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# <u>How the Web Functions</u>

**What Happens When we go to [https://www.techtonicgroup.com/](https://www.techtonicgroup.com/)?**

Firstly, a request is made to a DNS (domain name service) server, which converts the domain name techtonicgroup.com into an IP (internet protocol) address. Using this, the web browser is able to request the homepage of techtonicgroup.com. The server responds with the HTML (Hypertext Markup Language) which the browser can render. Usually the HTML will reference other assets, such as Javascript, CSS, and images/videos, which the browser must fetch with additional requests.

**How is Data Rendered in your Browser from Start to Finish?**

HTML is processed from top to bottom. The web browser parses the HTML and issues requests to retrieve any CSS, JavaScript, and images/videos in it. These assets are loaded asynchronously which provides a performance benefit. Rather than making requests serially, it can issue multiple requests at a time. The HTML from the initial request can be rendered immediately and then as the CSS images and videos are returned the browser can deal with them. On a slower internet connection, this may be the reason some images are not immediately visible.

**What code is Rendered in your Browser?**

HTML and CSS are rendered in the browser in a way that is visible. JavaScript itself is typically not visible but executes in the browser. JavaScript may cause HTML and CSS to change dynamically.

**What is the Server-Side Code's Main Function?**

Its main purpose is to deliver the content requested by the client i.e. the HTML, CSS, JavaScript, json, and other assets like images and videos. Some content may be dynamically generated, for example search results.

**What is the Client-Side Code's Main Function?**

HTML and CSS code is about presenting information. JavaScript handles user interaction and making requests to the server.

**Instances of Client-Side Assets**

When you go to techtonicgroup.com, you can see various images. Looking at the source, you can see that it utilizes CSS and JavaScript. These assets are download once per person/browser. I believe that there is only a single instance of these assets, but if a friend were to go to the website, he too would get a single instance of the same assets on his computer.

**Instances of Server-Side Code**

There is one instance of server side code that services requests from all clients. If you look near the top right at the "Services" hyperlink, the code on the server that delivers this page is the same no matter people request i.e. there is only one instance of it. I have heard that high volume website can have hundreds of servers sharing the work of responding to requests, in that case there would be multiple instances of the same server side code.

**What is Runtime?**

I did not notice the reading covering anything pertaining to "Runtime". According to Wikipedia, runtime is "software designed to support the execution of computer programs written in some computer language.".

**How Many Instances of Databases Connected to Server Application are Created?**

Again I didn't see anything in the reading about databases. But from my research, my understanding is that there is one instance of a database being connected to a server. Potentially there could be multiple instances for larger websites.