Nicholas Ciambrone

A socket is an endpoint in a device that enables it to communicate with other machines. They enable one machine to input or output data from another machine. Socket programming involves writing code which creates a network connection between two machines. The socket descriptor can be created and stored in an integer variable. The programmer must specify the domain, the communication type, and the protocol. When a user interacts with a web application there is a two part process for each time they are brought to a new URL. There is a request and a response. The client (the user’s machine) send out a request to the server. The server takes this request, and based on the given parameters, constructs and returns the response, which is what the user then sees on their screen. Sockets are what enable the server to receive this request and return it’s response. When people use the term server they are referring to the machine that contains the data that is sent in the form of an I/O or request/response transaction. For instance, if I build a web application that is backed by a MySql database which allows the user to query the database and see the resulting relation, when I deploy this to the internet and another person uses this application, my machine acts as a server, and “serves” the data that exists on my machine in my database. Without sockets, this is not possible.

If and when we deploy our project the network service called the Domain name system (DNS) is employed to enable a connection between the client who is looking to use the web application and the application itself, along with the data that it is backed by. This service enables a client machine to establish a connection by translating the domain name into an IP address- socket pair so that the two sockets can communicate with each other. In order for the client machine to be able to utilize the IP address it must follow a definitive protocol. Dynamic Host Configuration Protocol (DHCP) is a network service which assigns network configuration information to network hosts in order to make this connection possible. Network services run on the network application layer of the software stack, and enable data to be transferred from machine to machine. TCP is a network service that would be employed by the connection established in our project. TCP is in charge of delivering the data and maintaining the integrity and ensuring that the data arrives in the same order as it was sent in.

Our program is involved in this process by acting as the server and the client. We run the client out of a web browser such as google chrome. When the user presses the submit button, the URL tells the local python file that a request is being made. These are essentially two sockets in our one computer interacting with each other The python file tells the server what to do when the client sends a request. The python file also querys the SQL database in our machine, then the python file also determines what to do with the response. In our case, we are printing a table with the response as cells. When we say “message” we mean the data that is transferred between the IP address/ socket pairs. The messages are in the form of parenthetic data from the MySql database.