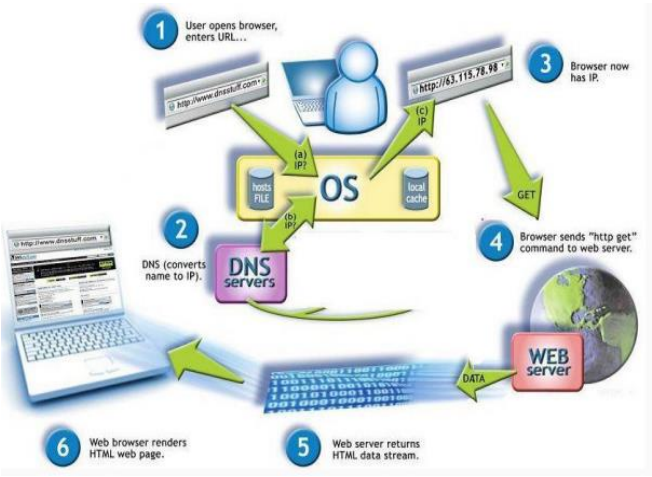
WWW Lifecycle

Sir Tim Berners-Lee invented the World Wide Web in 1989. The World Wide Web is NOT the Internet. It is used every day by millions of people for everything from checking the weather to sharing videos. It's like a big virtual city where we communicate with each other in web languages with browsers acting like our translators and it's organized in a way that mimics our brain's natural way of thinking.

So, what exactly happens from the moment a user enters an URL address on a browser till the web page is displayed?



Here are the steps:

1. **User opens browser, enters URL…**
   The client initiates an **HTTP request** message, which is serviced through a **HTTP response** message in return.
   At the heart of web communications is the request message, which are sent via Uniform Resource Locators (URLs).
2. **DNS (converts name to IP)**
   URLs are generally comprised of letters, meaning that people can easily remember them. Computers, on the other hand, work with combinations of numbers (known as IP addresses) to find a server on the internet. An additional step is required in order to access content from the web browser. This step requires translating a webpage's URL into the corresponding IP address. The task is carried out by DNS servers, which are responsible for managing the Domain Name System. Domain Name Servers are like an address book for websites. When you type a web address in your browser, the browser looks at the DNS to find the website's real address before it can retrieve the website. The browser needs to find out which server the website lives on, so it can send HTTP messages to the right place.
3. **Browser now has IP**
   When the IP address of the chosen webpage is identified, the browser requests the relevant data for the page from the appropriate web server. This request takes place via HTTP in the form of a data packet, which contains all the information the web server needs in order to deliver the webpage data. The browser communicates the IP address of the chosen webpage, and provides information on the operating system, itself, and the device on which the webpage should be displayed. The IP is responsible for addressing, sending and receiving the data packets over the Internet. It's a unique string of numbers separated by full stops/colons that identifies each computer using the Internet Protocol to communicate over a network.
4. **Browser sends "http get" command to web server**
   The browser sends an HTTP request message to the server, asking it to send a copy of the website to the client. This message, and all other data sent between the client and the server, is sent across your internet connection using TCP/IP.
5. **Web server returns HTML data stream**
   If the server approves the client's request, the server sends the client a "200 OK" message, which means "Of course you can look at that website! Here it is", and then starts sending the website's files to the browser as a series of small chunks called data packets. Basically, when data is sent across the web, it is sent as thousands of small chunks, so that many different web users can download the same website at the same time. If websites were sent as single big chunks, only one user could download one at a time, which obviously would make the web very inefficient and not much fun to use.

6. **Web browser renders HTML web page**

   The web browser then takes on the task of analyzing the data packets. Webpages generally comprise of HTML, CSS, and JavaScript files, whose lines of code contain detailed information about how the webpage should be presented. While HTML documents define the structure and controls of a webpage, the design information is specified in Cascading Style Sheets (CSS files). Elements that help user interaction on the webpage are usually implemented with JavaScript. The rendering engine of the web browser determines how the code is interpreted. Webpages can have a different appearance depending on the web browser used. Each browser has a cache in which data is temporarily stored when a webpage is accessed. This means that, when a webpage is re-visited, not all the data needs to be requested from the web server. The web browser simply retrieves the files that have changed since the last visit meaning that the website doesn't take as long to access. The browser assembles the small chunks into a complete web page and displays it to you.

And all that happens in a split second. The browser makes contact with globally distributed web servers, requests stored data packages, and then assembles the webpage from the information contained in the packages.