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Web Fundamentals:

1. Introduction

Web development involves creating websites and web applications. It includes web design, content development, scripting, and network security.

2. Language and Tools of Web Development

- **HTML**: Structure of web pages.
- **CSS**: Styling web pages.
- **JavaScript**: Adding interactivity.
- **Tools**: Text editors (VS Code), version control (Git), frameworks (React).

3. Inspecting HTTP Requests and Responses

- **HTTP Requests**: Client requests (GET, POST).
- **HTTP Responses**: Server replies (status codes like 200, 404).
- **DevTools**: Inspect these interactions.

4. HTML Basics

- **Tags and Elements**: Structure content.
- **Attributes**: Add information to elements.
- **Document Structure**: `<!DOCTYPE html>`, `<html>`, `<head>`, `<body>`.

5. CSS Basics

- **Selectors**: Target elements.
- **Properties/Values**: Define styles.
- **Box Model**: Layout elements.

6. Formatting Code

- **Indentation**: Use spaces/tabs consistently.
- **Comments**: Explain code.
- **Best Practices**: Follow conventions.

7. Inspecting Pages Using DevTools

- **Elements Panel**: Modify HTML/CSS.
- **Console Panel**: Interact with JavaScript.
- **Network Panel**: Monitor requests/responses.

8. Validating Web Pages

- **HTML Validation**: Check syntax (W3C Validator).
- **CSS Validation**: Ensure stylesheet standards (W3C Validator).
- **Accessibility**: Make pages usable for all users.

HTML Topics:

1. The Head Section

The `<head>` section contains metadata and links to resources:

- **Meta tags**: Define character set, viewport settings, etc. (`<meta charset="UTF-8">`).
- **Title**: Sets the page title (`<title>Page Title</title>`).
- **Links**: Include stylesheets (`<link href="styles.css" rel="stylesheet">`) scripts (`<script src="script.js"></script>`).

2. Text

HTML tags to format and structure text:

- **Paragraphs**: `<p>` for blocks of text.
- **Headings**: `<h1>` to `<h6>` for different heading levels.
- **Span**: `<span>` for inline text formatting.

3. Entities

Special characters not readily typed on a keyboard:

- **Common entities**: `&` for &, `<` for <, `>` for >, `"` for ", `'` for ', ` ` for a non-breaking space.

4. Hyperlinks

Creating links to other pages or resources:

- **Anchor tag**: `<a href="https://www.example.com">Link text</a>`.
- **Attributes**: `target="_blank"` opens the link in a new tab.

5. Images

Embedding images in web pages:

- **Image tag**: `<img src="image.jpg" alt="Description">`.
- **Attributes**: `width` and `height` to set dimensions, `alt` for alternative text.

6. Video and Audio

Including multimedia content:

- **Video**: `<video src="video.mp4" controls></video>`.
  - **Attributes**: `controls`, `autoplay`, `loop`, `muted`.
- **Audio**: `<audio src="audio.mp3" controls></audio>`.
  - **Attributes**: `controls`, `autoplay`, `loop`.

7. Lists

Organizing items in lists:

- **Unordered list**: `<ul><li>Item 1</li><li>Item 2</li></ul>` (bulleted).
- **Ordered list**: `<ol><li>Item 1</li><li>Item 2</li></ol>` (numbered).
- **Definition list**: `<dl><dt>Term</dt><dd>Definition</dd></dl>`.

8. Tables

Displaying data in a tabular format:

- **Table structure**: `<table>`, `<tr>` for rows, `<td>` for data cells, `<th>` for headers.
- **Attributes**: `border` to set table borders, `cellpadding` and `cellspacing` for cell spacing.

9. Containers

Grouping content for styling and layout purposes:

- **Div**: `<div>` for block-level container to group elements.
- **Span**: `<span>` for inline container to group text.

10. Semantic Elements

Improving document structure and accessibility:

- **Header**: `<header>` for introductory content.
- **Nav**: `<nav>` for navigation links.
- **Main**: `<main>` for main content.
- **Section**: `<section>` for thematic grouping.
- **Article**: `<article>` for independent content.
- **Footer**: `<footer>` for footer content.

11. Structuring a Web Page

Organizing elements to create a cohesive structure:

- **Example layout**:

```html
html
Copy code
<!DOCTYPE html>
<html>
<head>
    <title>Web Page Structure</title>
    <link href="styles.css" rel="stylesheet">
</head>
<body>
    <header>
        <h1>Welcome</h1>
        <nav>
            <ul>
                <li><a href="#home">Home</a></li>
                <li><a href="#about">About</a></li>
                <li><a href="#contact">Contact</a></li>
            </ul>
        </nav>
    </header>
    <main>
        <section id="home">
            <h2>Home Section</h2>
            <p>This is the home section.</p>
        </section>
        <section id="about">
            <h2>About Section</h2>
            <p>This is the about section.</p>
        </section>
    </main>
    <footer>
        <p>© 2024 Web Page</p>
    </footer>
    <script src="script.js"></script>
</body>
</html>
```