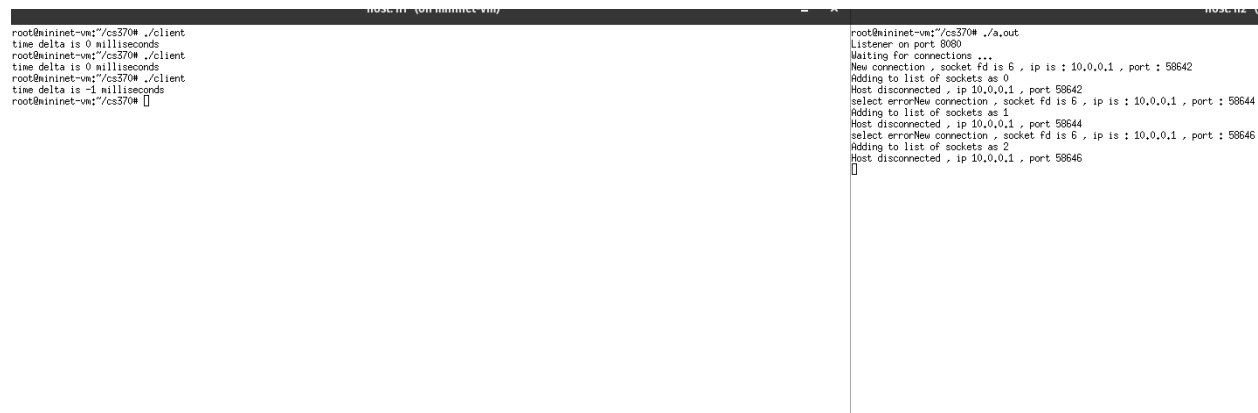


Screenshot:

A screenshot of a terminal window with a dark background. The terminal is split into two panes. The left pane shows a series of commands and their outputs: 'root@mininet-vet:/cs370# ./client', 'time delta is 0 milliseconds', 'root@mininet-vet:/cs370# ./client', 'time delta is 0 milliseconds', 'root@mininet-vet:/cs370# ./client', 'time delta is -1 milliseconds', and 'root@mininet-vet:/cs370# []'. The right pane shows the output of a server program: 'root@mininet-vet:/cs370# ./a.out', 'Listener on port 5850', 'Waiting for connections ...', 'New connection , socket fd is 6 , ip is : 10.0.0.1 , port : 58542', 'Adding to list of sockets as 0', 'Host disconnected , ip 10.0.0.1 , port 58542', 'select errorNew connection , socket fd is 6 , ip is : 10.0.0.1 , port : 58544', 'Adding to list of sockets as 1', 'Host disconnected , ip 10.0.0.1 , port 58544', 'select errorNew connection , socket fd is 6 , ip is : 10.0.0.1 , port : 58546', 'Adding to list of sockets as 2', 'Host disconnected , ip 10.0.0.1 , port 58546', and '[]'.

Write up: throughout this lab, I learned a lot about how network protocols work in general, and how important a standardized operating flow is to computer networks. This lab also helped me understand how ip packets can send more complicated data. Now I can more easily picture how packets are created and deconstructed.

I completed this lab in C++, and i think that contributed a lot to understanding how data is bundled into these sorts of packets, because c++ is a lower level language than something like python. I've used some network protocols in previous internships, but I never understood what a protocol was on a base level, and why it's used.

Reading through the documentation of the NTP protocol, and putting a very simple version into practice gave me a much better understanding of what exactly a protocol is at a code level.

Overall, even though implementing this in C++ was a lot more complicated than using something like python, but I think it helped me gain a better understanding of both internet protocols and IP packets.