Practical 2.1: Create a Math Server (Factorial, Fibonacci, Prime, and Palindrome) with multi-client support using TCP.

SERVER :

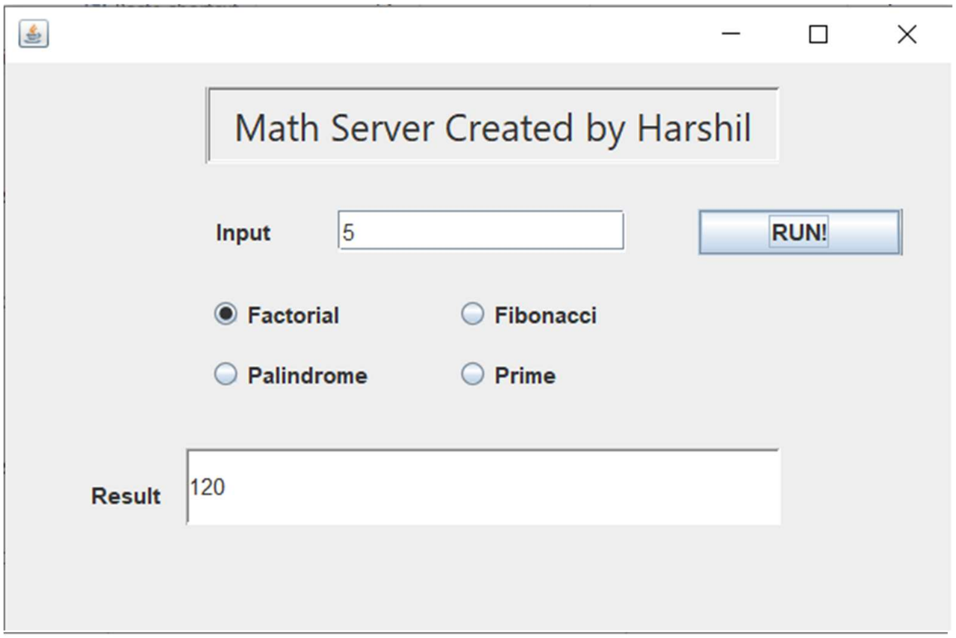
```
import java.net.*;

import java.io.*;

import java.math.BigInteger;


public class Mathrealserver

{

   public Mathrealserver(int port)

   {

                    Socket          soc   = null;

            ServerSocket    ss   = null;

            try {

                                ss = new ServerSocket(port);

                        } catch (IOException e) {

                                // TODO Auto-generated catch block

                                e.printStackTrace();

                        }

        System.out.println("Server started");

        System.out.println("Waiting for a client ...");

            while(true)

            {

                    try

                    {

                            soc = ss.accept();

                            System.out.println("Client accepted");

                    DataInputStream dis = new DataInputStream(soc.getInputStream());

                    DataOutputStream dout = new DataOutputStream(soc.getOutputStream());

                    String line = "";
String ans=new String();
line = (String)dis.readUTF();
String[] test=line.split("#");
String str=test[0];
if(str.isEmpty())
        ans="Enter Text First";
      else
      {
            int data=Integer.parseInt(str);
            if(test[1].equals("1"))
            {
                int flag=0;
                for(int i=2;i<data/2;i++)
                {
                    if(data%i==0)
                    {
                    flag=1;
                    ans=data+" is not Prime.";
                    break;
                    }
                }
                if(flag==0)
                {
                    ans=data+" is Prime.";
                }
            }
            else if(test[1].equals("2"))
            {

                int len=str.length();
                int f=0;
                for(int i=0;i<len/2;i++)
        {
        if(str.charAt(i)!=str.charAt(--len))
        {
                f=1;
                ans=str+" is not Palidrome.";
                break;
        }
        }
        if( f==0)
                ans=str+" is Palidrome.";
}

else if(test[1].equals("3"))
{
         BigInteger f = new BigInteger("1");
    for (int i = 2; i <= data; i++)
       f = f.multiply(BigInteger.valueOf(i));
    String str1 = f.toString();
        ans=str1;
}
else if(test[1].equals("4"))
{


        String ans2;
        ans2="0 1 ";
        int a=0,b=1,temp;
        for(int i=0;i<data-2;i++)
        {
                temp=a+b;
                a=b;
                b=temp;
        ans2=ans2+Integer.toString(b)+"    ";
                                                    }
                                                    ans=ans2;
                                                    }
                                                    }
                                            dout.writeUTF(ans);
                                            dout.flush();
                            }
                                    catch(IOException i)
                                    {
                                            System.out.println(i);
                                    }
                    }
    }

    public static void main(String args[])
    {
        Mathrealserver server = new Mathrealserver(8004);
    }
}
```

CLIENT :

```
import java.awt.EventQueue;
import javax.swing.JFrame;
import javax.swing.JPanel;
import java.awt.BorderLayout;
import javax.swing.JTextField;
import javax.swing.JLabel;
import java.awt.Font;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

import java.io.DataInputStream;

import java.io.DataOutputStream;

import java.io.IOException;

import java.io.PrintWriter;

import java.math.BigInteger;

import java.net.Socket;

import java.net.UnknownHostException;

import javax.swing.JRadioButton;

import javax.swing.ButtonGroup;

import javax.swing.JButton;

import javax.swing.border.LineBorder;

import java.awt.Color;

import javax.swing.border.BevelBorder;

import java.awt.Component;

import javax.swing.SwingConstants;

import javax.swing.UIManager;


public class mathserver {

	private JFrame frame;

	private JTextField input;

	private JTextField output;

	private JLabel lblNewLabel_1;

	public static void main(String[] args) {

		EventQueue.invokeLater(new Runnable() {

			public void run() {

				try {

					mathserver window = new mathserver();

					window.frame.setVisible(true);

				} catch (Exception e) {

					e.printStackTrace();

				}
				}
			});
		}
		public mathserver() {
			initialize();
		}



		private void initialize() {
			frame = new JFrame();
			frame.setBounds(100, 100, 518, 341);
			frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

			JPanel panel = new JPanel();
			frame.getContentPane().add(panel, BorderLayout.CENTER);
			panel.setLayout(null);

			input = new JTextField();
			input.setBounds(177, 79, 153, 22);
			panel.add(input);
			input.setColumns(10);

			output = new JTextField();
			output.setBorder(new BevelBorder(BevelBorder.LOWERED, null, null, null, null));
			output.setBounds(96, 205, 316, 41);
			panel.add(output);
			output.setColumns(10);

			JLabel lblNewLabel = new JLabel("Math Server Created by Harshil");
			lblNewLabel.setHorizontalAlignment(SwingConstants.CENTER);
			lblNewLabel.setBorder(new BevelBorder(BevelBorder.LOWERED, null, null, null, null));
			lblNewLabel.setFont(new Font("Segoe UI", Font.PLAIN, 20));
```

```
lblNewLabel.setBounds(107, 13, 305, 41);
panel.add(lblNewLabel);
ButtonGroup G1 = new ButtonGroup();
lblNewLabel_1 = new JLabel("Input");
lblNewLabel_1.setBounds(112, 75, 77, 31);
panel.add(lblNewLabel_1);

JRadioButton factbtn = new JRadioButton("Factorial");
factbtn.setBounds(108, 122, 127, 25);
panel.add(factbtn);
G1.add(factbtn);
JRadioButton palibtn = new JRadioButton("Palindrome");
palibtn.setBounds(108, 154, 127, 25);
panel.add(palibtn);
G1.add(palibtn);
JRadioButton fibobtn = new JRadioButton("Fibonacci");
fibobtn.setBounds(239, 122, 98, 25);
panel.add(fibobtn);
G1.add(fibobtn);
JRadioButton primebtn = new JRadioButton("Prime");
primebtn.setBounds(239, 154, 98, 25);
panel.add(primebtn);
G1.add(primebtn);
JButton runbtn = new JButton("RUN!");
runbtn.setBounds(368, 78, 109, 25);
panel.add(runbtn);

JLabel lblNewLabel_2 = new JLabel("Result");
lblNewLabel_2.setBounds(46, 216, 67, 28);
panel.add(lblNewLabel_2);

runbtn.addActionListener(new ActionListener() {
```

```
@Override
public void actionPerformed(ActionEvent arg0) {
        String str;
        String option=new String();
        try
        {
        Socket s=new Socket("localhost",8004);
DataInputStream dis = new DataInputStream(s.getInputStream());
DataOutputStream dout = new DataOutputStream(s.getOutputStream());
        str=input.getText();
        if(primebtn.isSelected())
                option="1";
        else if(palibtn.isSelected())
                option="2";
        else if(factbtn.isSelected())
                option="3";
        else if(fibobtn.isSelected())
                option="4";
        str=str+"#"+option;
        dout.writeUTF(str);
        String s2=new String();
        s2 = (String)dis.readUTF();
        output.setText(s2);
        s.close();
        }
        catch(Exception e)
        {
                e.printStackTrace();
        }
        }
        });}}
```



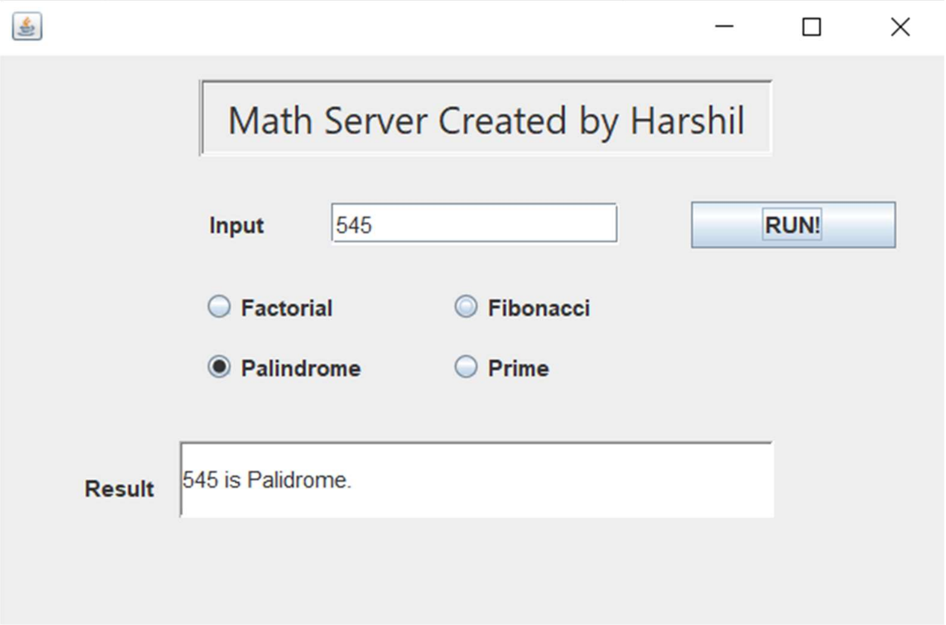
Math Server Created by Harshil

Input 5

● Factorial ○ Fibonacci

○ Palindrome ○ Prime

Result 120



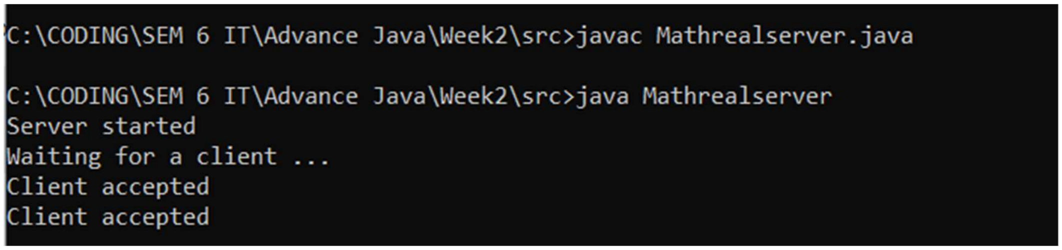
Math Server Created by Harshil

Input 545

○ Factorial ○ Fibonacci

● Palindrome ○ Prime

Result 545 is Palidrome.



```
C:\CODING\SEM 6 IT\Advance Java\Week2\src>javac Mathrealserver.java

C:\CODING\SEM 6 IT\Advance Java\Week2\src>java Mathrealserver
Server started
Waiting for a client ...
Client accepted
Client accepted
```

Practical 2.2: Implement any one sorting algorithm using TCP on Server application and Give input on client side and client should sorted output from server and display sorted on input side.

SERVER :

```
import java.net.*;

import java.io.*;


public class sortingserver

{

    public sortingserver(int port)

    {

                      Socket          soc   = null;

                ServerSocket    ss   = null;

                try

                {

                                  ss = new ServerSocket(port);

                            }

                catch (IOException e)

                {

                                  e.printStackTrace();

                            }


                System.out.println("Server started");

                System.out.println("Waiting for a client ...");

                while(true)

                {

                      try

                      {



                            soc = ss.accept();

                            System.out.println("Client accepted");
```

```
        DataInputStream dis = new DataInputStream(soc.getInputStream());
      DataOutputStream dout = new DataOutputStream(soc.getOutputStream());
            String line = "";
            String ans=new String();
            line = (String)dis.readUTF();
            String[] test=line.split(" ");
            if(line.isEmpty())
                    {
               ans="Enter Text First";
                    }
                    else
                    {
                            int len=test.length;
                            int[] arr=new int[len];
                            for(int i=0;i<len;i++)
                            {
                                    arr[i]=Integer.parseInt(test[i]);

                            }
                            for(int i=0;i<len-1;i++)
                            {
                                    for(int j=0;j<len-i-1;j++)
                                    {
                                            if(arr[j]>arr[j+1])
                                            {
                                                    int temp = arr[j];
                        arr[j] = arr[j+1];
                        arr[j+1] = temp;
                                            }
                                    }
                            }
                            for(int i=0;i<len;i++)
```

```
                                                                                ans=ans+Integer.toString(arr[i])+" ";
                                                      }
                                       dout.writeUTF(ans);
                                       dout.flush();
        }
        catch(IOException i)
        {
            System.out.println(i);
        }
       }
    }

    public static void main(String args[])
    {
        sortingserver server = new sortingserver(8004);
    }
}
```

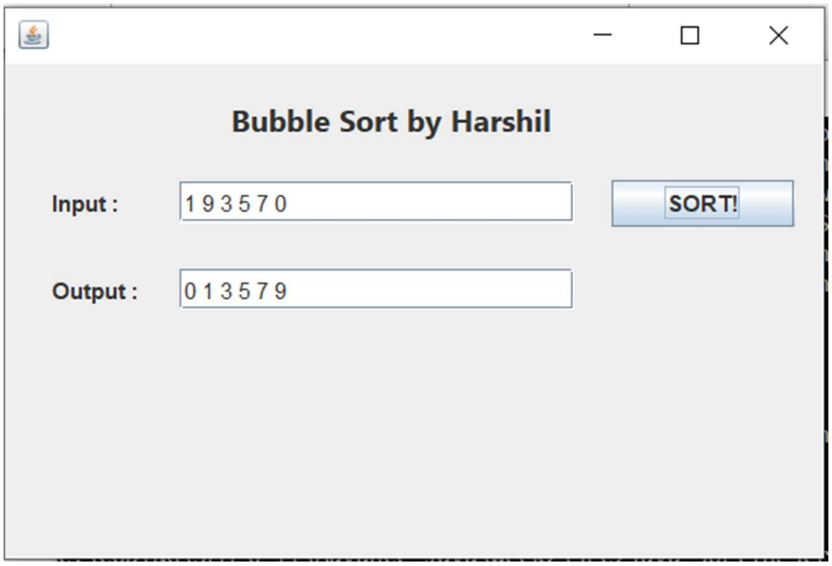
CLIENT :

```
import java.awt.EventQueue;
import javax.swing.JFrame;
import javax.swing.JLabel;
import java.awt.Font;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.net.Socket;
import javax.swing.JTextField;
import javax.swing.JButton;

public class sortingclient1 {
```

```
private JFrame frame;
private JTextField input;
private JTextField output;
public static void main(String[] args) {
    EventQueue.invokeLater(new Runnable() {
        public void run() {
            try {
                sortingclient1 window = new sortingclient1();
                window.frame.setVisible(true);
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    });
}
public sortingclient1() {
    initialize();
}
private void initialize() {
    frame = new JFrame();
    frame.setBounds(100, 100, 450, 300);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.getContentPane().setLayout(null);

    JLabel lblNewLabel = new JLabel("Bubble Sort by Harshil ");
    lblNewLabel.setFont(new Font("Segoe UI", Font.BOLD, 16));
    lblNewLabel.setBounds(120, 13, 178, 33);
    frame.getContentPane().add(lblNewLabel);

    JLabel lblNewLabel_1 = new JLabel("Input : ");
    lblNewLabel_1.setBounds(25, 66, 56, 16);
    frame.getContentPane().add(lblNewLabel_1);
```

```
JLabel lblNewLabel_2 = new JLabel("Output : ");
lblNewLabel_2.setBounds(25, 112, 56, 16);
frame.getContentPane().add(lblNewLabel_2);

input = new JTextField();
input.setBounds(93, 63, 210, 22);
frame.getContentPane().add(input);
input.setColumns(10);

output = new JTextField();
output.setBounds(93, 109, 210, 22);
frame.getContentPane().add(output);
output.setColumns(10);

JButton sortbtn = new JButton("SORT!");
sortbtn.setBounds(323, 62, 97, 25);
frame.getContentPane().add(sortbtn);
sortbtn.addActionListener(new ActionListener() {

        @Override
        public void actionPerformed(ActionEvent arg0) {
                try
                {
                String str;
                Socket s=new Socket("localhost",8004);
        DataInputStream dis = new DataInputStream(s.getInputStream());
        DataOutputStream dout = new DataOutputStream(s.getOutputStream());
                str=input.getText();
                dout.writeUTF(str);
                String s2=new String();
                s2 = (String)dis.readUTF();
```

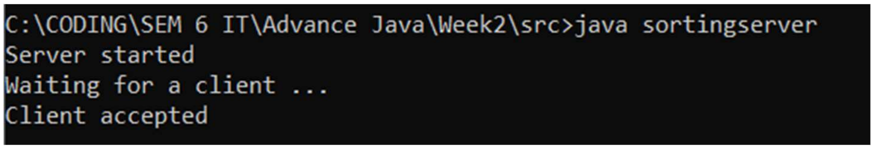
```
                        output.setText(s2);
                        s.close();
                        }
                        catch(Exception e)
                        {
                            e.printStackTrace();
                        }
                        }
                    });
                    }
        }
```



Bubble Sort by Harshil

Input : 1 9 3 5 7 0

Output : 0 1 3 5 7 9



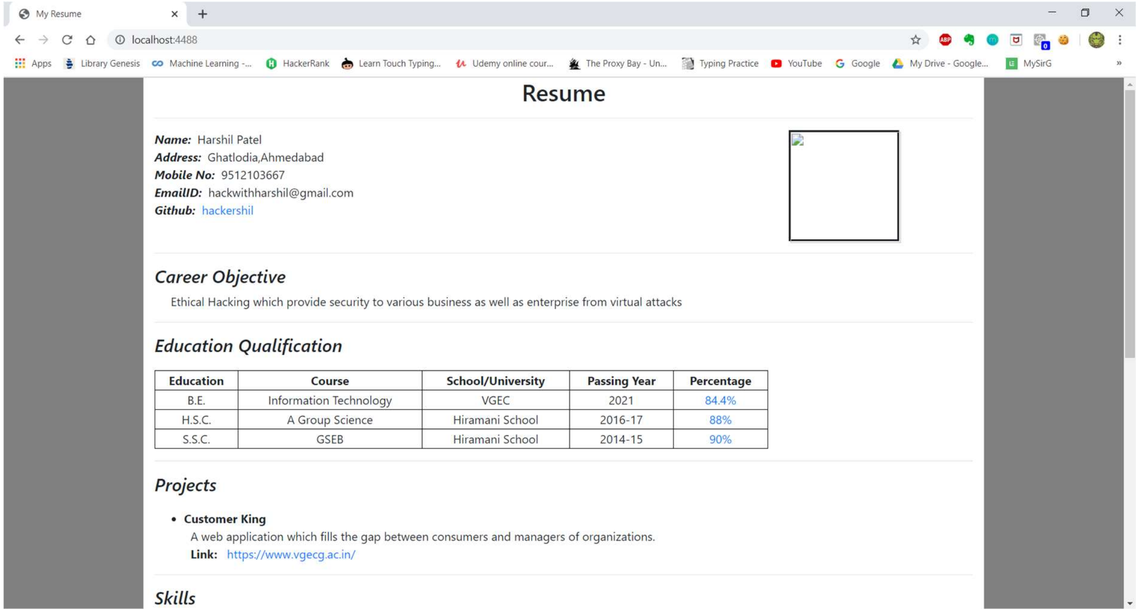
```
C:\CODING\SEM 6 IT\Advance Java\Week2\src>java sortingserver
Server started
Waiting for a client ...
Client accepted
```

<u>Practical 2.3:</u> Implement a basic web server which will serve html files. Use browser to send request to server and server returns requested html page. (Note: Don't create client program. Use browser as a client program).

SERVER :

```
import java.io.BufferedReader;

import java.io.File;

import java.io.FileReader;

import java.io.IOException;

import java.net.ServerSocket;

import java.net.Socket;

import java.util.Date;

 public class Browserconnection

 {

        public static void main(String args[]) throws IOException

        {

        ServerSocket server2 = new ServerSocket(4488);

        System.out.println("Listening for connection on port "+server2.getLocalPort());

                while (true)

                {

                        try (Socket socket = server2.accept())

                        {

                                File file = new File("C:\\CODING\\SEM 6 IT\\WTP\\WT\\Practical
                                                1\\Practical_1.html");

                                 BufferedReader br = new BufferedReader(new FileReader(file));

                                 String st;

                                 String forward=new String();

                                 while ((st = br.readLine()) != null)

                                         forward=forward+ st;

                                String httpResponse = "HTTP/1.1 200 OK\r\n\r\n" + forward;

                                socket.getOutputStream().write(httpResponse.getBytes("UTF-8"));

                        }
```

```
                    }
            }
}
```



Resume

Name: Harshil Patel
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Github: hackershil

Career Objective

Ethical Hacking which provide security to various business as well as enterprise from virtual attacks

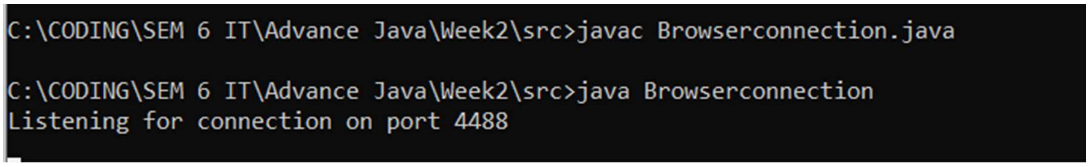
Education Qualification

Education	Course	School/University	Passing Year	Percentage
B.E.	Information Technology	VGEC	2021	84.4%
H.S.C.	A Group Science	Hiramani School	2016-17	88%
S.S.C.	GSEB	Hiramani School	2014-15	90%

Projects

- **Customer King**
  A web application which fills the gap between consumers and managers of organizations.
  Link: https://www.vgecg.ac.in/

Skills



```
C:\CODING\SEM 6 IT\Advance Java\Week2\src>javac Browserconnection.java

C:\CODING\SEM 6 IT\Advance Java\Week2\src>java Browserconnection
Listening for connection on port 4488
```