**Questions:**

**Day 1**

**----------------------------------**

**1)What are the key components and technologies involved in a Full stack web development setup?**

**ANS:** A full-stack web development setup typically includes the following components and technologies:

* Frontend:
  + HTML (Hypertext Markup Language): Defines the structure and content of web pages.
  + CSS (Cascading Style Sheets): Styles the appearance of web pages.
  + JavaScript: Adds interactivity and dynamic elements to web pages.
  + Frontend frameworks/libraries: React, Angular, Vue.js (for building complex user interfaces)
* Backend:
  + Server-side programming language: Node.js, Python (Django/Flask), Ruby on Rails, Java (Spring Boot)
  + Database: Relational databases (MySQL, PostgreSQL) or NoSQL databases (MongoDB, Redis)
  + Web framework: For organizing backend code and handling HTTP requests
* Other components:
  + Version control system: Git
  + Package managers: npm (Node Package Manager), yarn, pip (Python Package Index)
  + Build tools: Webpack, Parcel

**2)How does modern web development address the challenges of security, scalability, and performance?**

**ANS:**

**Security:**

* **Secure coding practices:** Following coding standards to prevent vulnerabilities like SQL injection, cross-site scripting (XSS), and cross-site request forgery (CSRF).
* **Authentication and authorization:** Implementing robust mechanisms to protect user data and control access to resources.
* **Regular updates and patching:** Keeping software and dependencies up-to-date to address known security vulnerabilities.

**Scalability:**

* **Cloud-based infrastructure:** Leveraging cloud platforms like AWS, GCP, or Azure to handle increasing traffic and data loads.
* **Microservices architecture:** Breaking down applications into smaller, independent services that can be scaled individually.
* **Caching:** Storing frequently accessed data in memory for faster retrieval.

**Performance:**

* **Optimization techniques:** Minifying CSS and JavaScript files, compressing images, and optimizing database queries.
* **Content delivery networks (CDNs):** Distributing content across multiple servers to reduce latency.
* **Asynchronous programming:** Using techniques like promises or async/await to avoid blocking operations and improve responsiveness.

**Day 2**

**----------------------------------**

**1)What are the primary architectural differences between web applications and mobile applications?**

**ANS:**

While both web and mobile applications serve similar purposes, they have distinct architectural differences:

* **Platform:**
  + **Web Applications:** Run in a web browser and are accessible on various devices (computers, tablets, smartphones).
  + **Mobile Applications**: Designed specifically for mobile devices (smartphones, tablets) and are installed from app stores.
* **Development:**
  + **Web Applications:** Typically use web technologies like HTML, CSS, JavaScript, and server-side languages (e.g., Node.js, Python).
  + **Mobile Applications:** Use platform-specific frameworks and languages (e.g., React Native, Flutter for cross-platform development, Swift/Objective-C for iOS, Kotlin/Java for Android).
* **Performance:**
  + **Web Applications:** Can be slower due to network latency and rendering times.
  + **Mobile Applications:** Have direct access to device hardware and can offer better performance and offline capabilities.
* **User Experience:**
  + **Web Applications:** Often have a more generic user interface that adapts to different screen sizes.
  + **Mobile Applications:** Can provide a more tailored experience with features like touch gestures and device-specific capabilities.

**2)How do the roles and skill sets of a web designer differ from those of an HTML developer?**

**ANS:**

While both web designers and HTML developers contribute to the creation of web pages, their roles and skill sets have distinct focuses:

* **Web Designer:**
  + **Focus:** Overall visual appearance and user experience.
  + **Skills:**
    - Understanding of design principles (layout, color theory, typography)
    - Proficiency in design tools (Adobe Photoshop, Illustrator, Figma)
    - Knowledge of user interface (UI) and user experience (UX) design
    - Ability to create wireframes, mockups, and prototypes
* **HTML Developer:**
  + **Focus:** Implementing the structure and content of web pages.
  + **Skills:**
    - Mastery of HTML syntax and semantics
    - Understanding of CSS for styling elements
    - Knowledge of accessibility standards (WCAG)
    - Ability to write clean, efficient, and maintainable HTML code

**Tasks Assigned:**

**In HTML, all the tags which were taught in today's session write a program using them and explain every tag below it.**

***Code:***

**<!-- <!DOCTYPE html>: Declares the document type and version of HTML. -->**

<!DOCTYPE html>

**<!-- <html lang="en">: The root element, specifying the language of the document. -->**

<html lang="en">

**<!-- <head>: Contains meta-information like character set, viewport settings, and the document title. -->**

<head>

    <title>HTML Basics</title>

</head>

**<!-- <body>: Contains the visible content of the webpage. -->**

<body bgcolor="grey">

**<!-- Heading Tags (<h1> to <h6>): Used to define headings. <h1> is the largest, <h6> is the smallest. -->**

    <h1>Main Heading (h1)</h1>

    <h2>Subheading (h2)</h2>

    <h3>Sub-subheading (h3)</h3>

    <h4>Heading level 4 (h4)</h4>

    <h5>Heading level 5 (h5)</h5>

    <h6>Heading level 6 (h6)</h6>

**<!-- Paragraph Tag: For text content -->**

    <p>This is a paragraph.</p>

**<!-- Formatting Tags: Used for text styling -->**

    <p><b>Bold text</b> (bold)</p>

    <p><i>Italic text</i> (italic)</p>

    <p><u>Underlined text</u></p>

    <p>H <sub>2</sub>O</p>

    <p>e<sup>x</sup></p>

**<!-- List Tags: Ordered and Unordered lists -->**

**<!-- Unordered List -->**

    <ul>

        <li>Item 1</li>

        <li>Item 2</li>

        <li>Item 3</li>

    </ul>

**<!-- Ordered List -->**

    <ol>

        <li>First item</li>

        <li>Second item</li>

        <li>Third item</li>

    </ol>

**<!-- Table Tag (<table>, <tr>, <th>, <td>): Creates a table. <tr> defines a row, <th> defines a header cell, and <td> defines a standard cell. -->**

    <table border="1">

        <tr>

            <th>Header 1</th>

            <th>Header 2</th>

        </tr>

        <tr>

            <td>Data 1</td>

            <td>Data 2</td>

        </tr>

        <tr>

            <td>Data 3</td>

            <td>Data 4</td>

        </tr>

    </table>

**<!-- Preformatted Text: For preserving whitespace and line breaks -->**

    <pre>

        This text

        will appear

        exactly as it is typed.

    </pre>

**<!-- Horizontal Rule: Insert a horizontal line -->**

    <hr>

**<!-- Comment Tag: This is a comment and will not be displayed in the browser -->**

</body>

</html>

***Output:***

