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# Lecture 1: Introduction to HTML Forms

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## What Are HTML Forms?

HTML forms are used to collect user input and send it to a server for processing. They play a crucial role in enabling user interaction with web applications.

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## 1. Structure of a Form

A basic form is defined using the `<form>` element.

```
<form action="/submit" method="post">
  <!-- Form elements go here -->
```

```
</form>
```

### Key Attributes:

- **action**: Specifies the URL where the form data is sent.
  - **method**: Determines how the data is sent (**GET** or **POST**).
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## 2. Common Form Elements

### Text Input

For single-line text input:

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

### Password Input

For sensitive information:

```
<label for="password">Password:</label>  
<input type="password" id="password" name="password">
```

### Textarea

For multi-line text input:

```
<label for="message">Message:</label>  
<textarea id="message" name="message" rows="4" cols="50"></textarea>
```

### Radio Buttons

For selecting one option:

```
<p>Gender:</p>
<input type="radio" id="male" name="gender" value="male">
<label for="male">Male</label>
<input type="radio" id="female" name="gender" value="female">
<label for="female">Female</label>
```

## Checkbox

For selecting multiple options:

```
<p>Interests:</p>
<input type="checkbox" id="coding" name="interest" value="coding">
<label for="coding">Coding</label>
<input type="checkbox" id="music" name="interest" value="music">
<label for="music">Music</label>
```

## Dropdown (Select)

For choosing from a list:

```
<label for="country">Country:</label>
<select id="country" name="country">
  <option value="usa">USA</option>
  <option value="india">India</option>
  <option value="uk">UK</option>
</select>
```

## Date Input

For selecting a date:

```
<label for="dob">Date of Birth:</label>
<input type="date" id="dob" name="dob">
```

## Buttons

Submit, reset, or custom actions:

```
<input type="submit" value="Submit">
<input type="reset" value="Reset">
<button type="button" onclick="alert('Hello!')">Click Me</button>
```

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## 3. GET vs POST

### GET Method

- Appends data to the URL as query strings.
- Data is visible and limited in size.
- Suitable for retrieving data (e.g., search forms).

### POST Method

- Sends data in the request body.
- Data is hidden and can be large.
- Suitable for sensitive or modifying operations (e.g., login forms).

```
<form action="/search" method="get">
  <input type="text" name="query" placeholder="Search">
  <input type="submit" value="Search">
</form>

<form action="/login" method="post">
  <input type="text" name="username" placeholder="Username">
  <input type="password" name="password" placeholder="Password">
  <input type="submit" value="Login">
</form>
```

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## 4. Organizing Forms

### Fieldsets and Legends

Group related elements:

```
<fieldset>
  <legend>Personal Information</legend>
```

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

<label for="age">Age:</label>
<input type="number" id="age" name="age">
</fieldset>
```

---

## 5. Enhancing Forms with Attributes

- **required**: Makes a field mandatory.
- **placeholder**: Provides a hint inside the field. For example:

```
<input type="text" name="username" placeholder="Enter your username">
```

- **maxlength** and **minlength**: Restrict the number of characters.
- **value**: Sets a default value.

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## 6. Example: Simple Registration Form

```
<form action="/register" method="post">
  <label for="username">Username:</label>
  <input type="text" id="username" name="username" placeholder="Choose a username"
  required>

  <label for="email">Email:</label>
  <input type="email" id="email" name="email" placeholder="Enter your email"
  required>

  <label for="password">Password:</label>
  <input type="password" id="password" name="password" placeholder="Create a
  password" required>

  <label for="dob">Date of Birth:</label>
  <input type="date" id="dob" name="dob" required>

  <input type="submit" value="Register">
</form>
```

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Forms collect and submit user input to servers.

- Choose **GET** for data retrieval and **POST** for sensitive submissions.