Marking Up with HTML

- **Tags** describe how a web page should look
- **Formatting with Tags:**
  - Words or abbreviations enclosed in angle brackets `< >`
  - Come in pairs (beginning and end):
    - `<title> </title>`
  - Tags are not case-sensitive, but the actual text between the tags is not.

Tags for Bold, Italic, and underline

- **Bold:** `<b> </b>`
- **Italic:** `<i> </i>`
- **Underline:** `<u> </u>`
  - Tag pair surrounds the text to be formatted
  - You can apply more than one kind of formatting at a time
  - `<b><i>Veni, Vidi, Vici!</i></b>` produces: *Veni, Vidi, Vici!*
  - Tags can be in any order, but have to be nested correctly
  - Some tags do not surround anything, so they don’t have an ending form. Closing angle bracket is replaced by `>`
    - `<hr />` inserts a horizontal rule (line)
    - `<br />` inserts a line break

An HTML Web Page File

 Begins with `<html>` and ends with `</html>`

```html
<html>
<head>
  Preliminary material goes here, including
  <title> … </title>
</head>
<body>
  Main content of the page goes here
</body>
</html>
```

Structuring Documents

- **Markup language** describes how a document’s parts fit together
- **Headings:**
  - Choice of eight levels of heading tags to produce headings, subheadings, etc.
  - Headings display material in large font on a new line
    - `<h1>Pope</h1> <h2>Cardinal</h2> <h3>Archbishop</h3>` produces:
      - Pope
      - Cardinal
      - Archbishop
HTML Format vs. Display Format

- HTML text was run together on one line, but displayed formatted on separate lines.
- HTML source tells the browser how to produce the formatted image based on the meaning of the tags, not on how the source instructions look.
- But HTML is usually written in a structured (indented) form to make it easier for people to understand.

```html
<h1>Pope</h1>
<h2>Cardinal</h2>
<h3>Archbishop</h3>
```

White Space

- White space that has been inserted for readability:
  - Spaces
  - Tabs
  - New lines
- Browser turns any sequence of white space characters into a single space before processing HTML.
  - Exception: Preformatted information between `<pre>` and `</pre>` tags is displayed as it appears.

```html
<pre>
<code>
h1 { font-size: 1.5em; color: #000; }
</code>
</pre>
```

Brackets in HTML: The Escape Symbol

- What if our web page needed to show a math relationship like $0 < p > r$?
  - The browser would interpret `<p>` as a paragraph tag, and would not display it.
  - To show angle brackets, use escape symbol — `&amp;` — then an abbreviation, then a semicolon (`;`).
    - `&lt;` displays as `<
    - `&gt;` displays as `>
    - `&amp;` displays as `&`

Russell’s Paradox

The Twentieth Century logician Bertrand Russell introduced a curious paradox, now called Russell’s Paradox. Suppose statements in English: “This statement can’t be true, because it claims the converse. However, if it is not true, then it’s false, just as it says. That makes it true. Paradoxically, it seems to be neither true nor false, or perhaps both true and false.”

Magritte’s Paradox

The famous Belgian artist René Magritte rendered the idea of Russell’s Paradox using his famous painting *Ceci n’est pas une pipe*. The title translates from French, This is Not A Pipe. The painting shows a pipe with the next Cocteau-inspiration pipe below it. Superficially, the painting looks like a true statement, since it is a picture of the pipe, not an actual pipe. However, the assertion is also a part of the picture, which seems to make it false, because it is clearly a painting of a pipe. Therefore, what seems to depend on whether the statement is an assertion about the painting or a part of it, but it’s both.
Special Characters

- `<`
- `>`
- `&`
- `&nbsp;` (non-breaking space)
- `&mdash;` (em dash)
- Full list at http://www.w3.org/TR/REC-html40/sgml/entities.html

Accent Marks in HTML

- Letters with accent marks use the escape symbol
- Ampersand, then letter, then the name of the accent mark, then semicolon
  - &eacute; displays as é
  - &tilde; displays as ñ
- Full list at http://www.w3.org/TR/REC-html40/sgml/entities.html

Attributes in HTML

- Properties such as text alignment require more information
- For justification, we need to specify left, right, or center
- Attributes appear inside the angle brackets of start tag, after tag word, with equal sign, value in double quotes. Do not use "fancy/smart quotes!!!"
  ```html
  <p align = "center">
  (default justification is left)
  ```
- Horizontal rule attributes: width and size (thickness) can be specified or left to default
  ```html
  <hr width="50%" size="3" />
  ```

Marking Links With Anchor Tags

- There are two sides of a hyperlink:
  1. Anchor text (the text in the current document that is highlighted)
  2. Hyperlink reference (the address of a Web page / target of the link)
- Begin with `<a` followed by a space
- Give the link reference using `href="filename"
- Close the start anchor tag with `>
- Text to be displayed for this link
- End anchor tag with `</a>

Anchor Tags (cont’d)

- Absolute pathnames: Reference pages at other web sites using complete URLs
  ```html
  http://server/directory_path/filename
  ```
  `<a href="http://www.aw.com/snyder/index.html">FIT</a>`
Anchor Tags (cont’d)

- **Relative pathnames**: Reference pages stored in the same directory (give only the name of the file)
  - Read `<a href="./filename">this file</a>.
  - Relative pathnames are more flexible — we can move web files around as a group
  - Relative pathnames can also specify a path deeper or higher in the directory structure
    ./directory/filename
    ../directory/filename
  - Current directory
  - Parent directory (one level up)

Including Pictures With Image Tags

- Image Tag Format:
  `<img src="filename" />`
  - src short for source
  - Absolute and relative pathname rules apply
- Pictures can be used as links using anchor tag
  `<a href="fullsize.jpg"><img src="thumbnail.jpg" /></a>`

Handling Color

- Color is used for both background and text
- `bgcolor` attribute of body tag gives solid background color
  - Use hexadecimal color numbers (0-9 A-F)
    `<body bgcolor="#FF00FF">` (magenta)
  - Or use predefined color terms
    `<body bgcolor="magenta">`
- `color` attribute can be used with body text, link, or font tags
  `<font color="red">text</font>`
### Handling Lists

- **Unordered (bulleted) list:**
  - `<ul>` and `<li>` tags begin and end the list
  - `<li>` tags begin and end the items within the list

- **Ordered (numbered) list:**
  - `<ol>` and `<li>` tags begin and end the list
  - Uses the same `<li>` tags

- **Sublists:** Insert lists within lists (between `<li>` `<li>` tags)

- **Definitional list:**
  - `<dt>` and `<dd>` tags begin and end the list
  - `<dd>` and `<dt>` surround the terms to be defined
  - `<dt>` and `<dd>` surround the definitions (indented)

### Handling Tables

- Tables begin and end with `<table>` and `</table>` tags
- Rows are enclosed in table row tags, `<tr>` and `</tr>`
- Cells of each row are surrounded by table data tags, `<td>` and `</td>`
- Create a caption centered at the top of the table with `<caption>` and `</caption>` tags
- Column headings are created as first row of table by using `<th>` and `</th>` tags instead of table data tags
- See examples in textbook

### Controlling Text with Tables

- Tables can control arrangement of information on a page
  - e.g., a series of links listed across the top of the page could be placed in a one-row table to keep them together
  - If the window is too small to display all the links, table keeps them in a row and a scroll bar is added
  - If the tags are not in a table, the links will wrap to the next line instead
Steinbeck

Steinbeck traveled to Russia several times, but never mastered the language. Traveling with photographer Robert Capa in 1944 he wrote, "And now I'm Russian to boot, but I won't say 'hello.' Some, you know, are beautiful, oh no you don't, and some shocking so for years I have an application only needed. The world is second cousin to the left foot. We don't use that much much in Russian."