CSE 534: Fundamentals of Computer Networks (Spring 2017)

Programming Assignment #1 – Socket Programming

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Design

   This assignment was to make a chatting program using socket. Socket needs to be connected to each other to be transmit data to each other.

   I made 2 source code files. One was about the client. The other was about the server. In each file, I included connection establishment, chatting, file transit functions. They both can send messages to each other including the port and IP address information. I used threads for the receiving messages and sending/receiving files.

Below are the flow charts of the way socket should work.
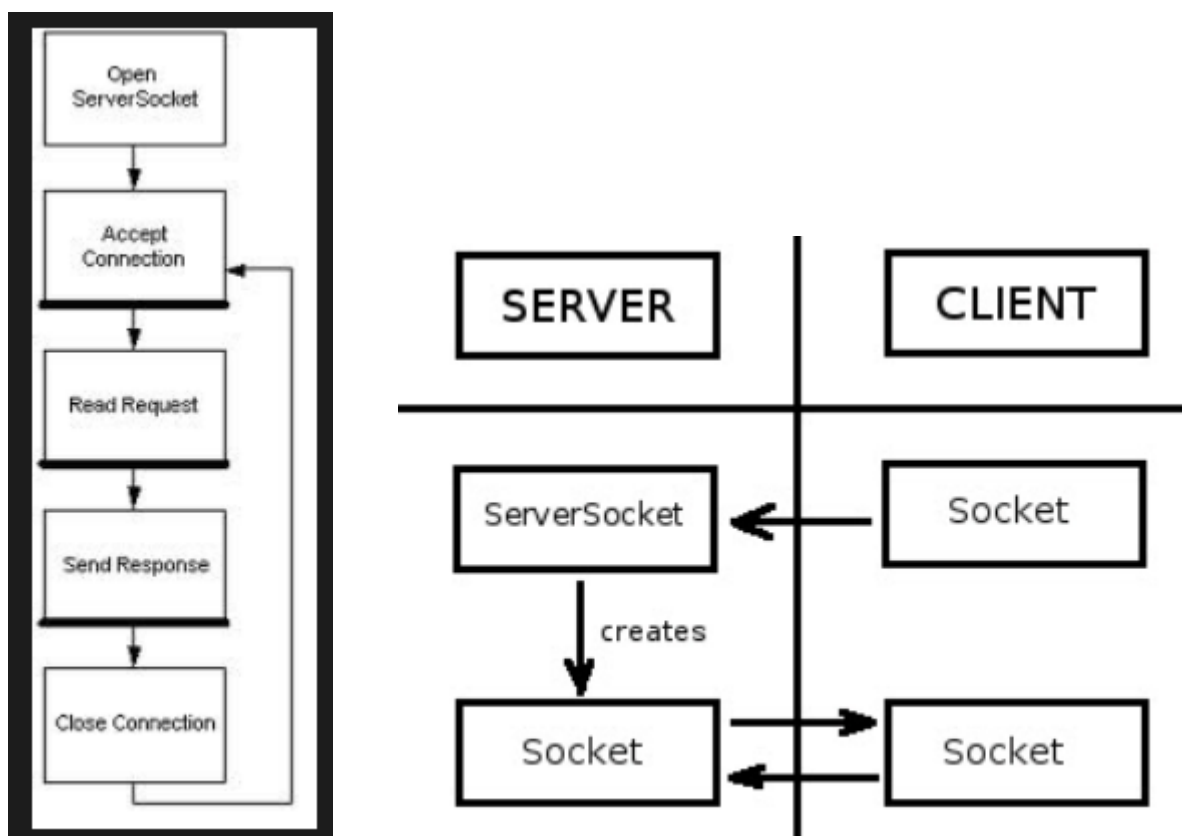
   The above chart shows about the server part. Server part will create a server socket to get connected with a client. If a request from client that it wants to get connected comes, it opens to client and start connection. From this point, you can send/read messages or send files.

The server gets request from the client. Only when you press "Yes", it continues to next step which is chatting. When you press something else, the socket will be disconnected and the program will be ended. It can both read and send messages containing information about what port and IP address it is using. The port number, I chose it myself randomly in the code between 50000 and 60000. When server receives messages which says '/view', it will show the files in the directory of C:/Users/lg/Documents/Workspace/Socket/Chatting/Picture in my laptop. When it receives messages which says '/get *filename*', it will send the data to client saying 'SEND *filename*'.

ServerSocket welcomeSocket = new ServerSocket(50000);

Socket connectionSocket = welcomeSocket.accept();

This is for making the socket in the beginning

String files[] = directory.list();

This is used for the directory file list.

files[i] = files[i] + " ";
System.out.print(files[i]);
outToClient.writeBytes(files[i]);

This is for printing out the file names and sending the file names.

clientSentence = inFromUser.readLine();

System.out.println("Server [" + server_socketAddress.getAddress() + ":50000] says : " + clientSentence);

clientSentence = clientSentence + '₩n';

if (clientSentence.equals("quit")) break;

This is for sending the messages from server to client.

FileInputStream file_data = new FileInputStream("C:/Users/lg/Documents/Workspace/Socket/Chatting/Picture/" + file_name);
BufferedInputStream file_Send = new BufferedInputStream(file_data);

This is used for sending files to client

The client sends request to server for the connection after creating socket itself. It has the function of sending and receiving messages. If the message includes 'SEND', it will receive the file and send the messages back to server that it received the file.

DataInputStream abc = new DataInputStream(clientSocket.getInputStream());

File f = new File(file_name);

FileOutputStream FOS = new FileOutputStream(f);

BufferedOutputStream BOS = new BufferedOutputStream(FOS);

This was for receiving files from the server.

Reference

Websites

http://alecture.blogspot.kr/2011/06/socket-programming.html - principles of socket

http://boxfoxs.tistory.com/209 - got the concepts of transporting data

http://www.javaworld.com/article/2076864/java-concurrency/building-an-internet-chat-system.html
- learned about the multithreaded client/server chat (didn't use it though)

http://blog.naver.com/highkrs/220848623545 - got the concept of threads

http://cbts.tistory.com/87 - concepts of creating socket

http://blog.naver.com/highkrs/220844554537 - about the chatting program using socket

http://blog.naver.com/shiriul/220896439189 - learned about tcp socket

http://cafe.naver.com/minecraftpe/1958980 - about java.io.File

Books

YeolHyeol Kang eui(Java for absolute beginners) – searched information about socket and java