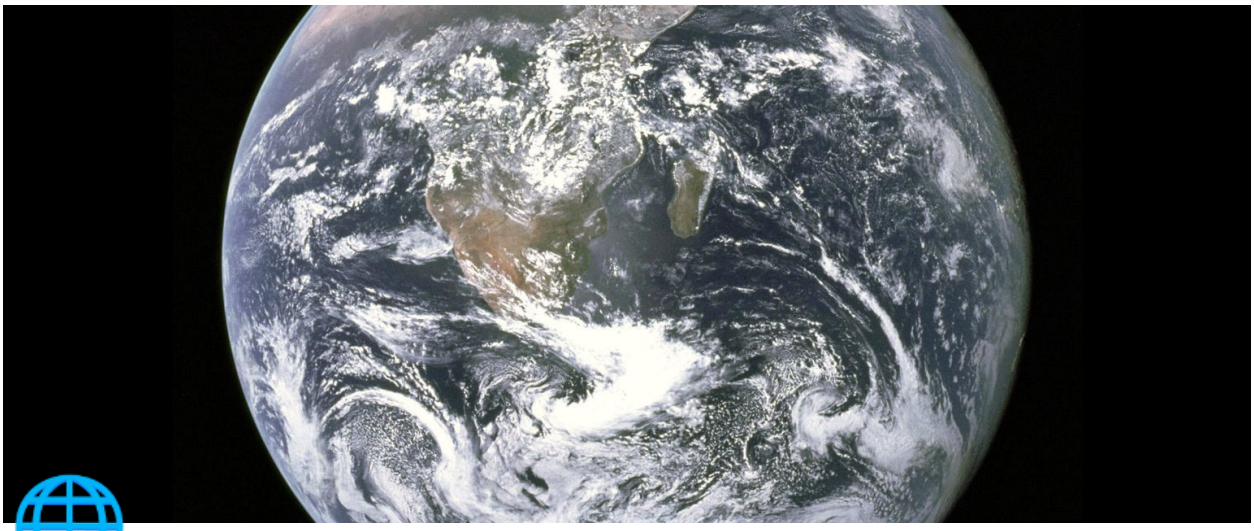

# How the web works?

**Skills**: HTML CSS JavaScript bootstrap framework React Git GitHub Figma

**Roles**:

1. Front End - HTML CSS JavaScript - HTML to build the display elements, CSS to position, color and style, JavaScript for the activity (user clicks the button)
2. Back End - Language (Python, Java, C), Database, APIs and web servers. Requires setup, configuration, resources and general IT structural knowledge- inner workings of internet, networks and servers
3. Full Stack - equally comfortable with both above technologies, planning architecture design development deployment maintenance

**How the internet works?**

Network : Two computers connected to one another communicate via wired or wireless connection

Network Switch : connects multiple devices and allows them to communicate with each other - helps two networks connect

Interconnected network : multiple networks connected with network switches : INTERNET

Clients —→ Internet —→ Servers

Server : A server is a computer that runs applications and services - it provides a service to the client computers. There are hundreds of servers in a Data Center. Servers might have a large memory or high compute or both.

A web server has many functions - website storage and administration, data storage, security and managing email. It’s primary function is to handle web requests. Web server consists of both hardware and software - hardware is the actual server and software is the code that runs on it.

Webpage - displays content

Website is a collection of webpages that link together

Links on one webpage can link to another website on which this webpage is not launched

**HTML**: structures the content. HTML stands for *hypertext markup language*. It uses markup tags to display the content.

**CSS** : *cascading style sheets* - enhances HTML displays

**JavaScript** : language built into the browser, data processing, control and action. Ability to manipulate content.

A copy of the webpage is sent from the web server to your browser, each line of code is interpreted one after another. As each line is interpreted, the browser creates building blocks which are the visual representation of what we see on the screen. This creation process is known as **page rendering.**

## Web Browser

Software application used to browse the World Wide Web. Browser sends request to web server and gets response of the content that needs to be displayed.

Address of the website : URL : *Uniform Resource Locator* - contains protocol (http), domain name, file path or path to the webpage

**HTTP** : *hypertext transfer protocol* - browser and server communicate using this protocol.

**Request - Response Cycle** : Open web browser which is a software application - enter URL which contains the domain name of our desired search engine - click Enter - web browser sends a request to the web server across a network - Web server responds and sends a webpage back to the browser - once browser receives all the information - it renders the webpage and displays it to the end user - Enter the query in the search bar and click on Search - web browser again sends request to the web server - web server looks through the database connected to it and sends response back to web browser.

## Web Hosting

Service where we place our websites and files on the hosting company's web server. We are essentially renting a space.

**Shared Hosting** : server's processing power, memory and bandwidth is shared between users. Small websites - low cost - sandbox

**VPS** : virtual private service : dedicated resources for VPS instances

**Dedicated hosting** : hardware server dedicated to you

**Cloud** :  Website is hosted in a cloud environment, which spans across multiple physical and virtual servers. We can scale, but we pay based on resource use. Fail proof - website stays online even if one server fails.

### Resources

What Is a Web Server? Deliver Content Fast - NGINX

A web server delivers content for a website to a client that requests it, like a web browser. A web server communicates with a web browser using HTTP.

https://www.nginx.com/resources/glossary/web-server/

What is a web browser?

A web browser takes you anywhere on the internet, letting you see text, images and video from anywhere in the world. The web is a vast and powerful tool. Over the course of a few decades, the

https://www.mozilla.org/en-US/firefox/browsers/what-is-a-browser/

https://youtu.be/21eFwbb48sE

https://youtu.be/mxT233EdY5c

Browser engine - Wikipedia

A browser engine ( also known as a layout engine or rendering engine) is a core software component of every major web browser. The primary job of a browser engine is to transform HTML documents and other resources of a web page into an interactive visual representation on a user's device.

W https://en.wikipedia.org/wiki/Browser_engine