Efficiency analysis and specs of printer driver

In computer science, efficiency is a very important word. It is not hard to code and develop something, what is hard is to code it efficiently and clean. Having a code written that takes 10 minutes to run when it should take 10 seconds is very inefficient. For a class in Penn State about systems programming, we had to code throughout the year a low-level networked 3d printer driver in C. Tests were supplied to us to verify our code and several of the tests checked for efficiency in number of commands issued and time taken.

The following are some technical specifications found on the assignments. The specs will cover number of commands issued as well as time taken by those commands when executed.

Commands and time specs

Executing locally:

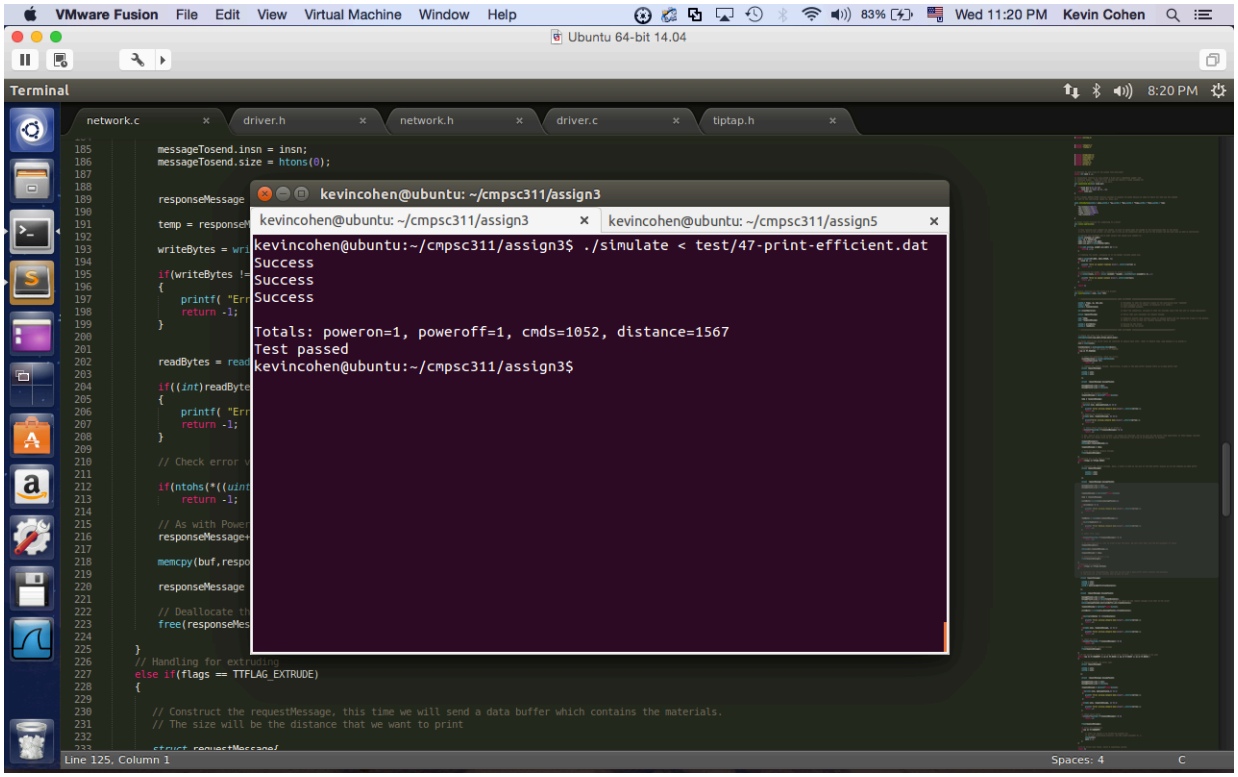
Commands by professor:	750
Expected commands:	1500
Personal commands:	1052

Executing over the network:

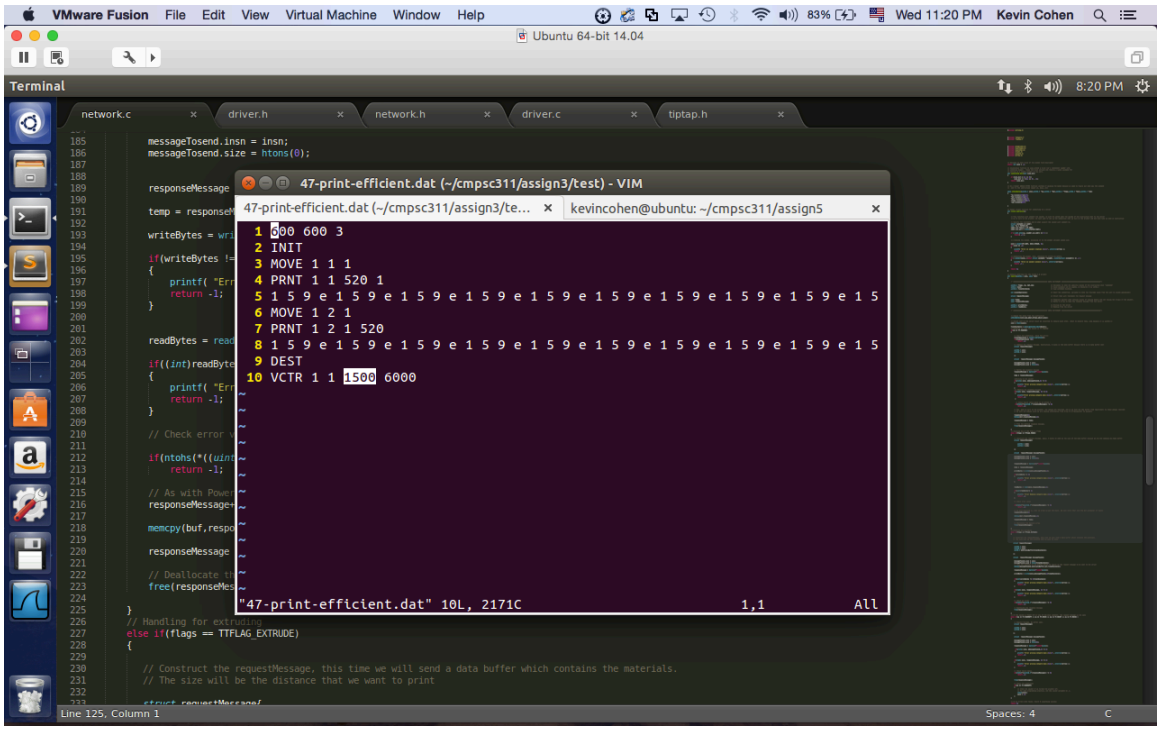
Professor's time	0.4 seconds
Average time for class	3 minutes
Personal time	9.04 seconds

As seen above, the average time for the class is not as efficient as it should be. While the time for the professor is incredibly low, standing below the 10 seconds is also great when evaluating the performance for this project. Also notice the commands issued and how they are far below the expected commands that the driver should execute.

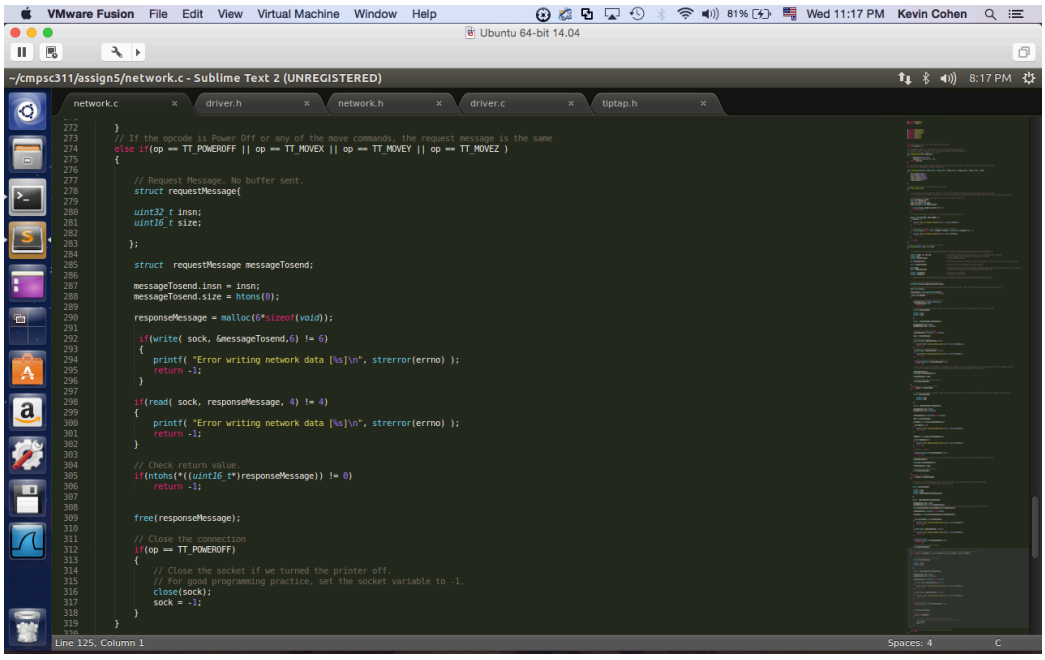
Below are some pictures depicting this outcome and a little code snippet on a function that is implemented efficiently. The number of commands issued to the network is very low, just one command for writing to the server and one command for reading from the server.



Picture 1: Testing the efficiency of the print function. Commands issued 1052. Where cmds means commands.



Picture 2: Code for the test where it is shown that the expected commands are 1500.



Picture 3: Code snippet on important efficient function implementation.