**HTML Basics Theory**

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

**Ans.** HTML (Hyper Text Markup Language) is the standard language used to create and structure web pages. It defines the elements of a webpage, such as headings, paragraphs, images, links, and multimedia content.

**Structuring Web Content** – Defines headings, paragraphs, lists, tables, and more.  
**Creating Links (Hypertext)** – Connects webpages using <a> tags.  
**Embedding Media** – Supports images, videos, and audio using <img>, <video>, and <audio>.  
**Forms & User Input** – Enables user interactions via <form>, <input>, and <button>.  
**SEO & Accessibility** – Uses semantic elements (<header>, <nav>, <article>) to improve search engine ranking and accessibility.

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

**Ans.**

**1) <!DOCTYPE html> (Document Type Declaration)**

* The first line of an HTML document.
* Defines the document as HTML5.
* Helps browsers correctly interpret the page.

**2)** **<html> (Root Element)**

* The **main container** for all HTML content.
* Everything inside an HTML document is wrapped inside <html>.

**3) <head> (Metadata Section)**

* Contains important information about the page but does not display on the webpage.
* Includes meta tags, styles, and links to external files.\

**4) <body> (Visible Content)**

* Contains all the visible elements like text, images, links, buttons, etc.

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

|  |  |  |
| --- | --- | --- |
| **Feature** | **Block-Level Elements** | **Inline Elements** |
| **Definition** | Elements that start on a new line and take up the full width available | Elements that do not start on a new line and take up only as much width as necessary. |
| **Layout Behavior** | Stretches to fill the entire width of the parent container. | Stays within the flow of surrounding text or content. |
| **Usage** | Used for structural components like headings, paragraphs, divs, and sections. | Used for styling or linking within a text like spans, links, and bold/italic text. |
| **Can Contain Other Elements?** | Yes, block elements can contain both block and inline elements. | No, inline elements can only contain other inline elements (except for some special cases). |

**Ans.**

|  |  |  |
| --- | --- | --- |

|  |
| --- |
|  |

|  |  |
| --- | --- |
|  |  |

|  |  |
| --- | --- |
|  |  |

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

**Ans.** Semantic HTML refers to using HTML elements that convey meaning about their content. Instead of using generic <div> and <span> tags, semantic elements like <header>, <article>, and <footer> provide a clear structure to the webpage.

**1. Improves Accessibility (A11Y)**

* Screen readers and assistive technologies rely on semantic elements to understand the content.
* Example: <nav> helps visually impaired users recognize a navigation menu.

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

* Search engines like Google use semantic HTML to better index and rank pages.
* Example: <article> signals important content, helping search engines prioritize it.

**3. Improves Code Readability & Maintainability**

* Developers can understand the structure of a webpage without needing extra comments or CSS classes.
* Example: <aside> clearly indicates sidebar content instead of using a generic <div>.

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

**Ans.** HTML forms are used to collect user input and send it to a server for processing. They are essential for interactive web applications, enabling functionalities such as user authentication, search operations, feedback collection, and data submissions.

**Key Form Elements and Their Purpose**

1. **<input>**
   * The <input> element is used to collect user input.
   * It supports various types (e.g., text, email, password, checkbox, radio, file, etc.), each serving different purposes.
2. **<textarea>**
   * The <textarea> element allows users to enter multi-line text input.
   * It is useful for feedback forms, comments, or messages.
3. **<select>**
   * The <select> element creates a dropdown list for users to choose from predefined options.
   * It contains multiple <option> elements, each representing a choice.
4. **<button>**
   * The <button> element is used to submit forms or trigger actions.
   * It can contain text, images, or other HTML elements.

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

**Ans.**

|  |  |  |
| --- | --- | --- |
| **Feature** | **GET Method** | **POST Method** |
| **Data Visibility** | Data is appended to the URL as query parameters | Data is sent in the request body, not visible in the URL |
| **Security** | Less secure since data appears in the URL (not recommended for sensitive data). | More secure because data is hidden from the URL. |
| **Data Size Limit** | Limited by the URL length (varies by browser, typically around 2000 characters). | Can send large amounts of data, including files. |
| **Use in Bookmarking/Caching** | Can be bookmarked and cached by browsers. | Cannot be bookmarked or cached. |
| **Use Case** | Suitable for retrieving data (e.g., search queries, filtering). | Suitable for sending sensitive or large amounts of data (e.g., login, registration, file upload). |

** Use GET when:**

* Retrieving or requesting data from a server (e.g., search forms, product filters).
* Sharing URLs with prefilled form data (e.g., example.com/search?q=shoes).

** Use POST when:**

* Submitting sensitive data (e.g., passwords, payment details).
* Sending large data (e.g., file uploads, long text inputs).
* Performing actions that modify server data (e.g., creating a user account).

**7.What is the purpose of the label element in a form, and how does it improve accessibility?**

**Ans.** The <label> element in an HTML form is used to provide a descriptive text for form controls, such as <input>, <textarea>, and <select>. It improves usability by clearly associating text with the corresponding input field.

**Screen Reader Support**

* Screen readers announce the label text when users navigate form elements, helping visually impaired users understand the purpose of each input field.

**Increases Clickable Area**

* When a <label> is correctly associated with an input field, clicking the label also focuses the input, making it easier for users to interact with smaller elements like checkboxes and radio buttons.

**Enhances Form Usability**

* Users can better understand what data they need to enter, reducing errors and confusion.

**Keyboard Navigation**

* Labels help users who rely on keyboards by improving focus management when tabbing through form fields.

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

**Ans.**

**1) <table>**

* The <table> element is the container that holds all the data in the table.
* It defines the boundaries of the table and contains rows (<tr>), header cells (<th>), and data cells (<td>).

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

* The <tr> element represents a row in the table.
* It contains table header (<th>) and table data (<td>) cells.
* Each <tr> must be inside a <table> and typically within <thead> or <tbody**>.**

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

* The <th> element is used to define a header cell in a table.
* It is typically found in the first row of a table to describe the columns.
* Text inside a <th> is bold and centered by default.

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

* The <td> element represents a data cell within a table row.
* It contains the actual data for each cell in a table.
* It is placed inside a <tr> and typically within <tbody>.

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

* The <thead> element is used to group the header content of a table.
* It usually contains one or more <tr> elements with <th> cells.
* It helps in making table structures more semantic and easier to style with CSS.

**9.** **What is the difference between colspan and rowspan in tables? Provide examples**

**Ans.** Both colspan and rowspan are attributes used in the <th> and <td> elements to merge cells in an HTML table, but they serve different purposes:

* **colspan (Column Span)**
  + It allows a cell to extend across multiple columns.
  + It merges two or more columns into a single cell.
* **rowspan (Row Span)**
  + It allows a cell to extend across multiple rows.
  + It merges two or more rows into a single cell.

**10.** **Why should tables be used sparingly for layout purposes? What is a better alternative?**

**Ans.** In the past, HTML tables were commonly used to design web page layouts, but they are now discouraged for several reasons:

1. **Poor Accessibility**
   * Tables are meant for tabular data, not layout. Screen readers may interpret table structures incorrectly, making content harder to navigate for visually impaired users.
2. **Bad for SEO (Search Engine Optimization)**
   * Search engines expect tables to contain data, not layout elements. Using tables for layout can make it harder for search engines to understand the page structure.
3. **Difficult to Maintain**
   * Table-based layouts are complex and require nested tables, making it harder to update or modify the design.
4. **Slower Page Load Times**
   * Tables require more HTML code, leading to larger file sizes and slower rendering compared to modern layout methods.
5. **Not Responsive**
   * Tables do not adapt well to different screen sizes. Making a table-based layout responsive requires additional workarounds like JavaScript or CSS hacks.