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CLASS : TE (B) COMP
ROLL NO : 39055

CNL ASSIGNMENT 2 - (B1)

PROBLEM STATEMENT:

Write a Program with following options to transfer- (Use any Framing Technic). a. Characters separated by space b. One Strings at a time c. One Sentence at a time d. file

PROGRAM:

Sender.java:

```
package com.company;

import org.jetbrains.annotations.NotNull;


import java.io.*;
import java.net.ServerSocket;
import java.net.Socket;
import java.util.Scanner;
import java.util.regex.Pattern;


public class Sender {


    private DataOutputStream dataOutputStream;
    private static Scanner scanner=new Scanner(System.in);
    Socket socket;

    Sender(){

        try {
            ServerSocket serverSocket = new ServerSocket(3000);
            socket = serverSocket.accept();
            dataOutputStream=new DataOutputStream(socket.getOutputStream());
            if(socket.isConnected()){
                System.out.print("\nClient Connected");
            }
            while (true) {
                sendData();
            }
        } catch (IOException e) {
            e.printStackTrace();
        }
    }

    private void sendData() throws IOException {
```

```
        System.out.print("Select The Method :\n1.Char With Spaces\n2.String At
A Time\n3.Sentence At A Time\n4.File");
        int ch=scanner.nextInt();
        switch (ch){
            case 1:scanner.nextLine();
                System.out.print("Enter Characters with spaces :");
            String ip=scanner.nextLine();
            dataOutputStream.writeInt(1);
            dataOutputStream.writeInt(ip.length());

            for(int i=0;i<ip.length();i++){
                dataOutputStream.writeUTF(String.valueOf(ip.charAt(i)));
            }

            break;

            case 2:scanner.nextLine();
                System.out.print("Enter String :");
                String ip1=scanner.nextLine();
                String[] str=ip1.split(" ");
                dataOutputStream.writeInt(2);
                dataOutputStream.writeInt(5);
                sendBuffer(getCountFrame(str));
                dataOutputStream.writeInt(2);
            break;

            case 3:scanner.nextLine();
             System.out.print("Enter Sentences with \".\" :");
                String ip2=scanner.nextLine();
                String[] str1=ip2.split(Pattern.quote("."));
                dataOutputStream.writeInt(3);
                dataOutputStream.writeInt(5);
                sendBuffer(getCountFrame(str1));
                dataOutputStream.writeInt(2);
                break;

            case 4:
                dataOutputStream.writeInt(4);
                dataOutputStream.writeInt(6);
                sendFile();
                dataOutputStream.writeInt(2);
        }

    }

    private void sendFile(){
        try {
            byte b[]=new byte[10000];
            byte send[][]=new byte[100][10000];
            InputStream in = new FileInputStream(new
File("D:\\sendFile.txt"));
            BufferedReader reader = new BufferedReader(new
InputStreamReader(in));
            StringBuilder out = new StringBuilder();
            String line;
            while ((line = reader.readLine()) != null) {
```

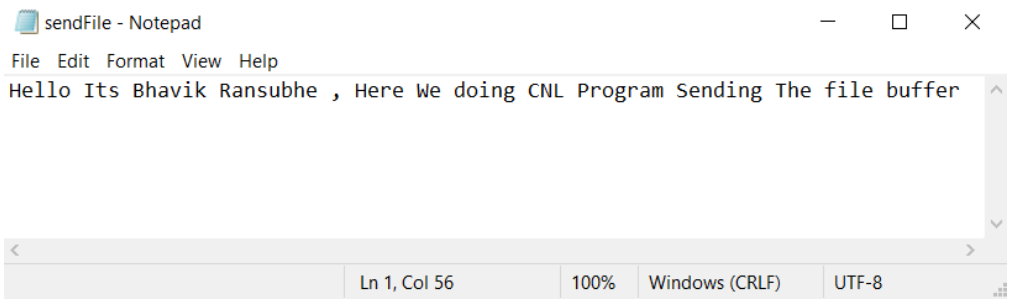
```
            out.append(line);
        }
        String outData=out.toString();
        String str[]=outData.split(Pattern.quote(" "));
        String op=getCountFrame(str);

        OutputStream outputStream = socket.getOutputStream();

        for(int i=0;i<op.length();i++){
            if(Character.isDigit(op.charAt(i))){
                StringBuilder sendB = new StringBuilder("");
                int l=Integer.parseInt(String.valueOf(op.charAt(i)));
                for(int j=i+1;j<l+i+1;j++){
                    sendB.append(op.charAt(j));
                }
                send[i]=sendB.toString().getBytes();
                dataOutputStream.writeInt(1);
                outputStream.write(send[i],0,send[i].length);
            }
        }
        System.out.println("\nFile sent Successfully!");
    } catch (IOException e){
        e.printStackTrace();
    }
}


private void sendBuffer(String frame) throws IOException {
    for(int i=0;i<frame.length();i++){
        if(Character.isDigit(frame.charAt(i))){
            StringBuilder sendB = new StringBuilder("");
            int l=Integer.parseInt(String.valueOf(frame.charAt(i)));
            for(int j=i+1;j<l+i+1;j++){
                sendB.append(frame.charAt(j));
            }
            dataOutputStream.writeInt(1);
            dataOutputStream.writeUTF(sendB.toString());
        }
    }
}

@NotNull
private String getCountFrame(String[] arr){
    StringBuilder frame = new StringBuilder("");
    for (String s : arr) {
        frame.append(s.length());
        frame.append(s);
    }
    return frame.toString();
}


public static void main(String[] args){
    new  Sender();
}
```

Client.java:

```java
package com.company;

import java.io.*;
import java.net.Socket;
import java.util.Arrays;

public class Client {

    private DataInputStream dataInputStream;
    private DataOutputStream dataOutputStream;
    Socket socket;

    Client() {
        try {
            socket = new Socket("localhost", 3000);
            dataInputStream = new DataInputStream(socket.getInputStream());
            dataOutputStream = new DataOutputStream(socket.getOutputStream());
            if (socket.isConnected()) {
                System.out.print("\nConnected To Server\n");
            }
        } catch (IOException e) {
            e.printStackTrace();
        }
        while (true){
            try {
                receiveData();
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
    }

    private void receiveData() throws IOException {
        int ch = dataInputStream.readInt();
        switch (ch) {
            case 1:
                System.out.print("Characters At A Time : ");
                break;
            case 2:
                System.out.print("\nString At A Time : ");
                break;
            case 3:
                System.out.print("\nSentences At A Time : ");
                break;
            case 4:
                System.out.print("\nFile : ");
                break;
            case 5: int loops;
                boolean stat;
                do{
                    loops=dataInputStream.readInt();
                    if(loops==1) {
                        String buffer = dataInputStream.readUTF();
                        System.out.println(buffer);
```

```
                        stat=true;
                    }else{
                        stat=false;
                    }

                }while (stat);
                break;
            case 6:
                byte[] c = new byte[10000];
                do{
                    loops=dataInputStream.readInt();
                    if(loops==1) {
                    receiveFile(c);
                        stat=true;
                    }else{
                        stat=false;
                    }
                }while (stat);
                break;
        }
        }

    private void receiveFile(byte[] c){
        InputStream inputStream = null;
        byte[] b = new byte[10000];
        try {
            inputStream = socket.getInputStream();
            inputStream.read(b,0,b.length);
            FileOutputStream fos = new FileOutputStream("C:\\Users\\bhavi
Desktop\\CNL\\Framing Technique\\Client\\src\\com\\company\\receivedFile");
            fos.write(b,0,b.length);

        } catch (IOException e) {
            e.printStackTrace();
        }
        return;
    }


    public static void main(String[] args){
        new Client();
    }
}
```

sendFile.txt:



OUTPUT:

Sender:

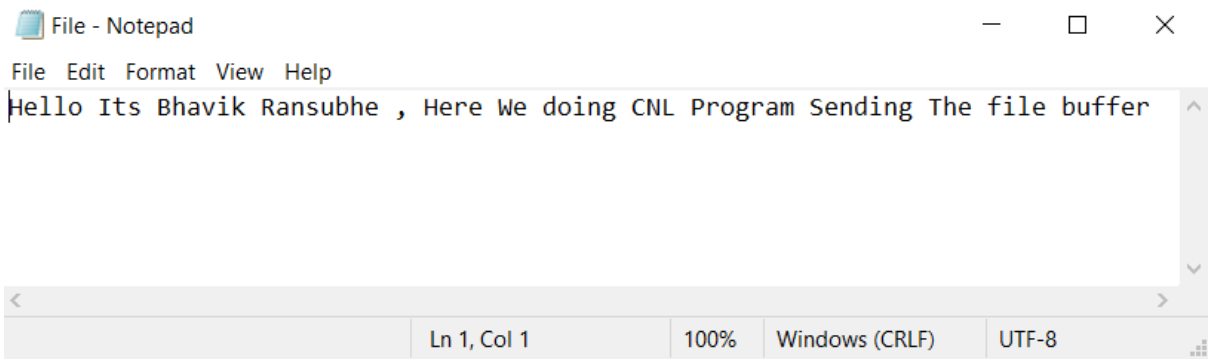
```
Client Connected
Select The Method :
1.Char With Spaces
2.String At A Time
3.Sentence At A Time
4.File :1
Enter Characters with spaces :B H A V I K  R A N S U B H E
Select The Method :
1.Char With Spaces
2.String At A Time
3.Sentence At A Time
4.File :2
Enter String :BHAVIK RANSUBHE
Select The Method :
1.Char With Spaces
2.String At A Time
3.Sentence At A Time
4.File :3
Enter Sentences with "." :HELLO.ITS BHAVIK RANSUBHE HERE.I AM FROM TE B
COMPUTER ENGINEERING DEPARTMENT
Select The Method :
1.Char With Spaces
2.String At A Time
3.Sentence At A Time
4.File :4

File sent Successfully!

Select The Method :
1.Char With Spaces
2.String At A Time
3.Sentence At A Time
4.File :5
```

Client:

```
Connected To Server
Characters At A Time : B
H
A
V
I
K
R
A
N
S
U
B
H
E
```

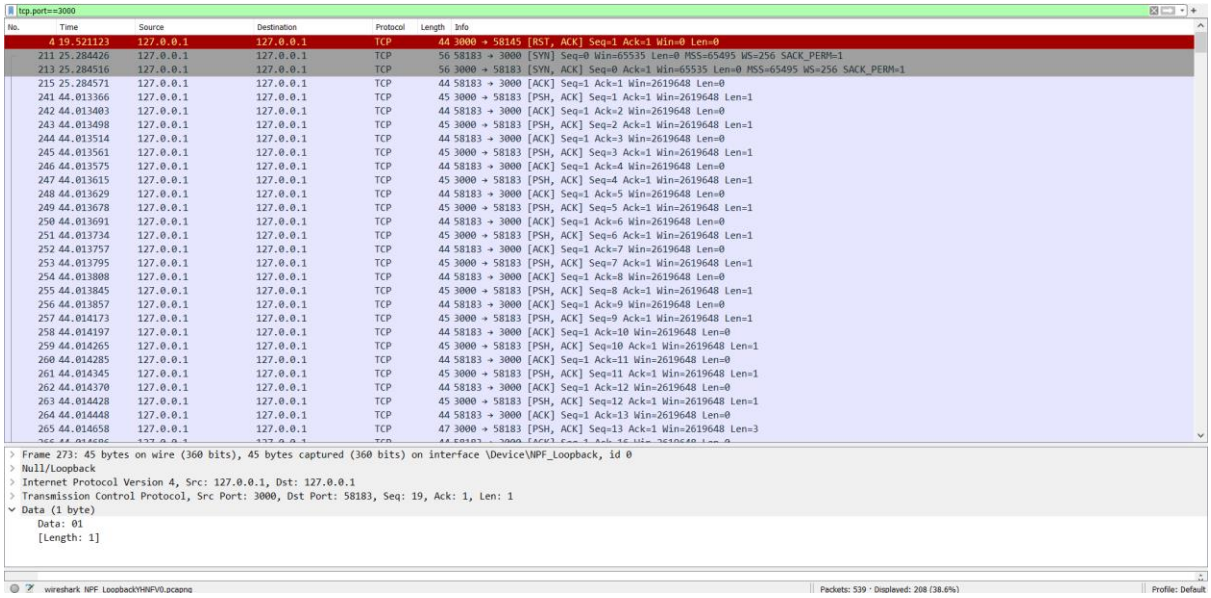
```
String At A Time :
BHAVIK
RANSUBHE

Sentences At A Time :
HELLO
ITS BHAVIK RANSUBHE HERE
I AM FROM TE B COMPUTER ENGINEERING DEPARTMENT

File :
```

File.txt:

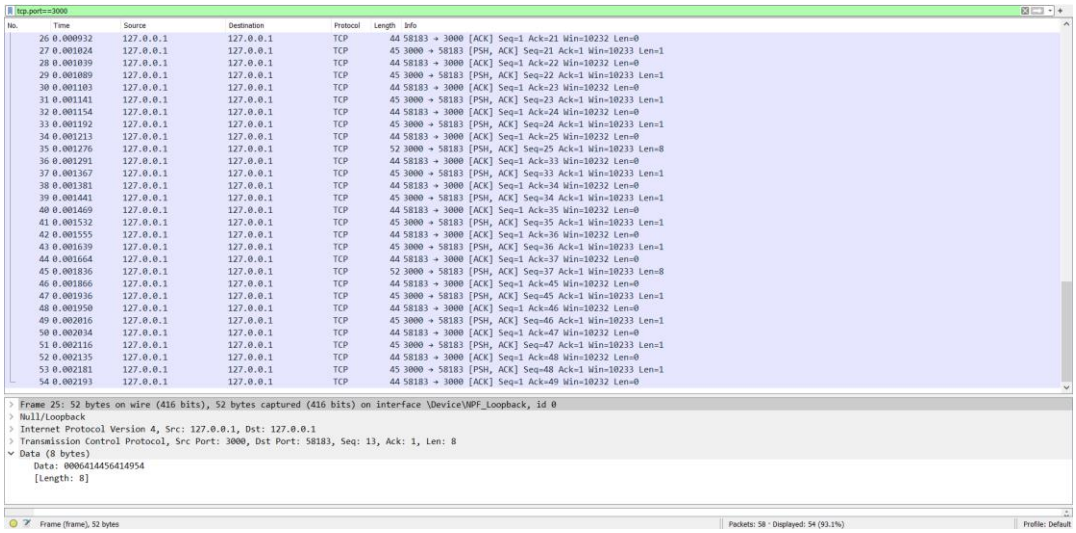


Wireshark:

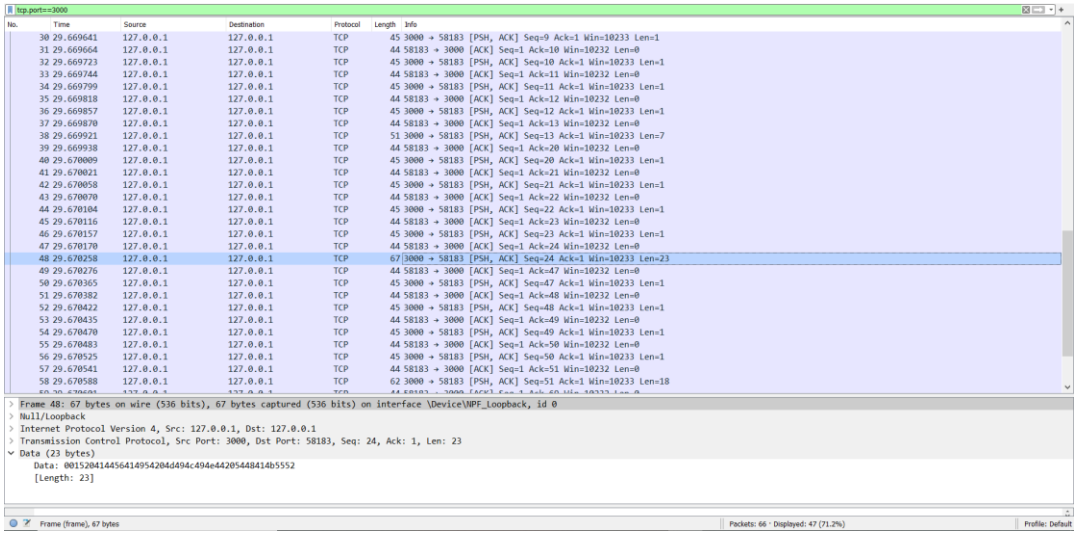
Characters Separate By Space:



String At A Time:



Sentence At A Time:



File: