

Code

Client.java

```
package exp_1.program;

import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.Socket;
import java.util.Scanner;

public class ClientJava {
    public static void main(String[] args) throws IOException{
        String hostname = args[0];
        Integer portnumber = Integer.parseInt(args[1]);

        try(
            Socket sock = new Socket(hostname,portnumber);
            BufferedReader in = new BufferedReader(
                new InputStreamReader(
                    sock.getInputStream()
                )
            );
            PrintWriter out = new PrintWriter(sock.getOutputStream(),true);
        ){
            String fromServer, fromUser;
            Scanner stdIn = new Scanner(System.in);
            while((fromServer = in.readLine()) != null){

                System.out.println(fromServer);
                if (fromServer.equals("Bye.")) break;

                fromUser = stdIn.nextLine();
                if (fromUser!=null){
                    out.println(fromUser);
                }
            }
        }
    }
}
```

Server.java

```
package exp_1.program;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.ServerSocket;
```

```

import java.net.Socket;

class ServerJava{

    public static class KnockKnockProtocol {
        private static final int WAITING = 0;
        private static final int SENTKNOCKKNOCK = 1;
        private static final int SENTCLUE = 2;
        private static final int ANOTHER = 3;

        private static final int NUMJOKES = 5;

        private int state = WAITING;
        private int currentJoke = 0;

        private String[] clues = { "Turnip", "Little Old Lady", "Atch", "Who", "Who" };
        private String[] answers = { "Turnip the heat, it's cold in here!",
                                     "I didn't know you could yodel!",
                                     "Bless you!",
                                     "Is there an owl in here?",
                                     "Is there an echo in here?" };

        public String processInput(String theInput) {
            String theOutput = null;

            if (state == WAITING) {
                theOutput = "Knock! Knock!";
                state = SENTKNOCKKNOCK;
            } else if (state == SENTKNOCKKNOCK) {
                if (theInput.equalsIgnoreCase("Who's there?")) {
                    theOutput = clues[currentJoke];
                    state = SENTCLUE;
                } else {
                    theOutput = "You're supposed to say \"Who's there?! \" +
                                "Try again. Knock! Knock!";
                }
            } else if (state == SENTCLUE) {
                if (theInput.equalsIgnoreCase(clues[currentJoke] + " who?")) {
                    theOutput = answers[currentJoke] + " Want another? (y/n)";
                    state = ANOTHER;
                } else {
                    theOutput = "You're supposed to say \"" +
                                clues[currentJoke] +
                                " who?\" +
                                "! Try again. Knock! Knock!";
                    state = SENTKNOCKKNOCK;
                }
            } else if (state == ANOTHER) {
                if (theInput.equalsIgnoreCase("y")) {
                    theOutput = "Knock! Knock!";
                }
            }
        }
    }
}

```

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        if (currentJoke == (NUMJOKES - 1))
            currentJoke = 0;
        else
            currentJoke++;
        state = SENTKNOCKKNOCK;
    } else {
        theOutput = "Bye.";
        state = WAITING;
    }
}
return theOutput;
}
}
public static void main(String[] args) {
    int portNumber = Integer.parseInt(args[0]);

    try(
        ServerSocket ServerSocket = new ServerSocket(portNumber);
        Socket client = ServerSocket.accept();
        PrintWriter out = new PrintWriter(
            client.getOutputStream(),true
        );

        BufferedReader inBuffer = new BufferedReader(
            new InputStreamReader(client.getInputStream())
        );
    ){

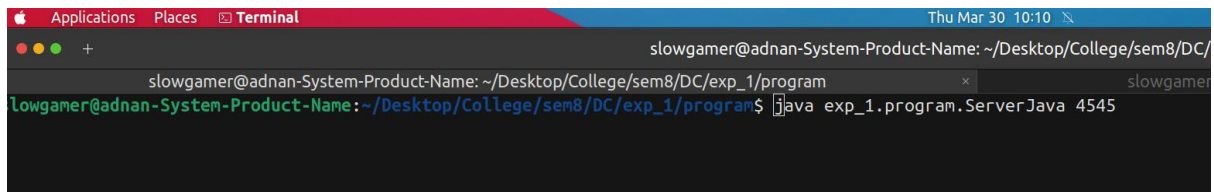
        String inputLine, outputLine;

        KnockKnockProtocol kkp = new ServerJava.KnockKnockProtocol();
        outputLine = kkp.processInput(null);
        out.println(outputLine);

        while((inputLine=inBuffer.readLine()) != null){
            outputLine = kkp.processInput(inputLine);
            out.println(outputLine);
            if (outputLine.equals("Bye.")) break;
        }
    }catch (Exception e){
        System.err.println(e.getStackTrace());
    }
}
}

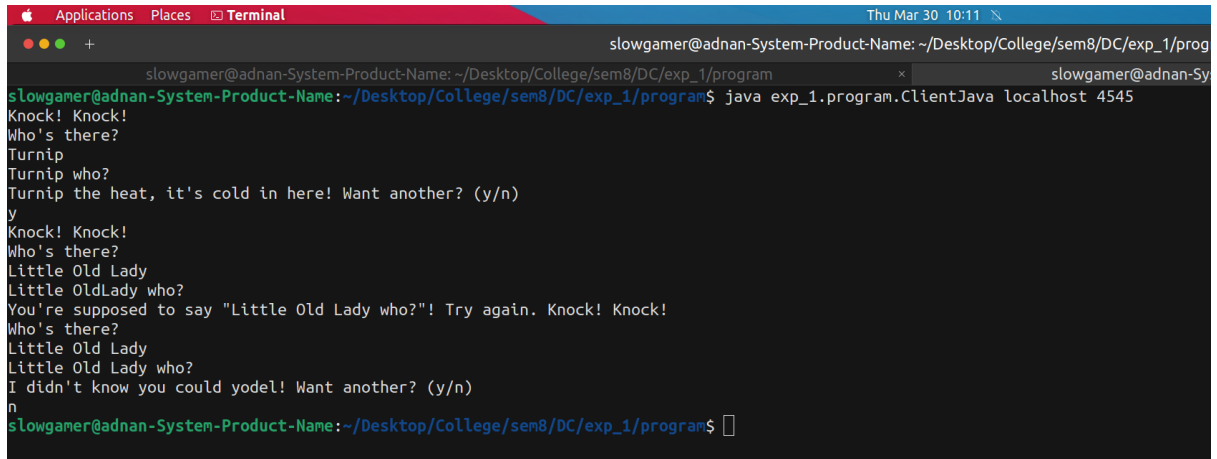
```

Output



A terminal window titled 'Terminal' with a red title bar. The window shows the command `java exp_1.program.ServerJava 4545` being executed. The prompt is `slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program`. The window has a tab titled `slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program`. The status bar at the top right shows 'Thu Mar 30 10:10'.

```
slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program
slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program$ java exp_1.program.ServerJava 4545
```



A terminal window titled 'Terminal' with a red title bar. The window shows the command `java exp_1.program.ClientJava localhost 4545` being executed. The prompt is `slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program`. The window has a tab titled `slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program`. The status bar at the top right shows 'Thu Mar 30 10:11'. The output of the program is displayed below the command.

```
slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program$ java exp_1.program.ClientJava localhost 4545
Knock! Knock!
Who's there?
Turnip
Turnip who?
Turnip the heat, it's cold in here! Want another? (y/n)
y
Knock! Knock!
Who's there?
Little Old Lady
Little Old Lady who?
You're supposed to say "Little Old Lady who?"! Try again. Knock! Knock!
Who's there?
Little Old Lady
Little Old Lady who?
I didn't know you could yodel! Want another? (y/n)
n
slowgamer@adnan-System-Product-Name: ~/Desktop/College/sem8/DC/exp_1/program$
```