GOVERNMENT POLYTECHNIC, NAGPUR

Mangalwari Bazar, Sadar

(An Autonomous Institute of Govt. of Maharashtra)

Department of Computer Engineering

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MINI PROJECT REPORT

(ADVANCE JAVA)

Guided by :- Sumit Khatri sir

Submitted

by

Mr. Dhananjay Chacherkar

VI. Sem. Diploma in Computer Engineering

Enrollment Number :- 2013804

ACKNOWLEDGEMENT

Firstly ,I want to thank Mr .Sumit khatri sir for his constant reinforcement and guidance for this project report. I would also like to thank everyone that is my family and friends that hey participate in my life and get me in this intensity and individuals who support and share idea and also help me to be like this. I am very thankful to HOD Sir for having given me this opportunity to undertake this project report .It was a very good learning experience form .I would like to convey my heartiest thanks to every other teacher for lending their helping hands to me for this project report

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PROBLEM STATEMENT

Create a client side GUI using Java Swing which takes a number through JTextField which is passed to the Server using TCP/IP after clicking on the submit button. The server checks whether the number received is a prime or not. The output received from the server is displayed on the client side using JLabel.

INTERPRETATION

In the given project we have to create a client side GUI using JFrame containing the following Swing components:

1. JButton

JButton class is used to create a push-button on the UI. The button can contain some display text or image. It generates an event when clicked and double-clicked.

We will create a submit button using this component which will invoke the actionPerformed method when it is clicked by the user.

2. JLabel

JLabel class   is used to render a read-only text label or images on the UI. It does not generate any event.

We will use this component in our project to display the result received from the client.

3. JTextField

JTextField renders an editable single-line text box. A user can input non-formatted text in the box. .

We will use this component in our project to take the input from the user.

On the server side we will create a program using socket programming.

THEORY

Java Networking

Java Networking is a concept of connecting two or more computing devices together so that we can share resources.

Java socket programming provides facility to share data between different computing devices.

Advantages of Java networking

1. Sharing resources
2. Centralize software management

The **java.net** package of the Java programming language includes various classes and interfaces that provide an easy-to-use means to access network resources. Other than classes and interfaces, the **java.net** package also provides support for the two well-known network protocols. These are:

1. **Transmission Control Protocol (TCP) –** TCP or Transmission Control Protocol allows secure communication between different applications. TCP is a connection-oriented protocol which means that once a connection is established, data can be transmitted in two directions. This protocol is typically used over the Internet Protocol. Therefore, TCP is also referred to as TCP/IP. TCP has built-in methods to examine for errors and ensure the delivery of data in the order it was sent, making it a complete protocol for transporting information like still images, data

files, and web pages.

2. **User Datagram Protocol (UDP) –** UDP or User Datagram Protocol is a connection-less protocol that allows data packets to be transmitted between different applications. UDP is a simpler Internet protocol in which error-checking and recovery services are not required. In UDP, there is no overhead for opening a connection, maintaining a connection, or terminating a connection. In UDP, the data is continuously sent to the recipient, whether they receive it or not.

Java Swing

Swing has about four times the number of User Interface [U1] components as AWT and is part of the standard Java distribution. By today's application GUI requirements, AWT is a limited implementation, not quite capable of providing the components required for developing complex GUI's required in modern commercial applications. The AWT component set has quite a few bugs and really does take up a lot of system resources when compared to equivalent Swing resources. Netscape introduced its Internet Foundation Classes [IFC] library for use with Java. Its Classes became very popular with programmers creating GUI's for commercial applications.

- Swing is a Set Of API (API- Set Of Classes and Interfaces)
- Swing is Provided to Design a Graphical User Interfaces

- Swing is an Extension library to the AWT (Abstract Window Toolkit)
- Includes New and improved Components that have been enhancing the looks and Functionality of GUI's.

Features Of Swing Class

- Pluggable look and feel
- Uses MVC architecture
- Lightweight Components
- Platform Independent
- Advance features such as JTable, JTabbedPane, JScollPane etc
- Java is a platform-independent language and runs on any client machine, the GUI look and feel, owned and delivered by a platform specific O/S, simply does not
- affect an application's GUI constructed using Swing components

Client side

Classes and interfaces used :

1.ActionListener

ActionListener in Java is a class that is responsible for handling all action events such as when the user clicks on a component. Mostly, action listeners are used for JButtons.

2.Socket

The **java.net.Socket** class represents the socket that both the client and the server use to communicate with each other. The client obtains a Socket object by instantiating one, whereas the server obtains a Socket object from the return value of the accept() method.

3.InputStream

The InputStream class of the java.io package is **an abstract superclass that represents an input stream of bytes**. Since InputStream is an abstract class, it is not useful by itself.

4.OutputStream

OutputStream class is **the superclass of all classes representing an output stream of bytes**. An output stream accepts output bytes and sends them to some sink. Applications that need to define a subclass of OutputStream must always provide at least a method that writes one byte of output.

5.PrintWriter

Java PrintWriter class is the implementation of Writer class. It is used to print the formatted representation of objects to the text-output stream.

Server side

Classes and interfaces used

1.InputStream

The InputStream class of the java.io package is **an abstract superclass that represents an input stream of bytes**. Since InputStream is an abstract class, it is not useful by itself.

2.OutputStream

OutputStream class is **the superclass of all classes representing an output stream of bytes**. An output stream accepts output bytes and sends them to some sink. Applications that need to define a subclass of OutputStream must always provide at least a method that writes one byte of output.

3.ServerSocket

The ServerSocket class lets client programs connect with a server program. When a client connects, the server socket creates a Socket object, which the server can then use to communicate with the client

CODE

Server side code

```
import java.net.*;
import java.io.*;
import java.util.*;
public class tcpServer{
public static void main(String args[]){
try{
ServerSocket ss=new ServerSocket(1559);
System.out.println("SERVER PORT CREATED ");
Socket sc = ss.accept();
System.out.println("Connection Established ");
InputStream is = sc.getInputStream();
OutputStream os = sc.getOutputStream();
System.out.println("STREAMS CREATED ");
String reply= null;
Scanner s =new Scanner(is);
System.out.println("Reading request");
String req = s.next();
```

```
System.out.println("NUMBER RECIVED is: "+req);
int num= Integer.parseInt(req);
boolean flag = false;
for(int i = 2; i<=num/2; i++)
{
if(num%i==0){
flag = true;
break;
}
}
if(flag==false){
 reply = "It is a Prime number";
}
else{
 reply = "It is not a Prime Number";
}
PrintWriter pw = new PrintWriter(os,true);
pw.println(reply);
}
catch(Exception e){
}


}
}
```

Client side code

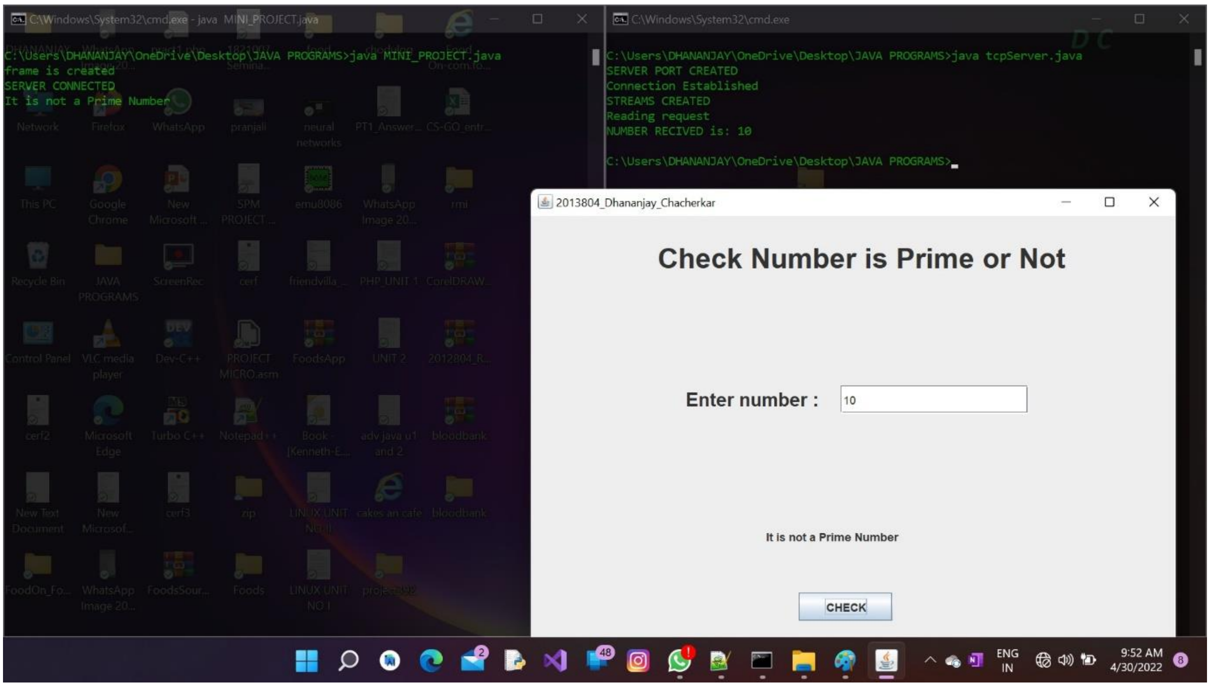
```
import java.awt.event.ActionListener;
import java.io.InputStream;
import java.io.OutputStream;
import java.io.PrintWriter;
import java.net.Socket;
import java.util.Scanner;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextField;
import java.awt.event.ActionEvent;
import java.awt.*;
public class MINI_PROJECT implements ActionListener
{
JFrame f;
```

```
        JTextField t;

        JLabel heading , l1 , reply,jl;

        JButton find;

 MINI_PROJECT( ){

 f = new JFrame("2013804_Dhananjay_Chacherkar");


          System.out.println("frame is created");


          f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);



          heading = new JLabel("Check Number is Prime or
Not");

          heading.setBounds(135, 30, 500, 30);

          heading.setFont(new Font("Arial", Font.BOLD,30));


          l1 = new JLabel("Enter number :");

          l1.setBounds(165, 180, 200, 30);

          l1.setFont(new Font("Arial", Font.BOLD,20));
```

```
    t = new JTextField(20);

    t.setBounds(330, 180, 200, 30);




    find = new JButton("CHECK");

    find.setBounds(285, 400, 100, 30);

    find.addActionListener(this);

            jl = new JLabel("Press Check after giving input");

    jl.setBounds(250,300,200,80);



    f.add(l1);

    f.add(heading);

    f.add(t);


    f.add(find);
```

```
                        f.add(jl);







            f.setSize(700, 500);

            f.setLayout(null);

            f.setVisible(true);



}

public void actionPerformed(ActionEvent ae)  {

   try{

Socket s = new Socket("localhost",1559);

System.out.println("SERVER CONNECTED");

InputStream  is = s.getInputStream();

OutputStream os = s.getOutputStream();


String str = t.getText();

PrintWriter pw = new PrintWriter(os,true);
pw.println(str);


Scanner sc = new Scanner(is);
String str2 = sc.nextLine();
System.out.println(str2);
 jl.setText(str2);


}
catch(Exception e){
}
}
public static void main(String args[]){
new MINI_PROJECT();
}
}
```

OUTPUT SCREEN SHOT



```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created
SERVER CONNECTED
It is not a Prime Number
```

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java tcpServer.java
SERVER PORT CREATED
Connection Established
STREAMS CREATED
Reading request
NUMBER RECIVED is: 10

C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>_
```

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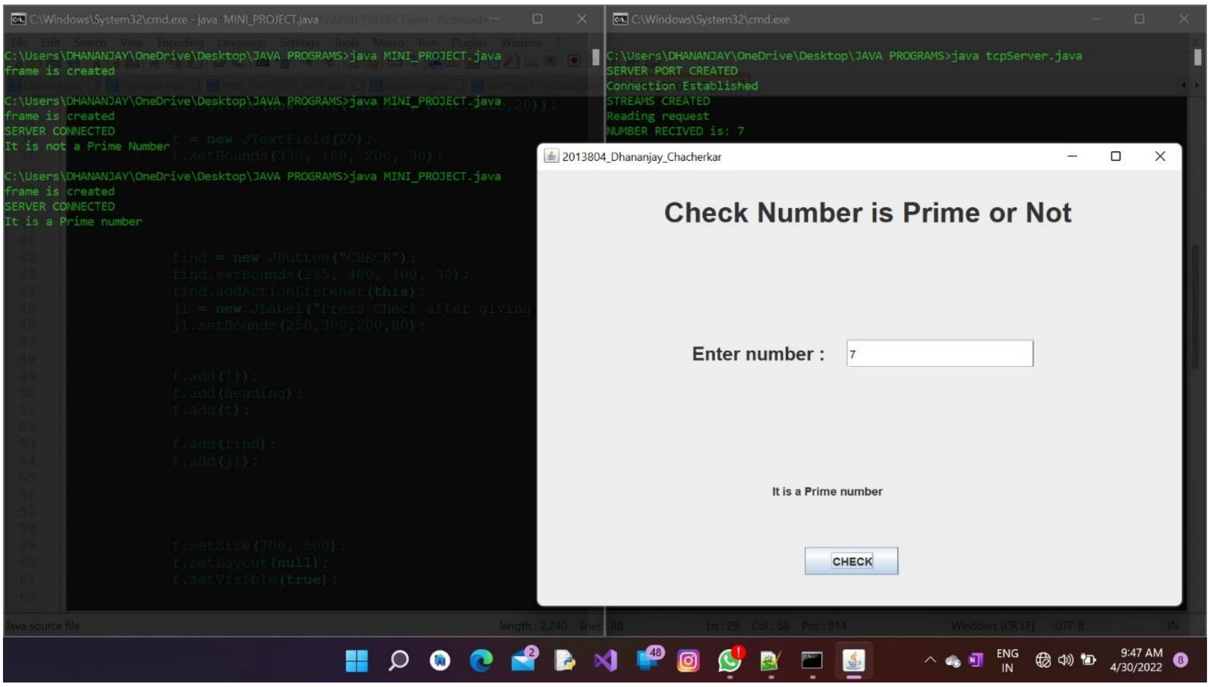
Check Number is Prime or Not

Enter number : 10

It is not a Prime Number

C:\Windows\System32\cmd.exe - java MINI_PROJECT.java
C:\Windows\System32\cmd.exe
CHECK
ENG
IN
9:52 AM
4/30/2022



```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created

C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created
SERVER CONNECTED
It is not a Prime Number

C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created
SERVER CONNECTED
It is a Prime number
```

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java tcpServer.java
SERVER PORT CREATED
Connection Established
STREAMS CREATED
Reading request
NUMBER RECIVED is: 7
```

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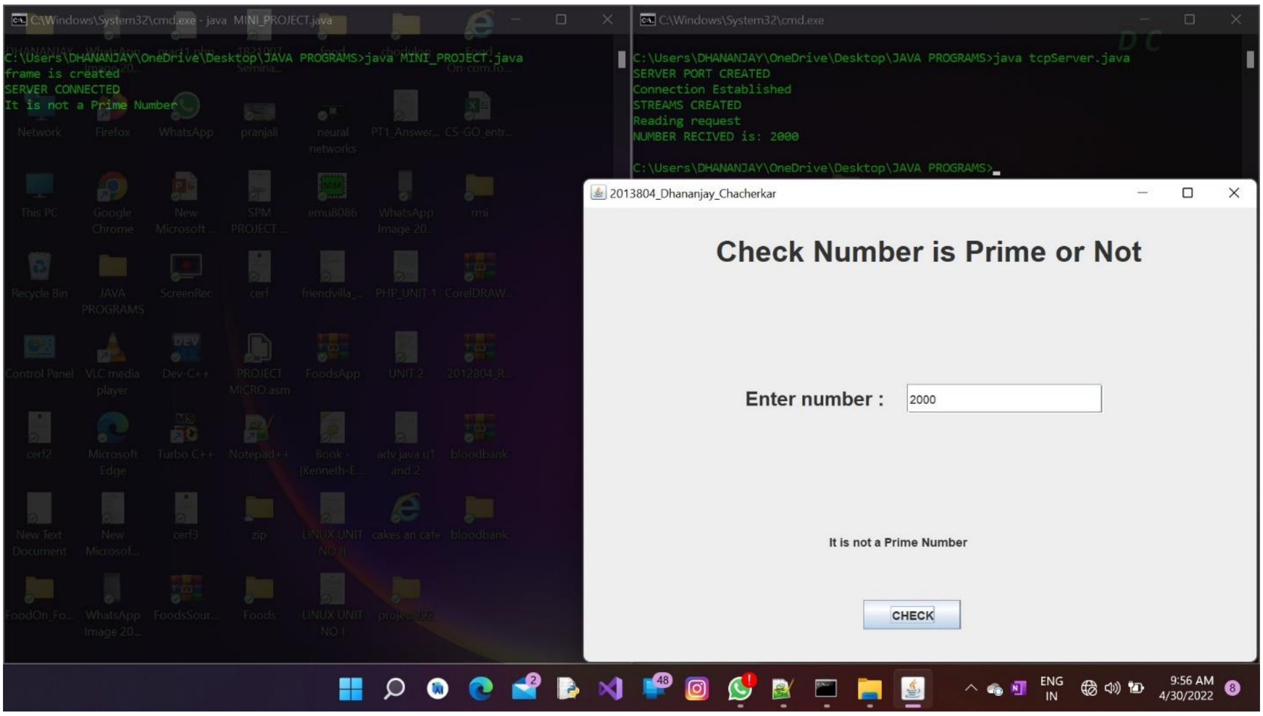
Check Number is Prime or Not

Enter number : 7

It is a Prime number

C:\Windows\System32\cmd.exe - java MINI_PROJECT.java
C:\Windows\System32\cmd.exe
CHECK
ENG
IN
9:47 AM
4/30/2022


C:\Windows\System32\cmd.exe - java MINI_PROJECT.java
C:\Windows\System32\cmd.exe
9:56 AM
4/30/2022

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created
SERVER CONNECTED
It is not a Prime Number
```

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java tcpServer.java
SERVER PORT CREATED
Connection Established
STREAMS CREATED
Reading request
NUMBER RECIVED is: 2000

C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>_
```

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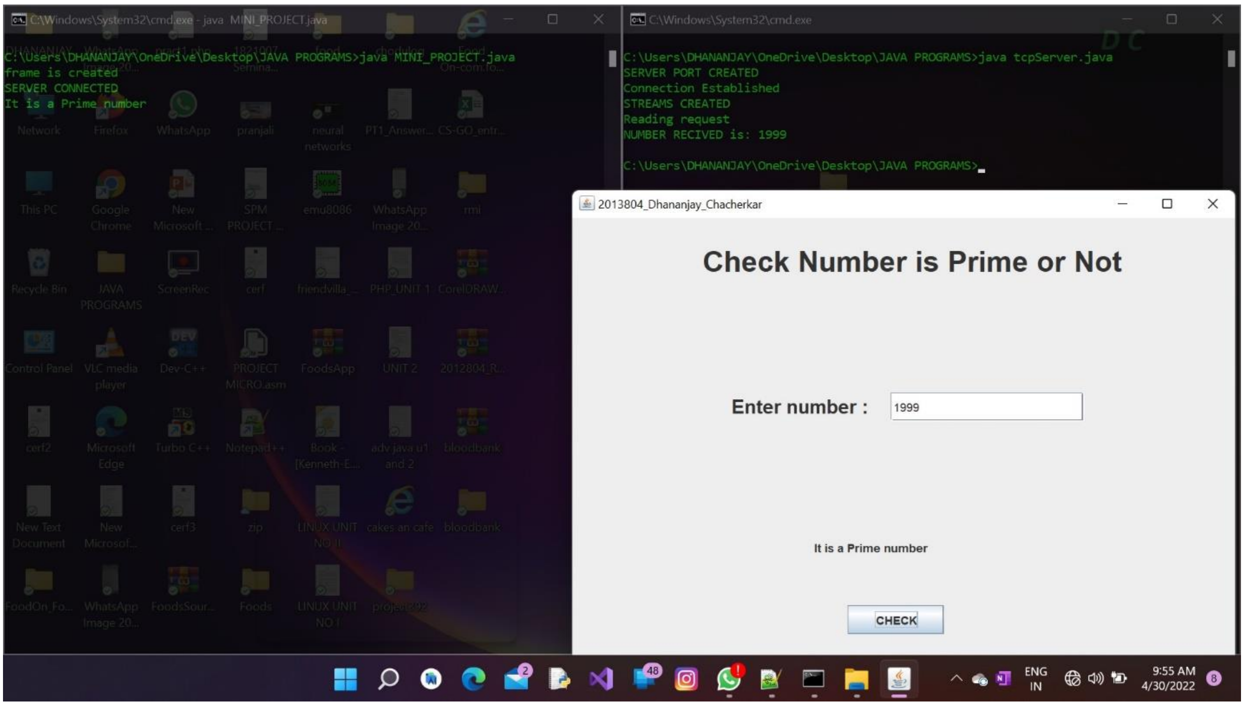
Check Number is Prime or Not

Enter number : 2000

It is not a Prime Number


C:\Windows\System32\cmd.exe - java MINI_PROJECT.java
C:\Windows\System32\cmd.exe
9:55 AM
4/30/2022

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created
SERVER CONNECTED
It is a Prime number
```

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java tcpServer.java
SERVER PORT CREATED
Connection Established
STREAMS CREATED
Reading request
NUMBER RECIVED is: 1999

C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>_
```

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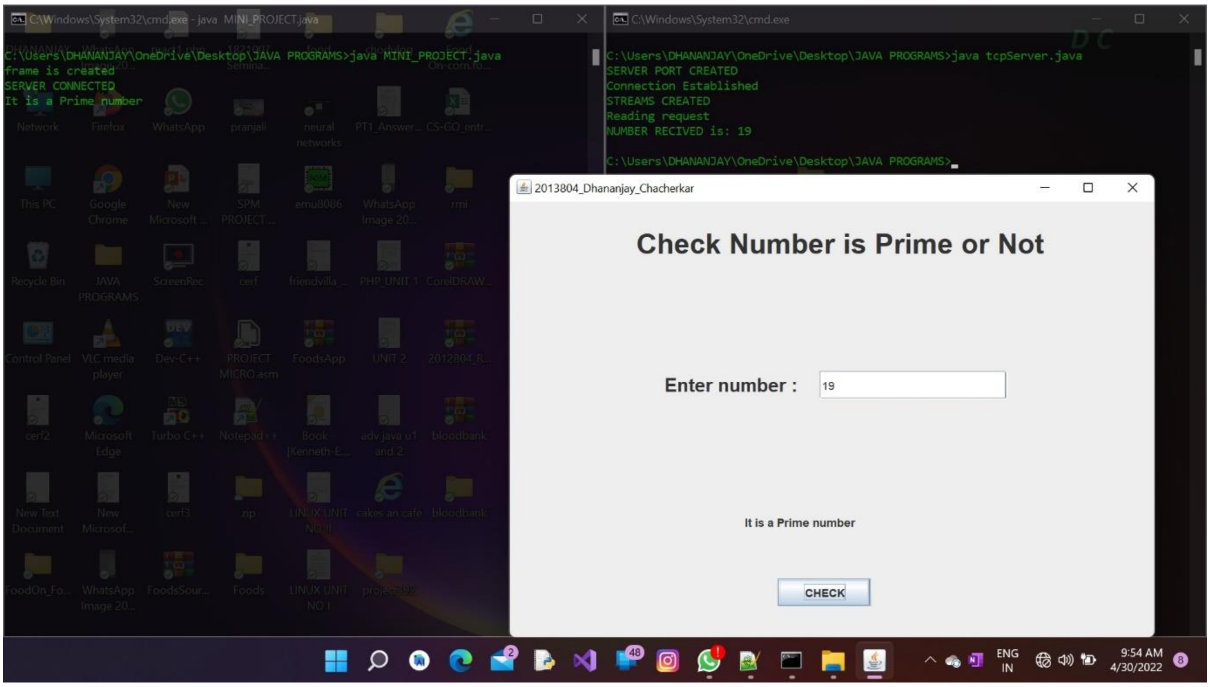
Check Number is Prime or Not

Enter number : 1999

It is a Prime number



C:\Windows\System32\cmd.exe - java MINI_PROJECT.java

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java MINI_PROJECT.java
frame is created
SERVER CONNECTED
It is a Prime number
```

C:\Windows\System32\cmd.exe

```
C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>java tcpServer.java
SERVER PORT CREATED
Connection Established
STREAMS CREATED
Reading request
NUMBER RECIVED is: 19

C:\Users\DHANANJAY\OneDrive\Desktop\JAVA PROGRAMS>
```

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Check Number is Prime or Not

Enter number : 19

It is a Prime number

Result

Using the java Swing Components such as Jbutton , JTextField, JLabel and various classes and interfaces in java.net packages , we have developed this project and we run code successfully using localhost aand find the prime number using interface and network programming .

VISION :-

To provide academic excellence in computer engineering by imparting indepth knowledge that meets the aspirations of the global community and to serve as a valuable resource for industry

MISSION

To develop human potential to its fullest extent so that intellectually capable and optimistic leaders can emerge in a range of profession.

- To• provide quality engineering education to the students through state of art education in Computer engineering.
- To produce globally competent diploma holders having creative skills and ethical values keeping pace with ever-changing technological advancements in Computer Engineering.
- To establish Industry Institute Interaction to make students ready for the industrial environment.

PROGRAM OUTCOMES (POS):-

PO1. Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.

PO2. Problem analysis: Identify and analyse well-defined engineering problems using codified standard methods.

PO3. Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.

PO4. Engineering Tools, Experimentation and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

PO5. Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.

PO6. Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.

PO7. Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

PROGRAM SPECIFIC OUTCOMES:-

- Design and code engineering problems using programming skills.
- Apply, design and develop principles of software engineering and data base concepts for computer- based systems in solving engineering Problems.