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# Basic HTML

# Hypertext Markup Language (HTML)

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- 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

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- Uses a markup format called XML
- $\text{XML} + \text{HTML} = \text{XHTML}$
- Standardized in 2000
- A strict XHTML page uses some different syntax and tags than HTML

# Structure of XHTML page

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```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    information about the page
  </head>

  <body>
    page contents
  </body>
</html>
```

HTML

- 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

# How to Convert from HTML to XHTML

1. Add an XHTML `<!DOCTYPE>` to the first line of every page
2. Add an `xmlns` attribute to the `html` element of every page
3. Change all element names to lowercase
4. Close all empty elements
5. Change all attribute names to lowercase
6. Quote all attribute values

# Page Title <title>

6

```
...  
    <head>  
        <title> HARRY POTTER AND THE DEATHLY HALLOWS - PART  
2 </title>  
    </head>  
...
```

HTML

- ❑ Placed within the head of the page
- ❑ Displayed in web browser's title mark and when bookmarking the page

# Paragraph <p>

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```
...  
    <body>  
        <p> 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</p>  
    </body>
```

HTML

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

*output*

- Placed within the body of the page

# Headings <h1>, <h2>, ... <h6>

8

```
<h1> Harry Potter </h1>  
<h2> Books </h2>  
<h3> Harry Potter and the Philosopher's Stone </h3>
```

*HTML*

# Harry Potter

## Books

### Harry Potter and the Philosopher's Stone

*output*



# Horizontal rule <hr />

9

```
<p> First paragraph </p>  
<hr />  
<p> Second Paragraph </p>
```

HTML

First Paragraph

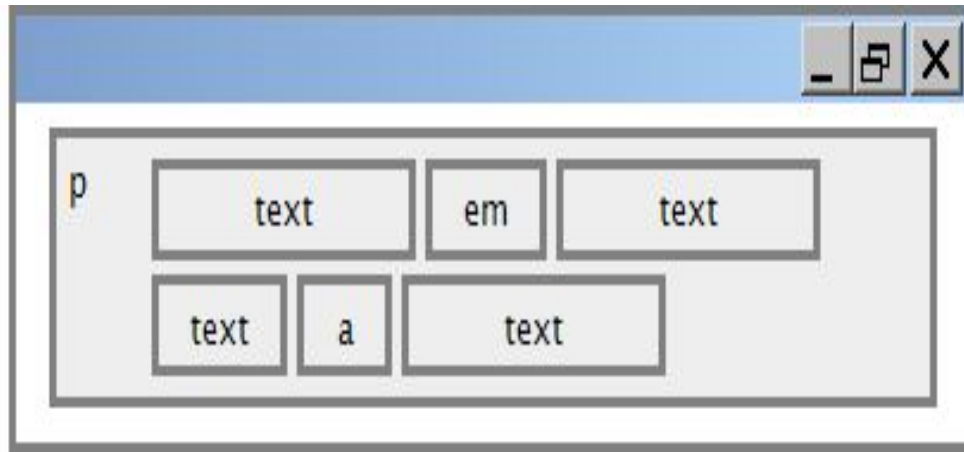
Second Paragraph

*output*

- Should be immediately closed with />

# Block and Inline Statements

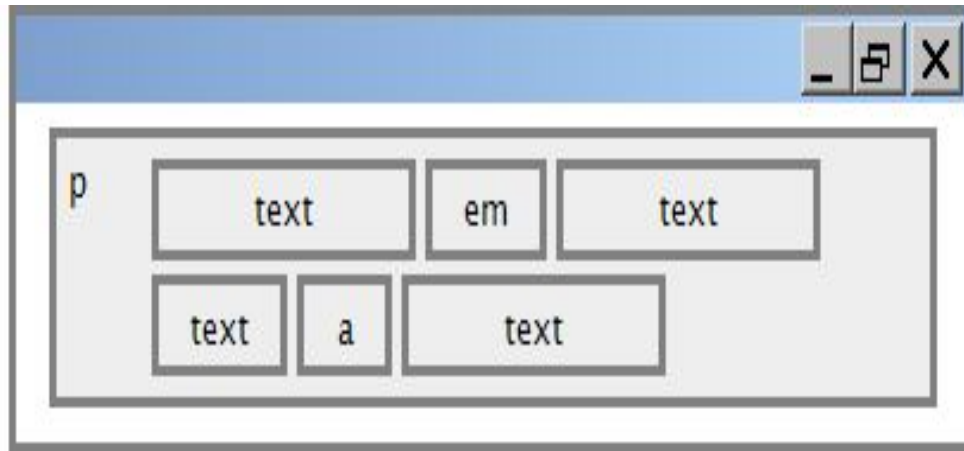
10



- 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.)

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- 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

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- Some tags can contain additional information called attributes
  - syntax: **<element attribute="value" attribute="value"> content </element>**
  - example: `<a href="page2.html">Next page</a>`

# More HTML tags

13

- Some tags don't contain content; can be opened and closed in one tag

- syntax:

- <element attribute="value" attribute="value" />**

- example: **<hr />**

- example:

- **

# Links <a>

14

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

HTML

Search Google now!  
*output*

- ❑ 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`

# More about anchors

15

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

```
<p><a href="http://en.wikipedia.org"  
title="Search">Wikipedia</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

16

## Bad

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

*HTML*

- ❑ 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>

17

```

```

*HTML*



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

# More about images

18

```
<a href="http://harrypotter.net/">  
  
</a>
```

HTML



- ❑ If placed inside an a anchor, the image will become a link
- ❑ The title attribute specifies an optional tooltip

# Line Break <br>

19

```
<p>One Ring to rule them all, One Ring to find them, <br  
> One Ring to bring them all and in the darkness bind  
them.</p>
```

```
<p> In the Land of Mordor where the Shadows lie. </p>
```

*HTML*

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.

*output*

- ❑ 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 `<!-- ... -->`

20

```
<!-- My web page, by Bob Student  
ICT 705, Fall 2048 -->  
<p>CS courses are <!-- NOT --> a lot of fun!</p>
```

*HTML*

CS courses are a lot of fun!

*output*

- ❑ Comments are useful for disabling sections of a page
- ❑ Comments cannot be nested and cannot contain a --

# Phrase elements <em>, <strong>

21

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

*HTML*

HTML is *really* **REALLY** fun!  
*output*

- ❑ **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>

22

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

*HTML*

- No shoes
- No shirt
- No problem!

*output*

- ❑ **ul** represents a bulleted list of items (block)
- ❑ **li** represents a single item within the list (block)

# More about unordered lists

23

```
<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>
```

*HTML*

# More about unordered lists (cont.)

24

- Harry Potter characters:
  - Harry Potter
  - Hermione
  - Ron
- LOTR characters:
  - Frodo
  - Bilbo
  - Sam

*output*



# Ordered list <ol>

25

```
<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

*output*

- ❑ **ol** represents a numbered list of items
- ❑ we can make lists with letters or Roman numerals using CSS (later)

# Common error: Not closing a list

26

```
<ul>  
<li>No shoes</li>  
<li>No shirt</li>  
<li>No problem!</li>  
<p>Paragraph after list...</p>
```

*HTML*

- No shoes
- No shirt
- No problem!

Paragraph after list...

*output*

- ❑ If you leave a list open, subsequent contents will be indented

# Common Error: Improper nested list placement

27

```
<ul>
<li>Harry Potter characters:</li>
<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>
</ul>
```

HTML

- ❑ 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>

28

```
<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>
```

*HTML*

newbie  
    one who does not have mad skills  
jaded  
    Tired, bored, or lacking enthusiasm  
frag  
    a kill in a shooting game

*output*

- ❑ **dl** represents a list of definitions of terms
- ❑ **dt** represents each term, and **dd** its definition

# Tables `<table>`, `<tr>`, `<td>`

29

```
<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>
```

*HTML*

1,1	1,2 okay
2,1 real wide	2,2

*output*

- ❑ `table` defines the overall table, `tr` each row, and `td` each cell's data
- ❑ Useful for displaying large row/column data sets
- ❑ NOTE: tables are sometimes used by novices for web page layout, but this is not proper semantic HTML and should be avoided

# Table headers, captions: <th>, <caption>

30

```
<table>
  <caption>My important data</caption>
  <tr><th>Column 1</th><th>Column 2</th></tr>
<tr><td>1,1</td><td>1,2 okay</td></tr>
  <tr><td>2,1 real wide</td><td>2,2</td></tr>
</table>
```

*HTML*

My important data

Column 1

Column 2

1,1

1,2 okay

2,1 real wide

2,2

*output*

- th cells in a row are considered headers
- a caption at the start of the table labels its meaning

# Quotations <blockquote>

31

```
<p>As Lincoln said in his famous Gettysburg Address:</p>
  <blockquote>
    <p>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.</p>
  </blockquote>
```

*HTML*

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.

*output*

- a lengthy quotation

# Inline quotations <q>

32

```
<p>Quoth the Raven, <q>Nevermore.</q></p>
```

*HTML*

Quoth the Raven, “Nevermore.”

*output*

- 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

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character(s)	entity
< >	&lt; &gt;
é è ñ	&eacute; &egrave; &ntilde;
™ ©	&trade; &copy;
π δ Δ	&pi; &delta; &Delta;
И	&#1048;
" &	&quot; &amp;

# Inline quotations <q>

34

```
<lt;p>
<lt;a
href=&quot;http://google.com/search?q=xenia&amp;ie=utf-8&a
mp;aq=t&quot;&gt;
Search Google for Xenia
<lt;/a>
<lt;/p>
```

HTML

```
<p> <a href="http://google.com/search?q=xenia&ie=utf-8&aq=t"> Search
Google for Xenia </a> </p>
```

output

# Computer code `<code>`

35

```
<p>  
The <code>ul</code> and <code>ol</code>  
tags make lists.  
</p>
```

*HTML*

The `ul` and `ol` tags make lists.

*output*

- code: a short section of computer code

# Preformatted text <pre>

36

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

*HTML*

```
Bill Gates speaks
    You will be assimilated
    Microsoft fans delirious
```

*output*

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

# Preformatted text <pre>

37

```
<pre><code>
    public static void main(String[] args) {
        System.out.println("Hello, world!");
    }
</code></pre>
```

*HTML*

```
public static void main(String[] args) {
    System.out.println("Hello, world!");
}
output
```

- When showing a large section of computer code, enclose it in a `pre` to preserve whitespace and a `code` to describe the semantics of the content

# Web Standards

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- 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
  - can be interchanged with other XML data: SVG (graphics), MathML, MusicML, etc.

# W3C XHTML Validator

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```
<p>  
  <a href="http://validator.w3.org/check/referer">  
      
  </a>  
</p>
```

HTML



- checks your HTML code to make sure it meets the official strict XHTML specifications

# Web page metadata <meta>

40

```
<meta name="description"
content="Harry Potter Official Website." />
<meta name="keywords" content="harry potter, harry potter
and the deathly hallows, deathly hallows, ministry of
magic, resurrection stone, clock of invisibility" />
<meta http-equiv="Content-Type"
content="text/html; charset=iso-8859-1" />
```

HTML

- 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

41

```
<meta http-equiv="Content-Type"
content="type of document (character encoding)" />
<meta http-equiv="refresh"
content="how often to refresh the page (seconds)" />
</head>
```

HTML

- using the Content-Type gets rid of the W3C "tentatively valid" warning

```
<meta http-equiv="Content-Type" content="text/html;
charset=iso-8859-1" />
```

- the meta refresh tag can also redirect from one page to another:

```
<meta http-equiv="refresh" content="5;url=http://www.bjp.com"
/>
```

- why would we want to do this? (example)

# meta element to describe the page

42

```
<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>
```

HTML

- many WYSIWYG HTML editors (FrontPage, PageMaker, etc.) place their names in the meta generator tag (why?)

# meta element to aid search engines

43

```
<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>
```

HTML

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

# How to protect your html code?