Draghici Andreea-Maria
CR 3.1B

Laborator 12

P1. Implementarea in Java pentru exemplul cu comunicarea UDP

```java
package com.home.lab11.task1;

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

public class UDPClient {
    public static void main(String args[]) {
        DatagramSocket aSocket = null;
        try {
            aSocket = new DatagramSocket();
            byte[] m = args[0].getBytes(); // Conversie mesaj in sir de octeti.
            InetAddress aHost = InetAddress.getByName(args[1]); // Get hostname.
            int serverPort = 6789;
            DatagramPacket request =
                    new DatagramPacket(m, args[0].length(), aHost, serverPort);
            aSocket.send(request);
            byte[] buffer = new byte[1000];
            DatagramPacket reply = new DatagramPacket(buffer, buffer.length);
            aSocket.receive(reply);
            System.out.println("Reply: " +
                    new String(reply.getData(), offset: 0, reply.getLength()));
        } catch (SocketException e) {
            System.out.println("Socket: " + e.getMessage());
        } catch (IOException e) {
            System.out.println("IO: " + e.getMessage());
        } finally {
            if (aSocket != null) aSocket.close();
        }
    }
}
```

```java
package com.home.lab11.task1;

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

public class UDPServer {
    public static void main(String args[]) {
        DatagramSocket aSocket = null;
        try {
            aSocket = new DatagramSocket( port: 6789);
            byte[] buffer = new byte[1000];
            while (true) {
                DatagramPacket request = new DatagramPacket(buffer, buffer.length);
                aSocket.receive(request);
                DatagramPacket reply =
                        new DatagramPacket(request.getData(), request.getLength(),
                                request.getAddress(), request.getPort());
                aSocket.send(reply);
            }
        } catch
        (SocketException e) {
            System.out.println("Socket: " + e.getMessage());
        } catch (IOException e) {
            System.out.println("IO: " + e.getMessage());
        } finally {
            if (aSocket != null) aSocket.close();
        }
    }
}
```

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P2. Implementarea in Java pentru exemplul cu comunicarea TCP

Main.java | UDPClient.java | TCPClient.java | TCPServer.java | Connection.java | UDPServer.java | .git

```java
package com.home.lab11.task2;

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

public class TCPClient {
    public static void main(String args[]) {
        Socket s = null;
        try {

            int serverPort = 6789;
            s = new Socket(args[1], serverPort);

            DataInputStream in = new DataInputStream(s.getInputStream());
            DataOutputStream out = new DataOutputStream(s.getOutputStream());

            out.writeUTF(args[0]); // UTF is a string encoding.
            String data = in.readUTF();
            System.out.println("Received: " + data);

        } catch (UnknownHostException e) {
            System.out.println("Socket:" + e.getMessage());
        } catch (EOFException e) {
            System.out.println("EOF:" + e.getMessage());
        } catch (IOException e) {
            System.out.println("readline:" + e.getMessage());
        } finally {
            if (s != null)
                try {
                    s.close();
                } catch (IOException e) {
                    System.out.println("close:" + e.getMessage());
                }
        }
    }
}
```

Main.java | UDPClient.java | TCPClient.java | TCPServer.java | Connection.java

```java
package com.home.lab11.task2;


import java.io.IOException;
import java.net.ServerSocket;
import java.net.Socket;

public class TCPServer {
    public static void main(String args[]) {
        try {
            int serverPort = 6789;
            ServerSocket listenSocket =
                    new ServerSocket(serverPort);
            while (true) {
                Socket clientSocket = listenSocket.accept();
                Connection c = new Connection(clientSocket);
            }
        } catch(IOException e) {
            System.out.println("Listen socket:"+e.getMessage());
        }

    }
}
```

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```java
package com.home.lab11.task2;

import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.EOFException;
import java.io.IOException;
import java.net.Socket;

class Connection extends Thread {
    DataInputStream in;
    DataOutputStream out;
    Socket clientSocket;

    public Connection(Socket aClientSocket) {
        try {
            clientSocket = aClientSocket;
            in = new DataInputStream(clientSocket.getInputStream());
            out = new DataOutputStream(clientSocket.getOutputStream());
            this.start();
        } catch (IOException e) {
            System.out.println("Connection:" + e.getMessage());
        }
    }


}
```

Output:

```
TCPServer × UDPServer × TCPClient ×
C:\Users\user\.jdks\corretto-16.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException Create breakpoint : Index 1 out of bounds for length 0
    at com.home.lab11.task2.TCPClient.main(TCPClient.java:12)

Process finished with exit code 1
```