What happens when you type a URL in your browser and press enter?

The internet runs on the [Internet Protocol Suite](https://en.wikipedia.org/wiki/Internet_protocol_suite), the set of standard networking and data formatting protocols described and maintained by the [Internet Engineering Task Force](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force). Although a number of connection protocols exist, TCP/IP, or Transmission Control Protocol and Internet Protocol, is the primary one used to transfer information about websites between web servers and browsers. The actual data is actually handled by the HTTP protocol, but TCP and HTTP serve different purposes and represent distinct layers of the OSI communication model (application layers for HTTP and transport layer for TCP).

1. In general, when you type a [URL](https://en.wikipedia.org/wiki/URL) into the browser location bar (and press enter) the browser needs to find server you are trying communicate with based on whatever you typed.
2. To communicate with the web server hosting the website you’ve requested it needs to discover its IP address, which will allow a connection to be established across the internet. The website name or domain name is a shorthand for us humans so we don’t have to remember IP addresses (e.g. 123.456.789.101). To get the IP address, specific servers called Domain Name Servers (DNS) with well known IP addresses exist that maintain tables of domain names and the actual IP addresses of the servers hosting their associated content. That way, your browser can first check with a DNS server for the actual IP address of e.g. [www.holbertonschool.com](http://www.holbertonschool.com/) and then make a second request directly to the correct IP address.
3. Getting a valid IP address is only the beginning. A browser is multicomponent piece of software with several important and distinct jobs, one of which is correctly formatting requests based on the HTTP protocol and interpreting the server responses. The rendering of HTML and GUI operations are distinct jobs for the browser that load the content once it has been received. With the correct IP address in hand, the browser will make a GET request to the web server using HTTP and wait for a response, ultimately setting up a bidirectional connection between the computer running the browser and the one running the webserver. If secure communication is desired, then that will be negotiated between the server and the client before any significant data is sent.
4. On the server side, unless it is serving purely static HTML content, it will probably need to query some kind of application server or run some scripts based on the requests of the user or some external information (e.g. time of day). This will be used to generate custom HTML content before being returned to the client.
5. After all the data needed to render the web page has been transferred, the connection *may be* closed and the browser rendering engine parses the HTML and stylesheet content and runs any Javascript code. Continuing connection is possible and ongoing communication between the server and the browser may continue, especially in the case of a web application, which updates its view through continued communication with an application server.