**Lecture 1:**

**Working with Forms, Input Elements, and Validation**

**1. HTML Form Elements**

Forms allow users to input data, which is then sent to a server for processing.

**a) Basic Form Elements**

<form> → Defines the form  
 <input> → Used for user input fields  
 <textarea> → Multi-line text input  
<select> → Dropdown selection  
 <option> → Options inside <select>  
<button> → Submit or reset form

**Example of a Basic Form:**

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

<label for="name">Name:</label>

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

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

<textarea id="message" name="message"></textarea>

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

</form>

**b) Form Attributes**

| **Attribute** | **Purpose** |
| --- | --- |
| action | Specifies where to send form data (e.g., "submit.php"). |
| method | Defines how data is sent (GET for URL parameters, POST for sensitive data). |
| enctype | Defines encoding (used for file uploads: multipart/form-data). |
| target | Opens result in a new tab (\_blank) or same page (\_self). |

**Example of Using Attributes:**

<form action="process.php" method="POST" target="\_blank">

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

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

</form>

**2. Types of Input Elements**

**a) Textual Inputs**

text → Normal text input  
 email → Validates email format  
 password → Hides input as dots  
 number → Accepts numbers only  
 search → Optimized for search fields  
 url → Requires a valid URL

**Example:**

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

<input type="email" placeholder="Enter Email">

<input type="password" placeholder="Enter Password">

<input type="number" placeholder="Enter Age">

<input type="search" placeholder="Search">

<input type="url" placeholder="Enter Website URL">

**b) Selection Inputs**

checkbox → Select multiple options  
 radio → Select one option from a group  
 select → Dropdown menu

**Example:**

<label><input type="checkbox" name="hobby" value="sports"> Sports</label>

<label><input type="checkbox" name="hobby" value="music"> Music</label>

<label><input type="radio" name="gender" value="male"> Male</label>

<label><input type="radio" name="gender" value="female"> Female</label>

<select>

<option value="html">HTML</option>

<option value="css">CSS</option>

<option value="js">JavaScript</option>

</select>

**c) Date and Time Inputs**

date → Select a date  
datetime-local → Select date & time  
month → Select a month  
week → Select a week  
time → Select time

**Example:**

<input type="date">

<input type="datetime-local">

<input type="month">

<input type="week">

<input type="time">

**3. Form Validation**

**a) Built-in Validation**

required → Makes a field mandatory  
min / max → Defines number or date limits  
pattern → Defines custom input pattern  
maxlength → Restricts character length  
type="email" → Ensures correct email format

**Example:**

<form>

<input type="text" required placeholder="Required field">

<input type="number" min="1" max="10" placeholder="Between 1-10">

<input type="email" placeholder="Enter a valid email">

<input type="text" pattern="[A-Za-z]{3,}" title="At least 3 letters">

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

</form>

**b) Styling Form Validation with :valid and :invalid**

CSS pseudo-classes can be used to style valid and invalid inputs.

**Example:**

<style>

input:valid {

border: 2px solid green;

}

input:invalid {

border: 2px solid red;

}

</style>

<input type="email" placeholder="Enter a valid email">

<input type="text" pattern="[A-Za-z]{3,}" placeholder="At least 3 letters">

**Green border** for valid input

**Red border** for invalid input

**4. Practical Task: Contact Form with Validation and Styling**

**Lecture 2: Embedding Media: Images, Audio, Video, and Iframes**

**1. Embedding Images**

Images are added using the <img> tag, which supports various attributes.

**a) <img> Tag and Attributes**

src → Specifies the image file path.  
 alt → Alternative text for accessibility & SEO.  
 width / height → Defines image dimensions.  
 loading="lazy" → Loads images only when they appear in the viewport (improves performance).

**Example:**

<img src="image.jpg" alt="A beautiful landscape" width="400" height="300" loading="lazy">

**b) Common Image Formats**

| **Format** | **Use Case** |
| --- | --- |
| **JPG/JPEG** | Best for photos (lossy compression). |
| **PNG** | Supports transparency (larger size). |
| **SVG** | Scalable without quality loss (logos, icons). |
| **WebP** | Modern, high-quality, smaller file size. |
| **GIF** | Used for simple animations. |

**Example of Using WebP with Fallback:**

<picture>

<source srcset="image.webp" type="image/webp">

<img src="image.jpg" alt="A fallback image">

</picture>

**2. Working with Media (Audio & Video)**

**a) Embedding Audio**

Use the <audio> tag to add sound files.

controls → Shows play/pause buttons.  
 autoplay → Plays automatically (muted required in most browsers).  
 loop → Repeats audio indefinitely.

**Example:**

<audio controls>

<source src="audio.mp3" type="audio/mpeg">

Your browser does not support the audio element.

</audio>

**b) Embedding Video**

The <video> tag supports different formats like MP4, WebM, and Ogg.

controls → Displays play/pause options.  
 autoplay → Plays automatically (requires muted).  
 loop → Repeats video indefinitely.  
 poster → Shows an image before the video plays.

**Example:**

<video controls width="600" poster="thumbnail.jpg">

<source src="video.mp4" type="video/mp4">

<source src="video.webm" type="video/webm">

Your browser does not support the video tag.

</video>

**3. Embedding External Media (YouTube, Google Maps, etc.)**

**a) YouTube Video Embedding**

YouTube videos can be embedded using an <iframe>.

**Example:**

<iframe width="560" height="315"

src="https://www.youtube.com/embed/dQw4w9WgXcQ"

title="YouTube video player" frameborder="0"

allow="autoplay; encrypted-media" allowfullscreen>

</iframe>

**b) Embedding Google Maps**

Google Maps locations can also be embedded using an <iframe>.

**Example:**

<iframe

src="https://www.google.com/maps/embed?pb=YOUR\_MAP\_LINK\_HERE"

width="600" height="450" style="border:0;" allowfullscreen>

</iframe>

**4. Best Practices for Media Embedding**

**Alt Text for Accessibility**

Always provide alt attributes in <img> tags for visually impaired users.

**Example:**

<img src="logo.png" alt="Company Logo">

**Responsive Images with srcset and sizes**

To load different image sizes based on screen width, use srcset.

**Example:**

<img

srcset="small.jpg 480w, medium.jpg 1024w, large.jpg 1600w"

sizes="(max-width: 600px) 480px, (max-width: 1200px) 1024px, 1600px"

src="default.jpg"

alt="A responsive image">

**Activity: Create a multimedia-rich webpage showcasing images, audio, and videos.**

**HTML Tables: Structuring Data and Table Attributes**

**Introduction**

Tables in HTML are used to organize and display data in a structured format. They are useful for presenting data such as schedules, pricing tables, comparison charts, and more.

**1. Creating Tables in HTML**

**Basic Table Structure**

A table is created using the <table> element. Inside a table:

* Rows are defined using <tr> (table row).
* Columns are created using <td> (table data cell).
* Headers are defined using <th> (table header).

**Example of a Simple Table**

<table border="1">

<tr>

<th>Name</th>

<th>Age</th>

<th>City</th>

</tr>

<tr>

<td>Ali</td>

<td>25</td>

<td>Lahore</td>

</tr>

<tr>

<td>Fatima</td>

<td>22</td>

<td>Karachi</td>

</tr>

</table>

**Explanation**

* <table> starts the table.
* <tr> defines a row.
* <th> defines header cells (bold and centered by default).
* <td> defines normal table data cells.

**2. Table Sections**

Tables can be divided into three sections for better structure:

1. <thead>: Table header section.
2. <tbody>: Main content section.
3. <tfoot>: Footer section.

**Example**

<table border="1">

<thead>

<tr>

<th>Product</th>

<th>Price</th>

</tr>

</thead>

<tbody>

<tr>

<td>Mobile</td>

<td>$500</td>

</tr>

<tr>

<td>Laptop</td>

<td>$1000</td>

</tr>

</tbody>

<tfoot>

<tr>

<td>Total</td>

<td>$1500</td>

</tr>

</tfoot>

</table>

* The <thead> section helps style the header separately.
* The <tfoot> section is useful for totals and summaries.

**3. Merging Cells: rowspan and colspan**

Sometimes, you need to merge multiple cells into one.

**Merging Columns (colspan)**

This merges multiple columns into one.

<table border="1">

<tr>

<th colspan="2">Student Info</th>

</tr>

<tr>

<td>Name</td>

<td>Ali</td>

</tr>

</table>

**Merging Rows (rowspan)**

This merges multiple rows into one.

<table border="1">

<tr>

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

<td>Ali</td>

</tr>

<tr>

<td>Fatima</td>

</tr>

</table>

**4. Styling Tables Using CSS**

Tables can be styled using CSS to improve readability.

**Borders and Spacing**

table {

width: 100%;

border-collapse: collapse;

}

th, td {

border: 1px solid black;

padding: 10px;

text-align: center;

}

**Striped Rows**

Adding alternating background colors:

tr:nth-child(even) {

background-color: #f2f2f2;

}

**Hover Effects**

Highlighting a row when the mouse is over it:

tr:hover {

background-color: yellow;

}

**Example Table with Styling**

html

CopyEdit

<table>

<tr>

<th>Name</th>

<th>Age</th>

</tr>

<tr>

<td>Ali</td>

<td>25</td>

</tr>

<tr>

<td>Fatima</td>

<td>22</td>

</tr>

</table>

**5. Responsive Tables**

Large tables may not fit on small screens, so we use scrolling.

**Using overflow: auto;**

.table-container {

overflow-x: auto;

}

html

CopyEdit

<div class="table-container">

<table border="1">

<tr>

<th>Name</th>

<th>Age</th>

<th>City</th>

</tr>

<tr>

<td>Ali</td>

<td>25</td>

<td>Lahore</td>

</tr>

</table>

</div>

**Using Media Queries**

@media screen and (max-width: 600px) {

table {

width: 100%;

display: block;

overflow-x: scroll;

}

}

**6. Use Cases of HTML Tables**

**1. Data Presentation**

Tables are commonly used to present structured data like sales reports, student marks, etc.

**2. Schedules and Timetables**

Example:

<table border="1">

<tr>

<th>Day</th>

<th>Time</th>

<th>Subject</th>

</tr>

<tr>

<td>Monday</td>

<td>10:00 AM</td>

<td>Math</td>

</tr>

</table>

**3. Pricing Tables**

<table border="1">

<tr>

<th>Plan</th>

<th>Price</th>

</tr>

<tr>

<td>Basic</td>

<td>$10/month</td>

</tr>

</table>

**4. Comparison Charts**

Tables help compare products, features, and services