2021

OBJECT ORIENTED PROGRAMMING LAB [KCA 251]

SHUBHAM PATKAR
MCA 1ST YEAR

ACCURATE INSTITUTE OF MANAGEMENT & TECHNOLOGY

SESSION 2020-21

PRACTICAL FILE

OBJECT ORIENTED PROGRAMMING LAB [KCA-251]

UNDER GUIDANCE OF:-

PROF. ANAND SINGH

MCA DEPT.

SUBMITTEDBY:-

SHUBHAM PATKAR

MCA 1ST

INDEX

PROGRAM-1

Write a program to find out the factorial of given number(by takimg user input).

```
class Factorial
 {
  public static void main(String args[])
   {
System.out.println("Find Factorial of : 5 ");
    int i,fact=1;
    int number=5;
    for(i=1;i<=number;i++)
     {
      fact=fact*i;
     }
    System.out.println("Factorial of "+number+" is: "+fact);
   }
 }
```

Output –

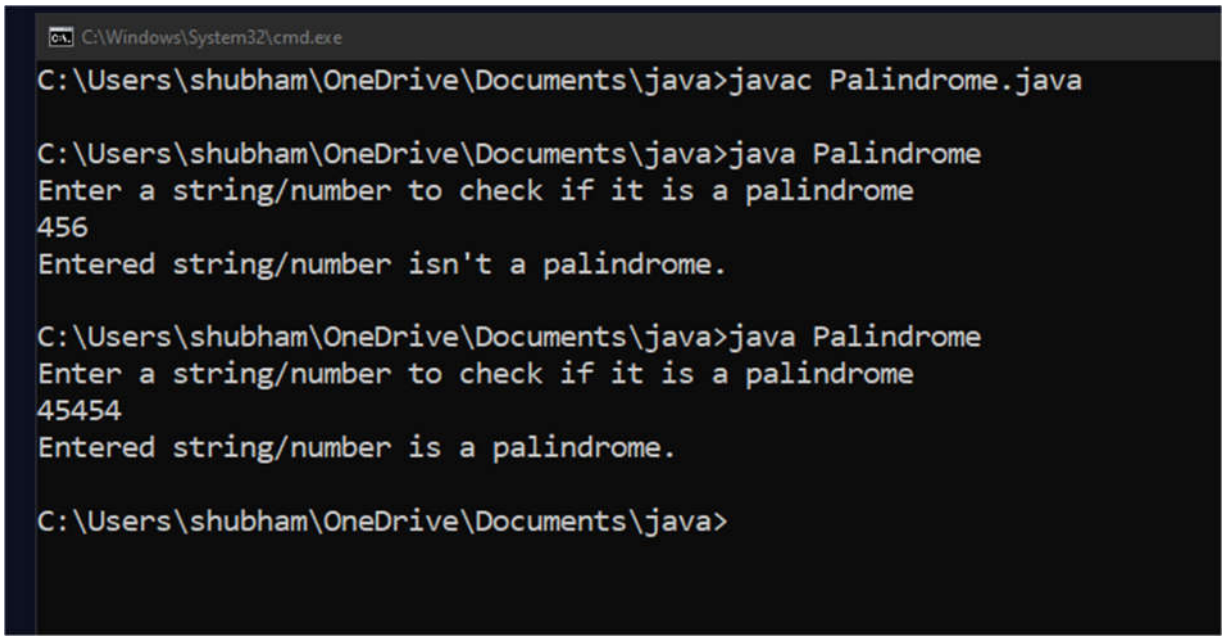
```
C:\Users\shubham\OneDrive\Documents\java>javac Factorial.java

C:\Users\shubham\OneDrive\Documents\java>java Factorial
Find Factorial of : 5
Factorial of 5 is: 120

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-2

Write a program to find out that given number is palindrome or not.

```
import java.util.*;
class Palindrome
{
  public static void main(String args[])
  {
    String original, reverse = ""; // Objects of String class
    Scanner in = new Scanner(System.in);
    System.out.println("Enter a string/number to check if it is a palindrome");
    original = in.nextLine();
    int length = original.length();
    for ( int i = length - 1; i >= 0; i-- )
      reverse = reverse + original.charAt(i);
    if (original.equals(reverse))
      System.out.println("Entered string/number is a palindrome.");
    else
      System.out.println("Entered string/number isn't a palindrome.");
  }
}
```

Output -


C:\Windows\System32\cmd.exe
C:\Users\shubham\OneDrive\Documents\java>javac Palindrome.java
C:\Users\shubham\OneDrive\Documents\java>java Palindrome
Enter a string/number to check if it is a palindrome
456
Entered string/number isn't a palindrome.
C:\Users\shubham\OneDrive\Documents\java>java Palindrome
Enter a string/number to check if it is a palindrome
45454
Entered string/number is a palindrome.
C:\Users\shubham\OneDrive\Documents\java>

PROGRAM-3

Write a program that will display the sum of 1+1/2+1/3....+1/n.

```
import java.util.Scanner;
public class series
 {
   public static void main(String[] args)
{
  Scanner sc=new Scanner(System.in);
  System.out.print("Enter n: ");
  int n = sc.nextInt;
 double sum=0;
 for(int i=1;i<=n:i++)
{
   long f=1;
  for(int j=1;i<=n:j++)
{
  f *=j;
}
  Sum+=(1.0/f);
    }
System.out.println("Sum=  + sum);
  } }
```

Output -

```
Enter n: 10
Sum=1.7182818011463847
```

PROGRAM-4

Write a program that will display 25 prime numbers.

```
public class PrimeNum
 {
    public static void main(String args[])
  {
    int i,m=0,flag=0;
    int n=3;
    m=n/2;
    if(n==0||n==1)
     {
        System.out.println(n+" is not prime number");
     }
      else
      {
          for(i=2;i<=m;i++){
          if(n%i==0){
          System.out.println(n+" is not prime number");
          flag=1;
          break;
         }
  }
  if(flag==0)
   {
    System.out.println(n+" is prime number");
```

```
    }
   }
  }
}
```

Output -

```
C:\Users\shubham\OneDrive\Documents\java>javac PrimeNum.java

C:\Users\shubham\OneDrive\Documents\java>java PrimeNum
3 is prime number

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-5

Write a program that uses the use of inheritance.

```
class First
{
   int  i=10;
   void inherit()
{
  System.out.println("Hello");
 }
}
   class Second extends First
{
   void inherit()
{
   System.out.println("World");
 }
    public static void main(String args[])
   {
      Second s=new Second();
      s.inherit();
      System.out.println(s.i);
   }}
```

Output -

Hello World

PROGRAM-6

Write a program to implement Multiple Interfaces.

```
interface A
{
void show();
}
interface B
{
void disp();
}
class INNER implements A,B
{
public void show()
{
System.out.println("This Is Interface A");
}

public void disp()
{
System.out.println("This Is Interface B");
}
public static void main(String arg[])
{
INNER obj= new INNER();
```

```
obj.show();
obj.disp();
  }
}
```

Output -

This is Interface A

This is Interface B

PROGRAM-7

Write a program to method overriding.

```
class Vehicle
{
  void run()
{
  System.out.println("Vehicle is running");
  }
}
class Bike2 extends Vehicle
 {
  void run()
  {
    System.out.println("Bike is Running Fast");
  }
   public static void main(String args[])
  {
     Bike2 obj = new Bike2();
     obj.run();
   }
}
```

Output -

```
C:\Users\shubham\OneDrive\Documents\java>javac Bike.java

C:\Users\shubham\OneDrive\Documents\java>java Bike
Bike is Running Fast

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-8

Write a program to show the use of abstract class.

```
abstract class Sum
{
  public abstract int sumOfTwo(int n1, int n2);
  public abstract int sumOfThree(int n1, int n2, int n3);
  public void display()
  {
    System.out.println("Method of class Sum :");
  }
}
  class Demo extends Sum
  {
   public int sumOfTwo(int num1, int num2)
   {
   return num1+num2;
  }
   public int sumOfThree(int num1, int num2, int num3)
 {
   return num1+num2+num3;
  }
        public static void main(String args[])
   {
       Sum obj = new Demo();
       System.out.println(obj.sumOfTwo(3, 7));
```

```
        System.out.println(obj.sumOfThree(4, 3, 19));
        obj.display();
    }
}
```

Output -

```
C:\Users\shubham\OneDrive\Documents\java>javac Demo.java

C:\Users\shubham\OneDrive\Documents\java>java Demo
Method of class Sum :
10
26

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-9

Write a program which shows creation of package and importing of a classes from other packages .

```
package pack1;

import pack2.Student

public class Example

{

 public static void main(String []args)

 {

   Student s1=new Student();

   s1.setRollno(22);

   s1.setName("Shubham !");

 }

  System.out.println("Student Roll Number = "+getRollno());

   System.out.println("Student Full Name = "+getName());

}
```

Output –

```
Student Roll Number = 22

Student Full Name = Shubham !
```

PROGRAM-10

Write a program to Addition of two matrices .

```
class ArrAddMatrics{
        public static void main(String args[]){
        int m1[][]={{2,4,6},{3,5,7},{4,8,12}};
        int m2[][]={{2,4,6},{3,5,7},{4,8,12}};

   int  add[][]=new int[3][3];
        System.out.println("Addition of matrix");
for(int i=0;i<3;i++)
{
        for(int j=0;j<3;j++)
        {
                add[i][j]=0;
                for(int k=0;k<3;k++)
           {
             add[i][j]=add[i][j]+m1[i][k]+m2[k][j];
             System.out.print(add[i][j]+" ");
           }
                System.out.println();
   }
}       }
    }
```

OUTPUT

```
C:\Users\shubham\OneDrive\Documents\java>javac ArrAddMatrics.java

C:\Users\shubham\OneDrive\Documents\java>java ArrAddMatrics
Addition of matrix
4 8 12
6 10 14
8 16 24
```

PROGRAM-11

Write a program to Multiplication of two matrices .

```
class ArrMulMatrics{
public static void main(String args[]){
int m1[][]={{2,4,6},{3,5,7},{4,8,12}};
int m2[][]={{2,4,6},{3,5,7},{4,8,12}};
int mul[][]=new int[3][3];
System.out.println("Multiplication of matrix");
for(int i=0;i<3;i++)
{
for(int j=0;j<3;j++)
{
        mul[i][j]=0;
        for(int k=0;k<3;k++)
   {
     mul[i][j]=mul[i][j]+m1[i][k]+m2[k][j];

   }
        System.out.print(mul[i][j]+" ");
}
        System.out.println();
 }

 }
}
```

OUTPUT

```
C:\Users\shubham\OneDrive\Documents\java>javac ArrMulMatrics.java

C:\Users\shubham\OneDrive\Documents\java>java ArrMulMatrics
Multiplication of matrix
21 29 37
24 32 40
33 41 49

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-12

Write a program to concept of default constructor in java .

```
class DefaultConstructor{
        int rollno;
        String name;
        void display(int r,String n){
                rollno=r;
                name=n;
                System.out.println("Student Roll number : "+rollno+" Student Name : "+name);
        }
public static void main(String args[]){
 DefaultConstructor st=new DefaultConstructor();
 st.display(10,"SHUBHAM PATKAR");
}
}
```

OUTPUT

```
C:\Users\shubham\OneDrive\Documents\java>javac DefaultConstructor.java

C:\Users\shubham\OneDrive\Documents\java>java DefaultConstructor
Student Roll number : 10 Student Name : SHUBHAM PATKAR

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-13

Write a program to show sleep concept in java

```
class Sleep{
public static void main(String args[]) throws InterruptedException{
Thread.sleep(5000);
System.out.println("Hello, Shubham Patkar !");
Thread.sleep(4000);
System.out.println("-: Web Developer :-");
}
}
```

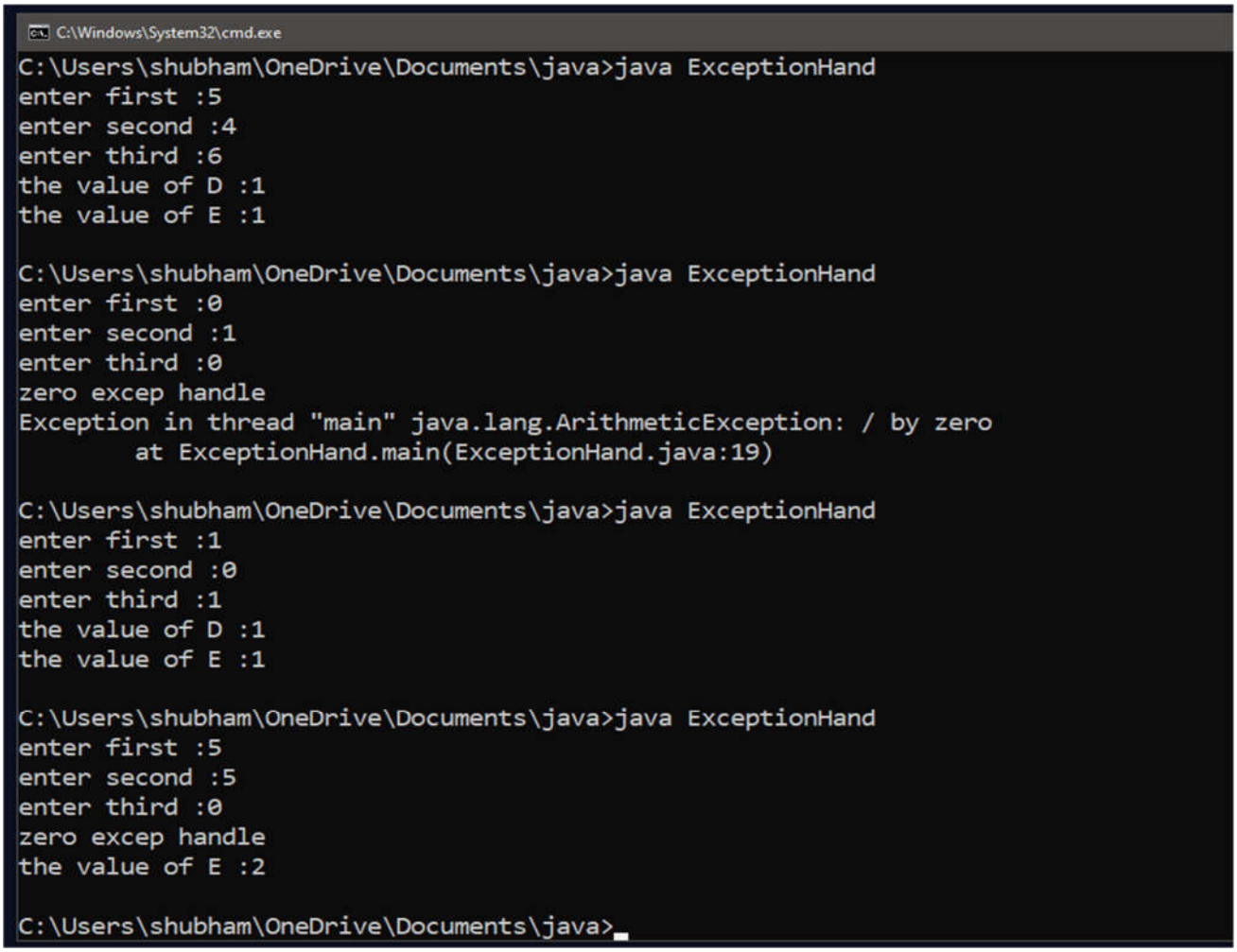
```
C:\Users\shubham\OneDrive\Documents\java>javac Sleep.java

C:\Users\shubham\OneDrive\Documents\java>java Sleep
Hello, Shubham Patkar !
-: Web Developer :-

C:\Users\shubham\OneDrive\Documents\java>
```

PROGRAM-14

Write a program to handle exception in java

```
import java.util.Scanner;
class ExceptionHand{
public static void main(String args[]){
System.out.print("enter first :");
Scanner sc=new Scanner(System.in);
int a=sc.nextInt();
System.out.print("enter second :");
int b=sc.nextInt();
System.out.print("enter third :");
int c=sc.nextInt();
try
{
int d=(a+b)/c;
System.out.println("the value of D :"+d);
}
catch(ArithmeticException e){
System.out.println("zero excep handle");
}
int e=(a+b)/a;
System.out.println("the value of E :"+e);

}
}
```

OUTPUT

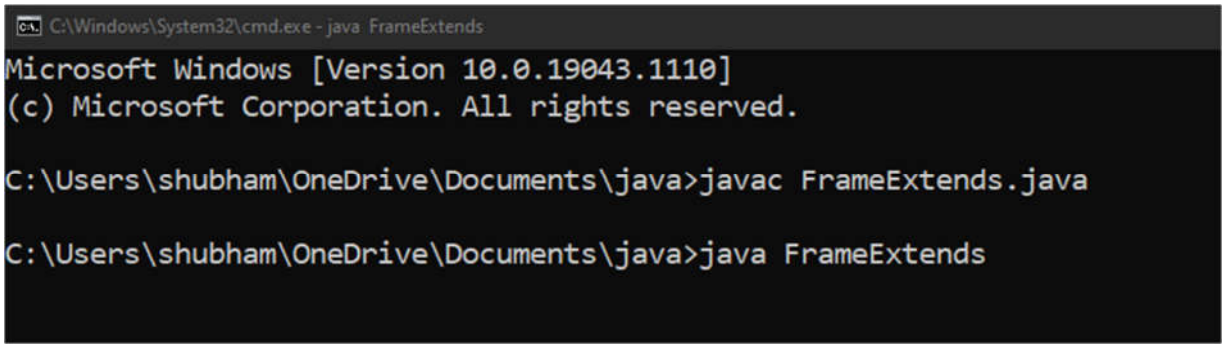

C:\Windows\System32\cmd.exe
C:\Users\shubham\OneDrive\Documents\java>java ExceptionHand
enter first :5
enter second :4
enter third :6
the value of D :1
the value of E :1
C:\Users\shubham\OneDrive\Documents\java>java ExceptionHand
enter first :0
enter second :1
enter third :0
zero excep handle
Exception in thread "main" java.lang.ArithmeticException: / by zero
at ExceptionHand.main(ExceptionHand.java:19)
C:\Users\shubham\OneDrive\Documents\java>java ExceptionHand
enter first :1
enter second :0
enter third :1
the value of D :1
the value of E :1
C:\Users\shubham\OneDrive\Documents\java>java ExceptionHand
enter first :5
enter second :5
enter third :0
zero excep handle
the value of E :2
C:\Users\shubham\OneDrive\Documents\java>

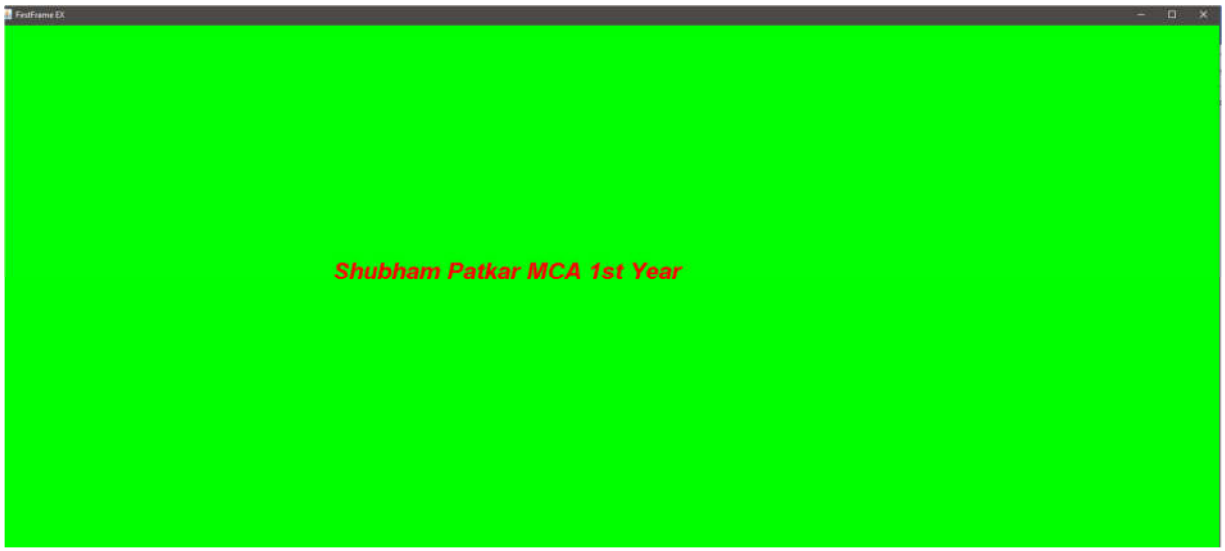
PROGRAM-15

Write a program to create Frame using java awt.

```
import java.awt.*;
class FirstFrameEx extends Frame{
   FirstFrameEx(){

   this.setVisible(true);
   this.setSize(1000,300);
        this.setBackground(Color.green);
   this.setTitle("FirstFrame EX");
        }
        public void paint(Graphics g){
Font font =new Font("arial",Font.ITALIC+Font.BOLD,35);
g.setFont(font);
g.drawString("Shubham",200,100);
this.setForeground(Color.red);
        }
}
class FrameExtends{
public static void main(String args[]){
FirstFrameEx ff=new FirstFrameEx();
}
}
```

OUTPUT


C:\Windows\System32\cmd.exe - java FrameExtends
Microsoft Windows [Version 10.0.19043.1110]
(c) Microsoft Corporation. All rights reserved.
C:\Users\shubham\OneDrive\Documents\java>javac FrameExtends.java
C:\Users\shubham\OneDrive\Documents\java>java FrameExtends


Shubham Patkar MCA 1st Year

PROGRAM-16

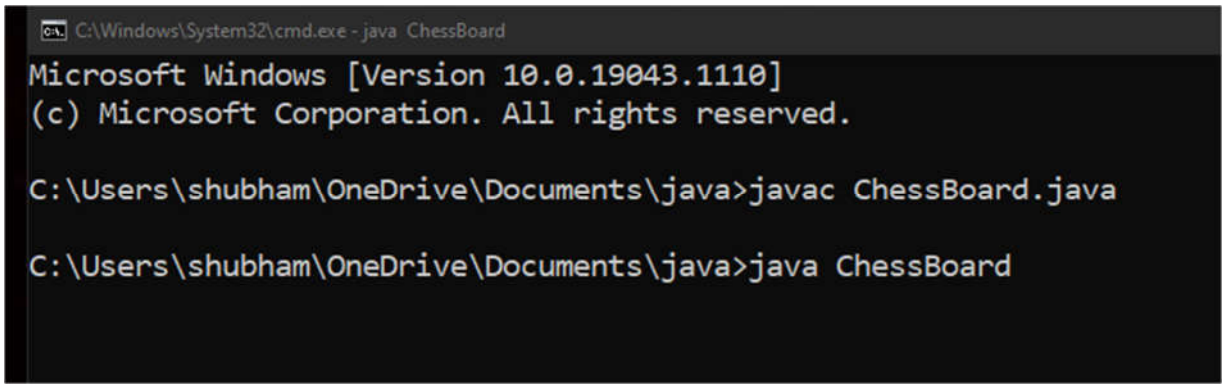
Develop GUI applications using Swing components

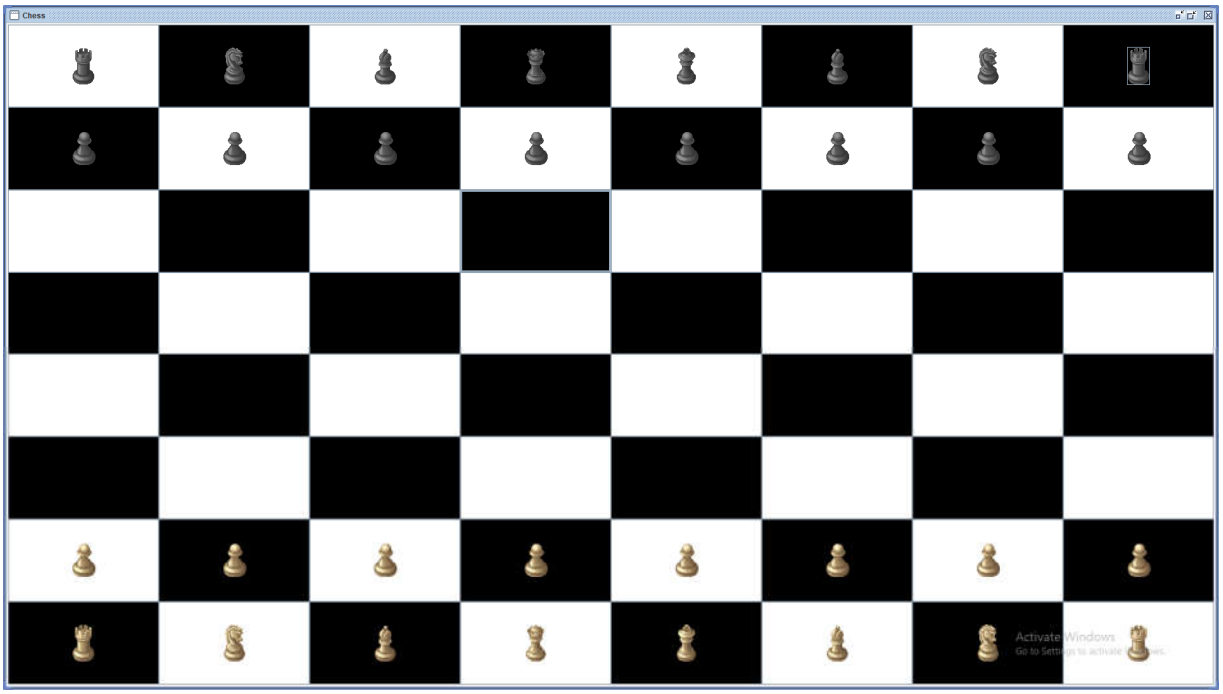
```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
class ChessBoard extends JFrame
{
 JButton [][]bt=new JButton[8][8];
 public ChessBoard()
 {
        super("Chess");
        setExtendedState(6);
        setDefaultCloseOperation(3);
        addButtons();
        setVisible(true);
 }
 private void addButtons()
 {
        setLayout(new GridLayout(8,8));
        int c=0;
      ChessListener listener=new ChessListener();
        for(int i=0;i<8;i++)
        {
          for(int j=0;j<8;j++)
```

```
        {
            bt[i][j]=new JButton();
          bt[i][j].addActionListener(listener);
            if(j%2==c)
              bt[i][j].setBackground(Color.white);
            else
              bt[i][j].setBackground(Color.black);
            add(bt[i][j]);
        }
        c=1-c;
      }
      setImage();
 }
 private void setImage()
 {
   ImageIcon icon3=new ImageIcon(getClass().getResource("image/bp.gif"));
   ImageIcon icon4=new ImageIcon(getClass().getResource("image/wp.gif"));
   for(int c=0;c<8;c++)
   {
      ImageIcon icon1=new
ImageIcon(getClass().getResource("image/b"+c+".gif"));
      bt[0][c].setIcon(icon1);
      ImageIcon icon2=new
ImageIcon(getClass().getResource("image/w"+c+".gif"));
      bt[7][c].setIcon(icon2);
      bt[1][c].setIcon(icon3);
```

```
            bt[6][c].setIcon(icon4);
        }
    }
    class ChessListener implements ActionListener
    {
        public void actionPerformed(ActionEvent evt)
        {
            JButton bc=(JButton)evt.getSource();
            Icon ic=bc.getIcon();
            bt[5][0].setIcon(ic);
            bc.setIcon(null);
        }
    }
    public static void main(String []args)
    {
            setDefaultLookAndFeelDecorated(true);
            new ChessBoard();
    }
}
```

OUTPUT


C:\Windows\System32\cmd.exe - java ChessBoard
Microsoft Windows [Version 10.0.19043.1110]
(c) Microsoft Corporation. All rights reserved.
C:\Users\shubham\OneDrive\Documents\java>javac ChessBoard.java
C:\Users\shubham\OneDrive\Documents\java>java ChessBoard


Chess