3. Write a program where client sends a string and server returns the reverse of the string Using TCP/IP Socket Programming

```
import java.io.BufferedReader;
import java.io.BufferedWriter;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.io.OutputStream;
import java.io.OutputStreamWriter;
import java.net.Socket;
import java.util.Scanner;

public class Client1 {

    private static Socket socket;

    public static void main(String args[]) {
        try {
            socket = new Socket("127.0.0.1", 4000);
            System.out.println("Client Running...");


            OutputStream os = socket.getOutputStream();
            OutputStreamWriter osw = new OutputStreamWriter(os);
            BufferedWriter bw = new BufferedWriter(osw);
            System.out.println("Type in a string and Press Enter...");
            Scanner sc = new Scanner(System.in);
            String string = sc.next();
            System.out.println("string = " + string);
            String sendMessage = string + "\n"; ////Next to line
            bw.write(sendMessage);
            bw.flush();
            System.out.println("Message sent to the server : " + sendMessage);


            InputStream is = socket.getInputStream();
            InputStreamReader isr = new InputStreamReader(is);
            BufferedReader br = new BufferedReader(isr);
            String message = br.readLine();
            System.out.println("Message received from the server : " + message);
        } catch (Exception exception) {
            exception.printStackTrace();
```

```
        } finally {

            try {
                socket.close();
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    }
}
import java.io.BufferedReader;
import java.io.BufferedWriter;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.io.OutputStream;
import java.io.OutputStreamWriter;
import java.net.ServerSocket;
import java.net.Socket;

   public class Server1 {

            private static Socket socket;

            public static void main(String[] args) {
                try {
                    ServerSocket serverSocket = new ServerSocket(4000);
                    System.out.println("Server Running...");

                    while (true) {

                        socket = serverSocket.accept();
                        InputStream is = socket.getInputStream();
                        InputStreamReader isr = new InputStreamReader(is);
                        BufferedReader br = new BufferedReader(isr);
                        String string = br.readLine();
                        System.out.println("Message received from client is " + string);

                        try {

                            StringBuilder input = new StringBuilder();

                            input.append(string);

                            input = input.reverse();
```

```
                string = input + "\n";
                for (int i = 0; i < input.length(); i++) {
                    System.out.println(input.charAt(i));
                }
            } catch (Exception e) {

                string = "Please send a proper text message\n";
            }

            OutputStream os = socket.getOutputStream();
            OutputStreamWriter osw = new OutputStreamWriter(os);
            BufferedWriter bw = new BufferedWriter(osw);
            bw.write(string);
            System.out.println("Message sent to the client is " + string);
            bw.flush();
        }
    } catch (Exception e) {
        e.printStackTrace();
    } finally {
        try {
            socket.close();
        } catch (Exception e) {
        }
    }
  }
}
```