**Internet Browser:**

* Allows access and navigation to the world wide web
* Roughly 200 web browsers out there
* I use chrome because of the extensions and the bookmark bar is accessible.

**HTTP:**

* Hypertext Transfer Protocol
* Purpose: to enable the transfer of data between a client and a server
* We see this every time we try to go to a website
  + Each site has an IP address
  + Client sends a request
  + Server sends a response

**HTTPS:**

* Hypertext Transfer Protocol Secure
* Protects data by using cryptographic keys to encrypt data
* SSL/TLS encryption (Secure Sockets Layer/Transport Layer Security)
* Prevents hackers from reading your computer data

**TCP/IP:**

* Transmission Control Protocol/Internet Protocol
* Purpose is to allow computers to communicate over networks
  + Delivers data packets between device and destination
* Layers:
* Application Layer: Translates the data into usable content
  + Transport Layer: aligns the packets in proper order, and it sends them
  + Network Layer: Assigns IP addresses, and it searches for destination address
  + Network Access Layer: generates data and initiates connection requests; processes and manages incoming data

**IP Address:**

* Like a house address, but for computers (Internet Protocol)
* Unique string of numbers that identifies one device from another
* Ex: 192.158.1.38
* IPv6 Addresses provide much larger address space
  + Improved security

**URL:**

* Uniform Resource Locator
  + Scheme: http/https, indicates set of rules of transmission and exchange
  + Subdomain: specifies type of resource to be delivered to the client (www, blog, audio)
  + Domain Name: specifies the organization or entity that the URL belongs to
  + Top-level Domain: (TLD) indicates type of organization (.com = commercial, .org = organization, .co.uk = commercial in the UK)
  + Port Number: specifies the type of service requested by the client (port 80 = HTTP, port 443 = HTTPS [default ports])
  + Path: specifies the exact location of the web page, file, or resource
  + Query String Separator: (?) tells that a specific query is happening
  + Query String: specifies parameters of the data that is queried from a website’s database; (parameter=value&parameter=value)
  + Fragment: optional part, appears at end and begins with hash (#); indicates a specific location within a page (‘id’ or ‘name’ attribute for HTML element)
* Put into web browsers
* Browser Cache, Protocol Used, Server Limitations, Encoding Characters all affect the length of a URL
* All resources on the internet require a URL link, web servers also tie the URL link to their unique IP address

**DNS (Domain Name System):**

* Database with all the existent domain names and IP addresses that correspond to them
* Translates the name of the domain into IP addresses for computers and sends the IP to the browser
* The DNS provides the name of the domain in the URL. Without it, the domain part of the URL would be an IP address.
* Stores information in a distributed database
  + Databases spread out across several sites, connected by a network

**Web Server:**

* Software or hardware that stores, processes, and serves web content to users
* Operates on HTTP
* Stored on a hardware server or over the cloud
* Data center technicians and server administrators interact with web servers
  + No one person controls all of the web servers

**Web Client:**

* Software app that communicates to server and displays that information
* Web clients live locally on a user’s device
  + Ex: Edge, Chrome, Firefox
* Components of a Browser:
  + User Interface: address bar, back and forward buttons, home button, etc.
  + Browser Engine: interprets code and renders content on screen
  + Rendering Engine: turns code into visual pages, determines layout, styling, colors, etc.
  + Networking: handles HTTP/HTTPS communication
  + UI Backend: provides interactive behavior on web page
  + Javascript Interpreter: analyzes and executes Javascript code in web pages
  + Data storage: stores history, cookies, cache, etc.
* Components of Web Client:
  + Frontend: client-side interface users use
  + Backend: server-side logic that processes requests and manages data
  + Database: storage for data, can be accessed by backend

**WWW (World Wide Web):**

* Internet is network system that facilitates worldwide communication and access to data resources
* World Wide Web is the info retrieval service of the worldwide computer network
* WWW is subset of the Internet
* Internet is superset of WWW
* WWW uses HTTP; Internet uses IP address
* When URL has WWW, indicates that it is a part of the global internet, when it doesn’t it’s not
* WWW is not in every website

**HTML (Hyper Text Markup Language):**

* Provides a basic structure for the development of web pages
* It organizes websites, and it allows them to include audio, links, media, and images

**CSS (Cascading Style Sheets):**

* A language in web development that enhances HTML
* Applies color, layout, and spacing
* Makes Updates easier and smoother
* Improves Website Presentation
* Helps Web Pages Load faster

**Client-side Scripting Languages:**

* Allows for interactivity
* Performs several actions without user input
* Runs on user’s computer
* Provides requested output to user
* HTML, CSS, javascript

**Server-side Scripting Languages:**

* Runs on webserver
* Provides access to specific database
* PHP, Python, Java, Ruby