

Homework # 2

Due October 26

This is a programming assignment to give you experience with the UNIX interface to UDP. It is based on a server (provided for you). Your assignment will be to program a client that uses this server.

The server is called “Grapevine” (by analogy to the way gossip travels). Grapevine receives UDP packets on host `irazu` and port number 1718, and takes different actions depending on the contents of the packet. The central purpose of Grapevine is to forward packets to other clients on the grapevine (the ones you want to exchange gossip with). To facilitate the exchange of gossip, Grapevine maintains a set of connections for currently active clients (gossipers).

The syntax of Grapevine packets has been designed to make them real easy to parse. The packet type is determined by looking at the first character. Grapevine responds to the following packet types:

Echo packet: `E <text>`

This type of packet is simply echoed to the sender. Use this packet to help you in your debugging. If you send one of these packets to the Grapevine and it comes back, you know you have a working set of UDP addresses.

Connect packet: `C <name>`

Before you can use Grapevine to send gossip to your friends you must connect to the grapevine. Grapevine keeps a table of connections to link names to UDP addresses. You would normally use your login name as `<name>`, but if you will be spreading some really bad gossip, you might wish to select a pseudonym.

Connect query packet: `C ?`

Use this packet to find out who else is connected to the grapevine. You will get a bunch of packets back with other gossipers names.

Disconnect packet: `D <name>`

Gossip gets old after awhile. When you’ve had enough, send one of these. Also, you will be automatically disconnected if you haven’t participated in any gossip for awhile (I’m not implying your program crashed, but...).

Message packet: `M <name> <text>`

Grapevine forwards this packet to whoever is connected as `<name>`. Before forwarding the packet, it substitutes your name for the destination name, so the receiver can see who it came from (hence the advisability of a pseudonym).

The assignment

Your assignment is to write a client, called *chat*, that allows you to participate in the grapevine. No need to be fancy about the user interface, you might as well just type in the packets and send them off to the grapevine. Of course, incoming packets could arrive at any time, so you must select (hint) carefully which file descriptor to read from next. This description is deliberately short to give you maximum freedom for simplicity.

Rules of engagement

You are required to do this assignment as part of a team of two or three people.

No member of the team is allowed to generate code except in the presence of his/her team members.

No team may turn in its assignment until all members of the team understand the solution.

No team may contain more than one C/Unix guru or more than one C/Unix beginner unless the team is composed solely of students watching the class from MCNC.

The purpose of these rules is to ensure that students unfamiliar with our computer systems will be helped by experts.