***Include: Table HTML stuff? Also are tables for boxes of info = NOPE**

World Web History: (complete)

- Originally made as a tool to link information kept by different researchers in CERN (nuclear resarchers) for research projects. Help collaboration of researches and exchange of information

- Berners-Lee version: (1989)
    - Distributive heterogeneous collaborative multimedia information system
    - The uses of hypertext
    - Later wrote a graphical one called worldwideweb

- Marc Anderessenn (1993) NCSA → Mosaic graphical browser

- Marc Anderessenn + Jim Clark version (1994) → Netscape communication →
    - They develop browser called Netscape browser, navigator drove the popularity of WWW

- CERN and MIT + Berner-Lee (1994) → W3C
    - Develops web protocols and encourage inter-operability between websites

- Microsoft (1995) → Made internet explorer to compete with Netscape browser

World Wide Web**Think Internet has ALL THE PROTOCOLS. WWW is a specific application which contains SOME of the internet's protocols. WWW is one application that runs on the internet

Is a global information system where:

- Resources are addressed using URL, or it subsequent extension or follow-on
- Communication occurs using HTTP, or its subsequent extension or follow-on
- Information is linked using hypertext based on html, or its subsequent extension or follow-on

World Wide Web characteristics (concepts):

- Essentially based on the concept of client-server model *think: Internet is roads while WWW is just client server model
    - Web client: ask web browser for documents. Browser send request
    - Web browser: client on the web initiates communication with server
    - Web servers: monitor communications port on its host machine, accept http command through that port, perform the operations specified by those commands
- Universal readership: open to everyone
- The use of hypertext

    - Using (Hyper)Link pointing to other documents to tie together documents and with computer assistance we can click them to retrieve and view
        - Very useful as it models our brain. Without hypertext we would be reading books up to down. Instead of branching tree.
    - Think a document makes reference to another document which is on another computer. Instead of using FTP to download documents. So click on document is downloaded and displayed
- Allows searching for information so google is the tool
- Communication by *format* negotiation
    - Where two parties (machines) involved communication can negotiate between themselves what format they want to communicate in.
    - Required more specifically in the past because not every computer can run render a format. Ie: so a machine may need to negotiate for the image to be in format JPEG instead of GIF, which the machine may not render
    - This format negotiation is through HTTP protocol **Think about the HTTP protocol steps refer below

WWW vs Internet:

- WWW:
    - Collection of software + protocols installed on all computers. These computers roles are based of client-server model. Web client and web servers. A way of accessing info over the medium of internet
    - Defines specific internet protocols it uses (HTTP, URL, ETC).

- Internet:
    - Is a collection of computers and other devices connected by equipment that allows them to communicate with each other?
    - Defined using TCP/IP, which deals with transfer of packets but does not mention specific protocols for applications **Think Internet has ALL THE PROTOCOLS. WWW is a specific application which contains SOME of the internet's protocols

**Protocols: system of rules that govern how messages (data or packets) are to flow around network

WWW protocols (In the past):

Information exchange:

- Hypertext transfer protocol (HTTP)

Addressing:

- Universal resource protocols (URL): Identify resources often documents on internet

Formatting:

- The hypertext markup language (HTML)

HTTP Protocol Operation: Think HTTP packet is sent in two phases

General form of Request phase:

- HTTP method domain part url HTTP version
- Header fields: Categories-
    - General
    - Request
    - Response
    - Entity
- Blank line
- Message body

HTTP request methods:

- GET, HEAD, POST, PUT, DELETE

General form of Response phase:

- Status line
- Response head field
- Blank line
- Response body

HTTP status codes + category:

- (1—>5) Informational, success, redirection, client error, and server error

Each HTML communication (Either in request phase or response phase) between browser and a web server has a header and body.

- Header: contains information about communication
- Body: contains the data of the communication if there is any

WWW modern protocols:

- XML:
    - Extensible mark-up language
- CSS:
    - Cascading style sheets
- DOM
    - Document object model

World Wide Web Consortium (W3C):

- Responsible for the standard on the world wide web
    - HTTP
    - HTML
    - XML

HTML (HyperText Markup Language):

- How the content on web page should be formatted
- HTML was defined with SGML (standard general markup language)
- Original intent was to work out the general layout of documents that could be displayed
- W3C recommendation means officially everyone should upgrade
- HTML5 became W3C recommendation 2014

XHTML5 vs HTML:

- Newest version reduces the ambiguity of the computer to process
- HTML5 has two syntax specifications:
    - Intended to be backwards compatible with the old HTML versions meaning lax syntax rules and sloppy code is acceptable

- HTML processors do not even enforce the few syntax rules that exist in HTML
- XHTML syntax correctness of XTML document can be validated

- XHTML5 is based off XML must be follow strict syntax rules. The documents can potentially be processed by software in areas beyond the mere document display
- So in the futures HTML5 accepting sloppy code results in the potential of outside software not being able to process due to ambiguity

- XHTML encourages the separation of document structural description (XHTML) from document presentation description (CSS)

****NOTE: Missing DNS operation page5 + webserver operation

Security issues for transactions:

- Privacy
- Integrity
- Authentication
- Nonrepudiation: it must be possible to prove legally the message was sent and received

Relative path vs absolute path: [FILL]

Element:

```
<OpeningTag>Content</ClosingTag>
```

Tag may have attributes (Body):

```
<OpeningTag attribute=”Text”>Content</ClosingTag>
```

OR

```
<h1 align=”center”>Content</h1>
```

Comments (element cos it contains content):

```
<!--    Content  -->
```

XHTML5 document structure:

```
<!DOCTYPE html>
<html xmlns = "http://www.w3.org/1999/xhtml" >
<head>
   <title> here is the title </title>
</head>
<body>

   Things inside the body is usually rendered.

</body>
</html>
```

Note: html has 2 child = head + body. Head has 1 child = title

Paragraph Tag (element to be specific cos it contains content):

- Breaks the current line and inserts new paragraph (ie not line but new paragraph)

```
<p> New paragraph </p>
```

Line Break Tag (element to be specific cos it contains content):

- Insert new line not paragraph (no new paragraph)
- No closing tag

```
<br />

Line 1 <br /> Line 2
```

Horizontal Rule Tag + Attributes:

- Draws a horizontal line across the page
- No closing tag

- *Attributes*: Width=”70” size=”20”

```
<hr />
```

Heading Tag + Attributes:

- Six headings with heading 4 being default size and 5 & 6 being smaller default size
- *Attributes*: align=”center”

```
<h1>Content</h1>

<h2>Content</h2>
```

Preserve whitespaces:

- Where the indentations are kept and spaces are all kept
- May be used for programming visibility

```
<Pre> Content </Pre>
```

Superscript and Subscript:

```
<sub>Content</sub>

<sup>Content</sup>
```

Font style and sizes:

Bold

```
        <b>Content</b>
```

Italics

```
<i>Content</i>
```

Larger + Smaller

```
<big>Content</big>

<small>Content</small>
```

Monospace

```
<tt>Content</tt>
```

Characters Entities:

- Print out characters like &, <, > etc

```
&gt; (>)

&amp; (&)

&lt; (<)
```

Images + Attributes:

- Print out images can include GIF or JPEG
- No closing tags
- Attributes:
    - src=”image.jpg”
    - alt= “Picture of coment”
    - width=”70”
    - height=”80”

```
<img />
```