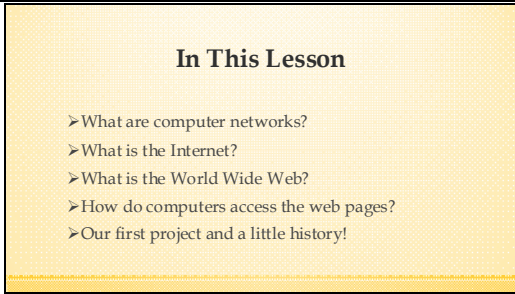


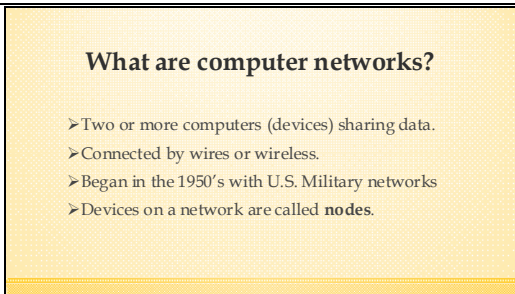
Welcome to the first lesson in Introduction to HTML and CSS.



We are going to begin writing HTML and CSS and developing web pages very quickly, but first we are going to cover some background information and a little history that will help us understand the web and how web development works within the bigger picture. So for the next few minutes we are going to look at:

Read bullets

Finally, we'll see an example of our first project which will include a little history of the inventing of the WWW.



- Nowadays we say devices because so many electronic devices can connect and share data and information. Phones, TV's, tablets – even watches, refrigerators, cars the list goes on and on.
- Devices can be wired together or connected wirelessly. Everyone in this room is probably on your cell providers network right now. The 21st century will continue to expand this connected world.
- Computer networks began in the 1950's with military networks like SAGE (Semi-Automatic Ground Environment) which was a radar system that controlled the NORAD (North American Aerospace Defense Command) missile defense system for the US. But the first network that was similar to today's was Defense Department's Advanced Research Projects Agency (ARPA), which became ARPANET in the late 1960's and involved mainframe computers connected to nodes. Nodes can also be routers. We won't be using the term nodes in this class. As programmers we will use the terms client and server – which we will discuss in a moment.

Do Computers Talk to Each Other?

- Computers share information using **protocols**.
- **Protocol**: Procedures for sharing data between electronic devices.
- **TCP/IP**: a foundation protocol of networks
 - *TCP: Transmission Control Protocol
 - *IP: Internet Protocol

The short answer is yes.

- Computers share information using protocols.
- **Protocol**: A set of rules or procedures for transmitting and receiving data or information between electronic devices.

You can think of a protocol as an agreed upon language. In the same way that two people meet on the street and one says, "Buenos dias. Como esta usted?" and the other person says, "Bien, gracias! Y usted?" They have agreed to speak Spanish. Computers do much the same thing.

TCP/IP is the foundation protocol of all networks including The Internet.

- *TCP: Transmission Control Protocol
- *IP: Internet Protocol

Computer network diagram.



This is kind of a generic network.

It shows several devices connected to a switch in the center. In this diagram I forgot to add a wireless access point to allow wireless connections. You may have a network similar to this at home. Usually when you have a provider like Verizon, Frontier or AT&T they ship you a router that also acts as a switch, a firewall, and wireless access point.

A network does not have to connect to the Internet to be a network. Although in today's world it does have to connect to be a productive network.

Networks can have just a few devices, like most of us have at home. Or have thousands of computers over a wide area. The last company I worked for had about 15K users on a worldwide WAN that spanned several countries.

What is The Internet?

- A global network of networks.
- Used by 40% of world's population.
- The Internet is a proper noun.
- Uses many protocols and technologies.

➤ A global network of networks.

The Internet connects billions of computers on millions of networks. It connects many types of networks such as government, academic, business, military, private, scientific, etc.

➤ Used by about 40% of world's population. About 25% of those users are in China.

➤ The Internet is a proper noun when using it to write a paper.

➤ Uses many protocols and many technologies:

- protocols for Email, Instant Messaging, File transfer, web pages and many more. And they all have acronyms that are daunting for even IT professionals to remember. But we use acronyms because saying or typing HTTP is easier than saying Hypertext Transfer Protocol

***Looking at protocols in depth is a subject beyond the scope of this course but we will deal with a few that are necessary in understanding web development.

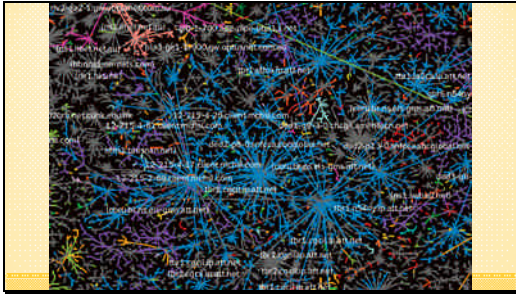
The Internet



A last look at The Internet.

This is a representation of the internet done by AT&T.

It's pretty big! A vast collection of connected networks. Interestingly, this image is now over 10 years old.



Here you can see some individual carrier networks. Remember this is only a representation, not an actual diagram.

These devices are all identified by a number called an IP address and servers called Domain Name Servers translate those numbers names, such as sbc-global.net.

The Internet and World Wide Web

➤ . . . are not the same thing!

We often hear people say things like, browsing the Internet or surfing the net. But technically this is not true.

➤ The Internet and the World Wide Web are not the same thing!

What is the World Wide Web?

- An information space for documents and other resources.
- These resources are identified by a URL (Uniform Resource Locator).
- Abbreviated WWW, the Web and W3.
- Invented by English scientist Tim Berners-Lee in 1989.

- An information space for documents and other resources.

The Web is made up of resources that are stored on The Internet. You could say The Internet is made up of connected hardware or devices and the WWW is made up of information or resources stored on some of that hardware. Web resources are connected by hyperlinks.

- These resources can be documents, images, videos, audio. They are identified by a URL (Uniform Resource Locator).

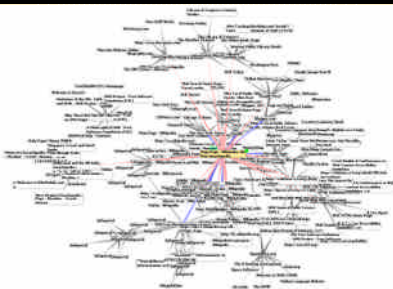
Here is one of those acronyms. This is one we will need to remember because we will be using it all the time in HTML.

- The World Wide Web is also a proper noun and can be abbreviated WWW, the Web and W3.
- Invented by English scientist Tim Berners-Lee in 1989. As our first significant project, we will be developing a web site about this topic, which I will show you later.

The World Wide Web



Here is a representation of the WWW showing web servers. This again is just a representation. In the representation of the Internet we looked at before, a large number of the nodes in the image could be web servers. These web servers may be familiar to us with information spaces on them that have names such as nytimes.com, latimes.com, Wikipedia.org or whitehouse.gov. These are called top level domains and they are storage areas for the resources on the WWW – in other words web sites.



A little closer look but remember this is only a graphical representation of a very small portion of the Web. The actual amount of information on the WWW is probably beyond our ability to represent accurately.

WWW Significance

- The Internet led to the WWW
- The WWW has led to the Information Age
- Too billions of people use on the Internet
- Continues massive expansion

- The idea of networking computers for the purpose of sharing information led directly to The Internet, which in turn led directly to the WWW.
- The Internet and WWW have been the key developments that have led the way into the Information Age.
- The WWW is the primary tool used by billions of people all over the world to interact on the Internet. It is now used by more than your home computer, but also your phone, your TV, your watch, maybe your refrigerator and many, many other devices.
- It is still growing at a phenomenal rate. One of the web links we are going to look at includes a web stats site that shows live statistics on the growth of the WWW.

How does the WWW work?

- Resources are stored on a **web server**.
- Resources are requested by a **client**.
- The client has software called a **web browser**.
- Tim Berners-Lee also wrote the first browser.

➤ Documents and other resources are stored on a computer called a web server.

Web servers do just what it sounds like they should do. They serve Web resources to a client.

➤ A computer called a client, can request these resources. When you are browsing the Web, your computer is a client.

➤ The client has software called a web browser. A web browser reads text files formatted primarily in HTML. We'll be learning a lot more about this every lesson.

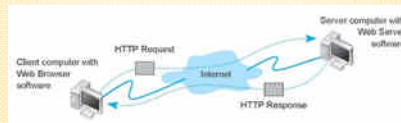
➤ Tim Berners-Lee also invented the first browser.

There are many web browsers.



There are currently hundreds of browsers available. We are probably familiar with some of them such as Chrome, Safari, Opera, Internet Explorer, Firefox and Microsoft's latest entry, Edge.

How does it look?



- HTTP is the data protocol for the WWW.
- HTTP stands for Hypertext Transfer Protocol.

So, what does this, browsing the Web actually look like? When you open your browser, let's say Google.com is your home page, your browser makes an HTTP request. There are a few jumps necessary, but the google.com webserver makes an HTTP response by serving the homepage to your computer.

HTTP is the foundation of data communication for the World Wide Web. HTTP stands for Hypertext Transfer Protocol and this acronym we will need to remember because we will use it constantly as a web developer. When writing HTML almost every hyperlink will include the letters HTTP or HTTPS, which is the secure version of HTTP.

Accessing Web Pages

- Typing the URL of the page into a web browser.
- Clicking a hyperlink in an existing web page.
- Hyperlinks in web pages link to the URL of a web page or other resource.
- URLs include the protocol (HTTP):

<http://www.some-website.com/some-webpage.html>

Read bullets.

A good way to remember forward slash and back slash is the hands of a clock. Back slash is 11 and forward slash is 1.

Key Takaways

- A network is two or more connected devices sharing information.
- The Internet is a global network of networks.
- The WWW is information stored on the Internet.
- This information is displayed using HTML.
- This information is connected using hyperlinks.

Key Takeaways

- A network is two or more connected devices sharing information.
- The Internet is a global network of networks.
- The WWW is information stored on the Internet.
- This information is displayed using HTML.
- This information is connected using hyperlinks.

Investigative Links

- PEW Research Center - WWW Timeline:
<http://www.pewinternet.org/2014/03/11/world-wide-web-timeline/>
- Internet Live Stats:
<http://www.internetlivestats.com/>
- The first browser. Line mode browser.
<http://line-mode.cern.ch/>
- The First Website:
<http://info.cern.ch/hypertext/WWW/TheProject.html>

Investigate these links.

Did the WWW exist before you were born? Before your parents were born? Talk with your parents or grandparents. How was life different before the WWW. Has the WWW and the Internet made life in American easier or more difficult? In what areas?

Reading Links

➤ How the Web works.

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/How_the_Web_works

➤ Short history of the WWW by Tim Berners-Lee

<https://webfoundation.org/about/vision/history-of-the-web/>

Read both web pages.

Assignment

➤ Read *How the Web Works*:

Write a one paragraph summary in your own words.

➤ Read *Short history of the WWW*

Write a one paragraph summary in your own words.

After reading both reading links, write one paragraph for each page, summarizing the information on it.
