DWA_12 Knowledge Check

To complete this Knowledge Check, ensure you have worked through all the lessons in **Module 12: Declarative Abstractions.**

To prepare for your session with your coach, please answer the following questions. Then download this document as a PDF and include it in the repository with your code.

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1. What are the benefits of direct DOM mutations over replacing HTML?

- Efficiency: Directly mutating the DOM is typically more efficient than replacing HTML. When you modify the DOM directly, you only change the specific elements or attributes that need to be updated. This avoids the need to recreate and replace entire sections of HTML, which can be time-consuming and resource-intensive.

- Performance optimization: Direct DOM mutations enable you to optimize performance by making incremental changes instead of full replacements. You can selectively update parts of the DOM that have changed, minimizing unnecessary operations and improving overall rendering speed.

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2. What low-level noise do JavaScript frameworks abstract away?

- DOM manipulation: Manipulating the DOM directly can be cumbersome and error-prone. JavaScript frameworks abstract away the low-level details of directly modifying the DOM. Instead, they provide higher-level APIs and abstractions that make it easier to create, update, and remove elements dynamically. This abstraction saves developers from manually handling tasks like element creation, insertion, removal, and attribute manipulation.

- Event handling: Managing events across different browsers and handling their complexities can be challenging. JavaScript frameworks provide consistent event handling abstractions that abstract away browser-specific differences and simplify event management. They provide unified interfaces for attaching event listeners, handling events, and propagating events through the component hierarchy.

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3. What essence do JavaScript frameworks elevate?

- Abstraction of Complexity: Web development involves dealing with a wide range of complexities, including browser compatibility, asynchronous operations, DOM manipulation, event handling, and more. JavaScript frameworks abstract away many of these complexities, providing higher-level abstractions that simplify development. For example, frameworks handle cross-browser inconsistencies, provide intuitive APIs for asynchronous operations, and abstract away low-level DOM manipulation, allowing developers to focus on application logic rather than plumbing.

- Productivity: JavaScript frameworks aim to enhance developer productivity by providing tools, utilities, and abstractions that streamline the development process. They offer pre-built components, modules, and libraries that can be easily integrated into projects, reducing the amount of code that needs to be written from scratch. Additionally, frameworks often come with development tools, such as debuggers and build systems, that help automate common tasks and improve workflow efficiency.

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4. Very broadly speaking, how do most JS frameworks achieve abstraction?

- Declarative programming: JavaScript frameworks often promote declarative programming paradigms, where developers describe what they want the application to look like or how it should behave, rather than specifying detailed step-by-step instructions. By using declarative syntax or configuration, frameworks abstract away the lower-level imperative code required to achieve the desired outcome. This approach simplifies development and makes code more expressive and readable.

- Virtual DOM: Some frameworks use a virtual DOM, which is an in-memory representation of the actual DOM. Changes to the application's state trigger a process where the framework compares the previous and current virtual DOMs, identifies differences, and efficiently applies only the necessary updates to the real DOM. This abstraction eliminates the need for manual DOM manipulation, resulting in more efficient and optimized rendering.

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5. What is the most important part of learning a JS framework?

- Routing and navigation: Understand how the framework handles routing and navigation within applications. Learn how to define routes, handle route parameters, and navigate between different views or components.