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Bachelor of Science in Information Technology
BSIT 3-1N

Web Development
Signature:
Assignment # 1

Instructions: Kindly read the questions carefully and write your answer in the yellow pad paper together with name, course, subject and signature on it.

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

→ Essential Best Practices in Web Development are:

a. Accessibility standards: a website must have features where people with disabilities such as deafness, mental retardation and blindness can still be involved to use the website as it does not only improves usability and user experience for everyone but also, it provides inclusivity and equal access to information for all users.

b. Code optimization and Maintainability: codes written must be clean, well-structured, easy to understand, fast to modify, and maintainable for easier collaboration among other developers, fast trouble shooting and debugging, scalable and adaptable to future updates.

c. Page speed optimization / Responsive Design: optimizing page speed makes a website a responsive webpage. Web Developers must employ practices like image compression, code minification, caching, and content delivery network usage. Having a responsive design improves user experience, high conversion rates and lower bounce rates, and it also reduces development time and costs.

d. Security Measures: safety of the user and user's personal information must be one of the top priorities. Having security measures makes the website not accessed without permission, maintains trust and confidence with users, secures sensitive data and protects end-user confidentiality.

e. Voice Search Optimization: It is the process of upgrading and streamlining the information on pages to appear in voice searches. It aims to optimize pages by answering people's questions when they

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conduct verbal searches. It also enhances brand visibility and also improves user experience.

f. Multi-Device / Cross-Device Compatiblity & Mobile Optimization: It allows developers to identify and address any issues that may arise due to variations in hardware and software parameters. Compatibility testing is essential in identifying development flaws before the product is set to launch. It also must prioritize user experience accross varions screen sizes and devices.

2.) Explore emerging trends and technologiesin web development (e.g. Progressive Web Apps, WebAssembly) how are these trends reshaping the landscape of web development and what opportunities do they represent for developers.

→ Emerging trends and technologies in web development transforms websites and webpages into a faster, interactive, more engaging and efficient, safer, and accessible for all users.

a. Progressive Web Apps: a type of application software built using common web technologies like HTML and JavaScript, where it works on any device with a normal browser. The technology has gained popularity for its potential to offer a high-quality user experience. In PWA, Web Developers can now build more powerful & cross platform apps without having to learn mobile specific programming languages.

b. Motion UI: a frontend framework that is used to build fully responsive web designs. A website should not only provide the information a user is looking for but has to be attractive. Frontend Developers skilled in css animations, JavaScript and motion libraries will find themselves in demand in this trend.

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3.) Explain the concept of Backend Development and its role in handling server-side logic and data storage.

→ Backend Development refers to the server-side development of web application in which it is the part of application where the server and database reside and the logics is build to perform operations. Its roles are: building server logic, manage databases, security concerns, server-side processing and more.

a.) Server-side Processing: backend code runs on the server, allowing for server-side processing. This reduces the load on the client's device and enhances the overall performance of the application.

b.) Data Management: Backend handles data storage, retrieval, and management in databases. This ensures organized and efficient handling of large volumes of data.

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

Server-side Technologies	Performance	Scalability	Ease of Use
NODE.JS	High	High	High
PHP	Medium	Medium	Medium
Python Django	Medium	Medium	High
RUBY (Ruby on Rails)	Medium	Medium	Medium
Java (Spring / Javaee)	High	High	High
.NET (C# / ASP.NET)	High	High	High

→ these serverside or backend technologies interact with front-end framework by exchanging data to rendering between the client & server. Frontend is for interaction, real-time updates and engagement while Backend is incharge for data processing, security, and database management.

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5.) Define HTML and explain its role in the Web Development

→ HTML or Hyper Text Markup Language is the standard language used for presenting web page content such as text, images, and other multimedia elements. It is the language that browser speak and understands to carry out an action. HTML also is a Markup Language, not a programming language; markup language is a standard text-encoding system consisting of a set of symbols to control a structure. HTML is the structural foundation or backbone of every webpage and applications. It is also the root of Web Development as even though the web continuously evolves, HTML stay foundational.

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 tags helps both the developer and browser understand the significance of the elements and their content as semantic tags are the cornerstone of HTML that provides meaning to the webpage structure. Examples:

a. <header> : the <header> element represents a container for introductory content or a set of navigational links. It contains; one or more heading elements, authorship, logo or icon.

b. <footer> : the <footer> element defines a footer for a document or section where it typically contains copyright information, contact info, site map, etc.

c. <nav> : it define a set of navigation links

d. <time> : defines a date / time

e. <article> : defines independent, self-contained content

→ Semantic Markup helps improve the website more structured and it also transforms the SEO by making the content of website more identifiable to search engines.