

CS 146: Intro to Web Programming and Project Development

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Introduction to HTML forms



What are Forms?

- Forms are used in HTML to receive input from the user
- There are various input elements providing numerous possibilities for clean forms that are easy to use
- HTML5 introduces new inputs for use on mobile devices' on-screen keyboards
- While we will not program server-side code to process the data, it is useful to know how to obtain it from the user



Forms Basics

- A form should always start and end with the `<form> ... </form>` tag
- It is possible to have multiple forms on the same page each serving a separate purpose, but only one for can be submitted at a time
- All HTML forms contain form elements
 - input elements, like text fields, checkboxes, radio buttons, submit buttons, and more.

```
<form>  
.  
  form elements  
.  
</form>
```



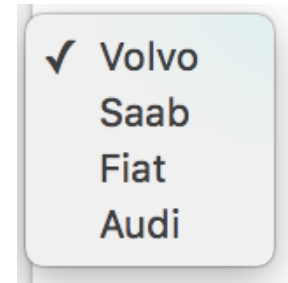
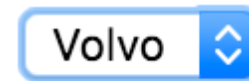
The Input Element

- The **<input>** element is the most important form element
- The **<input>** element can be displayed in several ways, depending on the **type** attribute
- Here are some examples:
 - `<input type="text">`
 - `<input type="radio">`
 - `<input type="submit">`

The Select Element

- The **<select>** element defines a **drop-down list**:

```
<select name="cars">  
  <option value="volvo">Volvo</option>  
  <option value="saab">Saab</option>  
  <option value="fiat">Fiat</option>  
  <option value="audi">Audi</option>  
</select>
```



- The **<option>** elements defines an option that can be selected.
- By default, the first item in the drop-down list is selected.
- To define a pre-selected option, add the **selected** attribute to the option:

```
<option value="fiat" selected>Fiat</option>
```



The Textarea Element

- The **<textarea>** element defines a multi-line input field (**a text area**):

```
<textarea name="message" rows="10" cols="30">
```

```
The cat was playing in the garden.
```

```
</textarea>
```

- The **rows** attribute specifies the visible number of lines in a text area.
- The **cols** attribute specifies the visible width of a text area.
- This is how the HTML code above will be displayed in a browser:



The cat was playing in the garden.



The Button Element

- The **<button>** element defines a clickable **button**:

```
<button type="button" onclick="alert('Hello World!')">Click Me!</button>
```





The Datalist Element

- The **<datalist>** element specifies a list of pre-defined options for an **<input>** elements
- Users will see a drop-down list of the pre-defined options as they input data
- The **list** attribute of the **<input>** element, must refer to the **id** attribute of the **<datalist>** element

```
<form action="action_page.php">
  <input list="browsers" name="browser">
  <datalist id="browsers">
    <option value="Internet Explorer">
    <option value="Firefox">
    <option value="Chrome">
    <option value="Opera">
    <option value="Safari">
  </datalist>
  <input type="submit">
</form>
```



The Keygen Element

- The purpose of the **<keygen>** element is to provide a secure way to authenticate users
- The **<keygen>** element specifies a key-pair generator field in a form
- When the form is submitted, two keys are generated, one private and one public
- The private key is stored locally, and the public key is sent to the server
- The public key could be used to generate a client certificate to authenticate the user in the future




The Keygen Element

```
<form action="action_page.php">  
  Username: <input type="text" name="user">  
  <br><br>  
  Encryption: <keygen name="security">  
  <br><br>  
  <input type="submit">  
</form>
```

The Output Element

- The `<output>` element represents the result of a calculation (like one performed by a script)

```
<form
oninput="x.value=parseInt(a.value)+parseInt(b.value)">
  0
  <input type="range" id="a" name="a" value="50">
  100 +
  <input type="number" id="b" name="b" value="50">
  =
  <output name="x" for="a b"></output>
  <br><br>
</form>
```

0  100 + = 68

Text Input

- `<input type="text">` defines a one-line input field for **text input**:

```
<form>
  First name:<br>
  <input type="text" name="firstname"><br>
  Last name:<br>
  <input type="text" name="lastname">
</form>
```

First name:

Last name:

- **Note:** The form itself is not visible; also note that the default width of a text field is 20 characters

Password Input

- `<input type="password">` defines a password field:

```
<form action="">  
User name:<br>  
<input type="text" name="userid">  
<br>  
User password:<br>  
<input type="password" name="psw">  
</form>
```

User name:

User password:

- The characters in a password field are masked (shown as asterisks or circles)



Submit Button Input

- `<input type="submit">` defines a button for **submitting** the form data to a **form-handler**
- The form-handler is typically a server page with a script for processing input data
- The form-handler is specified in the form's **action** attribute:

```
<form action="action_page.php">  
  First name:<br>  
  <input type="text" name="firstname" value="Mickey"><br>  
  Last name:<br>  
  <input type="text" name="lastname" value="Mouse"><br><br>  
  <input type="submit" value="Submit">  
</form>
```

First name:

Mickey

Last name:

Mouse

Submit



Reset Button Input

- `<input type="reset">` defines a **reset button** that will reset all form values to their default values:

```
<input type="submit" value="Submit">  
<input type="reset">
```

- If you change the input values and then click the "Reset" button, the form-data will be reset to the default values



CheckBox Input

- `<input type="checkbox">` defines a **checkbox**
- Checkboxes let a user select ZERO or MORE options of a limited number of choices

```
<form>  
  <input type="checkbox" name="vehicle1" value="Bike"> I have a bike<br>  
  <input type="checkbox" name="vehicle2" value="Car"> I have a car  
</form>
```

☐ I have a bike

☐ I have a car



Radio Button Input

- `<input type="radio">` defines a **radio button**
- Radio buttons let a user select ONE of a limited number of choices:

```
<form>  
  <input type="radio" name="gender" value="male" checked> Male<br>  
  <input type="radio" name="gender" value="female"> Female<br>  
  <input type="radio" name="gender" value="other"> Other  
</form>
```

☒ Male
☐ Female
☐ Other



HTML5 Input Types

- HTML5 added several new input types:
 - color
 - date
 - datetime
 - datetime-local
 - email
 - month
 - number
 - range
 - search
 - tel
 - time
 - url
 - week



The Action Attribute

- The **action** attribute defines the action to be performed when the form is submitted
- Normally, the form data is sent to a web page on the server when the user clicks on the submit button
- In the example above, the form data is sent to a page on the server called "action_page.php"; this page contains a server-side script that handles the form data:

```
<form action="action_page.php">
```

- If the action attribute is omitted, the action is set to the current page.



The Method Attribute

- The **method** attribute specifies the HTTP method (**GET** or **POST**) to be used when submitting the form data:

```
<form action="action_page.php" method="get">
```

```
<form action="action_page.php" method="post">
```



When to use the Get Method?

- The default method when submitting form data is GET.
- However, when GET is used, the submitted form data will be **visible in the page address field**:

`action_page.php?firstname=Mickey&lastname=Mouse`

- **Note:** GET must NOT be used when sending sensitive information! GET is best suited for short, non-sensitive, amounts of data, because it has size limitations too



When to use the PUT Method?

- Always use POST if the form data contains sensitive or personal information
- The POST method does not display the submitted form data in the page address field
- POST has no size limitations, and can be used to send large amounts of data



The Name Attribute

- Each input field must have a **name** attribute to be submitted.
- If the name attribute is omitted, the data of that input field will not be sent at all.
- This example will only submit the "Last name" input field:

```
<form action="action_page.php">  
  First name:<br>  
  <input type="text" value="Mickey"><br>  
  Last name:<br>  
  <input type="text" name="lastname" value="Mouse"><br><br>  
  <input type="submit" value="Submit">  
</form>
```




Grouping Form Data with <fieldset>

- The **<fieldset>** element is used to group related data in a form
- The **<legend>** element defines a caption for the <fieldset> element

```
<form action="action_page.php">
  <fieldset>
    <legend>Personal information:</legend>
    First name:<br>
    <input type="text" name="firstname" value="Mickey"><br>
    Last name:<br>
    <input type="text" name="lastname" value="Mouse"><br>
  <br>
  <input type="submit" value="Submit">
</fieldset>
</form>
```



Grouping Form Data with <fieldset>

Personal information:

First name:

Mickey

Last name:

Mouse

Submit