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**Link to Project:** <https://github.com/hvluu/CS380/tree/master/Projects/Project4>

**IPv6Client.java**

*import java.io.\*;*

*import java.net.\*;*

*final class Ipv6Client {*

*private static Socket socket;*

*public static void main(String[] args) {*

*connect();*

*}*

*/\*\**

*\* Connects the client to the server and creates a Listener thread.*

*\*/*

*public static void connect() {*

*String hostName = "18.221.102.182";*

*int portNumber = 38004;*

*try {*

*socket = new Socket(hostName, portNumber);*

*new Connection(socket).start();*

*System.out.println("Connected to server.");*

*} catch (UnknownHostException e) {*

*System.err.println("ERROR: Unknown host " + hostName + ".");*

*} catch (IOException e) {*

*System.err.println("ERROR: Could not connect to " + hostName + ".");*

*}*

*}*

*/\*\**

*\* Disconnects the client from the server.*

*\*/*

*public static void disconnect() {*

*try {*

*socket.close();*

*System.out.println("\nDisconnected from server.");*

*} catch (IOException e) {*

*System.err.println("ERROR: " + e.getMessage());*

*}*

*}*

*}*

**Connection.java**

*import java.io.\*;*

*import java.net.Socket;*

*import java.util.Random;*

*public class Connection extends Thread {*

*public volatile static boolean endThread = false;*

*private Socket socket = null;*

*public Connection(Socket socket) {*

*super("Connecting Thread");*

*this.socket = socket;*

*}*

*/\*\**

*\* Override run() function in the Thread class. The function handles the*

*\* communication between the server and the client.*

*\*/*

*@Override*

*public void run() {*

*try {*

*socket.getInputStream();*

*socket.getOutputStream();*

*ipv6();*

*Ipv6Client.disconnect();*

*} catch (IOException e) {*

*System.err.println("ERROR: Connection lost.");*

*}*

*}*

*private void ipv6() throws IOException {*

*InputStream inputStream = socket.getInputStream();*

*OutputStream outputStream = socket.getOutputStream();*

*for (int i = 0; i < 12; i++) {*

*int dataLength = (int) Math.pow(2, i + 1);*

*byte[] packet = new byte[dataLength + 40];*

*System.out.println("\nData length: " + (dataLength));*

*byte[] data = new byte[dataLength];*

*new Random().nextBytes(data);*

*packet[0] = (0b0110 << 4);*

*packet[1] = 0x0;*

*packet[2] = 0x0;*

*packet[3] = 0x0;*

*short temp = (short) (dataLength);*

*byte second = (byte) ((temp >>> 8) & 0xFF);*

*byte first = (byte) (temp & 0xFF);*

*packet[4] = second;*

*packet[5] = first;*

*packet[6] = 0x11;*

*packet[7] = 0x14;*

*for (int k = 8; k < 18; k++) {*

*packet[k] = 0b0;*

*}*

*packet[18] = (byte) 0xFF;*

*packet[19] = (byte) 0xFF;*

*packet[20] = 0b01111111;*

*packet[21] = 0b0;*

*packet[22] = 0b0;*

*packet[23] = 0b01;*

*for (int j = 24; j < 34; j++) {*

*packet[j] = 0b0;*

*}*

*packet[34] = (byte) 0xFF;*

*packet[35] = (byte) 0xFF;*

*packet[36] = (byte) 0b00110100;*

*packet[37] = (byte) 0b00100001;*

*packet[38] = (byte) 0xB5;*

*packet[39] = (byte) 0b1110010;*

*for (int m = 40; m < packet.length; m++) {*

*packet[m] = data[(m - 40)];*

*}*

*outputStream.write(packet);*

*System.out.print("Response: 0x");*

*for (int l = 0; l < 4; l++) {*

*System.out.printf("%x", inputStream.read());*

*}*

*System.out.println();*

*}*

*}*

*}*