INDEX

1. Write a program to find factorial of list of number reading input as command line argument.

```java
import java.util.Scanner;
class Fact{
public static void main(String[] args){
int n,fac=1;
System.out.print("Enter the number");
Scanner r=new Scanner(System.in);
n=r.nextInt();

for(int i=1;i<=n;i++){
fac=fac*i;

}
System.out.println("factorial of the number is :"+fac);
}
}
```
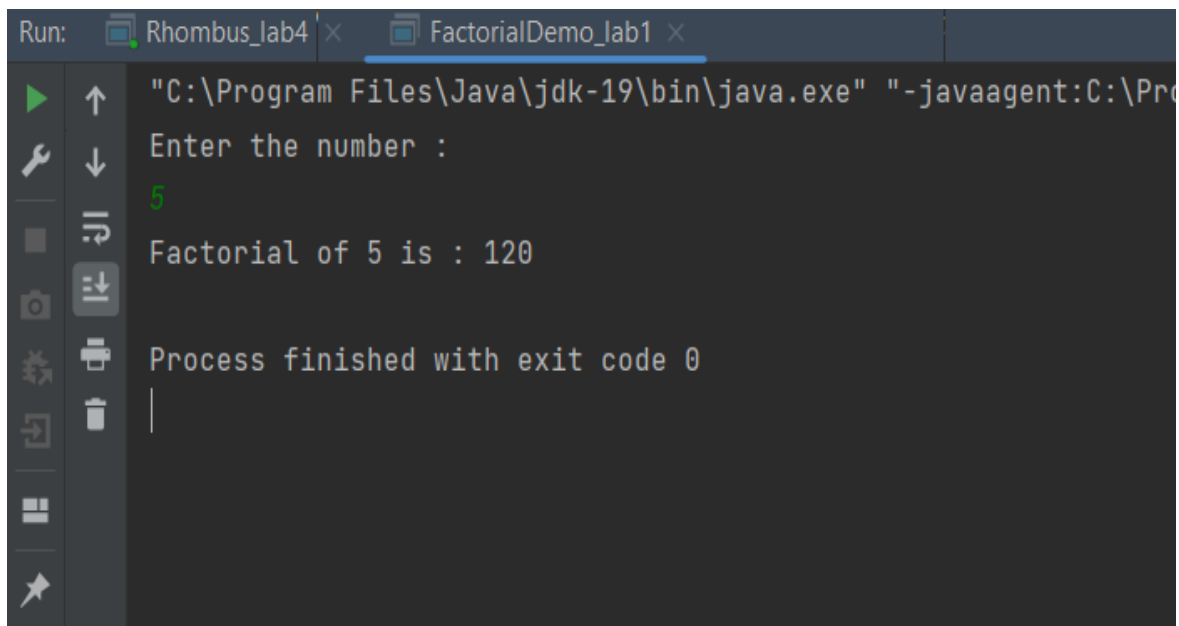
Output: -


```
Run:    Rhombus_lab4 ×    FactorialDemo_lab1 ×

"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Pro
Enter the number :
5
Factorial of 5 is : 120


Process finished with exit code 0
```

2.Write a program to check if a given number is prime number or not.
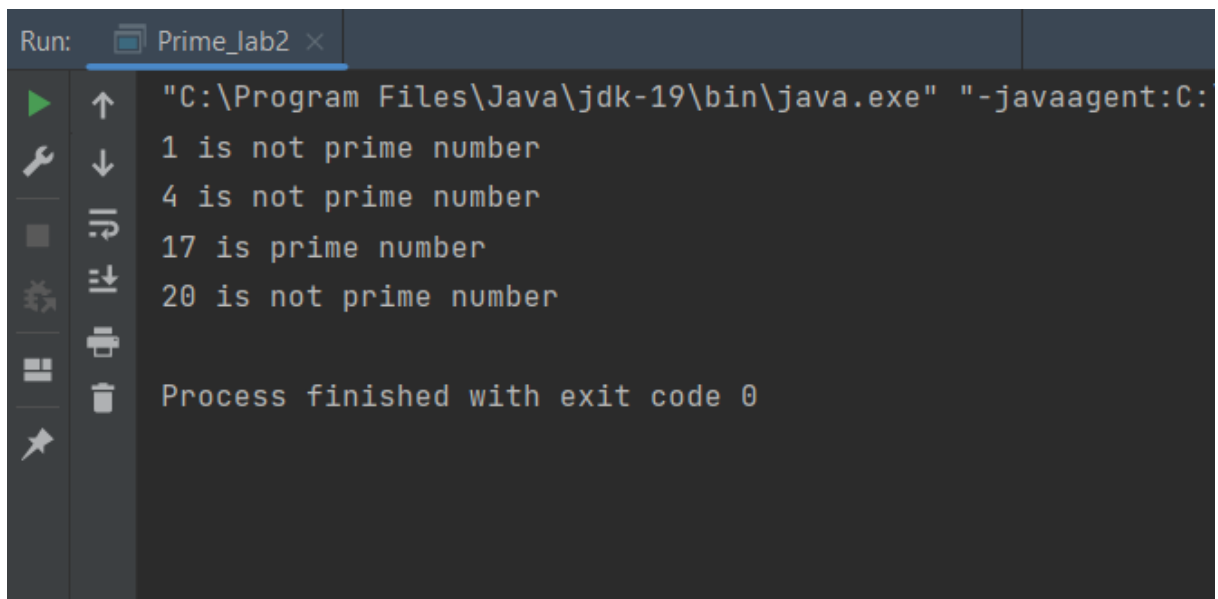
```java
package com.company;
public class CheckPrime {
        static void Prime(int n) {
int i,flag = 0;
if(n==0 || n==1) {
System.out.println(n+ " is not a Prime number");
}else {
for(i=2;i<=n/2;i++) {
if(n%i ==0) {
System.out.println(n+ " is not a Prime Number");
flag = 1;
break;
}
}
if(flag == 0) {
System.out.println(n+ " is a Prime Number");
}
}
}
public static void main(String[] argus) {
Prime(1);
Prime(4);
Prime(17):
Prime(20):
}
}
```

Output: -

```
Run:    Prime_lab2 ×

    "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:
    1 is not prime number
    4 is not prime number
    17 is prime number
    20 is not prime number

    Process finished with exit code 0
```

3.Write a program to sort list of elements in Ascending order and descending order and show the exception handling.

```
import java.util.Scanner;
public  class SortDemo {
public static void main(String[] args)
int n;
Scanner sc = new Scanner(System.in);
try {

System.out.println("Enter the number of elements:");

n = sc.nextInt();
int[] arr = new int[10];
System.out.println("please enter" + n + "Number");
for (int i = 0; i < n; i++) {
arr[i] = sc.nextInt();
};
System.out.println("After sorting");
System.out.println("Ascending order");

for (int i = 0; i < n; i++) {
for (int j = i + 1; j < n; j++) {
int tmp = 0;
if (arr[i] > arr[j]) {
tmp = arr[i];
arr[i]  = arr[j];
arr[j] = tmp;
}
}
System.out.println("" + arr[i]);
```
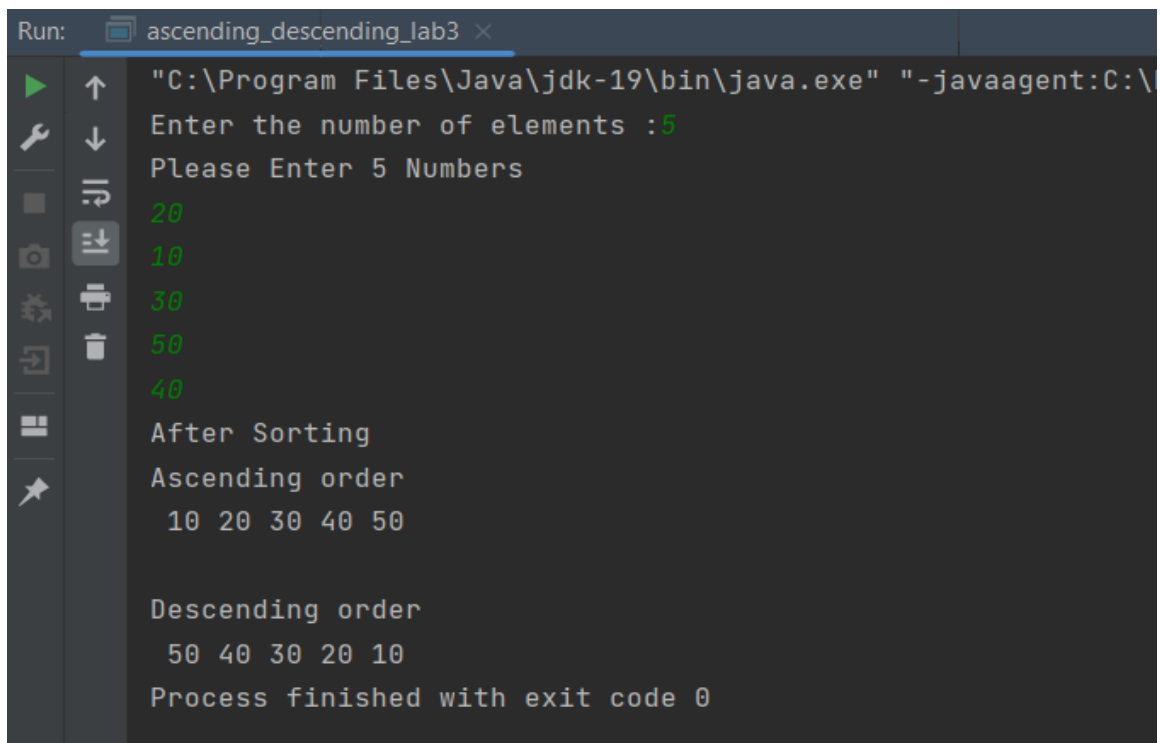
211301   **5**

```java
        }
        System.out.println("\n\nDescending order \n");
        for (int i = n - 1; i >= 0; i--) {
        System.out.println("" + arr[i]);
        }
        }
        catch (Exception exception) {
        System.out.println("Error occured" + exception);
        }
        }
        }
```

Output: -

```
Run:        ascending_descending_lab3 ×

    ▶   ↑     "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\
    🔧  ↓     Enter the number of elements :5
              Please Enter 5 Numbers
        ⇄     20
    ■   ≡↓    10
    📷        30
    🐞        50
    🔂        40
              After Sorting
    ⊞         Ascending order
    📌         10 20 30 40 50

              Descending order
               50 40 30 20 10
              Process finished with exit code 0
```

4. Write a program to implement Rhombus pattern reading the limits from user.

```java
import java.io.*;
public class RhombusDemo
{
public static void main(String args[])  throws IOException
{
int i ,j, limit;
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
System.out.println("Enter the limit:");
limit=Integer.parseInt(br.readLine());
for(i=1;i<=limit;i++)
{
for(j=limit-i; j>0; j--)
System.out.print(" ");
for (j=1;j<=2*i-1;j++)
System.out.print("*");
System.out.println();
}
for(i=limit-1;i>=1;i--)
{
for(j = 1; j<=limit-i;  j++)
System.out.print(" ");
for(j = 1;  j<=2*i-1;  j++)
System.out.print("*");
System.out.println( );
}
}
}
```

Output: -

```
Run:      Rhombus_lab4 ×

  ▶    ↑    "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\
  🔧    ↓    Enter the limit :
  ■    ⇥    5
  📷    ⤓        *
  🐞    🖶      ***
  ⤵    🗑     *****
                *******
  🖵           *********
  📌           *******
               *****
                ***
                 *

            Process finished with exit code 0
            |
```

5.Write a program to implement all string operations.

```java
package com.company;

public class StringOperation {
public static void main(String[] argus) {

String s1 = "Hello";
String s2 = "World";
System.out.println("The Strings are "+s1+" and "+s2);

int len1 = s1.length();
int len2 = s2.length();
System.out.println("The length of "+s1+" is :"+len1);
System.out.println("The length of "+s2+" is :"+len2);

        System.out.println("The Concatination of Two Strings is    :"+s1.concat(s2));
        System.out.println("The First Character of "+s1+" is:" +s1.charAt(0));
System.out.println("The Uppercase of s1 is :"+s1.toUpperCase());
System.out.println("The Lowercase of s1 is:" +s1.toLowerCase());
        System.out.println("The letter E occurs at the position :"+s1.indexOf("e"));
        System.out.println("Substring of "+s1+ " Starting From index 2 to 4 is
        :"+s1.substring(2,4));
        System.out.println("Replace letter 'e' with 'o' in s1:"+s1.replace('e','o'));

boolean check =s1.equals(s2);
if(check == false) {
System.out.println(s1+" and "+s2+" are not same");
}
else {
System.out.println(s1+" and " +s2+" are same");
}
}
}
```
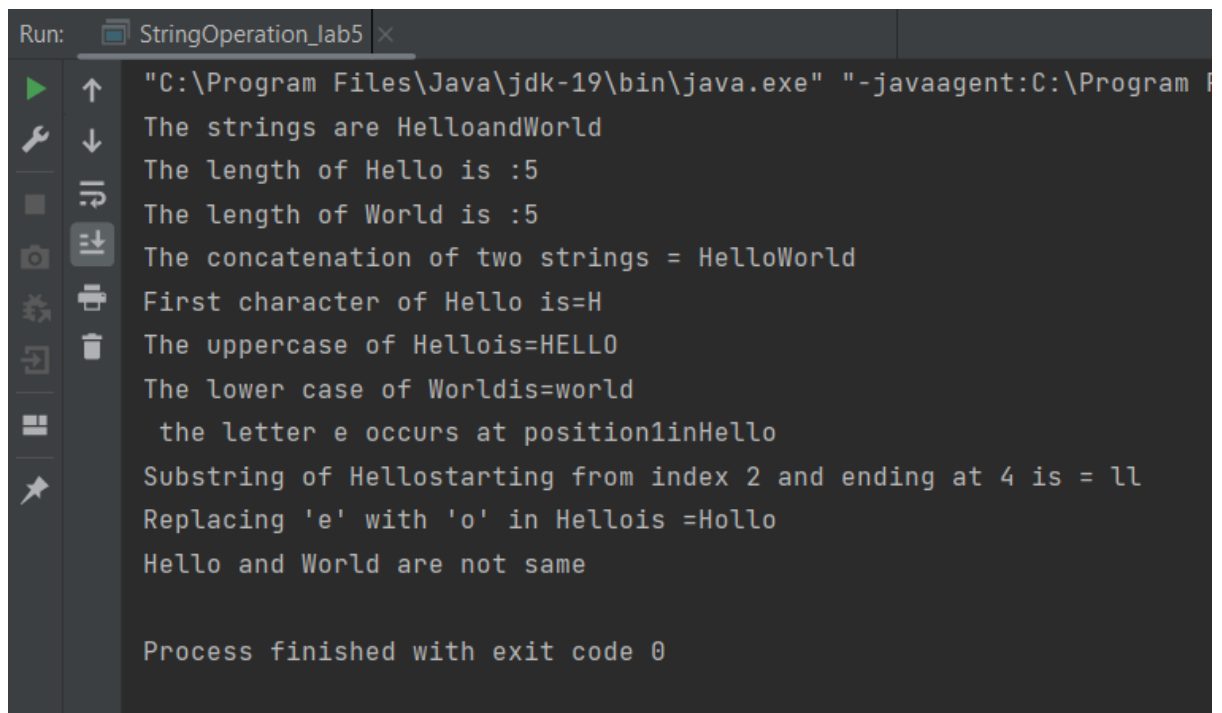
Output: -

```
Run:    StringOperation_lab5 ×

    "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program F
    The strings are HelloandWorld
    The length of Hello is :5
    The length of World is :5
    The concatenation of two strings = HelloWorld
    First character of Hello is=H
    The uppercase of Hellois=HELLO
    The lower case of Worldis=world
     the letter e occurs at position1inHello
    Substring of Hellostarting from index 2 and ending at 4 is = ll
    Replacing 'e' with 'o' in Hellois =Hollo
    Hello and World are not same

    Process finished with exit code 0
```

6.Write a program in java to generate an abstract class A also class B inherits the class A. Generate the object for B and display the text "Call me from B".

package com.company;

import java.security.PublicKey;

abstract class A

{

abstract void call();

}

class B extends A

{

public void call()

{

System.out.println("Call me from B");

}

public static void main(String[] args)
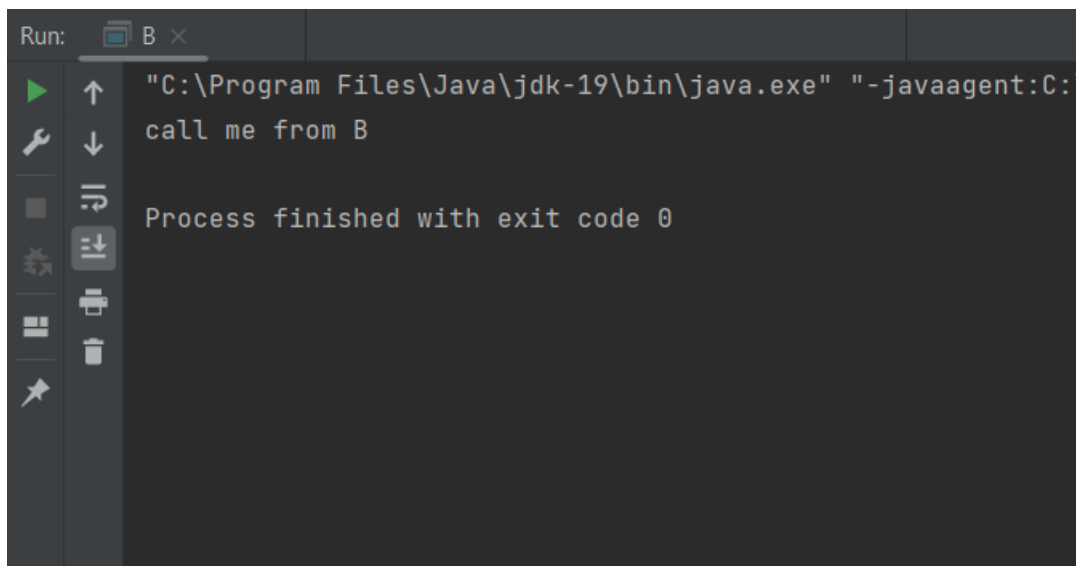
{

B b=new B();

b.call();

}

Output: -

7. Write a program to find area of geometric figures using method

```java
package module2;
//import java.io.*;
import java.util.Scanner;
public class Area {
    public static double CircleArea(double r) {
        return Math.PI * r *r;
    }
    public static double SquareArea(double side) {
        return side * side;
    }
    public static double RectArea(double width,double height) {
        return width * height;
    }
    public static double TriArea(double base,double height1) {
        return 0.5 * base * height1;
    }
        public static void main(String[] arg) {
            try {
//              Scanner sc = new Scanner(System.in);
                System.out.println("Enter the Radius:");

                double Radius = sc.nextDouble();
                System.out.println("Area of Circle = "+CircleArea(Radius));

                System.out.println("Enter the Side:");
                double side =  sc.nextDouble();
                System.out.println("Area of Square="+SquareArea(side));

                System.out.println("Enter the width:");
```

```java
            double width = sc.nextDouble();
            System.out.println("Enter the Height:");
            double height = sc.nextDouble();
            System.out.println("Area of Rectangle="+RectArea(width,height));


            System.out.println("Enter the Base:");
            double base = sc.nextDouble();
            System.out.println("Enter the Height:");
            double height1 = sc.nextDouble();
            System.out.println("Area of Triangle="+TriArea(base,height1));
            }
            catch(Exception e) {
                System.out.println("Error" +e);
                }


    }


}
```
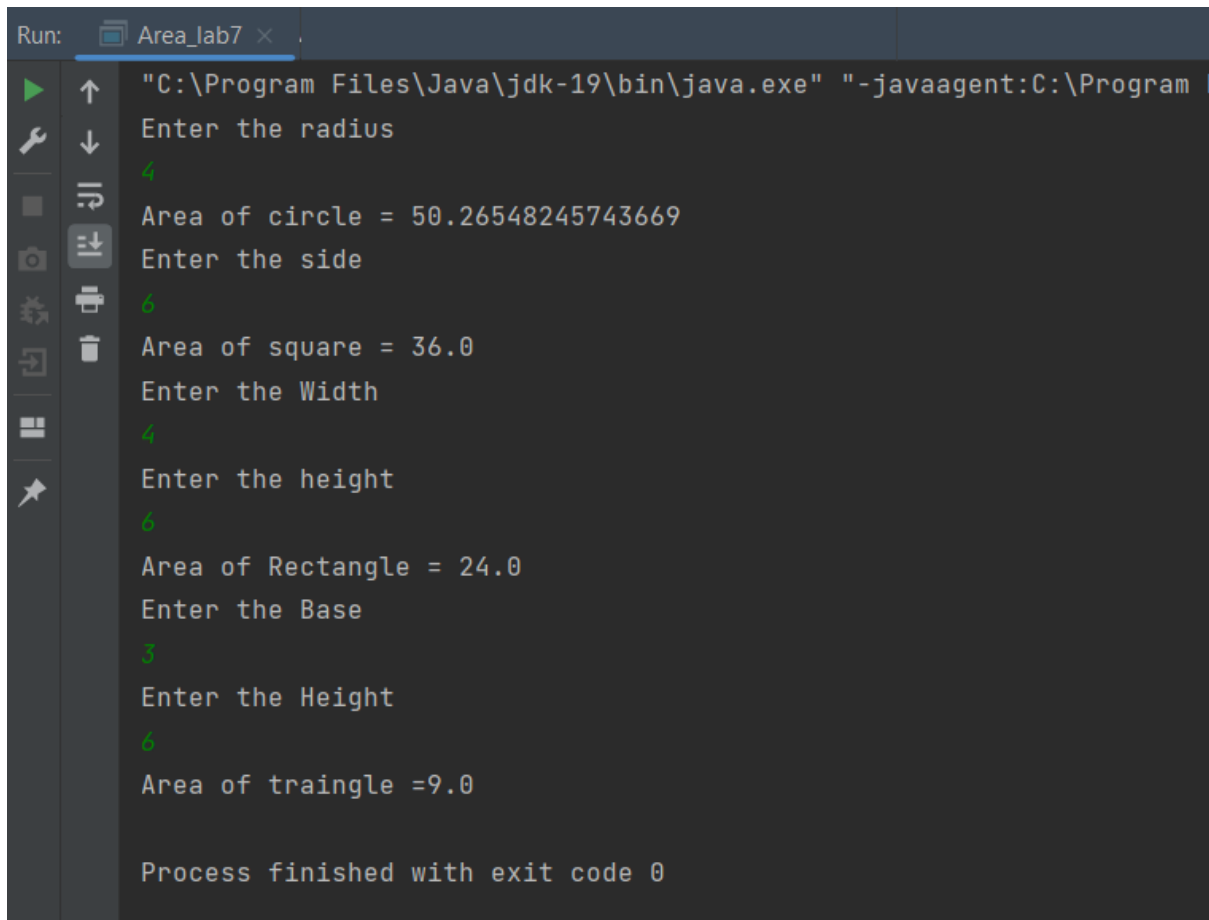
Output: -

```
Run:      Area_lab7 ×
  ►    ↑    "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program
  🔧   ↓    Enter the radius
  ■    ⇥    4
  📷   ⇲    Area of circle = 50.26548245743669
           Enter the side
  🖨       6
  🗑       Area of square = 36.0
           Enter the Width
  ⊞        4
  📌       Enter the height
           6
           Area of Rectangle = 24.0
           Enter the Base
           3
           Enter the Height
           6
           Area of traingle =9.0

           Process finished with exit code 0
```

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8. Write a program to implement constructor overloading by passing different numbers by parameter of different type.

package com.company;

import javax.swing.*;

public class Box

{

int length, breadth, height;

Box()

{

length = breadth = height = 2;

System.out.println("Intialized with defalt constructor");

}

Box(int l, int b)

{

length=1; breadth=b; height=2;

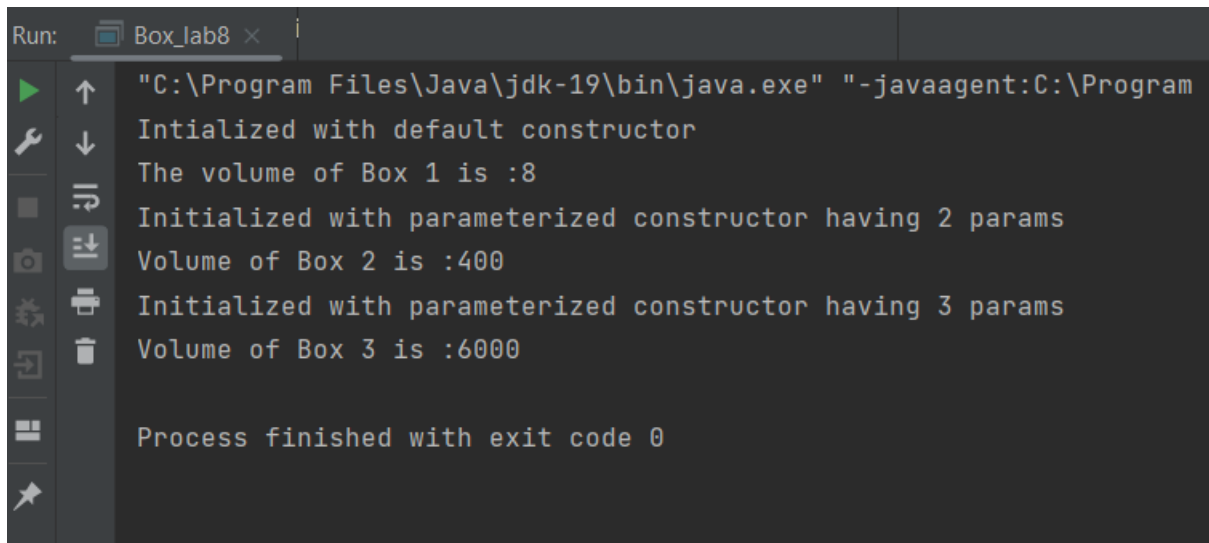System.out.println("Initialized with parameterized constructor having 2 params");

}

Box(int l,int b,int h)

{

length =l; breadth =b; height =h;

System.out.println("Intialized constructor having 3 params");

}

public int getVolume()

{

return length*breadth*height;

}

public static void main(String args[])

{

```java
Box box1 = new Box();
System.out.println("the Volume of Box1 is:"+ box1.getVolume());
Box box2 = new Box(10,20);
System.out.println("the Vol  ume of Box2 is:"+ box2.getVolume());
Box box3 = new Box(10,20,30);
System.out.println("the Vol  ume of Box3 is:"+ box3.getVolume());
}
}
```

Output: -

9.Write a program to calculate bonus for different department using method overriding.

```
package com.company;

abstract class Department {

double salary,bonus,totalSalary;

public abstract  void calBonus(double salary);

public void displaytotalSalry(String dept)

{


System.out.println(dept+"/t"+salary+"/t/t"+bonus+"/t"+totalSalary);

}

}

class Account extends Department

{

public void calBonus(double sal)

{

salary=sal;

bonus=sal*0.2;

totalSalary=salary+bonus;

}

}

class sales extends Department

{

public void calBonus(double sal)

{

salary=sal;bonus=sal*0.3;

totalSalary=salary+bonus;

}

}
```
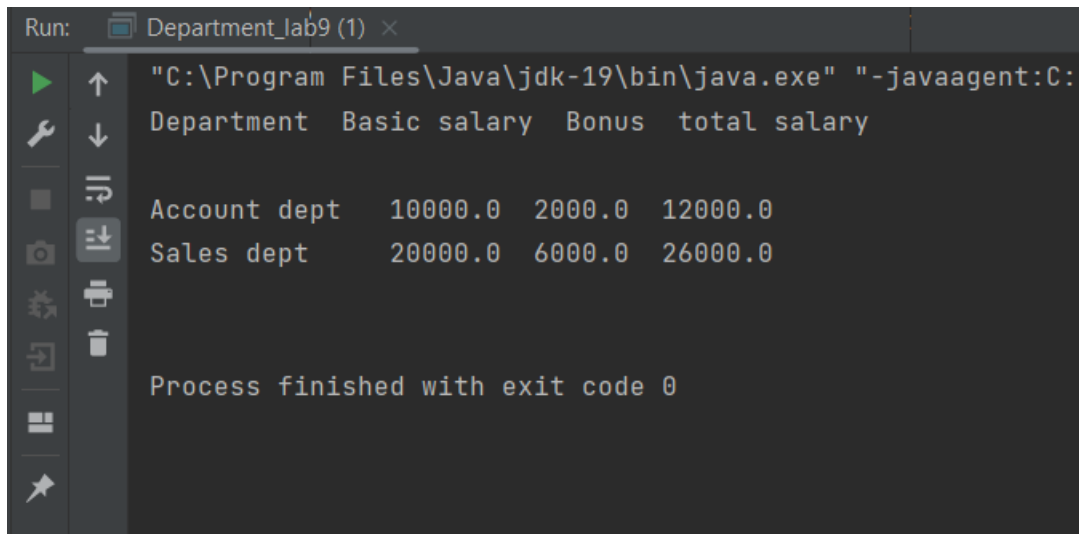
```java
public class BonusCalculate
{
public static void main(String[] arr)
{
Department acc=new Account();
Department sales=new sales();
acc.calBonus(10000);
sales.calBonus(20000);

System.out.println("Department \t Basic salary \t Bonus \t total salary");
System.out.println();
acc.displaytotalSalry("Account dept  ");
sales.displaytotalSalry("Sales dept    ");
System.out.println();
}
}
```

Output: -

```
Run:    Department_lab9 (1) ×
        "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:
        Department  Basic salary  Bonus  total salary

        Account dept   10000.0  2000.0  12000.0
        Sales dept     20000.0  6000.0  26000.0



        Process finished with exit code 0
```

10. Write a program to implement Thread Priority

```java
package com.company;

class A extends Thread
{
public void run()
{
System.out.println("Thread A Started");for(int i=1;i<5;i++)
System.out.println("thread A:i="+i);
System.out.println("Exits from thread A");
}
}
class B extends Thread
{
public void run()
{
System.out.println("Thread B Started");for(int i=1;i<5;i++)
System.out.println("thread B:i="+i);
System.out.println("Exits from thread B");
}
}
class C extends Thread
{
public void run()
{
System.out.println("Thread C Started");for(int i=1;i<5;i++)
System.out.println("thread C:i="+i);
System.out.println("Exits from thread C");
}
}
```
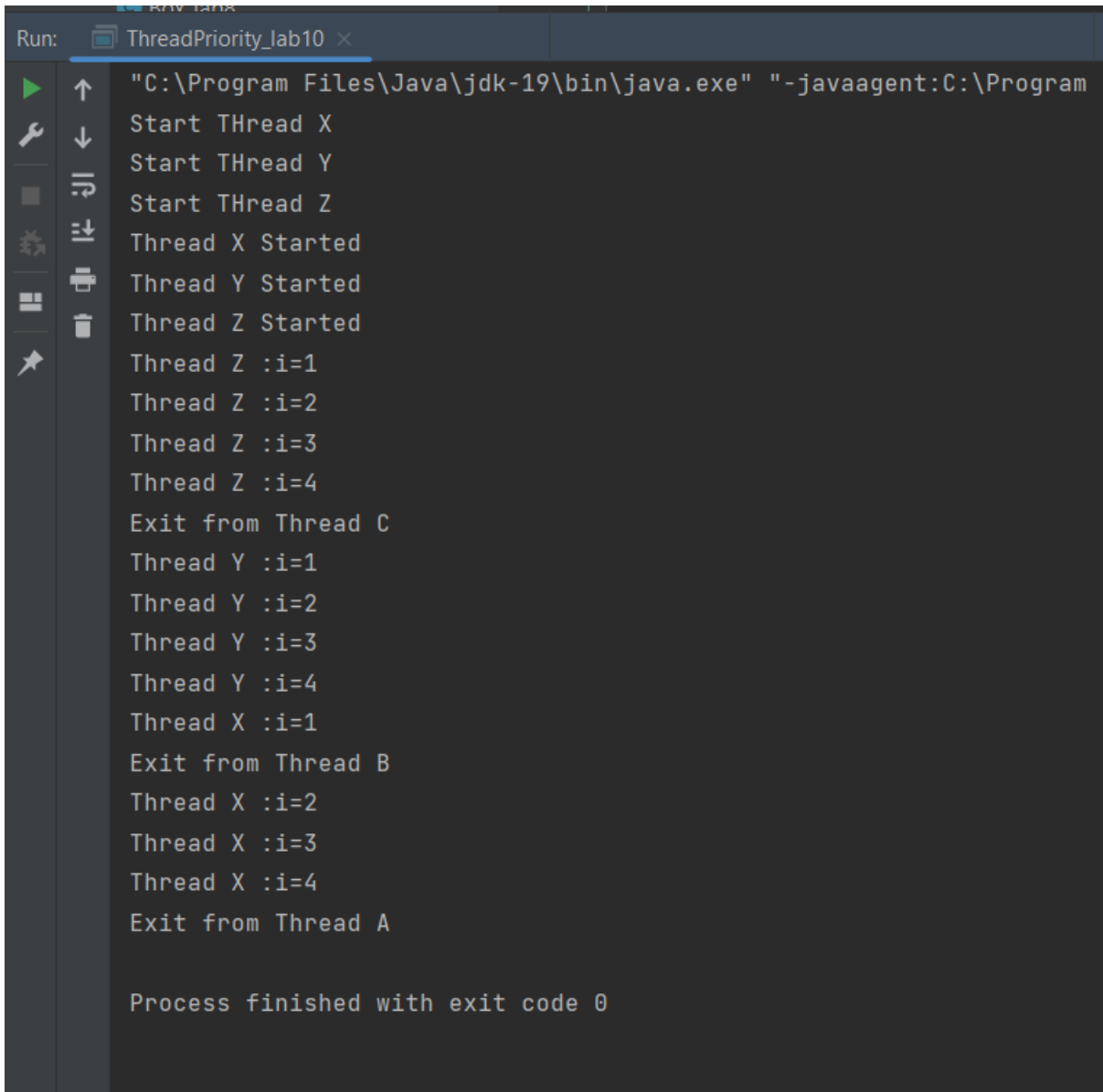
```
class threadPriority
{
public static void main(String[] arr)
{
A threadA = new A();
B threadB = new B();
C threadC = new C();

threadA.setPriority(Thread.NORM_PRIORITY);
threadB.setPriority(Thread.MAX_PRIORITY);
threadC.setPriority(Thread.MIN_PRIORITY);

System.out.println("Start thread A");threadA.start();
System.out.println("Start thread B");threadB.start();
System.out.println("Start thread C");threadC.start();
}
```

Output: -

```
Run:    ThreadPriority_lab10 ×

▶   ↑    "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program
🔧  ↓    Start THread X
■   ⇥    Start THread Y
        Start THread Z
🔨  ⬇    Thread X Started
🖨      Thread Y Started
▤  🗑    Thread Z Started
📌      Thread Z :i=1
        Thread Z :i=2
        Thread Z :i=3
        Thread Z :i=4
        Exit from Thread C
        Thread Y :i=1
        Thread Y :i=2
        Thread Y :i=3
        Thread Y :i=4
        Thread X :i=1
        Exit from Thread B
        Thread X :i=2
        Thread X :i=3
        Thread X :i=4
        Exit from Thread A

        Process finished with exit code 0
```