**Today’s Tech Spotlight**

Let’s begin today with an interesting take on a particular technology application, that of the underlying infrastructure enabling the use of the Web at large, by examining it in closer detail than we normally would in daily life. In particular, let’s look into the underlying technology that enables us to utilize the internet as we do today.

I would like to introduce this underlying technology that allows us to use the web, also known as an application protocol, and it, in fact, allows us to access the web by being an intermediary of sorts. Indeed, the application protocol is known as “Hypertext Transfer Protocol”, or by the shortened form of HTTP as known to many of us, enables those of us who input links to access webpages through our various internet devices to do so.

HTTP is the standardised protocol that web browsers and web servers use to communicate with each other over the Internet. Clients (web browsers), that are triggered by us, will send requests to web servers, obtaining web elements such as web pages and images and such forth. After the request is serviced by a server, the connection between client and server across the Internet is disconnected. New connections must be made for each request thereafter, even the reloading of the webpage in itself.

When someone types a URL (Uniform Resource Locator) into a web browser, this is what typically happens in a cascading order:

1. If the URL contains a domain name, the browser first connects to the domain name server, retrieves the corresponding IP address for the web server.
2. The web browser connects to the web server and sends an HTTP request (via the protocol stack) for the desired web page.
3. The web server receives the request and checks for the desired page. If the page exists, the web server sends it. If the server cannot find the requested page, it will send an HTTP 404 error message. (404 means 'Page Not Found' as anyone who has surfed the web probably knows.)
4. The web browser receives the page back and the connection is closed between the browser and server.
5. The browser then parses through the page and looks for other page elements it needs to complete the web page. These usually include images, embedded videos, GIFs etc.
6. For each element needed, the browser will make additional connections and HTTP requests to the server for each element.
7. When the browser has finished loading all images, applets, etc. the page will be completely loaded in the browser window for the use of the end consumer.

Given recent developments and emphasis on the IoT(Internet of Things) age, that promises us smarter devices that can communicate with each other with the medium of the internet, such that information exchange need not be accessed via clients through traditional means of inputting commands to fetch data, such as that of human input. Perhaps autonomous food dispensing from a AI incorporated food cabinet to the food bowl for a beloved pet from the connection it established with the nearby desktop at home with regards to time, and calendaring schedules to order pet food and supplies from the nearby pet supply store via automated ordering through the web, in accordance to estimations arising from scheduling and estimates, this is promising revolutions in user efficacy in time to come.

Well, obviously, this application protocol that allows me to surf the internet, and in fact find CS50 to take part in and learn from amongst numerous other benefits arising from the ease of access to the internet, indeed brings about benefits to me. For the better in a sense that we can use technology as a singularity to learn and improve ourselves at faster and more efficient means, to that of whole societies benefitting from the propagation of data enabled devices, this serves as a means of increasing accessibility to a wider information database of all sorts, as and when required.

Those who disagree would be the naysayers who believe that the internet is a force of evil and would want to stay away from that. Well, let’s just say that the tools are available, and whoever uses them as a force of good or evil would give rise to the results being good or evil itself.

References:

1. <https://www.sciencedirect.com/science/article/pii/S2405959516300911>
2. <http://www.theshulers.com/whitepapers/internet_whitepaper/index.html>