Module 4:
The World Wide Web

IT Exploration Training

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The Internet is “Data Plumbing”

- The Internet (big-I) is a network-of-networks.
- The TCP/IP Protocol “Suite” provides standards for the Internet’s many mechanisms for shipping data from one place to another.
  - Module-3 showed how the core mechanisms worked.
- Think of TCP/IP as plumbing for distributing data – just as house plumbing distributes water (and removes other things).

Before the World Wide Web (est. 1989)…

- It wasn't convenient to send and receive multimedia content, such as audio, images, and video.

- You could send and receive any kind of data using the TCP/IP plumbing – but there was no standardized way of addressing and accessing (viewing) such remote content on your computer.

- As networks and computers became cheaper and faster, and large storage for multimedia became affordable, new protocols emerged on top of TCP/IP, resulting in…

The Birth of the World Wide Web!

- In late 1980's Tim Berners-Lee came up with new protocols and languages for adding a new layer on top of existing TCP/IP layers: the World-Wide Web.
  - W3 for short, and eventually just "the Web".
- Tim chose TCP for the delivering messages in his new protocol: HyperText Transfer Protocol or HTTP.
- He also designed a new scheme for addressing remote content: Uniform Resource Location or URL
  - Example: http://www.minneapolis.edu/index.htm
  - A URL has three parts: **location of host** + **name of resource**, prefaced by the **name of the protocol** to be used in accessing the resource.

How the Web Works

- Let's watch another video from Code.org that shows how all of this works…

- **The Internet: HTTP and HTML**

  https://www.youtube.com/watch?v=kBXQZMmiA4s

Activity: Viewing HTTP Web Traffic

- We'll how HTTP messaging works, using the **Live HTTP Headers** plug-in for the Firefox browser
- The HTTP protocol is a protocol allowing communication between web browsers and web servers
- This messaging is fundamental for communications between your web browser and remote web sites.
- Follow along: install the plug-in, view normally hidden HTTP traffic...

Learning the Basics of the HyperText Markup Language (HTML)

- We browse the **W3Schools** site: http://www.w3schools.com
- This site has many tutorials on HTML and other web technologies.
- We'll look together at the beginning tutorial – then you are free to explore on your own.
- There are *many* other sites for learning HTML…

W3Schools Tutorials and Examples

- Work through W3Schools tutorials, and use what you learn!
- These use W3Schools online HTML5 editor and viewer, built into their site pages.
- You can edit your HTML, then see how it looks in a web browser.
- Start at the beginning:
  - https://www.w3schools.com/html/default.asp

W3Schools Browser HTML Editor

- Some HTML examples:
  - http://www.w3schools.com/html/html_examples.asp
- And an HTML Reference, describing all the different tags:
  - https://www.w3schools.com/tags/default.asp

Running JavaScript In a Web Page

- You can run programs within your browser, provided by the web page that you request (via links or entering URL in address bar).

- W3Schools explains:

  - https://www.w3schools.com/js/default.asp