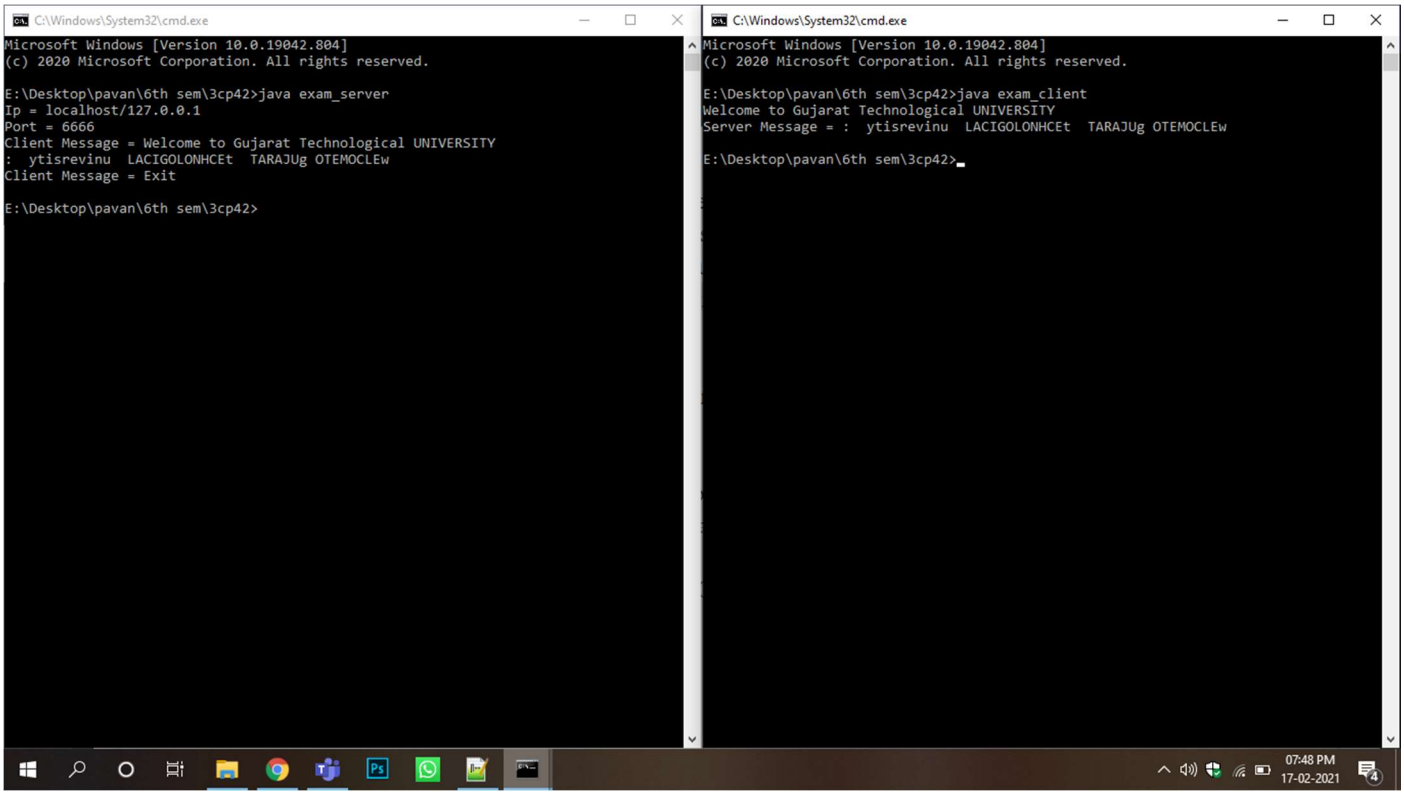
1. Write a TCP or UDP client and server program to do the following:
-client> java client localhost/IP Port
-Enter text: Welcome to Gujarat Technological UNIVERSITY
-Response from server: ytisrevinu LACIGOLONHCEt TARAJUg OTEMOCLEw
-client> exit

Code:

```
//server
import java.io.*;
import java.net.*;
public class exam_server
{
	public static void main(String[] args)
	{
		try
		{
			ServerSocket ss=new ServerSocket(6666);
			Socket s=ss.accept();

			DataOutputStream dout=new DataOutputStream(s.getOutputStream());
			DataInputStream din=new DataInputStream(s.getInputStream());
			BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

			System.out.println("Ip = "+din.readUTF());
			System.out.println("Port = "+din.readInt());
			System.out.println("Client Message = "+din.readUTF());

			String data=br.readLine();
			dout.writeUTF(data);

			System.out.println("Client Message = "+din.readUTF());

			ss.close();



		}
		catch(Exception e){System.out.println(e);}
	}
}
//client
import java.io.*;
import java.net.*;
public class exam_client
{
	public static void main(String[] args)
	{
		try
		{
			Socket s=new Socket("localhost",6666);

			DataOutputStream dout=new DataOutputStream(s.getOutputStream());
			DataInputStream din=new DataInputStream(s.getInputStream());
			BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

			InetAddress ip=s.getInetAddress();
			int port=s.getPort();

			dout.writeUTF(ip.toString());
			dout.flush();
			dout.writeInt(port);
			dout.flush();

			String data=br.readLine();
			dout.writeUTF(data);
			dout.flush();

			System.out.println("Server Message = "+din.readUTF());

			dout.writeUTF("Exit");
			dout.flush();

			din.close();
			dout.close();
```

```
                    s.close();
                }
                catch(Exception e){System.out.println(e);}
        }
}
```

Output:



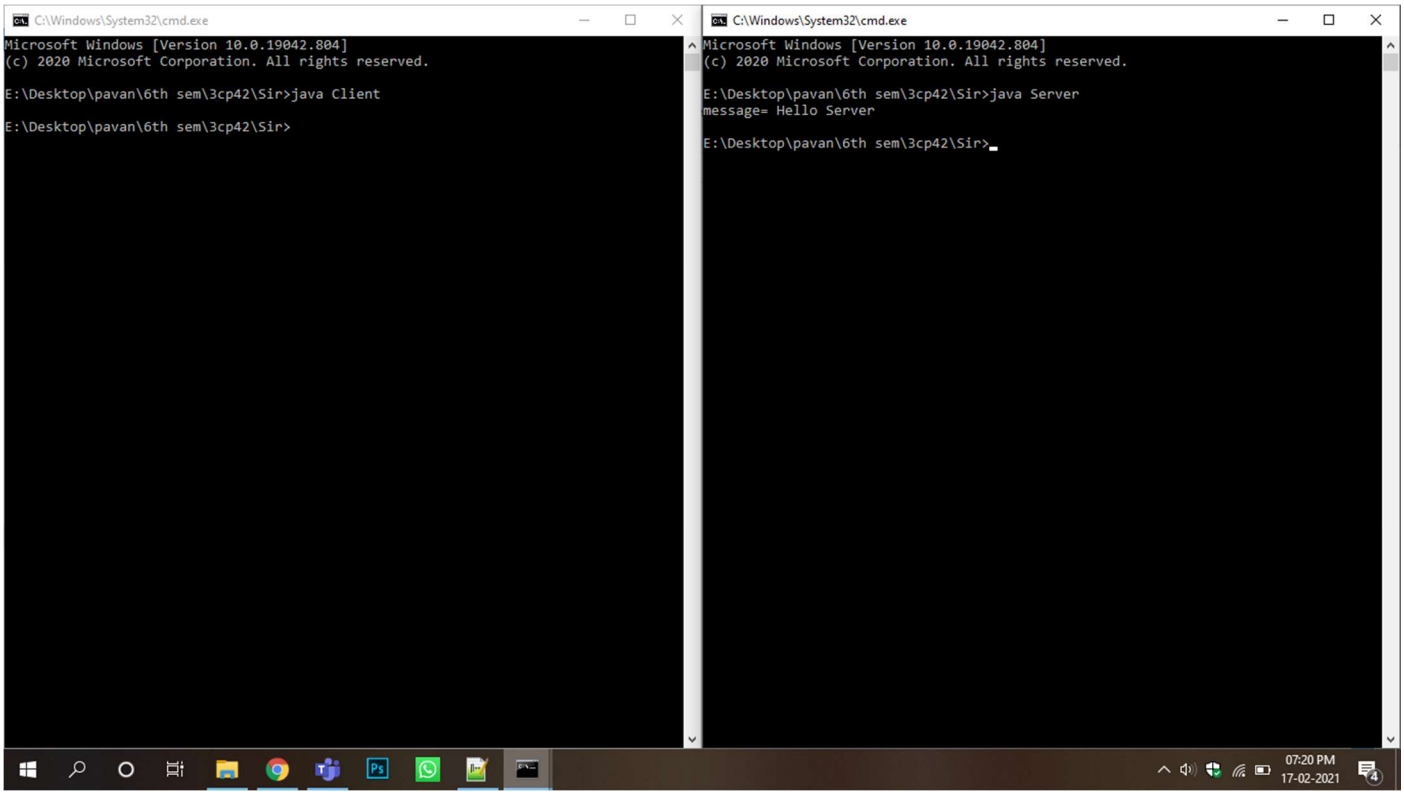
2. Write a client-server program using TCP sockets to echo the message send by the client.

Code:

```
//server
import java.io.*;
import java.net.*;
public class Server
{
        public static void main(String[] args)
        {
                try
                {
                        ServerSocket ss=new ServerSocket(6666);
                        Socket s=ss.accept();//establishes connection
                        DataInputStream dis=new DataInputStream(s.getInputStream());
                        String  str=(String)dis.readUTF();
                        System.out.println("message= "+str);
                        ss.close();
                }
                catch(Exception e){System.out.println(e);}
        }
}
//client
import java.io.*;
import java.net.*;
public class Client
{
        public static void main(String[] args)
        {
                try
                {
                        Socket s=new Socket("localhost",6666);
                        DataOutputStream dout=new DataOutputStream(s.getOutputStream());
                        dout.writeUTF("Hello Server");
                        dout.flush();
                        dout.close();
                        s.close();
```

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

Output:



3. Consider Bank table with attributes AccountNo, CustomerName, Balance, Phone and Address. Write a database application which allows insertion, updation and deletion of records in Bank table. Print values of all customers whose balance is greater than 20,000.(Use PreparedStatement)

Code:

```
import java.awt.*;
import java.sql.*;
import javax.swing.*;
import java.awt.event.*;

class test extends JFrame implements ActionListener
{
        JButton bi,bu,bd,bdis;
        JLabel la,ln,lb,lp,ladd,display;
        JTextField ta,tn,tb,tp;
        JTextArea address;

        Connection conn;
        Statement st;
        PreparedStatement pst;
        ResultSet rs;

        test()
                {
                        setLayout(new FlowLayout());

                        bi=new JButton("INSERT");
                        bu=new JButton("UPDATE");
                        bd=new JButton("DELETE");
                        bdis=new JButton("DISPLAY");

                        la=new JLabel("Enter Your Account No:");
                        ln=new JLabel("Enter Your Name:");
                        lb=new JLabel("Enter Balance:");
                        lp=new JLabel("Enter Your Phone No:");
```

```
                display=new JLabel("Label");
                ladd=new JLabel("Enter Your Address:");

                ta=new JTextField(10);
                tn=new JTextField(10);
                tb=new JTextField(10);
                tp=new JTextField(10);
                address=new JTextArea(4,20);

                add(la);
                add(ta);
                add(ln);
                add(tn);
                add(lb);
                add(tb);
                add(lp);
                add(tp);
                add(ladd);
                add(address);
                add(bdis);
                add(bi);
                add(bu);
                add(bd);
                add(display);

                bi.addActionListener(this);
                bu.addActionListener(this);
                bd.addActionListener(this);
                bdis.addActionListener(this);

                setSize(300,300);
                setVisible(true);

                try{conn=DriverManager.getConnection("jdbc:mysql://localhost:3306/pavan","root","");}
                catch(Exception e){System.out.println("NOT CONNECT...pavan!!!");}
        }
public void actionPerformed(ActionEvent e)
        {
        if(e.getSource()==bi)
                {
                        String query="INSERT INTO bank(AccountNo,CustomerName,Balance,Phone,Address) VALUES(?,?,?,?,?)";
                        try
                                {
                                pst=conn.prepareStatement(query);
                                pst.setInt(1,Integer.parseInt(ta.getText()));
                                pst.setString(2,tn.getText());
                                pst.setInt(3,Integer.parseInt(tb.getText()));
                                pst.setString(4,tp.getText());
                                pst.setString(5,address.getText());
                                pst.executeUpdate();

                                display.setText("DATA INSERTED SUCESSFULLY...");
                                JOptionPane.showMessageDialog(this,"DATA INSERTEDSUCESSFULLY...");
                                }
                        catch(Exception ae){display.setText(ae.getMessage());}
                }
        if(e.getSource()==bu)
                {
                        String query="UPDATE bank SET CustomerName=?,Balance=?, Phone=?, Address=? WHERE AccountNo=?";
                        try
                        {
                                pst=conn.prepareStatement(query);
                                pst.setString(1,tn.getText());
                                pst.setInt(2,Integer.parseInt(tb.getText()));
                                pst.setString(3,tp.getText());
                                pst.setString(4,address.getText());
                                pst.setInt(5,Integer.parseInt(ta.getText()));
                                pst.executeUpdate();
                                JOptionPane.showMessageDialog(this,"DATA UPDATED SUCESSFULLY...");
                        }
                        catch(Exception oe){display.setText(oe.getMessage());}
                }

        if(e.getSource()==bd)
```

```
		{
			try
			{
				st=conn.createStatement();
				st.executeUpdate("delete from bank");
				JOptionPane.showMessageDialog(this,"DATA DELETED SUCESSFULLY...");
			}
			catch(Exception oe){display.setText(oe.getMessage());}
		}
	if(e.getSource()==bdis)
		{
			try
			{
				st=conn.createStatement();
				rs=st.executeQuery("select * from bank where balance > 20000");
				while(rs.next())
				{

	JOptionPane.showMessageDialog(this,rs.getInt(1)+"\n"+rs.getString(2)+"\n"+rs.getInt(3)+"\n"+rs.getString(4)+"\n"+rs.getString(5)+"
\n");
				}
			}
			catch(Exception oe){display.setText(oe.getMessage());}
		}
	}
}
public class bank
{
	public static void main(String args[])
	{
		test t=new test();
	}
}
```

Output: