

## Module 2 – Mernstack – HTML:

### ➤ HTML Basics - Theory Assignment

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

**Answer:**

1. HTML stands for **HyperText Markup Language**.
2. It is the standard language used to create web pages.
3. HTML provides the basic structure of a webpage — like headings, paragraphs, images, links, buttons, forms, etc.
4. Browsers read HTML code and display the webpage accordingly.
5. Without HTML, a webpage cannot be created, as it acts as the foundation of every website.

**Purpose in web development:**

- It defines the layout and structure of content.
- It helps organize information in a readable format.
- It works together with CSS (for styling) and JavaScript (for interactivity).

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

**Answer:**

1. An HTML document follows a standard structure that every browser understands.
2. **<!DOCTYPE html>**
  - Declares that the document is using HTML5.
  - Helps browsers display the page correctly.
3. **<html> tag**
  - The root (main container) of the entire webpage.
  - Everything is written inside this tag.
4. **<head> section**
  - Contains information *about* the webpage, not the content visible to users.
  - Includes metadata, links to CSS files, scripts, SEO tags, etc.
5. **<title> tag**
  - Specifies the title shown on the browser tab.
  - Helps identify the page.
6. **Important tags inside <head>:**
  - <meta> → for character set, description, keywords
  - <link> → to attach CSS files

- `<script>` → to attach JavaScript files
- 7. **`<body>` section**
  - Contains everything that appears *on the screen*.
  - Includes text, images, links, buttons, forms, tables, videos, etc.
- 8. Browsers read this structure from top to bottom to display the page correctly.
- 9. Without this basic structure, the webpage will not load properly.

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

**Answer:**

### 1. Block-level Elements

- Always start on a **new line**.
- Take up the **full width** available (100% of the row).
- Used to create larger structures/sections on a webpage.
- Can contain other block or inline elements.

**Examples:**

`<div>`, `<p>`, `<h1>` to `<h6>`, `<section>`, `<header>`, `<footer>`, `<ul>`, `<li>`

### 2. Inline Elements

- Do **not** start on a new line.
- Take up **only the space required** by the content.
- Used for small pieces of text or formatting inside block elements.
- Cannot contain block-level elements (mostly text or other inline elements).

**Examples:**

`<span>`, `<a>`, `<img>`, `<strong>`, `<em>`, `<label>`, `<br>`

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

**Answer:**

### 1. Role of Semantic HTML

- Semantic HTML means using meaningful tags that describe the purpose of the content.
- Instead of using only `<div>` everywhere, we use proper tags like `<header>`, `<nav>`, `<section>`, etc.
- It makes the structure of the webpage clear and organized.

## 2. Importance for Accessibility

- Screen readers (used by visually impaired users) understand semantic tags better.
- They can easily identify sections like navigation, main content, footer, articles, etc.
- This helps improve the user experience for disabled users.

## 3. Importance for SEO (Search Engine Optimization)

- Search engines (Google) understand semantic tags more clearly.
- It helps Google identify headings, articles, navigation, and important content.
- This improves **search ranking**, crawling, and indexing of the webpage.

## 4. Examples of Semantic HTML Elements

- **Structural elements:** <header>, <footer>, <main>, <section>, <article>, <aside>
- **Navigation elements:** <nav>
- **Text meaning elements:** <strong>, <em>, <mark>, <time>
- **Media-related:** <figure>, <figcaption>

### ➤ HTML Forms - Theory Assignment:

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

**Answer:**

#### 1. What are HTML forms used for?

- HTML forms are used to **collect user information** and **send it to the server**.
- Examples: login forms, signup forms, search boxes, feedback forms, payment forms, etc.

#### 2. Purpose of Form Elements

##### a) <input>

- Used for **single-line input**.
- Can take many types of data like text, email, password, number, date, checkbox, radio buttons, etc.
- Example: name box, email box, password field.

##### b) <textarea>

- Used for **multi-line text input**.
- Good for messages, comments, feedback, descriptions, etc.

- User can type long text here.

c) **<select>**

- Creates a **dropdown menu**.
- User can choose one option (or multiple if allowed) from a list.
- Example: selecting country, city, gender, category.

d) **<button>**

- Creates a clickable button.
- Used to **submit the form**, reset the form, or perform any action.
- Example: “Submit”, “Login”, “Search” buttons.

**Question 2: Explain the difference between the GET and POST methods in form submission. When should each be used?**

**Answer:**

**1. GET Method**

- Sends form data through the **URL** (visible in the address bar).
- Data is **not secure** because anyone can see it.
- Has a **data size limit** (URL length limit).
- Mostly used for **fetching data**, not sending sensitive info.
- GET requests **can be bookmarked** and shared.

**Use GET When:**

- The form is simple and not sensitive
- Search forms (e.g., Google search)
- Filters, sorting, or queries on a webpage

**2. POST Method**

- Sends form data **inside the request body**, not in the URL.
- Data is **more secure** (not visible in browser address bar).
- Can send **large amounts of data**.
- Cannot be bookmarked.

**Use POST When:**

- You are sending **sensitive data** like passwords, login info
- Form submissions like signup, login, payment

- Uploading files
- Sending long text (feedback forms, comments)

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

**Answer:**

### **1. Purpose of the <label> element**

- The <label> element is used to **describe or identify** a form input.
- It tells the user what the input field is for, like Name, Email, Password, etc.
- When a label is linked to an input (using for and id), **clicking the label focuses the input field**.

**Example:**

```
<label for="name">Name:</label>
<input id="name" type="text">
```

### **2. How <label> improves accessibility**

- Screen readers used by visually impaired users read the label aloud before the input.  
Example: It says → “Name: edit text”
- This helps blind users understand what information they must enter.
- Proper labels make forms easier to navigate using a keyboard.
- Without labels, screen readers may not know what each input field means.

## **➤ HTML Tables - Theory Assignment:**

**Question 1: Explain the structure of an HTML table and the purpose of each of the following elements: <table>, <tr>, <th>, <td>, and <thead>**

**Answer:**

### **1. <table>**

- It is the **main container** for creating a table.
- All rows and columns are written inside this tag.

## 2. <tr> (Table Row)

- Used to create a **row** in the table.
- Each row contains table header cells (<th>) or table data cells (<td>).

## 3. <th> (Table Header)

- Creates a **header cell** (top row headings).
- The text inside <th> is usually **bold** and **centered** by default.
- Used for column titles like “Name”, “Age”, “Email”.

## 4. <td> (Table Data)

- Creates a **normal data cell** inside a row.
- It holds the actual data like “Kartik”, “21”, “Example@gmail.com”.

## 5. <thead>

- Used to group the **header section** of the table.
- Usually contains the <tr> with <th> elements.
- Helps in styling and improves structure/semantics.

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

**Answer:**

### 1. Colspan

- Colspan is used to **combine multiple columns** into one cell.
- The cell expands **horizontally (left to right)**.
- Meaning: One cell covers **two or more columns** in the same row.

### 2. Rowspan

- Rowspan is used to **combine multiple rows** into one cell.
- The cell expands **vertically (top to bottom)**.
- Meaning: One cell covers **two or more rows** in the same column.

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

Answer:

### 1. Why table should not be used for layout

- **Tables are meant for showing data**, not designing page structure.
- Using tables for layout makes the HTML **complex, hard to maintain**, and **difficult to style**.
- Tables reduce **flexibility** — they don't adjust well on mobile screens or responsive designs.
- Screen readers read tables as data, which **confuses visually impaired users**, making accessibility poor.
- Table-based layouts load slower and can cause layout issues.

### 2. Better alternative

- The modern and recommended way is to use **CSS layout techniques** such as:
  - **CSS Flexbox**
  - **CSS Grid**

Why these are better:

- Easier to design responsive websites.
- Cleaner, simpler HTML.
- Better for accessibility and SEO.
- Easier to control alignment, spacing, and layout.

## ➤ Module 5 – Mernstack – HTML5 Theory Assignment

### Question 1: Difference b/w HTML & HTML5?

Answer:

Point	HTML (Older Version)	HTML5 (Latest Version)
<b>1. Definition</b>	Older version used to create basic web pages	Latest version with more features and modern standards
<b>2. Multimedia Support</b>	No built-in support for audio/video; needed plugins like Flash	Built-in <audio> and <video> tags
<b>3. Semantic Elements</b>	Mostly used <div> for structure	New semantic tags like <header>, <footer>, <section>, <article>, <nav>
<b>4. Form Enhancements</b>	Limited input types	New input types: email, date, number, url, range, etc.

Point	HTML (Older Version)	HTML5 (Latest Version)
<b>5. Graphics &amp; Animations</b>	Required external plugins for graphics/animation	Supports <canvas> and <b>SVG</b> for drawings
<b>6. Offline Storage</b>	Only cookies for storing data	Local Storage, Session Storage, IndexedDB
<b>7. Mobile-Friendly</b>	Not designed for mobile	Supports responsive and works better on mobile devices.

## Question 2: What are the additional tags used in HTML5?

Answer:

### 1. Semantic Tags (for better structure)

- <header> – top section of a webpage (*logo, menu*)
- <footer> – bottom section (*copyright, contact info*)
- <section> – different sections (*about, services, gallery*)
- <article> – independent content (*blog post, news article*)
- <nav> – navigation area (*menu links*)
- <aside> – sidebar (*ads, related links*)
- <main> – main content area (*central page content*)
- <figure> – image container (*photo with caption*)
- <figcaption> – caption for a figure (*image description*)

### 2. Media Tags

- <audio> – play audio (*music, podcast*)
- <video> – play video (*tutorials, trailers*)
- <source> – provide file sources (*multiple audio/video formats*)
- <track> – subtitles/captions (*closed captions in videos*)

### 3. Graphics Tags

- <canvas> – drawing graphics (*games, charts, animations*)
- <svg> – vector graphics (*icons, shapes, logos*)

### 4. Form-Related Tags

- <datalist> – autocomplete list (*search suggestions*)
- <output> – display calculation result (*form calculations*)
- <progress> – progress bar (*file upload progress*)
- <meter> – measurement indicator (*rating, score level*)