

# HTML Forms & User Input

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# The <form> Element

The `<form>` element is the essential container for all user input controls. It groups them together and defines how the data is sent to a server. Its two most important attributes are:

- **action:** The URL of the server-side script that will process the form data (e.g., `/login.php`).
- **method:** The HTTP method for sending the data. POST is secure and used for sensitive data, while GET appends the data to the URL and is less secure.

```
<body>  
  <form action="#" method="POST">  
  
  </form>  
</body>
```

# Labels & Text Inputs

The most common input is a text field. We use `<input type="text">` for general text, `<input type="password">` to mask characters, and `<input type="email">` for email addresses. It's crucial to pair every input with a `<label>`. The label's for attribute must match the input's id to link them for accessibility.

```
<form action="#" method="POST">
  <label for="username">Username:</label>
  <input type="text" name="username" id="username"
    placeholder="e.g., john_doe">

  <br>
  <br>

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

# Radio Buttons (Select One)

Radio buttons (`<input type="radio">`) are used when a user must select only one option from a list. To group them, they must all share the same name attribute. The value attribute specifies what data is sent if that option is selected.

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

<p>Choose your plan:</p>
<input type="radio" id="planFree" name="membership_plan"
value="free" checked>
<label for="planFree">Free</label>

<input type="radio" name="membership_plan"
id="planPremium" value="premium">
<label for="planPremium">Premium</label>
```

# Checkboxes (Select Many)

Checkboxes (`<input type="checkbox">`) allow the user to select zero or more options from a list. Like radio buttons, they should share a name attribute if they represent a group of related choices.

```
<p>What are your interests?</p>
<input type="checkbox" name="interests"
id="interestTech" value="technology">
<label for="interestTech">Technology</label>

<input type="checkbox" name="interests" id="interestArt"
value="art">
<label for="interestArt">Art</label>

<input type="checkbox" name="interests"
id="interestMusic">
<label for="interestMusic">Music</label>
```

# Dropdown Menus

A dropdown list is created with the `<select>` element, which contains one or more `<option>` elements. The value attribute on each `<option>` is the data that gets sent to the server.

```
<label for="country">Country:</label>
<select name="country" id="country">
  <option value="">--Please choose an option--</option>
  <option value="us">United States</option>
  <option value="ca">Canada</option>
  <option value="uk">United Kingdom</option>
</select>
```

# Text Area

For multi-line text input, like comments or a biography, use the `<textarea>` element. You can suggest a size using the rows and cols attributes.

```
<label for="bio">Biography:</label><br>
<textarea name="bio" id="bio" rows="5" cols="40"
placeholder="Tell us about yourself..."></textarea>
```

# Buttons

The `<button>` element is used to submit or reset a form.

- **`type="submit"` (default):** Submits the form data to the action URL.
- **`type="reset"`:** Clears all user input in the form.
- **`type="button"`:** A generic button that does nothing by default; it's used for JavaScript actions.

```
<button type="submit">Submit Data</button>  
<button type="reset">Clear Form</button>
```



# Basic Form Validation

HTML5 allows you to add validation rules directly to your inputs, preventing the form from being submitted if the rules aren't met.

- **required:** The field cannot be empty.
- **minlength / maxlength:** Specifies the minimum/maximum number of characters.
- **min / max:** Specifies the minimum/maximum value for number inputs.
- **pattern:** Requires the input to match a specified regular expression (e.g., for a postal code).

```
<label for="zipcode">Zip Code (5 digits):</label>
<input
  type="text"
  id="zipcode"
  name="zipcode"
  required
  minlength="5"
  maxlength="5"
  pattern="[0-9]{5}"
  title="Please enter a 5-digit zip code."
>
<button type="submit">Validate & Submit</button>
```