Implementation of Sliding Window Protocol

Sender

```
import java.net.*;
 import java.io.*;
 import java.rmi.*;
 public class Sender {
 public static void main(String a[])throws Exception {
ServerSocket ser=new ServerSocket(10);
Socket s=ser.accept();
 DataInputStream in=new DataInputStream(System.in);
 DataInputStream in1=new DataInputStream(s.getInputStream());
String sbuff[]=new String[8];
PrintStream p;
 int sptr=0,sws=8,nf,ano,i;
 String ch;
do
 {
 p=new PrintStream(s.getOutputStream());
System.out.print("Enter the no. of frames : ");
nf=Integer.parseInt(in.readLine());
p.println(nf);
if(nf<=sws-1)
{
System.out.println("Enter "+nf+" Messages to be send\n");
for(i=1;i<=nf;i++)
 {
```

```
sbuff[sptr]=in.readLine();
p.println(sbuff[sptr]);
sptr=++sptr%8;
 }
sws-=nf;
System.out.print("Acknowledgment received");
 ano=Integer.parseInt(in1.readLine());
System.out.println(" for "+ano+" frames");
 sws+=nf;
}
 else { System.out.println("The no. of frames exceeds window size");
 break;
 }
System.out.print("\nDo you wants to send some more frames : ");
ch=in.readLine();
 p.println(ch);
}
 while(ch.equals("yes"));
 s.close();
 }
}
```

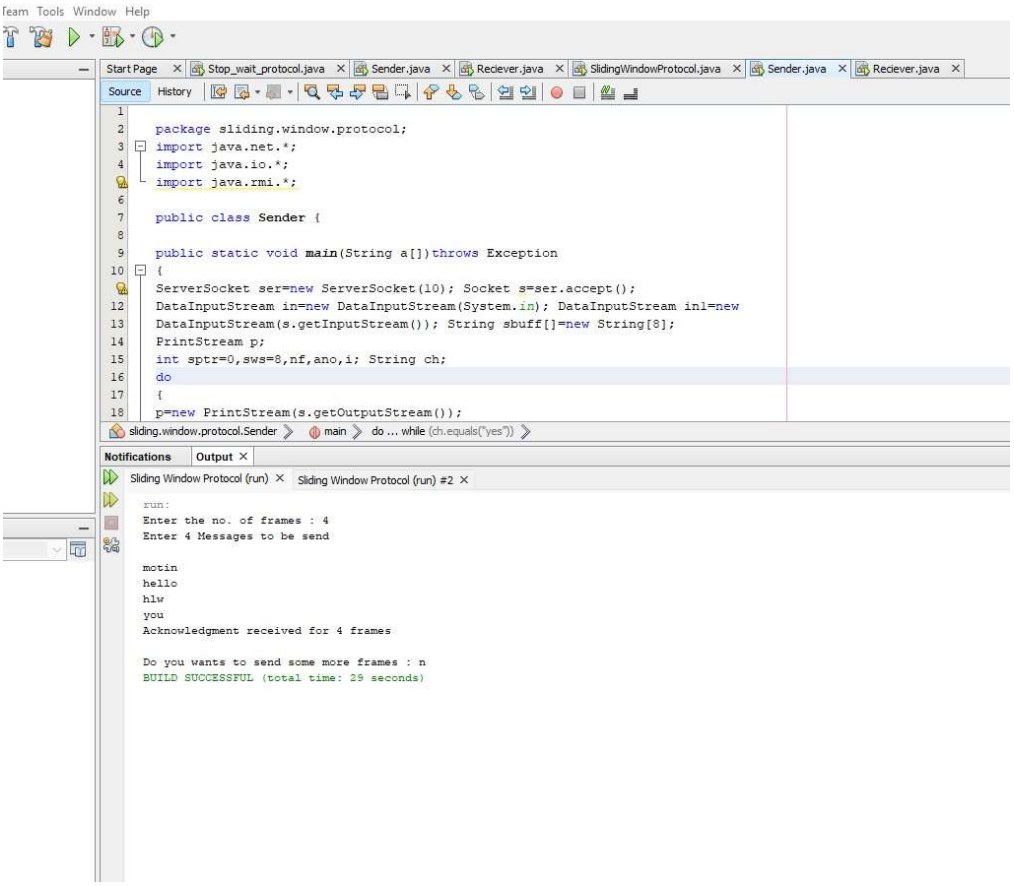
Reciever

```
import java.net.*;
 import java.io.*;
 class Receiver {
```

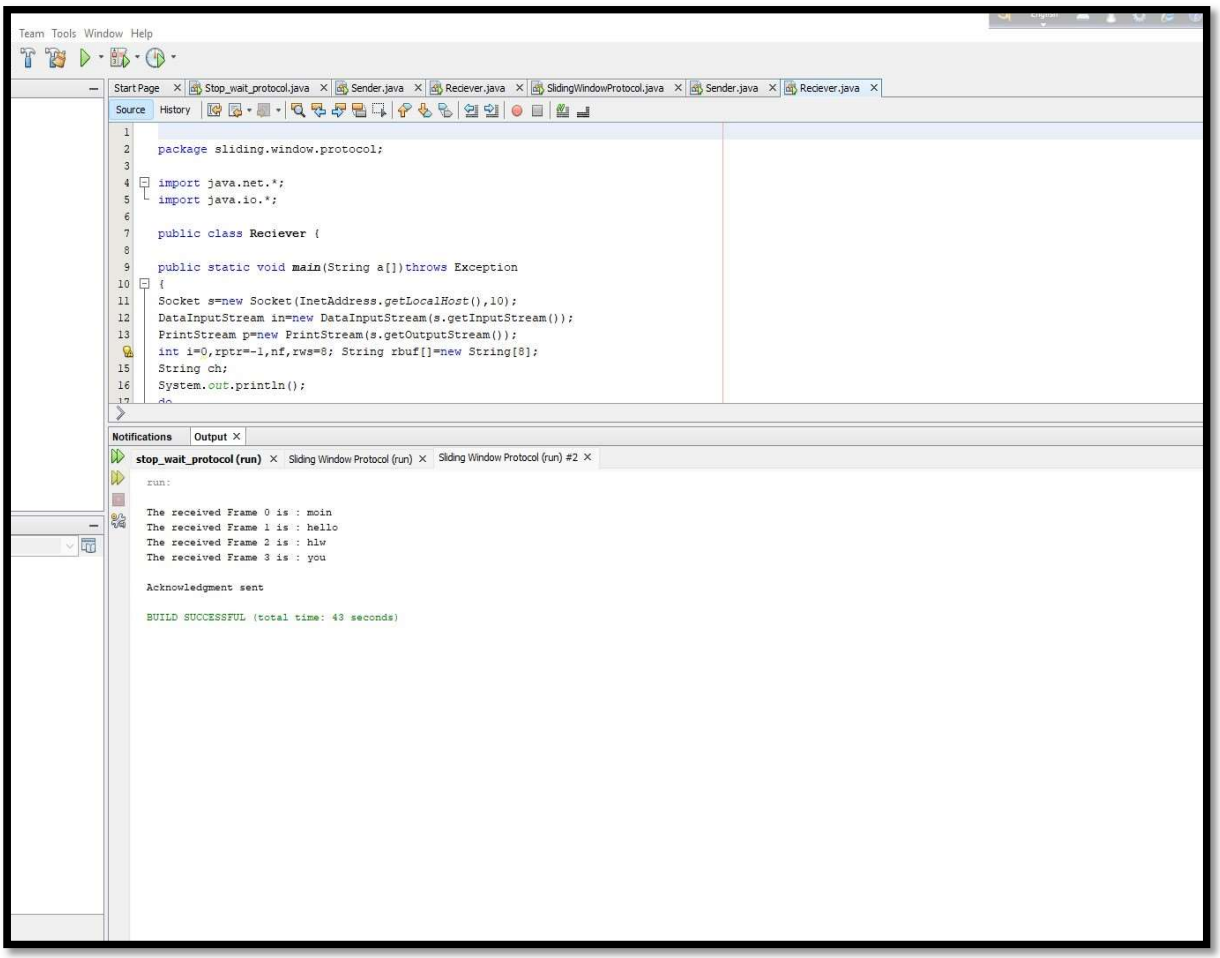
```
 public static void main(String a[])throws Exception
 {
Socket s=new Socket(InetAddress.getLocalHost(),10);
 DataInputStream in=new DataInputStream(s.getInputStream());
 PrintStream p=new PrintStream(s.getOutputStream());
 int i=0,rptr=-1,nf,rws=8;
 String rbuf[]=new String[8];
 String ch;
System.out.println();
 do { nf=Integer.parseInt(in.readLine());
if(nf<=rws-1)
{
for(i=1;i<=nf;i++)
 {
 rptr=++rptr%8;
 rbuf[rptr]=in.readLine();
System.out.println("The received Frame " +rptr+" is : "+rbuf[rptr]);
 }
 rws-=nf;
System.out.println("\nAcknowledgment sent\n");
p.println(rptr+1);
rws+=nf;
}
else break;
 ch=in.readLine();
 }
```

```
while(ch.equals("yes"));
 }
}
```

Sender Output



Reciever Output



Implementation of Stop and Wait Protocol

#SENDER PROGRAM

```
import java.io.*;

import java.net.*;

public class Sender{

Socket sender;

ObjectOutputStream out;

ObjectInputStream in;
```

```
String packet,ack,str, msg;

int n,i=0,sequence=0;

 Sender()

{

}

public void run()

{

 Try

{

 BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

System.out.println("Waiting for Connection...."); sender = new
Socket("localhost");

sequence=0;

 out=new ObjectOutputStream(sender.getOutputStream());

out.flush();

in=new ObjectInputStream(sender.getInputStream());

 str=(String)in.readObject(); System.out.println("reciver > "+str);

System.out.println("Enter the data to send....");

packet=br.readLine();

 n=packet.length();

do{

try{

 if(i<n){

msg=String.valueOf(sequence);
```

```
msg=msg.concat(packet.substring(i,i+1));
}
else if(i==n){
 msg="end";out.writeObject(msg);
break;
}
out.writeObject(msg);
sequence=(sequence==0)?1:0;
out.flush();
System.out.println("data sent>"+msg);
ack=(String)in.readObject();
System.out.println("waiting for ack.....\n\n");
if(ack.equals(String.valueOf(sequence))){
i++;
System.out.println("receiver > "+" packet recieved\n\n");
}
else{
System.out.println("Time out resending data....\n\n");
sequence=(sequence==0)?1:0;
}
}catch(Exception e){}
}while(i<n+1);
System.out.println("All data sent. exiting.");
```

```
}catch(Exception e){}
finally{
try{
in.close();
out.close();
sender.close();
}
catch(Exception e){}
}
}
public static void main(String args[]){
Sender s=new Sender();
s.run();
}
}
```

RECEIVER

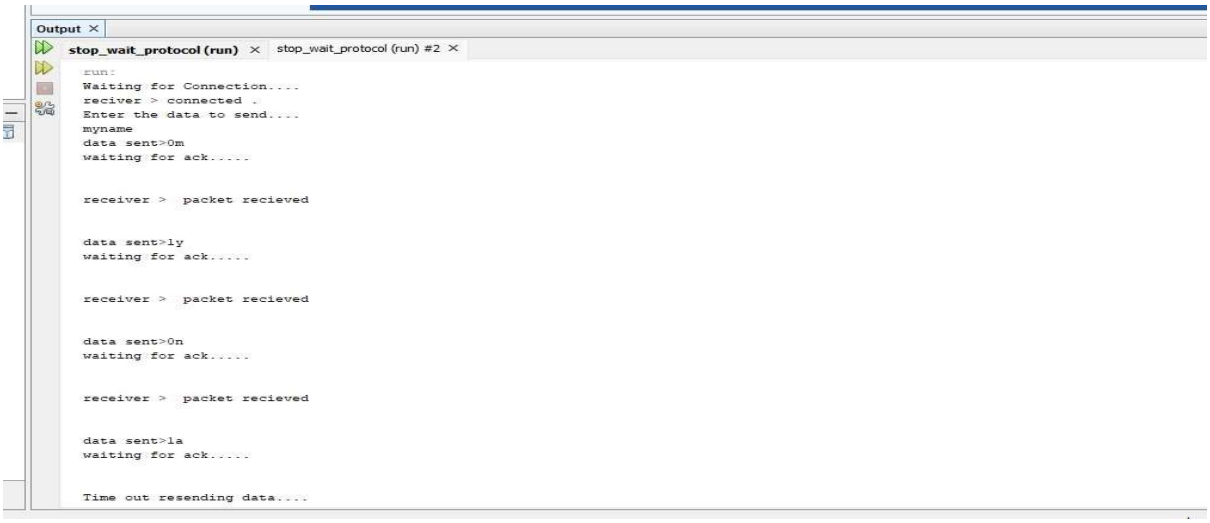
```
import java.io.*;
import java.net.*;
public class Reciever{
ServerSocket reciever;
Socket connection=null;
ObjectOutputStream out;
ObjectInputStream in;
```

```
String packet,ack,data="";
int i=0,sequence=0;
Reciever(){}
public void run(){
try{
BufferedReader br=new BufferedReader(new InputStreamReader(System.in));
reciever = new ServerSocket(2004,10);
System.out.println("waiting for connection...");
connection=reciever.accept();
sequence=0;
System.out.println("Connection established :");
out=new ObjectOutputStream(connection.getOutputStream());
out.flush();
in=new ObjectInputStream(connection.getInputStream());
out.writeObject("connected .");
do{
try{
packet=(String)in.readObject();
if(Integer.valueOf(packet.substring(0,1))==sequence){
data+=packet.substring(1);
sequence=(sequence==0)?1:0;
System.out.println("\n\nreceiver >"+packet);
}
```

```
else
{
System.out.println("\n\nreceiver >"+packet +" duplicate data");
}
if(i<3){
out.writeObject(String.valueOf(sequence));i++;
}
else{
out.writeObject(String.valueOf((sequence+1)%2));
i=0;
}
}
catch(Exception e){}
}
while(!packet.equals("end"));
System.out.println("Data recived="+data);
out.writeObject("connection ended .");
}
catch(Exception e){}
finally{
try{
in.close();
out.close();
```

```
reciever.close();
}
catch(Exception e){}
}
}
public static void main(String args[]){
Reciever s=new Reciever();
while(true){
s.run();
}
}
}
```

Output Stop wait Protocol



Output

stop_wait_protocol (run) | stop_wait_protocol (run) #2

```
data sent>1a
waiting for ack.....


Time out resending data....


data sent>1a
waiting for ack.....


receiver >  packet recieved


data sent>0m
waiting for ack.....


receiver >  packet recieved


data sent>1e
waiting for ack.....


receiver >  packet recieved


All data sent. exiting.
BUILD SUCCESSFUL (total time: 6 seconds)
```