Introduction to HTML : Forms

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`<form>` Element

The HTML `<form>` element is used to collect and send information to an external source.

`<form>` can contain various input elements. When a user submits the form, information in these input elements is passed to the source which is named in the `action` attribute of the form.

```
<form method="post" action="http://server1">
  Enter your name:
  <input type="text" name="fname">
  <br/>
  Enter your age:
  <input type="text" name="age">
  <br/>
  <input type="submit" value="Submit">
</form>
```

`<input>` Element

The HTML `<input>` element is used to render a variety of input fields on a webpage including text fields, checkboxes, buttons, etc. `<input>` element have a `type` attribute that determines how it gets rendered to a page.

The example code block will create a text input field and a checkbox input field on a webpage.

```
<label for="fname">First name:</label>
<input type="text" name="fname" id="fname"><br>

<input type="checkbox" name="vehicle" value="Bike"> I
own a bike
```

`<label>` Element

The HTML `<label>` element provides identification for a specific `<input>` based on matching values of the `<input>`'s `id` attribute and the `<label>`'s `for` attribute. By default, clicking on the `<label>` will focus the field of the related `<input>`.

The example code will create a text input field with the label text "Password: " next to it. Clicking on "Password: " on the page will focus the field for the related `<input>`.

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

`<input>`: Checkbox Type

When using an HTML `input` element, the `type="checkbox"` attribute will render a single checkbox item. To create a group of checkboxes related to the same topic, they should all use the same `name` attribute. Since it's a checkbox, multiple checkboxes can be selected for the same topic.

```
<input type="checkbox" name="breakfast"
value="eggs">Eggs<br>
<input type="checkbox" name="breakfast"
value="bacon">Bacon<br>
<input type="checkbox" name="breakfast"
value="pancakes">Pancakes<br>
```

`<input>`: Text Type

HTML `<input>` elements can support text input by setting the attribute `type="text"`. This renders a single row input field that users can type text inside.

The value of the `<input>`'s `name` and `value` attribute of the element are sent as a key-value pair when the form is submitted.

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

`<input>` Password Type

The HTML `<input>` element can have the attribute `type="password"` that renders a single row input field which allows the user to type censored text inside the field. It is used to type in sensitive information.

The value of this `<input>`'s `name` and `value` (actual value and not the censored version) attribute of this element are sent as a key-value pair when the form is submitted.

The code block shows an example of the fields for a basic login form - the username and password fields.

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

`<input>`: Number Type

HTML input elements can be of type `number`. These input fields allow the user to enter only numbers and a few special characters inside the field.

The example code block shows an input with a type of `number` and a name of `balance`. When the input field is a part of a form, the form will receive a key-value pair with the format: `name:value` after form submission.

```
<input type="number" name="balance" />
```

`<input>`: Range Type

A slider can be created by using the `type="range"` attribute on an HTML `input` element. The range slider will act as a selector between a minimum and a maximum value. These values are set using the `min` and `max` attributes respectively. The slider can be adjusted to move in different steps or increments using the `step` attribute.

The range slider is meant to act more as a visual widget to adjust between 2 values, where the relative position is important, but the precise value is not as important. An example of this can be adjusting the volume level of an application.

```
<input type="range" name="movie-rating" min="0"
max="10" step="0.1">
```

`<input>`: Radio Button Type

HTML `<input>` elements can be given a `type="radio"` attribute that renders a single radio button. Multiple radio buttons of a related topic are given the same `name` attribute value. Only a single option can be chosen from a group of radio buttons.

The value of the selected/checked `<input>`'s `name` and `value` attribute of this element are sent as a key-value pair when the form is submitted.

```
<input name="delivery_option" type="radio"
value="pickup" />
<input name="delivery_option" type="radio"
value="delivery" />
```

`<select>` Element

The HTML `<select>` element can be used to create a dropdown list. A list of choices for the dropdown list can be created using one or more `<option>` elements. By default, only one `<option>` can be selected at a time.

The value of the selected `<select>`'s `name` and the `<option>`' s `value` attribute are sent as a key-value pair when the form is submitted.

```
<select name="rental-option">
  <option value="small">Small</option>
  <option value="family">Family Sedan</option>
  <option value="lux">Luxury</option>
</select>
```

`<datalist>` Element

When using an HTML input, a basic search/autocomplete functionality can be achieved by pairing an `<input>` with a `<datalist>`. To pair a `<input>` with a `<datalist>` the `<input>`'s `list` value must match the value of the `id` of the `<datalist>`. The `datalist` element is used to store a list of `<option>`s.

The list of data is shown as a dropdown on an `input` field when a user clicks on the input field. As the user starts typing, the list will be updated to show elements that best match what has been typed into the input field. The actual list items are specified as multiple `option` elements nested inside the `datalist`.

`datalist`s are ideal when providing users a list of pre-defined options, but to also allow them to write alternative inputs as well.

```
<input list="ide">

<datalist id="ide">
  <option value="Visual Studio Code" />
  <option value="Atom" />
  <option value="Sublime Text" />
</datalist>
```

`<textarea>` Element

The `textarea` element is used when creating a text-box for multi-line input (e.g. a comment section). The element supports the `rows` and `cols` attributes which determine the height and width, respectively, of the element.

When rendered by the browser, `textarea` fields can be stretched/shrunk in size by the user, but the `rows` and `cols` attributes determine the initial size.

Unlike the `input` element, the `<textarea>` element has both opening and closing tags. The `value` of the element is the content in between these tags (much like a `<p>` element). The code block shows a `<textarea>` of size 10x30 and with a `name` of `"comment"`.

```
<textarea rows="10" cols="30" name="comment">
</textarea>
```

`required` Attribute

In HTML, input fields have an attribute called `required` which specifies that the field must include a value.

The example code block shows an input field that is required. The attribute can be written as `required="true"` or simply `required`.

```
<input type="password" name="password" required >
```

`min` Attribute

In HTML, input fields with type `number` have an attribute called `min` that specifies the minimum value that can be entered into the field. The code block provided shows an input number field that accepts a number with minimum value 1.

```
<input type="number" name="rating" min="1" max="10">
```

`max` Attribute

HTML `<input>`s of type `number` have an attribute called `max` that specifies the maximum value for the input field.

The code block shows an `input` number field that is set to have a maximum value of `20`. Any value larger than `20` will mark the input field as having an error.

```
<input type="number" max="20">
```

`minlength` Attribute

In HTML, an input field of type `text` has an attribute that supports minimum length validation. To check that the input text has a minimum length, add the `minlength` attribute with the character count.

The example code block shows an example of a text field that has a minimum length of `6`.

```
<input type="text" name="username" minlength="6" />
```

`<input>` `name` Attribute

In order for a form to send data, it needs to be able to put it into key-value pairs. This is achieved by setting the `name` attribute of the `input` element. The `name` will become the `key` and the `value` of the input will become the `value` the form submits corresponding to the key.

It's important to remember that the name is not the same as the ID in terms of form submission. The ID and the name of the input may be the same, but the value will only be submitted if the `name` attribute is specified.

In the code example, the first input will be submitted by the form, but the second one will not.

```
<input name="username" id="username" />
<input id="address" />
```

`maxlength` Attribute

In HTML, input fields with type `text` have an attribute called `maxlength` that specifies the maximum number of characters that can be entered into the field. The code block shows an input text field that accepts text that has a maximum length of 140 characters.

```
<input type="text" name="tweet" maxlength="140">
```

`pattern` Attribute

In a `text` input element, the `pattern` attribute uses a regular expression to match against (or validate) the value of the `<input>`, when the form is submitted.

```
<form action="/action_page.php">
  Country code:
  <input type="text" name="country_code"
         pattern="[A-Za-z]{3}"
         title="Three letter country code">
  <input type="submit">
</form>
```