

HTML5 and CSS3 7th Edition

Tutorial 7 Designing a Web Form

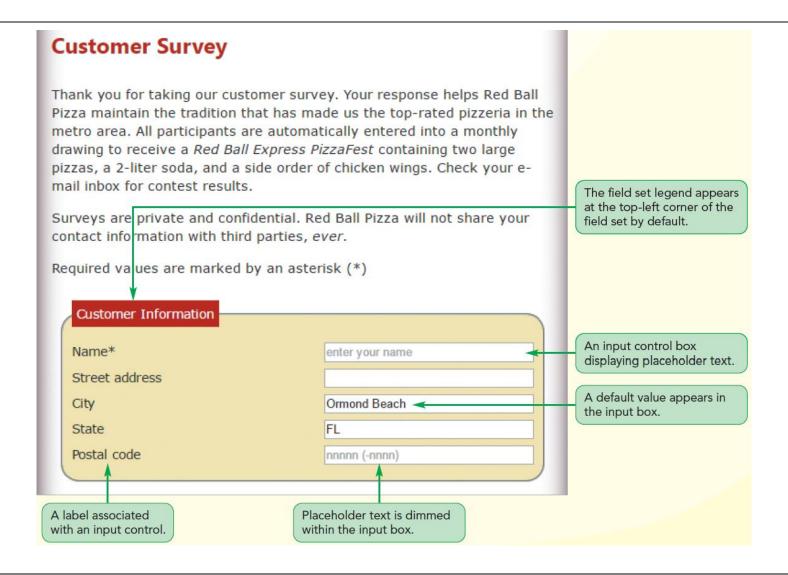
Objectives

- Explore web forms
- Work with form servers
- Create forms and field sets
- Create labels and input boxes
- Explore form layout
- Work with date and time fields
- Create a selection list

Objectives (continued)

- Create option buttons
- Create check boxes and text area boxes
- Create spinners and range sliders
- Use data lists
- Create form buttons
- Validate a form
- Apply validation styles

Structure of a Web Form



Introducing Web Forms

Web form

- Allows users to enter data that can be saved and processed
- Common way to accept user input
- Allows the creation of interactive websites for user feedback

Parts of a Web Form

- Controls, also known as widgets, are the objects that allow a user to interact with a form
- Each data entry control is associated with a data field
- Data field: Stores the data values supplied by a user

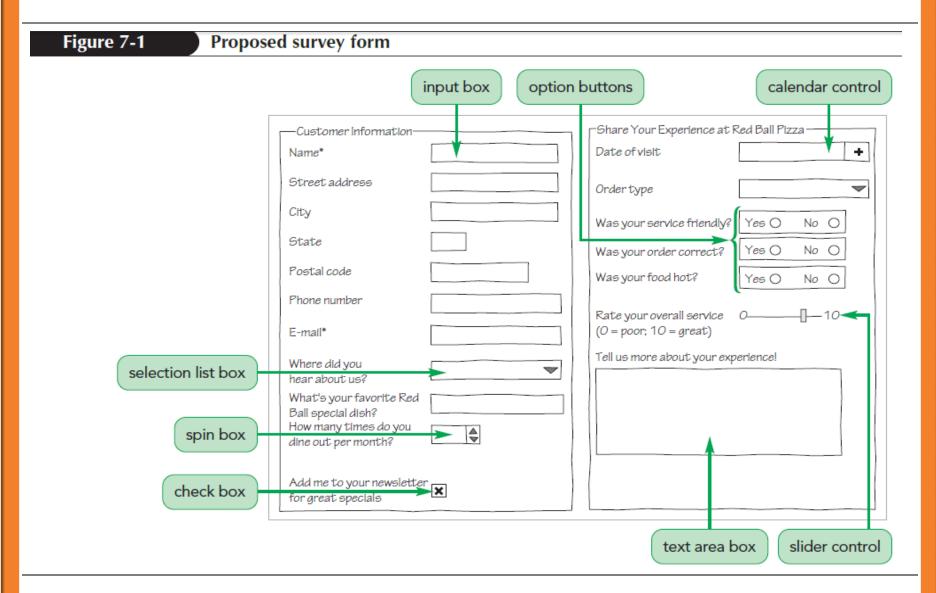
Parts of a Web Form (continued 1)

- Types of controls
 - Input boxes to insert text and numeric values
 - Option/radio buttons to select data values from a predefined set of options
 - Selection lists to select data values from an extensive list of options
 - Check boxes to select data values limited to two possibilities, such as "yes" or "no"
 - Text area boxes to enter text strings that may include several lines of content

Parts of a Web Form (continued 2)

- Types of widgets
 - Spin boxes to enter integer values confined to a specified range
 - Slider controls to enter numeric values confined to a specified range
 - Calendar controls to select date and time values
 - Color pickers to choose color values

Parts of a Web Form (continued 3)



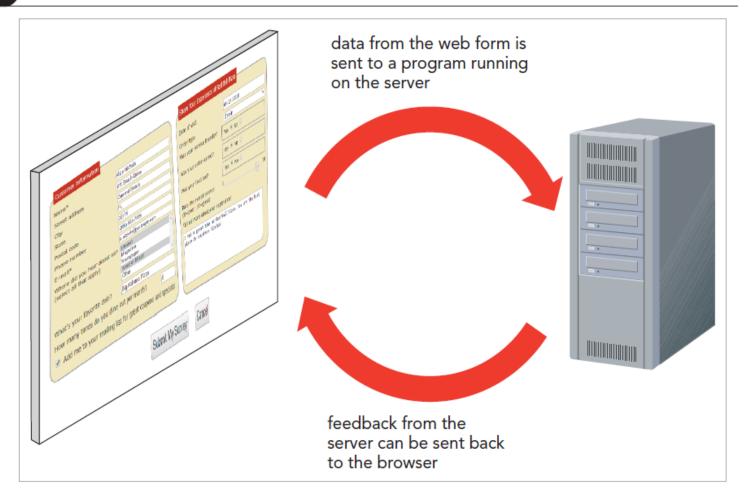
Forms and Server-Based Programs

- Field values entered by a user are processed by a program running on the user's computer or on a web server in a secure location
- Example: A web form is used to collect data from a customer for an order and the server program processes the data and handles the billing and delivery

Forms and Server-Based Programs (continued)

Figure 7-2

Interaction between the web form and the server



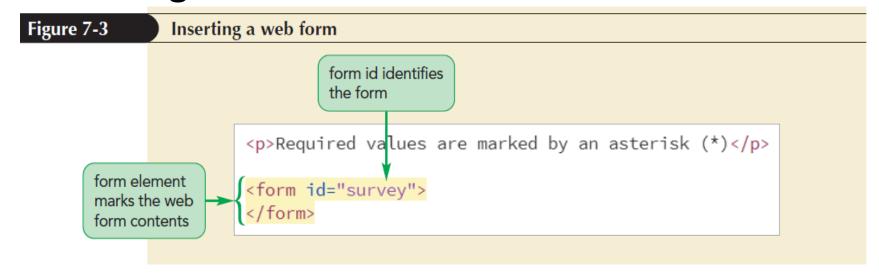
Starting a Web Form

 Web forms are marked using the form element

- id identifies the form
- attributes specify how the form should be processed by the browser
- content is the form's content

Starting a Web Form (continued)

- A form element can be placed anywhere within the body of a page
- Forms also can contain page elements such as tables, paragraphs, inline images, and headings



Interacting with the Web Server

The action, method, and enctype attributes
have to be included in a form to specify where
and how to send the form data

Interacting with the Web Server (continued 1)

- action attribute provides the location of the web server program that processes the form
- method attribute specifies how the browser
 should send form data to the server
- enctype attribute specifies how the form data should be encoded as it is sent to the server

Interacting with the Web Server (continued 2)

- Two possible values for method attribute
 - Get method: Tells the browser to append the form data to the end of the URL specified in the action attribute
 - The get method is the default method
 - Post method: Sends the form data in its own separate data stream
 - The post method is considered to be a more secure form of data transfer

Interacting with the Web Server (continued 3)

The enctype attribute has three possible values

Figure 7-4 Value

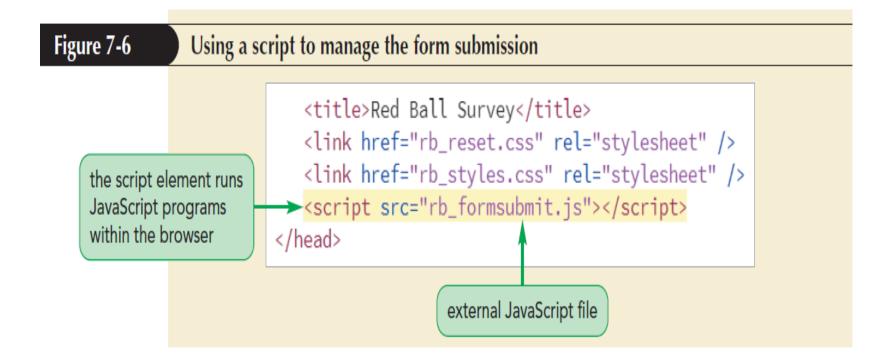
Values of the enctype attribute

Value	Description
application/x-www-form-urlencoded	The default format in which the data is encoded as a long text string with spaces replaced by the + character and special characters (including tabs and line breaks) replaced with their hexadecimal code values
multipart/form-data	The format used when uploading files in which no encoding of the data values occurs
text/plain	The format in which data is transferred as plain text with spaces replaced with the + character but no other encoding of the data values occurs

Interacting with the Web Server (continued 4)

Interacting with the Web Server (continued 5)

 A script element is an HTML element used to access and run JavaScript programs that will run within the user's browser



Creating a Field Set

- Field set: Groups fields that share a common purpose
- Field sets are created using the fieldset element

- id identifies the field set
- content is the form content within the field set

Marking a Field Set

Adding a Field Set Legend

 Legend describes the content of a field set using the legend element

<legend>text</legend>

where text is the text of the legend

- The legend element contains only text and no nested elements
- By default, legends are placed in the top-left corner of the field set box and can be moved to a different location using the CSS positioning styles

Adding a Field Set Legend (continued)



Creating Input Boxes

Syntax for the input element

```
<input name="name" id="id"
type="type" />
```

- The name attribute provides the name of the data field associated with the control
- The id attribute identifies the control in which the user enters the field value
- The type attribute indicates the data type of the field

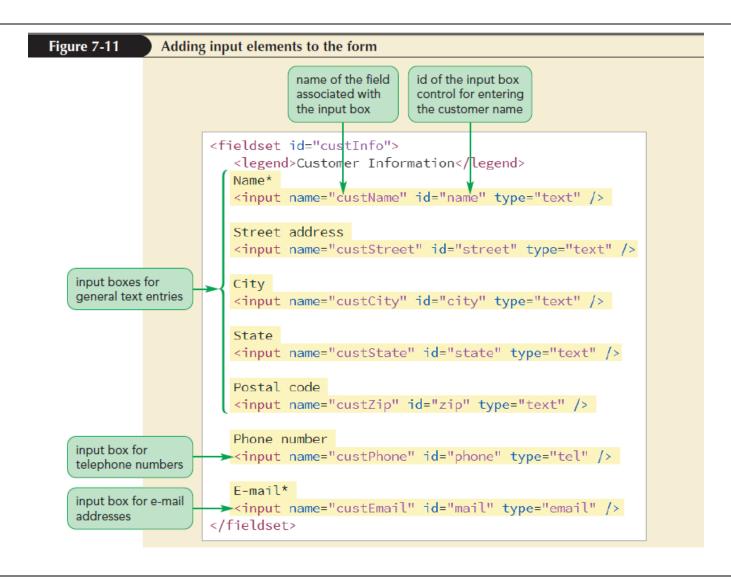
Creating Input Boxes (continued 1)

Figure 7-10

Controls and the input type attribute

Type Value	Control Displayed by the Browser
button	A button that can be clicked to perform an action
checkbox	A check box for yes/no or true/false responses
color	A widget from which users can select a color
date	A widget from which users can select a calendar date
datetime-local	A widget from which users can select a calendar date and time
email	An input box used for e-mail addresses
file	A widget from which users can select a local file
hidden	A control that is hidden from the user
image	An image that can be clicked to perform an action
month	A widget from which users can select a calendar month and year
number	A spin box from which users can select a numeric value
password	An input box in which the entry value is hidden by * symbols
radio	A radio or option button that can be clicked by the use
range	A slider from which users can select a numeric value within a defined range
reset	A button that can be clicked to reset the web form
search	A widget that can be used to search for a defined term
submit	A button that can be clicked to submit the form for processing
tel	An input box used for telephone numbers
text (the default)	An input box used for text entries
time	A widget from which users can select a time value
url	An input box used for entering URLs
week	A widget from which users can select a week value

Creating Input Boxes (continued 2)



Input Types and Virtual Keyboards

- Virtual keyboards are software representations of a physical device
- Web forms can be made responsive by displaying different virtual keyboards for each input type
- Example: An input box for telephone number is more convenient to read with digits displayed prominently on the keyboard

Adding Field Labels

 To associate a text string with a control, the text string has to be enclosed within the label element

```
<label for="id">label text</label>
```

- id is the id of the control that is associated with the label
- label text is the text of the label

Adding Field Labels (continued)

Figure 7-14 Adding form labels for attribute associates the label with the name input box <legend>Customer Information</legend> label element <label for="name">Name*</label> <input name="custName" id="name" type="text" /> <label for="street">Street address</label> <input name="custStreet" id="street" type="text" /> <label for="city">City</label> <input name="custCity" id="city" type="text" /> <label for="state">State</label> <input name="custState" id="state" type="text" /> <label for="zip">Postal code</label> <input name="custZip" id="zip" type="text" />

Designing a Form Layout

- There are two general layouts
 - Labels are placed directly above the input controls
 - Labels and controls are placed side-by-side

Figure 7-15	Form layouts	
	Customer Information Name * Street address City State	Customer Information Name * Street address City State (abbr.)
	one-column layout	two-column layout

Defining Default Values and Placeholders

 The value attribute is used to specify a default field value



Defining Default Values and Placeholders (continued 1)

- Placeholders: Text strings that appear within a form control, providing a hint about the kind of data that should be entered into a field
- They are defined using the placeholder attribute

```
placeholder="text"
```

where text is the text of the placeholder

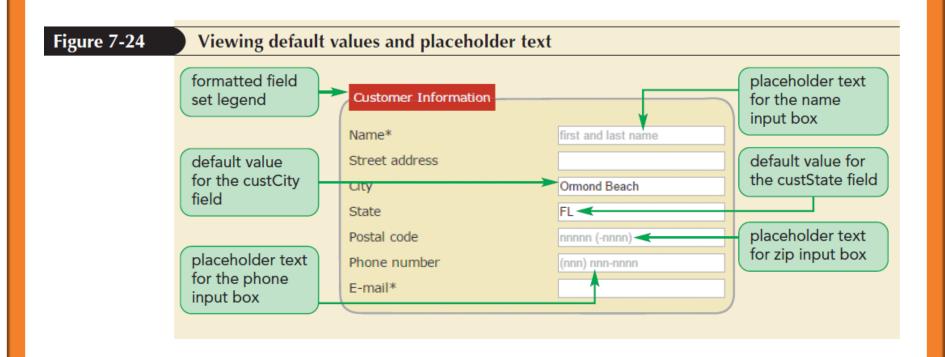
Defining Default Values and Placeholders (continued 2)

Figure 7-23

Defining placeholder text

```
placeholder text for
                                        the name input box
<div class="formRow">
  <label for="name">Name*</label>
  <input name="custName" id="name" type="text" placeholder="first and last name" />
                                        placeholder text for
                                        the zip input box
<div class="formRow">
   <label for="zip">Postal code</label>
   <input name="custZip" id="zip" type="text" placeholder="nnnnn '(-nnnn)" />
</div>
<div class="formRow">
   <label for="phone">Phone number</label>
   <input name="custPhone" id="phone" type="tel" placeholder="(nnn) nnn-nnnn" />
</div>
                                                             placeholder text for
                                                             the phone input box
```

Defining Default Values and Placeholders (continued 3)



Entering Date and Time Values

- Date and time fields ensure that users enter data in the correct format
- Indicated using type attributes: date, time, datetime-local, month, and week

Creating a Selection List

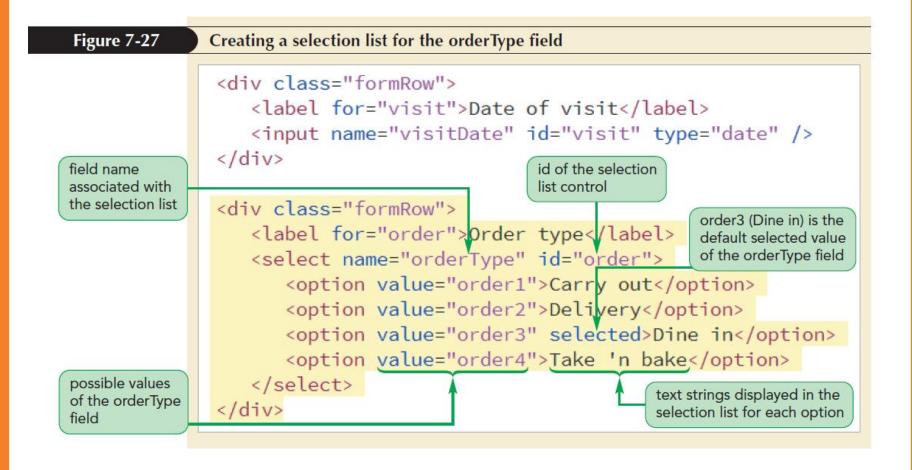
- A selection list is a list box that presents users with a group of possible values for the data field
- The list is created using the select and option elements

```
<select name="name">
<option value="value1">text1</option>
<option value="value2">text2</option>
...
</select>
```

Creating a Selection List (continued 1)

- name is the name of the data field
- value1, value2,... are the possible field values
- text1, text2,... are the text of the entries in the selection list that users see on the web form

Creating a Selection List (continued 2)



Working with Select Attributes

- By default, a selection list appears as a dropdown list box
- To display a selection list as a scroll box, use the size attribute to the select element

```
<select size="value"> ... </select>
```

where *value* is the number of options that the selection list displays at one time

Working with Select Attributes (continued 1)

- By default, selection lists allow only one selection from the list of options
- To allow more than one item to be selected,
 add multiple attribute

```
<select multiple> ... </select>
```

Working with Select Attributes (continued 2)

- Two ways for users to select multiple items from a selection list
 - For non-contiguous selection, press and hold the
 Ctrl key while making the selections
 - For contiguous selection, select the first item,
 press and hold the Shift key, and then select the last item in the range

Grouping Selection Options

 Organize selection list options by placing them in option groups using the optgroup element

where label1 is the label for the different groups of options

Grouping Selection Options (continued)

Figure 7-31

Grouping options in a selection list

Starter Menu



Creating Option Buttons

- Option buttons are also called radio buttons
- Unlike selection lists, the options appear as separate controls in the web form
- They are created with a group of input elements with a type attribute value of "radio"

```
<input name="name" value="value1"
type="radio" />
```

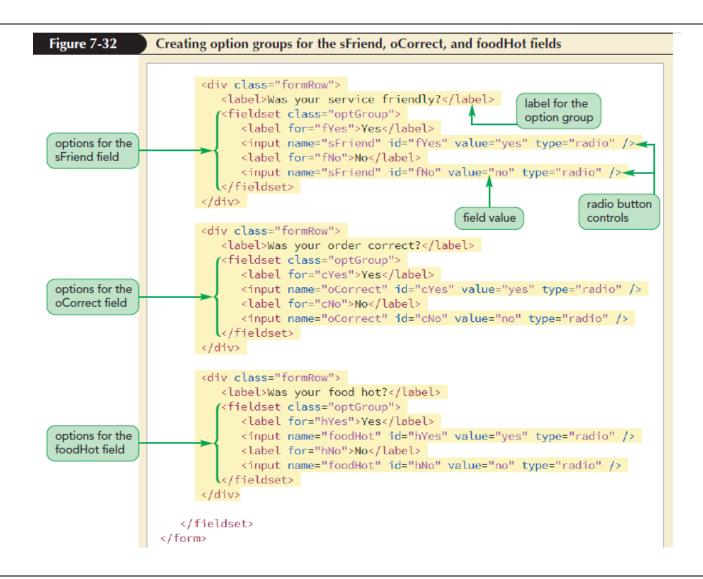
Creating Option Buttons (continued 1)

```
<input name="name" value="value2"
type="radio" />
...
```

where name is the name of the data field and value1, value2, value3,... are the field values associated with each option

- Set an option button to be selected as the default by adding the checked attribute to the input element
- <input name="name" type="radio" checked
 />

Creating Option Buttons (continued 2)



Creating Check Boxes

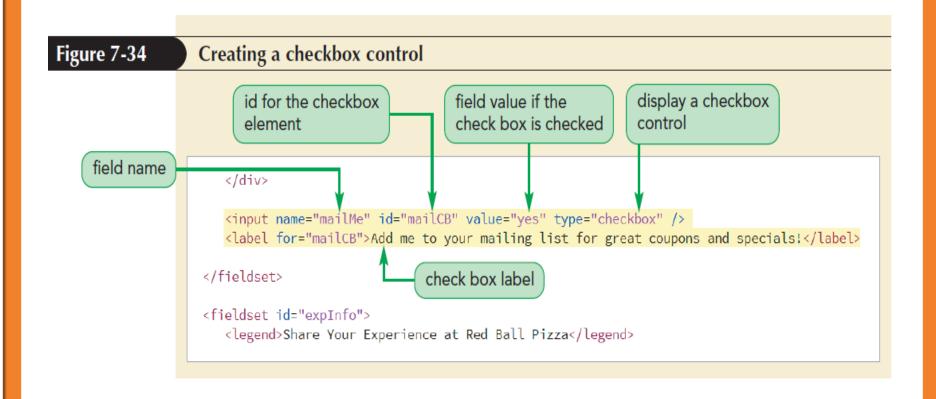
- Check boxes are designed for fields that record the presence or absence of an object or event
- They are created using the input element with the type attribute set to "checkbox"

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

- value attribute contains the value of the field when the check box is checked
- type attribute indicates that the input box is a check box

Creating Check Boxes (continued)

By default, a check box is not checked



Creating a Text Area Box

Text area is created using the textarea element

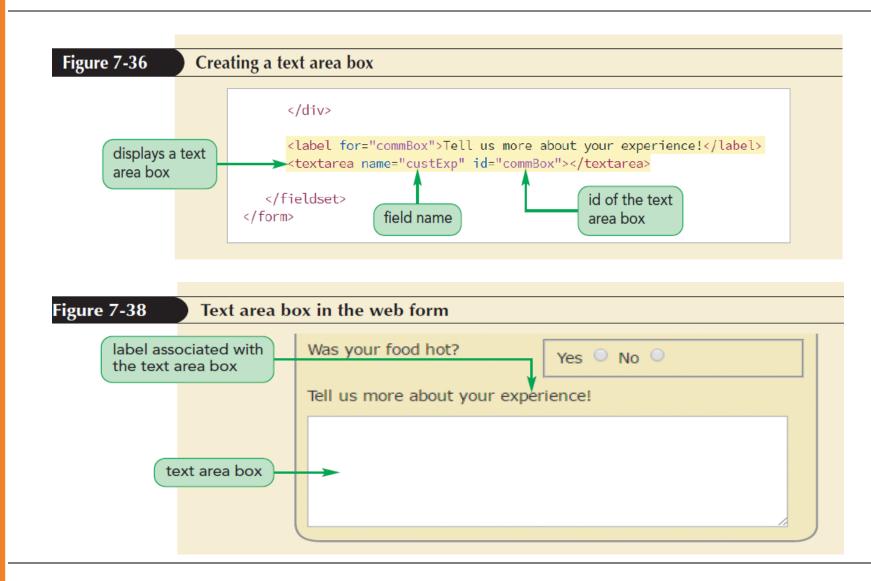
where text is the default value of the data field

Creating a Text Area Box (continued 1)

 HTML supports the rows and cols attributes to set the text area size

- rows attribute specifies the number of lines in the text area box
- cols attribute specifies the number of characters per line

Creating a Text Area Box (continued 2)

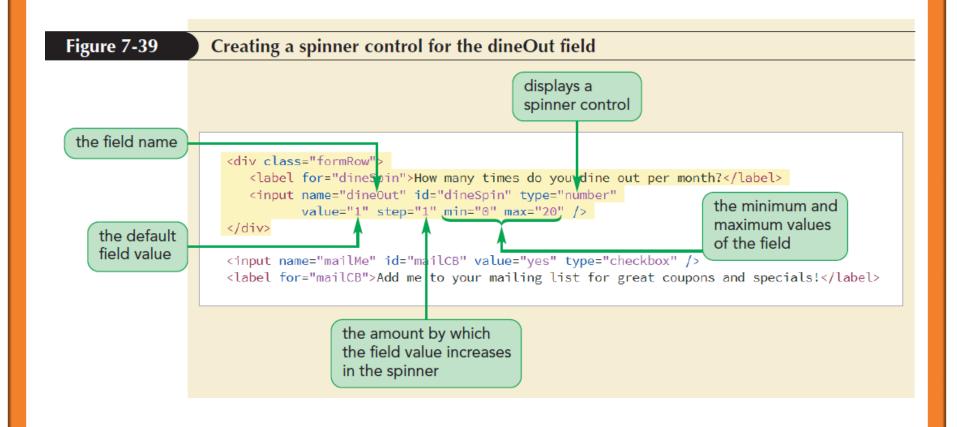


Entering Numeric Data

Creating a Spinner Control

- Spinner control: Displays an up or down arrow to increase or decrease the field value by a set amount
- To create a spinner control, apply the input
 element using the number data type

Entering Numeric Data (continued 1)

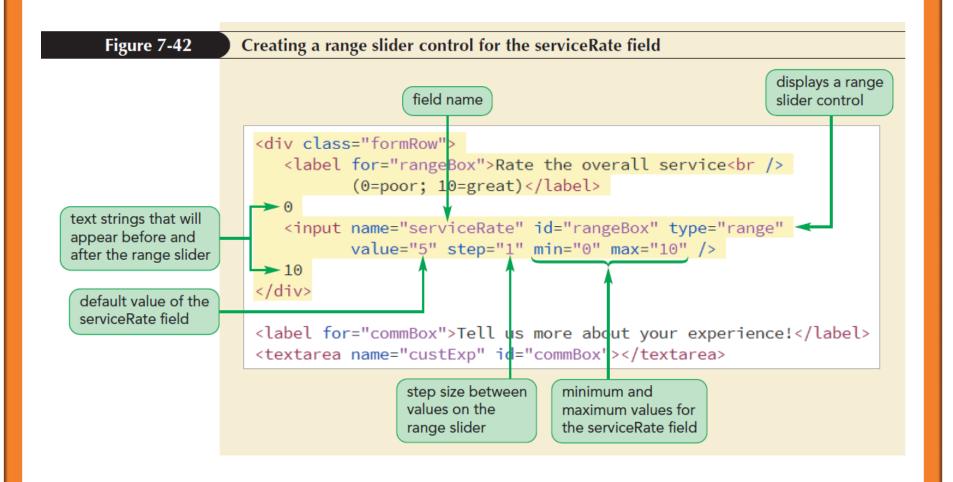


Entering Numeric Data (continued 2)

Creating a Range Slider

- Slider control: Limits a numeric field to a range of possible values
- To create a slider control, apply the range data type in the input element

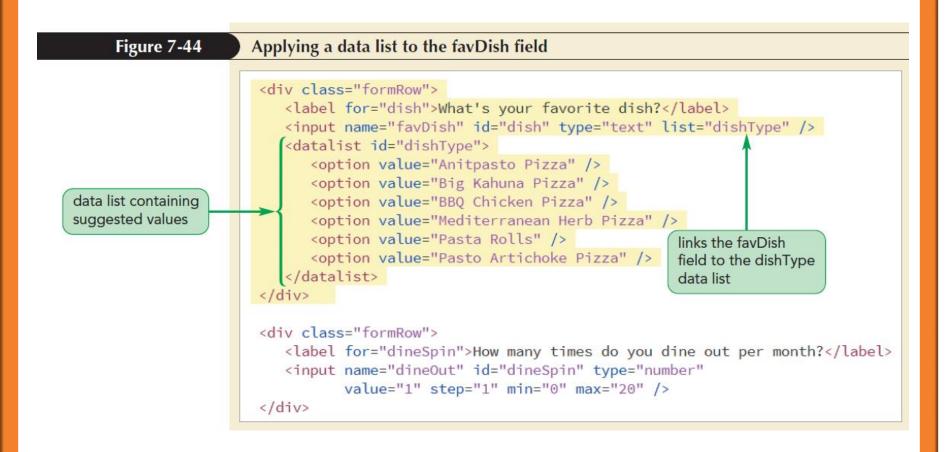
Entering Numeric Data (continued 3)



Suggesting Options with Data Lists

- Data list: A list of possible data values that a form field can have
- Data lists are defined using the datalist element

Suggesting Options with Data Lists (continued)



Working with Form Buttons

- Form buttons: A type of form control that performs an action
- Actions performed
 - Run a command from a program linked to the web form
 - Submit the form to a program running on the web server
 - Reset the form fields to their default values

Creating a Command Button

- Command button: Runs a program that affects the content of a page or the actions of a browser
- Created using the input element with the type attribute set to button

```
<input value="text" onclick="script"
type="button" />
```

- text is the text that appears on the button
- script is the name of the program code that is run when the button is clicked by the user

Creating Submit and Reset Buttons

- Submit button: Submits a form to the server for processing when clicked
- Submit button is created using input elements with the type attribute set to "submit" and "reset" respectively

```
<input value="text" type="submit" />
```

where text is the text string that appears on the button

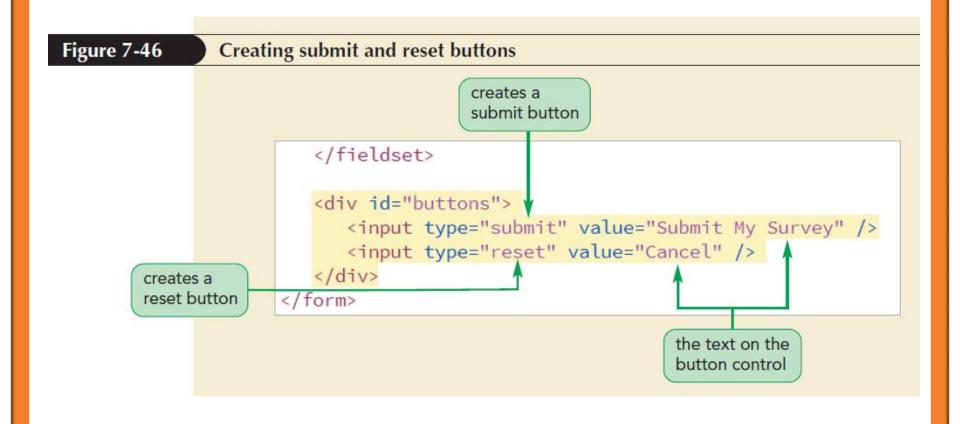
Creating Submit and Reset Buttons (continued 1)

- Reset button: Resets a form, changing all fields to their default values and deleting any field values that a user has entered
- Reset button is created using input elements with the type attribute set to "reset"

```
<input value="text" type="reset" />
```

where text is the text string that appears on the button

Creating Submit and Reset Buttons (continued 2)



Designing a Custom Button

- The appearance of a command, submit, and reset button is determined by the browser
- For more control over a button's appearance use the button element

```
<button type="text">
          content
</button>
```

- type attribute specifies the button type
- content are HTML elements placed within the button

Validating a Web Form

- Validation: Process of ensuring that a user has supplied valid data
- Types of validation
 - Server-side validation validation occurs on the web server
 - Client-side validation validation occurs in the user's browser

Identifying Required Values

- The first validation test is to verify if data is supplied for all the required data fields
- Add the required attribute to the control to identify the required data fields
- If a required field is left blank, the browser will not submit the form returning an error message to indicate the unavailability of data

Validating Based on Data Type

- A form fails the validation test if the data values entered into a field do not match the field type
- Example:
 - A data field with the number type will be rejected if nonnumeric data is entered
 - Fields with email and url types will be rejected if a user provides an invalid e-mail address or text that does not match the format of a URL

Testing for a Valid Pattern

- To test whether a field value follows a valid pattern of characters, test the character string against a regular expression
- Regular expression or regex is a concise description of a character pattern
- To validate a text value against a regular expression, add the pattern attribute to the input element

Testing for a Valid Pattern (continued)

 Example: The value of the custZip field against the regular expression pattern ^\d{5}\$

```
<input name="custZip"
pattern="^\d{5}$" />
```

where regular expression ^\d{5}\$ represents any string of five numeric characters

Defining the Length of the Field Value

- The syntax to define the maxlength attribute
 is <input maxlength="value" />
 where value is the maximum number of
 characters in the field value
- Example:

```
<input name="custZip" maxlength="5" />
```

 The maxlength attribute does not distinguish between characters and digits

Applying Inline Validation

- Inline validation: The technique of immediate data validation and reporting of errors
- The focus pseudo-class is used to change the display style of fields that currently contain invalid data
- Focus: The state in which an element has been clicked by the user, making it the active control on the form

Applying Inline Validation (continued 1)

Figure 7-54

Pseudo-classes for form controls and fields

Pseudo-Class	Matches
checked	A check box or option button that is selected or checked
default	A default control, such as the default option in a selection list
disabled	A control that is disabled
enabled	A control that is enabled
focus	A control that has the focus (is actively selected) in the form
indeterminate	A check box or option button whose toggle states (checked or unchecked) cannot be determined
in-range	A field whose value lies within the allowed range (between the min and max attribute values)
invalid	A field whose value fails the validation test
optional	A field that is optional (not required) in the form
out-of-range	A field whose value lies outside the allowed range (outside the \min and \max attribute values)
required	A field that is required in the form
valid	A field whose value passes the validation test

Applying Inline Validation (continued 2)

 Example: To create styles for all of the checked option buttons in the form, apply the checked pseudo-class

```
input[type="radio"]:checked {
  styles
}
```

 styles are the CSS styles applied to checked option buttons

Pseudo-Classes for Valid and Invalid Data

- The valid and invalid pseudo-classes are used to format controls based on whether their field values pass/fail a validation test
- Example: To display input elements containing valid data with a light green background, use the following style rule:

```
input:valid {
background-color: rgb(220, 255, 220);
}
```

Pseudo-Classes for Valid and Invalid Data (continued 1)

Example: To display input elements
 containing invalid data with a light red
 background with focus, use the following style
 rule:

```
input:focus:invalid {
  background-color: rgb(255, 232, 233);
}
```

Pseudo-Classes for Valid and Invalid Data (continued 2)

