

WEB TECHNOLOGIES
A COMPUTER SCIENCE PERSPECTIVE

JEFFREY C. JACKSON

Chapter 2
Markup Languages:
XHTML 1.0

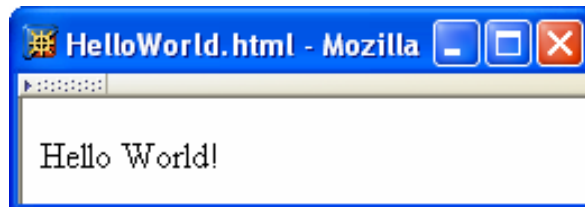
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HTML “Hello World!”

Document Type Declaration	{	<pre><!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd"> <html xmlns="http://www.w3.org/1999/xhtml"> <head> <title> HelloWorld.html </title> </head> <body> <p> Hello World! </p> </body> </html></pre>
Document Instance		

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HTML “Hello World”



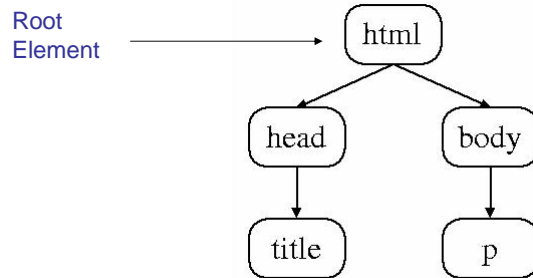
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HTML Tags and Elements

- Any string of the form `< ... >` is a *tag*
- All tags in document instance of Hello World are either *end tags* (begin with `</`) or *start tags* (all others)
 - Tags are an example of *markup*, that is, text treated specially by the browser
 - Non-markup text is called *character data* and is normally displayed by the browser
- String at beginning of start/end tag is an *element name*
- Everything from start tag to matching end tag, including tags, is an *element*
 - *Content* of element excludes its start and end tags

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HTML Element Tree



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HTML Root Element

- Document type declaration specifies name of root element:
`<!DOCTYPE html`
- Root of HTML document must be `html`
- XHTML 1.0 (standard we will follow) requires that this element contain `xmlns` attribute specification (name/value pair)

```
<html xmlns="http://www.w3.org/1999/xhtml">
```

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HTML head and body Elements

- The **body** element contains information displayed in the browser client area
- The **head** element contains information used for other purposes by the browser:
 - title (shown in title bar of browser window)
 - scripts (client-side programs)
 - style (display) information
 - etc.

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HTML History

- 1990: HTML invented by Tim Berners-Lee
- 1993: Mosaic browser adds support for images, sound, video to HTML
- 1994--~1997: “**Browser wars**” between Netscape and Microsoft, HTML defined operationally by browser support
- ~1997-present: Increasingly, World-Wide Web Consortium (**W3C**) recommendations define HTML

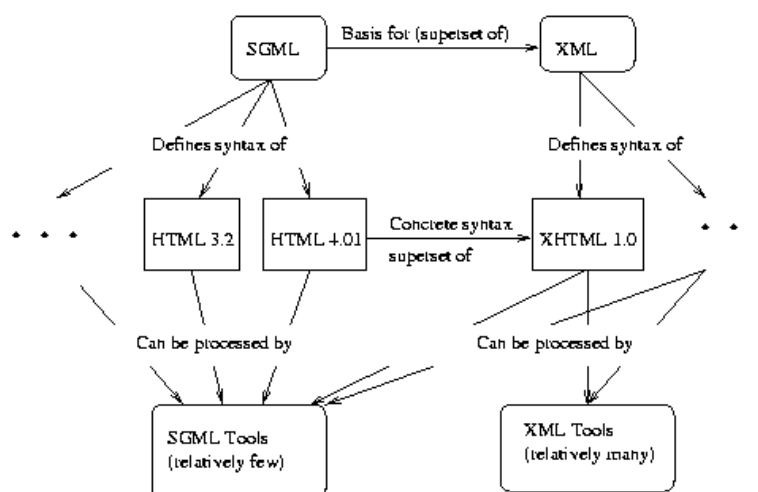
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HTML Versions

- HTML 4.01 (Dec 1999) syntax defined using **Standard Generalized Markup Language (SGML)**
- XHTML 1.0 (Jan 2000) syntax defined using **Extensible Markup Language (XML)**
- Primary differences:
 - HTML allows some **tag omissions** (e.g., end tags)
 - XHTML element and attribute names are **lower case** (HTML names are case-insensitive)
 - XHTML requires that attribute **values** be **quoted**

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SGML and XML



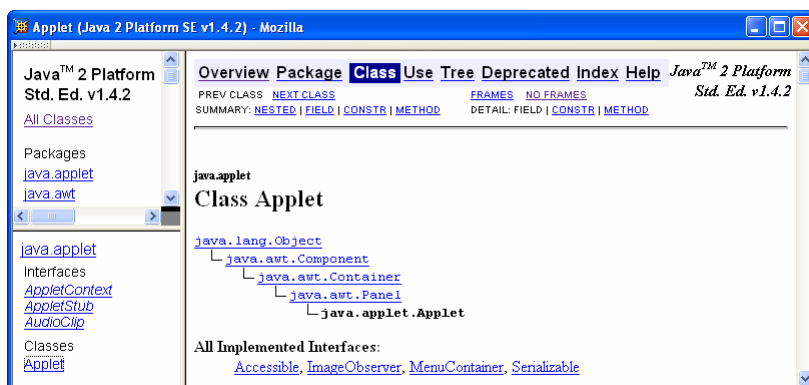
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HTML “Flavors”

- For HTML 4.01 and XHTML 1.0, the document type declaration can be used to select one of three “flavors”:
 - **Strict**: W3C ideal
 - **Transitional**: Includes deprecated elements and attributes (W3C recommends use of *style sheets* instead)
 - **Frameset**: Supports frames (subwindows within the client area)

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HTML Frameset



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XHTML White Space

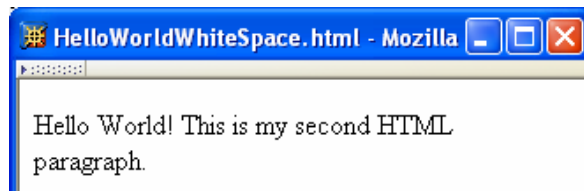
- Four white space characters: carriage return, line feed, space, horizontal tab
- Normally, character data is **normalized**:
 - All white space is converted to space characters
 - Leading and trailing spaces are trimmed
 - Multiple consecutive space characters are replaced by a single space character

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XHTML White Space

```
<body>
  <p>
    Hello World!

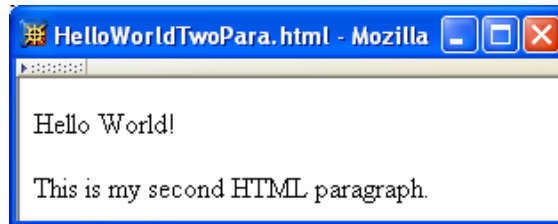
    This is my second HTML paragraph.
  </p>
</body>
```



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XHTML White Space

```
<p>
  Hello World!
</p>
<p>
  This is my second HTML paragraph.
</p>
```



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Unrecognized HTML Elements

```
<!DOCTYPE html
  PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <titl>
      HelloWorldBadElt.html
    </title>
  </head>
  <body>
    <p>
      Hello World!
    </p>
  </body>
</html>
```

Misspelled
element name →

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Unrecognized HTML Elements



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Unrecognized HTML Elements

- Browsers ignore tags with unrecognized element names, attribute specifications with unrecognized attribute names
 - Allows evolution of HTML while older browsers are still in use
- Implication: an HTML document may have errors even if it displays properly
- Should use an [HTML validator](#) to check syntax

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HTML References

- Since < marks the beginning of a tag, how do you include a < in an HTML document?
- Use markup known as a [reference](#)
- Two types:
 - [Character reference](#) specifies a character by its Unicode code point
 - For <, use `<`; or `<`; or `<`;
 - [Entity reference](#) specifies a character by an HTML-defined name
 - For <, use `<`;

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HTML References

TABLE 2.2: Example entity and character references.

Character	Entity Reference	Character Reference (decimal)
<	<code>&lt;</code>	<code>&#60;</code>
>	<code>&gt;</code>	<code>&#62;</code>
&	<code>&amp;</code>	<code>&#38;</code>
"	<code>&quot;</code>	<code>&#34;</code>
'	<code>&apos;</code>	<code>&#39;</code>
©	<code>&copy;</code>	<code>&#169;</code>
ñ	<code>&ntilde;</code>	<code>&#241;</code>
α	<code>&alpha;</code>	<code>&#945;</code>
∀	<code>&forall;</code>	<code>&#8704;</code>

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HTML References

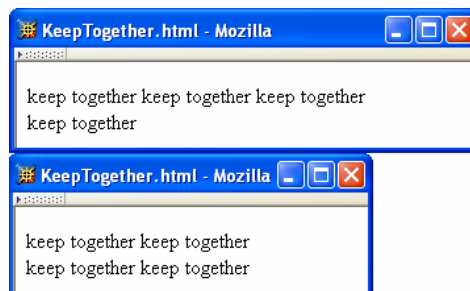
- Since `<` and `&` begin markup, within character data or attribute values these characters must **always** be represented by references (normally `<` and `&`;))
- Good idea to represent `>` using reference (normally `>`;))
 - Provides consistency with treatment of `<`
 - Avoids accidental use of the reserved string `]]>`

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HTML References

- **Non-breaking space** (` `) produces space but counts as part of a word
 - Ex: `keep together keep together`

...



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XHTML Attribute Values

- Can contain embedded quotes or references to quotes

✓ value = "Ain't this grand!"

✓ value = "He said, "She said";, then sighed."

✗ value = "He said, "She said", then sighed."

- May be normalized by browser
 - Best to normalize attribute values yourself for optimal browser compatibility

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Common HTML Elements

- **Headings** are produced using **h1**, **h2**, ..., **h6** elements:

```
<h1>
  Some Common HTML Elements
</h1>
<h2>
  Simple formatting elements
</h2>
```

- Should use h1 for highest level, h2 for next highest, etc.
 - Change style (next chapter) if you don't like the "look" of a heading

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Common HTML Elements

- Use `pre` to **retain format** of text and display using monospace font:

```
<pre>
Use pre (for "preformatted") to
preserve white space and use
monospace type.
(But note that tags such as<br />still work!)
</pre>
```

- Note that any embedded markup (such as `
`) is still treated as markup!

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Common HTML Elements

- `br` element represents **line break**
- `br` is example of an **empty element**, i.e., element that is not allowed to have content
- XML allows two syntactic representations of empty elements
 - **Empty tag** syntax `
` is recommended for browser compatibility
 - XML parsers also recognize syntax `
</br>` (start tag followed immediately by end tag), but many browsers do not understand this for empty elements

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Common HTML Elements

- Text can be **formatted** in various ways:
 - Apply **style sheet** technology (next chapter) to a **span element** (a styleless **wrapper**):

```
<span style="font-style:italic">separating line</span>
```
 - Use a **phrase element** that specifies semantics of text (not style directly):

```
<strong>hr</strong>
```
 - Use a **font style element**
 - Not recommended, but frequently used

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Common HTML Elements

TABLE 2.3: HTML font style elements.

Element	Font used by content
b	Bold-face
<i>i</i>	Italic
tt	“Teletype” (fixed-width font)
big	Increased font size
small	Decreased font size

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Common HTML Elements

- **Horizontal rule** is produced using `hr`
- Also an empty element
- Style can be modified using style sheet technology

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Common HTML Elements

- **Images** can be embedded using `img` element

```

```

- **Attributes:**
 - `src`: URL of image file (required). Browser generates a GET request to this URL.
 - `alt`: text description of image (required)
 - `height` / `width`: dimensions of area that image will occupy (recommended)

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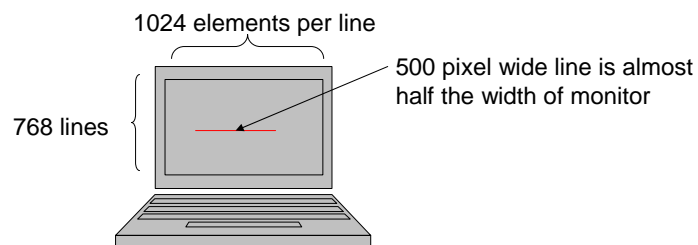
Common HTML Elements

- If height and width not specified for image, then browser may need to rearrange the client area after downloading the image (**poor user interface** for Web page)
- If height and width specified are not the same as the original dimensions of image, browser will **resize** the image
- Default units for height and width are “picture elements” (**pixels**)
 - Can specify percentage of client area using string such as “50%”

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Common HTML Elements

- Monitor resolution determines pixel size



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Common HTML Elements

- **Hyperlinks** are produced by the **anchor** element **a**

See

```
<a href="http://www.w3.org/TR/html4/index/elements.html">the  
W3C HTML 4.01 Element Index</a>
```

for a complete list of elements.

- Clicking on a hyperlink causes browser to issue GET request to URL specified in href attribute and render response in client area
- Content of anchor element is text of hyperlink (avoid leading/trailing space in content)

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Common HTML Elements

- Anchors can be used as **source** (previous example) or **destination**

```
<a id="section1" name="section1"></a>
```

- The fragment portion of a URL is used to reference a destination anchor

```
<a href="http://www.example.org/PageWithAnchor.html#section1">...
```

- Browser scrolls so destination anchor is at (or near) top of client area

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Common HTML Elements

- Comments are a special form of tag

`<!-- Notice that img must nest within a "block" element,
such as p -->`

- Not allowed to use `--` within comment

✗ `<!-- This is NOT
-- a good comment.
-->`

✗ `<!-- Can't end with more than two dashes! --->`

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Nesting Elements

- If one element is nested within another element, then the content of the inner element is also content of the outer element

`<tt>hr</tt>`

- XHTML requires that elements be properly nested

✗ `<tt>hr</tt>`

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Nesting Elements

- Most HTML elements are either **block** or **inline**
 - **Block**: browser automatically generates line breaks before and after the element content
 - Ex: p
 - **Inline**: element content is added to the “flow”
 - Ex: span, tt, strong, a

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Nesting Elements

- Syntactic rules of thumb:
 - Children of body must be blocks
 - Blocks can contain inline elements
 - Inline elements *cannot* contain blocks
- Specific rules for each version of (X)HTML are defined using SGML or XML (covered later)

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Relative URL's

- Consider an `` start tag containing attribute specification

```
src="valid-xhtml10.png"
```

- This is an example of a **relative URL**: it is interpreted relative to the URL of the document that contains the `img` tag

– If document URL is

<http://localhost:8080/MultiFile.html>

then relative URL above represents **absolute URL**

<http://localhost:8080/valid-xhtml10.png>

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Relative URL's

TABLE 2.4: Absolute URL's corresponding to relative URL's when the base URL is <http://www.example.org/a/b/c.html>.

Relative URL	Absolute URL
d/e.html	http://www.example.org/a/b/d/e.html
../f.html	http://www.example.org/a/f.html
.../g.html	http://www.example.org/g.html
../h/i.html	http://www.example.org/a/h/i.html
/j.html	http://www.example.org/j.html
/k/l.html	http://www.example.org/k/l.html

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Relative URL's

- Query and fragment portions of a relative URL are appended to the resulting absolute URL
 - Example: If document URL is <http://localhost:8080/PageAnch.html> and it contains the anchor element `...` then the corresponding absolute URL is <http://localhost:8080/PageAnch.html#section1>

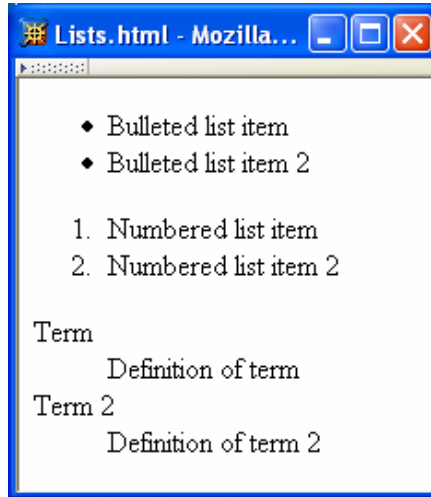
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Relative URL's

- Advantages:
 - Shorter than absolute URL's
 - Primary: can [change the URL of a document](#) (e.g., move document to a different directory or rename the server host) without needing to change URL's within the document
- Should use relative URL's whenever possible

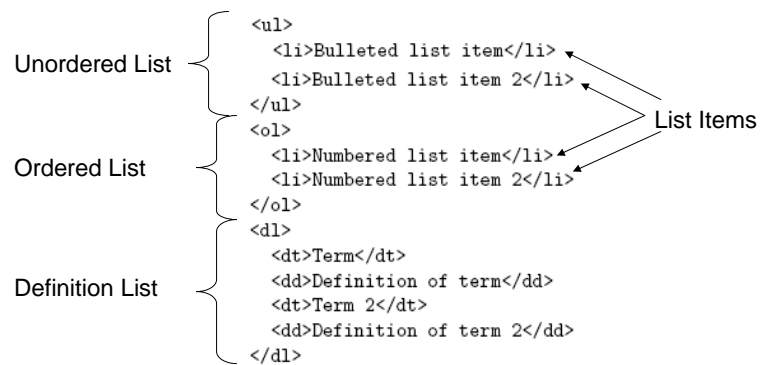
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Lists



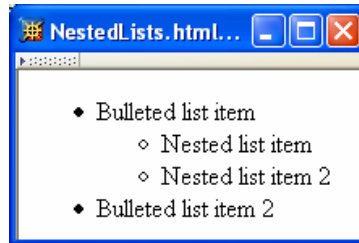
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Lists



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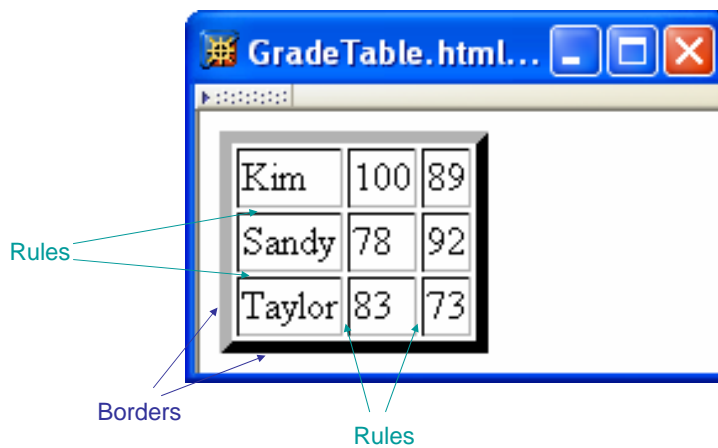
Lists



```
<ul>  
  <li>Bulleted list item  
    <ul>  
      <li>Nested list item</li>  
      <li>Nested list item 2</li>  
    </ul>  
  </li>  
  <li>Bulleted list item 2</li>  
</ul>
```

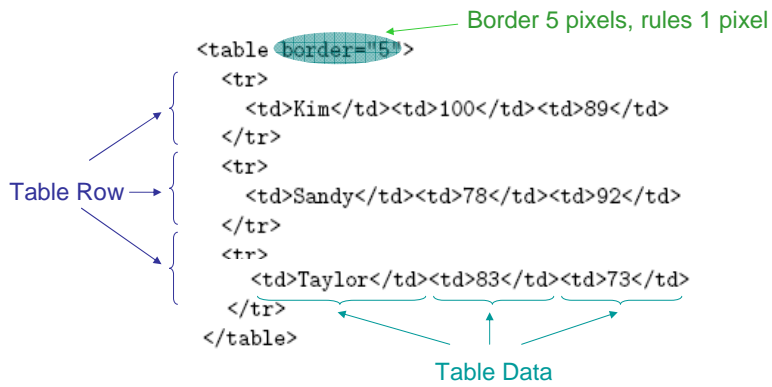
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Tables



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Tables



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Tables

COSC 400 Student Grades

		Grades	
	Student	Exam 1	Exam 2
Undergraduates	Kim	100	89
	Sandy	78	92
Graduates	Taylor	83	73

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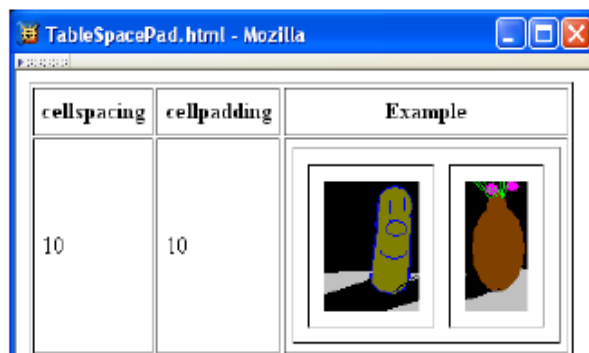
Tables

```
<table border="5">
  <caption>
    COSC 400 Student Grades
  </caption>
  <tr>
    <td>&nbsp;</td><td>&nbsp;</td><th colspan="2">Grades</th>
  </tr>
  <tr>
    <td>&nbsp;</td><th>Student</th><th>Exam 1</th><th>Exam 2</th>
  </tr>
  <tr>
    <th rowspan="2">Undergraduates</th><td>Kim</td><td>100</td><td>89</td>
  </tr>
  <tr>
    <td>Sandy</td><td>78</td><td>92</td>
  </tr>
  <tr>
    <th>Graduates</th><td>Taylor</td><td>83</td><td>73</td>
  </tr>
</table>
```

Table Header

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Tables

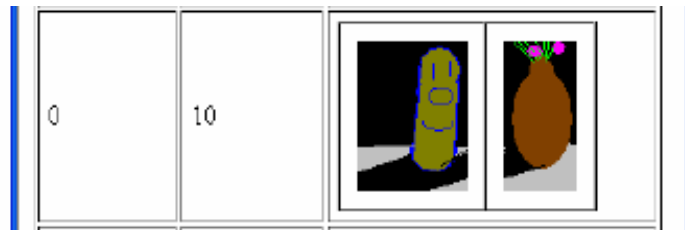


```
<table border="1" cellspacing="10" cellpadding="10">
```

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Tables

cellspacing cellpadding



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Tables

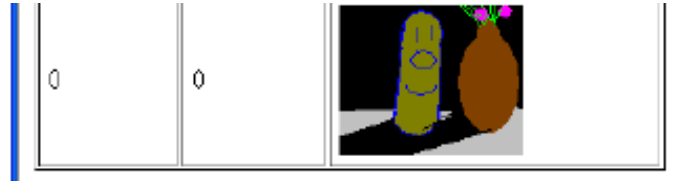
cellspacing cellpadding



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Tables

cellspacing cellpadding



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Forms

A screenshot of a web browser window titled "LifeStory.html - Mozilla". The form contains the following elements:

- A text input field with the label "Enter your name:".
- A text area with the label "Give your life's story in 100 words or less:".
- Three checkboxes with labels "tall", "funny", and "smart", preceded by the text "Check all that apply to you:".
- A button labeled "Publish My Life's Story".

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Forms

Each form is content of a form element

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  <br />
</form>
```

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Forms

action specifies URL where form data is sent in an HTTP request

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  <br />
</form>
```

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Forms

HTTP request method (lower case)

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  <br />
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div> div is the block element analog of span (no-style block element)
  <label>
    Enter your name: <input type="text" name="username" size="40" />
  </label>
  <br />
  <label>
    Give your life's story in 100 words or less:
  <br />
  <textarea name="lifestory" rows="5" cols="60"></textarea>
  </label>
  <br />
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div> Form control elements must be content of a block element
  <label>
    Enter your name: <input type="text" name="username" size="40" />
  </label>
  <br />
  <label>
    Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
  </label>
  <br />
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label> Text field control (form user-interface element)
    Enter your name: <input type="text" name="username" size="40" />
  </label>
  <br />
  <label>
    Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
  </label>
  <br />
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label>      Text field used for one-line inputs
    Enter your name: <input type="text" name="username" size="40" />
  </label>
  <br />
  <label>
    Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
  </label>
  <br />
</form>
```

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Forms

LifeStory.html - Mozilla

Enter your name:

Give your life's story in 100 words or less:

Check all that apply to you: tall funny smart

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label> Name associated with this control's data in HTTP request
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
      <br />
      <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  <br />
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label> Width (number of characters) of text field
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
      <br />
      <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  <br />
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label>                                     input is an empty element
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
  </label>
<br />
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label> Use label to associate text with a control
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60"></textarea>
  </label>
<br />
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br /> Form controls are inline elements
    <label>
      Give your life's story in 100 words or less:
      <br />
      <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  </div>
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
      <br /> textarea control used for multi-line input
      <textarea name="lifestory" rows="5" cols="60"></textarea>
    </label>
  </div>
</form>
```

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60" />
  </label>
  <br />

```

Height and width in characters

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Forms

```
<form action="http://www.example.org" method="get">
  <div>
    <label>
      Enter your name: <input type="text" name="username" size="40" />
    </label>
    <br />
    <label>
      Give your life's story in 100 words or less:
    <br />
    <textarea name="lifestory" rows="5" cols="60" * />
  </label>
  <br />

```

textarea is not an empty element; any content is displayed

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Forms

LifeStory.html - Mozilla

Enter your name:

Give your life's story in 100 words or less:

Check all that apply to you: tall funny smart

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Forms

```
Check all that apply to you:
<label> Checkbox control
  <input type="checkbox" name="boxgroup1" value="tall" />tall
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="funny" />funny
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="smart" />smart
</label>
<br /><br />
<input type="submit" name="doit" value="Publish My Life's Story" />
</div>
</form>
```

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Forms

Check all that apply to you: Value sent in HTTP request if box is checked

```
<label>
  <input type="checkbox" name="boxgroup1" value="tall" />tall
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="funny" />funny
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="smart" />smart
</label>
<br /><br />
<input type="submit" name="doit" value="Publish My Life's Story" />
</div>
</form>
```

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Forms

Check all that apply to you: Controls can share a common name

```
<label>
  <input type="checkbox" name="boxgroup1" value="tall" />tall
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="funny" />funny
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="smart" />smart
</label>
<br /><br />
<input type="submit" name="doit" value="Publish My Life's Story" />
</div>
</form>
```

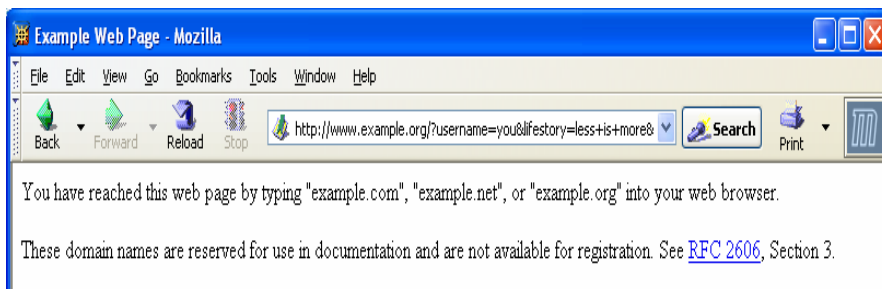
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Forms

```
Check all that apply to you:  
<label>  
  <input type="checkbox" name="boxgroup1" value="tall" />tall  
</label>  
<label>  
  <input type="checkbox" name="boxgroup1" value="funny" />funny  
</label>  
<label>  
  <input type="checkbox" name="boxgroup1" value="smart" />smart  
</label>  
<br /><br />  
<input type="submit" name="doit" value="Publish My Life's Story" />  
</div> Submit button: form data sent to action URL if button is clicked  
</form>
```

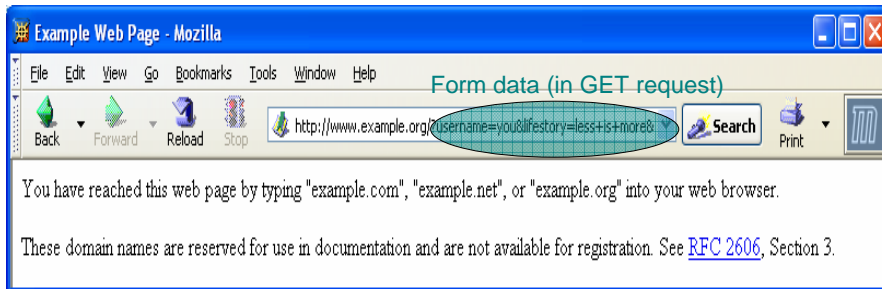
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Forms



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Forms



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Forms

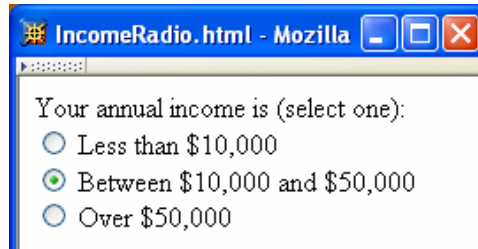
```
Check all that apply to you:
<label>
  <input type="checkbox" name="boxgroup1" value="tall" />tall
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="funny" />funny
</label>
<label>
  <input type="checkbox" name="boxgroup1" value="smart" />smart
</label>
<br /><br />
<input type="submit" name="doit" value="Publish My Life's Story" />
</div>
</form>
```

Displayed on button and sent to server if button clicked

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Forms

Radio buttons: at most one can be selected at a time.



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Forms

```
Your annual income is (select one):<br />
<label> Radio button control
  <input type="radio" name="radgroup1" value="0-10" />
    Less than $10,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="10-50"
    checked="checked" />
    Between $10,000 and $50,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="&gt;50" />
    Over $50,000
</label>
```

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Forms

```
Your annual income is (select one):<br />
<label>
  <input type="radio" name="radgroup1" value="0-10" />
  Less than $10,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="10-50"
    checked="checked" />
  Between $10,000 and $50,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="&gt;50" />
  Over $50,000
</label>
```

All radio buttons with the same name form a *button set*

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Forms

```
Your annual income is (select one):<br />
<label>
  <input type="radio" name="radgroup1" value="0-10" />
  Less than $10,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="10-50"
    checked="checked" />
  Between $10,000 and $50,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="&gt;50" />
  Over $50,000
</label>
```

Only one button of a set can be selected at a time

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Forms

```
Your annual income is (select one):<br />
<label>
  <input type="radio" name="radgroup1" value="0-10" />
  Less than $10,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="10-50"
    checked="checked" /> This button is initially selected
  Between $10,000 and $50,000 (checked attribute also applies
    to check boxes)
</label><br />
<label>
  <input type="radio" name="radgroup1" value="&gt;50" />
  Over $50,000
</label>
```

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Forms

```
Your annual income is (select one):<br />
<label>
  <input type="radio" name="radgroup1" value="0-10" />
  Less than $10,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="10-50"
    checked="checked" /> Boolean attribute: default false,
  Between $10,000 and $50,000 set true by specifying name as
    value
</label><br />
<label>
  <input type="radio" name="radgroup1" value="&gt;50" />
  Over $50,000
</label>
```

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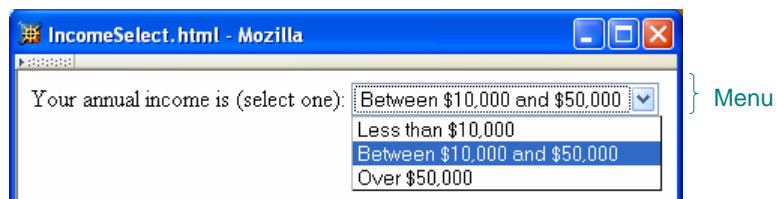
Forms

```
Your annual income is (select one):<br />
<label>
  <input type="radio" name="radgroup1" value="0-10" />
  Less than $10,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="10-50"
    checked="checked" />
  Between $10,000 and $50,000
</label><br />
<label>
  <input type="radio" name="radgroup1" value="&gt;50" />
  Over $50,000
</label>
```

Represents string: >50

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Forms



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Forms

Your annual income is (select one):

```
<select name="income"> Menu control; name given once
  <option value="0-10">Less than $10,000</option>
  <option value="10-50" selected="selected">
    Between $10,000 and $50,000
  </option>
  <option value=">50">Over $50,000</option>
</select>
```

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Forms

Your annual income is (select one):

```
<select name="income"> Each menu item has its own value
  <option value="0-10">Less than $10,000</option>
  <option value="10-50" selected="selected">
    Between $10,000 and $50,000
  </option>
  <option value=">50">Over $50,000</option>
</select>
```

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Forms

Your annual income is (select one):

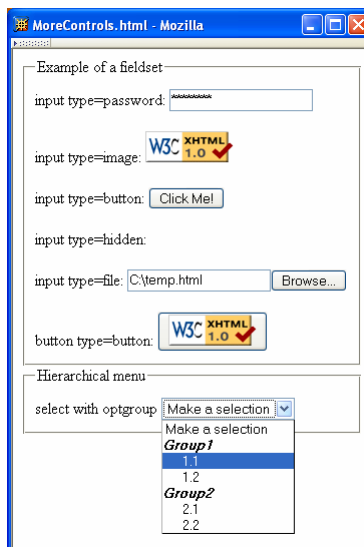
```
<select name="income">
  <option value="0-10">Less than $10,000</option>
  <option value="10-50" selected="selected">
    Between $10,000 and $50,000
  </option>
  <option value="&gt;50">Over $50,000</option>
</select>
```

Item initially displayed in menu control

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Forms

- Other form controls:
 - Fieldset (grouping)
 - Password
 - Clickable image
 - Non-submit buttons
 - Hidden (embed data)
 - File upload
 - Hierarchical menus



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Forms

TABLE 2.5: HTML 4.01/XHTML 1.0 non-deprecated form controls.

Element	type Attribute	Control
input	text	Text input
input	password	Password input
input	checkbox	Checkbox
input	radio	Radio button
input	submit	Submit button
input	image	Graphical submit button
input	reset	Reset button (form clear)
input	button	Push button (for use with scripts)
input	hidden	Non-displayed control (stores server-supplied information)
input	file	File select
button	submit	Submit button with content (not an empty element)
button	reset	Cancel button with content (not an empty element)
button	button	Button with content but no predefined action
select	N/A	Menu
option	N/A	Menu item
optgroup	N/A	Heading in a hierarchical menu
textarea	N/A	Multi-line text input
label	N/A	Associate label with control(s)
fieldset	N/A	Groups controls
legend	N/A	Add caption to a fieldset

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