

### Developing Web Content: HTML Tables and Frames

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## HTML Tables

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- ◆ Allow neat information organization in columns and rows, presented in cells
- ◆ Border and divider lines are optional and in choices of width in pixels
- ◆ May have colored background
  - » for cells or whole table
- ◆ If size is based on pixel count, then a table's shape is unchanged no matter how the browser is resized.

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# Visualizing HTML Tables

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*The table above has 3 rows, 5 columns, in 12 logical/virtual items*


*Now the table has some physical cells (each is colored differently) that can contain objects.*

- *The cell in bright green is in the 2<sup>nd</sup> row, spanning 2 columns and 2 rows.*
- *The cell in light blue is in 1<sup>st</sup> row 3<sup>rd</sup> column, spanning 3 rows.*

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## (Logical/Virtual) Table Items

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- ◆ A table conceptually has logical/virtual items to form rows and columns
- ◆ Each row can have a different number of items
  - » the maximum number of items in all rows in a table defines the number of columns of the table
- ◆ All items in different rows that have the same order number in its own row are considered to be in the same *column* of the table

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## (Logical/Virtual) Table Items

- ◆ Items in the same *column* have the same physical *width*, to be determined as filled by contents in the same column
- ◆ Items in the same *row* have the same physical *height*, to be determined as filled by contents in the same row

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## Physical Table Cells

- ◆ Physical contents occupy physical table cells
- ◆ A cell takes up one item by default
- ◆ A cell may start from an item in a specific row and column table position and then span multiple column items to the right and multiple row items down, taking up the space of all the spanned items
- ◆ A cell's width may be specified in terms of either the number of pixels or percentage of the table width

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## Physical Table Cells

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- ◆ If not specified, a cell's dimension is dynamically determined based on the content in the cell
  - » all items in the same column are of the same width
  - » the widest item determines the column width
  - » an item is as narrow as it is allowed to be
  
- ◆ A cell's height is determined similarly as its width
  - » items in the same row are of the same height
  - » the highest item determines the row height
  - » an item is as short as it is allowed to be

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## Physical Table Cells

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- ◆ When improperly specified, different browsers may treat the table in different ways
  - » to interpret and display in their respective best possible ways
  
- ◆ When either or both of the width and height are specified, resizing the font by user may cause display problems
  
- ◆ Unless specified, final cell dimensions are generally based on the data in the entire table

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## Features of Physical Table Cells

- ◆ Span different numbers of (virtual) items
- ◆ Individual colored background
- ◆ Individual content alignment
- ◆ Allow better controlled image display in a page
  - » Example: row of pictures with captions in row below

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## Specifying Tables in HTML

- ◆ Tables are defined with the `<table>` tag
  - » and end with `</table>` tag
- ◆ Rows are defined with `<tr>`
  - » and end with `</tr>`
- ◆ Cells are defined with `<td>`
  - » and end with `</td>`
- ◆ Headings are defined with `<th>`
  - » and end with `</th>`

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## Table Example

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```
<table border="1">
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td> </tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td> </tr>
</table>
```

<http://www.cs.odu.edu/~mweigle/cs312/table-example.html>

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## Example with Headings

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```
<table border="1">
<tr>
<th>Heading</th>
<th>Another Heading</th> </tr>
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td> </tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td> </tr>
</table>
```

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## Blank Cell

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```
<table border="1">
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td> </tr>
<tr>
<td>row 2, cell 1</td>
<td></td> </tr>
</table>
```

**Note:** Some browsers will display the empty cell differently if it contains &nbsp; rather than nothing (or just spaces).

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## Table Attributes

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- ◆ border
  - » default is no border (or border = 0)
- ◆ cellpadding
  - » amount of space between the contents of the cell and the cell wall, default is 1
- ◆ cellspacing
  - » defines the space between cells, default is usually 2
- ◆ width
  - » width of table defined in pixels (width=300) or percentage of the browser window (width=75%)
  - » if defined in percentage, resizing window resizes the table

<http://www.cs.odu.edu/~mweigle/cs312/table-attr-example.html>

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## Multiple Rows/Columns

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- ◆ colspan
  - » defines a cell to be a certain number of columns across
- ◆ rowspan
  - » defines a cell to be a certain number of rows high
- ◆ Both are defined as attributes of the cell
  - » either in `<td>` or `<th>`

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## Color, Captions, and Cell Width

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- ◆ bgcolor
  - » can be used as attribute for `<table>` or `<td>`
- ◆ caption
  - » specified by `<caption> ... </caption>` tags inside the table
  - » can use align attribute (bottom, top, left, right)
- ◆ cell width / height
  - » attribute of `<td>` and `<th>`
  - » either in pixels or percentage of table width

<http://www.cs.odu.edu/~mweigle/cs312/table-fancy-example.html>

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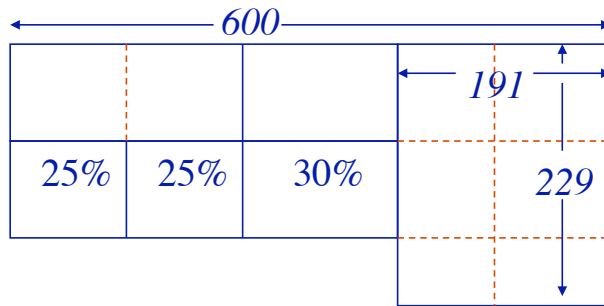
## More on Widths

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- ◆ Widths in fixed pixels override % specification

### *Abbreviated HTML:*

```
<table width=600>  
<tr><td colspan=2></td>  
<td></td>  
<td colspan=2 rowspan=3><img width=191 height=229></td></tr>  
<tr><td width=25%></td>  
<td width=25%></td>  
<td width=30%></td>
```



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## Nested Tables

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- ◆ Tables within tables
- ◆ Any cell can be another table

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## Nested Tables Example

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```
<table border=1>
<tr><td>cell 1</td>
<td>cell 2</td></tr>
<tr>
<td><table><tr>
    <td>subcell 1</td>
    <td>subcell 2</td></tr>
<tr><td>subcell 3</td>
    <td>subcell 4</td></tr>
</table>
<td>cell 3</td></tr>
</table>
```

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## Tables vs. Framesets

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### ◆ Table

- » Used for organizing a page or parts of a page
- » A table can not contain framesets nor frames
- » Table width/height
  - ❖ Specified: fixed or relative to the displaying window
  - ❖ Unspecified: as wide/tall as is needed
  - ❖ *don't specify both height and width in case that can't accommodate all of the data*
- » Cells cannot be scrolled or resized by the user
- » Cells can contain text, images, other tables, etc.

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# Tables vs. Framesets

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## ◆ Frameset

- » Helps define the layout of a webpage
- » A frameset typically contains multiple columns or rows, but not both of them
- » Each column or row can be either a frame or another frameset
- » *Note: With the rise in popularity of CSS and PHP, frames and framesets are considered outdated*

## ◆ Frame

- » Displays a HTML page, specified with a source URL
- » Traditionally, inside a browser, a frame acts as a window, may be scrolled

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# Framesets

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- ◆ An HTML file containing a frameset cannot contain anything else
- ◆ Other page features (e.g., texts, tables, images, etc.) cannot be specified directly in a frameset, nor before or after it
- ◆ The characteristics of a frameset continues in its inner framesets
  - » has columns and rows, with each column or row containing a frame or another inner frameset

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# Frames

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- ◆ A frame displays the contents of the specified URL as a window, may be scrolled if needed to
- ◆ A frame may have a name
- ◆ A named frame can be the target “window” for hyperlinks
- ◆ A frame must reside in a frameset

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## Frameset Skeleton

---

```
<HTML>
  <FRAMESET cols="...">
    <FRAME src="aURL" name="...">
    <FRAME src="aURL" name="...">
    .....
    <NOFRAMES>Sorry, you need a browser that can handle
      frames to access this page.
    </NOFRAMES>
  </FRAMESET>
</HTML>
```

*cols may be rows instead. aURL must refer to some external source.*

*No other HTML code can be in this file. It is just for defining the layout of the frames.*

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## Frameset

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- ◆ The cols or rows specification in a <frameset> tag
  - » In percentage, e.g.,
    - ❖ cols="30%,40%,30%" for 3 columns
    - ❖ cols="30%,40%,\*" for (the same) 3 columns
  - » In pixels, e.g.,
    - ❖ rows="200,\*" for 2 rows
  - » In relative proportions, e.g.,
    - ❖ cols="\*,\*,\*" for 3 columns
    - ❖ cols="3\*,2\*" for 2 columns
    - ❖ rows="10,5,2,8" for 4 (short) rows

*Note that the specification of columns in pixels works when at least one is \*.*

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## Frameset Example

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```
<html>
<frameset cols="20%,80%">
  <frame src="left-frame.html" name="left"></frame>
  <frame name="right"></frame>
  <noframes>Sorry, you need a browser that can handle frames to
  access this page</noframes>
</frameset>
</html>
```

<http://www.cs.odu.edu/~mweigle/cs312/frame-example.html>

- A frameset, containing two frames in two columns, named left and right, respectively.
- Frame names are optional, but are useful.

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## Left Frame

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```
<html>
```

```
<b>Tables Examples</b>
```

```
<p><a href="table-example.html" target="right">table  
-example.html</a></p>
```

tables with borders, headings, and blank cells

```
<p><a href="table-fancy-example.html" target="right">table  
-fancy-example.html</a></p>
```

tables with colspan, rowspan, color, widths, and nested tables  
</html>

<http://www.cs.odu.edu/~mweigle/cs312/left-frame.html>

*When a frame does not exist for a target value, then it means  
that the target is a new window.*

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## Nested Frames

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- ◆ Frames can be nested, like tables
- ◆ What if we wanted to add a footer (like author and last modified) to the bottom of our frame-example page?

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## Nested Frames – pg1

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- ◆ The first page will look as follows:

```
<frameset rows="95%,5%">  
<frame src="top-frames.html"> </frame>  
<frame src="footer.html"> </frame>  
</frameset>
```

- ◆ top-frames.html will contain the layout for the left side menu and the right side container
- ◆ footer.html will be displayed at the bottom

<http://www.cs.odu.edu/~mweigle/cs312/frame-nested-example.html>

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## top-frames and footer

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- ◆ top-frames.html will look almost exactly like frame-example.html
  - » except no <head> tags

- ◆ footer.html will just be HTML code

```
<html>  
<body>  
<h3><i>Created by Dr. Michele Weigle for CS  
312</i></h3>  
</body>  
</html>
```

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## Alternate Nesting Format

```
<frameset rows="95%,5%">  
  <frameset cols="20%,80%">  
    <frame src="left-frame.html" name="left"></frame>  
    <frame name="right"></frame>  
  </frameset>  
  <frame src="footer.html"></frame>  
</frameset>
```

Same result as previous example, but fewer files needed.

<http://www.cs.odu.edu/~mweigle/cs312/frame-nested-ex2.html>

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## Summary of Frames and Framesets

- ◆ The outermost frameset spans the whole browser
- ◆ A frameset contains framesets and/or frames in rows or columns only
- ◆ A frame cannot contain framesets, other than that it acts like a window
- ◆ A frame may contain any page, including tables, texts, images, etc.

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## **Summary of Frames and Framesets**

- ◆ A frame displays the content from elsewhere, not from the current document
- ◆ A frame may have an associated name
- ◆ A named frame can be the target of a hyperlink
- ◆ In general, framesets and frames give more control to the website creator on navigation
- ◆ A frame may be resized by viewer

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## **Browsers and Framesets**

- ◆ Old browsers did not handle framesets.
- ◆ Small browsers, e.g. those on mobile phones, cannot handle framesets.
- ◆ Browsers taking care of framesets may provide different menu capabilities on them.
- ◆ Try our example framesets on different browsers and see.

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