templates

Answer: B

Q950. What is the role of an ORM like Prisma or Sequelize in server-side Node.js applications?

A. To render CSS on the server
B. To provide a type-safe API for database operations, mapping database tables to JavaScript objects
C. To manage HTTP routing
D. To compress server responses

Answer: B

Q951. What is the purpose of database indexing and when should indexes be used?

A. Indexes slow down all queries
B. Indexes create data structures that speed up read queries on specific columns but add overhead to write operations
C. Indexes replace primary keys
D. Indexes only work with MongoDB

Answer: B

Q952. What is database normalization and what problem does it solve?

A. It normalizes CSS values
B. It organizes data to minimize redundancy and dependency by dividing large tables into related smaller tables
C. It normalizes JSON formatting
D. It standardizes SQL syntax

Answer: B

Q953. What is the difference between a LEFT JOIN and a RIGHT JOIN?

A. They return the same results
B. LEFT JOIN returns all rows from the left table with matching right rows, while RIGHT JOIN returns all rows from the right table
C. LEFT JOIN is faster
D. RIGHT JOIN is deprecated

Answer: B

Q954. What are ACID properties in database transactions?

A. A type of database query
B. Atomicity, Consistency, Isolation, and Durability - guarantees that ensure reliable transaction processing
C. A chemical database property
D. A MongoDB-specific feature

Answer: B

Q955. What is the purpose of a composite index in databases?

A. To compose CSS styles
B. To index multiple columns together, optimizing queries that filter or sort by those columns in combination
C. To compose database schemas
D. To combine multiple databases

Answer: B

Q956. What is the difference between HAVING and WHERE in SQL?

A. They are interchangeable
B. WHERE filters rows before grouping while HAVING filters groups after aggregation with GROUP BY
C. HAVING is faster
D. WHERE works with aggregate functions

Answer: B

Q957. What is a database trigger?

A. A CSS event
B. A stored procedure that automatically executes when a specified event occurs in the database such as INSERT, UPDATE, or DELETE
C. A JavaScript event listener
D. An HTML form trigger

Answer: B

Q958. What is the purpose of database connection string parameters like pool size?

A. To set CSS pool values
B. To configure how many simultaneous connections the application maintains to the database
C. To define HTML element pools
D. To set JavaScript thread pool size

Answer: B

Q959. What is a subquery in SQL?

A. A CSS sub-selector
B. A query nested inside another query that provides results used by the outer query
C. A sub-database
D. A JavaScript sub-function

Answer: B

Q960. How do database views simplify complex data access?

A. They replace all tables
B. They create reusable virtual tables from stored queries, providing abstraction over complex joins and restricting column visibility
C. They only work with MongoDB
D. They delete unused data

Answer: B

Q961. What is the purpose of the Secure flag on cookies?

A. To secure CSS styles
B. To ensure the cookie is only sent over encrypted HTTPS connections, preventing interception on unencrypted channels
C. To make cookies larger
D. To speed up cookie transmission

Answer: B

Q962. How does parameterized queries prevent SQL injection?

A. They encrypt SQL statements
B. They separate SQL logic from user data, ensuring user input is treated as data rather than executable SQL code
C. They make queries faster
D. They compress query results

Answer: B

Q963. What is the purpose of the X-Content-Type-Options header?

A. To set the page content type
B. To prevent browsers from MIME-type sniffing responses away from the declared content type
C. To compress content
D. To encrypt content

Answer: B

Q964. What is a cross-site scripting (XSS) stored attack?

A. A CSS storage technique
B. An attack where malicious scripts are permanently stored on the server and served to users who view the affected content
C. A JavaScript storage method
D. A database optimization

Answer: B

Q965. What is the purpose of multi-factor authentication (MFA)?

A. To make login faster
B. To require multiple forms of verification, making unauthorized access significantly harder even if one factor is compromised
C. To style login pages
D. To manage multiple user accounts

Answer: B

Q966. What is the purpose of encoding user output in web applications?

A. To compress HTML
B. To convert special characters to their safe HTML entities, preventing injected scripts from executing in the browser
C. To encode CSS styles
D. To compress JavaScript

Answer: B

Q967. What is session fixation and how is it prevented?

A. Fixing CSS session styles
B. An attack where an attacker sets a user's session ID before login; prevented by regenerating the session ID after authentication
C. A database session repair
D. A JavaScript debugging technique

Answer: B

Q968. What is the purpose of the Referrer-Policy header?

A. To set CSS referrer styles
B. To control how much referrer information is included when navigating from the site, protecting user privacy
C. To manage database references
D. To speed up page loads

Answer: B

Q969. What is clickjacking and how is it prevented?

A. A CSS clicking animation
B. An attack that tricks users into clicking hidden elements by overlaying transparent frames; prevented with X-Frame-Options or CSP frame-ancestors
C. A JavaScript click handler
D. A database click tracking method

Answer: B

Q970. What is the principle of defense in depth?

A. A CSS depth property
B. Implementing multiple layers of security controls so that if one layer fails, others still protect the system
C. A JavaScript nesting technique
D. A database depth indexing method

Answer: B

Q971. What is the purpose of the font-display CSS property for performance?

A. To set the font size
B. To control how custom fonts are displayed during loading, reducing invisible text periods
C. To display font metadata
D. To create font animations

Answer: B

Q972. How does HTTP/2 multiplexing improve web performance?

A. It makes HTTP slower
B. It allows multiple requests and responses to be sent simultaneously over a single connection, eliminating head-of-line blocking
C. It replaces HTTPS
D. It compresses all images

Answer: B

Q973. What is the purpose of critical CSS?

A. CSS that is hard to write
B. Inlining the CSS needed for above-the-fold content to eliminate render-blocking stylesheet downloads
C. Critical CSS errors
D. CSS for error pages

Answer: B

Q974. What is the Time to First Byte (TTFB) metric?

A. Time to write the first line of code
B. The time between the browser requesting a page and receiving the first byte of the response from the server
C. The time to display the first pixel
D. The time to first user click

Answer: B

Q975. How does image lazy loading improve performance?

A. It makes images load in higher quality
B. It defers loading of off-screen images until the user scrolls near them, reducing initial page load time
C. It compresses images automatically
D. It converts all images to SVG

Answer: B

Q976. What is the purpose of preconnect resource hint?

A. To preconnect CSS styles
B. To establish early connections (DNS, TCP, TLS) to important third-party domains before they are needed
C. To connect database pools
D. To preconnect JavaScript modules

Answer: B

Q977. What is the Cumulative Layout Shift (CLS) metric and why is it important?

A. A CSS shift property
B. A Core Web Vital measuring unexpected layout shifts that disrupt user experience during page load
C. A JavaScript shift operation
D. A server shift metric

Answer: B

Q978. How does bundling JavaScript files improve performance?

A. It makes files larger
B. It combines multiple files into fewer bundles, reducing the number of HTTP requests needed
C. It encrypts JavaScript
D. It compresses the server

Answer: B

Q979. What is the purpose of the Largest Contentful Paint (LCP) metric?

A. To measure the largest CSS file
B. To measure the time until the largest visible content element is fully rendered, indicating perceived load speed
C. To measure the largest JavaScript file
D. To measure database size

Answer: B

Q980. What is the purpose of using a service worker for caching?

A. To style web pages
B. To intercept network requests and serve cached responses, enabling offline access and faster repeat visits
C. To manage CSS workers
D. To create database workers

Answer: B

Q981. What is the purpose of a mock in testing?

A. To mock CSS styles
B. To simulate the behavior of real objects or functions, isolating the code under test from its dependencies
C. To mock HTML elements
D. To mock database tables

Answer: B

Q982. What is the difference between a spy and a mock in testing?

A. They are identical concepts
B. A spy observes and records calls to a real function while a mock replaces the function entirely with controlled behavior
C. Spies are faster
D. Mocks are deprecated

Answer: B

Q983. What is code coverage and what are its limitations?

A. It measures CSS coverage
B. It measures the percentage of code executed by tests, but high coverage does not guarantee all edge cases or logic paths are properly tested
C. It measures database coverage
D. It has no limitations

Answer: B

Q984. How does snapshot testing work and when is it most useful?

A. It takes screenshots of the browser
B. It serializes output to a file and compares future runs against it, most useful for detecting unintended changes in UI components
C. It creates database snapshots
D. It only works with React

Answer: B

Q985. What is the purpose of test fixtures?

A. To fix broken CSS
B. To set up known test data and state before tests run, ensuring consistent and repeatable test conditions
C. To fix HTML errors
D. To fix database bugs

Answer: B

Q986. What is the difference between Cypress and Playwright for end-to-end testing?

A. They are identical tools
B. Cypress runs tests in-browser with automatic waiting while Playwright supports multiple browsers and runs outside the browser with better parallel execution
C. Cypress is always faster
D. Playwright only supports Chrome

Answer: B

Q987. What is the purpose of test isolation?

A. To isolate CSS styles
B. To ensure each test runs independently without being affected by or affecting other tests
C. To isolate database tables
D. To isolate server instances

Answer: B

Q988. What is the role of continuous integration in testing?

A. To integrate CSS continuously
B. To automatically run tests on every code change, catching bugs early before they reach production
C. To integrate databases
D. To integrate HTML templates

Answer: B

Q989. What is the purpose of test doubles and what types exist?

A. To double CSS styles
B. To replace real dependencies in tests; types include stubs, mocks, spies, fakes, and dummies
C. To double database records
D. To duplicate HTML elements

Answer: B

Q990. What is the purpose of load testing?

A. To load CSS files
B. To simulate high traffic to evaluate how the application performs under expected and peak loads
C. To load database records
D. To load HTML templates

Answer: B

Q991. What is the purpose of Docker in modern deployment workflows?

A. To style web pages
B. To package applications with all dependencies into portable containers that run consistently across environments
C. To manage CSS variables
D. To create HTML templates

Answer: B

Q992. What is the difference between a Dockerfile and a docker-compose.yml file?

A. They are identical files
B. A Dockerfile defines how to build a single container image while docker-compose.yml orchestrates multiple containers as a service stack
C. Dockerfile is for CSS
D. docker-compose is deprecated

Answer: B

Q993. What is the purpose of environment-specific configuration in deployment?

A. To change CSS per environment
B. To adjust settings like database URLs, API keys, and feature flags for different environments without code changes
C. To create environment variables in CSS
D. To manage HTML per environment

Answer: B

Q994. What is a rollback strategy in deployment?

A. Rolling back CSS changes
B. A plan for reverting to a previous stable version of the application when a deployment introduces issues
C. Rolling back database schemas
D. Rolling back HTML templates

Answer: B

Q995. What is the purpose of a container registry?

A. To register CSS containers
B. To store and distribute Docker container images, providing version management and access control
C. To register HTML elements
D. To register database containers

Answer: B

Q996. How does blue-green deployment minimize downtime?

A. By using blue and green CSS themes
B. By maintaining two identical production environments and switching traffic from the current (blue) to the new (green) after verification
C. By deploying only during blue or green light hours
D. By coloring server logs

Answer: B

Q997. What is the purpose of deployment previews?

A. To preview CSS changes
B. To automatically deploy each pull request to a unique URL for review and testing before merging
C. To preview database migrations
D. To preview HTML layouts

Answer: B

Q998. What is the purpose of a load balancer in deployment architecture?

A. To balance CSS loads
B. To distribute incoming traffic across multiple server instances for reliability and performance
C. To balance database loads only
D. To balance JavaScript execution

Answer: B

Q999. What is the purpose of monitoring and alerting in production deployments?

A. To monitor CSS file sizes
B. To track application health, performance, and errors, and notify teams when issues are detected
C. To monitor HTML rendering
D. To monitor database schemas

Answer: B

Q1000. What is an artifact in the context of deployment?

A. An ancient CSS technique
B. A built and versioned package of the application ready for deployment to an environment
C. A database artifact
D. An HTML artifact

Answer: B

Q1001. What is the purpose of API versioning and what strategies exist?

A. To version CSS files
B. To maintain backward compatibility when making breaking changes; strategies include URL path, query parameter, and header-based versioning
C. To version HTML files
D. To version database schemas

Answer: B

Q1002. What is the difference between REST and GraphQL APIs?

A. They are identical
B. REST uses fixed endpoints returning predefined data while GraphQL uses a single endpoint where clients specify exactly what data they need
C. REST is always faster
D. GraphQL cannot handle mutations

Answer: B

Q1003. What is the purpose of API documentation tools like Swagger/OpenAPI?

A. To document CSS styles
B. To provide interactive documentation that describes endpoints, request/response formats, and allows testing APIs directly
C. To document HTML structures
D. To document database schemas only

Answer: B

Q1004. What is the purpose of cursor-based pagination compared to offset-based pagination?

A. To style cursor in CSS
B. Cursor-based pagination uses an opaque pointer to the last item, avoiding the performance and consistency issues of offset-based pagination on large datasets
C. To manage database cursors
D. To paginate CSS styles

Answer: B

Q1005. What is the purpose of HTTP caching headers in API responses?

A. To cache CSS styles
B. To control whether and how long API responses can be cached by browsers and intermediaries, reducing server load and latency
C. To cache HTML pages only
D. To cache database queries

Answer: B

Q1006. What is the purpose of request validation in API development?

A. To validate CSS syntax
B. To verify that incoming API requests contain valid data types, required fields, and acceptable values before processing
C. To validate HTML structure
D. To validate database schemas

Answer: B

Q1007. What is the purpose of webhook retry mechanisms?

A. To retry CSS loading
B. To automatically reattempt failed webhook deliveries with exponential backoff, ensuring event delivery despite temporary failures
C. To retry database connections
D. To retry HTML rendering

Answer: B

Q1008. What is the purpose of API error response standardization?

A. To standardize CSS errors
B. To return consistent error formats with status codes, error codes, and messages so clients can handle errors programmatically
C. To standardize HTML errors
D. To standardize database errors

Answer: B

Q1009. What is the purpose of API throttling versus rate limiting?

A. They are identical concepts
B. Rate limiting blocks requests exceeding a limit while throttling queues or slows them, allowing eventual processing
C. Throttling is always faster
D. Rate limiting queues requests

Answer: B

Q1010. How does hypermedia in REST API responses guide client navigation?

A. It adds CSS styles to responses
B. It includes links to related resources and available actions, allowing clients to navigate the API without hardcoded URLs
C. It embeds HTML pages in JSON
D. It manages database hyperlinks

Answer: B

Q1011. What is the purpose of design tokens in modern design systems?

A. Tokens for accessing CSS APIs
B. Atomic design decisions (colors, spacing, typography) stored as platform-agnostic variables that ensure consistency across products
C. Database access tokens
D. JavaScript authentication tokens

Answer: B

Q1012. How does monorepo tooling like Turborepo improve development workflows?

A. It creates CSS monorepos
B. It manages multiple packages in one repository with intelligent caching, parallel execution, and dependency-aware task orchestration
C. It only manages databases
D. It replaces Git

Answer: B

Q1013. How do web components achieve framework-agnostic reusability?

A. They only work inside React applications
B. They use browser-native APIs like Custom Elements, Shadow DOM, and HTML Templates to create encapsulated components usable in any framework
C. They require a special bundler plugin
D. They depend on a shared CSS library

Answer: B

Q1014. What is the concept of incremental adoption in modern web frameworks?

A. Installing the entire framework at once
B. Gradually integrating a framework into an existing application page by page instead of rewriting everything
C. Adopting only the CSS parts of a framework
D. Using multiple frameworks simultaneously

Answer: B

Q1015. What is the purpose of TypeScript in modern web development?

A. To replace JavaScript entirely
B. To add static type checking to JavaScript, catching type errors at compile time and improving developer experience
C. To type CSS styles
D. To type database queries

Answer: B

Q1016. What is the difference between optimistic and pessimistic UI updates?

A. Optimistic updates are slower but more accurate
B. Optimistic updates assume success and update the UI immediately before server confirmation, while pessimistic updates wait for the server response
C. Pessimistic updates never send data to servers
D. Optimistic updates only work with REST APIs

Answer: B

Q1017. What is the purpose of Bun as a JavaScript runtime?

A. To bundle CSS files
B. To provide a fast all-in-one JavaScript runtime, bundler, test runner, and package manager as an alternative to Node.js
C. To create database bundles
D. To manage HTML bundles

Answer: B

Q1018. What is the purpose of Web Components standards?

A. Standard CSS components
B. A set of browser APIs (Custom Elements, Shadow DOM, HTML Templates) for creating reusable, encapsulated UI components
C. Standard database components
D. Standard server components

Answer: B

Q1019. What is the purpose of a build tool like Webpack in modern development?

A. To build CSS from scratch
B. To bundle, transform, and optimize JavaScript modules and assets for production deployment
C. To build database schemas
D. To build HTML templates

Answer: B

Q1020. What is the purpose of containerization in modern web development?

A. To contain CSS styles
B. To package applications with all dependencies into isolated containers that run consistently across any environment
C. To contain database records
D. To contain HTML elements

Answer: B

Hard Questions

510 questions

Q1021. Which rendering strategy delivers HTML generated at request time from the server?

A. Static Site Generation
B. Server-Side Rendering
C. Client-Side Rendering
D. Incremental Static Regeneration

Answer: B

Q1022. What is the main advantage of a Single Page Application (SPA)?

A. It avoids full page reloads by dynamically updating
B. It does not need to communicate with any APIs
C. It renders only a single HTML element on screen
D. It can function with no JavaScript whatsoever

Answer: A

Q1023. What is the JAMstack architecture?

A. jQuery, Angular, MongoDB
B. Java, Apache, MySQL stack
C. JSON, AJAX, MVC
D. JavaScript, APIs, and Markup

Answer: D

Q1024. Which tool is used for bundling JavaScript modules?

A. Git
B. Postman
C. Parcel
D. Webpack

Answer: D

Q1025. What is the purpose of a service worker?

A. To compile TypeScript into JavaScript
B. To manage and process database queries
C. To enable offline functionality and sync
D. To minify and bundle CSS file assets

Answer: C

Q1026. What is Progressive Enhancement?

A. Starting with a basic experience and adding enhancements for capable ones
B. Starting with advanced features and removing them for old browsers
C. Optimizing progressive image loading formats for slower connections
D. Restricting support exclusively to modern browsers with new features

Answer: A

Q1027. What distinguishes a Progressive Web App (PWA) from a regular web app?

A. PWAs do not use standard HTML markup or CSS styling
B. PWAs require React as a mandatory framework dependency
C. PWAs work offline, can be installed, and send notifications
D. PWAs only function on mobile devices and tablets

Answer: C

Q1028. In web development, what is hydration?

A. Applying water-themed CSS styling to elements
B. Loading and parsing external CSS style sheets
C. Attaching JavaScript event handlers to server HTML
D. Compressing and optimizing image file formats

Answer: C

Q1029. What is tree shaking in modern web development?

A. Balancing binary search trees using JavaScript
B. Reorganizing the DOM tree for better performance
C. Clearing the browser cache for fresh content
D. Removing unused code from the final build output

Answer: D

Q1030. What is the critical rendering path?

A. The network path from the server to the browser
B. The route a URL takes through the DNS resolution
C. The order in which CSS files are loaded and parsed
D. The sequence of steps the browser takes to render

Answer: D

Q1031. What is the difference between HTTP/1.1 and HTTP/2?

A. HTTP/2 does not support any form of HTTPS encryption
B. HTTP/1.1 is significantly faster in performance than HTTP/2
C. HTTP/2 supports multiplexing requests over one connection
D. HTTP/2 is text-based while HTTP/1.1 uses binary framing

Answer: C

Q1032. What is CORS in web architecture?

A. Cross-Origin Resource Sharing, allowing cross-domain requests
B. A NoSQL document-oriented database for storing data
C. A lightweight JavaScript library for DOM manipulation
D. A popular CSS utility-first framework for styling apps

Answer: A

Q1033. What is the purpose of the OPTIONS HTTP method?

A. To retrieve existing data from a server resource
B. To update existing data on the specified server
C. To permanently delete a resource from the server
D. To describe the communication options for a resource

Answer: D

Q1034. What does the HTTP status code 304 indicate?

A. Bad request due to client error
B. Not modified, use the cached version
C. A permanent redirect to another URL
D. Internal server processing error

Answer: B

Q1035. What is HTTP/3 based on?

A. FTP protocol
B. TCP protocol
C. WebSocket API
D. UDP via QUIC

Answer: D

Q1036. What is the Same-Origin Policy?

A. A security measure restricting cross-origin script access
B. A policy requiring all files on a single web server
C. A CSS naming convention for component-scoped styling
D. A database access rule governing read-write permissions

Answer: A

Q1037. What is a reverse proxy?

A. A client-side mechanism for caching web assets
B. A type of VPN for securing remote connections
C. A proxy system that blocks all incoming traffic
D. A server that forwards client requests to backends

Answer: D

Q1038. What is content negotiation in HTTP?

A. Negotiating the pricing for a website project
B. The process of agreeing on the response format
C. A handshake protocol for secure connections
D. A type of compression for reducing file sizes

Answer: B

Q1039. What is the purpose of an ETag header?

A. To specify the content encoding type
B. To set and manage session cookies
C. To encrypt transmitted data in transit
D. To provide a version identifier for cache

Answer: D

Q1040. What is the difference between stateful and stateless protocols?

A. Stateful protocols are always significantly faster
B. Stateless protocols store all data on the server
C. Stateless protocols do not retain session information
D. Stateful protocols are unable to use any cookies

Answer: C

Q1041. What is the purpose of the data-* attribute in HTML5?

A. To define strict data types for form fields
B. To store custom data accessible via JavaScript
C. To store CSS data in external stylesheets
D. To create connections to external databases

Answer: B

Q1042. What is the Shadow DOM?

A. A hidden HTML element in the page structure
B. An encapsulated DOM tree that isolates styles
C. A dark mode feature provided by CSS natively
D. A deprecated feature from earlier HTML versions

Answer: B

Q1043. What is the purpose of the <template> tag in HTML5?

A. To create reusable email template layouts
B. To define HTML content not rendered until activated
C. To create reusable CSS template style blocks
D. To import external HTML files into a document

Answer: B

Q1044. Which attribute makes an HTML element editable?

A. editable='true'
B. edit='true'
C. writable='true'
D. contenteditable='true'

Answer: D

Q1045. What is the purpose of the srcset attribute in <img>?

A. To set the image dimensions and size
B. To provide multiple sources for responsive images
C. To add a link to the image source code
D. To set the primary image source URL

Answer: B

Q1046. What is an HTML Web Component?

A. A standard built-in HTML tag element
B. A server-side rendering technique for pages
C. A type of CSS framework for web styling
D. A reusable custom element with encapsulated code

Answer: D

Q1047. What does the defer attribute do on a <script> tag?

A. Prevents the script from ever running on page
B. Downloads script in parallel and runs after parsing
C. Makes the script load and execute asynchronously
D. Defers the loading of CSS stylesheets

Answer: B

Q1048. What is the difference between defer and async in script loading?

A. async preserves execution order; defer does not order them
B. defer blocks page rendering; async does not block rendering
C. defer runs after parsing in order; async runs on download
D. They behave the same in all situations

Answer: C

Q1049. What is ARIA in HTML?

A. A type of interactive HTML form input element
B. A client-side JavaScript rendering framework
C. A CSS animation and transition effects library
D. Accessible Rich Internet Applications attributes

Answer: D

Q1050. What is the purpose of the <picture> element in HTML5?

A. To embed inline SVG graphics within the page
B. To provide multiple sources for responsive images
C. To create a drawing canvas for vector graphics
D. To display a photo gallery with thumbnails

Answer: B

Q1051. What is the difference between em and rem units?

A. em is an absolute unit measured in exact pixels
B. em is relative to parent font; rem to the root
C. rem is relative to parent; em is relative to root
D. They are identical in how they calculate sizing

Answer: B

Q1052. What are CSS custom properties (variables)?

A. A type of CSS selector for targeting elements
B. JavaScript variables referenced from within CSS
C. User-defined values with -- prefix and var() access
D. Predefined CSS values built into the browser

Answer: C

Q1053. What is the will-change CSS property?

A. An animation delay property for scheduling effects
B. A transition property controlling animation timing
C. A property used to change element content
D. A hint about which properties will change for optimization

Answer: D

Q1054. How does the CSS calc() function work?

A. It calculates the total page loading time
B. It performs math with mixed units in CSS values
C. It calculates JavaScript expressions in CSS
D. It counts the number of DOM elements on page

Answer: B

Q1055. What is the stacking context in CSS?

A. A method of combining multiple CSS stylesheets
B. A CSS Grid feature for placing items in cells
C. A method for stacking div elements vertically
D. A 3D conceptualization of elements along z-axis

Answer: D

Q1056. What does the @supports rule do in CSS?

A. Provides support for external web fonts
B. Checks if a browser supports a CSS feature
C. Enables support for older browser versions
D. Adds browser support for legacy features

Answer: B

Q1057. What is the difference between :nth-child() and :nth-of-type()?

A. :nth-child only counts elements sharing the same type
B. They are identical in their selection behavior
C. :nth-of-type counts all siblings regardless of their type
D. :nth-child counts all siblings; :nth-of-type counts same type

Answer: D

Q1058. What is a CSS combinator?

A. A color combination and palette tool
B. A CSS framework for rapid prototyping
C. A character explaining selector relationships
D. A CSS minification and optimization tool

Answer: C

Q1059. What is the contain property in CSS?

A. A flexbox property for aligning child items
B. A property indicating subtree independence for optimization
C. A property to contain overflowing text content
D. A text wrapping property for long strings

Answer: B

Q1060. What is the CSS clamp() function?

A. A function constraining a value between min and max
B. A function to lock the scroll position on a page
C. A function to fix element positions in a container
D. A function to group elements together visually

Answer: A

Q1061. What is CSS Subgrid?

A. A third-party CSS grid component library
B. A sub-layout variation of the Flexbox model
C. A Grid feature letting nested grids adopt parent tracks
D. A standalone CSS framework for page layouts

Answer: C

Q1062. What is the CSS aspect-ratio property?

A. A media query feature for responsive design
B. The ratio of CSS file sizes in a project
C. A JavaScript API for measuring dimensions
D. Sets a preferred aspect ratio for an element

Answer: D

Q1063. What is CSS Container Queries?

A. Docker container related CSS configuration
B. Media queries designed for flex containers
C. Queries about the size of CSS containers
D. Rules applying styles based on container size

Answer: D

Q1064. What is the CSS isolation property?

A. Removes an element completely from the DOM tree
B. Creates a new stacking context for the element
C. Isolates an element from the internet connection
D. Blocks all external CSS from affecting the element

Answer: B

Q1065. What is the difference between transform and position for moving elements?

A. transform skips layout recalculation; position triggers it
B. transform only works within CSS Grid containers
C. position is faster for rendering than transform
D. They produce the same visual result always

Answer: A

Q1066. What are CSS Logical Properties?

A. Properties with conditional logic based on breakpoints
B. Properties that adapt to writing direction like inline-start
C. Boolean CSS properties that toggle features on or off
D. Properties that use logic gates for conditional values

Answer: B

Q1067. What is the prefers-reduced-motion media query?

A. A query detecting slow network connection speeds
B. A query specifically targeting mobile touch devices
C. A query detecting if user prefers less animation
D. A query for applying print-specific style rules

Answer: C

Q1068. What is CSS Houdini?

A. A popular CSS framework for responsive layouts
B. Low-level APIs giving access to the CSS engine
C. A browser debugging tool for inspecting CSS
D. A magic trick animation library for CSS effects

Answer: B

Q1069. What is the content-visibility CSS property?

A. Enables browser to skip rendering off-screen elements
B. Controls how text content is displayed on screen
C. An alternative to z-index for controlling layer order
D. A toggle switching element visibility on and off

Answer: A

Q1070. How does the CSS cascade layer (@layer) work?

A. It creates z-index layers for positioned elements
B. It layers multiple background images on a single element
C. It creates visible visual layers stacked on the page
D. It defines explicit layers giving control over precedence

Answer: D

Q1071. What is the event loop in JavaScript?

A. A mechanism handling async callbacks via call stack
B. An event listener looping through all DOM elements
C. A standard for loop iterating over event arrays
D. A DOM traversal method for walking element tree

Answer: A

Q1072. What is the difference between == and === in terms of type coercion?

A. Both operators perform type coercion
B. Neither operator performs type coercion
C. == performs type coercion; === does not
D. === performs type coercion; == does not

Answer: C

Q1073. What is the Temporal Dead Zone (TDZ)?

A. A time-related API for scheduling delayed operations
B. A concept related to memory management and GC
C. A garbage collection phase reclaiming unused memory
D. The period between scope entry and let/const declaration

Answer: D

Q1074. What is the difference between call(), apply(), and bind()?

A. Only bind invokes the function immediately when called
B. call and apply invoke immediately; bind returns a new function
C. They are all identical in functionality
D. call is for arrays; apply is for objects arguments

Answer: B

Q1075. What is a WeakMap in JavaScript?

A. A collection with weakly referenced object keys for GC
B. A smaller and more limited version of Map class
C. A map collection with weak security encryption
D. A map storing only string keys and string values

Answer: A

Q1076. What is the prototype chain in JavaScript?

A. A CSS inheritance model for cascading styles
B. The mechanism objects use to inherit properties
C. A linked list data structure for sequential data
D. A blockchain implementation for distributed apps

Answer: B

Q1077. What is tail call optimization in JavaScript?

A. A DOM rendering optimization for reducing paint operations
B. A CSS optimization technique for faster style calculations
C. Optimizing the last element of an array for access
D. Reusing the stack frame for a function call in tail position

Answer: D

Q1078. What is the difference between Object.freeze() and Object.seal()?

A. freeze prevents all changes; seal allows modifying values
B. freeze only prevents deletion of properties
C. seal prevents all changes including modifications
D. They are identical in behavior on objects

Answer: A

Q1079. What is a Symbol in JavaScript?

A. A unique immutable primitive for property identifiers
B. A string formatting token for template processing
C. A CSS icon or symbol for decorative elements
D. A mathematical operator for advanced calculations

Answer: A

Q1080. What is the purpose of generator functions?

A. To generate HTML markup from template files
B. To create iterators that pause and resume via yield
C. To create class instances from constructor functions
D. To generate random numbers for cryptographic use

Answer: B

Q1081. What is the difference between microtasks and macrotasks?

A. Microtasks run on a separate background thread
B. Macrotasks always have higher execution priority
C. They are identical in execution priority
D. Microtasks execute before macrotasks in the loop

Answer: D

Q1082. What is a SharedArrayBuffer?

A. A binary data buffer shared between workers
B. A database buffer for caching query results
C. A shared CSS buffer for component styling
D. An array with elements shared across files

Answer: A

Q1083. What is the Reflect API in JavaScript?

A. A browser debugging tool for inspecting elements
B. A library for creating mirror image visual effects
C. A CSS reflection API for reflecting element visuals
D. A built-in object with interceptable operation methods

Answer: D

Q1084. What is structural typing in TypeScript?

A. TypeScript uses nominal typing with explicit declarations
B. JavaScript has stronger typing than TypeScript overall
C. They use the identical type system without differences
D. TypeScript checks compatibility based on type structure

Answer: D

Q1085. What is the AbortController API?

A. A process manager for handling background server tasks
B. An error handling mechanism for catching thrown errors
C. An API to cancel fetch requests and async operations
D. A method to stop all JavaScript execution immediately

Answer: C

Q1086. What are Decorators in JavaScript/TypeScript?

A. Functions that modify classes and members via @ syntax
B. String formatting tools for template processing
C. CSS decorations like border styles and shadows
D. HTML attributes added to elements for metadata

Answer: A

Q1087. What is the structuredClone() function?

A. A function creating deep copies via structured clone
B. A CSS cloning function for duplicating style rules
C. A function to clone the DOM structure of elements
D. A shallow copy method copying only top-level values

Answer: A

Q1088. What is the difference between for...in and for...of?

A. for...in only works with arrays not objects
B. for...of iterates over property keys of objects
C. They are identical in their iteration behavior
D. for...in iterates keys; for...of iterates values

Answer: D

Q1089. What is a FinalizationRegistry in JavaScript?

A. An API to register a callback when an object is GC'd
B. A module registry for tracking installed packages
C. A service worker registry for managing active workers
D. A software design pattern for object creation

Answer: A

Q1090. What is the Intl object in JavaScript?

A. An interface definition for declaring TypeScript contracts
B. An interval timer for scheduling repeated function calls
C. An internal object for private variable storage
D. A namespace for Internationalization with locale formatting

Answer: D

Q1091. What is React's Concurrent Mode?

A. Parallel CSS processing across multiple browser threads
B. Multi-threaded JavaScript execution using Web Workers
C. Running multiple separate React applications at once
D. Features helping React stay responsive via background rendering

Answer: D

Q1092. What is the purpose of React.memo()?

A. Creating in-app memo or notification features
B. A HOC memoizing a component to prevent re-renders
C. Saving developer notes within the application code
D. Memory management and garbage collection control

Answer: B

Q1093. What is Angular's Change Detection strategy OnPush?

A. A Git branching strategy for version control
B. Detecting CSS property changes in stylesheets
C. Push notifications sent to mobile device users
D. A strategy checking only when input references change

Answer: D

Q1094. What is the Composition API in Vue 3?

A. A music composition tool for creating audio
B. A CSS composition method for combining styles
C. A database query API for composing SQL queries
D. An API organizing component logic using setup()

Answer: D

Q1095. What is code splitting in frontend frameworks?

A. Splitting CSS files into smaller partial files
B. Dividing server code into separate microservices
C. Splitting HTML files across multiple server routes
D. Breaking the bundle into smaller on-demand chunks

Answer: D

Q1096. What is Server-Side Rendering (SSR) in React/Next.js?

A. Rendering CSS on the server before page delivery
B. Running JavaScript only on server, never on client
C. Generating HTML on the server for each client request
D. A database rendering technique for cached query results

Answer: C

Q1097. What is React's useCallback hook?

A. A callback URL handler for authentication flows
B. An event listener for handling DOM user events
C. A hook returning a memoized callback function
D. A state management hook for complex data flows

Answer: C

Q1098. What is the purpose of useMemo in React?

A. Memoizing expensive computations until deps change
B. Creating memoized components that never re-render
C. Memory allocation and management control utilities
D. Managing in-app memo and notification features

Answer: A

Q1099. What is Angular's Dependency Injection?

A. A testing technique for isolating component behavior
B. Importing npm packages into project configuration
C. A class receiving dependencies from external sources
D. Injecting CSS dependencies into component styles

Answer: C

Q1100. What is Incremental Static Regeneration (ISR) in Next.js?

A. Updating static pages after deploy without full rebuild
B. Regenerating CSS incrementally during development
C. Incremental database updates during data migration
D. A version control strategy for incremental releases

Answer: A

Q1101. What is the difference between horizontal and vertical scaling?

A. Horizontal scaling is always cheaper in every scenario
B. Vertical adds power to existing servers; horizontal adds servers
C. Vertical scaling is only applicable to database servers
D. They are identical in their scaling approach

Answer: B

Q1102. What is a message queue in backend architecture?

A. A CSS animation queue for scheduling transitions
B. A database query queue for sequential execution
C. An async mechanism storing messages for consumers
D. A chat feature for sending user messages

Answer: C

Q1103. What is GraphQL and how does it differ from REST?

A. A JavaScript charting tool for rendering bar graphs
B. A graph database for storing relationship data
C. A query language where clients specify exact data needed
D. A CSS graph library for data visualization charts

Answer: C

Q1104. What is the N+1 query problem?

A. Fetching a list triggers one query plus N for related data
B. A database naming convention for table schemas
C. A CSS specificity issue with deeply nested selectors
D. A JavaScript error caused by off-by-one indexing

Answer: A

Q1105. What is a microservices architecture?

A. A small lightweight embedded database system
B. A small application with limited features overall
C. Independent services communicating via defined APIs
D. A CSS micro-framework for minimal page styling

Answer: C

Q1106. What is database connection pooling?

A. A database backup method for disaster recovery plans
B. Maintaining reusable database connections to reduce overhead
C. A swimming pool database for aquatic data
D. A CSS pooling technique for shared style resources

Answer: B

Q1107. What is idempotency in API design?

A. A security feature for encrypting API payloads
B. A mathematical concept from pure number theory
C. A caching mechanism for storing API responses locally
D. Making the same request multiple times yields same result

Answer: D

Q1108. What is the CAP theorem?

A. A capping limit on the number of API requests
B. A CSS theorem about cascade priority order
C. A JavaScript design pattern for state management
D. A distributed system can guarantee only two of C, A, P

Answer: D

Q1109. What is event-driven architecture?

A. A database event log for auditing record changes
B. CSS event handling through pseudo-class selectors
C. A React-specific pattern for component lifecycle
D. A pattern where flow is determined by produced events

Answer: D

Q1110. What is the purpose of a reverse proxy like Nginx?

A. To reverse engineer API endpoints for testing
B. To handle load balancing, SSL, caching, and routing
C. To reverse the order of database query results
D. To revert code changes to a previous version

Answer: B

Q1111. What is the difference between process-based and event-driven server architectures?

A. Process-based architectures cannot handle concurrent requests
B. They are identical in concurrency approach
C. Event-driven is always slower in handling concurrent requests
D. Process-based creates threads per request; event-driven uses async I/O

Answer: D

Q1112. What is the purpose of a load balancer?

A. To balance database queries across shards
B. To balance CSS style specificity weights
C. To load JavaScript files in parallel
D. To distribute traffic across multiple servers

Answer: D

Q1113. What is serverless computing?

A. A client-side only architecture without any backend logic
B. Computing without any servers whatsoever
C. A static site generator for building HTML pages
D. A cloud model with provider-managed infrastructure on demand

Answer: D

Q1114. What is the difference between monolithic and microservices architecture?

A. They are identical in application structure
B. Monolithic is a single unit; microservices are independent
C. Microservices are always faster in every scenario
D. Monolithic applications are unable to scale at all

Answer: B

Q1115. What is gRPC?

A. A CSS framework for responsive web design
B. A JavaScript library for building reactive interfaces
C. A high-performance RPC framework using Protocol Buffers
D. A relational database management system for apps

Answer: C

Q1116. What is the circuit breaker pattern?

A. A database locking mechanism for transaction isolation levels
B. An electrical safety feature for server power
C. A CSS layout pattern for organizing grid-based page elements
D. A pattern preventing cascading failures by stopping failing requests

Answer: D

Q1117. What is the difference between synchronous and asynchronous processing?

A. Synchronous processing cannot handle any I/O operations
B. Synchronous blocks until complete; asynchronous allows other ops
C. They are identical in execution flow handling
D. Asynchronous is always slower than synchronous code processing

Answer: B

Q1118. What is server-sent events (SSE)?

A. A technology for pushing real-time updates over HTTP
B. Server-side CSS events triggered by style changes
C. A database trigger that fires on record modifications
D. A JavaScript event system for handling user interactions

Answer: A

Q1119. What is the purpose of health check endpoints?

A. Checking only database health and connection status
B. Checking user health data in medical applications
C. Checking CSS health for validation errors
D. Providing a way for load balancers to verify server health

Answer: D

Q1120. What is the Twelve-Factor App methodology?

A. A database design pattern for normalized tables
B. A CSS framework following twelve core principles
C. A methodology for building scalable SaaS apps
D. A 12-step coding tutorial for learning web dev

Answer: C

Q1121. What is database sharding?

A. Encrypting data for security and privacy compliance
B. Compressing tables to reduce disk storage space
C. Splitting a database into smaller distributed pieces
D. Breaking a database beyond repair permanently

Answer: C

Q1122. What is the difference between horizontal and vertical partitioning?

A. Horizontal splits columns; vertical splits rows across servers
B. Neither approach has any effect on query performance
C. Horizontal splits rows across servers; vertical splits columns
D. They are identical in partitioning strategy

Answer: C

Q1123. What is eventual consistency?

A. A CSS consistency model for cross-browser rendering
B. Data is always immediately consistent everywhere
C. All replicas converge to the same value given enough time
D. Data is never consistent across any of the replicas

Answer: C

Q1124. What is a database migration?

A. A data backup process for disaster recovery planning
B. A CSS migration from one framework to another tool
C. Version-controlled changes to schema that can be rolled back
D. Moving a database to a new physical data center

Answer: C

Q1125. What is the N+1 query problem and how is it solved?

A. A JavaScript error caused by off-by-one array access
B. A CSS specificity issue with deeply nested selectors
C. A mathematical formula for calculating query cost
D. N extra queries for related data; solved by eager loading

Answer: D

Q1126. What is a materialized view?

A. A database object storing query results physically
B. A CSS view for presenting styled HTML content
C. A template engine view for generating dynamic pages
D. A JavaScript view for rendering reactive UI components

Answer: A

Q1127. What is connection pooling in database management?

A. A swimming pool database for aquatic records
B. A CSS pooling technique for shared style rule resources
C. A JavaScript object pool for reusing DOM element references
D. Maintaining reusable connections to avoid per-request overhead

Answer: D

Q1128. What is a write-ahead log (WAL)?

A. A CSS log file for tracking style computation results
B. A blogging technique for writing web content
C. Changes are written to a log before applying to the DB
D. A JavaScript console log for outputting debug messages

Answer: C

Q1129. What is database replication?

A. A backup tool for creating periodic data archive snapshots
B. A version control system for tracking file change history
C. Copying and maintaining data across servers for redundancy
D. Copying CSS files across multiple project directories

Answer: C

Q1130. What is the difference between optimistic and pessimistic locking?

A. They only apply to NoSQL databases not relational ones
B. They are identical in concurrency control approach
C. Optimistic always locks; pessimistic never locks anything
D. Optimistic checks at commit; pessimistic locks immediately

Answer: D

Q1131. What is a SQL injection attack and how is it prevented?

A. A CSS vulnerability from untrusted stylesheet loading
B. A database feature for optimizing query performance
C. Inserting malicious SQL; prevented by parameterized queries
D. A JavaScript error from uncaught promise rejections

Answer: C

Q1132. What is the difference between symmetric and asymmetric encryption?

A. They are identical in their encryption approach
B. Asymmetric is always faster than symmetric encryption
C. Symmetric uses one key; asymmetric uses a key pair
D. Symmetric encryption requires two separate keys

Answer: C

Q1133. What is a man-in-the-middle (MITM) attack?

A. A database corruption from concurrent write conflicts
B. An attack intercepting communication between two parties
C. A network administrator managing server infrastructure
D. A CSS hack for overriding conflicting style declarations

Answer: B

Q1134. What is the SameSite cookie attribute?

A. An attribute controlling cookies in cross-site requests
B. A site name attribute used in HTML anchor tags
C. A CSS property for styling site-specific page elements
D. A database attribute for defining column data constraints

Answer: A

Q1135. What is a zero-day vulnerability?

A. A CSS bug affecting zero-width element rendering
B. A vulnerability lasting zero days before being fixed
C. A database error caused by zero-division in queries
D. A security flaw exploited before the vendor has a patch

Answer: D

Q1136. What is OAuth 2.0?

A. An authorization framework for limited third-party access
B. A JavaScript library for building authentication flows
C. A CSS standard for defining cross-browser specifications
D. A database protocol for encrypted data transmission

Answer: A

Q1137. What is Subresource Integrity (SRI)?

A. A database integrity check for verifying data consistency
B. A CSS property for defining element integrity
C. A feature verifying fetched resources are not tampered with
D. A JavaScript framework for building secure web apps

Answer: C

Q1138. What is the purpose of rate limiting in security?

A. Limiting the speed of CSS transition animations
B. Restricting request frequency to prevent brute force
C. Limiting the number of page loads per session
D. Limiting the number of database queries per session

Answer: B

Q1139. What is X-Frame-Options used for?

A. A CSS frame property for creating bordered layouts
B. Preventing iframe embedding to stop clickjacking
C. A JavaScript frame option for window management
D. Framing images within decorative CSS borders

Answer: B

Q1140. What is the difference between encryption at rest and in transit?

A. At rest encryption is only for database systems
B. At rest encrypts stored data; in transit encrypts transmitted
C. They are identical in their security approach
D. In transit encryption is only for local file systems

Answer: B

Q1141. What is the difference between preload, prefetch, and preconnect?

A. They are identical in resource loading behavior
B. Prefetch is exclusively used for CSS stylesheet resources only
C. Preconnect downloads files from the server in advance before needed
D. Preload fetches current-page resources; prefetch loads future; preconnect opens connections

Answer: D

Q1142. What is the PRPL pattern?

A. A CSS color pattern for theming web pages
B. Push, Render, Pre-cache, Lazy-load for delivery
C. A database pattern for query optimization strategies
D. A JavaScript design pattern for state management

Answer: B

Q1143. What is the purpose of requestAnimationFrame?

A. To request data from REST API server endpoints
B. To request images from a remote CDN server
C. To schedule animations synced with the repaint cycle
D. To create CSS animations using keyframe declarations

Answer: C

Q1144. What is the impact of the critical rendering path on performance?

A. No impact on web application performance at all
B. It determines how quickly a page becomes visible
C. It only affects how CSS styles are calculated
D. It only affects how images are decoded and shown

Answer: B

Q1145. What is HTTP/2 Server Push?

A. A WebSocket feature for real-time data streaming
B. A database push operation for replication updates
C. Proactively sending resources before they are requested
D. Pushing CSS stylesheets to the client browser

Answer: C

Q1146. What is the difference between synthetic and real user monitoring?

A. They are identical monitoring approaches
B. Synthetic uses simulated tests; RUM collects real user data
C. Synthetic monitoring collects data from actual users
D. RUM uses simulated automated tests in lab environments

Answer: B

Q1147. What is layout thrashing?

A. A JavaScript error from undefined variable references
B. A CSS bug causing layout calculation errors
C. Forcing repeated layout recalculations by reading/writing DOM
D. A database deadlock from concurrent transaction conflicts

Answer: C

Q1148. What is the purpose of resource hints in HTML?

A. To add HTML comments for developer documentation
B. To create resource files for internationalization support
C. To inform the browser about resources to preload or prefetch
D. To add tooltip text to page elements on hover

Answer: C

Q1149. What is the benefit of WebP or AVIF image formats?

A. Better CSS support across all web browsers
B. Better database storage efficiency for images
C. Better JavaScript integration with image APIs
D. Significantly smaller file sizes than JPEG/PNG

Answer: D

Q1150. What is Time to Interactive (TTI)?

A. A CSS animation duration for transition effects
B. The time until the page is fully interactive
C. A server response time for processing API requests
D. The time to write the application source code

Answer: B

Q1151. What is the testing pyramid?

A. A database structure for hierarchical data storage
B. A pyramid-shaped test data structure for storage
C. Many unit tests, fewer integration, fewest E2E tests
D. A CSS shape rendered using clip-path properties

Answer: C

Q1152. What is mutation testing?

A. Testing DNA sequences in bioinformatics research
B. Testing code changes before merging into main branch
C. Database mutation testing for verifying data integrity
D. Introducing small code changes to verify tests detect them

Answer: D

Q1153. What is the difference between stubs and mocks?

A. Mocks are simpler and less capable than stub versions
B. They are identical in their testing approach
C. Stubs give predetermined responses; mocks verify interactions
D. Stubs verify that specific method interactions occurred

Answer: C

Q1154. What is visual regression testing?

A. Testing CSS variables across different components
B. Testing image quality and resolution across screen sizes
C. Testing color contrast for accessibility compliance
D. Comparing screenshots across versions for visual changes

Answer: D

Q1155. What is contract testing in microservices?

A. Legal testing of software license agreements
B. CSS contract testing for cross-browser consistency
C. Testing employment contracts for HR compliance
D. Verifying services communicate per agreed interfaces

Answer: D

Q1156. What is fuzz testing?

A. Testing with blurry images for visual quality checks
B. Providing random invalid data to find vulnerabilities
C. Testing with fuzzy logic algorithms for AI systems
D. CSS filter testing for verifying blur effect output

Answer: B

Q1157. What is the purpose of Selenium?

A. A JavaScript runtime for executing server-side scripts
B. A framework for automating browser testing interactions
C. A CSS preprocessor for compiling advanced style syntax
D. A chemical element found in nature supplements

Answer: B

Q1158. What is Playwright?

A. A CSS animation tool for creating transition effects
B. A theater tool for managing stage performances
C. A modern testing framework with auto-wait and isolation
D. A database testing tool for verifying query accuracy

Answer: C

Q1159. What is chaos engineering?

A. A random testing approach without defined test cases
B. Random coding without any structure or planning
C. Deliberately introducing failures to test resilience
D. A messy code style ignoring best practices rules

Answer: C

Q1160. What is the difference between black-box and white-box testing?

A. Black-box tests without code knowledge; white-box tests with
B. They are identical in their testing methodology
C. Black-box testing requires full access to source code
D. White-box testing ignores internal implementation details

Answer: A

Q1161. What is blue-green deployment?

A. A strategy using two environments with instant switching
B. A color-coded database for organizing data categories
C. Deploying blue and green CSS color themes
D. A testing framework for comparing two UI versions

Answer: A

Q1162. What is canary deployment?

A. A testing technique for incremental feature validation
B. Deploying software for bird tracking applications
C. A CSS animation strategy for progressive effects
D. Gradually rolling out to a small subset of users

Answer: D

Q1163. What is Infrastructure as Code (IaC)?

A. Managing infrastructure through configuration files
B. A JavaScript pattern for structuring backend code
C. Writing HTML for server configuration pages
D. A CSS framework for building server admin interfaces

Answer: A

Q1164. What is Kubernetes?

A. A NoSQL database for storing application document data
B. A JavaScript library for building reactive user interfaces
C. A CSS framework for responsive web design layouts
D. A container orchestration platform for deployment and scaling

Answer: D

Q1165. What is the difference between horizontal and vertical scaling in deployment?

A. Vertical adds more server machines to the cluster
B. They are identical in scaling approach
C. Horizontal adds more RAM to the current server
D. Horizontal adds servers; vertical adds resources to existing

Answer: D

Q1166. What is a CDN edge server?

A. A CDN server near end users for fast delivery
B. A development server for local test and debug
C. A database server for write-heavy workloads
D. A CSS edge property for element border styling

Answer: A

Q1167. What is serverless deployment?

A. Deploying functions that run on demand in the cloud
B. Deploying without any server infrastructure at all
C. A local deployment for development and testing only
D. A CSS deployment method for updating style sheets

Answer: A

Q1168. What is the purpose of a health check in deployment?

A. Automated checks verifying app availability for recovery
B. A code review process for ensuring quality standards
C. Checking the physical health of development staff
D. A CSS check for validating style rule correctness

Answer: A

Q1169. What is GitOps?

A. A CSS framework for building responsive web layouts
B. A database tool for managing schema version migrations
C. A Git client application for version control
D. A framework where Git repos are truth for infrastructure

Answer: D

Q1170. What is the difference between a monorepo and polyrepo?

A. They are identical in repository management
B. Polyrepo is exclusively for backend server application code
C. Monorepo stores all services in one repo; polyrepo uses separate
D. Monorepo is exclusively for frontend application code only

Answer: C

Q1171. What is GraphQL's N+1 problem and how is it solved?

A. A math problem related to computational complexity
B. A REST limitation with fixed endpoint over-fetching
C. A CSS specificity issue with deeply nested selectors
D. Nested field queries solved by DataLoader batching

Answer: D

Q1172. What is an API gateway?

A. A single entry point routing requests to microservices
B. A JavaScript gateway for module import resolution
C. A database gateway for managing connection pooling
D. A CSS gate for controlling style cascade flow

Answer: A

Q1173. What is the difference between idempotent and non-idempotent methods?

A. They are identical in request handling behavior
B. Idempotent methods produce same result on repetition; POST may differ
C. All HTTP methods are non-idempotent in their behavior always
D. All HTTP methods are idempotent without any exceptions at all

Answer: B

Q1174. What is content negotiation in APIs?

A. A CSS negotiation for determining style precedence
B. A database negotiation for connection pool allocation
C. Negotiating API pricing for commercial usage plans
D. Client and server agree on response format via headers

Answer: D

Q1175. What is gRPC and when is it preferred over REST?

A. A high-performance RPC framework using Protocol Buffers
B. A JavaScript library for real-time data streaming
C. A database protocol for distributed query execution
D. A CSS framework for responsive web design layouts

Answer: A

Q1176. What is the purpose of API throttling?

A. Controlling request rates to prevent abuse and ensure fairness
B. A CSS technique for limiting animation frame rates on pages
C. A database optimization for throttling query execution speed
D. Speeding up API response times with caching

Answer: A

Q1177. What is the difference between polling and SSE?

A. Polling is more efficient than SSE for real-time data delivery
B. SSE requires WebSocket protocol to function properly always
C. They are identical in data delivery approach
D. Polling makes repeated requests; SSE maintains persistent connection

Answer: D

Q1178. What are API error handling best practices?

A. Use appropriate status codes, consistent format, and messages
B. Return 200 for all responses regardless of outcome
C. Ignore errors and let the client handle all failures
D. Use CSS error styles to display formatted error pages

Answer: A

Q1179. What is hypermedia-driven API design?

A. A CSS animation API for creating interactive effects
B. A multimedia API for playing audio and video
C. An API where responses include links guiding transitions
D. A video streaming API for delivering live content

Answer: C

Q1180. What is the Backend for Frontend (BFF) pattern?

A. A best friend API for social networking features
B. A CSS pattern for frontend-specific responsive styling
C. Each frontend has its own backend aggregating services
D. A database pattern for frontend-optimized query caching

Answer: C

Q1181. What is Islands Architecture?

A. A database architecture for isolated schema partitioning
B. An architecture for building island-themed websites
C. Interactive components hydrated independently in static HTML
D. A CSS layout technique for island-shaped page elements

Answer: C

Q1182. What is Edge Computing in web development?

A. A database optimization for edge-case query handling
B. Computing at the physical edge of a desk surface
C. A CSS technique for styling elements at container edges
D. Running code on servers geographically close to users

Answer: D

Q1183. What is the difference between SSR, SSG, and ISR?

A. They are identical in rendering strategy and output
B. ISR renders only once and never updates content again
C. SSR renders per request; SSG at build; ISR updates after deploy
D. SSG renders per request at the time of each user visit

Answer: C

Q1184. What is Module Federation in Webpack?

A. A plugin allowing independent builds to share modules
B. A country federation of web development standards
C. A database federation distributing queries across nodes
D. A CSS module system for scoping styles to components

Answer: A

Q1185. What is Streaming SSR?

A. Streaming CSS stylesheets for progressive loading
B. Progressively sending HTML chunks as they are rendered
C. Streaming video content to the end user browser
D. Streaming database query results for batch processing

Answer: B

Q1186. What are React Server Components?

A. Components rendering exclusively on the server side
B. CSS server-side components for pre-rendering styles
C. Database components for managing query execution
D. Components that look like physical server hardware

Answer: A

Q1187. What is the purpose of an Abstract Syntax Tree (AST) in web tooling?

A. A CSS tree layout for hierarchical navigation menus
B. A tree representation of code used by compilers and linters
C. A database index structure for optimizing query lookups
D. A tree visualization for displaying data hierarchies

Answer: B

Q1188. What is Partial Hydration?

A. Partial CSS loading for progressive style application
B. Partial database loading for lazy data fetching
C. Partially loading water into server cooling systems
D. Selectively hydrating only interactive components

Answer: D

Q1189. What is the concept of Zero-JS pages?

A. Pages delivered without any visible content at all
B. Pages with zero interactive features for static content
C. Blank pages served as placeholder loading screen views
D. Pages delivered with no JavaScript, relying on HTML/CSS

Answer: D

Q1190. What is Resumability in frameworks like Qwik?

A. Continuing execution on client from where server left off
B. A database feature for resuming interrupted transactions
C. A CSS property for resuming paused animation effects
D. Pausing a video player for later playback resumption

Answer: A

Q1191. A developer must choose between an SPA and MPA for a content-heavy news site. What is a key drawback of using an SPA?

A. SPAs generally have worse initial SEO without server rendering
B. SPAs cannot serve any static assets like images or stylesheets
C. SPAs require a completely different programming language overall
D. SPAs are unable to make any asynchronous API calls to servers

Answer: A

Q1192. Which strategy best addresses the challenge of maintaining large-scale CSS in a team environment?

A. Adopting a methodology like BEM for consistent naming conventions
B. Writing all styles inline directly on each individual HTML element
C. Placing every style rule inside a single monolithic CSS file only
D. Avoiding CSS entirely and using only JavaScript for all styling

Answer: A

Q1193. What is the primary purpose of a service worker in progressive web apps?

A. To compile TypeScript source files into standard JavaScript code
B. To create database connections between client and SQL databases
C. To enable offline functionality and background sync capabilities
D. To generate server-side rendered HTML pages from template files

Answer: C

Q1194. In a JAMstack architecture, what does the A stand for and what role does it play?

A. APIs: handles dynamic functionality through reusable interfaces
B. Authentication: manages user identity verification for all pages
C. Applications: provides full server-side rendering capabilities
D. Automation: runs continuous integration pipelines for deployment

Answer: A

Q1195. A team is debating between a monolithic and microservices architecture. Which concern most favors microservices?

A. The application only serves static content with no dynamic functionality
B. The application needs independent scaling of different service components
C. The project has a single developer with no plans to add more team members
D. The project has very tight deadlines and needs the simplest possible setup

Answer: B

Q1196. What is the main advantage of using WebAssembly alongside JavaScript?

A. It runs computationally intensive code at near-native speed levels
B. It provides built-in database functionality without any server need
C. It eliminates the need for HTML and CSS in modern web applications
D. It completely replaces JavaScript for all web development tasks

Answer: A

Q1197. Which factor most impacts the choice between SSR and CSR for a web application?

A. The programming language used for writing automated test scripts
B. The color scheme and visual design preferences of the stakeholders
C. The specific brand of web server hardware used for hosting files
D. The initial load performance and search engine optimization needs

Answer: D

Q1198. What challenge does micro-frontend architecture primarily address?

A. Eliminating the need for any shared state management in the app
B. Reducing the total file size of individual CSS stylesheets loaded
C. Enabling independent development and deployment of UI components
D. Removing the requirement for build tools in the development flow

Answer: C

Q1199. In a headless CMS architecture, what is the primary role of the front end?

A. To perform automated backups of the content management system data
B. To store and manage all the database records for content authors
C. To consume content via APIs and render it in any presentation layer
D. To handle user authentication and authorization for CMS admin users

Answer: C

Q1200. Why might a team choose an isomorphic JavaScript approach for their application?

A. It eliminates the need for testing on multiple browser environments
B. It shares code between server and client for consistent rendering
C. It guarantees zero accessibility issues across all device platforms
D. It removes all server infrastructure requirements for the project

Answer: B

Q1201. In HTTP/2 server push, what is a potential drawback if not implemented carefully?

A. It can waste bandwidth by pushing resources the client already cached
B. It completely disables client-side caching for all website resources
C. It prevents the use of content delivery networks for static assets
D. It forces the browser to reload the entire page for every navigation

Answer: A

Q1202. What is the primary benefit of HTTP/3 using QUIC over TCP?

A. QUIC reduces connection setup latency and handles packet loss better
B. QUIC allows unlimited concurrent connections without any throttling
C. QUIC replaces DNS resolution entirely with a new naming system used
D. QUIC eliminates the need for TLS encryption on all connections

Answer: A

Q1203. A site experiences head-of-line blocking. Which protocol upgrade best addresses this?

A. Switching from HTTPS back to plain HTTP for simpler data transfer
B. Upgrading from HTTP/1.1 to HTTP/2 which multiplexes streams within
C. Replacing the web server with a simple FTP file transfer server app
D. Downgrading from HTTP/2 to HTTP/1.0 for better compatibility range

Answer: B

Q1204. What is the purpose of the HSTS header in web security architecture?

A. To set the maximum upload file size allowed by the server endpoint
B. To define which IP addresses are permitted to access the admin panel
C. To force browsers to only connect via HTTPS for a specified period
D. To compress response bodies using gzip or brotli encoding methods

Answer: C

Q1205. In a microservices architecture, what problem does an API gateway solve?

A. It replaces all microservices with a single monolithic application
B. It eliminates the need for any inter-service communication protocols
C. It provides a single entry point handling routing and cross-cutting concerns
D. It automatically generates the front-end UI from backend data models

Answer: C

Q1206. What is the CAP theorem and which two properties can a distributed system guarantee?

A. Caching, Authentication, Performance — all three must always be met
B. Concurrency, Accessibility, Portability — only two can be optimized
C. Compression, Authorization, Persistence — systems must pick one only
D. Consistency, Availability, Partition tolerance — pick any two of three

Answer: D

Q1207. What is the role of gRPC compared to REST in service-to-service communication?

A. gRPC uses JSON over HTTP/1.1 while REST uses binary protocol buffers
B. gRPC uses Protocol Buffers and HTTP/2 for efficient typed communication
C. gRPC only supports unidirectional calls while REST supports streaming
D. gRPC requires no schema definition while REST mandates strict schemas

Answer: B

Q1208. What problem does consistent hashing solve in distributed web systems?

A. It minimizes key redistribution when nodes are added or removed from clusters
B. It encrypts all data at rest using a consistent algorithm everywhere
C. It ensures that all web pages are cached for exactly the same duration
D. It guarantees that all database queries return results in constant time

Answer: A

Q1209. What is the purpose of circuit breaker pattern in distributed architectures?

A. To physically disconnect failing hardware servers from the data network
B. To automatically scale up server resources when traffic increases sharply
C. To encrypt inter-service communication using rotating TLS certificates
D. To prevent cascading failures by stopping calls to unresponsive services

Answer: D

Q1210. What is eventual consistency and when is it acceptable in web systems?

A. Data is never consistent and requires manual synchronization by admins
B. Data consistency is guaranteed only during server maintenance windows
C. Data is always immediately consistent across all distributed system nodes
D. Data will become consistent over time and suits high-availability needs

Answer: D

Q1211. A page has multiple forms. How does the form attribute on an input element help?

A. It prevents the input from being submitted with any form on the page
B. It applies CSS styles from a specific form to the input field element
C. It automatically validates the input using the parent form validation
D. It associates the input with a form it is not nested inside of by ID

Answer: D

Q1212. What is the Shadow DOM and how does it relate to HTML web components?

A. A caching technique that stores DOM elements in browser memory shadow
B. A deprecated API for manipulating DOM elements without using JavaScript
C. An encapsulation mechanism providing scoped styles and DOM for components
D. A server-side rendering method that generates HTML in a shadow process

Answer: C

Q1213. What is the purpose of the <slot> element in HTML web components?

A. It assigns a memory slot for caching frequently accessed DOM elements
B. It marks a position in the DOM where server-rendered content is placed
C. It creates a placeholder for user-provided content in shadow DOM trees
D. It defines a time slot for scheduling lazy-loaded resource downloads

Answer: C

Q1214. How does the Content Security Policy meta tag protect against XSS attacks?

A. It encrypts all HTML content before sending it from server to browser
B. It restricts which sources of scripts and resources the browser loads
C. It blocks all JavaScript execution and relies solely on server actions
D. It automatically sanitizes all user input before inserting into the DOM

Answer: B

Q1215. What accessibility issue arises from using div and span elements for interactive controls?

A. They cause slower page rendering compared to using native button elements
B. They cannot have click event listeners attached through JavaScript code
C. They lack built-in keyboard support, roles, and accessibility semantics
D. They are invisible to all users including those not using screen readers

Answer: C

Q1216. What is the purpose of the inert attribute introduced in HTML?

A. It converts a dynamic element into a static image for print stylesheet
B. It permanently deletes the element and its children from the DOM tree
C. It creates an animation that slowly fades the element out of the page
D. It makes an element and descendants non-interactive and hidden from AT

Answer: D

Q1217. How does the <dialog> element improve over custom modal implementations?

A. It removes the need for any CSS styling on the modal overlay component
B. It provides native focus trapping, backdrop, and accessibility features
C. It enables modals to persist across page navigations without JavaScript
D. It automatically translates modal content into multiple user languages

Answer: B

Q1218. What is the Intersection Observer API commonly used for in HTML pages?

A. To detect when elements enter or exit the viewport for lazy loading use
B. To watch for changes in the browser URL hash fragment for navigation
C. To observe and report CSS syntax errors found within style sheet rules
D. To monitor server response times and report performance metrics data

Answer: A

Q1219. What is the purpose of the popover attribute in modern HTML?

A. It enables server-sent events to push notifications to the browser tab
B. It creates a toggleable popup without JavaScript for tooltip-like behavior
C. It converts any element into a fixed-position navigation sidebar panel
D. It defines print-specific styles that appear only during page printing

Answer: B

Q1220. How does the fetchpriority attribute affect resource loading in HTML?

A. It controls whether the resource is loaded synchronously or not at all
B. It hints to the browser the relative priority for fetching a resource
C. It sets the maximum timeout duration for network requests to complete
D. It determines the order in which CSS rules are applied to the document

Answer: B

Q1221. How does the CSS contain property improve rendering performance?

A. It prevents any external stylesheets from overriding the element styles
B. It compresses CSS files automatically during the browser parsing process
C. It caches the rendered output of an element permanently in the browser
D. It limits an element's scope so the browser can optimize layout and paint

Answer: D

Q1222. What is the stacking context and how is it created in CSS?

A. It is the order CSS rules are processed based on their file positions
B. It is the order in which HTML files are loaded into the browser engine
C. It is a method for stacking multiple background images on one element
D. It is an element layer formed by z-index, opacity, or transform properties

Answer: D

Q1223. What is the difference between min-content and max-content sizing?

A. max-content uses the largest word width while min-content avoids wrapping
B. min-content forces all content onto one line without any line breaks used
C. max-content collapses content to zero width and expands on user hover
D. min-content uses the largest word width while max-content avoids wrapping

Answer: D

Q1224. How does the CSS subgrid feature extend CSS Grid capabilities?

A. It creates nested grid systems that are completely independent of parent
B. It automatically converts flexbox layouts into grid layouts for the page
C. It enables grid items to span across multiple separate grid containers
D. It lets child grid items inherit track sizing from their parent grid lines

Answer: D

Q1225. What problem does the CSS cascade layer feature (@layer) solve?

A. It automatically generates responsive breakpoints based on content size
B. It creates visual layering effects like parallax scrolling on web pages
C. It provides explicit control over which origin of styles takes precedence
D. It enables animations that transition between multiple keyframe states

Answer: C

Q1226. How do CSS custom properties differ from preprocessor variables?

A. Custom properties require JavaScript to read while preprocessor does not
B. Custom properties only store color values while preprocessor stores any type
C. Custom properties are resolved at compile time while preprocessor runs live
D. Custom properties cascade and update at runtime while preprocessor is static

Answer: D

Q1227. What is the purpose of the CSS will-change property and its potential pitfall?

A. It changes element properties automatically based on user scroll position
B. It schedules future DOM changes and blocks rendering until they complete
C. It hints to the browser about upcoming changes but overuse wastes memory
D. It defines fallback values for properties not supported in older browsers

Answer: C

Q1228. How does the :has() pseudo-class change CSS selector capabilities?

A. It verifies if a CSS variable has been defined before using it in a rule
B. It enables parent selection based on the presence of matching child elements
C. It determines whether the browser supports a given CSS property or not
D. It checks whether an element has a specific inline style attribute applied

Answer: B

Q1229. What is the CSSOM and how does it relate to the DOM?

A. The CSSOM is a testing framework for validating CSS syntax and structure
B. The CSSOM is the CSS object model representing styles paired with the DOM
C. The CSSOM is a server-side cache for storing precomputed CSS style values
D. The CSSOM replaces the DOM entirely for pages that use CSS stylesheets

Answer: B

Q1230. How does container query sizing differ from viewport-based media queries?

A. Container queries are a JavaScript API and not available in pure CSS code
B. Container queries use the viewport width while media queries use elements
C. Container queries only work with grid layouts and not flexbox or floats
D. Container queries respond to the parent container size not the viewport

Answer: D

Q1231. How do CSS container queries change the approach to component-based responsive design?

A. They remove the need for any CSS Grid or flexbox layout properties entirely
B. They let components adapt based on their container size rather than viewport
C. They require JavaScript to detect container dimensions and apply styles
D. They only work with elements that have a fixed pixel width explicitly set

Answer: B

Q1232. What is the purpose of the @supports rule and how does it enable progressive enhancement?

A. It verifies that the server supports a specific HTTP protocol version used
B. It conditionally applies styles based on browser support for CSS features
C. It checks whether the user's browser supports JavaScript execution enabled
D. It tests whether external font files have loaded successfully in the page

Answer: B

Q1233. How does the CSS scroll-snap property improve scroll-based user experiences?

A. It automatically lazy-loads content as the user scrolls down the web page
B. It creates defined snap points that the viewport locks to while scrolling
C. It prevents all scrolling and forces users to use navigation buttons only
D. It changes the scroll speed based on the amount of content on each page

Answer: B

Q1234. What is the difference between implicit and explicit grid tracks in CSS Grid?

A. Implicit tracks only appear in development mode and vanish in production
B. Explicit tracks are defined by template properties while implicit are auto
C. Implicit tracks are defined by the developer while explicit are automatic
D. Explicit tracks use percentage widths while implicit tracks use pixel only

Answer: B

Q1235. How does the isolation property interact with stacking contexts and blend modes?

A. It isolates network requests made by elements inside the isolated container
B. It prevents the element from inheriting any styles from parent containers
C. It disables all CSS animations within the element to improve performance
D. It creates a new stacking context limiting blend mode effects to the group

Answer: D

Q1236. What challenges arise when combining CSS Grid and flexbox in complex layouts?

A. Using both requires doubling the number of media queries for responsiveness
B. Nested contexts may cause unexpected sizing due to different algorithms used
C. Combining them automatically disables all CSS transitions and animations
D. Grid and flexbox cannot be used in the same document or stylesheet at all

Answer: B

Q1237. How does the CSS :is() pseudo-class improve selector maintainability?

A. It checks if an element exists in the DOM before applying styles to it
B. It creates conditional styles similar to if-else statements in JavaScript
C. It validates that CSS property values are within acceptable valid ranges
D. It groups selectors reducing repetition and uses highest specificity match

Answer: D

Q1238. What is the logical properties model in CSS and why is it important?

A. It defines logical conditions that determine when styles are applied now
B. It creates property dependencies where changing one updates others too
C. It uses flow-relative properties like inline-start for internationalization
D. It applies mathematical logic to calculate responsive font sizes for text

Answer: C

Q1239. How does the CSS accent-color property simplify form styling?

A. It applies a color tint to form validation error messages shown to users
B. It adds a colored border accent around the entire form container element
C. It sets the accent color for form controls like checkboxes and radio buttons
D. It changes the text color of all form labels to match the brand palette

Answer: C

Q1240. What is the purpose of the @property rule for CSS custom properties?

A. It registers custom properties with type checking and initial value support
B. It creates new CSS properties that override all existing browser defaults
C. It generates property documentation automatically for developer tooling
D. It defines JavaScript properties that can be accessed from CSS stylesheets

Answer: A

Q1241. What is a closure and why is it useful in JavaScript?

A. A function that retains access to its outer scope variables after return
B. A design pattern for preventing memory leaks in event listener callbacks
C. A syntax for immediately terminating asynchronous operations mid-flight
D. A method for closing browser windows programmatically using JavaScript

Answer: A

Q1242. How does the event loop handle microtasks versus macrotasks?

A. Microtasks execute after current task before the next macrotask is taken
B. Microtasks and macrotasks are processed in the exact same queue together
C. Macrotasks always have higher priority and execute before any microtasks
D. Microtasks are processed after all macrotasks in the queue are completed

Answer: A

Q1243. What is the Temporal Dead Zone for let and const declarations?

A. The gap between an event being triggered and its handler being executed
B. The period between scope entry and declaration where access throws error
C. The time period between page load and when DOMContentLoaded event fires
D. The delay between a network request being sent and response being received

Answer: B

Q1244. How does prototypal inheritance differ from classical inheritance?

A. Prototypal objects inherit directly from other objects via prototype chains
B. Prototypal is only available in strict mode while classical works anywhere
C. Prototypal inheritance requires TypeScript while classical uses JavaScript
D. Prototypal uses classes and constructors while classical uses object linking

Answer: A

Q1245. What is the purpose of WeakMap and how does it differ from Map?

A. WeakMap automatically expires entries after a time while Map keeps forever
B. WeakMap encrypts its values while Map stores all values as plain text data
C. WeakMap holds weak references to keys allowing garbage collection of them
D. WeakMap stores only string keys while Map can store any data type as key

Answer: C

Q1246. How does the JavaScript engine optimize code using hidden classes?

A. It hides CSS class names from the DOM to improve rendering performance
B. It compresses class definitions to reduce memory usage in the heap space
C. It encrypts class methods to prevent reverse engineering of the codebase
D. It creates internal type representations to speed up property access times

Answer: D

Q1247. What problem does the structured clone algorithm solve that JSON parse/stringify cannot?

A. It validates data types during cloning and throws errors for mismatches
B. It encrypts the cloned object data for secure storage in local sessions
C. It handles circular references, typed arrays, and more complex data types
D. It compresses the cloned data to use less memory than the JSON approach

Answer: C

Q1248. How does tail call optimization affect recursive functions in JavaScript?

A. It limits recursion depth to a fixed number regardless of memory available
B. It caches results of previous recursive calls to speed up the computation
C. It automatically converts recursive functions into iterative loop versions
D. It reuses the current stack frame for tail position calls preventing overflow

Answer: D

Q1249. What is the difference between a shallow copy and a deep copy of an object?

A. Shallow copies only copy top-level properties while deep clones all nested
B. Shallow copies are faster but create read-only versions of the object data
C. Deep copies can only be created using third-party libraries not native code
D. Shallow copies duplicate all nested levels while deep copies only copy top

Answer: A

Q1250. How does optional chaining (?.) handle deeply nested property access safely?

A. It logs a warning to the console but continues execution with null value
B. It automatically creates missing nested properties with default values set
C. It returns undefined instead of throwing when accessing nullish references
D. It throws a custom error message when a nested property is not found yet

Answer: C

Q1251. How does the JavaScript engine handle memory management and garbage collection?

A. Developers must manually allocate and free memory using explicit commands
B. The engine uses mark-and-sweep to automatically reclaim unreachable objects
C. Memory is allocated once at startup and never freed during page lifetime
D. The engine writes unused data to disk swap files for later reuse if needed

Answer: B

Q1252. What is the purpose of SharedArrayBuffer and Atomics in JavaScript?

A. They share CSS stylesheets between multiple browser tabs simultaneously
B. They automatically split large arrays into smaller chunks for processing
C. They enable shared memory and atomic operations between web worker threads
D. They synchronize database transactions across multiple server instances

Answer: C

Q1253. How does the Reflect API complement the Proxy API in JavaScript?

A. Reflect provides default implementations for Proxy trap operations used
B. Reflect converts Proxy objects back into normal JavaScript plain objects
C. Reflect enables Proxy objects to intercept CSS style computations too
D. Reflect optimizes Proxy performance by caching trap results in memory

Answer: A

Q1254. What is the difference between concurrency and parallelism in JavaScript?

A. They are identical concepts with no practical difference in any language
B. Concurrency manages multiple tasks interleaved while parallelism runs simultaneously
C. Parallelism is single-threaded while concurrency requires multiple threads
D. Concurrency is only possible in Node.js while parallelism works in browsers

Answer: B

Q1255. How do private class fields (#) differ from closure-based privacy in JavaScript?

A. Private fields work only in strict mode while closures work in any context
B. Private fields are only syntactic sugar with no actual encapsulation enforced
C. Private fields are slower because they require additional proxy wrapper objects
D. Private fields use hard privacy enforced by the engine unlike closure convention

Answer: D

Q1256. What is the purpose of the FinalizationRegistry in JavaScript?

A. It manages the order in which CSS animations complete their final frames
B. It ensures all pending network requests complete before page unload event
C. It finalizes database transactions and ensures data integrity on commit
D. It registers callbacks invoked when registered objects are garbage collected

Answer: D

Q1257. How does the import() dynamic import function differ from static import?

A. Dynamic import returns a Promise and loads modules conditionally at runtime
B. Dynamic import loads modules at compile time while static loads at runtime
C. Dynamic import only works with JSON files while static works with all types
D. Dynamic import is synchronous while static import is always asynchronous

Answer: A

Q1258. What is the Transferable interface and how does it optimize worker communication?

A. It transfers ownership of data to a worker without copying the memory buffer
B. It compresses messages between workers to reduce inter-thread bandwidth use
C. It copies data between workers using a shared clipboard buffer mechanism
D. It translates data formats between workers running different script versions

Answer: A

Q1259. How does the TC39 proposal process work for new JavaScript features?

A. Proposals go through stages 0-4 with increasing maturity before inclusion
B. The ECMA committee implements features first then writes specifications after
C. Features are voted on by developers through public polls on social media
D. Features are added by browser vendors independently without coordination

Answer: A

Q1260. What is the Iterator Helpers proposal and what problem does it solve?

A. It helps iterate over CSS selectors to find matching DOM elements faster
B. It provides helper functions for converting arrays into linked list types
C. It adds chainable methods like map and filter directly to iterator objects
D. It creates automatic pagination helpers for iterating over API result sets

Answer: C

Q1261. How does Svelte's compile-time approach differ from React's runtime approach?

A. Svelte only works with TypeScript while React supports only plain JavaScript
B. Svelte uses a larger runtime library while React compiles away its framework
C. Svelte compiles components to imperative DOM code eliminating virtual DOM need
D. Svelte requires manual DOM updates while React automates them with diffing

Answer: C

Q1262. What is the islands architecture and which frameworks implement it?

A. A network architecture where each microservice runs on separate server nodes
B. A pattern of interactive components in static HTML used by Astro and Fresh
C. A database sharding pattern where each table is stored on a separate island
D. A pattern where each page is an isolated island with no shared state at all

Answer: B

Q1263. How does React's Suspense mechanism work for data fetching and code splitting?

A. It pauses server execution and buffers all response data until completion
B. It suspends the browser event loop until all pending promises are resolved
C. It shows fallback content while waiting for lazy components or async data
D. It automatically caches all fetch responses to prevent redundant API calls

Answer: C

Q1264. What is the purpose of Angular's change detection strategy OnPush?

A. It only checks the component when its inputs change or events fire within
B. It enables automatic push notifications from the server to client updates
C. It pushes all changes to a remote server for persistence before rendering
D. It forces synchronous rendering of all child components before the parent

Answer: A

Q1265. How does Vue's Composition API improve code organization over the Options API?

A. It eliminates the need for templates and uses only render functions for views
B. It compiles Vue components into native mobile applications automatically
C. It converts Options API components into Composition API at build time process
D. It enables logic reuse through composable functions grouped by feature concern

Answer: D

Q1266. What is the fiber architecture in React and what problem does it solve?

A. It provides fiber optic network optimizations for faster data fetching use
B. It enables incremental rendering allowing React to pause and resume work
C. It creates a fiber-based threading model for true parallel component rendering
D. It converts React components into web components for cross-framework usage

Answer: B

Q1267. How does Solid.js achieve fine-grained reactivity without a virtual DOM?

A. It delegates all DOM updates to web workers for off-main-thread rendering
B. It requires developers to manually specify which DOM nodes need updating
C. It uses a virtual DOM internally but markets itself as not having one
D. It uses signals and reactive primitives that update only affected DOM nodes

Answer: D

Q1268. What are the tradeoffs of using micro-frontends with module federation?

A. Module federation eliminates all build complexity and has no tradeoffs at all
B. It enables independent deployment but adds complexity in shared dependency management
C. It requires all micro-frontends to use the same exact version of every dependency
D. Module federation only works with React and cannot be used with other frameworks

Answer: B

Q1269. How does streaming SSR improve time-to-first-byte compared to traditional SSR?

A. It progressively sends HTML chunks as they render without waiting for all data
B. It splits the HTML into multiple separate HTTP requests sent in parallel order
C. It sends the complete HTML document only after all data fetching is finished
D. It compresses the HTML response using streaming compression before any sending

Answer: A

Q1270. What is the concept of signals in modern frontend frameworks like Preact and Angular?

A. Network signals indicating connection quality used for adaptive content loading
B. Reactive primitives that track dependencies and update only subscribers directly
C. Audio signals processed by the Web Audio API for multimedia web applications
D. Database signals that notify the frontend when backend data changes on server

Answer: B

Q1271. How does database sharding improve scalability for high-traffic applications?

A. It compresses database tables to fit more records into less storage space
B. It creates a complete copy of the database on every single server available
C. It caches all database queries in memory eliminating disk read operations
D. It distributes data across multiple databases reducing load on each individual

Answer: D

Q1272. What is the saga pattern and when is it used in distributed systems?

A. A database indexing strategy for optimizing full-text search across multiple tables
B. A pattern for managing distributed transactions across microservices with compensations
C. A UI design pattern for creating step-by-step wizard forms in web applications
D. A testing pattern for writing narrative-style test cases in behavior-driven development

Answer: B

Q1273. How does event sourcing differ from traditional CRUD data storage?

A. Event sourcing stores state changes as events while CRUD stores current state
B. Event sourcing is synchronous while CRUD operations are always asynchronous
C. Event sourcing deletes old data while CRUD keeps complete history of changes
D. Event sourcing only works with NoSQL while CRUD requires relational databases

Answer: A

Q1274. What is the CQRS pattern and what problem does it solve?

A. It compresses query results on the server before sending them to clients
B. It combines all read and write operations into a single optimized data model
C. It creates a queue for all server requests to process them sequentially only
D. It separates read and write models for independent optimization and scaling

Answer: D

Q1275. How does a message queue improve backend architecture reliability?

A. It queues CSS style calculations to prevent layout thrashing in the browser
B. It stores database query results in a queue for faster repeated access times
C. It decouples services by buffering messages for asynchronous processing safely
D. It creates a queue of user interface updates for batch rendering on client

Answer: C

Q1276. What is the difference between horizontal and vertical scaling?

A. Horizontal only works for databases while vertical only works for web servers
B. Horizontal adds more servers while vertical adds more resources to one server
C. Horizontal adds resources to one server while vertical adds more server nodes
D. Horizontal scaling is free while vertical scaling always requires paid licenses

Answer: B

Q1277. How does the strangler fig pattern help migrate monoliths to microservices?

A. It immediately replaces the entire monolith with microservices in one deployment
B. It gradually replaces monolith functionality by routing to new services incrementally
C. It copies the monolith code into separate repositories without any code changes
D. It strangles the monolith by reducing its allocated server resources over time

Answer: B

Q1278. What is the purpose of a dead letter queue in message processing?

A. To create a backup of all messages sent during system maintenance downtime
B. To queue messages from deactivated user accounts for archival purposes only
C. To permanently delete messages that have been successfully processed already
D. To store messages that fail processing for later inspection and retry handling

Answer: D

Q1279. How does the outbox pattern ensure reliable event publishing in microservices?

A. It stores events in a database table atomically with data then publishes them
B. It creates an outbox email notification for every event published by service
C. It sends events directly to the message broker before committing the database
D. It buffers events in browser local storage until network connectivity returns

Answer: A

Q1280. What is the bulkhead pattern in distributed systems?

A. A pattern that isolates failures by partitioning resources into separate pools
B. A pattern for compressing bulk API responses to reduce network bandwidth use
C. A pattern for creating bulk database insert operations for high throughput
D. A pattern for generating bulk SSL certificates for multiple domain endpoints

Answer: A

Q1281. How does the N+1 query problem occur and how can it be resolved?

A. It occurs when a query returns N+1 duplicate records from the database table
B. It occurs when loading related data triggers a query per item instead of batching
C. It occurs when N+1 users simultaneously access the same server resource endpoint
D. It occurs when the database connection pool has exactly N+1 connections open

Answer: B

Q1282. What is the purpose of a write-ahead log in database systems?

A. To record changes before applying them ensuring durability and crash recovery
B. To write CSS styles ahead of rendering to prevent layout shift on the page
C. To prewrite API documentation before implementing the actual endpoint logic
D. To log all user write operations for billing and usage tracking purposes only

Answer: A

Q1283. How does connection multiplexing work in HTTP/2 server implementations?

A. It multiplies the server bandwidth by splitting traffic across many networks
B. It duplicates every request to multiple servers for redundancy and failover
C. It creates multiple separate TCP connections for each HTTP request sent out
D. It sends multiple requests and responses over a single TCP connection stream

Answer: D

Q1284. What is the leader election pattern in distributed server systems?

A. A pattern for selecting which CSS framework the development team should adopt
B. A pattern where users vote for their preferred server through a web interface
C. A pattern where the fastest server automatically becomes the primary database
D. A pattern where one node is chosen to coordinate tasks among distributed nodes

Answer: D

Q1285. How does server-side request forgery (SSRF) attack work and how is it prevented?

A. SSRF sends forged DNS responses to redirect traffic to malicious web servers
B. SSRF exploits SQL injection to forge database records in production tables
C. SSRF tricks a server into making requests to unintended internal resources
D. SSRF forges client-side cookies to impersonate legitimate authenticated users

Answer: C

Q1286. What is the purpose of graceful shutdown in server applications?

A. To finish in-progress requests and release resources before stopping the server
B. To immediately terminate all active connections without completing any requests
C. To reduce server CPU speed gradually to lower power consumption over time
D. To send shutdown notifications to all connected users via email before stop

Answer: A

Q1287. How does the sidecar pattern work in server-side architecture?

A. It deploys a helper process alongside the main service for cross-cutting tasks
B. It creates a secondary copy of the application for A/B testing user features
C. It adds a sidebar navigation component to every page of the web application
D. It places the database alongside the web server on the same physical machine

Answer: A

Q1288. What is back-pressure in server systems and how should it be handled?

A. It is the physical pressure on server hardware from high temperature levels
B. It is a database optimization that compresses data under high storage pressure
C. It is a mechanism to slow producers when consumers cannot keep up with load
D. It is the CSS pressure applied to buttons to create depth visual effects

Answer: C

Q1289. How does the actor model approach concurrency differently than shared memory?

A. Actors require operating system level support and cannot run on standard hardware
B. Actors communicate via message passing with isolated state avoiding shared memory
C. Actors use a single thread and cannot process multiple messages simultaneously
D. Actors share a global memory space and use locks for synchronization of access

Answer: B

Q1290. What is the purpose of distributed tracing in microservice architectures?

A. To track requests across multiple services for debugging and performance analysis
B. To monitor network cable connections between physical server rack units in DC
C. To trace CSS rendering performance across multiple browser rendering engines
D. To trace database query execution plans across multiple table join operations

Answer: A

Q1291. How does database replication improve availability and what are its consistency challenges?

A. Replication creates copies across servers but may cause stale reads temporarily
B. Replication guarantees immediate consistency across all replicas without any delay
C. Replication eliminates the need for backups since data exists on multiple servers
D. Replication only works with NoSQL databases and not with relational SQL databases

Answer: A

Q1292. What is the write-ahead log and how does it ensure data durability?

A. It logs all SELECT queries for audit purposes before returning results to clients
B. It writes database documentation ahead of implementation for planning purposes
C. It records changes to a log before applying them enabling crash recovery of data
D. It pre-generates auto-increment IDs ahead of insert operations for performance

Answer: C

Q1293. How does database connection pool sizing affect application performance?

A. Larger pools always improve performance with no diminishing returns whatsoever
B. Connection pools should always match the exact number of application server threads
C. Too few connections cause queuing while too many waste resources and add contention
D. Pool size has no impact on performance and is purely a configuration preference

Answer: C

Q1294. What is the difference between optimistic and pessimistic locking?

A. Optimistic is for read operations only while pessimistic is for writes exclusively
B. Optimistic locking is faster but pessimistic locking uses less memory on the server
C. Optimistic assumes no conflicts and checks at commit while pessimistic locks upfront
D. Optimistic locks the resource immediately while pessimistic waits until commit time

Answer: C

Q1295. How do graph databases differ from relational databases for relationship-heavy data?

A. Graph databases require data to be normalized into third normal form before insertion
B. Graph databases cannot store any properties on nodes and only support edge connections
C. Graph databases store data in tables but use graphical user interfaces for queries
D. Graph databases model relationships as first-class citizens enabling efficient traversal

Answer: D

Q1296. What is the purpose of a materialized view and when should it be used?

A. It stores precomputed query results physically for fast access on complex queries
B. It visualizes database schema as a material design diagram for documentation use
C. It generates a physical backup file of the database view definitions and metadata
D. It creates a virtual view that recomputes on every access for fresh data always

Answer: A

Q1297. How does database partitioning differ from sharding?

A. Partitioning distributes data across servers while sharding splits within one database
B. Partitioning and sharding are identical concepts with no practical difference at all
C. Partitioning is for NoSQL only while sharding works exclusively with SQL databases
D. Partitioning splits data within one database while sharding distributes across servers

Answer: D

Q1298. What is the CAP theorem's impact on database selection for distributed systems?

A. CAP only applies to NoSQL databases and has no relevance to SQL database systems
B. CAP requires all three properties to be met for any distributed database to function
C. CAP states you can only guarantee two of consistency, availability, partition tolerance
D. CAP states distributed systems must choose between consistency and partition tolerance

Answer: C

Q1299. How does a time-series database optimize for temporal data compared to relational databases?

A. It stores all timestamps as plain text strings for human-readable log file output
B. It requires data to be inserted in reverse chronological order for index efficiency
C. It uses time-based partitioning and compression optimized for append-heavy workloads
D. It only supports queries for the most recent hour of data and archives everything else

Answer: C

Q1300. What is the change data capture pattern and how does it enable event-driven architectures?

A. It captures network packet changes for monitoring database connection health status
B. It captures CSS property changes and generates transition animations automatically
C. It captures UI changes in the browser DOM and sends them to the server for storage
D. It captures database changes as events enabling downstream systems to react to them

Answer: D

Q1301. How does a timing attack exploit web applications and how is it mitigated?

A. It measures response time differences to infer secret data using constant-time comparison
B. It exploits expired TLS certificates during the brief window before renewal occurs
C. It sends requests at precisely timed intervals to bypass rate limiting protections
D. It attacks during specific time zones when server administrators are offline

Answer: A

Q1302. What is the difference between symmetric and asymmetric encryption in web security?

A. Symmetric uses two keys while asymmetric uses a single shared secret key only
B. Symmetric uses one shared key while asymmetric uses a public-private key pair
C. Symmetric is more secure than asymmetric in all possible use case scenarios today
D. Symmetric is for encrypting files while asymmetric is for encrypting databases

Answer: B

Q1303. How does a JWT token compromise affect application security and what mitigations exist?

A. JWT compromise only affects the single request where the token was intercepted
B. JWT tokens cannot be compromised because they are encrypted with AES-256 always
C. JWT compromise requires the attacker to also know the user password to exploit
D. JWT compromise grants access until expiration mitigated by short TTL and rotation

Answer: D

Q1304. What is the purpose of a Web Application Firewall and how does it differ from a network firewall?

A. WAF operates at the network layer while network firewall operates at application layer
B. WAF only protects static websites while network firewall protects dynamic applications
C. WAF replaces the need for HTTPS encryption while network firewall enhances encryption
D. WAF protects against application layer attacks while network firewall handles lower layers

Answer: D

Q1305. How does certificate pinning enhance TLS security and what are its drawbacks?

A. It pins SSL certificates to specific IP addresses for geographic restriction purposes
B. It pins certificates in DNS records requiring DNSSEC for validation of every connection
C. It binds a host to specific certificates preventing man-in-middle with CA compromise risk
D. It permanently pins a certificate preventing any future certificate rotation or updates

Answer: C

Q1306. What is a supply chain attack in web development and how can it be mitigated?

A. A vulnerability in the CDN supply chain that serves corrupted static asset files
B. A compromised dependency that injects malicious code mitigated by lockfiles and audits
C. An attack on the physical supply chain of server hardware during manufacturing
D. An attack where the attacker buys the domain name of a deprecated npm package

Answer: B

Q1307. How does Subresource Integrity protect against CDN compromises?

A. It checks that CDN servers have valid SSL certificates before loading any resources
B. It encrypts all resources loaded from CDNs to prevent eavesdropping during transfer
C. It creates a backup copy of CDN resources on the origin server for failover support
D. It verifies resource integrity using cryptographic hashes ensuring files are untampered

Answer: D

Q1308. What is the OAuth 2.0 authorization code flow and why is PKCE important?

A. OAuth uses basic auth and PKCE adds an extra password layer for security measure
B. Auth code flow exchanges code for tokens and PKCE prevents authorization code interception
C. OAuth only works with social login providers and PKCE extends it to email passwords
D. Auth code flow is deprecated and PKCE is the entirely new protocol that replaced it

Answer: B

Q1309. How does a zero-day vulnerability differ from a known vulnerability in web security?

A. Zero-day is a vulnerability discovered on the first day the software was released
B. Zero-day is an unknown exploit with no patch while known vulnerabilities have fixes
C. Zero-day means the vulnerability has zero impact while known ones have high impact
D. Zero-day vulnerabilities can only affect server software and not client applications

Answer: B

Q1310. What is the purpose of security response headers like Permissions-Policy?

A. To set file system permissions for static assets served by the web server only
B. To control which browser features and APIs a document is allowed to use safely
C. To define which team members have permission to deploy code to production servers
D. To manage database user permissions through HTTP headers sent with each request

Answer: B

Q1311. How does the PRPL pattern optimize web application loading performance?

A. It Parses HTML, Resolves dependencies, Processes CSS, and Loads JavaScript
B. It Prioritizes above-fold, Reduces payload, Prefetches links, Lowers latency
C. It Pre-renders, Re-renders, Pre-loads, and Lazy-loads all page components
D. It Pushes critical resources, Renders route, Pre-caches, and Lazy-loads rest

Answer: D

Q1312. What is the impact of long tasks on web performance and how are they identified?

A. Long tasks are HTTP requests taking over five seconds to receive a server response
B. Long tasks are CSS animations exceeding one second that cause janky scrolling
C. Tasks that write large amounts of data to localStorage causing storage quota errors
D. Tasks exceeding 50ms block the main thread and are identified via Long Tasks API

Answer: D

Q1313. How does resource prioritization work in the browser and how can developers influence it?

A. Browsers assign priority based on resource type and developers use fetchpriority hints
B. Browsers load all resources with equal priority and developers cannot change this
C. Resource priority is determined solely by the order resources appear in the HTML file
D. Developers must manually specify download order for every single resource on page

Answer: A

Q1314. What is the purpose of the Performance Observer API?

A. To observe network performance and automatically switch to lower quality resources
B. To asynchronously observe performance entries like marks, measures, and paint timing
C. To observe and report CSS rendering performance for animation smoothness checks
D. To monitor server CPU and memory performance from the client browser JavaScript

Answer: B

Q1315. How does Brotli compression compare to Gzip for web content delivery?

A. Brotli only works with HTML files while Gzip supports all content types served
B. Brotli and Gzip produce identical compression ratios for all web content types
C. Brotli achieves higher compression ratios than Gzip especially for static content
D. Brotli requires client-side decompression libraries while Gzip is built into browsers

Answer: C

Q1316. What is layout thrashing and how can it be prevented?

A. Layout thrashing occurs when too many CSS classes are applied to a single element
B. It occurs when multiple CSS files conflict with each other causing rendering delays
C. It occurs when repeated reads and writes to the DOM force synchronous layout recalculations
D. Layout thrashing happens when the server sends too many layout instructions in response

Answer: C

Q1317. How does the speculation rules API improve navigation performance?

A. It allows prerendering of pages the user is likely to navigate to using rules set
B. It guesses user input and pre-fills form fields to reduce time to completion
C. It predicts server load and automatically scales resources before traffic spikes
D. It speculates which CSS styles will be needed and pre-compiles them for speed

Answer: A

Q1318. What is the difference between First Contentful Paint and Largest Contentful Paint?

A. FCP is a server metric while LCP is a client metric and they measure different things
B. FCP measures when first content renders while LCP measures largest content element render
C. FCP measures first byte received while LCP measures last byte received from server
D. FCP only measures text rendering while LCP only measures image rendering on the page

Answer: B

Q1319. How does edge computing improve web application performance?

A. It runs computation at network edge locations closer to users reducing latency seen
B. It prioritizes content at the top edge of the page for above-the-fold rendering
C. It sharpens image edges using advanced algorithms for better visual quality display
D. It processes data at the edge of the database table for faster query result times

Answer: A

Q1320. What is the Interaction to Next Paint metric and why did it replace First Input Delay?

A. INP measures overall responsiveness across all interactions not just the first input event
B. INP measures network latency to the next server while FID measured to the current server
C. INP only measures touch interactions while FID measured all types of user input events
D. INP measures the time between two consecutive paint operations on the canvas element

Answer: A

Q1321. How does visual regression testing work and what tools support it?

A. It manually reviews visual design changes in a design review meeting with stakeholders
B. It tests CSS regression properties by comparing computed styles programmatically
C. It runs CSS animations in reverse to test visual consistency during undo operations
D. It captures and compares screenshots pixel-by-pixel using tools like Percy or Chromatic

Answer: D

Q1322. What is property-based testing and how does it differ from example-based testing?

A. Property-based only tests object properties while example-based tests entire components
B. Property-based uses specific examples while example-based uses random test input data
C. Property-based requires no assertions while example-based requires explicit assertions
D. Property-based generates random inputs to verify invariants rather than specific examples

Answer: D

Q1323. How does contract testing ensure compatibility between microservices?

A. It verifies that service interactions conform to agreed-upon API contracts defined
B. It verifies that all microservices use the same programming language and framework
C. It ensures all services are deployed in the same data center for low latency access
D. It tests the legal contracts associated with third-party service license agreements

Answer: A

Q1324. What is mutation testing and how does it evaluate test suite quality?

A. It introduces small code changes to verify that tests catch defects effectively now
B. It tests how the application handles mutated or corrupted database records safely
C. It mutates the test code itself to verify it can be easily maintained over time
D. It tests the application with different user input mutations for edge case coverage

Answer: A

Q1325. How does chaos engineering apply to web application testing?

A. It intentionally introduces failures to test system resilience and recovery ability
B. It generates random database schemas to test ORM compatibility across configurations
C. It tests the application with randomly generated CSS styles for visual robustness
D. It creates chaotic user interface layouts to test responsive design breakpoints

Answer: A

Q1326. What is the difference between synthetic and real user monitoring?

A. Synthetic measures server metrics while RUM measures only client-side rendering speed
B. Synthetic uses scripted tests in controlled environments while RUM tracks actual users
C. Synthetic only works in development while RUM only works in staging environments used
D. Synthetic monitors real users while RUM uses automated scripts for testing performance

Answer: B

Q1327. How does test parallelization improve CI/CD pipeline performance?

A. It parallelizes code compilation and testing in the same process for efficiency gains
B. It runs all tests sequentially on multiple servers for consistent result comparison
C. It creates parallel copies of the database for each test to run in complete isolation
D. It runs independent tests simultaneously across workers reducing total execution time

Answer: D

Q1328. What is the role of test fixtures and factories in maintaining test data?

A. Fixtures are physical hardware devices used for hardware-in-the-loop testing only
B. Fixtures store CSS styling for test result report pages displayed in the browser
C. Fixtures and factories create consistent reusable test data reducing setup duplication
D. Factories generate random production data for populating staging environments daily

Answer: C

Q1329. How does fuzz testing help discover security vulnerabilities?

A. It applies fuzzy logic to determine which test cases should be prioritized first
B. It feeds random or malformed input to find crashes and unexpected behavior patterns
C. It tests the application with fuzzy or blurred images to check image processing
D. It tests fuzzy string matching algorithms for accuracy in search functionality

Answer: B

Q1330. What is the testing trophy pattern and how does it differ from the testing pyramid?

A. The trophy inverts the pyramid putting the most end-to-end tests at the base level
B. The trophy eliminates unit tests entirely and focuses only on end-to-end test coverage
C. The trophy has more integration tests emphasizing confidence per test written effort
D. The trophy adds a new layer of performance tests that the pyramid does not include

Answer: C

Q1331. How does GitOps differ from traditional CI/CD approaches?

A. GitOps eliminates the need for any version control system in the deployment process
B. GitOps only works with GitHub and cannot be used with GitLab or Bitbucket platforms
C. GitOps requires manual approval for every deployment while CI/CD is fully automated
D. GitOps uses Git as the single source of truth for declarative infrastructure and apps

Answer: D

Q1332. What is the purpose of a service mesh in container orchestration?

A. It manages service-to-service communication with observability, security, and routing
B. It generates a mesh network of CDN nodes for distributed static asset delivery use
C. It creates a visual mesh overlay of all CSS grid layouts on the deployed web page
D. It meshes multiple databases together into a single unified query interface for apps

Answer: A

Q1333. How does immutable infrastructure improve deployment reliability?

A. It replaces servers entirely instead of updating them ensuring consistent clean state
B. It freezes all application features and prevents any new deployments from occurring
C. It makes database records immutable so they cannot be updated or deleted by anyone
D. It prevents any developer from modifying the infrastructure code in the repository

Answer: A

Q1334. What is the purpose of a deployment rollback strategy?

A. To create a backup of the deployment pipeline configuration for disaster recovery
B. To gradually roll forward by deploying incrementally to larger user group segments
C. To roll back CSS changes to a previous design version when stakeholders disagree
D. To quickly revert to a previous working version when a deployment causes issues

Answer: D

Q1335. How does Kubernetes handle self-healing of deployed applications?

A. It automatically rewrites application code to fix bugs detected in production use
B. It heals network connections between services by automatically rerouting all traffic
C. It monitors pod health and restarts or replaces failed pods to maintain desired state
D. It repairs corrupted database tables by restoring from the most recent backup file

Answer: C

Q1336. What is the difference between horizontal and vertical pod autoscaling in Kubernetes?

A. Horizontal only scales CPU while vertical only scales memory allocation for each pod
B. Horizontal adjusts resources while vertical adds replicas for load distribution work
C. Horizontal adds more pod replicas while vertical adjusts pod resource limits upward
D. Horizontal requires manual triggers while vertical scales automatically based on load

Answer: C

Q1337. How does a progressive delivery strategy improve deployment safety?

A. It progressively increases the server CPU speed during deployment for faster builds
B. It delivers CSS and JavaScript progressively using chunked transfer encoding only
C. It deploys all changes at once but progressively enables monitoring after deployment
D. It gradually exposes changes to users with feature flags, canaries, and observability

Answer: D

Q1338. What is the purpose of chaos engineering in production deployments?

A. To generate chaotic test data that stress-tests database storage capacity under load
B. To randomly assign deployment tasks to team members for knowledge sharing purposes
C. To intentionally inject failures to verify system resilience and recovery mechanisms
D. To create chaotic deployment schedules that test team response time capabilities

Answer: C

Q1339. How does multi-region deployment improve application availability?

A. It deploys across geographic regions providing failover and reduced latency globally
B. It runs multiple instances of the database on the same server for read performance
C. It deploys the application to multiple folders within a single server for redundancy
D. It creates multiple copies of the source code repository in different version controls

Answer: A

Q1340. What is the twelve-factor app methodology and how does it influence deployment?

A. It mandates twelve team members minimum for any cloud deployment project management
B. It requires twelve separate deployment stages before code can reach production servers
C. It limits applications to twelve files maximum for simplified deployment management
D. It defines twelve principles for building scalable, maintainable cloud-native applications

Answer: D

Q1341. How does GraphQL handle the over-fetching and under-fetching problems of REST?

A. GraphQL automatically paginates responses to prevent over-fetching of large datasets
B. GraphQL requires multiple round trips but each returns exactly one field per request
C. GraphQL lets clients specify exactly which fields they need in a single query request
D. GraphQL caches all possible response combinations to eliminate unnecessary fetching

Answer: C

Q1342. What are the tradeoffs between REST, GraphQL, and gRPC for API design?

A. gRPC only works between frontend and backend while REST is only for backend services
B. REST is always the best choice and GraphQL and gRPC offer no advantages over it
C. REST is simple and cacheable, GraphQL is flexible for clients, gRPC is fast for services
D. GraphQL is the fastest protocol while REST and gRPC are slower but more user-friendly

Answer: C

Q1343. How does the BFF (Backend for Frontend) pattern optimize API consumption?

A. It creates dedicated backend services tailored to specific frontend client requirements
B. It creates a beautiful frontend framework that replaces the need for API calls entirely
C. It bundles all frontend files and serves them from the backend for faster initial loads
D. It buffers frontend failures and retries API calls automatically without user awareness

Answer: A

Q1344. What is the purpose of API circuit breakers and how do they improve reliability?

A. They stop calling failing APIs after threshold breaches preventing cascade failures
B. They create circular API routes for redundant request handling and load balancing
C. They break API responses into smaller circuits for parallel processing on the client
D. They physically disconnect API servers from the network during maintenance windows

Answer: A

Q1345. How does event-driven API design differ from request-response patterns?

A. Event-driven APIs push events to subscribers asynchronously instead of synchronous calls
B. Event-driven APIs only support read operations and cannot handle data write operations
C. Event-driven APIs require clients to poll the server continuously for new events data
D. Event-driven APIs are limited to WebSocket transport and cannot use HTTP protocol at all

Answer: A

Q1346. What is the purpose of API schema validation and how does it prevent issues?

A. It validates CSS schemas applied to API response rendering in the browser viewport
B. It validates request and response structures against defined schemas catching errors early
C. It validates server configuration files to ensure API routing is correctly configured
D. It validates database schemas before running API queries to prevent SQL syntax errors

Answer: B

Q1347. How does API versioning through content negotiation work?

A. Clients specify the desired API version in the URL path like /api/v1/resource endpoint
B. Clients specify the desired version through Accept headers rather than URL path changes
C. Servers randomly assign API versions to clients based on their geographic location data
D. Clients download different API versions and choose which one to install on their device

Answer: B

Q1348. What is the purpose of the saga pattern in managing distributed API transactions?

A. It tracks the complete saga or history of all API calls for audit compliance purposes
B. It creates epic narrative documentation for complex API integration workflows only
C. It generates sequential API call stories for automated testing of integration scenarios
D. It coordinates long-running distributed transactions with compensating actions for failures

Answer: D

Q1349. How does server-sent events differ from WebSockets for real-time API communication?

A. SSE requires a dedicated server while WebSockets work on any standard HTTP web server
B. SSE only supports binary data while WebSockets only support plain text message formats
C. SSE is bidirectional over HTTP while WebSockets only support server-to-client messages
D. SSE provides one-way server-to-client streaming over HTTP while WebSockets are bidirectional

Answer: D

Q1350. What is the purpose of API observability and what does it encompass?

A. It observes API source code changes and generates release notes documentation only
B. It encompasses logging, metrics, and tracing for understanding API behavior and health
C. It observes competitor API features and suggests improvements for your own API design
D. It monitors the visual appearance of API documentation pages for design consistency

Answer: B

Q1351. How does partial hydration improve performance compared to full hydration?

A. Partial hydration only hydrates interactive components reducing JavaScript sent to client
B. Partial hydration pre-renders CSS while full hydration renders it at runtime on client
C. Partial hydration downloads less HTML while full hydration downloads the complete page
D. Partial hydration splits the database queries while full hydration runs them all at once

Answer: A

Q1352. What is the purpose of React Server Components in the modern web ecosystem?

A. They are server-side templates that generate static HTML without any React features used
B. They create server-to-server communication channels for microservice architectures only
C. They render on the server reducing bundle size while keeping client interactivity where needed
D. They replace all client components entirely and run everything on the server only

Answer: C

Q1353. How does the module federation pattern enable micro-frontend architectures?

A. It creates federated databases where each micro-frontend has its own data storage silo
B. It federates CSS modules across multiple applications for shared styling consistency
C. It allows applications to share and load modules from other builds at runtime dynamically
D. It merges all micro-frontend codebases into a single monolithic bundle for deployment

Answer: C

Q1354. What is the purpose of observability in modern web applications?

A. To observe CSS rendering performance and generate visual reports for stakeholders
B. To observe user behavior through screen recording for UX research purposes only
C. To monitor competitor websites and observe their feature changes for benchmarking
D. To provide insight into system behavior through logs, metrics, and distributed tracing

Answer: D

Q1355. How does the streaming architecture pattern benefit modern web applications?

A. It streams video content to users using specialized video encoding protocols only
B. It processes and delivers data incrementally reducing time to first meaningful content
C. It creates a stream of database backups continuously for disaster recovery purposes
D. It streams CSS styles progressively so the page styling appears gradually over time

Answer: B

Q1356. What is the difference between build-time and runtime in modern web frameworks?

A. Build-time only applies to CSS while runtime only applies to JavaScript code execution
B. Build-time requires Node.js while runtime requires a completely different language runtime
C. Build-time is slower but more secure while runtime is faster but has security vulnerabilities
D. Build-time generates optimized output ahead of deployment while runtime executes on request

Answer: D

Q1357. How does the AI-assisted development trend impact modern web practices?

A. AI development tools are limited to backend development and cannot assist with frontend
B. AI completely replaces the need for human developers in all web development tasks today
C. AI tools assist with code generation, review, and debugging while humans provide oversight
D. AI only works for generating CSS styles and cannot help with JavaScript or HTML coding

Answer: C

Q1358. What is the concept of edge-first architecture in modern web development?

A. Designing buildings with edge-shaped architecture for modern tech company headquarters
B. Developing applications that only work on Microsoft Edge browser for optimal performance
C. Designing applications to run primarily at network edge for minimal latency and global scale
D. Prioritizing the visual edges and borders of UI elements for a modern design aesthetic

Answer: C

Q1359. How does the concept of composability influence modern web architecture?

A. It composes CSS animations by chaining multiple keyframe definitions in sequence only
B. It composes music and sound effects for web applications using the Web Audio API
C. It creates composite database indexes by combining multiple columns for query speed
D. It builds systems from interchangeable independent modules that can be freely combined

Answer: D

Q1360. What are the tradeoffs of adopting a serverless architecture for web applications?

A. Serverless only works for static websites and cannot handle any dynamic content at all
B. Serverless eliminates all costs since you never pay for idle server time or any resources
C. Serverless has no tradeoffs and is always the best choice for every web application type
D. Serverless reduces ops overhead but introduces cold starts and vendor lock-in challenges

Answer: D

Q1361. What is the main trade-off when choosing between a monolithic architecture and a microservices architecture for a web application?

A. Monoliths are always slower than microservices
B. Microservices add operational complexity but allow independent scaling and deployment of services
C. Monoliths cannot use databases
D. Microservices require a single programming language

Answer: B

Q1362. How does WebAssembly complement JavaScript in modern web development?

A. It completely replaces JavaScript in all browsers
B. It allows near-native performance for compute-intensive tasks while JavaScript handles DOM interaction
C. It is only used for styling web pages
D. It is a server-side-only technology

Answer: B

Q1363. What problem does the micro-frontend architecture solve in large-scale web development?

A. It reduces CSS file size
B. It allows independent teams to develop, deploy, and maintain separate parts of a frontend application
C. It eliminates the need for a backend
D. It only works with Angular applications

Answer: B

Q1364. What is the significance of the critical rendering path in web performance?

A. It determines how the server compiles JavaScript
B. It is the sequence of steps the browser takes to convert HTML, CSS, and JS into rendered pixels on screen
C. It only affects mobile devices
D. It refers to the deployment pipeline

Answer: B

Q1365. What is the purpose of edge computing in the context of modern web applications?

A. To increase the physical size of data centers
B. To run computations closer to the end user, reducing latency and improving responsiveness
C. To replace all client-side JavaScript
D. To eliminate the need for caching

Answer: B

Q1366. How does the concept of progressive enhancement differ from graceful degradation?

A. They are the same strategy
B. Progressive enhancement builds from a baseline experience upward, while graceful degradation starts with full features and falls back
C. Progressive enhancement only applies to CSS
D. Graceful degradation does not work in modern browsers

Answer: B

Q1367. What is the role of a build tool like Webpack or Vite in modern web development?

A. It hosts websites on the internet
B. It bundles, transforms, and optimizes source files for production deployment
C. It is used exclusively for database management
D. It replaces the need for version control

Answer: B

Q1368. Why is accessibility (a11y) considered a fundamental aspect of professional web development?

A. It only improves search engine rankings
B. It ensures web content is usable by people with disabilities and often improves usability for all users
C. It is only required by European law
D. It slows down website performance

Answer: B

Q1369. What is the difference between Server-Sent Events and WebSockets for real-time communication?

A. They are identical protocols
B. SSE is unidirectional from server to client over HTTP, while WebSockets provide full-duplex bidirectional communication
C. SSE is faster than WebSockets in all cases
D. WebSockets cannot send text data

Answer: B

Q1370. What is the impact of third-party scripts on web application performance and security?

A. Third-party scripts have no impact on performance
B. They can increase page load time, introduce security vulnerabilities, and affect Core Web Vitals
C. They always improve website speed
D. They are automatically sandboxed by browsers

Answer: B

Q1371. What is the split-brain problem in distributed web systems?

A. A CSS rendering issue
B. When network partitions cause parts of a distributed system to operate independently with conflicting states
C. A JavaScript memory leak pattern
D. A browser compatibility issue

Answer: B

Q1372. How does the QUIC protocol improve web performance compared to TCP?

A. QUIC is slower but more secure than TCP
B. QUIC eliminates head-of-line blocking and reduces connection establishment latency by combining transport and encryption handshakes
C. QUIC only works on local networks
D. QUIC replaces HTTP entirely

Answer: B

Q1373. What is the purpose of the saga pattern in distributed architectures?

A. To optimize CSS rendering
B. To manage distributed transactions by breaking them into a sequence of local transactions with compensating actions
C. To compress network traffic
D. To handle DNS resolution

Answer: B

Q1374. What is the difference between strong consistency and eventual consistency in distributed systems?

A. They are the same model
B. Strong consistency guarantees all nodes see the latest data immediately while eventual consistency allows temporary divergence
C. Strong consistency is always faster
D. Eventual consistency prevents data replication

Answer: B

Q1375. What is the purpose of connection pooling in web architecture?

A. To create new database connections for every request
B. To maintain a pool of reusable connections to reduce the overhead of establishing new connections
C. To encrypt all network traffic
D. To manage CSS class names

Answer: B

Q1376. How does the event-driven architecture pattern benefit web applications?

A. It makes all operations synchronous
B. It decouples services through asynchronous event publishing and consumption, improving scalability and resilience
C. It eliminates the need for databases
D. It only works with a single server

Answer: B

Q1377. What is the role of a service mesh in modern web architecture?

A. To create HTML templates
B. To manage service-to-service communication, providing observability, security, and traffic control
C. To replace the frontend framework
D. To store static files

Answer: B

Q1378. What problem does the Command Query Responsibility Segregation (CQRS) pattern address?

A. CSS specificity conflicts
B. It separates read and write models to optimize each independently for different performance and scaling requirements
C. It manages DNS records
D. It compresses HTTP responses

Answer: B

Q1379. What is the purpose of request idempotency in web architecture?

A. To make all requests faster
B. To ensure that making the same request multiple times produces the same result without unintended side effects
C. To encrypt request payloads
D. To compress response bodies

Answer: B

Q1380. How does the sidecar proxy pattern work in distributed web architectures?

A. It replaces the main application entirely
B. It deploys a helper process alongside each service instance to handle cross-cutting concerns like networking and observability
C. It is a CSS layout technique
D. It manages browser cookies

Answer: B

Q1381. How does the <portal> element differ from an <iframe> for embedding content?

A. They are identical elements
B. Portals allow seamless navigation to the embedded content and can be activated to become the top-level page
C. Portals cannot load external URLs
D. Iframes are deprecated in HTML5

Answer: B

Q1382. What is the purpose of the Declarative Shadow DOM in HTML?

A. To add CSS animations
B. To allow server-side rendering of shadow DOM content using HTML-only syntax without JavaScript
C. To manage form validation
D. To create responsive images

Answer: B

Q1383. How does the blocking attribute on script and style elements affect rendering?

A. It has no effect on rendering
B. It explicitly indicates which rendering operations should be blocked until the resource is processed
C. It deletes the element from the DOM
D. It compresses the resource

Answer: B

Q1384. What is the purpose of the rel='modulepreload' link type?

A. To load CSS modules
B. To preload JavaScript modules and their dependencies for faster execution when needed
C. To create module-scoped styles
D. To define database modules

Answer: B

Q1385. How does the is attribute enable customized built-in elements?

A. It sets the element's ID
B. It extends a built-in HTML element with custom behavior by associating it with a custom element class
C. It changes the element's display property
D. It removes default browser styling

Answer: B

Q1386. What is the purpose of the ElementInternals API in custom elements?

A. To style elements with CSS
B. To allow custom elements to participate in forms, manage accessibility states, and interact with browser internals
C. To create database connections
D. To handle routing

Answer: B

Q1387. How does the importmap script type improve module loading in HTML?

A. It imports CSS modules
B. It allows developers to control module specifier resolution, mapping bare specifiers to URLs without a build step
C. It creates image maps
D. It generates sitemaps

Answer: B

Q1388. What is the purpose of the Sanitizer API in the context of HTML?

A. To remove all JavaScript from a page
B. To safely parse and sanitize untrusted HTML strings before inserting them into the DOM, preventing XSS attacks
C. To compress HTML files
D. To validate form inputs

Answer: B

Q1389. What role does the Navigation API play in modern single-page applications?

A. It manages CSS navigation menus
B. It provides a standardized way to intercept and handle navigation events, replacing History API workarounds
C. It creates breadcrumb components
D. It manages database migrations

Answer: B

Q1390. How does the Speculation Rules API improve page navigation performance?

A. It guesses which CSS to apply
B. It allows developers to specify rules for prefetching or prerendering future navigations based on link patterns
C. It creates animated page transitions
D. It manages service workers

Answer: B

Q1391. How does the CSS paint API allow custom rendering of element backgrounds?

A. It uses JavaScript to generate images dynamically as CSS backgrounds through registered paint worklets
B. It only changes text colors
C. It is a server-side rendering technique
D. It replaces all CSS with JavaScript

Answer: A

Q1392. What is the difference between logical and physical properties in CSS?

A. They are identical
B. Logical properties like inline-start and block-end adapt to writing direction and text flow, while physical properties like left and top do not
C. Logical properties only work in Firefox
D. Physical properties are deprecated

Answer: B

Q1393. How does the CSS typed object model (Typed OM) improve performance over traditional CSSOM access?

A. It has no performance benefit
B. It provides typed JavaScript objects for CSS values, reducing string parsing overhead and enabling more efficient style manipulation
C. It replaces CSS entirely
D. It only works with inline styles

Answer: B

Q1394. What is the purpose of the CSS @scope rule?

A. To create global styles
B. To limit the reach of CSS selectors to a specific subtree of the DOM, preventing style leakage
C. To define animation keyframes
D. To import external fonts

Answer: B

Q1395. How does the CSS view transitions API work for page transitions?

A. It uses iframes for transitions
B. It captures screenshots of old and new states, then animates between them using CSS animations on pseudo-elements
C. It requires WebGL
D. It only works with React

Answer: B

Q1396. What is the purpose of CSS anchor positioning?

A. To create navigation links
B. To position elements relative to other elements without JavaScript, enabling native tooltip and popover positioning
C. To set the font weight
D. To define grid areas

Answer: B

Q1397. How do CSS nesting rules change the way styles are authored?

A. They have no effect on authoring
B. They allow selectors to be nested inside parent rules natively, similar to preprocessor nesting, reducing repetition
C. They replace all existing CSS syntax
D. They only work with class selectors

Answer: B

Q1398. What is the CSS color-mix() function used for?

A. To add borders to elements
B. To blend two colors together in a specified color space, producing a new color
C. To mix fonts together
D. To generate random colors

Answer: B

Q1399. How does the CSS scroll-driven animations API differ from scroll-based JavaScript animations?

A. It is slower than JavaScript
B. It runs animations on the compositor thread linked to scroll progress, avoiding main-thread JavaScript execution
C. It only supports opacity changes
D. It requires a third-party library

Answer: B

Q1400. What is the purpose of the CSS light-dark() function?

A. To toggle animations
B. To return one of two colors depending on the computed color-scheme, simplifying dark mode implementation
C. To adjust screen brightness
D. To create gradients

Answer: B

Q1401. How does the CSS Containment Level 2 specification improve rendering performance?

A. It has no performance impact
B. It allows developers to declare containment boundaries that isolate an element's layout, paint, or style from the rest of the document
C. It only works with tables
D. It replaces the box model

Answer: B

Q1402. What is the CSS timeline-scope property used for in scroll-driven animations?

A. To set animation duration
B. To extend a scroll timeline's scope to ancestor elements, allowing animations to be driven by scrolling of a descendant
C. To create CSS variables
D. To define grid tracks

Answer: B

Q1403. How does the CSS starting-style at-rule solve transition-on-entry problems?

A. It sets default browser styles
B. It defines initial styles for elements being inserted into the DOM, enabling transitions from display:none to visible states
C. It creates startup animations
D. It initializes CSS variables

Answer: B

Q1404. What is the purpose of the CSS individual transform properties (translate, rotate, scale)?

A. They replace the transform property entirely
B. They allow independent control over individual transformations, enabling separate animation timing without affecting other transforms
C. They only work in 3D space
D. They are identical to the transform property

Answer: B

Q1405. How does the CSS math function round() improve responsive design?

A. It rounds element corners
B. It rounds a value to a specified interval, enabling snap-to-grid-like sizing without JavaScript
C. It rounds animation durations
D. It rounds font sizes to integers only

Answer: B

Q1406. What is the relationship between the CSS paint() function and the PaintWorklet API?

A. They are unrelated features
B. paint() references a registered PaintWorklet to generate custom images rendered directly by the browser's paint engine
C. paint() is a JavaScript function
D. PaintWorklet replaces CSS entirely

Answer: B

Q1407. How does the CSS masonry layout proposal extend CSS Grid?

A. It replaces CSS Grid entirely
B. It enables items to pack tightly along one axis while maintaining grid alignment on the other, like a Pinterest-style layout
C. It only creates circular layouts
D. It is a flexbox feature

Answer: B

Q1408. What is the purpose of the CSS initial-letter property?

A. To set the default font
B. To create decorative drop caps by sizing the first letter of a block to span multiple lines
C. To initialize CSS variables
D. To set the first column width

Answer: B

Q1409. How does the @layer rule affect the CSS cascade?

A. It has no effect on the cascade
B. It creates explicit cascade layers that control the priority of rule sets, allowing authors to manage specificity conflicts intentionally
C. It only applies to media queries
D. It replaces the specificity system

Answer: B

Q1410. What problem does the CSS text-wrap: balance property solve?

A. It aligns text to the left
B. It distributes text more evenly across lines in headings, preventing orphans and uneven line lengths
C. It wraps text around images
D. It sets text to uppercase

Answer: B

Q1411. How does the JavaScript garbage collector determine which objects to free?

A. It deletes all objects after a set time
B. It uses a mark-and-sweep algorithm to identify objects no longer reachable from the root and frees their memory
C. It only frees variables declared with var
D. It requires manual memory management

Answer: B

Q1412. What is the difference between a lexical scope and a dynamic scope?

A. They are the same concept
B. Lexical scope is determined by where code is written in the source while dynamic scope is determined by the call stack at runtime
C. Lexical scope is slower
D. Dynamic scope is used in JavaScript

Answer: B

Q1413. How do labeled statements work with break and continue in JavaScript?

A. Labels are only for comments
B. Labels name a statement, allowing break or continue to reference it from within nested loops to control the outer loop
C. Labels define CSS classes
D. Labels create new variables

Answer: B

Q1414. What is the purpose of the Proxy and Reflect objects working together?

A. They are for styling elements
B. Proxy intercepts operations on objects while Reflect provides default behavior methods that traps can delegate to
C. They manage CSS animations
D. They handle file uploads

Answer: B

Q1415. How does the structuredClone() function handle circular references compared to JSON.parse(JSON.stringify())?

A. Neither handles circular references
B. structuredClone() correctly preserves circular references while JSON methods throw an error on circular structures
C. JSON handles circular references better
D. structuredClone() removes circular references

Answer: B

Q1416. What is the purpose of the Symbol.toPrimitive well-known symbol?

A. To create CSS symbols
B. To define how an object is converted to a primitive value, controlling behavior in type coercion contexts
C. To create HTML symbols
D. To generate random numbers

Answer: B

Q1417. How does the JavaScript engine optimize property access using inline caches?

A. It caches CSS properties
B. It remembers the shape of objects at specific code locations to skip repeated property lookup steps on subsequent accesses
C. It stores all properties in a database
D. It uses localStorage for caching

Answer: B

Q1418. What is the difference between Object.create(null) and a regular object literal?

A. They are identical
B. Object.create(null) creates an object with no prototype chain, avoiding inherited properties like toString and hasOwnProperty
C. Object.create(null) is slower
D. Regular object literals have no prototype

Answer: B

Q1419. How does the for...in loop differ from Object.keys() for iterating over properties?

A. They are identical
B. for...in iterates over all enumerable properties including inherited ones while Object.keys() only returns own enumerable properties
C. for...in is faster
D. Object.keys() includes inherited properties

Answer: B

Q1420. What is the purpose of the @@iterator (Symbol.iterator) protocol in JavaScript?

A. To iterate over CSS rules
B. To define a standard way for objects to produce a sequence of values, making them usable with for...of and spread syntax
C. To create database iterators
D. To manage HTTP request sequences

Answer: B

Q1421. How does the WeakRef class work and what is its relationship to garbage collection?

A. It prevents garbage collection
B. It holds a weak reference to an object that does not prevent it from being garbage collected, allowing observation without retention
C. It creates strong references
D. It manages CSS references

Answer: B

Q1422. What is the purpose of the Atomics object and how does it work with SharedArrayBuffer?

A. It manages CSS atoms
B. It provides atomic operations on shared memory locations to prevent race conditions in concurrent multi-threaded JavaScript
C. It creates atomic CSS classes
D. It manages DOM atoms

Answer: B

Q1423. How does the using declaration (Explicit Resource Management) improve resource cleanup?

A. It imports CSS modules
B. It ensures resources like file handles and database connections are automatically cleaned up via Symbol.dispose when they go out of scope
C. It creates reusable components
D. It manages memory allocation

Answer: B

Q1424. What is the difference between Error.cause and traditional error wrapping?

A. They are identical approaches
B. Error.cause provides a standardized way to chain errors by attaching the original error as a cause property
C. Error.cause is deprecated
D. Traditional wrapping is always better

Answer: B

Q1425. How does the Temporal API improve date and time handling compared to the Date object?

A. It has no improvements over Date
B. It provides immutable date-time types, proper time zone support, and eliminates ambiguities present in the Date API
C. It only works in Node.js
D. It replaces setTimeout

Answer: B

Q1426. What is the purpose of the Decorator pattern in the TC39 proposal and how does it modify class definitions?

A. It adds CSS decorations
B. It allows functions to wrap class elements to add behavior, modify definitions, or add metadata at definition time
C. It creates decorative HTML elements
D. It manages font decorations

Answer: B

Q1427. How does the Record and Tuple proposal introduce immutable data structures to JavaScript?

A. Records are identical to objects
B. Records and Tuples are deeply immutable versions of objects and arrays that are compared by value rather than by reference
C. They only work with strings
D. They replace Map and Set

Answer: B

Q1428. What problem does the Pipeline Operator proposal solve in JavaScript?

A. It manages network pipes
B. It improves readability of nested function calls by allowing values to be piped through a series of functions in a left-to-right order
C. It creates CSS pipes
D. It handles data streaming

Answer: B

Q1429. How does the ShadowRealm proposal enable secure code isolation in JavaScript?

A. It creates CSS shadow effects
B. It provides a mechanism to evaluate code in an isolated global environment with its own set of built-in objects
C. It manages Shadow DOM
D. It creates encrypted variables

Answer: B

Q1430. What is the purpose of the AsyncContext proposal in JavaScript?

A. It manages CSS context
B. It provides a way to propagate context values through asynchronous operations without explicit parameter passing
C. It creates database contexts
D. It manages HTML contexts

Answer: B

Q1431. How does React's compiler (React Forget) optimize re-renders without manual memoization?

A. It removes all re-renders
B. It automatically inserts memoization at the compiler level, eliminating the need for useMemo, useCallback, and React.memo
C. It only optimizes CSS
D. It replaces the virtual DOM

Answer: B

Q1432. What is the concept of resumability in Qwik and how does it differ from hydration?

A. They are the same process
B. Resumability serializes the application state and event handlers to HTML, allowing the client to resume without re-executing component code
C. Resumability is slower
D. Hydration is more efficient

Answer: B

Q1433. How does fine-grained reactivity in Solid.js avoid the overhead of virtual DOM diffing?

A. It uses a faster virtual DOM
B. It tracks reactive dependencies at the individual expression level, updating only the specific DOM nodes that depend on changed data
C. It skips all DOM updates
D. It uses Web Workers for rendering

Answer: B

Q1434. What is the purpose of the React use() hook and how does it change data fetching patterns?

A. It replaces all other hooks
B. It allows reading the value of a resource like a Promise or Context during rendering, enabling Suspense-based data fetching
C. It only fetches CSS resources
D. It replaces the fetch API

Answer: B

Q1435. How does Angular's signal-based reactivity change its change detection model?

A. It has no effect on change detection
B. Signals enable fine-grained reactivity that automatically tracks dependencies and updates only affected components, reducing unnecessary checks
C. Signals replace all observables
D. Signals only work with forms

Answer: B

Q1436. What is the purpose of React Server Actions and how do they simplify data mutations?

A. They manage CSS server-side
B. They allow defining server-side functions that can be called directly from client components, handling form submissions without manual API routes
C. They replace all server routes
D. They only work with databases

Answer: B

Q1437. How does the islands architecture in Astro optimize page performance?

A. It renders everything on the client
B. It renders static HTML by default and only hydrates interactive components as isolated islands, minimizing client-side JavaScript
C. It uses iframes for each component
D. It eliminates all JavaScript

Answer: B

Q1438. What is the difference between optimistic and pessimistic UI updates in frontend applications?

A. They are the same strategy
B. Optimistic updates immediately reflect changes in the UI before server confirmation while pessimistic updates wait for server response
C. Optimistic updates are always correct
D. Pessimistic updates are faster

Answer: B

Q1439. How does streaming SSR improve the user experience compared to traditional SSR?

A. It has no improvement over traditional SSR
B. It sends HTML in chunks as they become ready, allowing the browser to start rendering before the entire page is generated
C. It only streams CSS
D. It requires WebSocket connections

Answer: B

Q1440. What is the purpose of module federation in micro-frontend architectures?

A. It manages CSS modules
B. It allows separately built and deployed applications to share code and components at runtime without rebuilding
C. It merges all JavaScript into one file
D. It only works with Angular modules

Answer: B

Q1441. How does the repository pattern improve backend architecture?

A. It replaces all databases
B. It abstracts data access logic behind an interface, decoupling business logic from specific database implementations
C. It manages CSS repositories
D. It creates HTML templates

Answer: B

Q1442. What is the purpose of database connection pooling in high-traffic applications?

A. To create more databases
B. To maintain a pool of reusable connections that avoid the overhead of establishing new connections for each request
C. To pool CSS styles
D. To merge database schemas

Answer: B

Q1443. How does the event sourcing pattern differ from traditional CRUD storage?

A. They are identical approaches
B. Event sourcing stores every state change as an immutable event, allowing complete reconstruction of state, while CRUD overwrites current state
C. Event sourcing is slower
D. CRUD stores more historical data

Answer: B

Q1444. What is the purpose of the circuit breaker pattern in backend services?

A. To manage electrical circuits
B. To prevent cascading failures by stopping requests to a failing service and returning fallback responses
C. To break CSS layouts
D. To interrupt database connections

Answer: B

Q1445. How does idempotency in API design prevent duplicate operations?

A. It makes all requests faster
B. It ensures that making the same request multiple times has the same effect as making it once, preventing duplicate side effects
C. It only applies to GET requests
D. It replaces authentication

Answer: B

Q1446. What is the purpose of the outbox pattern in microservices?

A. To manage email outboxes
B. To reliably publish events by writing them to a database table and processing them asynchronously, ensuring atomicity
C. To store outgoing CSS styles
D. To manage outbound network connections

Answer: B

Q1447. How does the CQRS pattern benefit read-heavy backend applications?

A. It has no benefit for reads
B. It separates read and write models, allowing the read model to be optimized with denormalized views and separate scaling
C. It only works with NoSQL databases
D. It replaces all caching

Answer: B

Q1448. What is the purpose of distributed locking in backend systems?

A. To lock CSS stylesheets
B. To coordinate exclusive access to shared resources across multiple service instances to prevent race conditions
C. To lock database schemas
D. To prevent code modifications

Answer: B

Q1449. How does the strangler fig pattern facilitate migration from monolith to microservices?

A. It removes the monolith immediately
B. It gradually replaces monolith functionality with microservices by routing specific features to new services while keeping the monolith running
C. It only works with fig trees
D. It creates a copy of the monolith

Answer: B

Q1450. What is the purpose of a dead letter queue in message-driven backend systems?

A. To send farewell emails
B. To store messages that failed processing after maximum retry attempts for later investigation and reprocessing
C. To delete old messages
D. To compress message queues

Answer: B

Q1451. How does the cluster module in Node.js improve server performance?

A. It clusters CSS styles
B. It forks multiple worker processes to utilize all CPU cores, distributing incoming connections across workers
C. It creates database clusters
D. It clusters HTML templates

Answer: B

Q1452. What is the purpose of database query optimization using execution plans?

A. To plan CSS layouts
B. To analyze how the database engine processes a query, identifying bottlenecks like full table scans that can be resolved with indexes
C. To plan server deployments
D. To optimize HTML rendering

Answer: B

Q1453. How does connection draining ensure zero-downtime deployments?

A. It drains CSS connections
B. It allows existing requests to complete while stopping new connections from reaching the old server instance during deployment
C. It drains database connections permanently
D. It removes all network connections

Answer: B

Q1454. What is the purpose of request coalescing in server-side caching?

A. To merge CSS requests
B. To combine multiple identical concurrent requests into a single backend call, serving all requesters with the same response
C. To coalesce HTML files
D. To merge database tables

Answer: B

Q1455. How does server-side request forgery (SSRF) exploit server-side applications?

A. It forges CSS styles
B. It tricks the server into making requests to internal resources or services by manipulating user-controlled input used in server requests
C. It forges HTML elements
D. It duplicates JavaScript code

Answer: B

Q1456. What is the purpose of structured logging in server-side applications?

A. To structure CSS files
B. To output log entries as structured data (JSON) with consistent fields, enabling automated parsing, searching, and alerting
C. To structure HTML templates
D. To organize database tables

Answer: B

Q1457. How does graceful shutdown differ from abrupt termination in server applications?

A. They are identical
B. Graceful shutdown stops accepting new requests, finishes in-flight requests, closes connections, and releases resources before exiting
C. Graceful shutdown is faster
D. Abrupt termination is safer

Answer: B

Q1458. What is the purpose of the back-pressure mechanism in streaming server applications?

A. To compress network traffic
B. To signal data producers to slow down when consumers cannot process data fast enough, preventing memory exhaustion
C. To increase server pressure
D. To manage CSS pressure

Answer: B

Q1459. How does the worker thread model in Node.js differ from the cluster module for CPU-intensive tasks?

A. They are identical
B. Worker threads share memory within a single process for CPU tasks while cluster creates separate processes that share the server port
C. Worker threads are slower
D. Cluster uses less memory

Answer: B

Q1460. What is the purpose of rate limiting with sliding window algorithms?

A. To limit CSS animations per second
B. To track request counts over a continuously moving time window, providing smoother rate limiting than fixed windows
C. To limit database queries
D. To control HTML rendering speed

Answer: B

Q1461. How does Multi-Version Concurrency Control (MVCC) enable concurrent database access?

A. It locks all tables
B. It maintains multiple versions of data so readers see a consistent snapshot while writers create new versions without blocking reads
C. It duplicates the database
D. It uses CSS versioning

Answer: B

Q1462. What is the purpose of a write-ahead log (WAL) in database crash recovery?

A. To log CSS changes
B. To record all changes to a log file before applying them to the database, ensuring recovery by replaying the log after a crash
C. To write HTML ahead of rendering
D. To log JavaScript errors

Answer: B

Q1463. How does range partitioning differ from hash partitioning in database systems?

A. They are identical strategies
B. Range partitioning splits data by value ranges enabling range queries while hash partitioning distributes data evenly using a hash function
C. Range partitioning is always faster
D. Hash partitioning only works with strings

Answer: B

Q1464. What is the N+1 query problem and how do eager loading and batching solve it?

A. It is a CSS specificity issue
B. It occurs when fetching related data triggers N additional queries; eager loading and batching reduce this to a constant number of queries
C. It only happens with MongoDB
D. It is a JavaScript memory issue

Answer: B

Q1465. What is the purpose of a materialized view and how does it differ from a regular view?

A. They are the same thing
B. A materialized view stores precomputed query results physically, providing faster reads at the cost of requiring periodic refresh
C. Materialized views are slower
D. Regular views store data physically

Answer: B

Q1466. How does the change data capture (CDC) pattern enable event-driven architectures?

A. It captures CSS changes
B. It monitors database transaction logs for changes and publishes them as events, enabling downstream systems to react to data modifications
C. It captures HTML changes
D. It captures JavaScript variable changes

Answer: B

Q1467. What is the purpose of query plan caching in database systems?

A. To cache CSS query results
B. To store optimized execution plans for previously seen queries, avoiding expensive re-optimization on repeated executions
C. To cache HTML pages
D. To cache JavaScript functions

Answer: B

Q1468. How does a graph database model data differently from a relational database?

A. They model data identically
B. Graph databases use nodes, edges, and properties to represent and store relationships directly, enabling efficient traversal of connected data
C. Graph databases cannot store relationships
D. Relational databases are always better for relationships

Answer: B

Q1469. What is the purpose of connection pool monitoring in production database deployments?

A. To monitor CSS pool usage
B. To track pool utilization, wait times, and connection lifecycle to detect issues like pool exhaustion, leaks, or misconfigured sizing
C. To monitor HTML elements
D. To track JavaScript memory pools

Answer: B

Q1470. How does an LSM tree-based storage engine differ from a B-tree-based engine?

A. They are identical
B. LSM trees buffer writes in memory and flush sorted runs to disk, optimizing write throughput, while B-trees update pages in place, optimizing reads
C. LSM trees are always slower
D. B-trees cannot handle concurrent writes

Answer: B

Q1471. How does a Content Security Policy nonce-based approach prevent XSS compared to hash-based CSP?

A. They are identical approaches
B. Nonces use a unique random token per request added to allowed scripts, while hashes allow only scripts matching precomputed hash values
C. Nonces are less secure
D. Hashes require more server resources

Answer: B

Q1472. What is the purpose of the Permissions-Policy header and how does it reduce attack surface?

A. It manages CSS permissions
B. It controls which browser features (camera, microphone, geolocation) can be used by the page and its iframes, reducing exploitable surface
C. It manages user login permissions
D. It sets database access permissions

Answer: B

Q1473. How does a timing attack exploit web applications and what is the defense?

A. It attacks CSS timing functions
B. It measures response time differences to extract information like valid usernames; constant-time comparison functions are the defense
C. It times JavaScript execution
D. It attacks database query timing

Answer: B

Q1474. What is the purpose of certificate transparency logs?

A. To log CSS certificate changes
B. To publicly record all issued TLS certificates, enabling domain owners to detect unauthorized certificates issued for their domains
C. To track HTML changes
D. To log JavaScript errors

Answer: B

Q1475. How does the PKCE extension improve the OAuth 2.0 authorization code flow for public clients?

A. It adds CSS styling to OAuth pages
B. It prevents authorization code interception attacks by binding the code to a cryptographic verifier known only to the client
C. It compresses OAuth tokens
D. It speeds up token refresh

Answer: B

Q1476. What is prototype pollution and how can it compromise a Node.js application?

A. It pollutes CSS prototypes
B. It modifies Object.prototype through malicious input, potentially adding properties to all objects and bypassing security checks
C. It pollutes HTML prototypes
D. It pollutes database prototypes

Answer: B

Q1477. What is the purpose of a Web Application Firewall (WAF) and how does it differ from a network firewall?

A. They are identical
B. A WAF inspects HTTP traffic at the application layer for attack patterns like XSS and SQLi while a network firewall filters traffic at the network layer
C. WAFs are less secure
D. Network firewalls inspect HTTP content

Answer: B

Q1478. How does token binding prevent token theft in bearer token authentication systems?

A. It binds CSS tokens to elements
B. It cryptographically binds tokens to the TLS connection, making stolen tokens unusable from a different TLS session
C. It binds JavaScript variables
D. It binds database tokens to queries

Answer: B

Q1479. What is the purpose of Software Composition Analysis (SCA) in web security?

A. To analyze CSS compositions
B. To scan project dependencies for known vulnerabilities and license compliance issues in third-party code
C. To compose HTML elements
D. To analyze JavaScript compositions

Answer: B

Q1480. How does a credential stuffing attack differ from a brute force attack?

A. They are identical attacks
B. Credential stuffing uses previously leaked username-password pairs from data breaches while brute force systematically tries all possible combinations
C. Brute force uses leaked credentials
D. Credential stuffing is always faster

Answer: B

Q1481. How does the Interaction to Next Paint (INP) metric improve upon First Input Delay (FID)?

A. It is the same metric
B. INP measures responsiveness across all interactions throughout the page lifecycle, not just the first input, providing a more comprehensive view
C. INP only measures first click
D. FID is more comprehensive

Answer: B

Q1482. How does the scheduler.yield() API improve long task handling in browsers?

A. It yields CSS rendering
B. It allows JavaScript to voluntarily yield control back to the browser during long tasks, preventing input delay while maintaining task priority
C. It yields database connections
D. It yields server resources

Answer: B

Q1483. What is the purpose of the PerformanceObserver API for monitoring web performance?

A. To observe CSS changes
B. To asynchronously observe and collect performance metrics like LCP, FID, and CLS without polling, enabling real user monitoring
C. To observe database performance
D. To monitor server health

Answer: B

Q1484. How does Brotli compression compare to Gzip for reducing transfer sizes?

A. They achieve identical compression
B. Brotli typically achieves 15-25% better compression ratios than Gzip for text resources, though at higher compression CPU cost
C. Gzip always compresses better
D. Brotli only works with images

Answer: B

Q1485. What is the purpose of the fetchpriority attribute and how does it affect resource loading?

A. It sets CSS priority
B. It lets developers hint at the relative priority of resources (high, low, auto), influencing browser fetch scheduling for critical resources
C. It prioritizes database queries
D. It manages server priorities

Answer: B

Q1486. How does the speculation rules API enable instant page navigation?

A. It speculates about CSS styles
B. It allows prerendering entire pages in the background based on declarative rules, enabling near-instant navigations when the user clicks
C. It predicts server loads
D. It speculates database queries

Answer: B

Q1487. What is the impact of main thread long tasks on web performance and how are they identified?

A. Long tasks have no impact
B. Tasks exceeding 50ms block the main thread, delaying input processing and rendering; they are identified using the Long Tasks API or Performance profiler
C. Long tasks improve performance
D. Only tasks over 1 second matter

Answer: B

Q1488. How does edge computing with edge functions improve web application latency?

A. It moves computation farther from users
B. It runs server-side logic at CDN edge locations near users, reducing round-trip time for dynamic content generation
C. It only serves static files
D. It replaces all backend servers

Answer: B

Q1489. What is the purpose of priority hints in resource loading and how do they interact with browser heuristics?

A. They replace browser loading behavior
B. They supplement browser heuristics by letting developers explicitly adjust the fetch priority of resources like images, scripts, and fetch calls
C. They have no effect on loading
D. They only work with CSS files

Answer: B

Q1490. How does the content-visibility CSS property improve rendering performance for long pages?

A. It hides content permanently
B. It allows the browser to skip layout and paint for off-screen elements, dramatically reducing initial rendering work for long pages
C. It only affects text visibility
D. It replaces lazy loading

Answer: B

Q1491. How does property-based testing complement example-based testing?

A. It replaces example-based testing
B. It generates random inputs to verify that properties hold for all cases, discovering edge cases that manually chosen examples miss
C. It only tests CSS properties
D. It is slower and less useful

Answer: B

Q1492. What is the testing trophy pattern and how does it prioritize test types?

A. It is a CSS trophy animation
B. It emphasizes integration tests as the largest layer, with fewer unit tests, even fewer E2E tests, and static analysis at the base
C. It is identical to the testing pyramid
D. It prioritizes unit tests above all

Answer: B

Q1493. How does mutation testing evaluate the quality of a test suite?

A. It mutates CSS properties
B. It introduces small code changes (mutations) and checks if tests detect them; surviving mutations indicate gaps in test coverage
C. It mutates database records
D. It creates new test files

Answer: B

Q1494. What is contract testing and how does it prevent integration failures in microservices?

A. Testing legal contracts
B. It verifies that services adhere to agreed-upon API contracts, catching incompatible changes before deployment without full integration tests
C. It tests CSS contracts
D. It manages database contracts

Answer: B

Q1495. How does test sharding across multiple CI workers reduce pipeline duration?

A. It has no effect on duration
B. It distributes test files across parallel CI runners, with each runner executing a subset, reducing total wall-clock time proportionally
C. It only works with unit tests
D. It requires identical test runners

Answer: B

Q1496. What is the purpose of chaos engineering and how does it apply to web applications?

A. Creating chaotic CSS layouts
B. Deliberately introducing failures into production to verify system resilience and identify weaknesses before they cause outages
C. Creating random test data
D. Randomizing deployment order

Answer: B

Q1497. How does visual regression testing work at scale?

A. It compares CSS file sizes
B. It captures and pixel-compares screenshots of UI components across changes, using AI to filter false positives from legitimate changes
C. It visually inspects database records
D. It manually compares page designs

Answer: B

Q1498. What is the purpose of API fuzz testing and how does it discover vulnerabilities?

A. To make APIs fuzzy
B. To send malformed, unexpected, or random data to API endpoints to discover crashes, memory leaks, and security vulnerabilities
C. To add blur effects to APIs
D. To fuzz CSS values

Answer: B

Q1499. How do test containers improve integration testing reliability?

A. They contain CSS test styles
B. They spin up real database and service instances in Docker containers for tests, ensuring consistent environments and avoiding shared state
C. They contain HTML elements
D. They compress test files

Answer: B

Q1500. What is the purpose of the testing library philosophy of testing user behavior over implementation details?

A. It tests CSS behavior
B. It encourages testing what users see and interact with rather than internal component state, making tests more resilient to refactoring
C. It only tests API behavior
D. It avoids testing entirely

Answer: B

Q1501. How does GitOps use Git as the single source of truth for infrastructure and deployments?

A. It stores CSS in Git
B. It stores desired infrastructure and application state declaratively in Git, with automated controllers continuously reconciling actual state with the repository
C. It only manages Git repositories
D. It replaces CI/CD entirely

Answer: B

Q1502. What is the purpose of a service mesh in container orchestration deployments?

A. To mesh CSS styles together
B. To manage service-to-service communication with features like mutual TLS, traffic splitting, retries, and distributed tracing without modifying application code
C. To create mesh network layouts
D. To mesh database connections

Answer: B

Q1503. How does immutable infrastructure differ from mutable infrastructure and why is it preferred?

A. They are identical approaches
B. Immutable infrastructure replaces entire server instances instead of updating them in place, ensuring consistency and eliminating configuration drift
C. Immutable infrastructure is more expensive
D. Mutable infrastructure is always more reliable

Answer: B

Q1504. What is the purpose of canary analysis in progressive delivery?

A. To analyze bird sounds
B. To automatically compare metrics between the canary release and the stable version, rolling back if degradation is detected
C. To analyze CSS canary values
D. To manage canary database records

Answer: B

Q1505. How does Kubernetes handle rolling updates and what role do readiness probes play?

A. It updates all pods simultaneously
B. It gradually replaces old pods with new ones, using readiness probes to ensure new pods are serving traffic before terminating old ones
C. It only works with Docker
D. Readiness probes are optional and unused

Answer: B

Q1506. What is the purpose of a deployment feature flag system?

A. To flag CSS features
B. To decouple deployment from release by toggling features on or off without redeploying, enabling gradual rollouts and instant rollbacks
C. To flag database features
D. To create HTML feature flags

Answer: B

Q1507. How does Infrastructure as Code (IaC) with tools like Terraform improve deployment reliability?

A. It codes CSS infrastructure
B. It defines infrastructure declaratively in version-controlled files, enabling reproducible provisioning, change tracking, and peer review
C. It only works with AWS
D. It replaces all deployment tools

Answer: B

Q1508. What is the purpose of deployment runbooks and how do they improve incident response?

A. To run CSS books
B. To provide step-by-step procedures for deployments and incident recovery, reducing mean time to recovery through documented playbooks
C. To manage database runbooks
D. To create HTML runbooks

Answer: B

Q1509. How does multi-region deployment improve application resilience?

A. It deploys CSS to multiple regions
B. It runs application instances across geographically separate regions so that regional failures do not cause total outages
C. It only improves database speed
D. It requires identical hardware everywhere

Answer: B

Q1510. What is the purpose of observability in production deployments and how does it differ from monitoring?

A. They are identical concepts
B. Observability provides the ability to understand internal system state from external outputs (logs, metrics, traces) while monitoring checks predefined conditions
C. Observability replaces monitoring
D. Monitoring is more comprehensive

Answer: B

Q1511. How does GraphQL's DataLoader pattern solve the N+1 query problem?

A. It loads CSS data
B. It batches multiple individual data requests within a single tick into one bulk query, eliminating redundant database calls
C. It only loads JavaScript modules
D. It replaces GraphQL resolvers

Answer: B

Q1512. What is the purpose of API schema validation using JSON Schema or Zod?

A. To validate CSS schemas
B. To define and enforce the shape, types, and constraints of API request and response data at runtime, catching errors early
C. To validate HTML schemas
D. To validate database schemas only

Answer: B

Q1513. How does content negotiation work in REST APIs and what role does the Accept header play?

A. It negotiates CSS content
B. The client sends an Accept header specifying desired response formats (JSON, XML, etc.) and the server returns data in the best matching format
C. It only works with HTML
D. It negotiates database connections

Answer: B

Q1514. What is the purpose of API gateway patterns like Backend for Frontend (BFF)?

A. To style frontend gateways
B. BFF creates dedicated API gateways for each frontend type, aggregating and tailoring backend service calls to specific client needs
C. It replaces all backend services
D. It only works with GraphQL

Answer: B

Q1515. How does gRPC achieve better performance than REST for service-to-service communication?

A. It uses CSS for styling
B. It uses HTTP/2, Protocol Buffers for binary serialization, and supports streaming, resulting in smaller payloads and lower latency than JSON over HTTP
C. It is always slower than REST
D. It replaces HTTP entirely

Answer: B

Q1516. What is the purpose of idempotency keys in API design and how do they work?

A. To identify CSS keys
B. They allow clients to attach a unique key to requests so the server can detect retries and return the original response without re-executing the operation
C. To create database keys
D. To generate JavaScript keys

Answer: B

Q1517. How does event-driven API design with event sourcing differ from traditional request-response patterns?

A. They are identical patterns
B. Event-driven APIs publish domain events that consumers subscribe to asynchronously, enabling loose coupling and eventual consistency instead of synchronous calls
C. Event-driven APIs are always slower
D. They only work with GraphQL

Answer: B

Q1518. What is the purpose of API observability and what metrics should be tracked?

A. To observe CSS changes
B. To monitor API health through metrics like request rate, error rate, latency percentiles, and throughput, enabling proactive issue detection
C. To observe HTML changes
D. To observe database queries

Answer: B

Q1519. How does the API circuit breaker pattern improve system resilience?

A. It breaks CSS circuits
B. It monitors failure rates and opens the circuit to reject requests to a failing service, preventing resource exhaustion and enabling recovery
C. It breaks database circuits
D. It disconnects API clients

Answer: B

Q1520. What is the purpose of API contract testing with tools like Pact?

A. To test CSS contracts
B. To verify that API providers and consumers agree on request/response formats by testing both sides against a shared contract independently
C. To test HTML contracts
D. To test database contracts

Answer: B

Q1521. How does the concept of partial hydration improve performance in modern frameworks?

A. It partially loads CSS
B. It hydrates only interactive components on a page while leaving static content as plain HTML, reducing JavaScript payload
C. It partially loads databases
D. It replaces full page hydration entirely

Answer: B

Q1522. What is the purpose of the edge-first architecture pattern in modern web applications?

A. It adds CSS edge effects
B. It runs application logic at CDN edge locations by default, falling back to origin servers only when necessary, minimizing latency globally
C. It only processes edge cases
D. It replaces all server-side logic

Answer: B

Q1523. How does the signals pattern in modern frameworks differ from React's state model?

A. They are identical patterns
B. Signals provide fine-grained reactivity by tracking dependencies at the value level, updating only subscribers without re-rendering entire component trees
C. Signals are slower
D. React's model is more granular

Answer: B

Q1524. What is the purpose of the Baseline web platform compatibility initiative?

A. To create CSS baselines
B. To define a clear set of web features that are interoperable across major browsers, helping developers know what they can safely use
C. To baseline database performance
D. To measure JavaScript execution baselines

Answer: B

Q1525. How does the composability pattern influence modern web architecture?

A. It composes CSS animations
B. It enables building applications by combining independent, interchangeable modules and services rather than monolithic implementations
C. It only applies to React components
D. It replaces all existing patterns

Answer: B

Q1526. What is the purpose of the View Transitions API for multi-page applications?

A. To create CSS views
B. It enables smooth animated transitions between pages in traditional multi-page applications, previously only achievable in SPAs
C. It only works in SPAs
D. It replaces CSS animations

Answer: B

Q1527. How does AI-assisted development change modern web development workflows?

A. It replaces all developers
B. AI tools assist with code generation, debugging, review, and documentation while developers provide direction, review outputs, and handle complex decisions
C. AI writes all CSS
D. AI manages all databases

Answer: B

Q1528. What is the purpose of the Interop project for web standards?

A. To create interoperable CSS
B. It is a cross-browser collaboration where major browser vendors commit to improving compatibility on specific web features each year
C. It only affects JavaScript
D. It manages database interoperability

Answer: B

Q1529. How does the concept of zero-JavaScript pages improve performance in modern frameworks like Astro?

A. It removes all JavaScript from the internet
B. Pages ship no client-side JavaScript by default, rendering everything as static HTML and only adding JavaScript for explicitly interactive components
C. It prevents JavaScript from running
D. It only works for simple pages

Answer: B

Q1530. What are the key tradeoffs of adopting a serverless architecture for web applications?

A. There are no tradeoffs
B. Serverless offers automatic scaling and reduced ops but introduces cold starts, vendor lock-in, execution limits, and challenges with stateful workloads
C. Serverless is always better
D. Serverless cannot scale

Answer: B