Dr. Christian Scheideler
Johns Hopkins University

Baltimore, Feb. 20 2002

Computer Networks

Spring 2002

Assignment 4

Problem 12 (2 points)**:**
Compile and run the Java programs `TCPClient` and `UDPClient` on one host and `TCPServer` and `UDPServer` on another host.

(a) Suppose you run `TCPClient` before you run `TCPServer`. What happens? Why?

(b) Suppose you run `UDPClient` before you run `UDPServer`. What happens? Why?

Problem 13 (4 points)**:**
Solve the problem of sending an email from your host A via host B to your SMTP server so that the following conditions are satisfied:

- Host A and B should communicate via port 6789.
- Emails sent from A to B should be manipulated so that the email address is taken out of the lines "MAIL FROM: `<email address>`" and "From: `<email address>`".
- Host B will put an email address of your choice back to the lines "MAIL FROM:" and "From:" before forwarding it to the mail server.

Realize this by modifying `XSniffer.java` accordingly, which can be found on the course web page. One variant of it has to run on host A and one on host B. As a test, try to manipulate an email so that you send yourself an email with another one's (mine, your friend's,...) email address. (With a text like, for example, "You MADE it!!!") Print out your modified sniffers (or sniffer if you manage to do it with a single program) and protocols of the actions of the sniffers at host A and B.
Note: Host A does not have to be an on-campus computer any more when you run the sniffers. You only have to be able to remotely run the sniffer on some on-campus host B.

Problem 14 (4 points)**:**
Consider a protocol between an ATM machine and a bank server that is based on the following commands:
Messages from ATM machine to user (via standard IO):

- Please enter your user id:
- Please enter your password:
- How much money would you like to withdraw:

Messages from ATM machine to server (via socket 6789):

- HELLO `<userid>`: ATM machine introduces user to Server
- PASSWD `<passwd>`: ATM machine forwards user password to Server
- WITHDRAW `<amount>`: ATM machine tells Server amount of money
- BYE: ATM machine closes session

Messages from Server to ATM machine (via socket 6789):

- PASSWD: ask user for PIN (password)
- OK: last requested operation (PASSWD, WITHDRAW) OK
- ERR: last requested operation (PASSWD, WITHDRAW) caused error
- BYE: answer of Server to BYE of ATM machine

Extend the `TCPClient.java` and `TCPServer.java` program so that they can interpret the commands above and interact accordingly. On the server side (bank server), set the user id to "Your Friend", the password to "007" and the maximum amount that can be withdrawn to "1000000". On the client side (ATM machine), simply close the session if the server sends an error. Print out your program for the ATM machine and the bank server and a protocol of a successful withdrawal of money.