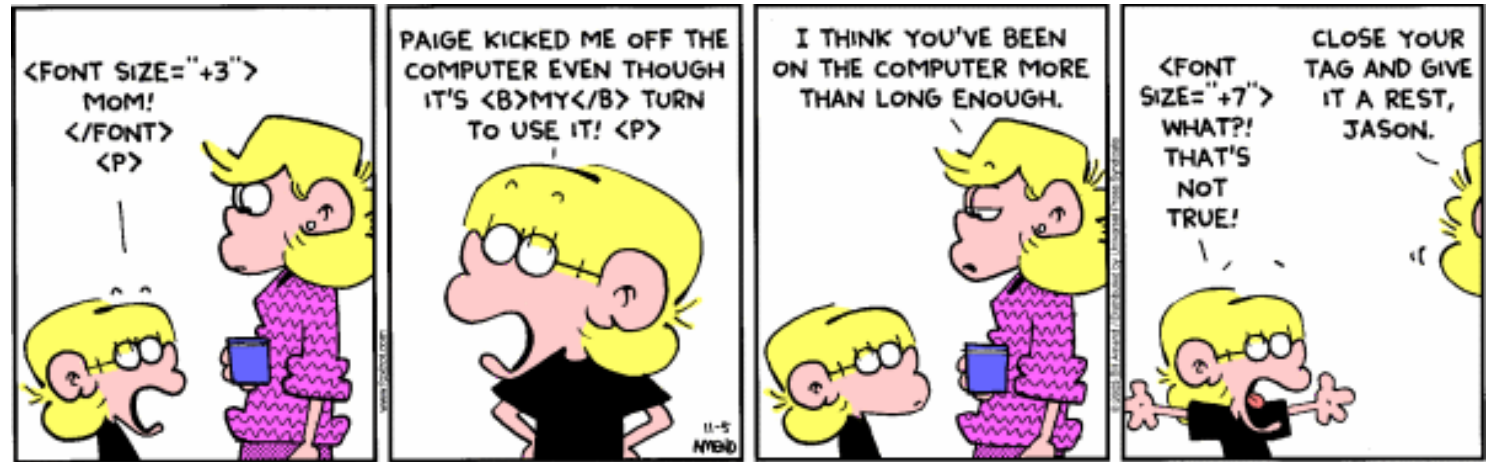


# CSc 337

## LECTURE 1: BASIC HTML



# The Internet

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- Wikipedia: <http://en.wikipedia.org/wiki/Internet>
- a connection of computer networks using the Internet Protocol (IP)
- layers of communication protocols: IP → TCP/UDP → HTTP/FTP/POP/SMTP/SSH...

# Web servers and browsers

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- **web server:** software that listens for web page requests
  - [Apache](#)
  - Microsoft Internet Information Server (IIS) ([part of Windows](#))
- **web browser:** fetches/displays documents from web servers
  - [Mozilla Firefox](#)
  - Microsoft [Internet Explorer](#) (IE)
  - Apple [Safari](#)
  - [Google Chrome](#)
  - [Opera](#)

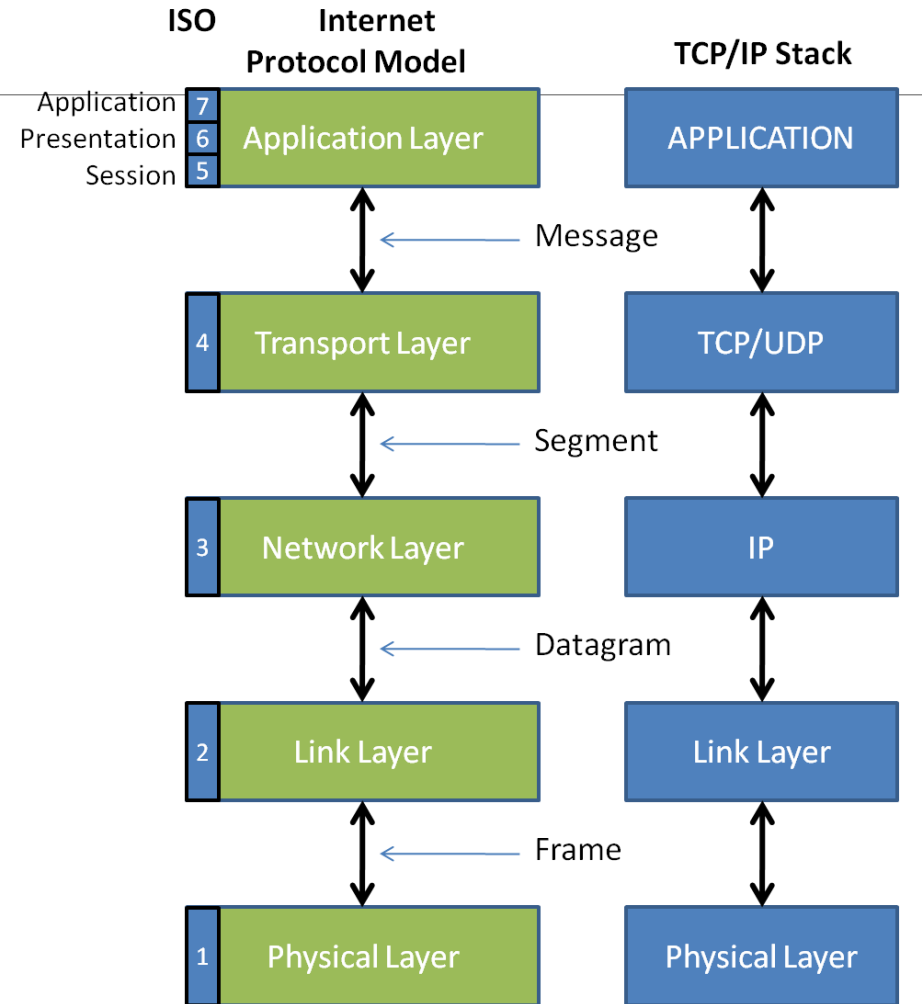
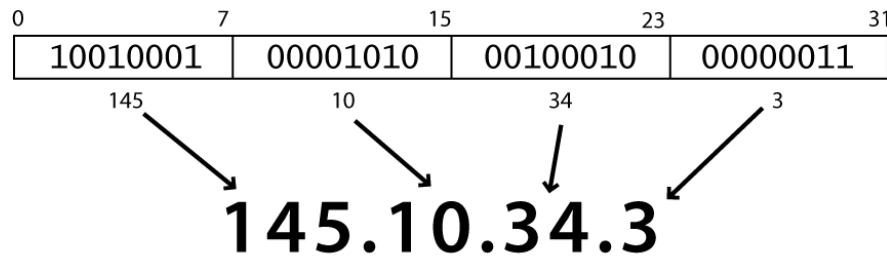


# Layers of protocol

## Protocol:

a set of rules governing the format of data sent

## IP address:



# How do web addresses work?

---

## DNS:

- a set of servers that map written names to IP addresses
  - Example: `www.cs.washington.edu` → `128.208.3.88`
- many systems maintain a local cache called a hosts file

## URL:

- a basic URL: `http://www.aw-bc.com/info/regesstepp/index.html`  
~~~~ ~~~~~~ ~~~~~~  
protocol host path

# Who "runs" the internet?

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- Internet Engineering Task Force ([IETF](#)): internet protocol standards
- Internet Corporation for Assigned Names and Numbers ([ICANN](#)):  
decides top-level [domain names](#)
- World Wide Web Consortium ([W3C](#)): web standards



# Brief History

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- began as a US Department of Defense network called [ARPANET](#) (1960s-70s)
- initial services: electronic mail, file transfer
- opened to commercial interests in late 80s
- WWW created in 1989-91 by [Tim Berners-Lee](#)
- popular web browsers released: Netscape 1994, IE 1995
- Amazon.com opens in 1995; Google January 1996
- [Hamster Dance](#) web page created in 1999



# Web languages / technologies

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- Hypertext Markup Language ([HTML](#)): used for writing web pages
- Cascading Style Sheets ([CSS](#)): stylistic info for web pages
- [JavaScript](#): interactive and programmable web pages
- Node.js ([Node](#)): dynamically create pages on a web server
- Asynchronous JavaScript and XML ([Ajax](#)): accessing data for web applications
- JavaScript Object Notation ([JSON](#)): metalanguage for organizing data
- Structured Query Language ([SQL](#)): interaction with databases



# Structure of an HTML page

---

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
    information about the page
```

```
  </head>
```

```
  <body>
```

```
    page contents
```

```
  </body>
```

```
</html>
```

# Page title: <title>

---

*describes the title of the web page*

<title>Chapter 2: HTML Basics</title>

- placed within the head of the page
- displayed in the web browser's title bar and when bookmarking the page

# Paragraph: `<p>`

---

*paragraphs of text (block)*

```
<p>You're not your job.  
You're not how much money you have in the bank.  
You're not the car you drive.    You're not the contents  
of your wallet. You're not your          khakis.  You're  
the all-singing, all-dancing crap of the world.</p>
```

You're not your job. You're not how much money you have in the bank. You're not the car you drive. You're not the contents of your wallet. You're not your khakis. You're the all-singing, all-dancing crap of the world.

- placed within the body of the page

# More about HTML tags

---

- some tags can contain additional information called attributes
  - syntax: `<element attribute="value" attribute="value"> content </element>`
  - example: `<a href="page2.html">Next page</a>`
- some tags don't contain content; can be opened and closed in one tag
  - syntax: `<element attribute="value" attribute="value" />`
  - example: `<hr />`
  - example: ``

# Horizontal rule: `<hr>`

---

*a horizontal line to visually separate sections of a page (block)*

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

First paragraph

---

Second paragraph

- should be immediately closed with `/>`

# Links: `<a>`

---

*links, or "anchors", to other pages (inline)*

```
<p>  
  Search  
  <a href="http://www.google.com/">Google</a> or our  
  <a href="lectures.html">Lecture Notes</a>.  
</p>
```

Search Google or our Lecture Notes.

- uses the href attribute to specify the destination URL
  - can be absolute (to another web site) or relative (to another page on this site)
- anchors are inline elements; must be placed in a block element such as p or h1

# Activity: match this page

---

## Koala Bears

Koalas are **marsupials** and **not actually bears**.

---

### Food

Koalas eat eucalyptus.

### Dangers

*(Koalas are an endangered species)*

Dingos & Deforestation & Roads & Disease.

### Pictures



\*('O')\*

## Page Text:

Koala Bears

Koalas are marsupials and not actually bears.

Food

Koalas eat eucalyptus.

Dangers

*(Koalas are an endangered species)*

Dingos & Deforestation & Roads & Disease.

Pictures

\*('O')\*

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

---

*headings to separate major areas of the page (block)*

```
<h1>University of Whoville</h1>
```

```
<h2>Department of Computer Science</h2>
```

```
<h3>Sponsored by Micro$oft</h3>
```

University of Whoville

Department of Computer Science

Sponsored by Micro\$oft



# Images: `<img>`

---

*inserts a graphical image into the page (inline)*

```

```



- the src attribute specifies the image URL
- HTML5 also requires an alt attribute describing the image

# Line break: `<br>`

---

*forces a line break in the middle of a block element (inline)*

```
<p>The woods are lovely, dark and deep, <br /> But I have promises to keep,
```

```
<br /> And miles to go before I sleep, <br /> And miles to go before I sleep.</p>
```

The woods are lovely, dark and deep,  
But I have promises to keep,  
And miles to go before I sleep,  
And miles to go before I sleep.

- Warning: Don't over-use br (guideline:  $\geq 2$  in a row is bad)

# Phrase elements : `<em>`, `<strong>`

---

*em: emphasized text (usually rendered in italic)*

*strong: strongly emphasized text (usually rendered in bold)*

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

HTML is *really*, **REALLY** fun!

- as usual, the tags must be properly nested for a valid page

# Quotations <blockquote>

---

*a lengthy quotation (block)*

```
<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

# Inline quotations <q>

---

*a short quotation (inline)*

|                                                                                |        |
|--------------------------------------------------------------------------------|--------|
| <code>&lt;p&gt;Quoth the Raven, &lt;q&gt;Nevermore.&lt;/q&gt;&lt;/p&gt;</code> | HTML   |
| Quoth the Raven, “Nevermore.”                                                  | output |

- Why not just write the following?

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

# Computer code `<code>`

---

*a short section of computer code (usually shown in a fixed-width font)*

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

HTML

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

output

# Preformatted text <pre>

---

*a large section of pre-formatted text (block)*

|                                                                                                                    |        |
|--------------------------------------------------------------------------------------------------------------------|--------|
| <pre>&lt;pre&gt;   Bill Gates speaks     You will be assimilated       Microsoft fans delirious &lt;/pre&gt;</pre> | HTML   |
| <pre>  Bill Gates speaks     You will be assimilated       Microsoft fans delirious</pre>                          | output |

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

# Line break: `<br>`

---

*forces a line break in the middle of a block element (inline)*

`<p>`

The woods are lovely, dark and deep, `<br />` But I have promises to keep, `<br />` And miles to go before I sleep, `<br />` And miles to go before I sleep.

`</p>`

The woods are lovely, dark and deep,  
But I have promises to keep,  
And miles to go before I sleep,  
And miles to go before I sleep.

- **Warning:** Don't over-use br (guideline:  $\geq 2$  in a row is bad)



# HTML Character Entities

---

*a way of representing any Unicode character within a web page*

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

- [Complete list of HTML entities](#)

# Deletions and insertions: <del>, <ins>

*content that should be considered deleted or added to the document (inline)*

```
<p>
```

```
  <del>Final Exam</del> <ins>Midterm</ins> is on  
  <del>Aug 29</del> <ins>Apr 17</ins>.
```

```
</p>
```

HTML

~~Final Exam~~ Midterm is on ~~Aug 29~~ Apr 17.

output

# Abbreviations: <abbr>

*an abbreviation, acronym, or slang term (inline)*

```
<p>
```

```
Safe divers always remember to check their  
<abbr title="Self-Contained Underwater Breathing  
Apparatus">SCUBA</abbr> gear.
```

```
</p>
```

HTML

Safe divers always remember to check their SCUBA gear.

output

- The title will appear when the abbreviated word is hovered over
- In some browsers the abbreviated word will have a dashed underline

# Phrase elements : `<em>`, `<strong>`

---

*em: emphasized text (usually rendered in italic)*

*strong: strongly emphasized text (usually rendered in bold)*

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

HTML is *really*, **REALLY** fun!

- as usual, the tags must be properly nested for a valid page

# Nesting tags

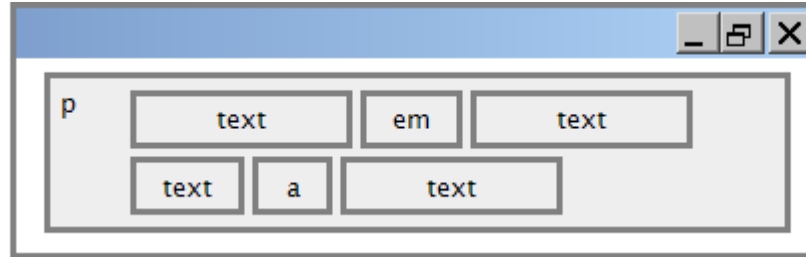
---

```
<p>  
    HTML is <em>really,  
    <strong>REALLY</em> lots of</strong> fun!  
</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 HTML
  - (how would we get the above effect in a valid way?)

# Block and inline elements

---



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

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