Lab Assignment on Unit II: (Use JAVA/PYTHON)

Write a program to simulate Go back N and Selective Repeat Modes of Sliding Window Protocol in peer to peer mode

Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode

PROGRAMS

```
//...............CLIENT SIDE (SELECTIVE REPEAT).............//

import java.lang.System;
import java.net.*;
import java.io.*; import
java.text.*; import
java.util.Random; import
java.util.*;

public class Client { static
    Socket connection;

    public static void main(String a[]) throws SocketException
        { try { int v[] = new int[10];
            int n = 0;
            Random rands = new Random();
            int rand = 0;

            InetAddress addr = InetAddress.getByName("Localhost");
            System.out.println(addr);
            connection = new Socket(addr, 8011);
            DataOutputStream out = new DataOutputStream(
                    connection.getOutputStream());
            DataInputStream in = new DataInputStream(
                    connection.getInputStream());
            int p = in.read();
            System.out.println("No of frame is:" + p);

            for (int i = 0; i < p; i++) {
                v[i] = in.read();
                System.out.println(v[i]);
                //g[i] = v[i];
            }
```

```java
            rand = rands.nextInt(p);//FRAME NO. IS RANDOMLY GENERATED

            v[rand] = -1;

            for (int i = 0; i < p; i++)
             {
                  System.out.println("Received frame is: " + v[i]);

             }
            for (int i = 0; i < p; i++)
                if (v[i] == -1) {
                   System.out.println("Request to retransmit from packet no
"
                            + (i+1) + " again!!");
                   n = i;
                   out.write(n);
                   out.flush();
                }

            System.out.println();

                v[n] = in.read();
                System.out.println("Received frame is: " + v[n]);


            System.out.println("quiting");
        } catch (Exception e) {
            System.out.println(e);
        }

    }
}
```

```
60
70
80
90
100
Received frame is: 30
Received frame is: 40
Received frame is: 50
Received frame is: 60
Received frame is: -1
Received frame is: 80
Received frame is: 90
Received frame is: 100
Request to retransmit from packet no 5 again!!

Received frame is: 70
quiting

C:\Users\dell\Java\CN\SelRep>
*/
```

//....................SERVER SIDE (SELECTIVE REPEAT)..........//

```java
import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.IOException;
import java.net.ServerSocket;
import java.net.Socket; import
java.net.SocketException;

public class Server { static ServerSocket Serversocket; static
    DataInputStream dis; static DataOutputStream dos; public static
    void main(String[] args) throws SocketException {

        try { int a[] = { 30, 40, 50, 60, 70, 80, 90, 100
            };
            Serversocket = new ServerSocket(8011);
            System.out.println("waiting for connection"); Socket client =
            Serversocket.accept(); dis = new
            DataInputStream(client.getInputStream()); dos = new
            DataOutputStream(client.getOutputStream());
```

```java
            System.out.println("Thenumberofpacketssentis:"+a.length); int
            y = a.length; dos.write(y); dos.flush();

            for (int i = 0; i < a.length; i++) {
                dos.write(a[i]);
            dos.flush(); } int
            k = dis.read();

            dos.write(a[k]);
            dos.flush();

        } catch (IOException e) {
            System.out.println(e);
        } finally {
            try {
                dis.close();
                dos.close();
            } catch (IOException e) {
                e.printStackTrace();
            }

        }
    }
}


/*-------------OUTPUT---------------------

C:\Users\dell\Java\CN\SelRep>javac Server.java

C:\Users\dell\Java\CN\SelRep>java Server
waiting for connection The
number of packets sent is:8

C:\Users\dell\Java\CN\SelRep>

*/
```

4 Go Back N protocol.
Selective. Repeat Protocol.

Q1 Why we need flow control Mechanism?
- flow control mechanism can be classiffed
by we whether or not the reciving node
sends feedback to the sending node.
flow control in important because it is
possible for a sending computer to
transmit information at a faster rate thats
the destination computer can receive and
process it.

Q2 What are the ways to control flow Control at
DLL!

flow control way

feedback   Rate.
- baseflow control   base flow control.
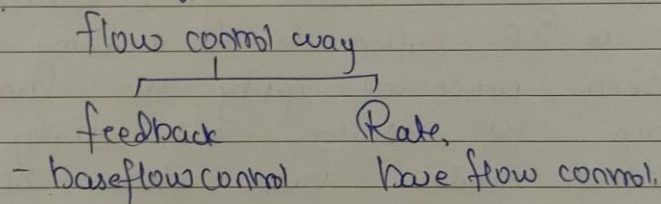
- In these protocols the   - These protocol have built
sender send frames after   in mechanisms to restrict
it has received acknouledgment   the rate of transmission
from the user. this used   of data without requiring
in the data link layer   this in used in the.
                                 network layer the transport ly.

Q3 What is Sliding Window. ?
→ The Sliding window is a technique for sending
multiple frame at a time. It control the data
packet betn the two device where reliable &
gradual delivery of data frame is needed. it
used TCP.

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Q4. How window size grow and shrink at Client side?
- Simple put it will a TCP receive buffer for incoming data that has not been processed yet by the application. The client & server are advertising their window size value as they communidte
- Each TCP header will display the most recent window value which can grow or shrink as the connection progresses

Q5 How window size grow & shrink at Server side?
- It is TCP buffer for incoming data has not been processed yet by the application.
Each TCP header will display the most recent window value which can grow or shrink as the connection progresses. In this example the client has TCP receives window of 65,535 bytes and the server has 3,840.

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