Tutorial 5
Working with Tables and Columns

HTML and CSS
6TH EDITION
Objectives

• Explore the structure of a Web table
• Create headings and cells in a table
• Create cells that span multiple rows and columns
• Create row and column groups
• Add a summary to a table
Objectives

- Format a table using HTML attributes
- Format a table using CSS styles
- Collapse table borders
- Display page elements in tabular form
- Create a multi-column layout
Structure of a Web Table
Introducing Web Tables

• Each table in a Web page follows a basic structure consisting of the table element and a collection of table rows nested in the table element

```html
<table>
  <tr>
    table cells
  </tr>
  <tr>
    table cells
  </tr>
  ...
</table>
```
Introducing Web Tables

- **Table headings**, the cells that identify the contents of a row or column, are marked using a `th` element.

- **Data cells** are marked with the `td` element and are used for any content that is not considered a heading.

```html
<table class="schedule">
  <tr>
    <th>Tue</th>
    <th>Wed</th>
    <th>Thu</th>
    <th>Fri</th>
    <th>Sat</th>
    <th>Sun</th>
  </tr>
  <tr>
    <td>National News</td>
    <td>Local News</td>
    <td>National News</td>
    <td>Local News</td>
    <td>National News</td>
    <td>Local News</td>
  </tr>
  <tr>
    <td>National News</td>
    <td>Local News</td>
    <td>National News</td>
    <td>Local News</td>
    <td>National News</td>
    <td>Local News</td>
  </tr>
</table>
```
Introducing Web Tables

**Figure 5-6** Viewing the Web table

**KPAF Nightly Schedule**

KPAF airs listener-supported public radio in Bismarck, North Dakota from 5:00 a.m. to 10:30 p.m. You can [Listen Live](#) to streaming audio of our broadcast. Please refer below for our current nightly schedule.

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30</td>
<td>Local News</td>
<td>Local News</td>
<td>Local News</td>
<td>Local News</td>
<td>Local News</td>
<td>Local News</td>
<td>Local News</td>
</tr>
</tbody>
</table>
Introducing Web Tables

• To add a border to a Web table using HTML, use the border attribute

\[
\text{<table border="value"> ... </table>}
\]

where \text{value} is the size of the border in pixels

![Figure 5-7: Tables with different border sizes](image)
Spanning Rows and Columns

• A **spanning cell** is a single cell that occupies more than one row or one column in the table.

• To create a table cell that spans several columns, add the attribute

  ```html
colspan="columns"
  ```

to the cell, where *columns* is the number of columns covered by the cell.

• To create a table cell that spans several rows, add the attribute

  ```html
rowspan="rows"
  ```

to the cell, where *rows* is the number of rows covered by the cell.
Creating a Table Caption

- To create a table caption, add the caption element directly below the opening `<table>` tag with the syntax

  `<caption>content</caption>`

  where `content` is the content of the table caption
Marking Row Groups

- You can divide a table’s rows into **row groups**, in which each group element contains different types of content and can be formatted differently.

- A table can have multiple table body row groups.

```html
<table>
  <thead>
    <table rows>
  </thead>
  <tbody>
    <table rows>
  </tbody>
</table>
```
Marking Column Groups

• Once the table columns have been determined by the browser, you can reference them through the use of column groups.

Figure 5-20  Inserting a column group

```html
<table class="schedule" border="1">
  <caption>All Times Central</caption>
  <colgroup>
    <col class="firstCol" />
    <col class="dayCols" span="7" />
  </colgroup>
</table>
```
Adding a Table Summary

• The summary attribute allows you to include a more detailed description about the table

\[
\text{<table summary="description" >} \\
\ldots \text{ </table>}
\]
### Web Table Styles

- The `column-count` property sets the number of columns.
- The `column-gap` property sets the space between columns.
- The `column-rule` property adds a dividing line between columns.

#### KPAF Nightly Rule

KPAF airs listener-supported public radio in Bismarck, North Dakota from 5:00 a.m. to 10:30 p.m.

#### Table Styles

- **thead**
  - `border-collapse: collapse;` (merges adjacent borders into one border)
  - `background-color: rgb(203, 50, 203);` (sets the background color)
  - `color: white;` (sets the text color)
  - `color: rgba(255, 255, 255, 0.5);` (sets the text color with a semi-transparent white)

- **tbody**
  - `border: 1px solid gray;` (sets the border style)
  - `padding: 5px;` (sets the padding)

- **td**
  - Applies to data cells within the tables.

- **th**
  - Applies to the table header row group.

- **caption**
  - Sets the caption of the table.

- **col**
  - Applies to the first column group.

- **colgroup**
  - Applies to the first column group.

- **thc**
  - Applies to the days of the week column group.

- **colspans**
  - Applies to the days of the week column group.

- **colspan**
  - Applies to the days of the week column group.

#### Example Table

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00</td>
<td>National News</td>
<td>Local News</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00</td>
<td>Opera Fest</td>
<td>Radio U</td>
<td>Science Week</td>
<td>The Living World</td>
</tr>
<tr>
<td>8:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Monday**

- National News
- Local News

**KPAF Listeners**

You can **Listen Live** to streaming audio of our broadcast. Please refer below for our current nightly schedule.
Formatting Tables with HTML Attributes

- The amount of space between table cells is known as the **cell spacing**
- The **cell padding** is the space between the cell contents and the cell border

**Figure 5-22** Cell spacing values

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ABCD</td>
<td>ABCD</td>
<td>ABCD</td>
<td>ABCD</td>
</tr>
<tr>
<td>0 pixels</td>
<td>1 pixel</td>
<td>5 pixels</td>
<td>10 pixels</td>
</tr>
</tbody>
</table>

**Figure 5-23** Cell padding values

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ABCD</td>
<td>ABCD</td>
<td>ABCD</td>
<td>ABCD</td>
</tr>
<tr>
<td>0 pixels</td>
<td>1 pixel</td>
<td>5 pixels</td>
<td>10 pixels</td>
</tr>
</tbody>
</table>
Formatting Tables with HTML Attributes

• To define the space between table cells, add the cellspacing attribute
  
  \[ <table cellspacing="value"> ... </table> \]

  to the \texttt{table} element, where \texttt{value} is the space between table cells in pixels

• To define the padding within table cells, add the cellpadding attribute
  
  \[ <table cellpadding="value"> ... </table> \]

  to the \texttt{table} element, where \texttt{value} is the size of the padding space in pixels
Formatting Tables with HTML Attributes

• To set the width of the table to a specific value, add the width attribute
  <table width="value"> ... </table>

• Many browsers also support the height attribute
  <table height="value"> ... </table>

• You can use HTML to set the row heights by applying the height attribute
  <tr height="value"> ... </tr>
Formatting Tables with HTML Attributes

• A **table frame** specifies which sides of the table (or which sides of the table cells) will have borders

```html
<table border="value" frame="type"> ... </table>
```
Formatting Tables with HTML Attributes

Figure 5-26  Values of the frame attribute

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="above"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="below"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="border"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="box"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="hsides"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="rhs"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="vsides"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
</tbody>
</table>

frame="void"
Formatting Tables with HTML Attributes

- A **table rule** specifies how the internal gridlines are drawn within the table

```html
<table border="value" rules="type">
  ...  
</table>
```

![Figure 5-27: Values of the rules attribute](image)
Formatting Tables with HTML Attributes

- By default, browsers horizontally center the contents of table header cells and left-align the contents of table data cells
  - To control the horizontal alignment
    ```html
    align="position"
    ```
  - To control the vertical alignment
    ```html
    valign="position"
    ```
Formatting Tables with CSS

• Starting with CSS2, Cascading Style Sheets included support for Web tables
• You can apply one set of borders to the Web table itself and another set of borders to the individual cells within the table
Formatting Tables with CSS

• To define the border model used by the table, apply the table style

\[ \text{border-collapse: type} \]

where \( \text{type} \) is separate (the default) to keep all borders around cells and the table itself apart, or collapse to merge all adjacent borders

• To set the space between separated borders, apply the table style

\[ \text{border-spacing: value} \]

where \( \text{value} \) is the space between the borders in any of the CSS units of measure
Formatting Tables with CSS

• The most general styles are those applied to the entire table

Figure 5-37  Levels of precedence in Web table styles
Formatting Tables with CSS

- To position a table caption, apply the style `caption-side: position` where `position` is top or bottom.

```html
/* Styles for the table caption */
table.schedule caption {
  caption-side: bottom;
  text-align: right;
}
```

![Figure 5-47 Setting the caption position](image1)

![Figure 5-48 Table caption in the bottom-right corner](image2)
Applying Table Styles to Other Page Elements

**Figure 5-49** Table display styles

<table>
<thead>
<tr>
<th>Display Style</th>
<th>Equivalent HTML Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>display: table;</td>
<td>table (treated as a block-level element)</td>
</tr>
<tr>
<td>display: table-inline;</td>
<td>table (treated as an inline element)</td>
</tr>
<tr>
<td>display: table-row;</td>
<td>tr</td>
</tr>
<tr>
<td>display: table-row-group;</td>
<td>tbody</td>
</tr>
<tr>
<td>display: table-header-group;</td>
<td>thead</td>
</tr>
<tr>
<td>display: table-footer-group;</td>
<td>tbody</td>
</tr>
<tr>
<td>display: table-column;</td>
<td>col</td>
</tr>
<tr>
<td>display: table-column-group;</td>
<td>colgroup</td>
</tr>
<tr>
<td>display: table-cell;</td>
<td>td or th</td>
</tr>
<tr>
<td>display: table-caption;</td>
<td>caption</td>
</tr>
</tbody>
</table>
Applying Table Styles to Other Page Elements

Figure 5-50 Applying table styles to a definition list

```html
dl
  <dt>bandwidth</dt>
  <dd>A measure of data transfer speed over a network</dd>
  <dt>HTTP</dt>
  <dd>The protocol used to communicate with web servers</dd>
</dl>

definition list code

<table>
<thead>
<tr>
<th>bandwidth</th>
<th>A measure of data transfer speed over a network</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP</td>
<td>The protocol used to communicate with web servers</td>
</tr>
</tbody>
</table>

definition list displayed as table

table styles

New Perspectives on HTML and CSS, Comprehensive
Designing Columnar Layouts with CSS3

- To specify the number of columns in the layout, use
  ```
  column-count: number;
  ```
  where `number` is the number of columns in the layout.

- To specify the width of the columns, use
  ```
  column-width: width;
  ```
  where `width` is the width of the columns expressed in one of the CSS units of measure or as a percentage of the width of the element.

- To set the size of the gap between columns, use
  ```
  column-gap: width;
  ```
  where `width` is the width of the gap.
Designing Columnar Layouts with CSS3

• To add a border between the columns, use

  \texttt{column-rule: border;}  

  where \texttt{border} is the format of the border.

• To specify the width and number of columns in a single style property, use

  \texttt{columns: width count;}  

  where \texttt{width} is the width of each column and \texttt{count} is the total number of columns in the layout.

• For specific browsers, add the \texttt{–moz–} vendor prefix for Firefox and the \texttt{–webkit–} prefix for Safari and Chrome to these style properties.
Designing Columnar Layouts with CSS3

Figure 5-51  Applying a two-column style

```css
/* Two column layout for the introductory paragraph */
section#main p {
  -moz-column-count: 2;
  -webkit-column-count: 2;
  column-count: 2;
  -moz-column-gap: 20px;
  -webkit-column-gap: 20px;
  column-gap: 20px;
  -moz-column-rule: 2px solid rgb(153, 0, 153);
  -webkit-column-rule: 2px solid rgb(153, 0, 153);
  column-rule: 2px solid rgb(153, 0, 153);
}
```

- creates a two-column layout
- sets the gap between the columns to 20 pixels
- adds a 2-pixel solid purple border between the columns
Designing Columnar Layouts with CSS3

Figure 5-52  Final KPAF nightly schedule page

two-column layout for the introductory paragraph