

CERTIFICATE

*This is to certify that Mr./Ms. **Hemil...Chovatiya**..... with
enrolment no.**200303108003**..... has successfully
completed **his/her** laboratory experiments in the **JAVA**
PROGRAMMING WORKSHOP (203105259) from the department
of **Information Technology(4ITA1)**..... during the
academic year **2021-2022**.....*



Date of Submission:

Staff In charge:

Head of Department:



Faculty of Engineering & Technology
Subject Name: Java Workshop
Subject Code: 203105259
B.Tech.: IT Year: 2021-22 Semester: 4

Index

Practical Set: 1

Basics of Java

Practical 1:

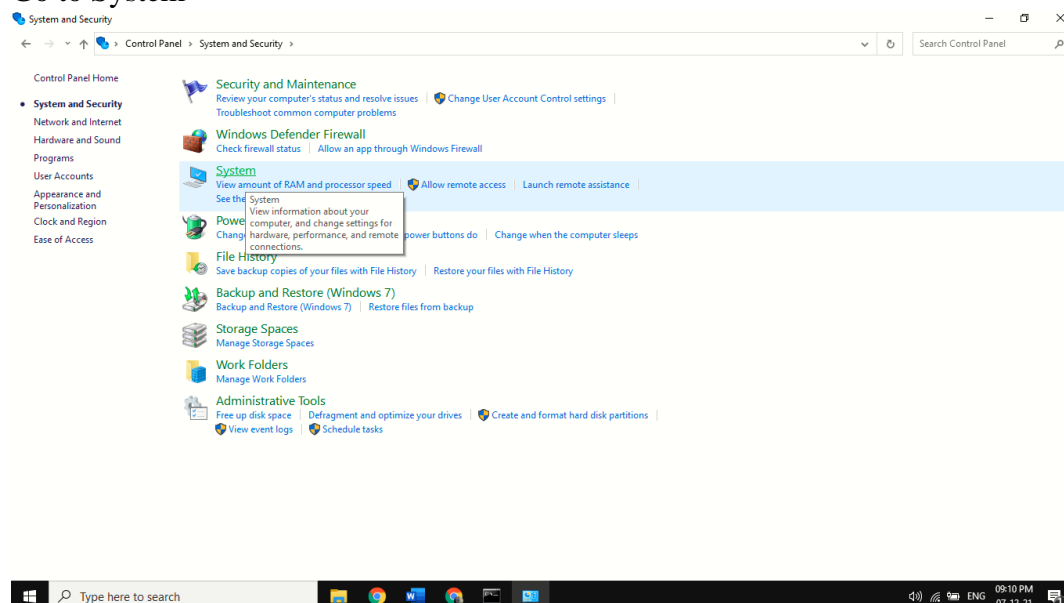
AIM: Prepare a report on how to set the PATH variable to the java directory.

Steps:

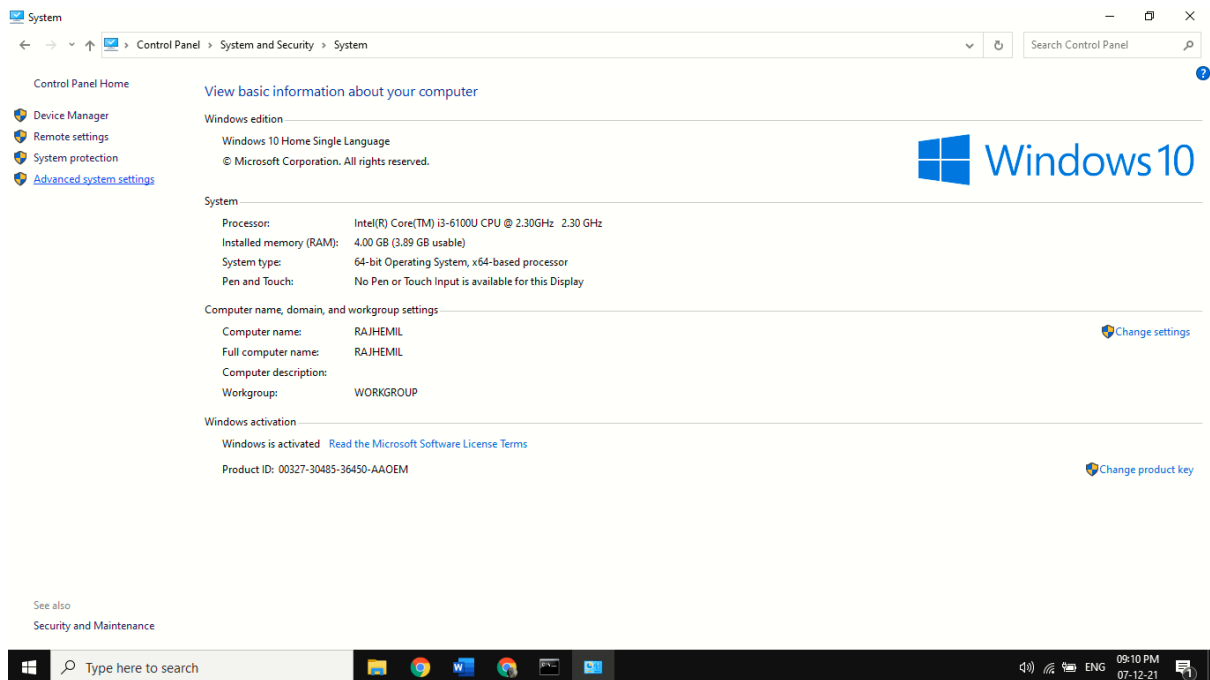
1. Open Control Panel and go to System and Security



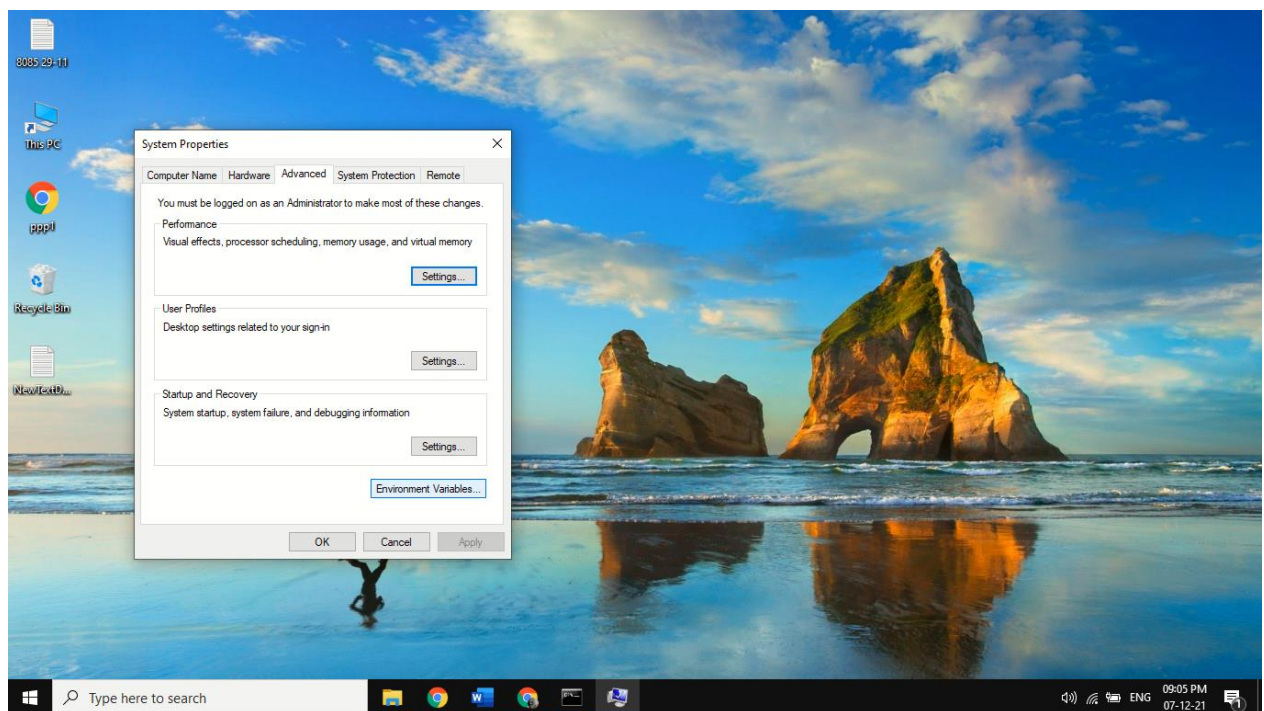
2. Go to System



3. Go to Advanced System Setting



4. Go to Environment Variables



The screenshot shows a Windows 10 desktop with a beach background. In the foreground, the 'Environment Variables' dialog box is open. The 'User variables for raj' section is expanded, showing a list of variables. The 'System variables' section is also visible, showing a list of variables. The 'Path' variable in the system variables section is highlighted.

Variable	Value
GOOGLE_DEFAULT_CLIENT_S...	no
OneDrive	C:\Users\raj\OneDrive
OneDriveConsumer	C:\Users\raj\OneDrive
Path	C:\Program Files\Java\jdk1.8.0_291\bin;C:\Users\raj\AppData\Local...
QT_DEVICE_PIXEL_RATIO	auto
TEMP	C:\Users\raj\AppData\Local\Temp
TMP	C:\Users\raj\AppData\Local\Temp

Variable	Value
ComSpec	C:\WINDOWS\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	4
OS	Windows_NT
Path	C:\Program Files\Oracle\Java\javapath;C:\Program ...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64

The screenshot shows a Windows 10 desktop with a beach background. In the foreground, the 'Environment Variables' dialog box is open, displaying a list of system variables. The 'Path' variable is selected, and its value is 'C:\Program Files\Java\jdk-11.0.2\bin'. The 'Edit environment variable' dialog box is also open, showing the same list of variables. The 'Path' variable is selected, and its value is 'C:\Program Files\Java\jdk-11.0.2\bin'. The 'Edit environment variable' dialog box is also open, showing the same list of variables. The 'Path' variable is selected, and its value is 'C:\Program Files\Java\jdk-11.0.2\bin'.

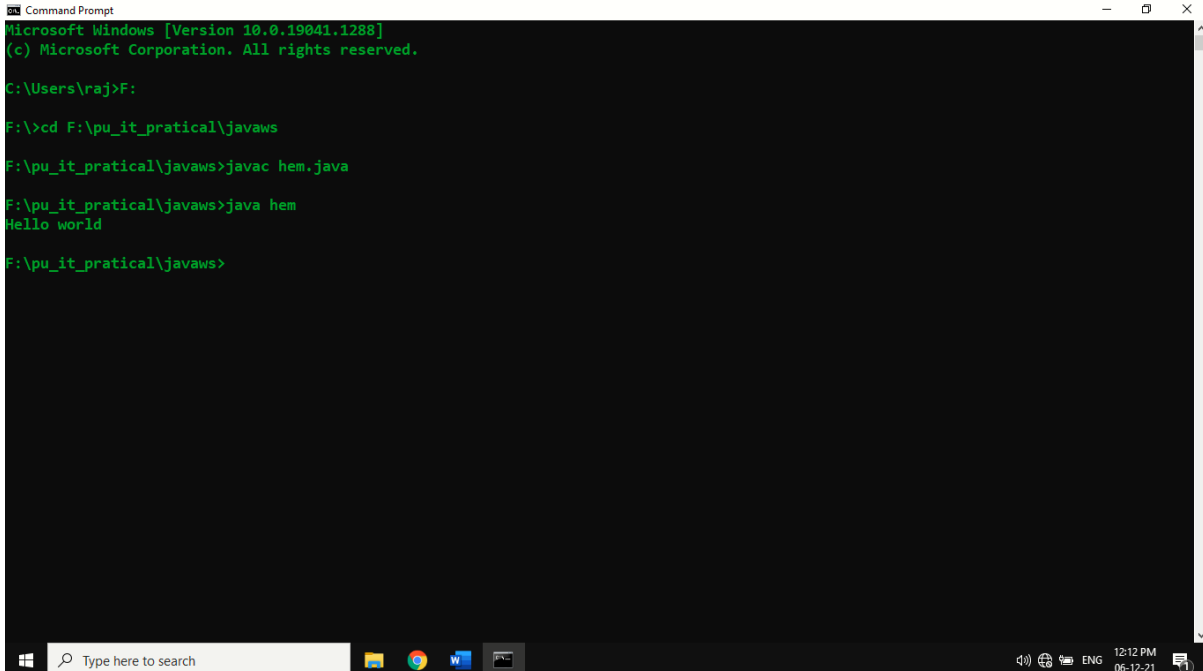
Practical 2:

AIM: Implement a JAVA program to display “Hello World” on the console.

CODE:

```
class hem
{
    public static void main(String args[])
    {
        System.out.println("Hello world");
    }
}
```

OUTPUT:



```
Command Prompt
Microsoft Windows [Version 10.0.19041.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\raj>F:

F:\>cd F:\pu_it_practical\javaws

F:\pu_it_practical\javaws>javac hem.java

F:\pu_it_practical\javaws>java hem
Hello world

F:\pu_it_practical\javaws>
```

Practical 3:

AIM: How to compile and run the above program.

Steps:

1. Firstly Open The Command Line In Your Device
2. Than Go To C Or D Drive Wherever You Have Saved Your Code File.
3. Than Type Javac P1.Java To Compile And Get Class File For It
4. And Than Type Java P1 To Run The Program

Code:

C:\Users\raj>F:

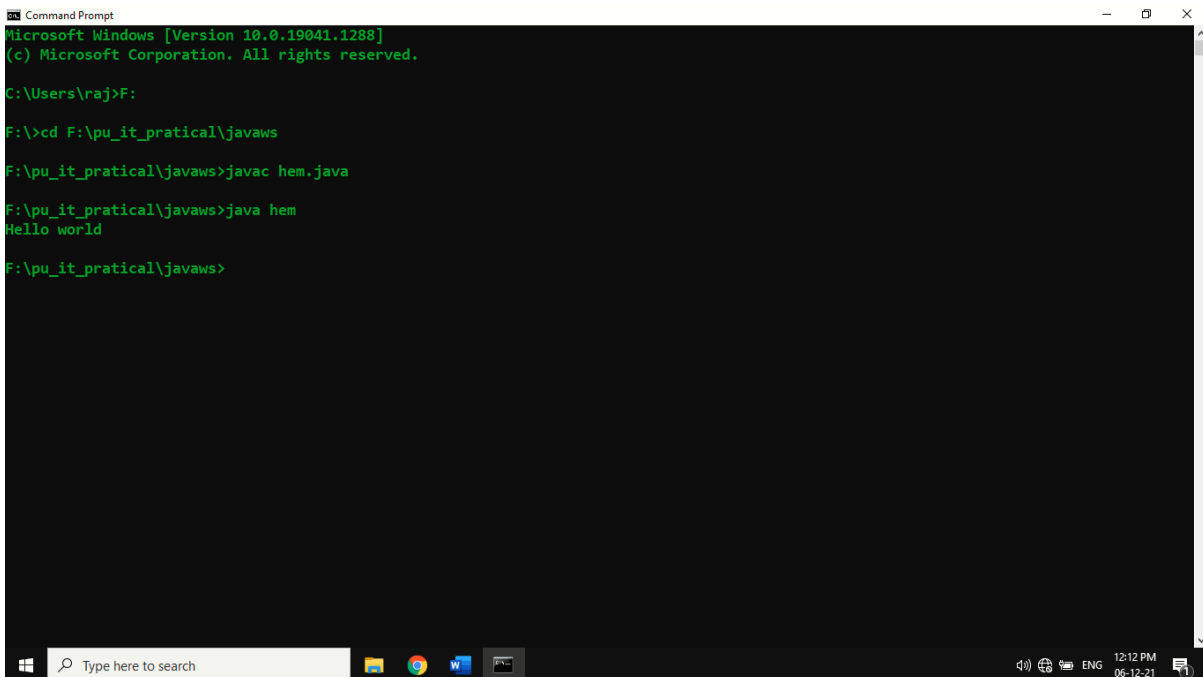
F:\>cd F:\pu_it_pratical\javaws

F:\pu_it_pratical\javaws>javac hem.java

F:\pu_it_pratical\javaws>java hem

Hello world

OUTPUT:



```
Microsoft Windows [Version 10.0.19041.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\raj>F:

F:\>cd F:\pu_it_pratical\javaws

F:\pu_it_pratical\javaws>javac hem.java

F:\pu_it_pratical\javaws>java hem
Hello world

F:\pu_it_pratical\javaws>
```

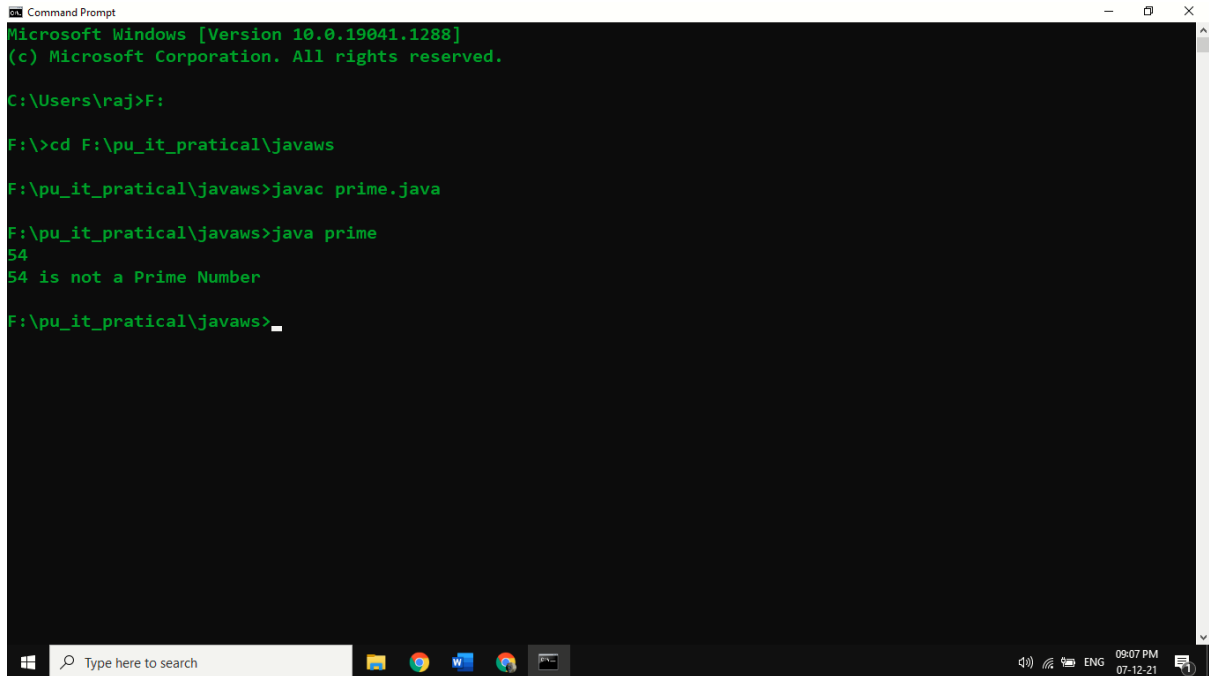

Practical 4:**AIM: Write a program to test number is prime or not.****CODE:**

```
import java.util.*;

class prime{

    public static void main(String args[])
    {
        int a,p,i;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Number:");
        a= sc.nextInt();
        p=0;
        for(i=1;i<=a;i++)
        {
            if ( a % i == 0)
            {
                p++;
            }
        }
        if(p==2)
        {   System.out.println(a+" is a Prime Number");   }
        else
        {   System.out.println(a+" is not a Prime Number");   }
    }
}
```


Output:



```
Microsoft Windows [Version 10.0.19041.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\raj>F:

F:\>cd F:\pu_it_practical\javaws

F:\pu_it_practical\javaws>javac prime.java

F:\pu_it_practical\javaws>java prime
54
54 is not a Prime Number

F:\pu_it_practical\javaws>
```

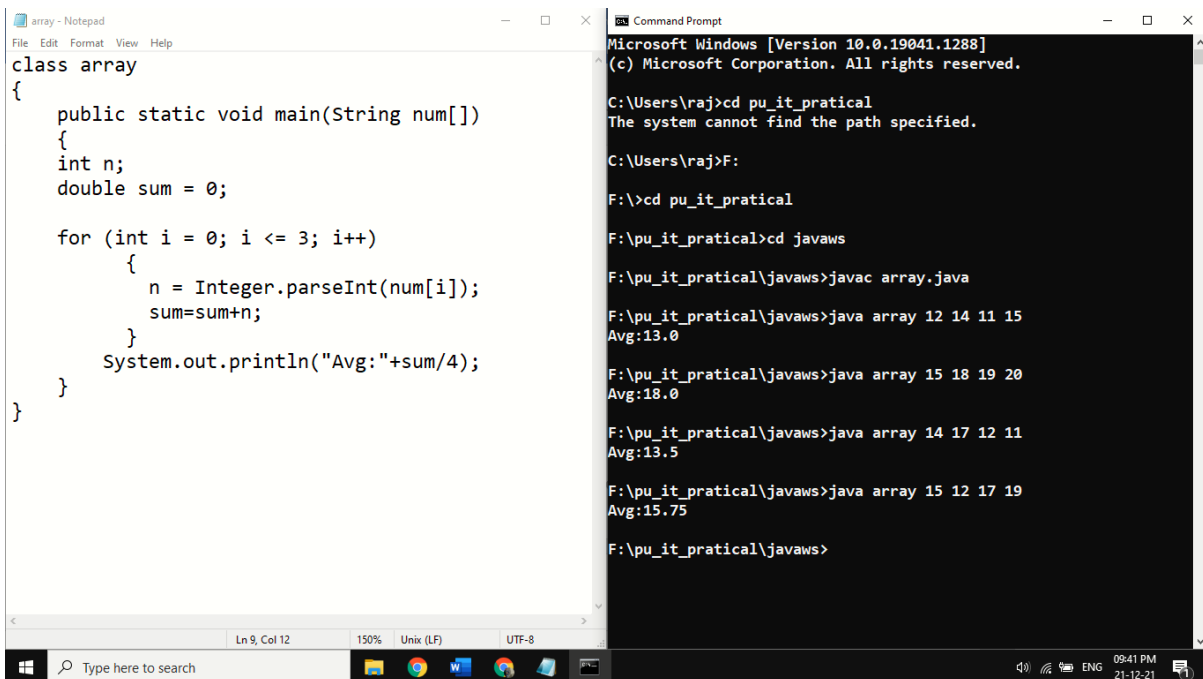
Practical 5:

AIM: Write a program that creates and initializes a four integer element array. Calculate and display the average of its values.

Code:

```
class array
{
    public static void main(String num[])
    {
        int n;
        double sum = 0;
        for (int i = 0; i <= 3; i++)
        {
            n = Integer.parseInt(num[i]);
            sum=sum+n;
        }
        System.out.println("Avg:"+sum/4);
    }
}
```

OUTPUT:



```
array - Notepad
File Edit Format View Help
class array
{
    public static void main(String num[])
    {
        int n;
        double sum = 0;

        for (int i = 0; i <= 3; i++)
        {
            n = Integer.parseInt(num[i]);
            sum=sum+n;
        }
        System.out.println("Avg:"+sum/4);
    }
}

Microsoft Windows [Version 10.0.19041.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\raj>cd pu_it_practical
The system cannot find the path specified.

C:\Users\raj>F:

F:\>cd pu_it_practical

F:\pu_it_practical>cd javaws

F:\pu_it_practical\javaws>javac array.java

F:\pu_it_practical\javaws>java array 12 14 11 15
Avg:13.0

F:\pu_it_practical\javaws>java array 15 18 19 20
Avg:18.0

F:\pu_it_practical\javaws>java array 14 17 12 11
Avg:13.5

F:\pu_it_practical\javaws>java array 15 12 17 19
Avg:15.75

F:\pu_it_practical\javaws>
```

Practical Set: 2

Class, object and methods in JAVA

Practical 1:

AIM: Write class Box

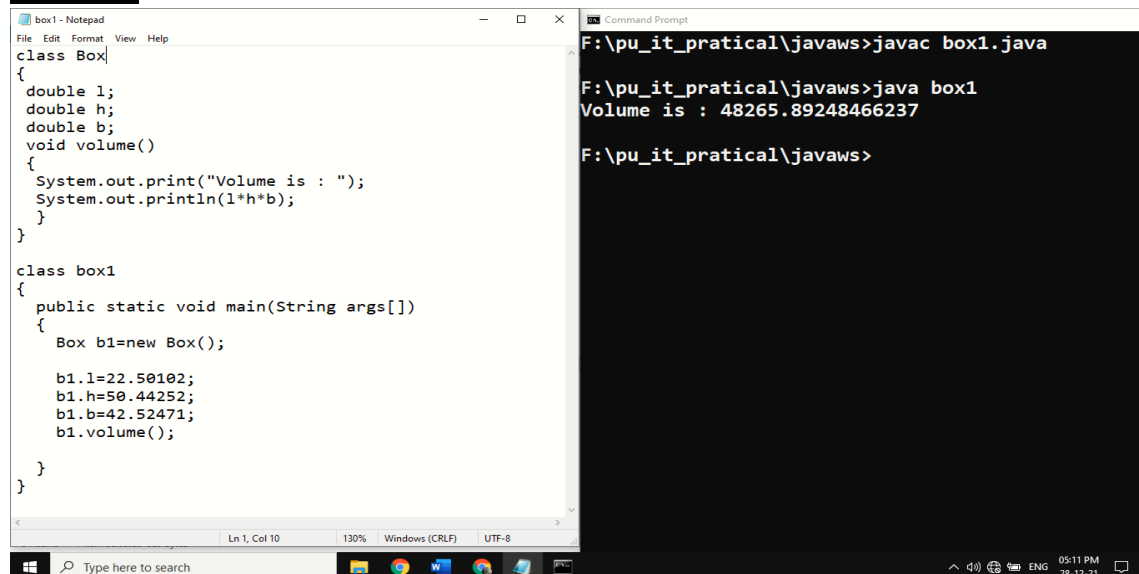
- Define data member l,b,h**
- Define method to set the data.**
- Define display method to display data member**

Code:

```
class Box
{
    double l;
    double h;
    double b;
    void volume()
    {
        System.out.print("Volume is : ");
        System.out.println(l*h*b);
    }
}

class box1
{
    public static void main(String args[])
    {
        Box b1=new Box();
        b1.l=22.50102;
        b1.h=50.44252;
        b1.b=42.52471;
        b1.volume();
    }
}
```

Output:



The screenshot displays a Windows desktop environment. On the left, a Notepad++ window titled 'box1 - Notepad' contains the Java source code for the 'Box' and 'box1' classes. The code defines a 'Box' class with attributes 'l', 'h', and 'b', and a 'volume()' method that prints the calculated volume. The 'box1' class contains a 'main' method that creates a 'Box' object, sets its attributes to specific values, and calls the 'volume()' method. On the right, a Command Prompt window shows the compilation and execution of the code. The commands entered are 'javac box1.java' and 'java box1'. The output of the execution is 'Volume is : 48265.89248466237'.

```
box1 - Notepad
File Edit Format View Help
class Box
{
double l;
double h;
double b;
void volume()
{
System.out.print("Volume is : ");
System.out.println(l*h*b);
}
}

class box1
{
public static void main(String args[])
{
Box b1=new Box();

b1.l=22.50102;
b1.h=50.44252;
b1.b=42.52471;
b1.volume();
}
}

Ln 1, Col 10 130% Windows (CRLF) UTF-8

Command Prompt
F:\pu_it_practical\javaws>javac box1.java

F:\pu_it_practical\javaws>java box1
Volume is : 48265.89248466237

F:\pu_it_practical\javaws>
```

Practical 2:

AIM: Write class Box

a. Define data member l,b,h.

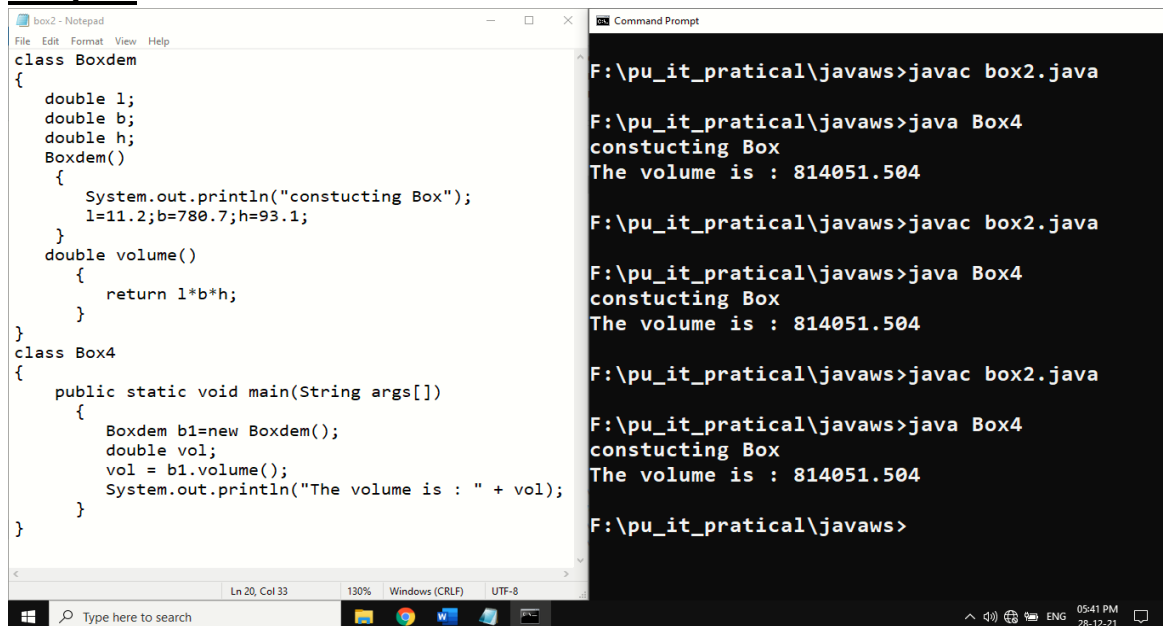
b. Define default and Parameterized constructor to initialize value of data member.

c. Define display method to display data member.

Code:

```
class Boxdem
{
    double l;
    double b;
    double h;
    Boxdem()
    {
        System.out.println("constucting Box");
        l=11.2;b=780.7;h=93.1;
    }
    double volume()
    {
        return l*b*h;
    }
}
class Box4
{
    public static void main(String args[])
    {
        Boxdem b1=new Boxdem();
        double vol;
        vol = b1.volume();
        System.out.println("The volume is : " + vol);
    }
}
```

Output:



```
box2 - Notepad
File Edit Format View Help
class Boxdem
{
    double l;
    double b;
    double h;
    Boxdem()
    {
        System.out.println("constucting Box");
        l=11.2;b=780.7;h=93.1;
    }
    double volume()
    {
        return l*b*h;
    }
}
class Box4
{
    public static void main(String args[])
    {
        Boxdem b1=new Boxdem();
        double vol;
        vol = b1.volume();
        System.out.println("The volume is : " + vol);
    }
}
Ln 20, Col 33 130% Windows (CRLF) UTF-8

Command Prompt
F:\pu_it_practical\javaws>javac box2.java
F:\pu_it_practical\javaws>java Box4
constucting Box
The volume is : 814051.504
F:\pu_it_practical\javaws>javac box2.java
F:\pu_it_practical\javaws>java Box4
constucting Box
The volume is : 814051.504
F:\pu_it_practical\javaws>javac box2.java
F:\pu_it_practical\javaws>java Box4
constucting Box
The volume is : 814051.504
F:\pu_it_practical\javaws>
```

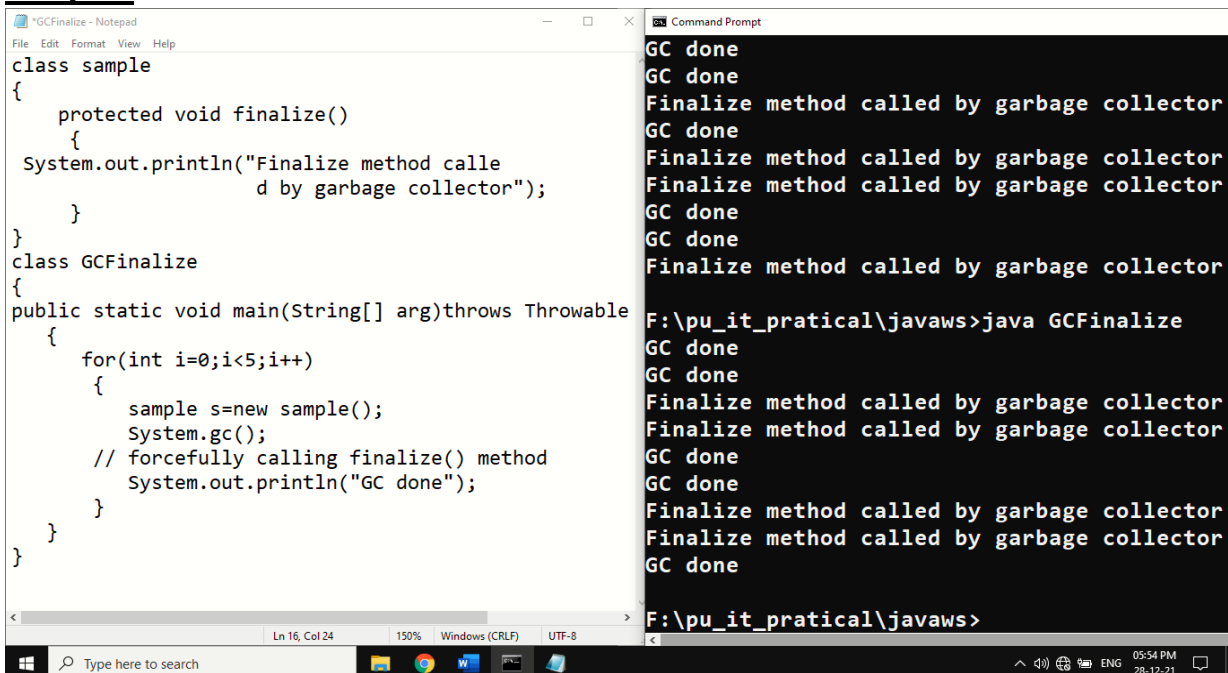
Practical 3:

AIM: Write a java Program for garbage collection.

Code:

```
class sample
{
    protected void finalize()
    {
        System.out.println("Finalize method called by garbage collector");
    }
}
class GCFinalize
{
    public static void main(String[] arg)throws Throwable
    {
        for(int i=0;i<5;i++)
        {
            sample s=new sample();
            System.gc(); // forcefully calling finalize() method
            System.out.println("GC done");
        }
    }
}
```

Output:



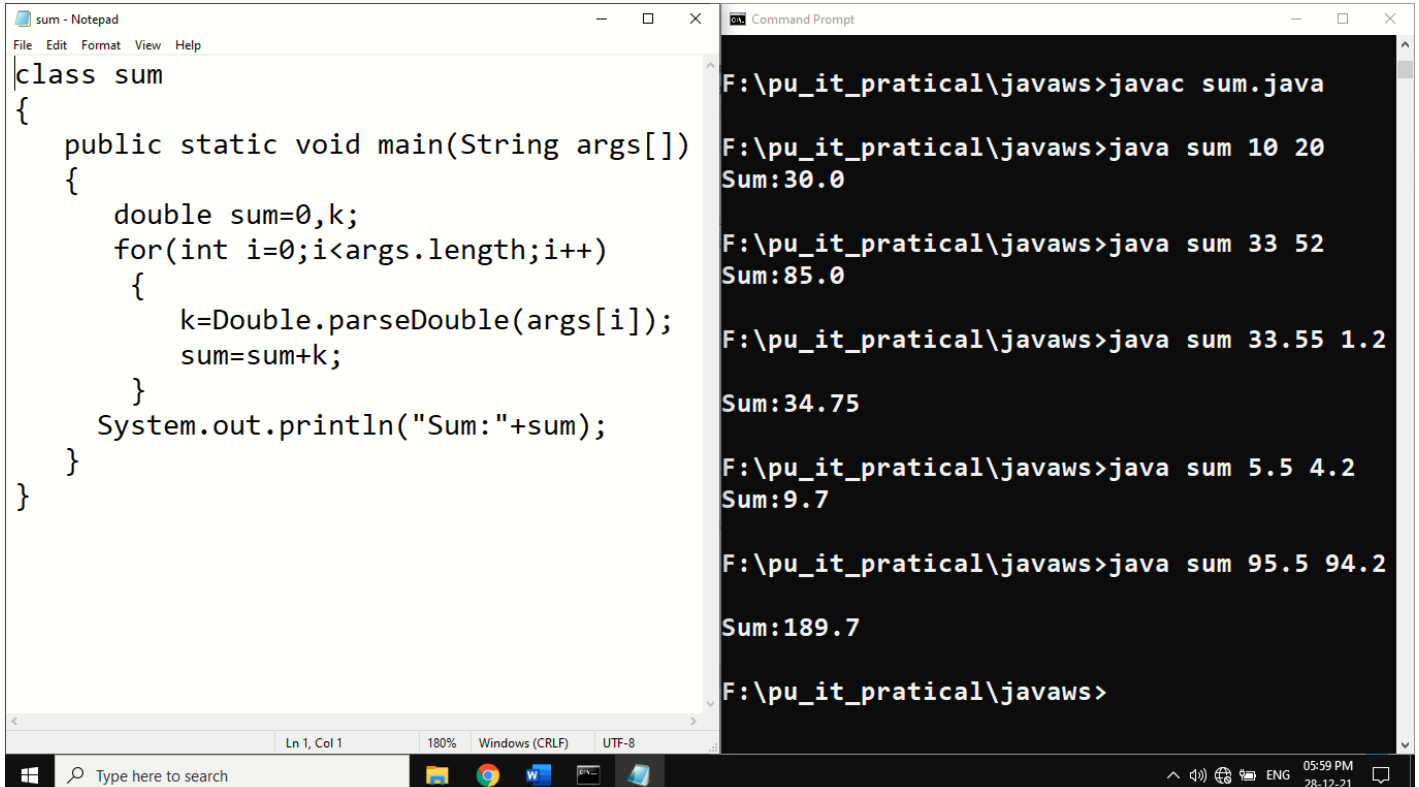
The screenshot shows a Notepad window titled "GCFinalize - Notepad" containing the Java code from the previous block. To its right is a Command Prompt window titled "Command Prompt" showing the output of the program. The output consists of 10 lines: "GC done" (5 times) and "Finalize method called by garbage collector" (5 times), alternating in sequence. The Command Prompt window also shows the command "F:\pu_it_pratical\javaws>java GCFinalize" being executed. The Windows taskbar at the bottom shows the time as 05:54 PM on 28-12-21.

Practical 4:

AIM: Write a java program to do sum of command line argument passed two Double numbers.

Code:

```
class sum
{
    public static void main(String args[])
    {
        double sum=0,k;
        for(int i=0;i<args.length;i++)
        {
            k=Double.parseDouble(args[i]);
            sum=sum+k;
        }
        System.out.println("Sum:"+sum);
    }
}
```

Output:

The screenshot shows two windows side-by-side. The left window is 'sum - Notepad' containing the Java code from the 'Code' section. The right window is 'Command Prompt' showing the execution of the program. The output shows the sum of two command-line arguments for five different test cases.

```
sum - Notepad
File Edit Format View Help
class sum
{
    public static void main(String args[])
    {
        double sum=0,k;
        for(int i=0;i<args.length;i++)
        {
            k=Double.parseDouble(args[i]);
            sum=sum+k;
        }
        System.out.println("Sum:"+sum);
    }
}

Command Prompt
F:\pu_it_practical\javaws>javac sum.java
F:\pu_it_practical\javaws>java sum 10 20
Sum:30.0
F:\pu_it_practical\javaws>java sum 33 52
Sum:85.0
F:\pu_it_practical\javaws>java sum 33.55 1.2
Sum:34.75
F:\pu_it_practical\javaws>java sum 5.5 4.2
Sum:9.7
F:\pu_it_practical\javaws>java sum 95.5 94.2
Sum:189.7
F:\pu_it_practical\javaws>
```

Practical Set: 3

Inheritance

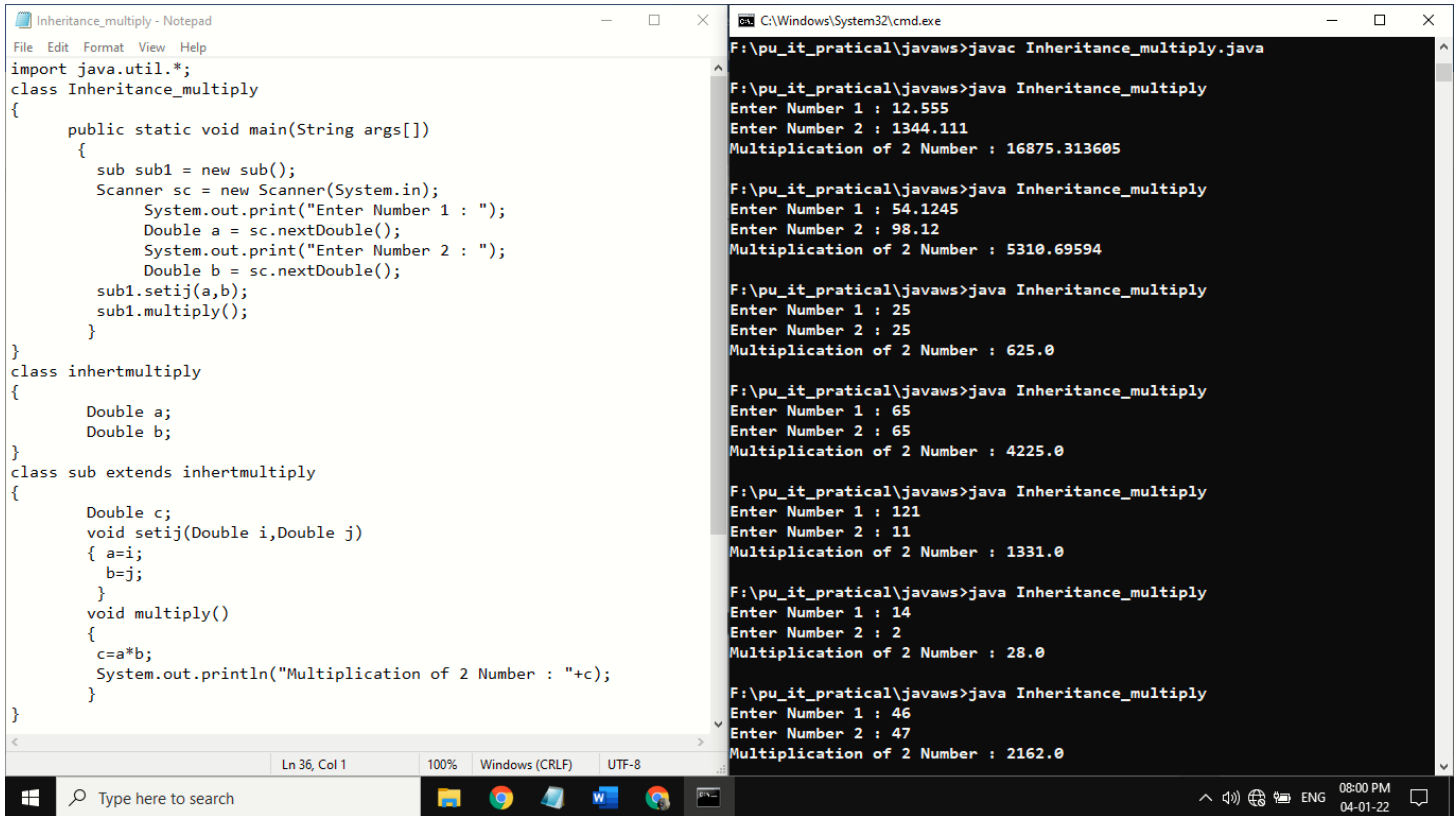
Practical 1:

AIM: Write java Program for single level inheritance.

Code:

```
import java.util.*;
class Inheritance_multiply
{
    public static void main(String args[])
    {
        sub sub1 = new sub();
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter Number 1 : ");
        Double a = sc.nextDouble();
        System.out.print("Enter Number 2 : ");
        Double b = sc.nextDouble();
        sub1.setij(a,b);
        sub1.multiply();
    }
}
class inhertmultiply
{
    Double a;
    Double b;
}
class sub extends inhertmultiply
{
    Double c;
    void setij(Double i,Double j)
    {
        a=i;
        b=j;
    }
    void multiply()
    {
        c=a*b;
        System.out.println("Multiplication of 2 Number : "+c);
    }
}
```


Output:



```
File Edit Format View Help
import java.util.*;
class Inheritance_multiply
{
    public static void main(String args[])
    {
        sub sub1 = new sub();
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter Number 1 : ");
        Double a = sc.nextDouble();
        System.out.print("Enter Number 2 : ");
        Double b = sc.nextDouble();
        sub1.setij(a,b);
        sub1.multiply();
    }
}
class inhertmultiply
{
    Double a;
    Double b;
}
class sub extends inhertmultiply
{
    Double c;
    void setij(Double i,Double j)
    { a=i;
      b=j;
    }
    void multiply()
    {
        c=a*b;
        System.out.println("Multiplication of 2 Number : "+c);
    }
}

F:\pu_it_pratical\javaws>javac Inheritance_multiply.java

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 12.555
Enter Number 2 : 1344.111
Multiplication of 2 Number : 16875.313605

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 54.1245
Enter Number 2 : 98.12
Multiplication of 2 Number : 5310.69594

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 25
Enter Number 2 : 25
Multiplication of 2 Number : 625.0

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 65
Enter Number 2 : 65
Multiplication of 2 Number : 4225.0

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 121
Enter Number 2 : 11
Multiplication of 2 Number : 1331.0

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 14
Enter Number 2 : 2
Multiplication of 2 Number : 28.0

F:\pu_it_pratical\javaws>java Inheritance_multiply
Enter Number 1 : 46
Enter Number 2 : 47
Multiplication of 2 Number : 2162.0
```

Practical Set: 4**Java Keyword****Practical 1:**

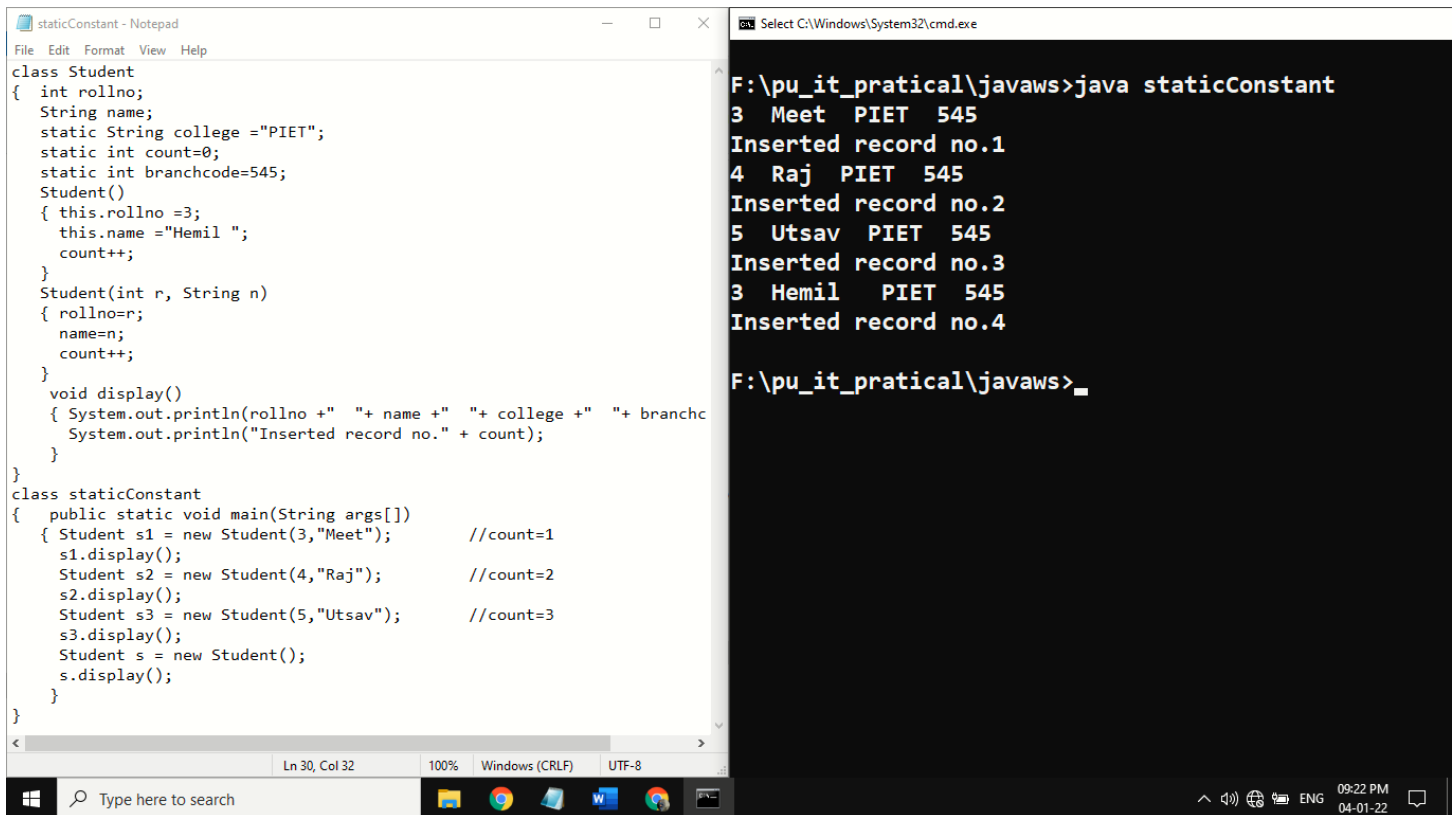
AIM: Write java program to demonstrate the use of static keyword.

Code:

```
class Student
{
    int rollno;
    String name;
    static String college ="PIET";
    static int count=0;
    static int branchcode=545;
    Student()
    {
        this.rollno =3;
        this.name ="Hemil ";
        count++;
    }
    Student(int r, String n)
    {
        rollno=r;
        name=n;
        count++;
    }
    void display()
    {
        System.out.println(rollno +" "+ name +" "+ college +" "+ branchcode);
        System.out.println("Inserted record no." + count);
    }
}
class staticConstant
{
    public static void main(String args[])
    {
        Student s1 = new Student(3,"Meet");    //count=1
        s1.display();
        Student s2 = new Student(4,"Raj");    //count=2
    }
}
```

```
s2.display();
Student s3 = new Student(5,"Utsav");    //count=3
s3.display();
Student s = new Student();
s.display();
}
}
```

Output:



```
staticConstant - Notepad
File Edit Format View Help
class Student
{ int rollno;
  String name;
  static String college ="PIET";
  static int count=0;
  static int branchcode=545;
  Student()
  { this.rollno =3;
    this.name ="Hemil ";
    count++;
  }
  Student(int r, String n)
  { rollno=r;
    name=n;
    count++;
  }
  void display()
  { System.out.println(rollno + " " + name + " " + college + " " + branchcode);
    System.out.println("Inserted record no." + count);
  }
}
class staticConstant
{ public static void main(String args[])
{ Student s1 = new Student(3,"Meet");    //count=1
  s1.display();
  Student s2 = new Student(4,"Raj");    //count=2
  s2.display();
  Student s3 = new Student(5,"Utsav");    //count=3
  s3.display();
  Student s = new Student();
  s.display();
}
}
```

```
Select C:\Windows\System32\cmd.exe
F:\pu_it_practical\javaws>java staticConstant
3 Meet PIET 545
Inserted record no.1
4 Raj PIET 545
Inserted record no.2
5 Utsav PIET 545
Inserted record no.3
3 Hemil PIET 545
Inserted record no.4
F:\pu_it_practical\javaws>
```

Practical Set: 5

AIM: Describe abstract class called Shape which has three subclasses say Triangle, Rectangle and Circle. Define one method area() in the abstract class and override this area() in these three subclasses to calculate area for specific class object.

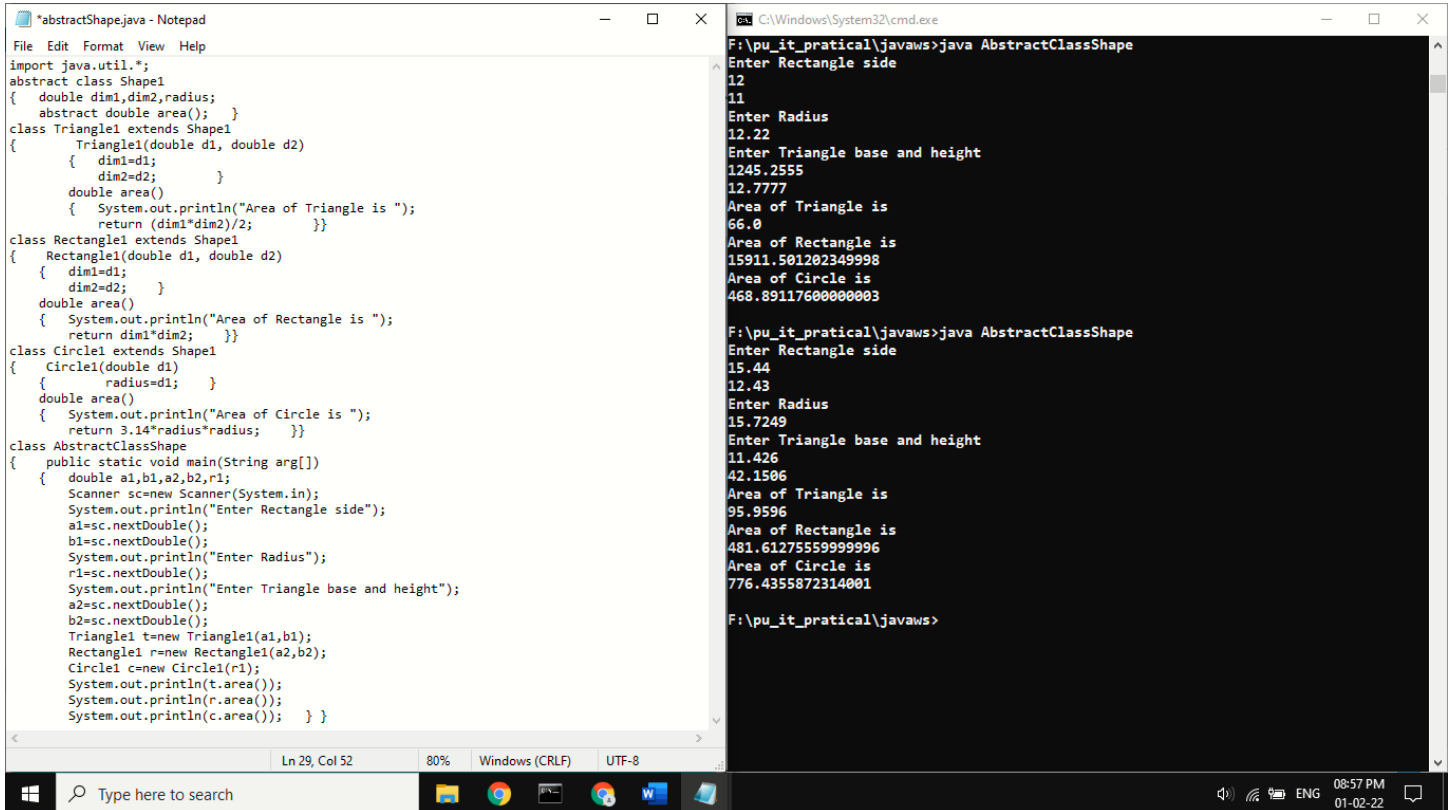
Code:

```
import java.util.*;
abstract class Shape1
{
    double dim1,dim2,radius;
    abstract double area();
}
class Triangle1 extends Shape1
{
    Triangle1(double d1, double d2)
    {
        dim1=d1;
        dim2=d2;
    }
    double area()
    {
        System.out.println("Area of Triangle is ");
        return (dim1*dim2)/2;
    }
}
class Rectangle1 extends Shape1
{
    Rectangle1(double d1, double d2)
    {
        dim1=d1;
        dim2=d2;
    }
    double area()
    {
        System.out.println("Area of Rectangle is ");
        return dim1*dim2;
    }
}
class Circle1 extends Shape1
{

```

```
Circle1(double d1)
{
    radius=d1;
}
double area()
{
    System.out.println("Area of Circle is ");
    return 3.14*radius*radius;
}
}
class AbstractClassShape
{
    public static void main(String arg[])
    {
        double a1,b1,a2,b2,r1;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter Rectangle side");
        a1=sc.nextDouble();
        b1=sc.nextDouble();
        System.out.println("Enter Radius");
        r1=sc.nextDouble();
        System.out.println("Enter Triangle base and height");
        a2=sc.nextDouble();
        b2=sc.nextDouble();
        Triangle1 t=new Triangle1(a1,b1);
        Rectangle1 r=new Rectangle1(a2,b2);
        Circle1 c=new Circle1(r1);
        System.out.println(t.area());
        System.out.println(r.area());
        System.out.println(c.area());
    }
}
```

Output:



```
*abstractShape.java - Notepad
File Edit Format View Help
import java.util.*;
abstract class Shape1
{ double dim1,dim2,radius;
  abstract double area();
}
class Triangle1 extends Shape1
{ Triangle1(double d1, double d2)
{ dim1=d1;
  dim2=d2;
}
double area()
{ System.out.println("Area of Triangle is ");
  return (dim1*dim2)/2;
}}
class Rectangle1 extends Shape1
{ Rectangle1(double d1, double d2)
{ dim1=d1;
  dim2=d2;
}
double area()
{ System.out.println("Area of Rectangle is ");
  return dim1*dim2;
}}
class Circle1 extends Shape1
{ Circle1(double d1)
{ radius=d1;
}
double area()
{ System.out.println("Area of Circle is ");
  return 3.14*radius*radius;
}}
class AbstractClassShape
{ public static void main(String arg[])
{ double a1,b1,a2,b2,r1;
  Scanner sc=new Scanner(System.in);
  System.out.println("Enter Rectangle side");
  a1=sc.nextDouble();
  b1=sc.nextDouble();
  System.out.println("Enter Radius");
  r1=sc.nextDouble();
  System.out.println("Enter Triangle base and height");
  a2=sc.nextDouble();
  b2=sc.nextDouble();
  Triangle1 t=new Triangle1(a1,b1);
  Rectangle1 r=new Rectangle1(a2,b2);
  Circle1 c=new Circle1(r1);
  System.out.println(t.area());
  System.out.println(r.area());
  System.out.println(c.area());
}
}

C:\Windows\System32\cmd.exe
F:\pu_it_practical\javaws>java AbstractClassShape
Enter Rectangle side
12
11
Enter Radius
12.22
Enter Triangle base and height
1245.2555
12.7777
Area of Triangle is
66.0
Area of Rectangle is
15911.501202349998
Area of Circle is
468.89117600000003

F:\pu_it_practical\javaws>java AbstractClassShape
Enter Rectangle side
15.44
12.43
Enter Radius
15.7249
Enter Triangle base and height
11.426
42.1506
Area of Triangle is
95.9596
Area of Rectangle is
481.61275559999996
Area of Circle is
776.4355872314001

F:\pu_it_practical\javaws>
```

Practical Set: 6

Package

Practical 1:

AIM: Write java program for package.

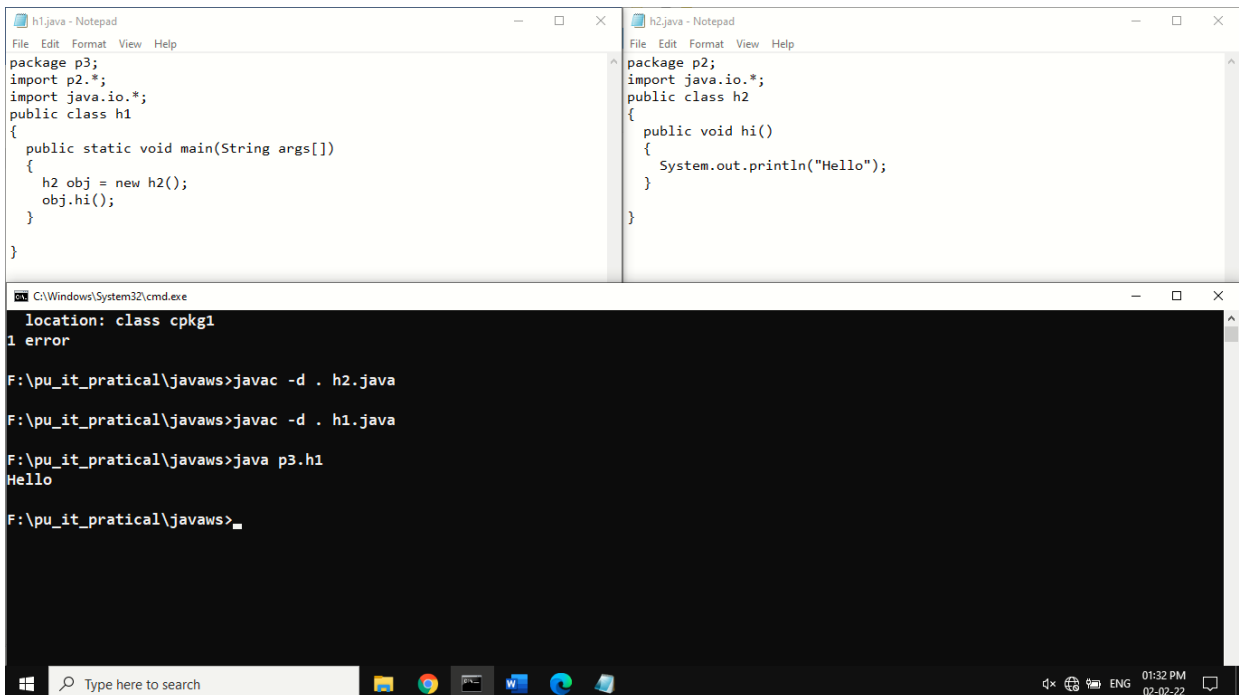
Code h1.java:

```
package p3;
import p2.*;
import java.io.*;
public class h1
{
    public static void main(String args[])
    {
        h2 obj = new h2();
        obj.hi();
    }
}
```

Code h2.java:

```
package p2;
import java.io.*;
public class h2
{
    public void hi()
    {
        System.out.println("Hello");
    }
}
```

Output:



```
h1.java - Notepad
File Edit Format View Help
package p3;
import p2.*;
import java.io.*;
public class h1
{
    public static void main(String args[])
    {
        h2 obj = new h2();
        obj.hi();
    }
}

h2.java - Notepad
File Edit Format View Help
package p2;
import java.io.*;
public class h2
{
    public void hi()
    {
        System.out.println("Hello");
    }
}

C:\Windows\System32\cmd.exe
location: class cpkg1
1 error

F:\pu_it_practical\javaws>javac -d . h2.java
F:\pu_it_practical\javaws>javac -d . h1.java
F:\pu_it_practical\javaws>java p3.h1
Hello
F:\pu_it_practical\javaws>
```


Practical Set: 7

Exception Handling

Practical 1:

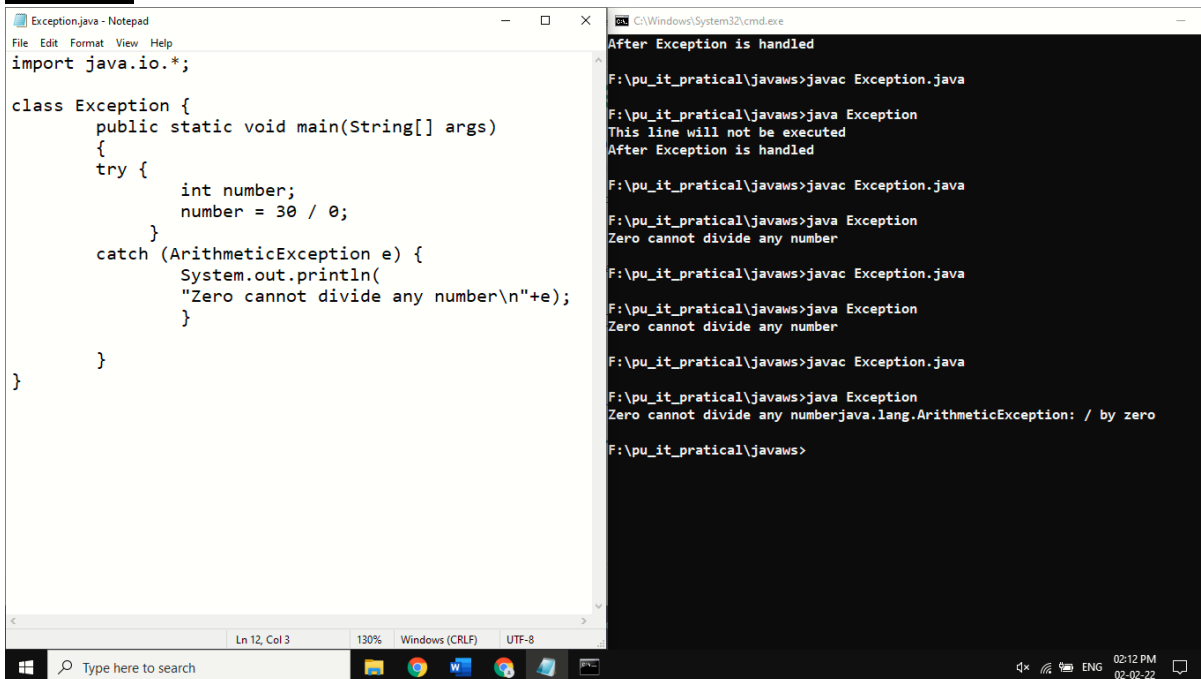
AIM: Write a program to show divide by zero error through exception, and also try to catch the exception.

Code:

```
import java.io.*;

class Exception {
    public static void main(String[] args)
    {
        try {
            int number;
            number = 30 / 0;
        }
        catch (ArithmeticException e) {
            System.out.println(
                "Zero cannot divide any number\n"+e);
        }
    }
}
```

Output:



The screenshot displays a Windows desktop environment. On the left, a Notepad++ window titled 'Exception.java - Notepad' shows the Java code. On the right, a Command Prompt window titled 'C:\Windows\System32\cmd.exe' shows the execution of the program. The Command Prompt output is as follows:

```
After Exception is handled
F:\pu_it_pratical\javaws>javac Exception.java
F:\pu_it_pratical\javaws>java Exception
This line will not be executed
After Exception is handled
F:\pu_it_pratical\javaws>javac Exception.java
F:\pu_it_pratical\javaws>java Exception
Zero cannot divide any number
F:\pu_it_pratical\javaws>javac Exception.java
F:\pu_it_pratical\javaws>java Exception
Zero cannot divide any number
F:\pu_it_pratical\javaws>javac Exception.java
F:\pu_it_pratical\javaws>java Exception
Zero cannot divide any numberjava.lang.ArithmeticException: / by zero
F:\pu_it_pratical\javaws>
```

Practical Set: 8

Concurrent Programming

Practical 1:

Aim: Write a program to demonstrate thread using Thread class and Runnable interface.

Code:

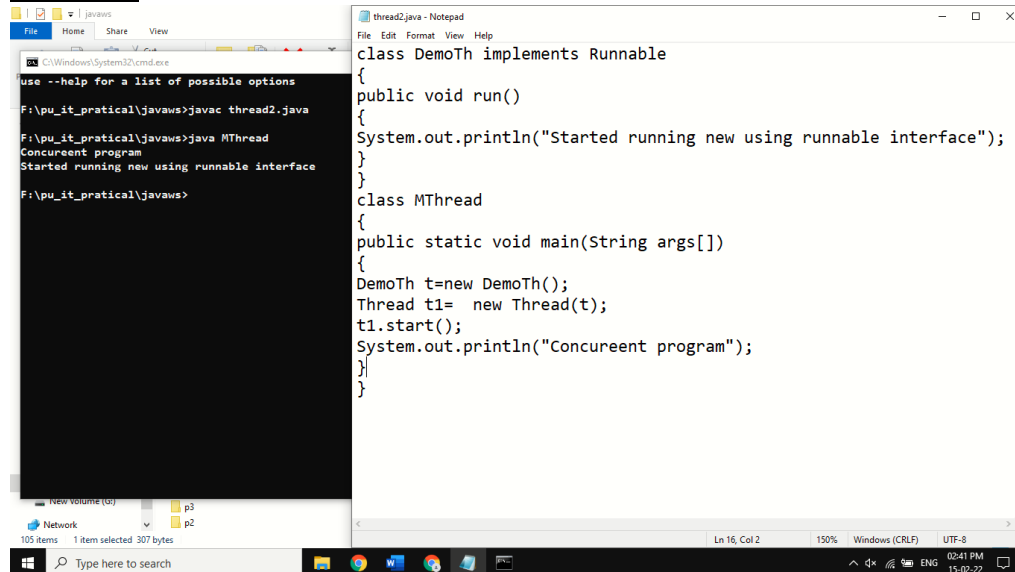
class DemoTh implements Runnable

```
{  
    public void run()  
    {  
        System.out.println("Started running new using runnable interface");  
    }  
}
```

class MThread

```
{  
    public static void main(String args[])  
    {  
        DemoTh t=new DemoTh();  
        Thread t1= new Thread(t);  
        t1.start();  
        System.out.println("Concureent program");  
    }  
}
```

Output:



```
thread2.java - Notepad  
File Edit Format View Help  
class DemoTh implements Runnable  
{  
    public void run()  
    {  
        System.out.println("Started running new using runnable interface");  
    }  
}  
class MThread  
{  
    public static void main(String args[])  
    {  
        DemoTh t=new DemoTh();  
        Thread t1= new Thread(t);  
        t1.start();  
        System.out.println("Concureent program");  
    }  
}
```

```
C:\Windows\System32\cmd.exe  
Use --help for a list of possible options  
F:\pu_it_practical\javaws>javac thread2.java  
F:\pu_it_practical\javaws>java MThread  
Concureent program  
Started running new using runnable interface  
F:\pu_it_practical\javaws>
```

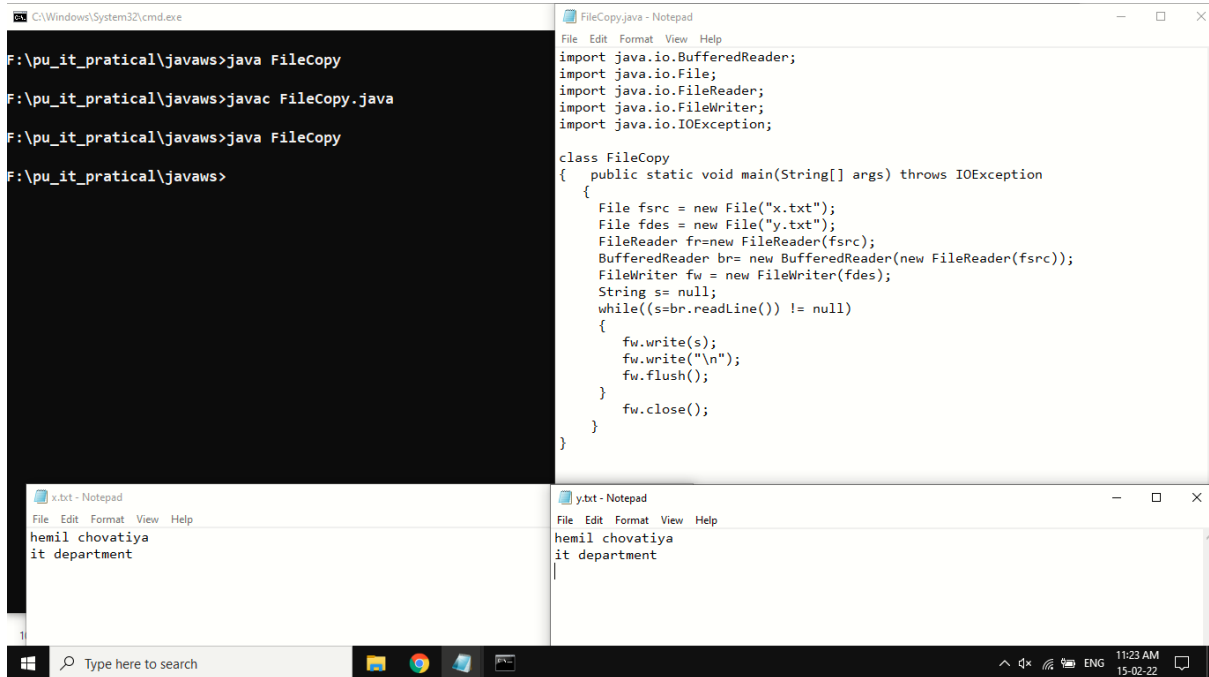
Practical Set: 9**IO Programming****Practical 1:**

Aim: Write a Java program to copy content of file1.txt to file2.txt using Java file handling.

Code:

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
class FileCopy
{
    public static void main(String[] args) throws IOException
    {
        File fsrc = new File("x.txt");
        File fdes = new File("y.txt");
        FileReader fr=new FileReader(fsrc);
        BufferedReader br= new BufferedReader(new FileReader(fsrc));
        FileWriter fw = new FileWriter(fdes);
        String s= null;
        while((s=br.readLine()) != null)
        {
            fw.write(s);
            fw.write("\n");
            fw.flush();
        }
        fw.close();
    }
}
```

Output:



```
FileCopy.java - Notepad
import java.io.BufferedReader;
import java.io.File;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;

class FileCopy
{
    public static void main(String[] args) throws IOException
    {
        File fsrc = new File("x.txt");
        File fdes = new File("y.txt");
        FileReader fr=new FileReader(fsrc);
        BufferedReader br= new BufferedReader(new FileReader(fsrc));
        FileWriter fw = new FileWriter(fdes);
        String s= null;
        while((s=br.readLine()) != null)
        {
            fw.write(s);
            fw.write("\n");
            fw.flush();
        }
        fw.close();
    }
}
```

```
x.txt - Notepad
File Edit Format View Help
hemil chovatiya
it department

y.txt - Notepad
File Edit Format View Help
hemil chovatiya
it department
|
```

Windows taskbar at the bottom shows the search bar, taskbar icons, and system tray with the date 15-02-22 and time 11:23 AM.