

John Lloyd S. Santos BSCS 3-1N Web Development



1. Identify and discuss essential best practices in web development, such as code optimization, security measures, and accessibility standards.

- Code Optimization

- ① Use efficient code - Remove all unnecessary comments, white spaces, and redundant code. Also, minify CSS, JavaScript, and HTML to have an optimized version of your code.

- ② Optimize Images - Avoid using inappropriate image formats and also compressed images to improve and reduce load times.

- ③ Leverage Caching - Enables browser caching to enhance speed.

- Security Measures

- ① Use HTTPS - This secures data transmission with SSL/TLS encryption to protect against man-in-the-middle attacks.

- ② Sanitize and Validate User Input - This prevents SQL injection, cross-site scripting (XSS), and other attacks.

- ③ Secure API endpoints - This implement authentication, rate limiting, and input validation for API security.

- Accessibility Standards

- ① Implement Semantic HTML - Proper headings, lists, and landmarks improves screen reader navigation.

- ② Ensure Keyboard Navigation - Make interactive elements accessible via keyboard navigation only.

- ③ Use ARIA Attributes Wisely - Apply ARIA (Accessible Rich Internet Applications) roles and attributes to enhance the accessibility.

2. Explore emerging trends and technologies in web development (e.g. Progressive Web Apps, Web Assembly). How are these trends reshaping the landscape of web development, and what opportunities do they present for developers?

- These emerging trends and technologies in web development like Progressive Web Apps that can offer fast loading speeds and etc., webAssembly (WASM) that runs high-performance code in browsers

and AI-Powered Web Development that can enhance UX, as we can observe their uses and enhancements that they can provide, these emerging trends reshapes the landscape of web development by providing new and advanced techniques for developers to utilize that also serve as opportunity for them to develop and create websites more efficient and effective.

3. Explain the concept of backend development and its role in handling server-side logic and data storage.

- Since a website use and manage data, it needs to have something to help its system to have smooth operations and also storage. The backend development is the one that is responsible for that. This part manages server-side logic, databases, and application functionality. It processes user requests, runs operations, and sends responses to the frontend.

4. Compare and contrast different server-side technologies (e.g. Node.js, PHP, Python Django) in terms of performance, scalability, and ease of use. How do these technologies interact with frontend frameworks?

- Server-side technologies are essential for handling backend logic, data processing, and communication with the frontend. Node.js offers high performance with non-blocking I/O, making it highly scalable and suitable for JavaScript-based applications. PHP on the other hand, is widely used for web development, especially with Laravel and WordPress, but it is less scalable than Node.js. While Python, Django, is optimized for performance and scalability, working well with frontend frameworks like React. These technologies can connect with frontend frameworks through APIs, data exchanges, or templating engines that can ensure smooth functionality and user interaction.

5. Define HTML (Hypertext Markup language) and explain its role in web development.

— HTML (Hypertext Markup language) is the backbone of web development since it is the technology that defines or that can define webpage structure. This technology is the one that organizes the contents of a webpage or website by using tags such as `<h1>`, `<p>`, and `<div>` to display texts, images, and multimedia.

6. Discuss the importance of semantic markup in HTML and provide examples of semantic elements. How does semantic markup contribute to accessibility and search engine optimization (SEO)?

— Semantic markup is significant in HTML since it enhances readability, accessibility, and search engine optimization (SEO) through the use of elements to convey the meaning of the content within the webpage. This benefits accessibility since the screen readers can better understand and navigate meaningful elements, making the website more user-friendly. SEO also benefits because search engines prioritize well-structured content, improving the website rankings and visibility. By using proper tags like `<article>`, `<section>`, and `<main>`, developers can create an organized, readable, and more effective web pages.