Networking with Linux Lab
Module 2: Client Server Network topology using NS-3

Assignment 11: Program to simulate FTP using TCP protocol

Aim: To develop a program that simulates FTP (File Transfer Protocol) using the TCP (Transmission Control Protocol) protocol

Theory: TCP Protocol

TCP (Transmission Control Protocol) is one of the main protocols of the Internet Protocol Suite. It operates at the transport layer and facilitates reliable, ordered, and error-checked delivery of data between devices over a network.

To simulate FTP (File Transfer Protocol) using the TCP (Transmission Control Protocol) protocol, you would need to create a client-server architecture where the client initiates requests for file transfers and the server responds accordingly. The client would establish a TCP connection with the server, send commands for file retrieval or storage, and the server would perform the requested operations, ensuring reliable data transfer over the TCP connection.

Code:

> TCPServer.java

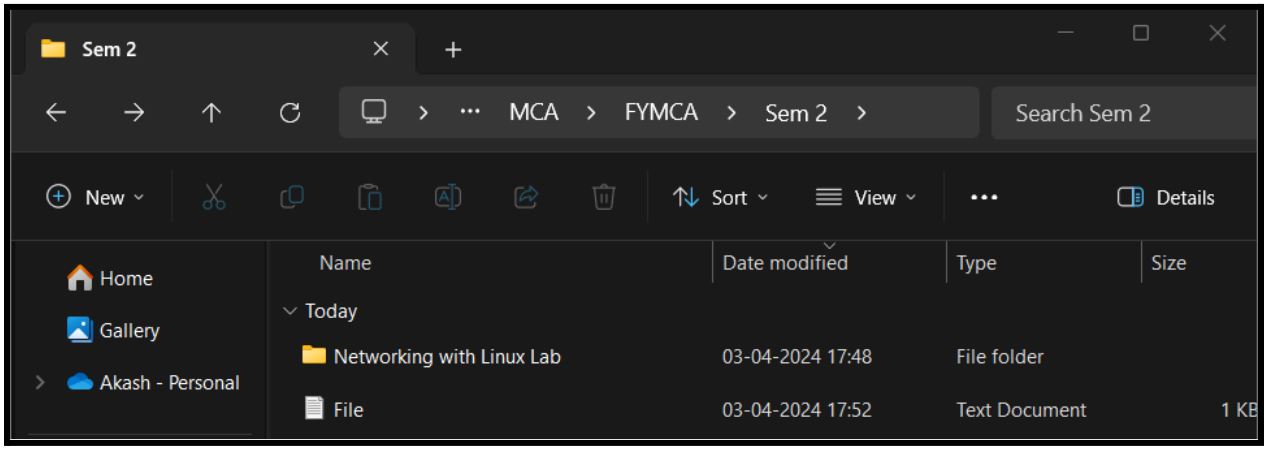
```
package TCP;

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

public class TCPServer {

	public static void main(String[] args) throws IOException {
		ServerSocket serverSocket = new ServerSocket(4002);
		Socket socket = serverSocket.accept();
		System.out.println("Server Connected ...");
		// Find Location of the file
		FileInputStream fileInputStream = new FileInputStream("C:\\Users\\itsak\\Downloads\\MCA\\FYMCA\\Sem 2\\File.txt");
		// Show File Size
		byte[] fileBytes = new byte[2500];
		// Start Reading File from 0th line to last
		fileInputStream.read(fileBytes, 0, fileBytes.length);
		// Convert file to stream to send to client
		OutputStream outputStream = socket.getOutputStream();
```

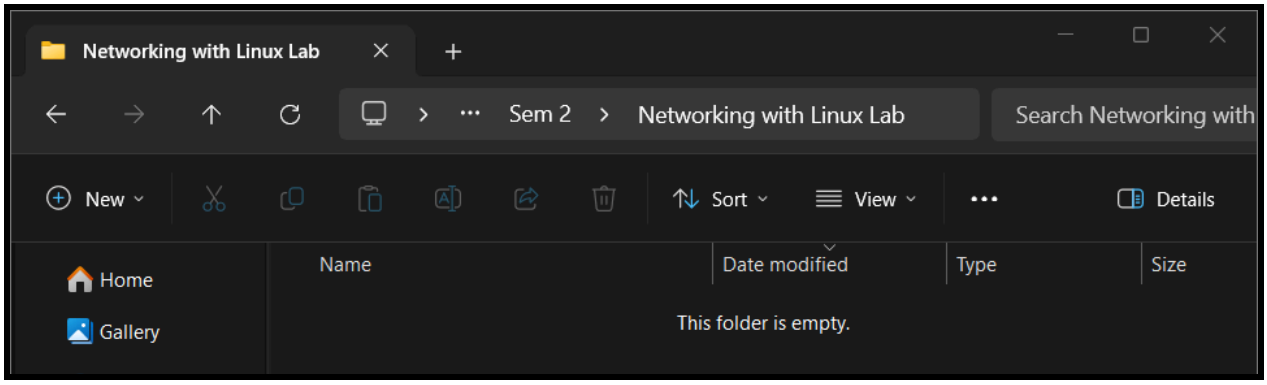
```
                outputStream.write(fileBytes, 0, fileBytes.length);
        }

}
```

> TCPClient.java

```
package TCP;

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

public class TCPClient {

        public static void main(String[] args) throws IOException {
                byte[] buffer = new byte[25004];
                Socket socket = new Socket("localhost", 4002);
                System.out.println("Sending file to the server...");
                InputStream inputStream = socket.getInputStream();
                FileOutputStream fileOutputStream = new
FileOutputStream("C:\\Users\\itsak\\Downloads\\MCA\\FYMCA\\Sem 2\\Networking with
Linux Lab\\File.txt");
                inputStream.read(buffer, 0, buffer.length);
                fileOutputStream.write(buffer, 0, buffer.length);
                System.out.println("File received successfully!");
                fileOutputStream.close();
                socket.close();
        }

}
```

Output:

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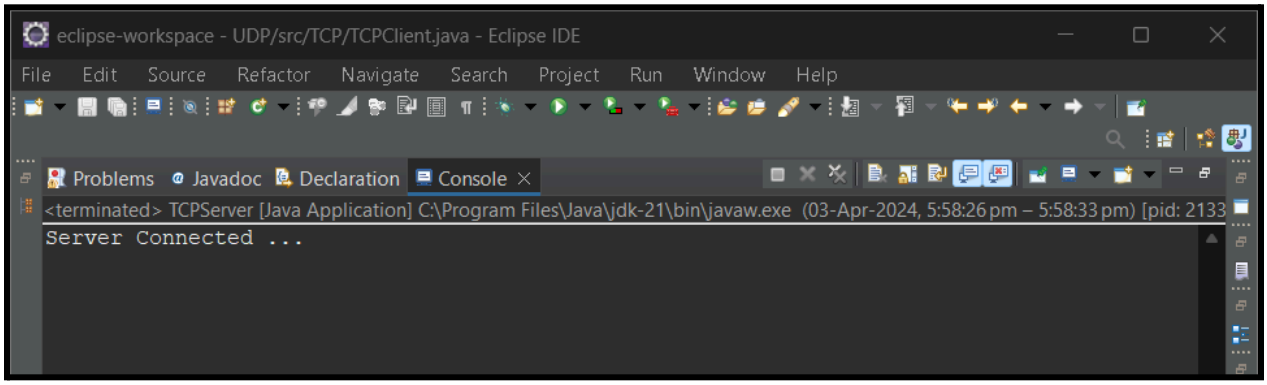
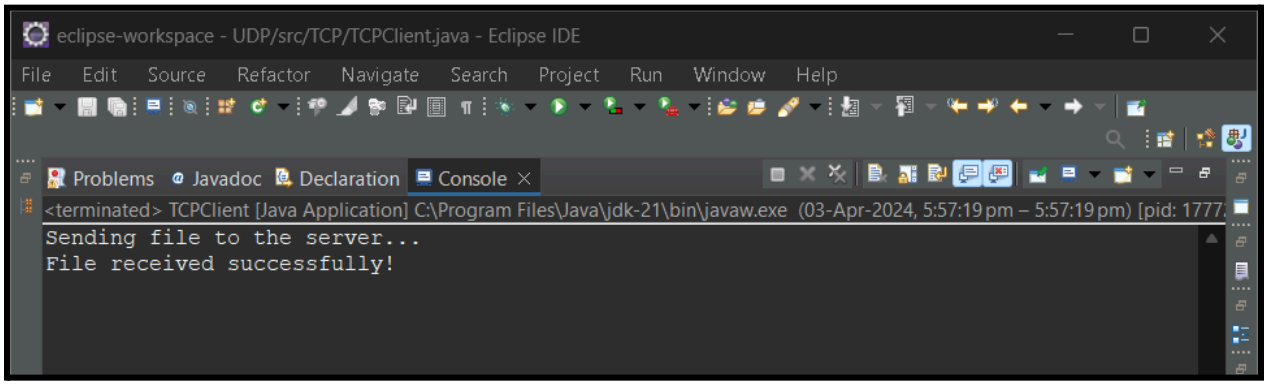
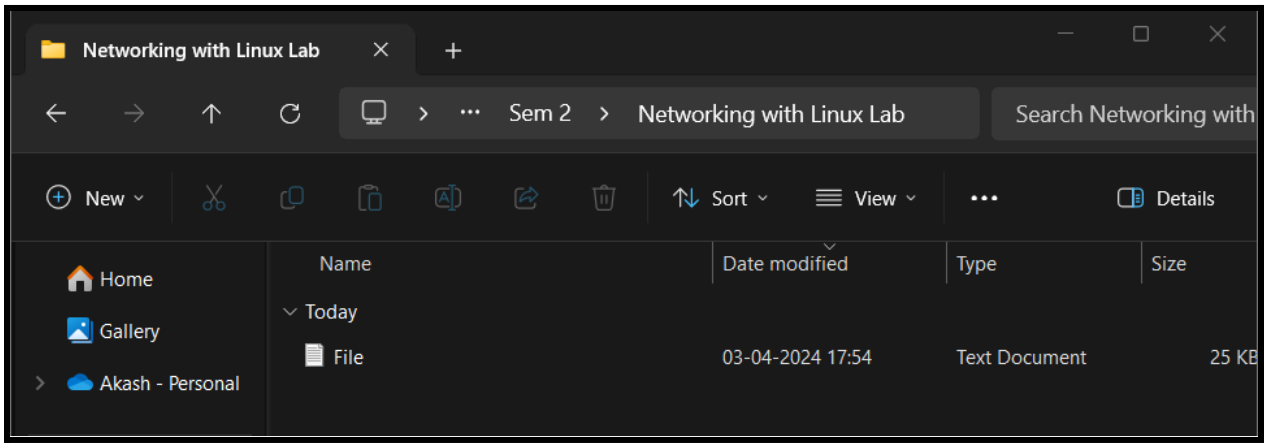

eclipse-workspace - UDP/src/TCP/TCPClient.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Problems Javadoc Declaration Console
<terminated> TCPServer [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (03-Apr-2024, 5:58:26 pm – 5:58:33 pm) [pid: 2133
Server Connected ...


eclipse-workspace - UDP/src/TCP/TCPClient.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Problems Javadoc Declaration Console
<terminated> TCPClient [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (03-Apr-2024, 5:57:19 pm – 5:57:19 pm) [pid: 1777
Sending file to the server...
File received successfully!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Conclusion: Implementing FTP simulation using TCP protocol allows for understanding and experimenting with file transfer mechanisms over a network.