BASIC HTML
Overview

- Basic HTML
- More HTML Elements
- Web Standards
Basic HTML
Hypertext Markup Language (HTML)

- Describes the *content* and *structure* of information on a web page
- Not the same as the presentation (appearance on screen)
- Surrounds text content with opening and closing tags
- Each tag’s name is called an element
  - syntax: `<element> content </element>`
  - example: `<p>This is a paragraph</p>`
XHTML

- Uses a markup format called XML
- XML + HTML = XHTML
- Standardized in 2000
- A strict XHTML page uses some different syntax and tags than HTML
Structure of XHTML page

- HTML is saved with extension .html
- Basic structure: tags that enclose content, i.e., elements
- Header describes the page
- Body contains the page’s contents
Page Title `<title>`

- Placed within the head of the page
- Displayed in web browser’s title mark and when bookmarking the page
Harry Potter and the Deathly Hallows, the last book in the series, begins directly after the events of the sixth book. Voldemort has completed his ascension to power and gains control of the Ministry of Magic.
Headings <h1>, <h2>, ... <h6>

Harry Potter
Books
Harry Potter and the Philosopher’s Stone
Should be immediately closed with `</>`
Block elements contain an entire large region of content

- examples: paragraphs, lists, table cells
- the browser places a margin of whitespace between block elements for separation
Block and Inline Statements (cont.)

- **Inline elements** affect a small amount of content
  - examples: bold text, code fragments, images
  - the browser allows many inline elements to appear on the same line
  - must be nested inside a block element
More HTML tags

- Some tags can contain additional information called attributes
  
  **syntax:**
  ```html
  <element attribute="value" attribute="value"> 
  content 
  </element>
  ```

  **example:** `<a href="page2.html">Next page</a>`
More HTML tags

- Some tags don't contain content; can be opened and closed in one tag
  - syntax:
    `<element attribute="value" attribute="value" />`
  - example: `<hr />`
  - example:
    `<img src="Harry.jpg" alt="pic of Harry Potter" />`
The `<a>` tag is used to create links. The `href` attribute specifies the destination URL. Links or anchors are inline elements, so they must be placed inside a block element such as a `<p>` or `<h1>` element.

```
<p>
Search <a href="http://www.google.com/">Google</a> now!
</p>
```
More about anchors

Types of URLs that can appear in anchors:

- **Absolute**: to another web site
- **Relative**: to another page on this web site

```
<p><a href="deathlyHallows-book.html">Harry Potter and the Deathly Hallows Book</a></p>

```

**HTML**

Harry Potter and the Deathly Hallows

Wikipedia

**output**

- **Types of URLs that can appear in anchors:**
  - **Absolute**: to another web site
  - **Relative**: to another page on this web site
Nesting tags

Bad

```html
<p>
<a href="deathlyHallows-book.html">Harry Potter and the Deathly Hallows Book</a>
</p>
<p>
This text also links to Harry Potter Book</p>
```

- Tags must be correctly nested: a closing tag must match the **most recently opened tag**
- The browser may render it correctly anyway, but it is invalid XHTML
Images `<img>`

- The `src` attribute specifies source of the image URL
- XHTML also requires an `alt` attribute describing the image
More about images

- If placed inside an anchor, the image will become a link.
- The title attribute specifies an optional tooltip.
Line Break <br>

One Ring to rule them all, One Ring to find them, One Ring to bring them all and in the darkness bind them.

In the Land of Mordor where the Shadows lie.

- br should be immediately closed with />
- br should not be used to separate paragraphs or used multiple times in a row to create spacing
Comments <!-- … -->

<!-- Comment here -->
<p>CS courses are <!-- NOT --> a lot of fun!</p>

CS courses are a lot of fun!

- Comments are useful for disabling sections of a page
- Comments cannot be nested
Phrase elements `<em>`, `<strong>`

```html
<p>
HTML is `<em>really</em>`, `<strong>REALLY</strong>` fun!
</p>
```

HTML is *really* REALLY fun!

- **em**: emphasized text (usually in italic)
- **strong**: strongly emphasized text (usually in bold)
- The tags must be properly nested for a valid page
Unordered list: `<ul>`, `<li>`

- `<ul>` represents a *unordered list* of items (block)
- `<li>` represents a *listed item* within the list (block)

```html
<ul>
  <li>No shoes</li>
  <li>No shirt</li>
  <li>No problem!</li>
</ul>
```

**output**
- No shoes
- No shirt
- No problem!
More about unordered lists

```html
<ul>
<li>Harry Potter characters:
  <ul>
    <li>Harry Potter</li>
    <li>Hermione</li>
    <li>Ron</li>
  </ul>
</li>
<li>LOTR characters:
  <ul>
    <li>Frodo</li>
    <li>Bilbo</li>
    <li>Sam</li>
  </ul>
</li>
</ul>
```
More about unordered lists (cont.)

- Harry Potter characters:
  - Harry Potter
  - Hermione
  - Ron
- LOTR characters:
  - Frodo
  - Bilbo
  - Sam
Ordered list `<ol>`

```
<p>Apple business model:</p>
<ol>
  <li>Beat Microsoft</li>
  <li>Beat Google</li>
  <li>Conquer the world!</li>
</ol>
```

**HTML**

Apple business model:
1. Beat Microsoft
2. Beat Google
3. Conquer the world

- `<ol>` represents an **ordered list** of items
- we can make lists with letters or Roman numerals using CSS (later)
Common error: Not closing a list

- No shoes
- No shirt
- No problem!

Paragraph after list...

If you leave a list open, subsequent contents will be indented
Common Error: Improper nested list placement

```html
<ul>
  <li>Harry Potter characters:</li>
  <ul>
    <li>Harry Potter</li>
    <li>Hermione</li>
    <li>Ron</li>
  </ul>
</li>
</ul>

<ul>
  <li>LOTR characters:
    <ul>
      <li>Frodo</li>
      <li>Bilbo</li>
      <li>Sam</li>
    </ul>
  </li>
</ul>

- closing the outer `li` too early (or not at all) will render correctly in most browsers, but it is incorrect XHTML
Definition list `<dl>`, `<dt>`, `<dd>`

- `<dl>` represents a list of definitions of terms
- `<dt>` represents each term, and `<dd>` its definition

```html
<dl>
  <dt>newbie</dt>  <dd>one who does not have mad skills</dd>
  <dt>jaded</dt>  <dd>tired, bored, or lacking enthusiasm</dd>
  <dt>frag</dt>  <dd>a kill in a shooting game</dd>
</dl>
```

Output:
- newbie
  - one who does not have mad skills
- jaded
  - Tired, bored, or lacking enthusiasm
- frag
  - a kill in a shooting game
Tables `<table>`, `<tr>`, `<td>`

```html
<table>
  <tr><td>1,1</td><td>1,2 okay</td></tr>
  <tr><td>2,1 real wide</td><td>2,2</td></tr>
</table>
```

Table defines the overall table, with
- `<tr>` defining each row
- `<td>` defining each cell's data

**NOTE:** tables are sometimes used by novices for web page layout, but this is not proper semantic HTML and should be avoided
### Table header, caption: `<th>`, `<caption>`

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1</td>
<td>1,2 okay</td>
</tr>
<tr>
<td>2,1 real wide</td>
<td>2,2</td>
</tr>
</tbody>
</table>

- **`th`** cells in a row are considered headers
- A **caption** at the start of the table labels its meaning
As Lincoln said in his famous Gettysburg Address:

Fourscore and seven years ago, our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal.

☑️ a lengthy quotation
Inline quotations <q>

- a short quotation
- Why not just write the following?

  <p>Quoth the Raven, "Nevermore."</p>

- We don't use " marks for two reasons:
  - XHTML shouldn't contain literal quotation mark characters; they should be written as &quot;
  - using <q> allows us to apply CSS styles to quotations
## HTML Character Entities

<table>
<thead>
<tr>
<th>character(s)</th>
<th>entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; &gt;</td>
<td>&lt; &gt;</td>
</tr>
<tr>
<td>é è ñ</td>
<td>é è ñ</td>
</tr>
<tr>
<td>™ ©</td>
<td>™ ©</td>
</tr>
<tr>
<td>π δ Δ</td>
<td>π δ Δ</td>
</tr>
<tr>
<td>И</td>
<td>&amp;1048;</td>
</tr>
<tr>
<td>&quot; &amp;</td>
<td>&quot; &amp;</td>
</tr>
</tbody>
</table>
The `<code>ul</code>` and `<code>ol</code>` tags make lists.

- code: a short section of computer code
Preformatted text `<pre>`

```html
<pre>
Bill Gates speaks
    You will be assimilated
    Microsoft fans delirious
</pre>
```

- Displayed with exactly the whitespace / line breaks given in the text
- Shown in a fixed-width font by default
Web Standards
Web Standards

- Why use XHTML and web standards?
  - more rigid and structured language
  - more interoperable across different web browsers
  - more likely that our pages will display correctly in the future (compatibility)
  - can be interchanged with other XML data: SVG (graphics), MathML, MusicML, etc.
W3C XHTML Validator

- checks your HTML code to make sure it meets the official strict XHTML specifications
Web page metadata <meta>

- information about your page (for a browser, search engine, etc.)
- placed in the head of your XHTML page
- meta tags often have both the name and content attributes
  - some meta tags use the http-equiv attribute instead of name
meta element to aid browser / web server

- using the Content-Type specifies the type of document
  <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />

- the meta refresh tag can redirect from one page to another:
  <meta http-equiv="refresh" content="5;url=http://www.bjp.com" />
  - why would we want to do this?
meta element to describe the page

```html
<head>
<meta name="author" content="web page's author" />
<meta name="revised" content="web page version and/or last modification date" />
<meta name="generator" content="the software used to create the page" />
</head>
```

- many WYSIWYG HTML editors place their names in the meta generator tag (why?)
meta element to aid search engines

```
<head>
<meta name="description"
content="how you want search engines to display your page" />
<meta name="keywords"
content="words to associate with your page (comma separated)" />
</head>
```

- these are suggestions to search engines about how to index your page
- the search engine may choose to ignore them (why?)