Name: _____   **Date: _____**

Answer Key: Full-Stack Flash: 11th Grade Web Dev Duel

Synthesize DOM manipulation and asynchronous logic across 10 challenges to optimize high-performance web applications.

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1. Which of the following describes the 'Event Loop' in JavaScript, and why is it critical for handling asynchronous requests like fetching data from a REST API?

Answer: B) It manages a callback queue, moving tasks to the call stack only when it is empty to prevent blocking.

> The event loop allows JavaScript to be non-blocking by offloading asynchronous operations (like fetch) and processing their callbacks only when the main execution stack is clear.

2. In the CSS Box Model, setting 'box-sizing: border-box;' ensures that padding and border widths are included within the specified element width and height.

Answer: A) True

> Unlike the default content-box model, border-box makes layout calculations easier by preventing an element's size from growing when padding or borders are added.

3. When building a semantic HTML5 page, which tag is most appropriate for a standalone piece of content that could be distributed independently, such as a blog post or news story?

Answer: B) <article>

> The <article> element is intended for self-contained compositions that are independently distributable or reusable, providing high accessibility and SEO value.

4. Consider a scenario where you need to apply a grid system where columns adjust based on available space without using media queries. Which CSS function is best suited for this?

Answer: C) repeat(auto-fit, minmax(200px, 1fr))

> The repeat function with auto-fit and minmax allows elements to wrap and resize fluidly, creating a responsive design without explicit breakpoint management.

5. JavaScript 'closures' are created every time a function is created, allowing an inner function to access the scope of its outer function even after the outer function has closed.

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Answer: A) True

> Closures are a fundamental concept in JS used for data privacy and maintaining state in asynchronous callbacks or event handlers.

6. Which of the following represents the most performant way to update the text content of a DOM element with the ID 'status' using modern JavaScript?

Answer: B) document.querySelector('#status').textContent = 'Loading...';

> textContent is faster and more secure than innerHTML because it treats the input as raw text rather than parsing it as HTML, preventing script injection.

7. In the context of the Fetch API, which keyword is paired with 'async' to pause the execution of a function until a Promise is resolved?

Answer: C) await

> The 'await' keyword makes asynchronous code look and behave more like synchronous code, improving readability and error handling via try/catch blocks.

8. A developer wants to ensure that a specific CSS rule always takes precedence over others, regardless of specificity or source order. Which suffix is used (though generally discouraged for clean code)?

Answer: A) !important

> The !important rule overrides all previous styling rules for that specific property on that element, though it can make debugging CSS specificity difficult.

9. Local Storage and Session Storage both persist data even after the browser tab or window is closed.

Answer: B) False

> Session Storage is cleared when the page session ends (tab closed), whereas Local Storage has no expiration date unless manually cleared.

10. Which HTTP method is most appropriate when a web application needs to send sensitive user credentials to a server for authentication?

Answer: C) POST

> POST sends data in the request body rather than the URL (like GET), which is essential for security to prevent credentials from appearing in browser history or server logs.