

## 1. *Basic Structure*

- `<html>`: Root element of the document.
- `<head>`: Contains meta-information about the document.
- `<body>`: Contains the content of the document.
- `<title>`: Specifies the title of the document.
- `<meta>`: Provides metadata such as character set and viewport settings.
- `<link>`: Used to link external resources like CSS files.

## 2. *Text Formatting*

- Headings (`<h1>` to `<h6>`): Define headings of different levels.
- Paragraph (`<p>`): Defines a paragraph.
- Strong (`<strong>`): Indicates strong importance, typically displayed in bold.
- Emphasis (`<em>`): Indicates emphasis, typically displayed in italics.
- Blockquote (`<blockquote>`): Defines a section that is quoted from another source.
- Abbreviation (`<abbr>`): Represents an abbreviation or acronym.
- Code (`<code>`): Displays a fragment of computer code.

## 3. *Lists*

- Unordered List (`<ul>`): Defines a bulleted list.
- Ordered List (`<ol>`): Defines a numbered list.
- List Item (`<li>`): Defines an item in a list.

## 4. *Tables*

- Table (`<table>`): Defines a table.
- Table Row (`<tr>`): Defines a row in a table.
- Table Header (`<th>`): Defines a header cell in a table.
- Table Data (`<td>`): Defines a standard cell in a table.
- Table Head (`<thead>`): Groups the header content in a table.
- Table Body (`<tbody>`): Groups the body content in a table.
- Table Foot (`<tfoot>`): Groups the footer content in a table.

## 5. *Forms*

- Form (`<form>`): Defines an HTML form for user input.
- Input (`<input>`): Defines an input control.
- Label (`<label>`): Defines a label for an `<input>` element.
- Select (`<select>`): Defines a drop-down list.
- Option (`<option>`): Defines an option in a drop-down list.
- Textarea (`<textarea>`): Defines a multi-line text input control.
- Button (`<button>`): Defines a clickable button.

## 6. *Media*

- Image (`<img>`): Embeds an image.
- Audio (`<audio>`): Embeds audio content.
- Video (`<video>`): Embeds video content.
- Inline Frame (`<iframe>`): Embeds another HTML page within the current page.

## 7. Semantic Tags

- Header (<header>): Defines a header for a document or section.
- Footer (<footer>): Defines a footer for a document or section.
- Section (<section>): Defines a section in a document.
- Article (<article>): Defines an independent, self-contained content.
- Navigation (<nav>): Defines a set of navigation links.
- Aside (<aside>): Defines content aside from the main content.
- Main (<main>): Specifies the main content of a document.

## 8. Interactive Elements

- Details (<details>): Defines additional details that the user can view or hide.
- Summary (<summary>): Defines a visible heading for a <details> element.
- Progress (<progress>): Represents the completion progress of a task.
- Meter (<meter>): Defines a scalar measurement within a known range.

## 9. Links & Navigation

- Anchor (<a>): Defines a hyperlink.
- Navigation (<nav>): Defines a set of navigation links.
- Button (<button>): Defines a clickable button.

## 10. Div & Span

- Division (<div>): Defines a division or section.
- Span (<span>): Defines a span of text.
- Fieldset: Grouping visual representation.

## Basic Structure Tags

### <html> - Root Element

Definition: It is the root element that contains all other HTML elements.

Syntax:

```
<!DOCTYPE html>
<html>
</html>
```

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>My Page</title>
</head>
<body>
  <h1>Welcome</h1>
</body>
</html>
```

Real-Time Use: Every web page starts with <html>.

### **<head> - Metadata Section**

Definition: Contains metadata like title, character set, and links to stylesheets.

Syntax:

```
<head>
  <title>Page Title</title>
</head>
```

Example:

```
<head>
  <meta charset="UTF-8">
  <title>Student Portfolio</title>
</head>
```

Real-Time Use: Defines page settings, styles, and SEO-related metadata.

### **<body> - Main Content**

Definition: Contains all visible content of a web page.

Syntax:

```
<body>
  <h1>Hello, World!</h1>
</body>
```

Example:

```
<body>
  <p>This is a student portfolio.</p>
</body>
```

Real-Time Use: Holds all text, images, videos, and interactive content.

### **<title> - Page Title**

Definition: Defines the title displayed on the browser tab.

Syntax:

```
<title>Page Title</title>
```

Example

```
<head>
  <title>Student Profile</title>
</head>
```

Real-Time Use: Helps in SEO and branding.

<meta> - Metadata Information

Definition: Provides metadata like charset, author, and viewport.

Syntax:

```
<meta name="description" content="This is a student portfolio.">
```

Example:

```
<meta name="keywords" content="HTML, CSS, Portfolio">
```

Real-Time Use: Helps in SEO and page responsiveness.

<link> - External Resources

Definition: Links external stylesheets or resources.

Syntax:

```
<link rel="stylesheet" href="styles.css">
```

Example:

```
<link rel="icon" href="favicon.ico">
```

Real-Time Use: Used for linking CSS files.

## Text Formatting Tags

<h1> to <h6> - *Headings*

Definition: Defines headings, <h1> being the largest.

Syntax:

```
<h1>Main Heading</h1>
```

Example:

```
<h2>About Me</h2>
```

Real-Time Use: Used for section titles.

<p> - *Paragraph*

Definition: Defines paragraphs.

Syntax:

```
<p>This is a paragraph.</p>
```

Example:

```
<p>Hello, I am a web developer.</p>
```

Real-Time Use: Used for text content.

### ***<strong> - Bold Text***

Definition: Displays text in bold.

Syntax:

```
<strong>Important Text</strong>
```

Example:

```
<p><strong>Warning:</strong> This is important.</p>
```

Real-Time Use: Highlights important content.

### ***<em> - Italic Text***

Definition: Displays text in italics.

Syntax:

```
<em>Emphasized Text</em>
```

Example:

```
<p>Please <em>focus</em> on this.</p>
```

## **Lists**

### ***<ul> - Unordered List***

Definition: Creates a bullet list.

Syntax:

```
<ul>
  <li>Item 1</li>
  <li>Item 2</li>
</ul>
```

Example:

```
<ul>
  <li>HTML</li>
  <li>CSS</li>
</ul>
```

Real-Time Use: Lists menu items.

### ***<ol> - Ordered List***

Definition: Creates a numbered list.

Syntax:

```
<ol>
  <li>Step 1</li>
  <li>Step 2</li>
</ol>
```

Example:

```
<ol>
  <li>Download Software</li>
  <li>Install Software</li>
</ol>
```

Real-Time Use: Step-by-step instructions.

### ***<li> - List Item***

Definition: Represents an item in a list.

Syntax:

```
<ul>
  <li>Item</li>
</ul>
```

Example:

```
<ol>
  <li>First Task</li>
  <li>Second Task</li>
</ol>
```

Real-Time Use: Used in navigation menus.

## **Tables**

### ***<table> - Table Element***

Definition:

- The <table> tag is used to create a table in HTML.
- It organizes data into rows and columns.

Syntax:

```
<table>
  <tr>
    <th>Heading 1</th>
    <th>Heading 2</th>
  </tr>
  <tr>
    <td>Data 1</td>
    <td>Data 2</td>
  </tr>
</table>
```

Example:

```
<table border="1">
  <tr>
    <th>Product</th>
    <th>Price</th>
  </tr>
  <tr>
    <td>Laptop</td>
    <td>$800</td>
  </tr>
  <tr>
    <td>Phone</td>
    <td>$500</td>
  </tr>
</table>
```

Real-Time Use:

- Used to display product lists, schedules, invoices, etc.
- Example: E-commerce websites use tables to display product details.

### ***<tr> - Table Row***

Definition:

- The <tr> tag defines a row in an HTML table.
- Each row contains one or more <th> (table header) or <td> (table data) elements.

Syntax:

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

Example:

```
<table border="1">
  <tr>
    <th>Name</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>John</td>
    <td>25</td>
  </tr>
</table>
```

Real-Time Use:

- Used in tables to define rows of information, such as employee records, marksheets, etc.

### ***<th> - Table Header***

Definition:

- The <th> tag defines a header cell in a table.
- It is bold and centered by default.

Syntax:

```
<th>Column Title</th>
```

Example:

```
<table border="1">
  <tr>
    <th>Employee ID</th>
    <th>Name</th>
    <th>Department</th>
  </tr>
  <tr>
    <td>101</td>
    <td>Alice</td>
    <td>HR</td>
  </tr>
</table>
```

Real-Time Use:

- Used for column titles in tables.
- Example: Student mark sheets, employee details tables.

### ***<td> - Table Data Cell***

Definition:

- The <td> tag is used to define a standard data cell in a table.
- It holds text, numbers, images, or links.

Syntax:

```
<td>Data</td>
```

Example:

```
<table border="1">
  <tr>
    <th>Subject</th>
    <th>Marks</th>
  </tr>
  <tr>
    <td>Math</td>
    <td>90</td>
  </tr>
</table>
```



Real-Time Use:

- Used for displaying actual data in tables.
- Example: Bank statements, sales reports.

### ***<thead> - Table Header Section***

Definition:

- The <thead> tag groups the header content of a table.
- It helps in organizing table structure.

Syntax:

```
<thead>
  <tr>
    <th>Header 1</th>
    <th>Header 2</th>
  </tr>
</thead>
```

Example:

```
<table border="1">
  <thead>
    <tr>
      <th>Course</th>
      <th>Instructor</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>HTML</td>
      <td>Mr. John</td>
    </tr>
  </tbody>
</table>
```

Real-Time Use:

- Used to separate header content from body content in a table.
- Example: Mark sheets, attendance sheets, invoices.

### ***<tbody> - Table Body Section***

Definition:

- The <tbody> tag groups the main content (data rows) of a table.
- It separates the body from the table header and footer.

Syntax:

```
<tbody>
  <tr>
    <td>Data 1</td>
    <td>Data 2</td>
  </tr>
</tbody>
```

Example:

```
<table border="1">
  <thead>
    <tr>
      <th>Product</th>
      <th>Price</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>Keyboard</td>
      <td>$20</td>
    </tr>
    <tr>
      <td>Mouse</td>
      <td>$10</td>
    </tr>
  </tbody>
</table>
```

Real-Time Use:

- Used for separating data rows in reports and databases.

***<tfoot> - Table Footer Section***

Definition:

- The <tfoot> tag groups the footer content in a table.
- It is usually used for summary rows like totals.

Syntax:

```
<tfoot>
  <tr>
    <td colspan="2">Total</td>
  </tr>
</tfoot>
```

Example:

```
<table border="1">
  <thead>
    <tr>
      <th>Item</th>
      <th>Price</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>Bag</td>
      <td>$50</td>
    </tr>
    <tr>
      <td>Shoes</td>
      <td>$70</td>
    </tr>
  </tbody>
```

```
  <tfoot>
    <tr>
      <td><strong>Total</strong></td>
      <td><strong>$120</strong></td>
    </tr>
  </tfoot>
</table>
```

Real-Time Use:

- Used in invoices, sales reports, and mark sheets for total calculations.

## Conclusion

- `<table>`: Creates a table.
- `<tr>`: Defines rows.
- `<th>`: Defines headers.
- `<td>`: Holds data.
- `<thead>`: Groups header rows.
- `<tbody>`: Groups data rows.
- `<tfoot>`: Groups footer rows.

## Forms

### `<form>` - *Form Element*

Definition

- The `<form>` tag is used to collect user input and submit it to a web server.
- It can contain input fields, buttons, dropdowns, checkboxes, radio buttons, etc.
- Uses `action` to specify where the form data should be sent and `method` to define how data is sent (GET or POST).

Syntax

```
<form action="server_url" method="POST">
  <!-- Form fields go here -->
</form>
```

Example

```
<form action="submit.php" method="POST">
  <label for="name">Name:</label>
  <input type="text" id="name" name="name">
  <button type="submit">Submit</button>
</form>
```

Sample Output

Name: [\_\_\_\_\_] (input field)

[Submit] (button)

Real-Time Use

- Used in login forms, sign-up forms, contact forms, feedback forms.

## ***<input> - Input Field***

### Definition

- The <input> tag is used to collect user input.
- It supports different types like text, email, password, checkbox, radio, number, etc.

### Syntax

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

### Example

```
<form>
  <label for="email">Email:</label>
  <input type="email" id="email" name="email">
  <br>
  <label for="password">Password:</label>
  <input type="password" id="password" name="password">
  <br>
  <input type="submit" value="Login">
</form>
```

### Sample Output

Email: [   ]

Password: [   ]

[Login] (button)

### Real-Time Use

- Used for text inputs, passwords, checkboxes, radio buttons, file uploads, etc.

## ***<label> - Label for Input***

### Definition

- The <label> tag is used to associate a text label with an <input> field.
- The for attribute links it to an input field's id.

### Syntax

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

## Example

```
<form>
  <label for="age">Enter your age:</label>
  <input type="number" id="age" name="age">
</form>
```

## Sample Output

Enter your age: [\_\_\_\_] (number input field)

## Real-Time Use

- Used to improve form accessibility and make form fields clickable.

## *<select> - Dropdown List*

### Definition

- The <select> tag creates a dropdown menu.
- <option> tags define each selectable item.

### Syntax

```
<select name="country">
  <option value="USA">USA</option>
  <option value="India">India</option>
</select>
```

## Example

```
<form>
  <label for="city">Select your city:</label>
  <select id="city" name="city">
    <option value="New York">New York</option>
    <option value="London">London</option>
    <option value="Tokyo">Tokyo</option>
  </select>
</form>
```

## Sample Output

Select your city: □ (Dropdown with New York, London, Tokyo)

## Real-Time Use

- Used in country selection, gender selection, category selection.

## *<option> - Dropdown Option*

### Definition

- The <option> tag defines a single item in a <select> dropdown.
- The selected attribute can pre-select an option.

## Syntax

```
<option value="value">Display Text</option>
```

### Example

```
<form>
  <label for="language">Choose a language:</label>
  <select id="language" name="language">
    <option value="python">Python</option>
    <option value="java" selected>Java</option>
    <option value="js">JavaScript</option>
  </select>
</form>
```

## Sample Output

Choose a language: ☐ (Java pre-selected in dropdown)

## Real-Time Use

- Used in dropdowns for selections like languages, cities, countries.

### ***<textarea> - Multi-line Text Box***

### Definition

- The `<textarea>` tag creates a multi-line input field for text input.
- Used for comments, feedback, descriptions.

## Syntax

```
<textarea name="comments" rows="4" cols="50"></textarea>
```

### Example

```
<form>
  <label for="feedback">Your Feedback:</label>
  <br>
  <textarea id="feedback" name="feedback" rows="5" cols="40"></textarea>
</form>
```

## Sample Output

## You're Feedback:

[ ]

[ ]

[\_\_\_\_\_] (Large text box)

## Real-Time Use

- Used in feedback forms, message boxes, comment sections.

### ***<button> - Button***

#### Definition

- The <button> tag creates a clickable button.
- It can be used to submit forms, reset forms, or perform JavaScript actions.

#### Syntax

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

#### Example

```
<form>  
  <button type="submit">Submit Form</button>  
</form>
```

#### Sample Output

[Submit Form] (Clickable button)

#### Real-Time Use

- Used for form submission, actions like saving, deleting, or navigating pages.

#### Conclusion

- <form>: Creates a form.
- <input>: Takes user input.
- <label>: Labels input fields.
- <select>: Creates dropdowns.
- <option>: Defines dropdown options.
- <textarea>: Creates a multi-line text box.
- <button>: Creates a clickable button.

## **Media**

### ***<img> - Image Tag***

#### Definition

- The <img> tag is used to display images in a webpage.
- It does not have a closing tag.
- The src attribute defines the image source (URL or file path).

- The alt attribute provides alternative text for accessibility.

### Syntax

```

```

### Example

```

```

### Real-Time Use

- Used for logos, product images, banners, thumbnails, profile pictures.

## <audio> - Audio Tag

### Definition

- The <audio> tag is used to embed audio files into a webpage.
- The controls attribute adds play, pause, and volume buttons.
- The src attribute defines the audio file location.

### Syntax

```
<audio controls>  
  <source src="audio.mp3" type="audio/mpeg">  
  Your browser does not support the audio element.  
</audio>
```

### Sample Output

♪ Displays an audio player with play, pause, and volume controls.

### Real-Time Use

- Used for podcasts, background music, online courses, and sound effects.

## <video> - Video Tag

### Definition

- The <video> tag is used to embed videos in a webpage.
- The controls attribute provides play, pause, and volume buttons.
- The poster attribute shows a preview image before the video loads.

### Syntax



```
<video width="400" controls>
  <source src="video.mp4" type="video/mp4">
  Your browser does not support the video tag.
</video>
```

### Example

```
<video width="400" controls>
  <source src="https://www.w3schools.com/html/mov_bbb.mp4" type="video/mp4">
</video>
```

### Sample Output

🎥 Displays a video player with play, pause, and full screen options.

### Real-Time Use

- Used for tutorials, advertisements, product demos, news clips.

### **<iframe> - Embed External Content**

#### Definition

- The <iframe> tag is used to embed another webpage, video, map, or document inside the current webpage.
- The src attribute specifies the URL of the embedded content.

#### Syntax

```
<iframe src="https://www.example.com" width="600" height="400"></iframe>
```

### Example

```
<iframe width="560" height="315" src="https://www.youtube.com/embed/dQw4w9WgXcQ"
allowfullscreen></iframe>
```

### Sample Output

🖥️ Displays an embedded YouTube video.

### Real-Time Use

- Used for embedding YouTube videos, Google Maps, external websites, dashboards.

### Summary

Tag	Purpose	Key Attributes	Example Use
<img>	Displays images	src , alt , width , height	Logos, Banners, Thumbnails
<audio>	Embeds audio	controls , autoplay , loop	Podcasts, Music, Alerts
<video>	Embeds video	controls , poster , autoplay	Tutorials, Ads, Demos
<iframe>	Embeds external content	src , width , height	YouTube, Maps, Dashboards

## Semantic HTML Tags

Semantic tags help define the meaning of content in an HTML document, making it more readable for browsers, developers, and search engines. Below are detailed explanations of the following semantic tags:

- <header>
- <footer>
- <section>
- <article>
- <nav>
- <aside>
- <main>

### <header> - Defines a Page or Section Header

Definition:

- The <header> tag represents introductory content or a navigation section of a page.
- Typically includes logos, navigation menus, or headings.

Syntax:

```
<header>
  <h1>My Portfolio</h1>
  <nav>
    <ul>
      <li><a href="#about">About</a></li>
      <li><a href="#projects">Projects</a></li>
      <li><a href="#contact">Contact</a></li>
    </ul>
  </nav>
</header>
```

Real-time Use Case:

- Used for the top section of a website, like a company name, logo, and menu.

### <footer> - Defines Footer of a Web Page

Definition:

- The <footer> tag represents concluding content of a webpage or section.
- Usually contains copyright information, links, and contact details.

Syntax:

```
<footer>
  <p>© 2025 My Portfolio. All rights reserved.</p>
  <a href="https://linkedin.com">LinkedIn</a> |
  <a href="https://github.com">GitHub</a>
</footer>
```

Real-time Use Case:

- Used at the bottom of a page for legal information, social media links, or contact details.

### ***<section> - Defines a Thematic Section***

Definition:

- The <section> tag groups related content into sections.
- Typically contains a heading (<h2> or <h3>) and related content.

Syntax:

```
<section id="about">
  <h2>About Me</h2>
  <p>I am a web developer passionate about frontend and backend technologies.</p>
</section>
```

Real-time Use Case:

- Used for different sections in a webpage, such as About, Services, Testimonials, or Contact.

### ***<article> - Defines Independent Content***

Definition:

- The <article> tag represents self-contained content like blog posts, news articles, or tutorials.
- Typically includes headings, paragraphs, and author details.

Syntax:

```
<article>
  <h2>How AI is Transforming Web Development</h2>
  <p>Artificial Intelligence is revolutionizing frontend and backend development...</p>
  <p><strong>Author:</strong> John Doe</p>
</article>
```

Real-time Use Case:

- Used in news websites, blogs, and tutorials where each article is independent.

### ***<nav> - Defines Navigation Links***

Definition:

- The <nav> tag contains navigational links to other sections of the webpage or external pages.
- Helps in structuring a website's menu.

Syntax:

```
<nav>
  <ul>
    <li><a href="#home">Home</a></li>
    <li><a href="#services">Services</a></li>
    <li><a href="#contact">Contact</a></li>
  </ul>
</nav>
```

Real-time Use Case:

- Used for website navigation menus (header, sidebar, or footer menus).

***<aside> - Defines Related Sidebar Content***

Definition:

- The <aside> tag represents secondary content (like advertisements, side menus, or related articles).
- Usually placed beside the main content.

Syntax:

```
<aside>
  <h3>Related Articles</h3>
  <ul>
    <li><a href="#">Introduction to HTML</a></li>
    <li><a href="#">CSS Flexbox Guide</a></li>
  </ul>
</aside>
```

Real-time Use Case:

- Used for sidebars with advertisements, author bio, or related articles.

***<main> - Defines the Main Content***

Definition:

- The <main> tag contains the central content of a webpage.
- It should not include headers, footers, or sidebars.

Syntax:

```
<main>
  <section>
    <h2>Welcome to My Portfolio</h2>
    <p>Explore my work and experience in web development.</p>
  </section>
</main>
```

Real-time Use Case:

- Used to wrap the core content of a webpage, excluding sidebars and navigation menus.

**Summary**

Tag	Purpose
<header>	Defines page header with <b>logo, menu, and navigation</b> .
<footer>	Contains <b>contact info, copyright, and links</b> .
<section>	Groups <b>related content</b> together.
<article>	Used for <b>independent content</b> (blogs, news).
<nav>	Defines <b>navigation menu</b> .
<aside>	Sidebar with <b>related content</b> .
<main>	Wraps the <b>main content</b> of the page.

## Interactive Elements

Interactive HTML elements enhance user engagement by providing dynamic content and real-time feedback. Below is a detailed overview of the `<details>`, `<summary>`, `<progress>`, and `<meter>` tags, including their definitions, syntax, sample code, and real-world applications.

### *`<details>` Tag*

Definition:

- The `<details>` tag creates a disclosure widget that users can open and close to reveal or hide additional information. It's commonly used for content that doesn't need to be immediately visible, such as FAQs or additional details.

Syntax:

```
<details>
  <summary>Summary Text</summary>
  <!-- Hidden content here -->
</details>
```

Sample Code:

```
<details>
  <summary>More About Our Services</summary>
  <p>We offer a range of services including web development, SEO optimization, and digital
</details>
```

Real-World Example:

- On a product page, you might use the `<details>` tag to provide additional specifications:

```
<details>
  <summary>Technical Specifications</summary>
  <ul>
    <li>Processor: Intel Core i7</li>
    <li>RAM: 16GB</li>
    <li>Storage: 512GB SSD</li>
    <li>Display: 15.6" Full HD</li>
  </ul>
</details>
```

### *`<summary>` Tag*

Definition:

- The `<summary>` tag defines a visible heading for the `<details>` element. This heading can be clicked to expand or collapse the associated content. It should be the first child of the `<details>` element.

Syntax:

```
<details>
  <summary>Summary Text</summary>
  <!-- Hidden content here -->
</details>
```

Sample Code:

```
<details>
  <summary>Read More</summary>
  <p>This is additional information that is initially hidden. Click 'Read More' to expand.</p>
</details>
```

Real-World Example:

In an FAQ section, each question can be a <summary> within a <details> element:

```
<details>
  <summary>What is your return policy?</summary>
  <p>We accept returns within 30 days of purchase. Items must be in original condition</p>
</details>
```

This provides a clean and interactive way to present frequently asked questions.

## <progress> Tag

Definition:

- The <progress> tag represents the completion progress of a task, typically displayed as a progress bar. It's useful for tasks where progress can be quantified, such as file uploads or form submissions.

Syntax:

```
<progress value="current" max="max"></progress>
```

- value: Specifies how much of the task has been completed.
- max: Specifies the total amount of work required for the task. The default value is 1 if not specified.

Sample Code:

```
<label for="file">File Upload Progress:</label>
<progress id="file" value="32" max="100">32%</progress>
```

## <meter> Tag

Definition:

- The <meter> tag represents a scalar measurement within a known range, or a fractional value. It's commonly used to display values such as disk usage, battery level, or a rating system.

Syntax:

```
<meter value="current" min="min" max="max" low="low" high="high" optimum="optimum"></meter>
```

- value: Specifies the current measurement.
- min and max: Define the range of the measurement.
- low and high: Indicate the range considered as low and high.
- optimum: Specifies the optimal value.

Sample Code:

```
<label for="disk">Disk Usage:</label>  
<meter id="disk" value="0.6" min="0" max="1" low="0.3" high="0.8" optimum="0.5"></meter>
```

Real-World Example:

To display battery life:

```
<label for="battery">Battery Level:</label>  
<meter id="battery" value="0.75" min="0" max="1" low="0.2" high="0.8" optimum="1"></meter>
```

This visually represents the battery level, with different colors indicating low, optimal, or high levels.

By incorporating these interactive elements, you can enhance user experience by providing dynamic and responsive content.

## Links & Navigation

### <a> Tag

Definition:

- The <a> (anchor) tag defines a hyperlink, which is used to link from one page to another or to a specific section within a page. It's one of the most fundamental elements in HTML for navigation.

Syntax:

```
<a href="URL">Link Text</a>
```

- href: Specifies the URL of the page the link goes to.

Sample Code:

```
<a href="https://www.example.com">Visit Example</a>
```

Real-World Example:

To create a link to an external website:

```
<a href="https://www.wikipedia.org">Go to Wikipedia</a>
```

This creates a clickable link that directs users to Wikipedia.

### <nav> Tag

Definition:

- The <nav> tag defines a section of a page that contains navigation links. It's intended for major blocks of navigation links, such as menus, tables of contents, or indexes.

Syntax:

```
<nav>
  <!-- Navigation links go here -->
</nav>
```

Sample Code:

```
<nav>
  <ul>
    <li><a href="#home">Home</a></li>
    <li><a href="#about">About</a></li>
    <li><a href="#services">Services</a></li>
    <li><a href="#contact">Contact</a></li>
  </ul>
</nav>
```

Real-World Example:

Creating a navigation menu for a website:

```
<nav>
  <ul>
    <li><a href="/index.html">Home</a></li>
    <li><a href="/about.html">About Us</a></li>
    <li><a href="/products.html">Products</a></li>
    <li><a href="/contact.html">Contact</a></li>
  </ul>
</nav>
```

This defines a navigation bar with links to different sections of the website.

## Div & Span

In HTML, the <div> and <span> tags are fundamental elements used to structure and style web content. While both serve as containers, they differ in their display properties and typical use cases.

### <div> Tag

Definition:

- The <div> (short for "division") tag is a block-level element used to group other HTML elements together. It is commonly employed to structure sections of a webpage and can be styled using CSS or manipulated with JavaScript.

Syntax:



```
<div>
  <!-- Child elements go here -->
</div>
```

Sample Code:

```
<div class="container">
  <h2>About Me</h2>
  <p>I am a web developer with a passion for creating interactive applications.</p>
</div>
```

Real-World Example:

- A `<div>` is often used to group a header and paragraph together:

```
<div class="header-section">
  <h1>Welcome to My Portfolio</h1>
  <p>Explore my projects and skills below.</p>
</div>
```

In this example, the `<div>` with the class `header-section` groups the heading and paragraph, allowing for collective styling and layout management.

### `<span>` Tag

Definition:

- The `<span>` tag is an inline element used to group a part of text or other inline elements. It is primarily utilized for applying styles or scripts to a specific portion of content without disrupting the document's flow.

Syntax:

```
<span>
  <!-- Inline content goes here -->
</span>
```

Sample Code:

```
<p>My favorite color is <span style="color: blue;">blue</span>.</p>
```

Real-World Example:

Highlighting a specific word within a paragraph

```
<p>She has a <span style="font-weight: bold;">unique</span> perspective on design.</p>
```

Here, the `<span>` tag is used to make the word "unique" bold, distinguishing it from the rest of the text.

### Key Differences Between `<div>` and `<span>`

Display Type:

- `<div>`: Block-level element; starts on a new line and takes up the full width available.
- `<span>`: Inline element; does not start on a new line and only takes up as much width as necessary.

Usage:

- `<div>`: Used to group larger sections of content for layout purposes.
- `<span>`: Used to style or manipulate small portions of text or other inline elements.

Understanding when to use `<div>` and `<span>` is crucial for effective HTML structuring and styling. Use `<div>` to organize larger blocks of content and `<span>` to target specific inline elements for styling or scripting.

## Fieldset

In HTML, the `<fieldset>` element is used to group related form controls and labels within a web form, providing both semantic meaning and a visual grouping. This enhances the organization and accessibility of forms.

Key Features of `<fieldset>`:

- **Grouping:** It logically groups related form elements, which is particularly useful in complex forms with multiple sections.
- **Visual Representation:** By default, browsers render a border around the `<fieldset>`, visually separating grouped elements from the rest of the form.
- **Accessibility:** Screen readers and other assistive technologies can interpret `<fieldset>` groupings, providing users with context about related form controls.

Sample Code:

```
<form action="/submit-form" method="post">
  <fieldset>
    <legend>Personal Information</legend>
    <label for="name">Name:</label>
    <input type="text" id="name" name="user_name">
    <label for="email">Email:</label>
    <input type="email" id="email" name="user_email">
  </fieldset>
  <fieldset>
    <legend>Account Details</legend>
    <label for="username">Username:</label>
    <input type="text" id="username" name="username">
    <label for="password">Password:</label>
    <input type="password" id="password" name="password">
  </fieldset>
  <input type="submit" value="Register">
</form>
```

In this example:

- `<fieldset>`: Groups the "Personal Information" and "Account Details" sections of the form.
- `<legend>`: Provides a caption for each `<fieldset>`, indicating the purpose of the grouped elements.