Metro State University of Denver, Department of Mathematics and Computer Science
CS 3700-001: Computer Networks, Spring 2013, Dr. Weiying Zhu
Homework 4, Due Date: 10:00am 02/21/2013, Submission: Upload source code (.java) files to Blackboard
(10 extra bonus points for the features in red in addition to the basic features in black.)
Write a client process and a server process to implement the following simplified SMTP protocol based on TCP service. Please make sure your program supports multiple clients. You may choose a port like 5678 and hard code it in both client and server programs.

- "**Telnet <your server's ip address> <port>**" will be used to test your SMTP server process first (especially those "505" responses), then your SMTP client will be tested using your SMTP server process.
- SMTP Client Process:
  1. Display a message to ask the user to input the Host Name (or ip-address) of your SMTP server.
  2. Buildup the TCP connection to your SMTP server with the Host Name input by User at the given port. Catch the exception, terminate the process, and display error messages on the standard output if any.
  3. Display messages on the standard output to ask the user to input sender's email address, receiver's email address, subject, and email contents, respectively. Since email contents may be in multiple lines, while asking for email contents, the message displayed by your Client process MUST prompt the ending signature pattern like 4 continuous empty lines or "." on a line by itself.
  4. Use the above user inputs in the following 3-phase data transfer procedure (see step 3 on server side):
     4.1 Wait for, read, and display the "220" response from the SMTP server
     4.2 Send the "HELO" command followed by sender's mail server domain name (e.g., xyz.com) to the SMTP server process, wait for server's response and display it on the standard output.
     4.3 Send the "MAIL FROM: <sender's email address>" command to SMTP server, wait for SMTP server's response and display it on the standard output.
     4.4 Send the "RCPT TO: <receiver's email address>" command to the SMTP server process, wait for SMTP server's response and display it on the standard output.
     4.5 Send the "DATA" command to the SMTP server process, wait for SMTP server's response and display it on the standard output.
     4.6 Send the Mail message to the SMTP server. The format of this Mail message MUST follow the format detailed on the **slide titled "Mail message format"**. Wait for SMTP server's response and display it on the standard output.
  5. Display a message on the standard output to ask the User whether to continue. If yes, repeat steps 3 through 5. Otherwise, send a "QUIT" command to the SMTP server. close all i/o streams, TCP connection, and terminate the Client process.
- SMTP Server Process:
  1. Listen to the given port and wait for a connection request from a SMTP Client.
  2. Create a new thread for every incoming TCP connection request from a SMTP client.
  3. Implement the following 3-phase data transfer procedure (see step 4 on client side):
     3.1 Send the "200" response including server's ip address to the SMTP client
     3.2 Wait for, read, and display the "HELO" command from the SMTP client. If the incoming command is NOT HELO, sends "503 5.5.2 Send hello first" response to the SMTP client and repeat step 3.2.
     3.3 Send the "250 <server's ip> Hello <client's ip>" response to the SMTP client.
     3.4 Wait for, read, and display the "MAIL FROM" command from the SMTP client. If the incoming command is NOT "MAIL FROM", sends "503 5.5.2 Need mail command" response to the SMTP client and repeat step 3.4.
     3.5 Send the "250 2.1.0 Sender OK" response to the SMTP client.
     3.6 Wait for, read, and display the "RCPT TO" command from the SMTP client. If the incoming command is NOT "RCPT TO", sends "503 5.5.2 Need rcpt command" response to the SMTP client and repeat step 3.6.
     3.7 Send the "250 2.1.5 Recipient OK" response to the SMTP client.
     3.8 Wait for, read, and display the "DATA" command from the SMTP client. If the incoming command is NOT "DATA", sends "503 5.5.2 Need data command" response to the SMTP client and repeat step 3.6.
     3.9 Send the "354 Start mail input; end with <CRLF>.<CRLF>" response to the SMTP client.
     3.10 Wait for, read, and display the Mail message from the SMTP client line by line. (hint: the ending signature of this message is "." on a line by itself.)
     3.11 Send the "250 Message received and to be delivered" response to the SMTP client.
  4. Repeat Step 3 until the "QUIT" command is read.
  5. Close all i/o streams and the TCP socket for THIS Client, and terminate the thread for THIS client.