The Web Browser

Lesson Time: 10 Minutes

**GET WEB PAGES.
DISPLAY THE CONTENT.**

The web browser on your computer is responsible for doing four critical things.

1. The browser downloads the HTML web pages from the internet.

2.The browser converts all of the HTML code from html code into the graphics, colors, pictures, and images you see. This is called **rendering**. Each web browser software can render slightly different. For example, you may know that the same web page looks slightly different on home browser and Firefox browser. This is due to the small differences in the way each browser renders the html.

3. The browser executes all javascript code included with the web page.

4. The browser sends data you type into websites back to the web server.

Key Terms	rendering
Lesson Files	
Additional Resources	
Further Learning	

The Web Server

Lesson Time: 10 Minutes

SHARE THE WEB PAGES.
PROCESS THE DATA.

A Web Server is a computer that stores all of the website's HTML, CSS, Javascript, and any other code required to make the website work. A website is **hosted, or shared,** on a web server. **Hosting** a web site means that all of the files, code, graphics, pages, and content required to make the site work are available to the server. The server allows users to download the pages of the site through their web browsers.

While most web servers are on the internet, a web server is not required to be on the internet to function. Many companies have private networks with web servers only available inside of the company.

Many companies offer web hosting for a monthly price. They will allow you to upload your websites to their web servers, where they host the servers and make your sites available to the internet. GoDaddy, Bluehost, & Hostgator are all examples of companies that offer web hosting services.

Key Terms	Web Hosting
Lesson Files	
Additional Resources	
Further Learning	https://www.techradar.com/best/best-website-hosting-service

HTTP Protocol

Lesson Time: 10 Minutes

HTTP CONNECTS WEB BROWSERS TO WEB SERVERS.

Web servers and web browsers communicate by using the HTTP network protocol. We always give a web address in the form of http://google.com . This tells the computer to go contact the google web servers using http protocol.

As a new web developer, you do not have to worry too much about how HTTP works "under the hood", but there are a few things *you must know*.

When we download a web page from the internet, HTTP sends a **GET** request. Every time you open a new page, your browser sends an HTTP GET request to the web server saying "Hey, I want to download your page."

Whenever we send information to a web site, such as filling out a form or entering a username and password, the browser sends an HTTP **POST** request. The POST request says to the server "I have some information I want to give you."

When something goes wrong and the web server cannot offer us the page we request, it will send an error code back instead. The most famous error code is the 404 error code, when means the page requested can not be found on the web server. Common error codes include:

- 301/302 Errors - The website has been moved to a new server.
- 401 - Unauthorized to view web page--the website needs you to login first.
- 403 - Forbidden -- The user has logged in but isn't allowed to view the page. For example, a website might make parts of the site viewable only to paying members
- 404 - Page Not Found -- the website or page you want can't be returned.
- 500 - Internal Error - This means the website was found, but is experiencing a problem and isn't working as expected.

HTTPS is the secure version of HTTP that uses encryption to protect the communication between the web server and the web browser. We should always use HTTPS when shopping, entering payment details, sending usernames and passwords, or sending any other sensitive information to a web site.

Key Terms	HTTP, HTTPS, GET, POST
Lesson Files	
Additional Resources	https://developer.mozilla.org/en-US/docs/Web/HTTP/Status
Further Learning	

IP Addresses

Lesson Time: 10 Minutes

EVERY COMPUTER HAS AN ADDRESS & PHONE NUMBER.

All web servers have an IP Address, which is used to find the server on the internet or on a private network. An IP address looks like this:

208.31.199.50

An IP address is assigned by the server administrator. When you purchase web hosting, the IP is provided and setup for you in most cases. In most businesses, the IP address will be set by the person who installs the server operating system.

The important thing to understand is that without an IP address, your website won't be useable. You can also access a website by typing it's IP address. Try typing http://172.217.19.238 into your web browser and see what happens.

You can use lookup websites to find the IP addresses of websites on the internet. UltraTools is a site where you can search for the IP records of any website that is registered. Give it a try with the link below.

https://www.ultratools.com/tools/ipWhoisLookupResult

Key Terms	
Lesson Files	
Additional Resources	https://www.ultratools.com/tools/ipWhoisLookupResult
Further Learning	https://computer.howstuffworks.com/internet/basics/what-is-an

	-ip-address.htm

DNS and Domain Names

Lesson Time: 10 Minutes

EVERY COMPUTER HAS A NAME.

It would be too difficult if we had to browse the web by using only IP addresses. Domain Name Service allows websites to have friendly names like microsoft.com, google.com, or amazon.com.

When you type amazon.com into your web browser, behind the scenes all this happens in a fraction of a second:

1. The browser sends a DNS request to lookup amazon.com to it's IP
2. A DNS server returns the web server IP
3. The browser sends a HTTP GET request to the web server
4. The web server sends back the web page.

If anything goes wrong, you'll get a 404 page not found error.

In order to get a DNS name for your website, you must register your website with a hosting company like GoDaddy or Bluehost. They typically make the process quick and easy.

The WHOIS database is a master list of every website in the world. You can use WHOIS to lookup the DNS registrations for any website and even contact information for the owners.

Key Terms	DNS
Lesson Files	

Additional Resources	https://whois.net
Further Learning	https://www.cloudflare.com/learning/dns/what-is-dns/

Web Hosting

Lesson Time: 10 Minutes

EVERY INTERNET WEBSITE IS REGISTERED AND HAS AN OWNER.

When you want to setup a website on the internet, the process typically looks like this.

1. Pick out a great website name. Use WHOIS to make sure the name is available.
2. Pick a registrar your name with a hosting service, such as Godaddy and register your domain.
3. When you register, you also have the option of purchasing an IP address and a web server as well.

It's also perfectly ok to mix and match. For example, you can purchase your domain name from Cloudflare, but purchase your web server hosting and IP from Digital Ocean. However, mixing providers can be slightly more difficult to get started without a bit more knowledge of DNS.

Key Terms	
Lesson Files	
Additional Resources	
Further Learning	