

Purpose: This assignment requires an in-depth understanding of using multicast messages over UDP. You will build a time sender that sends multicasts the time every second on your personal port using multicast address 224.0.1.2; and a multicast time receiver that receives times on your personal port using the same multicast address.

Remember, the model here is different. The sender has the network characteristics of a client (no bind), but it is sending the time like a time server. The receiver has the network characteristics of a server (bind to a well known port), but it is receiving the time like a time client.

The time will be sent using the `gettimeofday` format used in your `timec.c` and `timed.c`.

Extended versions of the code from the lecture is located in `~volper/classes/472/programs` in the files `multisend.c` and `multirecv.c`.

THE MULTICAST TIME SENDER

The `mtimes` sender will send the time in `gettimeofday` format every second to all receivers listening on your well known port. This means, use a `while(1)` loop with a `sleep(1)` command at the end so it cycles once a second.

THE MULTICAST TIME RECEIVER

The `mtimer` receiver will listen for multicasts on your well-known UDP port. The server will enable the receipt of multicast messages. Whenever it receives a message from a client it will print the time (see `timec.c` for the format) So you can better see what is going on it must also print the address and port of the sender (you have already done this in a previous assignment).

This means a loop with a `recvfrom`. Unlike other programs, there is no `sendto`.

Submit: A print out of the sender and receiver. In addition, the source code for the sender must be placed in your home directory in a file named `mtimes.c` and the source code for the receiver must be placed in your home directory in a file named `mtimer.c`.

Discussion:

When you send a multicast, each receiver on the subnet should receive the message. Remember, UDP is “unreliable” so occasionally one of messages may not get delivered.

We are not allowing multicasts to go through gateways to avoid complaints from the rest of the net; so, as in your broadcast homework, your test will need to use machines on the same subnet.

To test this, start one sender and 3 receivers on the same subnet. It doesn't really matter which you start first. It's kind of interesting to start a receiver first, then the sender, then a couple more receivers.

Hint: get it to work with one receiver first.