

# WELCOME TO THE HISTORY OF THE INTERNET

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We are bringing you the history of a tool that forever changed the world

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# About

## Welcome to The History of the Internet!

Here you can learn about the content of this website.

We have created this website for you to easily navigate through the rapidly changing history of the internet. We have covered everything, from the very first browsers and websites to the sites that you use now on your day to day basis. You will learn about the origin of social media, such as Facebook and Youtube and their journey towards becoming sites that the majority of us use today. You will also find information about challenges that many of the most famous websites have encountered, such as Amazon, and a lot more.

We have divided the history for you into multiple sections, each one containing a significant event in history. We hope that you enjoy this webpage and find it useful to learn about a part that is so important in today's world.

If you want to go back to our Home Page, click our logo or click [here](#)

### Meet the creators.

If you want to learn more about the creators of this website we have good news! We created a page so you can get to meet us, learn more about us, and find our contact information. All you have to do is click the orange button down below.

[Our Team](#)

# Our Team

Welcome to our Team page! Here you will find some information about the creators of this website.

We are working together in creating new projects for you.



**Ido Tanne**

My name is Ido, I'm a Information Technology major with a specialization in Web Applications. I decided to enroll in this major because I want to be able to make awesome websites and hopefully one day get a position as a software engineer. A fun fact about myself is that I have 3 dogs and I am from Israel. I hope you enjoy our site!

[LinkedIn](#)

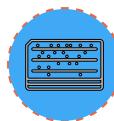


**Cindy Gonzalez**

Hello! My name is Cindy Gonzalez. I am a human-computer interaction major at NJIT. I am a very artistic person and so I decided to apply my passion to the technology field. I am currently on my first semester of college and although I am in the very first stages of learning about technology and design, I am enjoying this experience. Some facts about me: I enjoy reading, painting, and my favorite food is Sushi.

[LinkedIn](#)

# Invention of the Internet



1960's

- Time Sharing

Terminals would be connected to a very large server and users would all access the data at the same time.



1962

The research for the infrastructure of the internet developed



1966

- Bob Taylor had to use multiple computers to do his research, but he knew if all the computers were connected then he would be able to only have to use one
- Lawrence Roberts recruited to build this network, since he made a local network at MIT
- Built mini computer, so they would "speak" for the large computer
  - Like a secretary



1968

- Larry Roberts sought out engineers to build the ARPA Net
- Communication giants, like AT&T, did not want to support their idea
- Network four different Interface Message Processor (IMP)
  - ○ Sigma-7 (UCLA)
  - SDS-940 (SRI)
  - IBM-360/75 (UCSB)
  - PDP-10 (Utah)
- BBN Team

- Had to figure out if they could do it



1969

Construction of the internet begins

- Bob Taylor given \$1M to build his idea
- January 1969 BBN Team and Roberts Team started Construction
- UCLA was to implement the first network node in October 1969
  - Had to rush the software development
  - Had to define a common programming language
- BBN Troubles
  - How do you stop the packets from infinitely looping
  - How do they know when to stop
  - What stops an overflow
  - There were problems UNTIL they deployed the first node at UCLA
  - September 1st, 1969
  - Hardware sent to UCLA
- All 4 sites were connected by the end of '69



1971

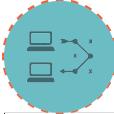
- 18 different nodes in the west coast and east coast
  - Rob Metcalfe connects the node at MIT
- The ARPANET was only developed to transfer data files
  - Raymond Tomlinson develops this "Killer App" which we know all know today as emailing



1972

- ARPANET turns sci-fi into a reality
  - Demonstration of the network in Washington D.C.
- Internet built with open-architecture
  - Started to absorb the ability of
    - TV
    - Radio
    - News
    - Telephone
  - Anyone could comment and help improve the internet
- Conference to show off the network
  - Contacted the hosts on ARPANET to show off their content
    - Games
    - Simulations
    - Remote Job Entry
    - AT&T Execs came to view the ARPANET demo

- Froze during demonstration
- LAN Network
  - Local Network for computers
- WAN Network
  - Global Netowrk for LAN networks to communicate with others on a different network
- TCP/IP Protocol
  - A way to describe packets and make it less confusing
  - Gateway
    - Knew how to talk to connected networks



## 1983

- TCP/IP becomes universal standard for internet
  - Common network of interconnected networks
- If everyone did not use TCP/IP then it would be much harder to communicate with other systems
- ARPA was initially a research defense project that only a few colleges could use.
  - It was released to the public for everyone to use, but struggled to gain traction
- Congress made it official for the internet to become a public resources for everyone to use.
  - President Bush made it an offical law
- Tim Berners-lee
  - Made it easier to "surf the web"
  - Developed the concept of World Wide Web, WWW
  - Helped link sites to one another



## 1992

Only 50 web pages on ARPA Net



## 1993

- Mosaic was replaced into Netscape
  - It was made by Robert Kahn
  - It turned the World Wide Web into a graphically rich world
  - The Web Grew by 341,000%
- It completely redefined the world of computing

# Browser Wars

Back in 1993, a group of computer students from the University of Illinois were fascinated by the invention of the web, which had just happened a couple of years earlier. During this decade, webpages were completely different from what we know today. These platforms were not interactive and consisted mainly of paragraphs or just information. But the development of the web had intrigued various computer science students at the university, one of them being Marc Andreessen. Andreessen soon started creating programs with the goal in mind that everyone could use websites.

Jim Clark, a powerful and wealthy businessman recruited Andreessen once this young creator graduated from college. The duo had a plan of developing a computer company; Mosaic. Clark and Andreessen wanted their innovative company to spread as much as other giant tech companies, Microsoft being one of them. However, Bill Gates, co founder and CEO of Microsoft, had trouble seeing the opportunity of developing web interactions like the ones Mosaic had in mind. He created his own Microsoft network, and planned to hold full power over the use of the web. Gates had just started to grow a monopoly; almost all of the PCs were running on Microsoft networks, and he had no intent to make less money.

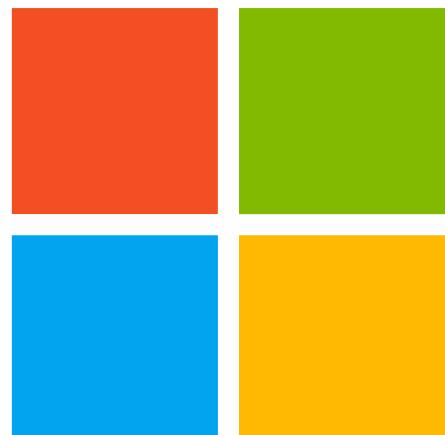


Mosaic eventually became 'Netscape'. But the goals of the company were still the same. However, as Netscape became more popular they soon realized that Microsoft was a harsh competitor. Gates too realized the importance of the web since he saw the popularity that Netscape was accumulating. Both companies regarded each other as competitors and implicitly started a war between each other.

Netscape was growing exponentially, and Microsoft was starting to get concerned. Gates decided to make an offer so that the two companies could work together, but he also decided to offer to buy Netscape. Netscape saw this offer as an opportunity to put a demand for the illegal offer since this was a behavior against monopoly policies in the United States. But, on another suspicious end was Netscape, which had previously hired lawyers prepared to fight any illegal actions by Microsoft.

Netscape continued to grow rapidly and soon became the giant. Meanwhile, Microsoft created internet explorer as a means to destroy Netscape. They put out several updates of internet explorer and also made sure to copy and better any move that Netscape made. Engineers from both companies worked around the clock with one only motivator in mind: destroy each other.

However, Microsoft made a smart move that would without doubt win the support of millions of people; internet explorer became free to use. There was nothing Netscape could do to beat Microsoft at that point. Microsoft and its engineers celebrated as they crashed a van against Netscape's headquarters and with that, officially declared themselves winners of the Browser Wars. Although it was a victory against Netscape, Microsoft soon faced another giant: the United States government, which had also started a war against Microsoft's monopoly. And even though the government found proof of Gates stating that he wanted to destroy or buy Netscape, Microsoft came out victorious once again as the judge decided that punishing the company was not fitting to the crime.



# Internet Search

When you open your browser and look for a website or start to do some research for a topic the first thing people usually do is head over to google, or more specifically <https://www.google.com>, but before 1994 you would have to remember the link to a site or you would have to go on a scavenger hunt and surf the web to find the site you were looking for though link redirects. That all changed once Stanford students, Jerry Yang and David Filo, developed the search engine some of us know today as Yahoo.

Yahoo, funny enough, was developed while Yang and Filo's professor went on a year-long sabbatical. While Yang and Filo were successfully developing their software they ran into an issue that many startups face, lack of funds. In Silicon Valley, start-ups are surrounded by an ocean of venture capitalists and Michael Moritz, a venture capitalist at Sequoia Capital, went to visit Yang and Filo's Trailer at Stanford when he heard about their software. While the company grew in size, they still struggled with the need for developing funds, so Moritz offered the idea of having ads on their search engine. But Yang and Filo were afraid that if they posted ads on Yahoo people would stop using their website. Luckily posting ads did the exact opposite for the company and even started a boom in interest from venture capitalists for startups related to the internet.



With the increase in interest comes an increase in rivals, and Yahoo's success did just so. In 1996 a new search engine popped up into the market by the name of Excite and in a matter of months Excite caught up to Yahoo in their number of features. Which led to a game of digital tennis between the two companies, when one company released a feature on their site the opposite company would develop the same feature too and this kept going on for a while.



With the two companies stuck in their endless game of tennis, another company was able to grow under their nose. We now all know this company as Alphabet Inc. or more well known, Google, unlike Yahoo and Excite Google offered a different way of searching for sites. They organized their pages based on the amount of views a site got and so this led to better search results since people would find what they needed more easily. But Google also faced the same difficulties as Yahoo and was struggling with their financials, so it was offered for Excite to take hold of the company for \$1 million dollars. However, Excite decided to turn down the offer. Google is now worth over \$100 billion dollars.

With the denial of Excite absorbing Google, the creators of the website had to find someone to help them get their feet off the ground, so they went to Andy Bechtolsheim. Google showed Bechtolsheim their product, and he really liked what he saw, so he wrote them a check for \$100k on the spot to help them get off the ground. For the average person \$100k is a lot of money, but in the valley \$100k is chump change, so Brin and Page had to find another source of financial income to help keep their company afloat. This is when venture capitalists John Doerr, the wealthiest venture capitalist in the valley, came into the spotlight of Google's fame. A meeting was set up between Brin, Page, and Doerr. Instead of Brin and Page asking Doerr for money they told him, "We will bring you \$10 billion dollars in revenue." Doerr thought it was funny because of how naive the two were. He had a good feeling about them and ended up writing them a check for \$12 Million dollars. It was a good thing he did because he got his promised cut of the \$10 billion dollars.

While Google was still developing their product they still had to figure out how to make a revenue by not relying solely on one individual, so they had to discuss the inevitable as their predecessors had to discuss banner ads. Google was against the idea of banner ads and wanted the concept to have nothing to do with

their product, so they had to come up with an innovative way of advertising. They ended up developing a system where a company would pay Google to have their website come up to the top of someone's search result. It was later found out that Brin and Page stole this idea from a company run by Bill Gross. Google ended up having to go to court over the matter, but was resolved with Google having to pay Gross for the idea.

On August 19th, 2004 Google decided to make their stock public and their starting price was \$85, which was unheard of, but ever since then their shares have never gone down from their starting price. The company is still growing till today and has made many apps that a lot of us use today, like Google Docs, Sheets, Maps, Calendar, and they absorbed companies like YouTube, Picasso (which got turned into Google Photos), and Blogger (which got turned into Google Sites).

# Dot Com Bubble



We have encountered multiple amazing companies throughout the years. But on the internet, we have seen modern and innovative websites. One of these is Amazon by Jeff Bezos. Which started in a garage in 1995. Another one of the most successful websites was created by Pierre Omidyar in 1995 which we know now as Ebay. Both Amazon and Ebay were launched around the same time and were successful in a couple of months.

It took only 4 years for 50 million people to use the internet, and as the number of users has increased, the network has become more and more useful and more popular. For sites like Amazon, as the web became more popular, numbers started to demonstrate that the site was, without a doubt, a good investment. Wall Street soon noticed the exponential growth of Amazon as investors noticed the potential of this 'library'. Amazon's users were enchanted by the website since Bezzos lowered the prices whenever he had the opportunity in order to boost the popularity of the website.

But how do we make business on the internet without the risk of confidential information being stolen? Three mathematicians, Martin Hellman, Whitfield Diffie and Ralph Merkle, developed Public key cryptography. This allows the sender to send confidential information and only allow the business to have the key for this information. Once this was set, investors were even more interested in Amazon and Ebay. Ebay opened stocks and they soared on the first day, making it become a multi billion company in very little time. Amazon's value also doubled within a few weeks even though the company was not doing so well financially.

Investors and Americans were putting their money on multiple websites with stock shares, not only Amazon and Ebay. Buying stocks became popular all over the world. TV ad campaigns were also a popular investment. Investment on e commerce was thriving.

However, there was a collapse in the stock market, historically known as blackfriday, after much of the investments in e-commerce came to a low because of an unexpected performance of selling websites during the holidays. Fortunately, Amazon and ebay succeeded through the crash of the stock market because they understood the power of the customer. Both were businesses whose goal was to satisfy the customers instead of just wanting to make a profit.

# People

Although we now know music apps like Spotify and Apple Music, a couple of decades ago you would have had to go looking for a physical recording of your favorite song. Fortunately, mp3 files were introduced. Mp3 files created a music revolution that used computers as a medium. These young men created downloadable media players which would allow people to play music whenever they wanted. The music industry, however, did not want to turn into this new technology for music. They did not want music to be distributed so freely around the world.



Napster was built so people around the world would use this browser to download mp3 files that other people on the web had on their possession. Napster created an opportunity for the music downloaders to be engaged and share content that they owned. And without a doubt, within weeks of its creation Napster soared.

However, there was an issue with downloading free music: copyright. The Recording Industry Association of America was not happy that music was being distributed around without the music industry being able to make the expected profits. To handle this issue, the Recording Industry Association of America started with a lawsuit against Napster and other websites like Youtube that would have big implications for the illegal distribution of copyright music. The association had the support of many soaring artists at the time, like Dr.Dre, who was very angry to have his fans listen to his music for free. Metallica, another popular band at the time, were on top of the association to make sure no one had access to their music unless they paid for it.



Napster was the first website that allowed its users to engage and share content with one another instead of just being spectators. Likewise, Myspace arose in 2003 which was firstly used to share mp3 files, but after about 2 years transformed into a social network and almost everyone had a myspace account. Then came Mark Zuckerberg with the development of Facebook. Facebook was a social network that started at Harvard University, it continued to spread throughout different colleges and then companies around the United States, and now people from all around the world have Facebook accounts.

# How The Internet Works

A site made by Ido Tanne

## Domain names and ICANN

Domain names were invented so a user would not have to remember the long numerical IP of a server. Since it's easier for people to remember words, Domain names are usually the company name or something related to the creator of the specific domain name.

The Internet Corporation for Assigned Names and Numbers (ICANN) is a not-for-profit organization that keeps the internet secure and makes sure that there isn't a conflict with domain names.

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## IP Addresses, Packets and Routing

An IP address is like a phone number, but for computers. A user would use an IP Address to access or "call" the computer they are looking for.

Packets are little digital envelopes that are used for a user and a server to communicate with one another. They split a command up into little bits so they move faster over the internet.

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## DNS

"An important part of the web's infrastructure, serving as the Internet's phone book: every time you visit a website"  
~ Google

[Learn More!](#)

## HTTP and HTTPS protocols

HTTP is, in a way, a binary to english translator so a user doesn't have to look at binary when they enter a website.

HTTPS is that same translation system, but makes it secure so people on the internet can't see your conversation between you and the server

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```

83     ); //image_src -> $image_src
84     $image_src = $captcha_config['code'];
85 }
86
87
88 if( !function_exists('hex2rgb') ) {
89     function hex2rgb($hex_str, $return_string = false, $separator = ',') {
90         $hex_str = preg_replace('/[^0-9A-Fa-f]/', '', $hex_str); // Gets a proper hex string
91         $hex_array = array();
92         if( strlen($hex_str) == 6 ) {
93             $color_val = hexdec($hex_str);
94             $hex_array[0] = $color_val >> 0x10;
95             $hex_array[1] = $color_val & 0xFF & ($color_val >> 0x08);
96             $hex_array[2] = $color_val & 0xFF;
97         } elseif( strlen($hex_str) == 3 ) {
98             $hex_array[0] = hexdec(str_repeat(substr($hex_str, 0, 1), 2));
99             $hex_array[1] = hexdec(str_repeat(substr($hex_str, 1, 1), 2));
100            $hex_array[2] = hexdec(str_repeat(substr($hex_str, 2, 1), 2));
101        } else{
102            return false;
103        }
104    }
105    return $return_string ? implode($separator, $hex_array) : $hex_array;
106 }
107 // draw the image
108 if( isset($_GET['c']) )

```

## W3C and HTML and CSS

W3C is an organization that helps web developers have a "standard" on how they should develop their website.

HTML and CSS is the base of a website. HTML is the "blocks" used to develop the website while CSS is the "make up" for the site. A great example is this website! We see all the blocks, but without CSS they wouldn't be oriented the way you see them now.

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Ido Tanne @ IS 117 2020



# About Page

In the early 1970's the Internet was invited by Bob Kahn & Vint Cerf and was a result of an experiment called the ARPANET(Advanced Research Projects Agency NETwork) which was funded and managed by the Department of Defense. Paul Baran needed to figure out a reliable way for the network to stand, so they wouldn't need to micromanage it. They developed a distributed form of networks where packets would be sent in little blocks all through this network at very high speeds. So, who controls the internet now? In reality there is no one company that has control over the internet. A user would gain access to the internet through their ISP (Internet Service Provider) and from there the user would be able to communicate and surf the web however they like. The way the internet was improved was through the methods used in science research where researchers share their information and the same thing happens over the internet. The internet is literally almost everywhere, so why not just learn to use it.



Ido Tanne

I am a Information Technology Major with a specialization in Web Applications. This is my seconds big project for IS 117 and I enjoyed every page I made of it.



Ido Tanne @ IS 117 2020

# Domain names and ICANN

ICANN maintains and administers unique identifiers across the world so users can communicate with one another or with a server.

If ICANN did not work to maintain the DNS then we would not be able to globally scale our internet to the size that it is today.

ICANN also holds community-driven policy making meetings, so the internet can have a say from each sector of the web

ICANN promotes Competition and choice to keep the DNS Ecosystem thriving.



## What does ICANN do?

They maintain the following systems:

- The Domain Name System
- Internet Protocol Address Allocation
- The protocol parameter registry
- Root Server Systems
- Generic Top Level Domain Name System Management
- Country Code Top Level Domain Name DNS
- Time Zone Database Management

ICANN works with the community to maintain security of users and stability of the internet.

ICANN allows new companies to flourish while maintaining interoperability.

ICANN makes sure that all users on the internet follow the policies developed by the community for the community

## Who else is involved with ICANN?

### The supporting organizations

They work to manage addressing, country code name, and generic names

### The Advisory committees

They work at large, on a governmental level, and they work at the root server system and maintain security and stability

### The Technical Advisory Bodies

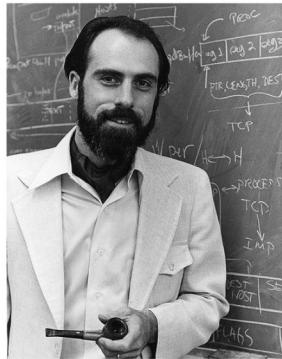
These comprise of the Technical Liaison group and the Internet Engineering Task Force



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# IP Addresses, Packets and Routing

In the 1970s there was no standard form of communication over the internet, it was only till Vint Cerf and Bob Kahn developed the Internetworking protocol, and we know this today as the Internet. The Internet is just a design philosophy which is expressed in a set of protocols. A protocol is a well-known set of rules and standards used to communicate between machines.

Vint Cerf	Bob Kahn
 A black and white photograph of Vint Cerf, a man with a beard and glasses, wearing a light-colored blazer over a collared shirt. He is standing in front of a chalkboard filled with handwritten notes and diagrams related to network protocols like IP, TCP, and UDP.	 A black and white portrait of Bob Kahn, an older man with glasses and a suit, looking directly at the camera.

Vint Cerf is the Co-Founder and Co-Developer of the ARPANET

Bob Kahn is the Founder and Main Developer of the ARPANET

The design philosophy has helped the internet grow even more by adapting and absorbing new communication technologies. Each device connect to the internet has a unique address, known as IP addresses, this is equivalent to a phone number or home address. So, no two devices will have the same IP at the same time. When we go into a website we are really just asking a computer to send us files for us to read. When we do ask for the files though we need to make sure to say where we are located so it knows where to send the files. Just like a mailing address, IP address are the same. The first two set of numbers are the network the ISP or network the device is located, then the subnetwork (which can be seen as the town), and finally the last set of numbers is the device itself.

This set of numbers is called IPv4 and there are 4 billion unique addresses, but as the population of the internet increases the number of addresses usable decreases so a new IP system is needed. We are slowly transitioning to IPv6, which works off a hex based system instead of a triple digit system. So, how many address do we get with IPv6? 340 Undecillion unique addresses, that's 36 zeros AFTER 340.

How is data delivered to us reliably? We would think that the way it works is just connecting to the server and collecting the data we need, but this is wrong. It is impossible for 1 computer to handle all the information required at the same time. Data actually travels on the internet in a much less direct fashion. The data is sent through packets through a dynamic form of pathing. A majority of the data on the internet can be sent through packets, but there are limits. Routers help direct the packets to their destination. Routers will also find the cheapest way to get the packet to its needed location. Cheap isn't meant by cost, but by time, politics, and relationships. Having options for paths makes the internet fault tolerant, which makes it reliable. TCP makes sure that the packets are sent and received correctly. TCP and routers are scalable, so they can work with 8 devices or 8 billion devices. The more router means the more reliable.

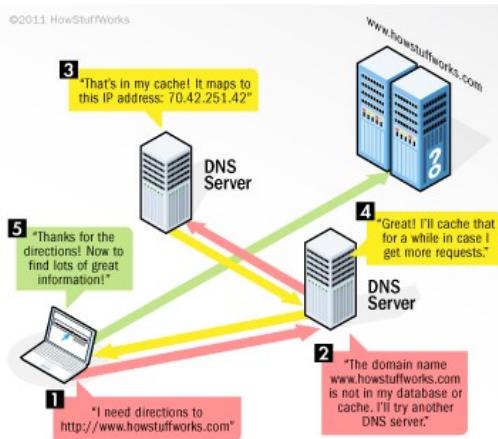


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# DNS Page

DNS, Domain Name System is a much simpler way for people to remember websites or servers through the use of words instead of numbers. You can actually look it up at this link (<https://mxtoolbox.com/DnsLookup.aspx>) if we search google.com we get this IP address 172.217.164.142, so even huge companies like google uses IPs. DNS domains are set up in a hierarchy system, so different servers handle the .com/.org/.net and distributes the workload among a different set of servers. DNS is an open system, so anyone can use it but because it has an open design it is susceptible to cyber-attacks. This form of cyber-attack is called DNS Spoofing, it happens when a hacker enters a DNS server and takes over a domain so people will think the hacker's "fake" website is the real one.

## How a DNS request works



Sourced from @HOWSTUFFWORKS.COM

From a user's client, chrome is an example, when they input a domain name. The client first communicates with a DNS server and asks, "hey do you know how to get to www.examplesite.com?" The DNS may say, "Oh yea! The IP for that domain is 12.674.442.24" or it may say "Uhh... I'm not sure" then it will ask another DNS server the same thing and until a DNS server responds with "Oh yea I know the IP for that!" Then from there the DNS server will give you the IP and your computer will access the server through the IP provided.



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# HTTP and HTTPS protocols

How do all of the computers all across the world communicate with each other?

Web Browsers, URL (uniform resource locator) let's you access websites.

## What happens when you type a URL?

Your computer starts talking to another computer, called a server, and in milliseconds the two computers are communicating with one another over HTTP (Hypertext Transfer Protocol) it's the language used to communicate between web browsers and servers. A lot of the communication is the users computer running GET commands which is essentially the computer asking for files and the server deciding if the user can get it or not.

## HTTPS Protocols

When communicating on normal HTTP we leave an open channel for hackers to steal our data and use it as they please, but some websites have a safety measure to ensure that a computer and server communicate on a secure channel, this is known as Transport Layer Security or HTTPS (Hyper Text Transfer Protocol Secure). Websites that use HTTPS are required to have digital certificates so when a user access the site they are informed that the site is the legit site and not some hacker trying to steal your data. When a user tries to access a site that has a fake certificate or there's something off with the certificate, you'll be informed that the certificate is invalid and/or not trusted.



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# W3C and HTML and CSS Page

## What is W3C?

W3C is an organization who's primary objective is to develop protocols and guidelines that ensure the long-term growth of the Web, so they develop an orthodox method of creating files for the web so it's easy to navigate.

## HTML

HTML (Hyper Text Markup Language) the language that is used to tell the web browser how a page should look. Text of a webpage is built into the HTML file, but images and videos are in separate files with their own URL. When a web page has a lot of images it'll take more time for it to load, since it has to make more requests. The internet isn't just get requests, you're also sending information (whether it is through a form or a search query). When logging into a website we give our information to the server and, when we log in successfully, we get the information related to our account back. We also get a cookie, not a literal one, so our browser can communicate with the server without the need for us to log in every time.

## CSS

CSS is the styling of a site. It's the make up that makes up a HTML portion of a site. When adding a framework for example, this site uses bootstrap, the framework itself is in essence a directory of css styles. It also contains some logic through Javascript, but we don't need to worry about this currently. CSS can also be seen as the canvas of your website, so a web developer would "paint" on the site to make it look the way it does.



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