9
FORMS

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OVERVIEW

- How forms work
- The `form` element
- Text entry controls
- Buttons
- Menus
- Specialized inputs
- Form accessibility
- Form design tips

How Forms Work

Web forms have two components:

- The **form on the page** that collects input
- An **application on the server** that processes the collected information

Web Form Transaction

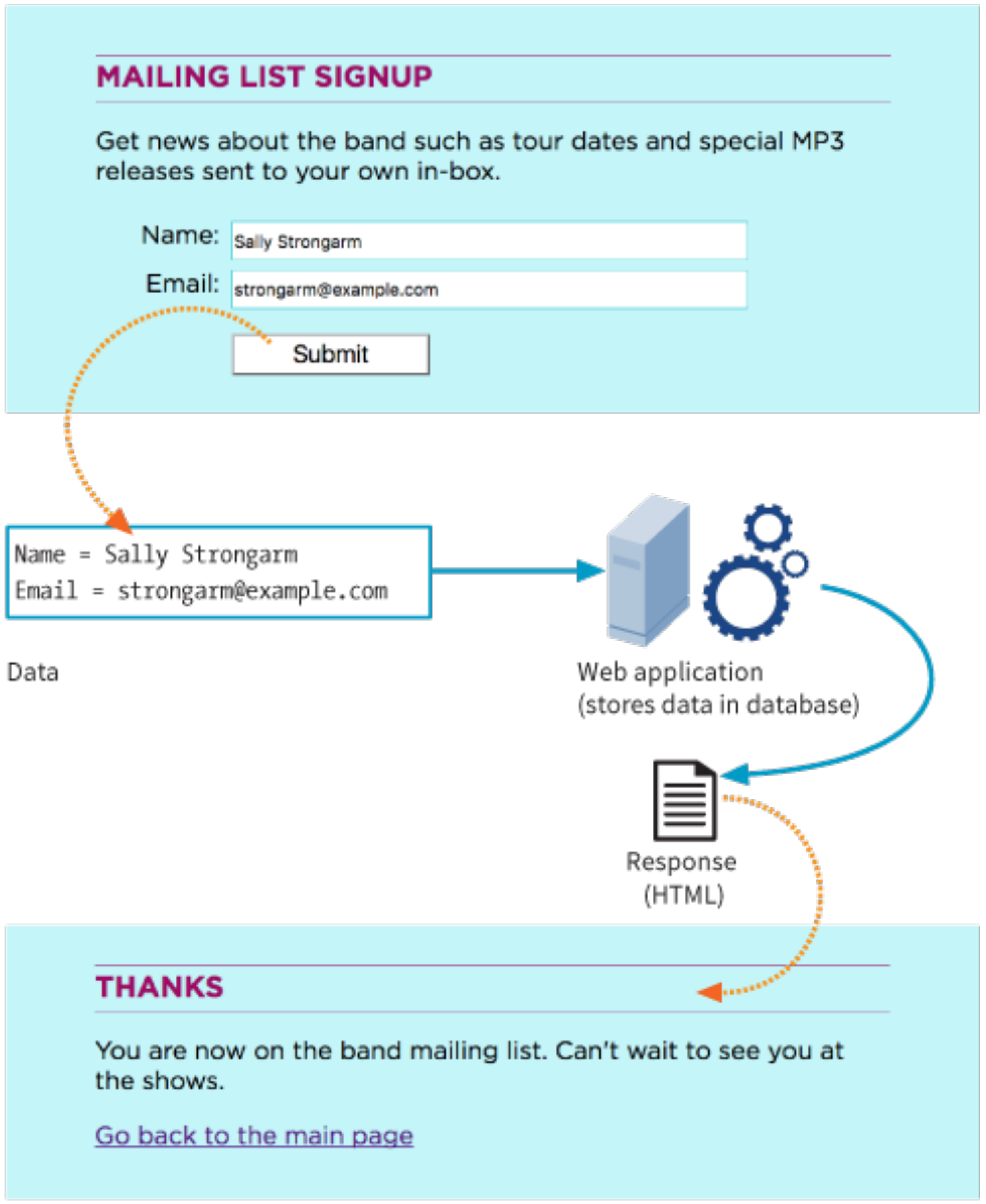
1. Browser renders the form inputs as indicated in the markup.

2. User enters information in the form and hits Submit.

3. The browser encodes the information entered and sends it to the server.

4. The application processes the information.

5. The application returns a response (for example, a thank you message or reloading the page).


MAILING LIST SIGNUP

Get news about the band such as tour dates and special MP3 releases sent to your own in-box.

Name: Sally Strongarm

Email: strongarm@example.com

```
Name = Sally Strongarm
Email = strongarm@example.com
```

THANKS

You are now on the band mailing list. Can't wait to see you at the shows.

Go back to the main page

Web Processing Applications

Web forms may be processed by any of the following technologies:

- PHP (*.php*)
- Microsoft ASP (*.asp*)
- Microsoft ASP.net (*.aspx*)
- Ruby on Rails
- JavaServer Pages (*.jsp*)
- Python

The form Element

```
<form action="URL" method="POST or GET">
  <!-- Form content and inputs here -->
</form>
```

- The **`form`** element is a container for all the content in the form and its input controls.
- The **`action`** and **`method`** attributes are necessary for interacting with the processing program.

The action Attribute

```
<form action="mailinglist.php" method="POST">
```

The **`action`** attribute provides the location of the script or application that will process the collected form data.

The method Attribute

```
<form action="mailinglist.php" method="POST">
```

The **`method`** attribute specifies how the encoded information should be sent to the server (GET or POST):

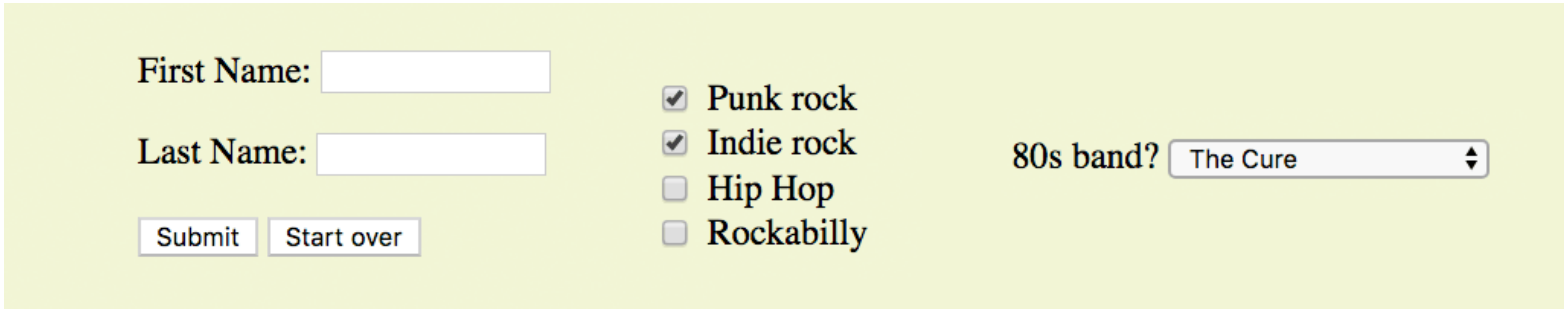
- **`GET`**: The encoded data is tacked onto the URL sent to the server:

```
get http://www.bandname.com/mailinglist.php?
name=Sally%20Strongarm&email=strongarm%40example.com
```

- **`POST`**: Data is send in a separate transaction and can be encrypted with HTTPS.

NOTE: POST is the most common method.

Form Control Elements



Form control elements (also called **widgets**) collect data from the user. A few examples:

```
<input type="text">
<input type="submit">
<input type="checkbox">
<select>
```

Form Control Elements (cont’d)

Form controls collect data in **variable/value pairs**.

Examples:

variable = "email"
value = jen@example.com

variable = "color"
value = green

Variables (the name Attribute)

- A **variable** is a bit of information collected by a form control (example: the user's last name).
- The required **`name`** attribute in the control element provides the name of the variable for that control:

```
<input name="lastname">
```

NOTE: The variable name is also programmed into the web processing script or app, so the name in the markup must match the name in the processor.

Values

- The data entered or selected by the user in the form control is the **value** that gets sent to the server. It is paired with the variable for that control.

- You can provide a default value with the **`value`** attribute:

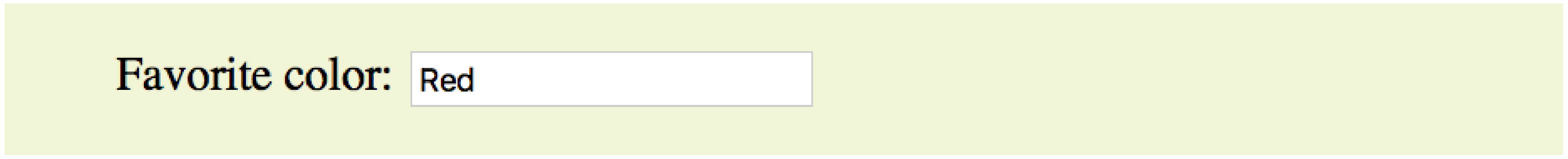
```
Name: <input name="lastname" value="Unknown">
```

In this example, if the text input is left blank, the value “Unknown” would be sent to the server for the variable “lastname”.

FORM CONTROL ELEMENTS

Text Entry Input

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



```
<input type="text" name="color" value="Red" maxlength="24">
```

`type`: Type of input control, in this case a single-line text field

`name`: Required variable name

`value`: Default text that appears in the field and is sent to server if the field is left blank

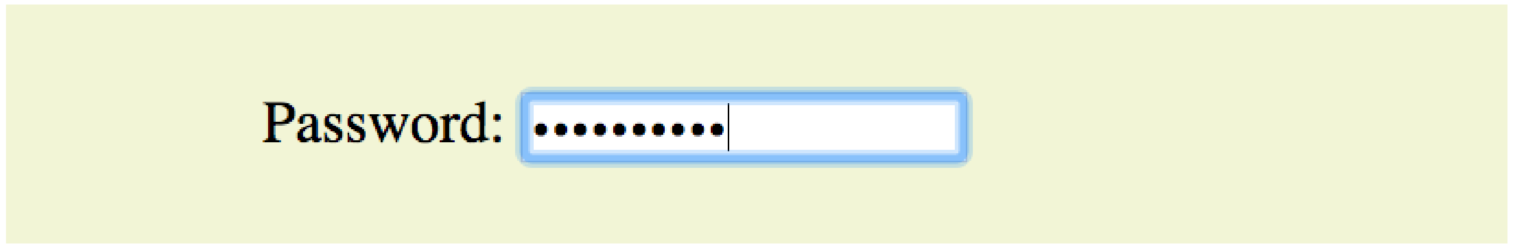
`maxlength`, **`minlength`**: Sets a character limit for the field

`size`: The length of the field in number of characters (CSS is more common for sizing)

FORM CONTROL ELEMENTS

Password Field

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


Password: ••••••••••

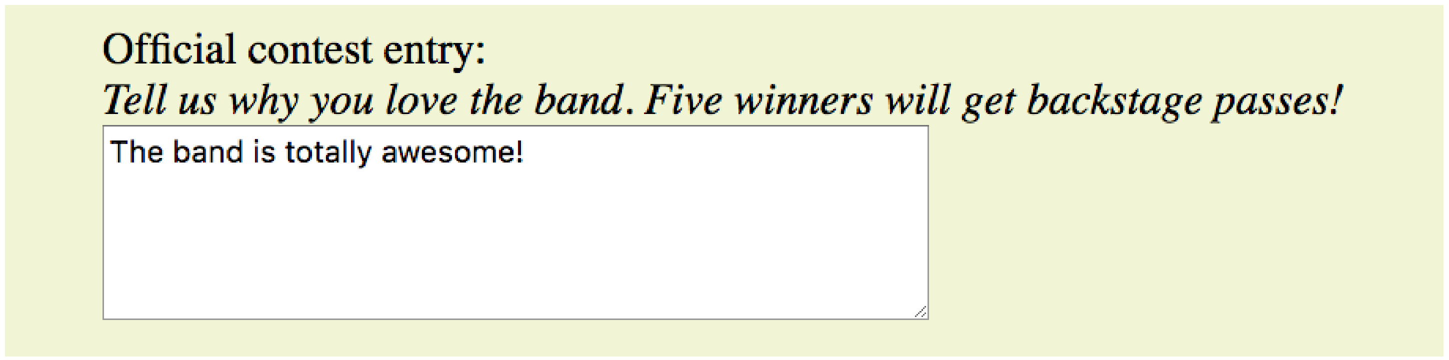
```
<input type="password" name="pswd" maxlength="10">
```

- Like a text entry field, except the characters are obscured from view
- The data entered is *not* encrypted on the way to the server (unless it uses HTTPS, a secure web protocol).

FORM CONTROL ELEMENTS

Multi-line Text Entry

`<textarea> </textarea>`


Official contest entry:
Tell us why you love the band. Five winners will get backstage passes!
The band is totally awesome!

```
<textarea name="entry" rows="6" cols="64">This band is totally
awesome!</textarea>
```

The content of the **`textarea`** element is the default value.

`rows`: The number of rows tall the field is initially drawn (users can write more)

`cols`: Width of initial text field, in number of characters

`maxlength`, **`minlength`**: Limits the number of characters that can be entered

FORM CONTROL ELEMENTS

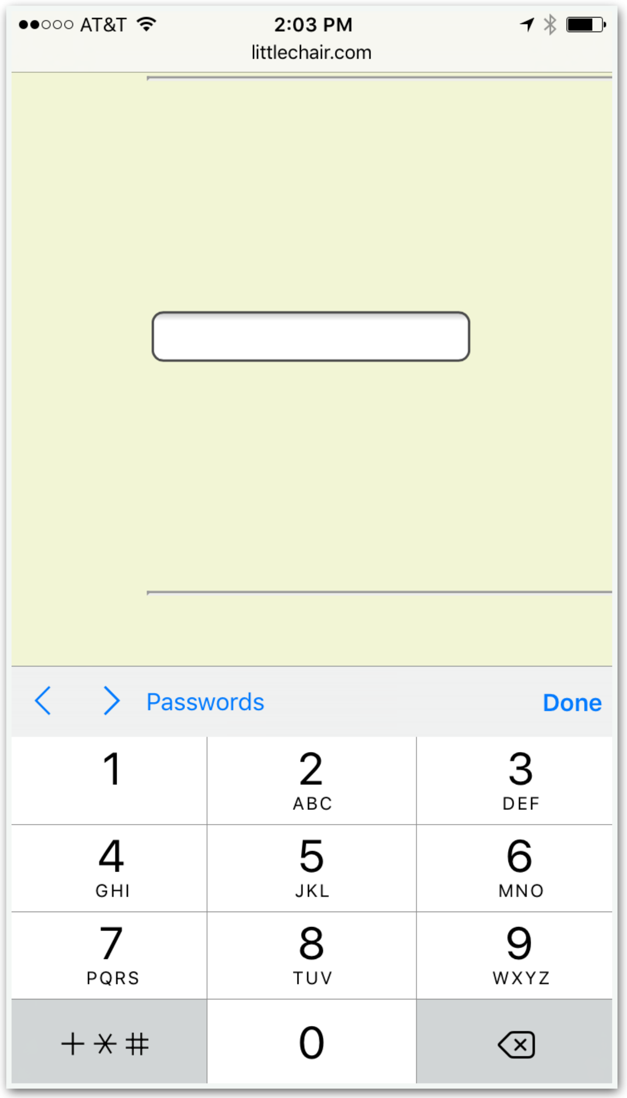
Specialized Text Entry Fields

```
<input type="search">
<input type="email">
<input type="tel">
<input type="url">
```

- These input types are more semantically rich than a default text field.
- Browsers may provide keyboards tailored to the input type.
- Browsers may validate entries on the fly without using the server application.

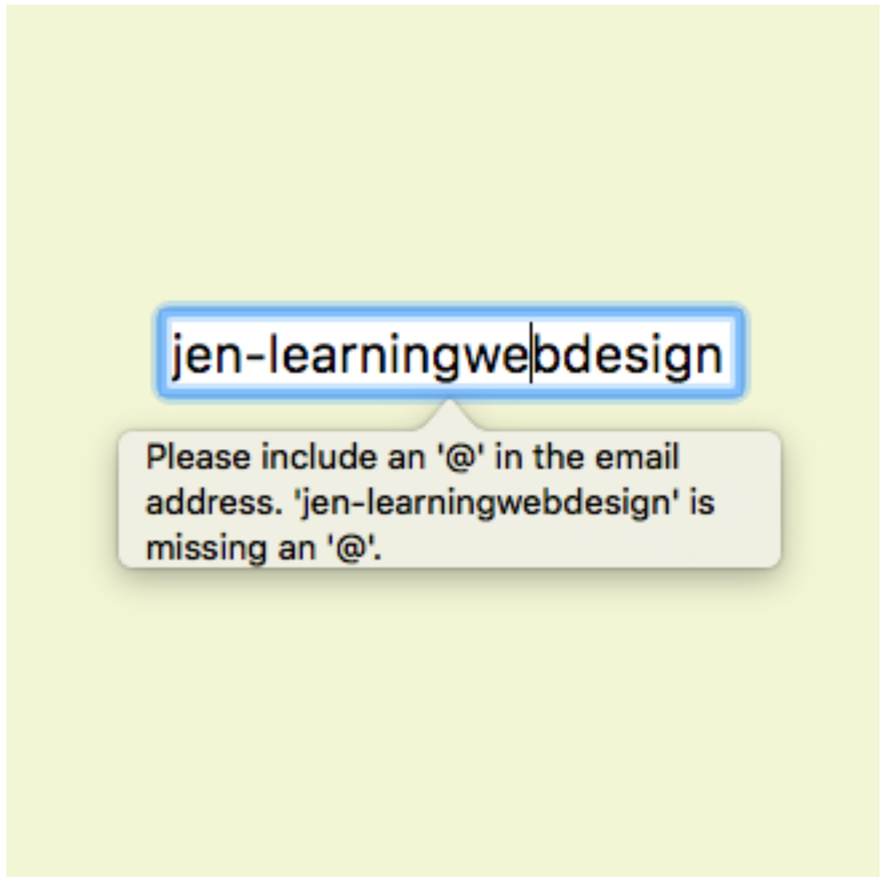
Specialized Text Entries (cont'd)

```
<input type="tel" name="">
```



Numerical keyboard provided on iOS

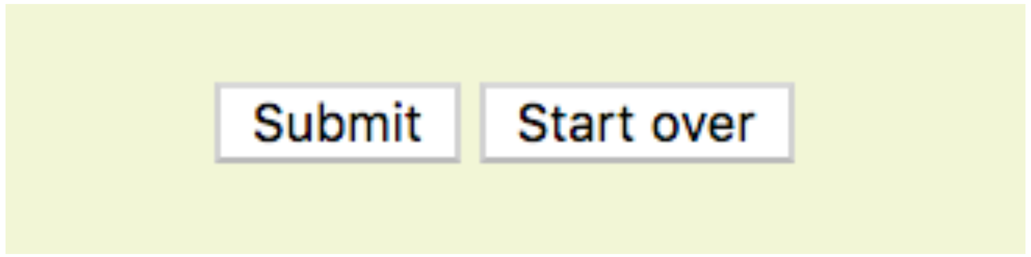
```
<input type="email" name="">
```



Please include an '@' in the email address. 'jen-learningwebdesign' is missing an '@'.

Opera looks for email address structure

Submit and Reset Buttons



```
<input type="submit">
```

- **Submits** the collected form data to the server. Does not require a variable name (**`name`** attribute):

```
<input type="reset" value="Start over">
```

- **Resets** the form to its defaults
- Less common with the rise of JavaScript for form handling
- Change the button text with the **`value`** attribute.

Custom Buttons

`<button> </button>`

The **`button`** element is used for creating custom buttons with JavaScript.

`<input type="button">`

Creates a custom button that has no predefined function and can be customized with JavaScript

`<input type="image" alt="">`

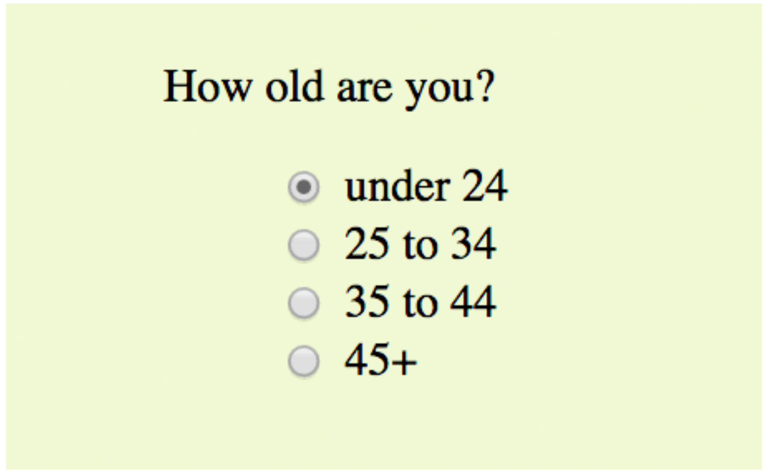
Allows an image to be used as a button to replace the Submit button. It requires a descriptive **`alt`** attribute value.

FORM CONTROL ELEMENTS

Radio Buttons

`<input type="radio">`

Only one radio button may be selected at a time.



```
<p>How old are you?</p>
<ol>
 <li><input type="radio" name="age" value="under24" checked> under 24</li>
 <li><input type="radio" name="age" value="25-34"> 25 to 34</li>
 <li><input type="radio" name="age" value="35-44"> 35 to 44</li>
 <li><input type="radio" name="age" value="over45"> 45+</li>
</ol>
```

NOTE: You can't belong to more than one age group, so radio buttons are the right choice for this list.

Radio Buttons (cont'd.)

```
<input type="radio" value="">
```

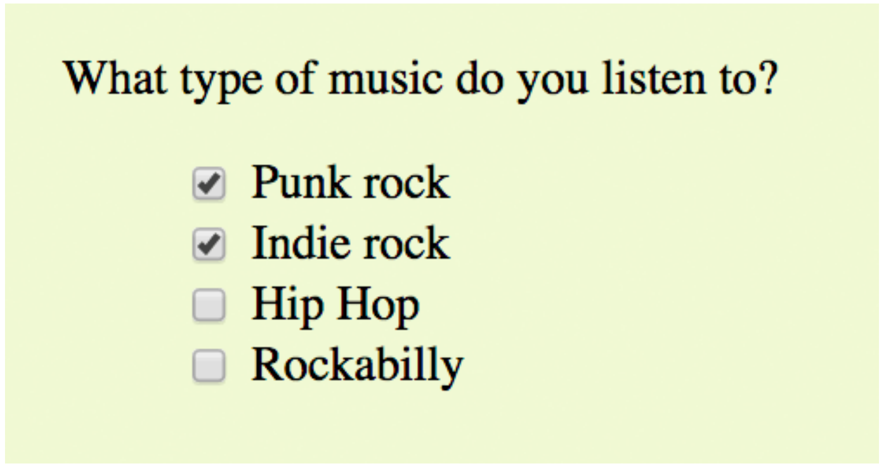
- Applying the same variable name to input elements binds them together as a mutually exclusive set of options.
- The value for each button must be provided with the **`value`** attribute.
- The **`checked`** attribute causes an option to be selected when the page loads. Only one input may be checked.

FORM CONTROL ELEMENTS

Checkbox Buttons

`<input type="checkbox">`

Multiple checkbox buttons may be selected.


What type of music do you listen to?

- ✓ Punk rock
- ✓ Indie rock
- ☐ Hip Hop
- ☐ Rockabilly

```
<p>What type of music do you listen to?</p>
<ul>
  <li><input type="checkbox" name="genre" value="punk" checked> Punk rock</li>
  <li><input type="checkbox" name="genre" value="indie" checked> Indie rock</li>
  <li><input type="checkbox" name="genre" value="hiphop"> Hip Hop</li>
  <li><input type="checkbox" name="genre" value="rockabilly"> Rockabilly</li>
</ul>
```

NOTE: You can like more than one type of music, so checkbox buttons are the right choice for this list.

Checkbox Buttons (cont'd)

```
<input type="checkbox" value="">
```

- Applying the same variable name to input elements binds them together as a group.
- The value for each button must be provided with the **`value`** attribute.
- The **`checked`** attribute causes an option to be selected when the page loads. Multiple buttons in a group may be checked.

FORM CONTROL ELEMENTS

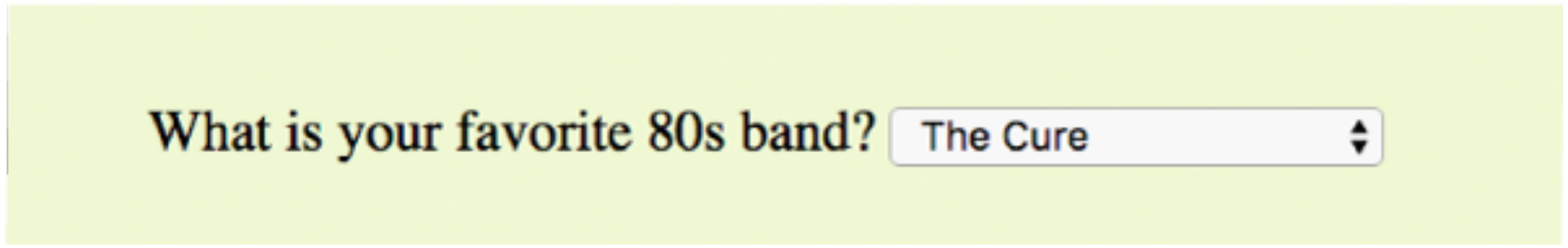
Drop-down Menus

```
<select> </select>
<option> </option>
<optgroup> </optgroup>
```

- The **`select`** element creates a drop-down menu when there is no **`size`** attribute (or if `size="1"`).
- The **`select`** element contains some number of **`option`** elements.
- The content of the **`option`** element is the value sent to the server (or one can be provided with the **`value`** attribute).

Drop-down Menus (cont'd.)

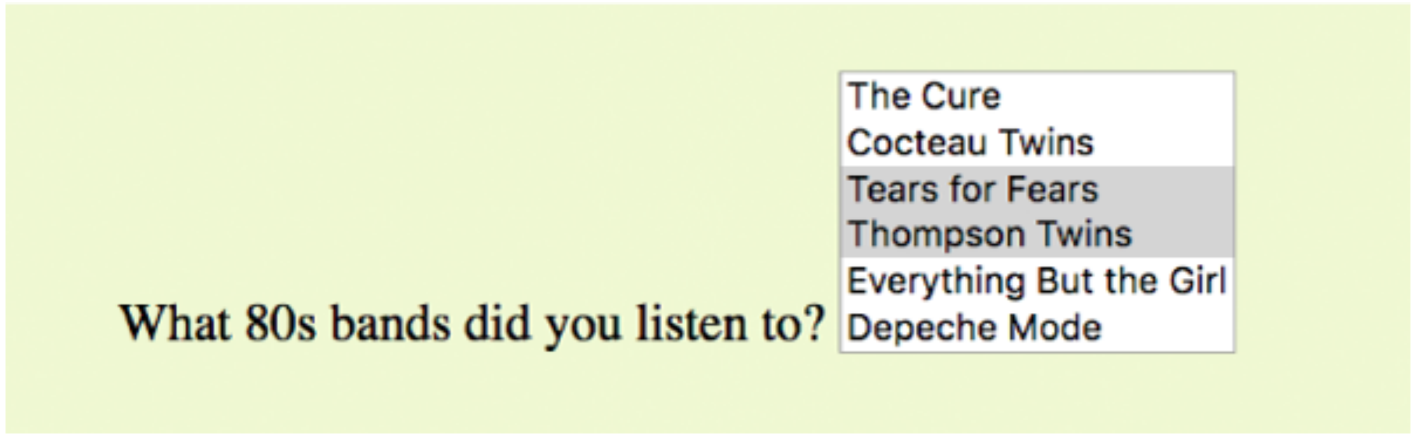
The select menu drops down to reveal options when the user clicks on it.


What is your favorite 80s band? The Cure

```
<p>What is your favorite 80s band?
<select name="EightiesFave">
   <option>The Cure</option>
   <option>Cocteau Twins</option>
   <option>Tears for Fears</option>
   <option>Thompson Twins</option>
   <option value="EBTG">Everything But the Girl</option>
   <option>Depeche Mode</option>
   <option>The Smiths</option>
   <option>New Order</option>
</select>
</p>
```

FORM CONTROL ELEMENTS

Scrolling Menus


What 80s bands did you listen to?

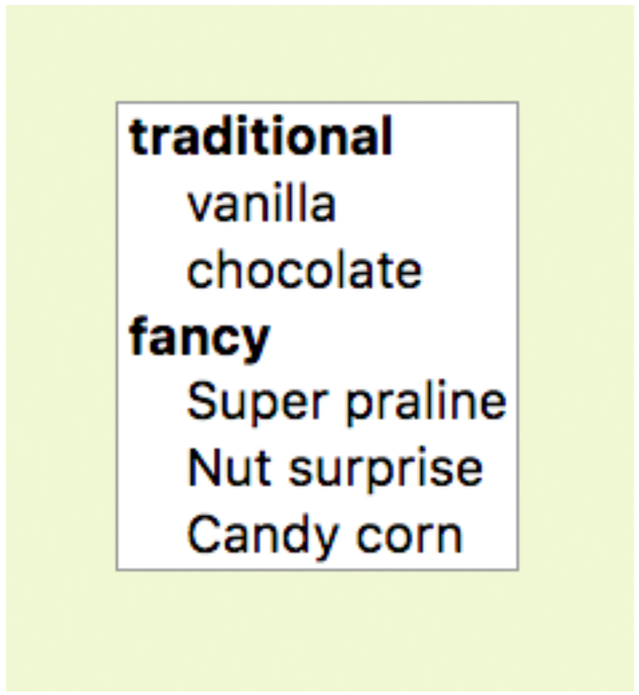
```
<p>What is your favorite 80s band?
<select name="EightiesFave" size="6" multiple>
   <option>The Cure</option>
   ...
</select>
</p>
```

- The same markup as drop-down menus, but the **`size`** attribute specifies how many lines to display.
- The **`multiple`** attribute allows more than one option to be selected.

Scrolling Menus (cont'd)

Use the **`optgroup`** element to create a conceptual group of options.

The **`label`** attribute provides the the heading for the group:



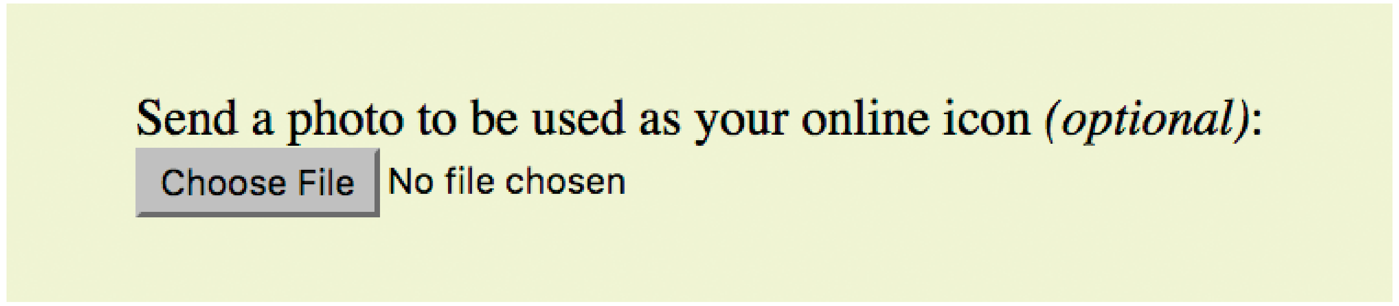
```
<select name="icecream" size="7" multiple>
  <optgroup label="traditional">
    <option>vanilla</option>
    <option>chocolate</option>
  </optgroup>
  <optgroup label="fancy">
    <option>Super praline</option>
    <option>Nut surprise</option>
    <option>Candy corn</option>
  </optgroup>
</select>
```

FORM CONTROL ELEMENTS

File Upload Control

```
<input type="file">
```

File input (on Chrome browser)


Send a photo to be used as your online icon *(optional)*:

```
<form action="/client.php" method="POST" enctype="multipart/form-data">
  <label>Send a photo to be used as your online icon <em>(optional)</em><br>
  <input type="file" name="photo"></label>
</form>
```

- The file input type allows a user to select a document from their hard drive to be submitted with the form data.
- The method must be set to POST, and the encoding type must be included.

Hidden Control

`<input type="hidden">`

```
<input type="hidden" name="success-link"
     value="http://www.example.com/thankyou.html">
```

- Sometimes it is necessary to feed values to the processing script/app that don’t come from the user.
- Hidden controls don’t display in the browser.

FORM CONTROL ELEMENTS

Date and Time Controls

```
<input type="date">
<input type="time">
<input type="datetime-local">
<input type="month">
<input type="week">
```

```
<input type="date" name="birthday" value="2017-01-14">
```

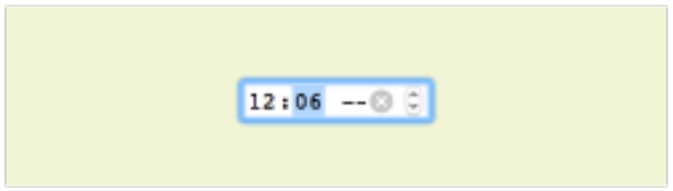
A starting value may be provided in standard date-time format.

Date and Time Controls (cont'd)

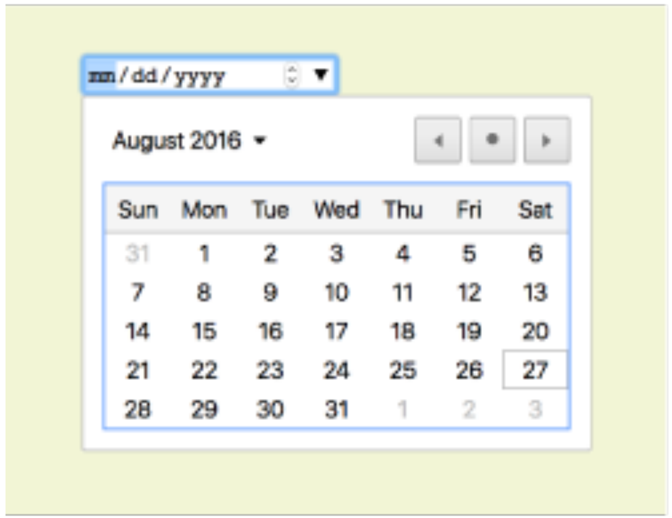
Browsers may display date and time selection widgets (not universally supported).

On non-supporting browsers, date and time inputs display as usable text-entry fields.

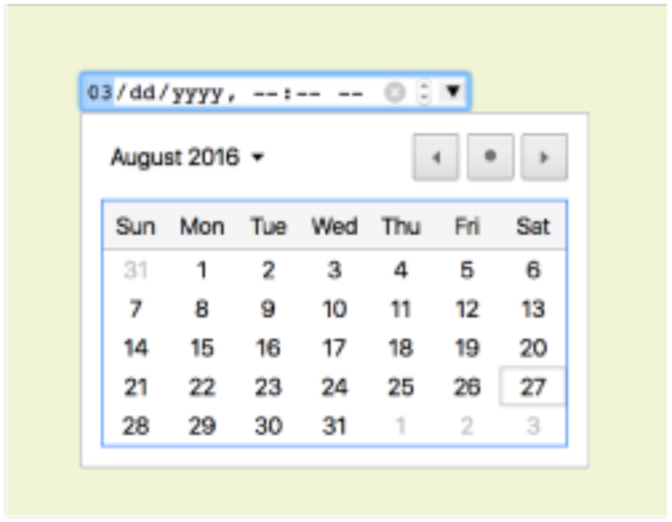
input type="time"



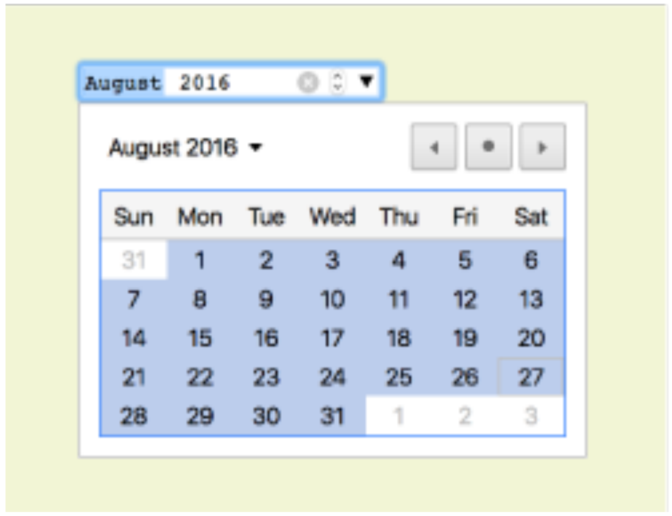
input type="date"



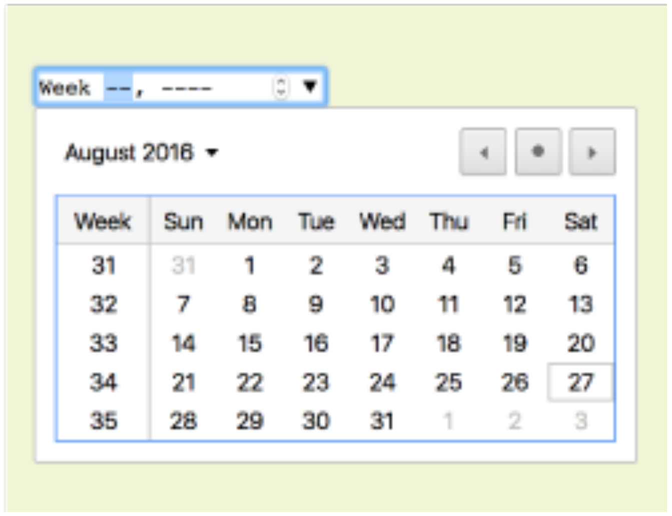
input type="datetime-local"



input type="month"



input type="week"



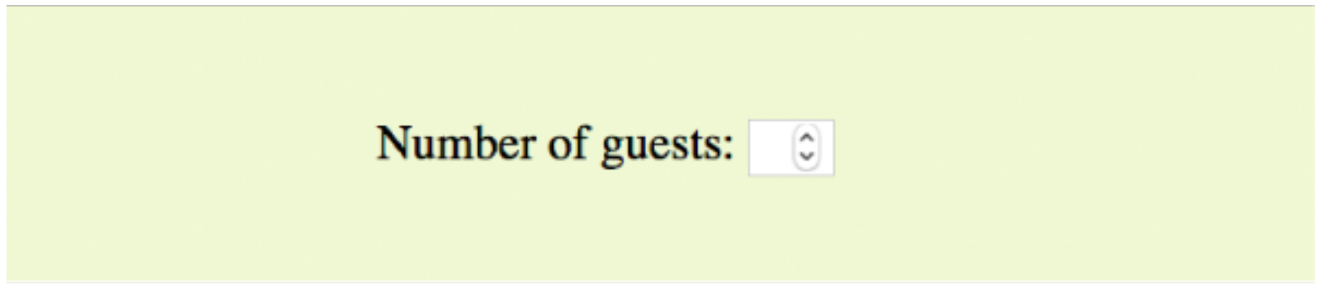
Numerical Controls

```
<input type="number">
<input type="range">
```

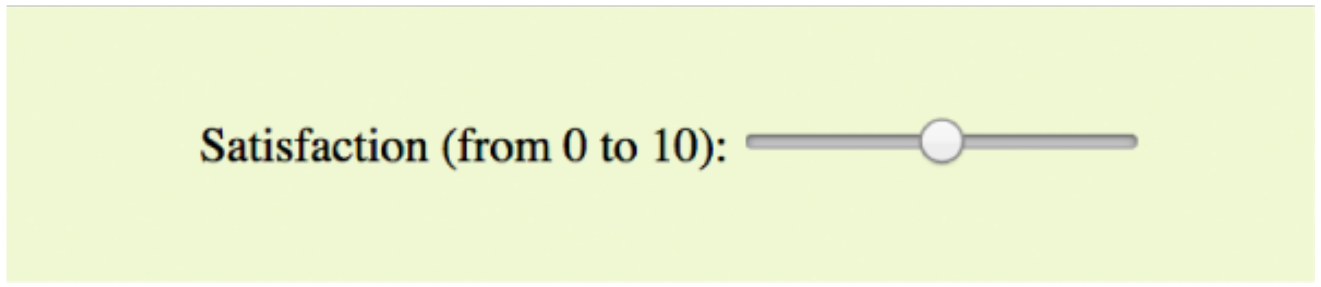
Number and range controls collect numerical data. Browsers may render counter or slider widgets.

Both types accept **`min`** and **`max`** attributes for setting limits on the allowed values.

input type="number"



input type="range"



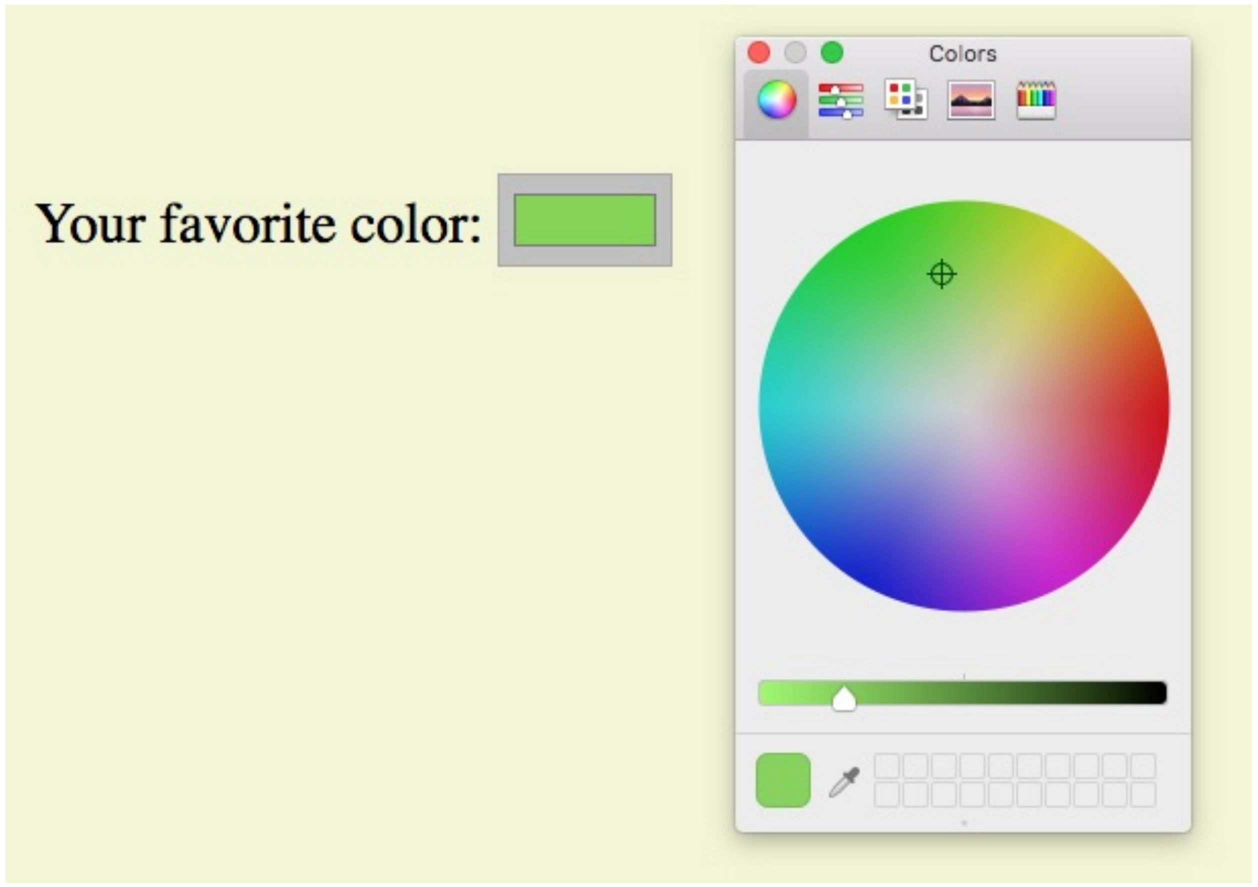
FORM CONTROL ELEMENTS

Color Selector

```
<input type="color">
```

The color input type is intended to provide a pop-up color picker.

It is not well supported. Non-supporting browsers display a text-entry field.


Your favorite color:

Form Accessibility

- Users may not be able to see the form. They may be listening to it with a screen reader.
- Whereas sighted users can see at a glance how elements are organized, form accessibility features create semantic connections between form components.

FORM ACCESSIBILITY

Labels

`<label> </label>`

The **`label`** element associates a descriptive label with a form field.

Implicit association

The label text and form control are both contained within the **`label`** element:

```
<li><label>Red <input type="radio" name="color" value="red"></
label></li>
```

Explicit association

Matches the label with the control's ID reference using the **`for`** attribute:

```
<li><label for="form-colors-red">Red</label>  <input type="radio"
name="color" value="red id="form-colors-red"></li>
```

FORM ACCESSIBILITY

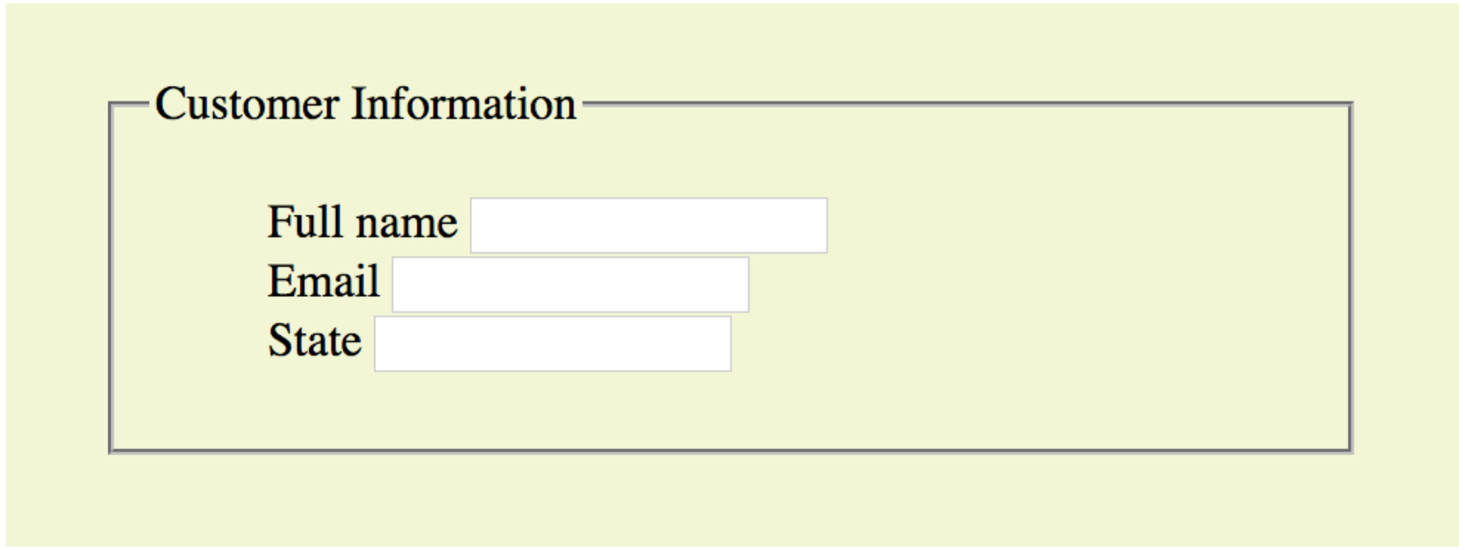
Fieldsets and Legends

```
<fieldset> </fieldset>
<legend> </legend>
```

`fieldset`
Indicates a logical grouping of controls (examples: credit card name, number, date, etc.). By default, rendered with a box around the set of controls.

`legend`
Provides a caption for the enclosed fields. By default, it's displayed along the top edge of the fieldset.

Fieldsets and Legends (cont'd)



```
<fieldset>
  <legend>Customer Information</legend>
  <ul>
    <li><label>Full name: <input type="text" name="fullname"></label></li>
    <li><label>Email: <input type="text" name="email"></label></li>
    <li><label>State: <input type="text" name="state"></label></li>
  </ul>
</fieldset>
```

Form Design Tips

- Avoid unnecessary questions.
- Consider the impact of label placement. Labels above fields tend to lead to faster completion.
- Choose input types carefully.
- Group related inputs.
- Primary actions (e.g., “Buy”) should be visually dominant to secondary actions (e.g., “Back”).