**Module-2: HTML**

**Theory Assignment:**

**HTML Basics:**

**Question 1: Define HTML. What is the purpose of HTML in web development?**

**Ans:**

HTML (Hyper Text Markup Language) is the standard markup language used to create and structure content on the web. It provides the basic framework for webpages by defining elements like headings, paragraphs, images, links, lists, forms, and other content.

Purpose of HTML in Web Development:

1. Structure Content:  
    HTML organizes and structures content using tags (e.g., <h1>, <p>, <img>, <a>).
2. Display Elements:  
    It tells the browser how to display text, images, links, and other media on a webpage.
3. Link Documents:  
    HTML uses hyperlinks (<a> tags) to connect different pages or resources, enabling website navigation.
4. Embed Media:  
    HTML allows embedding of audio, video, images, and other multimedia.
5. Work with Other Technologies:
   * CSS (Cascading Style Sheets): For styling and layout.
   * JavaScript: For interactivity and dynamic content.

**Question 2: Explain the basic structure of an HTML document. Identify the mandatory tags and their purposes.**

**Ans:**

The basic structure of an HTML document follows a standard format that ensures the browser can correctly interpret and display the webpage.

<html>

  <head>

    <title>Page Title</title>

  </head>

  <body>

    <h1>This is a Heading</h1>

    <p>This is a paragraph.</p>

  </body>

</html>

**Explanation of Mandatory Tags:**

1. **<!DOCTYPE html>**
   * Declares the document type.
   * Tells the browser to use **HTML5** standards.
   * Must be the first line in the HTML document.
2. **<html>**
   * The root element of the HTML document.
   * Wraps all the content of the entire webpage.
3. **<head>**
   * Contains **meta-information** about the page (not displayed directly).
   * Can include <title>, <meta>, <link>, <style>, and <script>.
4. **<title>**
   * Sets the title of the web page (shown in the browser tab).
   * Located inside the <head> section.
5. **<body>**
   * Contains all the **visible content** of the web page (text, images, links, etc.).
   * Everything inside <body> is what users see on the browser.

**Question 3: What is the difference between block-level elements and inline elements inHTML? Provide examples of each.**

**Ans:**

In **HTML**, elements are categorized as **block-level** or **inline** based on how they behave in the document layout.

**Block-Level Elements**

* **Start on a new line** and take up the **full width** available (from left to right).
* Used to **structure** and **group content**.
* Can contain **other block-level** or **inline elements**.

**Examples:**

* <div> – generic container
* <p> – paragraph
* <h1> to <h6> – headings
* <ul>, <ol> – lists
* <li> – list item
* <section>, <article>, <header>, <footer>

**Inline Elements**

* **Do not start on a new line.**
* Only take up as much **width as necessary**.
* Used to **format** parts of text **within block-level elements**.
* Cannot contain block-level elements.

**Examples:**

* <span> – generic inline container
* <a> – hyperlink
* <strong> – bold text
* <em> – italicized text
* <img> – image
* <br> – line break

**Question 4: Discuss the role of semantic HTML. Why is it important for accessibility andSEO? Provide examples of semantic elements.**

**Ans:**

**Semantic HTML** refers to the use of HTML tags that clearly describe the **meaning and purpose** of the content they contain. Instead of using generic tags like <div> or <span>, semantic tags use meaningful names, such as <header>, <article>, or <footer>.

**Why Semantic HTML Matters:**

**1. Improves Accessibility**

* **Screen readers** and assistive technologies rely on semantic elements to understand the structure and meaning of a webpage.
* Helps visually impaired users **navigate content easily** (e.g., identifying navigation menus, main content, headings).

**2. Boosts SEO (Search Engine Optimization)**

* **Search engines** like Google use semantic tags to better understand the **context and hierarchy** of content.
* Increases chances of better **ranking in search results** by clarifying what's important on the page.

**3. Better Code Readability & Maintainability**

* Semantic HTML makes the code more **understandable** for developers.
* Easier to maintain and debug.

**Examples of Semantic HTML Elements:**

|  |  |
| --- | --- |
| **Tag** | **Purpose** |
| <header> | Defines the header of a document or section |
| <nav> | Defines navigation links |
| <main> | Defines the main content area |
| <section> | Defines a section in a document |
| <article> | Represents self-contained content |
| <aside> | Content indirectly related to main content |
| <footer> | Defines the footer of a document or section |
| <figure> | Groups media content (like images) |
| <figcation> | Caption for the <figure> elemen |

**Lab Assignment:**

**Task: Create a simple HTML webpage that includes:**

• A header (), footer (), main section (), and aside section ().

• A paragraph with some basic text.

• A list (both ordered and unordered).

• A link that opens in a new tab.

**Ans:**

<html>

<head>

<title>Simple Webpage</title>

</head>

<body>

<header>

<h1>Welcome to My Simple Webpage</h1>

</header>

<main>

<p>This is a basic paragraph of text inside the main section of the webpage. It shows how simple HTML elements are structured.</p>

<h2>Ordered List</h2>

<ol>

<li>First item</li>

<li>Second item</li>

<li>Third item</li>

</ol>

<h2>Unordered List</h2>

<ul>

<li>Apple</li>

<li>Banana</li>

<li>Cherry</li>

</ul>

<p>Visit <a href="https://www.example.com" target="\_blank">Example Website</a> for more information.</p>

</main>

<aside>

<h3>Side Note</h3>

<p>This is an aside section with additional info.</p>

</aside>

<footer>

<p> 2025 My Simple Webpage</p>

</footer>

</body>

</html>

**HTML Forms:**

**Question 1: What are HTML forms used for? Describe the purpose of the input, textarea, select, and buttonelements.**

**Ans:**

**HTML forms** are used to **collect user input** and send it to a server for processing. They're essential for interactive websites—like login pages, registration forms, search boxes, contact forms, surveys, and more.

**Purpose of Common HTML Form Elements:**

**1. <input>**

* Used to create various types of **user input fields**.
* Common types include:
  + text – single-line input
  + password – hidden characters
  + email, number, date, checkbox, radio, etc.

Example:

<input type="text" name="username">

**2. <textarea>**

* Used to collect **multi-line** text input from users.
* Ideal for comments, messages, or descriptions.

Example:

<textarea name="message" rows="4" cols="30"></textarea>

**3. <select>**

* Creates a **dropdown menu** of options.
* Used when you want the user to choose **one (or more)** items from a list.
* Must contain one or more <option> elements.

Example:

<select name="country">

<option value="us">United States</option>

<option value="ca">Canada</option>

</select>

**<button>**

* Represents a **clickable button**.
* Used to **submit a form**, reset a form, or trigger JavaScript.
* Can include text, icons, or even HTML.

Example:

<button type="submit">Submit</button>

**Question 2: Explain the difference between the GETand POSTmethods in form submission. When should each be used?**

**ANS:**

HTML forms can submit data using two main HTTP methods: **GET** and **POST**. They determine **how the data is sent** to the server.

**GET Method:**

* **Sends form data as URL parameters.**
* Data is **visible in the URL** after the ? symbol (e.g., example.com/form?name=John).
* **Limited amount of data** (usually up to 2048 characters).
* **Data is not secure**, because it’s exposed in the URL.
* **Can be bookmarked** and shared (useful for search queries).
* **Caching is possible** (browser can save the request).

**Use GET when:**

* You're retrieving or searching data (e.g., search bars).
* The form doesn’t contain sensitive or private information.

Example:

<form action="search.php" method="get">

<input type="text" name="query">

<button type="submit">Search</button>

</form>

**POST Method:**

* **Sends data in the request body**, not in the URL.
* **Data is not visible in the URL**, making it more secure.
* **No size limitation** (can send large amounts of data).
* **Cannot be bookmarked**.
* **Better for sensitive data** and data-altering actions (like creating or updating records).

**Use POST when:**

* You're submitting sensitive data (e.g., login, passwords).
* You’re adding, editing, or deleting data on the server.

Example:

<form action="submit.php" method="post">

<input type="text" name="username">

<button type="submit">Submit</button>

</form>

**Question 3: What is the purpose of the label element in a form, and how does it improve accessibility?**

**ANS:**

**Purpose of the <label> Element:**

The <label> element is used to **define a label for an input element** in a form. It provides a **text description** for form fields like text boxes, checkboxes, and radio buttons.

Example:

<label for="username">Username:</label>

<input type="text" id="username" name="username">

**How <label> Improves Accessibility:**

1. **Screen Reader Support:**

Screen readers read the label aloud when the user focuses on the input.

Helps **visually impaired users** understand what the input is for.

1. **Larger Click Target:**

Clicking the label also activates the associated input (like a checkbox or radio button), making it easier for users with motor impairments.

1. **Form Structure Clarity:**

Helps define the relationship between inputs and their descriptions, which improves usability for **all users**.

**LAB ASSIGNMENT:**

**Task: Create a contact form with the following fields:**

• Full name (text input)

• Email (email input)

• Phone number (tel input)

• Subject (dropdown menu)

• Message (textarea)

• Submit button

**Additional Requirements:**

• Use appropriate form validation using required, minlength, maxlength, and pattern.

• Link form labels with their corresponding inputs using the forattribute.

**Ans:**

<html>

<head>

<title>Contact Form</title>

</head>

<body>

<h1>Contact Us</h1>

<form action="submit\_form.php" method="post">

<label for="fullname">Full Name:</label><br>

<input type="text" id="fullname" name="fullname" required minlength="3" maxlength="50"><br><br>

<label for="email">Email:</label><br>

<input type="email" id="email" name="email" required><br><br>

<label for="phone">Phone Number:</label><br>

<input type="tel" id="phone" name="phone"

required

pattern="[0-9]{10}"

title="Enter a 10-digit phone number"><br><br>

<label for="subject">Subject:</label><br>

<select id="subject" name="subject" required>

<option value="">--Please choose an option--</option>

<option value="general">General Inquiry</option>

<option value="support">Technical Support</option>

<option value="feedback">Feedback</option>

</select><br><br>

<label for="message">Message:</label><br>

<textarea id="message" name="message" rows="5" cols="40" required minlength="10" maxlength="500"></textarea><br><br>

<button type="submit">Submit</button>

</form>

</body>

</html>

**HTML Tables:**

**Question 1:Explain The Structure Of an HTML Table and the Purpose of Each of the following elements : <table>, <tr>, <th>, <td>, <thead>.**

**Ans:**

HTML tables are used to **organize data in rows and columns**, similar to spreadsheets. Below is a breakdown of the main elements used in an HTML table:

**1. <table>**

* The **main container** that defines the table.
* All rows and cells go inside this tag.

Example:

<table>

<!-- Table content goes here -->

</table>

**2. <tr> (Table Row)**

* Stands for **Table Row**.
* Wraps around a full **row of cells** (either headers or data).

Example:

<tr>

<td>Row 1, Cell 1</td>

<td>Row 1, Cell 2</td>

</tr>

**3. <th> (Table Header Cell)**

* Stands for **Table Header**.
* Used to define a **header cell** in the table.
* Text in <th> is **bold and centered by default**.
* Usually used inside the <thead> section.

Example:

<tr>

<th>Name</th>

<th>Age</th>

</tr>

**4. <td> (Table Data Cell)**

* Stands for **Table Data**.
* Represents a **regular cell** containing actual data in the table.

Example:

<tr>

<td>John</td>

<td>25</td>

</tr>

**5. <thead> (Table Head)**

* Groups the **header section** of the table.
* Usually contains a row (<tr>) of header cells (<th>).
* Helps **separate headings from body content** and improve readability and accessibility.

Example:

<thead>

<tr>

<th>Name</th>

<th>Age</th>

</tr>

</thead>

**Complete Structure Table:**

<table border="1">

<thead>

<tr>

<th>Name</th>

<th>Age</th>

</tr>

</thead>

<tr>

<td>John</td>

<td>25</td>

</tr>

<tr>

<td>Alice</td>

<td>30</td>

</tr>

</table>

**Question 2: What is the difference between colspanand rowspanin tables? Provide examples.**

**Ans:**

colspan and rowspan are **attributes** used in HTML tables to **merge table cells** across columns or rows.

**1. colspan (Column Span)**

* **Purpose:** Merges **multiple columns into one cell**.
* **Used in:** <th> or <td> elements.
* **Example Use Case:** A cell that needs to span across 2 or more columns.

Example:

<table border="1">

<tr>

<th colspan="2">Name & Contact</th>

</tr>

<tr>

<td>John</td>

<td>123-456-7890</td>

</tr>

</table>

**Explanation:**

* The first row has **1 cell that spans across 2 columns** using colspan="2".

**2. rowspan (Row Span)**

* **Purpose:** Merges **multiple rows into one cell**.
* **Used in:** <th> or <td> elements.
* **Example Use Case:** A category or label that applies to multiple rows.

Example:

<table border="1">

<tr>

<th rowspan="2">Name</th>

<td>John</td>

</tr>

<tr>

<td>Alice</td>

</tr>

</table>

**Explanation:**

* The "Name" header cell spans 2 rows vertically using rowspan="2"

**Question 3: Why should tables be used sparingly for layout purposes? What is a betteralternative?**

**Ans:**

Tables should be used sparingly for layout purposes because they can lead to several issues:

1. **Accessibility**: Screen readers and other assistive technologies may struggle to interpret tables that are used for layout rather than for presenting data. This can make content less accessible to users with disabilities.
2. **Responsiveness**: Tables can be rigid and may not adapt well to different screen sizes. This can result in poor user experiences on mobile devices or smaller screens.
3. **Semantic Meaning**: Using tables for layout can confuse the semantic meaning of HTML. Tables are intended for displaying tabular data, and using them for layout can mislead both developers and search engines about the content structure.
4. **Maintenance**: Layouts created with tables can be more difficult to maintain and update compared to modern CSS techniques. Changes to the layout may require significant adjustments to the table structure.

A better alternative for layout purposes is to use CSS (Cascading Style Sheets). CSS provides a flexible and powerful way to control the layout of web pages without compromising accessibility or semantic structure. Techniques such as Flexbox and CSS Grid allow for responsive designs that adapt to various screen sizes while maintaining a clear and meaningful HTML structure.

**Better Alternative: Use CSS for Layout**

Modern web design uses **CSS layout techniques** like:

<div style="display: flex;">

<div>Left</div>

<div>Right</div>

</div>

**Task: Create a product catalog table that includes the following columns:**

• Product Name

• Product Image (use placeholder image URLs)

• Price

• Description

• Availability (in stock, out ofstock)

**Additional Requirements:**

• Use thead for the table header.

• Add a border and some basic styling using inline CSS.

• Use colspanor rowspanto merge cells where applicable.

**Ans:**

<html>

<head>

<title>Product Catalog</title>

</head>

<body>

<h1>Product Catalog</h1>

<table border="1" cellpadding="8" cellspacing="0" style="border-collapse: collapse; width: 100%; font-family: Arial, sans-serif;">

<thead style="background-color: #f2f2f2;">

<tr>

<th>Product Name</th>

<th>Product Image</th>

<th>Price</th>

<th>Description</th>

<th>Availability</th>

</tr>

</thead>

<tbody>

<tr>

<td>Wireless Mouse</td>

<td><img src="https://via.placeholder.com/80" alt="Wireless Mouse" /></td>

<td>$25.99</td>

<td>Ergonomic wireless mouse with 2.4 GHz connection.</td>

<td>In Stock</td>

</tr>

<tr>

<td>Bluetooth Headphones</td>

<td><img src="https://via.placeholder.com/80" alt="Bluetooth Headphones" /></td>

<td>$59.99</td>

<td>Over-ear headphones with noise cancellation.</td>

<td>Out of Stock</td>

</tr>

<tr>

<td>Smart Watch</td>

<td><img src="https://via.placeholder.com/80" alt="Smart Watch" /></td>

<td>$199.99</td>

<td>Fitness tracking, heart rate monitor, and notifications.</td>

<td>In Stock</td>

</tr>

<tr>

<td colspan="3" style="text-align: center; font-weight: bold;">Special Offer</td>

<td colspan="2" style="color: red;">Buy 2 or more and get 15% off!</td>

</tr>

</tbody>

</table>

</body>

</html>