Module 15) HTML in Full Stack

1. HTML Basics

Theory Assignment

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

HTML (Hypertext Markup Language) is the standard markup language used to create web pages. It provides the basic structure and layout of a webpage by using various tags and elements.

Purpose of HTML in web development:

- To define the structure of a webpage.
- To instruct the browser on how to display content.
- To add elements like text, images, links, tables, and forms.
- To work with CSS and JavaScript for creating dynamic and styled websites.

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

Basic Structure of an HTML Document:

An HTML document has a specific structure made up of nested tags.
A simple structure is as follows:

```
html
<!DOCTYPE html>
<html>
<head>
   <title>Page Title</title>
</head>
<body>
   <h1>Hello World! </h1>
</body>
</html>
```

Mandatory Tags and Their Purposes:

1. <!DOCTYPE html> – Declares the document type and version of HTML (HTML5).
2. <html> – Root tag of the HTML document; all content goes inside it.
3. <head> – Contains metadata, title, styles, and links to external files.

4. <title> – Defines the title of the webpage (shown on browser tab).
5. <body> – Contains all the visible content (text, images, links, etc.).

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

Aspect	Block-level Elements	Inline Elements
Display	Start on a new line and take full width.	Do not start on a new line; take only needed width.
Structure	Used to define large sections or blocks.	Used to style or format small parts of content.
Examples	, , <h1> to <h6>, <table>.	, <a>, <img>, <b>, <i>.

Examples:

- Block-level:

html
This is a paragraph.
This is a block element.

- Inline:

html
This is inline text.
Click Here

 Question 4: Discuss the role of semantic HTML. Why is it important for accessibility and SEO?

Provide examples of semantic elements.

Role of Semantic HTML:

Semantic HTML uses tags that clearly describe the meaning and purpose of the content they contain. Instead of just defining how content looks, semantic tags explain the content's role in the webpage structure.

Importance for Accessibility and SEO:

- Accessibility: Screen readers and assistive technologies can better understand and navigate the webpage when semantic elements are used.
- SEO (Search Engine Optimization): Search engines can easily understand page structure and content relevance, improving ranking.

Examples of Semantic Elements:

- <header> – Defines the header section of a page.
- <nav> – Represents a navigation menu.
- <article> – Defines independent content, like blog posts.
- <section> – Represents thematic grouping of content.
- <footer> – Defines the footer section of a page.

2. HTML Forms

Theory Assignment

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

HTML forms are used to collect user input and send it to a server for processing (e.g., login forms, search boxes, registrations).

Purpose of Elements:

1. **<input>** – Used for single-line input fields like text, email, password, checkbox, radio buttons, etc.

html

<input type="text" placeholder="Enter name">

2. **<textarea>** – Used for multi-line text input (e.g., comments, messages).

html
<textarea rows="4" cols="30"></textarea>

3. **<select>** – Creates a drop-down menu for selecting one or more options.

html
<select>
  <option>Option 1</option>
  <option>Option 2</option>
</select>

4. **<button>** – Represents a clickable button (submit, reset, or custom action).

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

 Question 2: Explain the difference between the GET and POST methods in form submission.

When should each be used?

Aspect	GET Method	POST Method
Data Transfer	Appends data in the URL as query parameters.	Sends data in the request body (hidden).
Security	Less secure (data visible in URL).	More secure (data not visible in URL).
Data Limit	Limited to URL length (about 2048 characters).	No size limit for data.
Use Case	For retrieving or searching data (e.g., search forms).	For sensitive data (e.g., login, registration).

When to Use:

- **GET:** When data is non-sensitive and needs to be bookmarked or shared (e.g., search queries).
- **POST:** When sending sensitive or large amounts of data (e.g., passwords, form submissions).

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

The <label> element in a form is used to associate descriptive text with a form control (like <input>, <textarea>, <select>).

Purpose:

- It provides a clear description of the input field, helping users understand what data to enter.
- Clicking on the label automatically focuses the associated input field (when using for attribute with input's id).

Accessibility Improvement:

- Screen readers read the label along with the form control, which helps visually impaired users understand the purpose of the field.
- It improves usability by increasing the clickable area, making forms easier to navigate.

Example:

html
<label for="username">Username:</label>
<input type="text" id="username" name="username">

3. HTML Tables

Theory Assignment

 Question 1: Explain the structure of an HTML table and the purpose of each of the following

An HTML table is used to display data in rows and columns. The basic structure is defined using the <table> element, with rows defined by <tr> and cells defined by <td> (for data) or <th> (for headers).

Main Elements and Their Purpose:

1. **<table>** – Defines the start and end of the table.
2. **<tr> (Table Row)** – Represents a row within the table.
3. **<th> (Table Header)** – Defines a header cell, usually bold and centered by default.
4. **<td> (Table Data)** – Defines a standard data cell.
5. **<caption>** – Provides a title or description of the table.
6. **<thead>** – Groups the header rows of the table.
7. **<tbody>** – Groups the main body rows of the table.
8. **<tfoot>** – Groups the footer rows (often used for summaries).

Example:

```
html
<table border="1">
  <caption>Student Marks</caption>
  <thead>
    <tr>
      <th>Name</th>
      <th>Marks</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>Zeel</td>
      <td>85</td>
    </tr>
  </tbody>
</table>
```

 Question 2: What is the difference between colspan and rowspan in tables? Provide Examples.

In HTML tables, **colspan** and **rowspan** are attributes used with <td> or <th> to merge cells.

Difference:

- **colspan** – Merges multiple columns into a single cell (horizontal merge).
- **rowspan** – Merges multiple rows into a single cell (vertical merge).

Examples:

1. colspan Example:

```
html
<table border="1">
  <tr>
    <th colspan="2">Student Info</th>
  </tr>
  <tr>
    <td>Name</td>
    <td>Marks</td>
  </tr>
</table>
```

Here, the first row merges **2 columns** into one header cell.

2. rowspan Example:

```
html
<table border="1">
  <tr>
    <th rowspan="2">Name</th>
    <td>Zeel</td>
  </tr>
```

```
  <tr>
    <td>85</td>
  </tr>
</table>
```

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

Additional Requirements:

○ Use thead for the table header.

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

○ Use colspan or rowspan to merge cells where applicable.

Why tables should be used sparingly for layout purposes?

- Tables were historically used for webpage layouts, but this is not recommended because:
    - They are **not responsive** and make designs rigid.
    - They **increase page load time** due to extra markup.
    - They **hurt accessibility** since screen readers find it harder to interpret layout tables.
    - They **separate content from design**, which is against modern web standards.

Better Alternative:

- Use **CSS with and Flexbox/Grid layout** for page structuring.
- Flexbox and CSS Grid provide responsive, cleaner, and more maintainable designs.

Example with Requirements:

Html

```
<table style="border: 2px solid black; border-collapse: collapse; width: 50%; text-align: center;">
  <thead style="background-color: lightgray;">
```

```
  <tr>
    <th colspan="2" style="border: 1px solid black; padding: 5px;">Student Report</th>
  </tr>
  <tr>
    <th style="border: 1px solid black; padding: 5px;">Name</th>
    <th style="border: 1px solid black; padding: 5px;">Marks</th>
  </tr>
 </thead>
 <tbody>
  <tr>
    <td style="border: 1px solid black; padding: 5px;">Zeel</td>
    <td style="border: 1px solid black; padding: 5px;">85</td>
  </tr>
  <tr>
    <td style="border: 1px solid black; padding: 5px;">Philippe</td>
    <td style="border: 1px solid black; padding: 5px;">90</td>
  </tr>
  <tr>
    <td rowspan="2" style="border: 1px solid black; padding: 5px;">Total</td>
    <td style="border: 1px solid black; padding: 5px;">175</td>
  </tr>
  <tr>
    <td style="border: 1px solid black; padding: 5px;">Average: 87.5</td>
  </tr>
 </tbody>
</table>
```