**Networks Report**

Protocol: All of our networking protocols are defined in a separate file to rake-p and rakeserver, titled networkstuff.py.

We have defined a packet structure, where the first 7 bits are arbitrarily fixed at \x01 to identify the start of a packet. The 8th bit is a control bit, and determines the packet type: 0 for system queries, 1 for command, 2 for file transfer and 3 for command return. 64 bits are reserved for the filename, 64 for the file size, 64 as an offset and the remaining bits for the file contents itself for a total of 1024 bits.

Each file is separated according to the maximum allowed length in a single packet, encoded into bytes

Before connecting to the server, the rakefile is passed in to the client and separated through a series of conditionals, where each line is evaluated by its starting and ending characters to assign things like the port, host, local and remote commands to respective variables.

Once the file is passed in, the client and server connect to each other, and the client sends its first packet. The servers are requested a bid for usage to determine which is best to be used to execute commands. The bid is based on the current CPU and memory utilisation, averaged. The server with the lowest average is picked for execution.

In the client, after connection, it determines if the command must be run locally or remotely. If locally, it runs the commands as subprocesses. If remotely, the packets are run through poll. Poll checks if any process is finished via acknowledgements from the server, and performs all necessary reads and writes to the system.

The server, after receiving packets, sending back a bid, and under the assumption that it was selected to execute commands, processes commands and once completed sends them back to the client,