Socket Programming

Problem Definition

Write a Java program using socket programming where client sends a string and server reverses the string and sends the resulting reversed string to the client.

Algorithm

Server

```
Start server on port 3333
Wait for client connection

Set up:
    - Input from client
(DataInputStream)
    - Output to client
(DataOutputStream)
    - Input from server user
(BufferedReader)

Initialize:
    - str = ""
    - str2 = ""

WHILE str ≠ "stop"
    Read str from client
    Display "client says: " + str

    Read str2 from server user
(console)
    Reverse str2 using
reverseString()
    Send reversed str2 to client
    Flush output stream

END WHILE

Close input stream
Close socket
Close server socket
```

Client

```
Connect to server on port 3333 at
localhost

Set up:
    - Input from server
(DataInputStream)
    - Output to server
(DataOutputStream)
    - Input from user
(BufferedReader)

Initialize:
    - str = ""
    - str2 = ""

WHILE str ≠ "stop"
    Read str from user input
(console)
    Reverse str using reverseString()
    Send str2 to server
    Flush output stream

    Read response from server into
str
    Display "Server says: " + str

END WHILE

Close output stream
Close socket
```

Implementation/Code

Server

```
import java.net.*;
import java.io.*;

class MyServer1 {
    public static void main(String
args[]) throws Exception {
        ServerSocket ss = new
ServerSocket(3333);
        Socket s = ss.accept();

        DataInputStream din = new
DataInputStream(s.getInputStream());
        DataOutputStream dout = new
DataOutputStream(s.getOutputStream())
;
        BufferedReader br = new
BufferedReader(new
InputStreamReader(System.in));

        String str = "", str2 = "";

        while
(!str.equalsIgnoreCase("stop")) {
            str = din.readUTF();

System.out.println("client says: " +
str);
            str2 =
reverseString(br.readLine());
            dout.writeUTF(str2);
            dout.flush();
        }

        din.close();
        s.close();
        ss.close();
    }
    private static String
reverseString(String s) {
        StringBuilder sb = new
StringBuilder(s);
        return
sb.reverse().toString();
    }
}
```

Client

```
import java.net.*;
import java.io.*;

class MyClient1 {
    public static void main(String
args[]) throws Exception {
        Socket s = new
Socket("localhost", 3333);

        DataInputStream din = new
DataInputStream(s.getInputStream());
        DataOutputStream dout = new
DataOutputStream(s.getOutputStream())
;
        BufferedReader br = new
BufferedReader(new
InputStreamReader(System.in));

        String str = "", str2 = "";

        while
(!str.equalsIgnoreCase("stop")) {
            str = br.readLine();
            str2 =
reverseString(str);
            dout.writeUTF(str2);
            dout.flush();

            str = din.readUTF();

System.out.println("Server says: " +
str);
        }

        dout.close();
        s.close();
    }
    private static String
reverseString(String s) {
        StringBuilder sb = new
StringBuilder(s);
        return
sb.reverse().toString();
    }
}
```