Project "UDP port knocking" – DOCUMENTATION

1. The project was written in accordance with the Java 8 (JDK 8) language standard. Only the basic Java classes are used in the project, including the basic classes for network communication.
2. The program establishes a connection between the client (MainClient) and the server (MainServer) using the "UDP port knocking" method.
3. The program is launched by starting the server class (MainServer) with UDP port numbers, and then the client (MainClient) is started with the IP number and port numbers on which it tries to "knock". If the client's port number matches the server's port numbers, UDP messages with TCP port are forwarded to these ports.
4. And then server and client application are connected for authentication by using the TCP port.

Authentication is carried out by transferring simple TCP messages each other.

If authentication is ended, the client application terminates its process. The server application runs as long as we wish or until an error occurs. When you try to run two servers on the same UDP ports, we get a busy error, which ends with this error.

1. The client-server communication protocol has been divided into two parts:

A. The UDP communication part responsible for sending and receiving UDP messages for finding server or client.

B. The TCP communication part responsible for authentication between client and server application.

1. What are the individual classes of the project responsible for:

* MainServer class: is responsible for starting the server with the given UDP ports.
* PortListener class: is responsible for listening UDP ports from the client, if it listens the appropriate port (the same as the server has available) then it prints a message that it has received a given message from the client on the given UDP port; Moreover, if it receives UDP message with TCP port information, a TCP connection is established with the client and receives a TCP response from the client and also sends a TCP message to the client
* ClientConnection class: its purpose is only to manage the IP address and ports for connection from client.
* ResponseListener class: responsible for receiving messages from the server, so it also shows information about TCP port and thanks to this port a TCP connection is established; thanks to the TCP connection it sends a TCP message to the server
* MainClient class: is responsible for starting the client with the IP address and UDP port numbers