1)a)import java.util.Scanner;

public class HelloWorld{

public static void main(String args[]){

System.out.println(“Akshara Singa”);

System.out.println(“1BM22CS029”);

Scanner reader = new Scanner(System.in);

int number = reader.nextInt();

System.out.println(“You entered :” +number);}

}

```
C:\Users\bmsce\Desktop\1bm22cs029>javac HelloWorld.java

C:\Users\bmsce\Desktop\1bm22cs029>java HelloWorld
Akshara Singa
1BM22CS029
Enter a number29
You entered: 29
```

b)import java.util.Scanner;

public class JavaExample{

public static void main(String args[]){

System.out.println(“Akshara Singa”);

System.out.println(“1BM22CS029”);

int num;

System.out.println(“Enter an Integer number”);

Scanner input = new Scanner(System.in);

num = input.nextInt();

if(num%2==0){

System.out.println(num+“is even number”);

}

else{

System.out.println(num+“is odd number”);

}

}}

```
C:\Users\bmsce\Desktop\1bm22cs029>javac JavaExample.java

C:\Users\bmsce\Desktop\1bm22cs029>java JavaExample
Akshara Singa
1BM22CS029
Enter an Integer number:29
29 is an odd number.
```

c)public class JavaExample {

public static void main(String args[]){

System.out.println(“Akshara Singa”);

System.out.println(“1BM22CS029”);

int row, column ,no_of_rows=8;

for(row=0;row<no_of_rows;row++){

for(column=0;column<row;column++){

System.out.println(“*”);}}}}

```
C:\Users\bmsce\Desktop\1bm22cs029>javac RightTriangle.java

C:\Users\bmsce\Desktop\1bm22cs029>java RightTriangle
Akshara Singa
1BM22CS029
*
* *
* * *
* * * *
* * * * *
* * * * * *
* * * * * * *
* * * * * * * *
```

d)public class JavaExample{

public static void main(String args[]){

System.out.println(“Akshara Singa”);

System.out.println(“1BM22CS029”);

int num1=15,num2=2;

int Quotient =num1/num2;

int remainder=num1%num2;

System.out.println(“Qutoient is” +Quotient);

System.out.println(“Remainder is” +remainder);}}

```
C:\Users\bmsce\Desktop\1bm22cs029>javac QuotientAndRemainder.java

C:\Users\bmsce\Desktop\1bm22cs029>java QuotientAndRemainder
Quotient is: 7
Remainder is: 1
Akshara Singa
1BM222CS029
```

e)public class demo{

public static void main(String args[]){

System.out.println(“Akshara singa”);

System.out.println(“1BM22CS029”);

Scanner scan = new Scanner(System.in);

System.out.println(“Enter first number”);

int num1=scan.nextInt();

System.out.println(“Enter second number”);

int num2=scan.nextInt();

scan.close();

int product=num1*num2;

System.out.println(“Output:”+product);}}

```
C:\Users\bmsce\Desktop\1bm22cs029>javac Multiplication.java

C:\Users\bmsce\Desktop\1bm22cs029>java Multiplication
Enter first number:
2
Enter second number:
3
Output: 6
Akshara Singa
1BM22CS029
```

f)public class swapnumbers{

public static void main(String args[]){

```
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);
float first =1.20f,second=2.45f;
System.out.println(“—Before Swap—“);
System.out.println(“First number”+first);
System.out.println(“Second number”+second);
Float temp=first;
first=second;
second=temp;
System.out.println(“—After Swap—“);
System.out.println(“First number”+first);
System.out.println(“Second number”+second);}}
```

```
C:\Users\bmsce\Desktop\1bm22cs029>javac SwapNumbers.java

C:\Users\bmsce\Desktop\1bm22cs029>java SwapNumbers
--Before swap--
First number= 1.2
Second number= 2.45
--After swap--
First number = 2.45
Second number= 1.2
Akshara Singa
1BM22CS029
```

2)

```
import java.util.Scanner;

public class QuadraticSolver {

    public static void main(String[] args) {
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter the coefficients of the quadratic equation ax^2 + bx + c = 0:");
        System.out.print("Enter a: ");
        double a = scanner.nextDouble();
```

```
    System.out.print("Enter b: ");
    double b = scanner.nextDouble();
    System.out.print("Enter c: ");
    double c = scanner.nextDouble();
    double discriminant = b * b - 4 * a * c;
    if (discriminant > 0) {
        double root1 = (-b + Math.sqrt(discriminant)) / (2 * a);
        double root2 = (-b - Math.sqrt(discriminant)) / (2 * a);
        System.out.println("Real Solutions:");
        System.out.println("Root 1: " + root1);
        System.out.println("Root 2: " + root2);
    } else if (discriminant == 0) {
        double root = -b / (2 * a);
        System.out.println("Real Solution:");
        System.out.println("Root: " + root);
    } else {
        System.out.println("No real solutions exist for the given quadratic equation.");
    }
    scanner.close();
}
```

```
C:\Users\STUDENT\Desktop\1bm22cs029>javac QE.java

C:\Users\STUDENT\Desktop\1bm22cs029>java QE
Akshara 1BM22CS029
enter coefficients
2
1
1
Roots are imaginary
root1:-0.25+i0.6614378277661477
root2:-0.25-i0.6614378277661477

C:\Users\STUDENT\Desktop\1bm22cs029>javac QE.java

C:\Users\STUDENT\Desktop\1bm22cs029>java QE
Akshara 1BM22CS029
enter coefficients
1
2
1
Roots are real and equal
root1:-1.0
root2:-1.0

C:\Users\STUDENT\Desktop\1bm22cs029>javac QE.java

C:\Users\STUDENT\Desktop\1bm22cs029>java QE
Akshara 1BM22CS029
enter coefficients
1
3
1
Roots are real and distinct
root1:-0.3819660112501051
root2:-2.618033988749895

C:\Users\STUDENT\Desktop\1bm22cs029>javac QE.java

C:\Users\STUDENT\Desktop\1bm22cs029>java QE
Akshara 1BM22CS029
enter coefficients
0
1
1
Invalid quadratic equation
```

3)import java.util.Scanner;

public class Student {

String usn;

String name;

private static int credit[] = {4,4,3,3,3,1,1,1};

int marks[] = new int [8];

System.out.println(“Akshara Singa”);

System.out.println(“1BM22CS029”);

Scanner s = new Scanner(System.in);

public void get_details()

{

System.out.println("Enter your USN:");

usn = s.next();

System.out.println("Enter your name:");

name = s.next();

}

public void set_marks()

{

System.out.println("Enter your marks in order");

for(int i=0;i<8;++i)

{

marks[i] = s.nextInt();

}

}

public double sgpa()

{

double sgpa=0,temp=0;

for(int i=0;i<8;++i)

{

temp+=credit[i]*((int)(marks[i]/10)+1);

}

sgpa= temp/20;

```
                if(sgpa == 11)
                {
                        return sgpa-1;
                }
                return sgpa;
                }
        public void display()
                {
                        System.out.println("Name: "+name);
                        System.out.println("USN: "+usn);
                        System.out.println("SGPA: "+sgpa());
                }
public static void main(String[] args) {

                Student s1 = new Student();
                s1.get_details();
                s1.set_marks();
                s1.display();
        }
}
```

```
C:\Users\STUDENT\Desktop\1bm22cs029>javac Student.java

C:\Users\STUDENT\Desktop\1bm22cs029>java Student
enter your usn
1BM22CS029
enter name:
AKSHARA
enter your marks in the same order as credits
100
100
97
89
96
95
87
99
Name:AKSHARA
Usn:1BM22CS029
Sgpa:9.818181818181818
```

```
4)import java.util.Scanner;
class Books{
   String name;
   String author;
   int price;
   int num_pages;
   public void set(int i){
      Scanner in=new Scanner(System.in);
      System.out.println("Enter details of books "+(i+1)+" in name,author,price,num_pages order");
      name=in.next();
      author=in.next();
      price=in.nextInt();
      num_pages=in.nextInt();
   }
   public String toString() {
      return "Details of Book " + (i+1)+"\n"+
            "Name: " + name + "\n" +
            "Author: " + author + "\n" +
            "Price: " + price + "\n" +
            "No of pages: " + num_pages;
   }
}
class D {
   public static void main(String[] args) {
      int n;
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);

      Scanner in=new Scanner(System.in);
      System.out.println("Enter number of books");
      n=in.nextInt();
      Books b[]=new Books[n];
```

```
        for(int i=0;i<n;i++){
            b[i]=new Books();
            b[i].set(i);
        }
        System.out.println();
        for(int i=0;i<n;i++){
            System.out.println(b[i].toString());
        }
    }
}
```

```
Akshara Singa 1BM22CS029
enter bookname,author,price,num_pages
Python
ABCDEF
234
567
enter bookname,author,price,num_pages
JAVA
XYZ
565
567
the book Java was written by Strange it consists of 9857 pages and costs 243.0rupees.
the book Python was written by ABCDEF it consists of 567 pages and costs 234.0rupees.
the book JAVA was written by XYZ it consists of 567 pages and costs 565.0rupees.
```

5)

```
import java.util.Scanner;

abstract class Shape {
    protected int side1;
    protected int side2;

    public Shape(int side1, int side2) {
        this.side1 = side1;
        this.side2 = side2;
    }
    public abstract void printArea();
}

class Rectangle extends Shape {
    public Rectangle(int length, int width) {
```

```
        super(length, width);
    }

    public void printArea() {
        int area = side1 * side2;
        System.out.println("Area of Rectangle: " + area);
    }
}
class Triangle extends Shape {
    public Triangle(int base, int height) {
        super(base, height);
    }
   public void printArea() {
        double area = 0.5 * side1 * side2;
        System.out.println("Area of Triangle: " + area);
    }
}

class Circle extends Shape {
    public Circle(int radius) {
        super(radius, radius);
    }

    public void printArea() {
        double area = Math.PI * side1 * side1;
        System.out.println("Area of Circle: " + area);
    }
}

public class Main {
    public static void main(String[] args) {
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);
```

```
    Scanner scanner = new Scanner(System.in);

    System.out.print("Enter length of Rectangle: ");
    int length = scanner.nextInt();
    System.out.print("Enter width of Rectangle: ");
    int width = scanner.nextInt();
    Rectangle rectangle = new Rectangle(length, width);

    System.out.print("Enter base of Triangle: ");
    int base = scanner.nextInt();
    System.out.print("Enter height of Triangle: ");
    int height = scanner.nextInt();
    Triangle triangle = new Triangle(base, height);

    System.out.print("Enter radius of Circle: ");
    int radius = scanner.nextInt();
    Circle circle = new Circle(radius);

    scanner.close();

    rectangle.printArea();
    triangle.printArea();
    circle.printArea();
  }
```

```
Akshara 1BM22CS029
enter the radius of the circle
1
area of circle is 3.14
enter the length and breadth of the rectangle
2
2
area of rectangle is 4
enter the base and hieght of the triangle
2
2
area of triangle is 2.0
```

}

6)import java.util.Scanner;

```
class Account {
    String customerName;
    long accno;
    String accountType;
    double balance;
    public Account(String customerName, long accno, String accountType) {
        this.customerName = customerName;
        this.accno = accno;
        this.accountType = accountType;
        this.balance = 0.0;
    }
    public void displayBalance() {
        System.out.println("Account Number: " + accno);
        System.out.println("Customer Name: " + customerName);
        System.out.println("Account Type: " + accountType);
        System.out.println("Balance: $" + balance);
    }
}
class CurAcct extends Account {
    double minBalance;
    double serviceCharge;
    public CurAcct(String customerName, long accno) {
        super(customerName, accno, "Current");
        this.minBalance = 500.0; // Set minimum balance
        this.serviceCharge = 50.0; // Set service charge
    }
    public void withdraw(double amount) {
        if (balance - amount >= minBalance) {
            balance -= amount;
            System.out.println("Withdrawal successful. Current Balance: $" + balance);
```

```
        } else {
            System.out.println("Insufficient funds. Withdrawal not allowed.");
        }
    }
    public void imposeServiceCharge() {
        if (balance < minBalance) {
            balance -= serviceCharge;
            System.out.println("Service charge imposed. Current Balance: Rs." + balance);
        }
    }
}
class SavAcct extends Account {
    double interestRate;

    public SavAcct(String customerName, long accno) {
        super(customerName, accno, "Savings");
        this.interestRate = 0.05;
    }

    public void depositInterest() {
        double interest = balance * interestRate;
        balance += interest;
        System.out.println("Interest deposited. Current Balance: $" + balance);
    }

    public void compoundInterest(double initialAmount, int term) {
        double compoundInterest = initialAmount * Math.pow((1 + interestRate), term) - initialAmount;
        balance += compoundInterest;
        System.out.println("Compound Interest deposited. Current Balance: Rs." + balance);
    }
}
public class Bank {
    public static void main(String[] args) {
```

```
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);
        Scanner scanner = new Scanner(System.in);
        System.out.println("Choose account type:");
        System.out.println("1. Current");
        System.out.println("2. Savings");
        System.out.print("Enter choice (1 or 2): ");
        int choice = scanner.nextInt();
        System.out.print("Enter customer name: ");
        String customerName = scanner.next();
        System.out.print("Enter account number: ");
        long accno = scanner.nextLong();
        if (choice == 1) {
            CurAcct curAccount = new CurAcct(customerName, accno);
            System.out.print("Enter initial balance: $");
            double initialBalance = scanner.nextDouble();
            curAccount.balance = initialBalance;
            System.out.print("Enter withdrawal amount: $");
            double withdrawalAmount = scanner.nextDouble();
            curAccount.withdraw(withdrawalAmount);
            curAccount.imposeServiceCharge();
            curAccount.displayBalance();
        } else if (choice == 2) {
            SavAcct savAccount = new SavAcct(customerName, accno);
            System.out.print("Enter initial balance: $");
            double initialBalance = scanner.nextDouble();
            savAccount.balance = initialBalance;
            System.out.print("Enter withdrawal amount: $");
            double withdrawalAmount = scanner.nextDouble();
            savAccount.balance -= withdrawalAmount;
            System.out.println("Withdrawal successful. Current Balance: $" + savAccount.balance);
            System.out.print("Enter interest rate: ");
            double interestRate = scanner.nextDouble();
```

```
        savAccount.interestRate = interestRate;
        savAccount.displayBalance();
        System.out.print("Enter term (in years) for compound interest calculation: ");
        int term = scanner.nextInt();
        savAccount.compoundInterest(initialBalance, term);
        savAccount.displayBalance();
    } else {
        System.out.println("Invalid choice");
    }
}
```

```
1BM22CS029
Akshara Singa
Choose account type:
1. Current
2. Savings
Enter choice (1 or 2): 1
Enter customer name: Akshara
Enter account number: 7892858259
Enter initial balance: $10000
Enter withdrawal amount: $2000
Withdrawal successful. Current Balance: $8000.0
Account Number: 7892858259
Customer Name: Akshara
Account Type: Current
Balance: $8000.0

C:\Users\STUDENT\Desktop\1bm22cs029>javac Bank.java

C:\Users\STUDENT\Desktop\1bm22cs029>java Bank
1BM22CS029
Akshara Singa
Choose account type:
1. Current
2. Savings
Enter choice (1 or 2): 2
Enter customer name: Akshara
Enter account number: 7892858259
Enter initial balance: $10000
Enter withdrawal amount: $2000
Withdrawal successful. Current Balance: $8000.0
Enter interest rate: 0.05
Account Number: 7892858259
Customer Name: Akshara
Account Type: Savings
Balance: $8000.0
Enter term (in years) for compound interest calculation: 2
Compound Interest deposited. Current Balance: Rs.9025.0
Account Number: 7892858259
Customer Name: Akshara
Account Type: Savings
Balance: $9025.0
```

}

7)package CIE;

```
import java.util.*;
public class Student
{
   // instance variables - replace the example below with your own
   public int sem;
   public String usn;
   public String name;

   public void accept()
   {
      Scanner scan = new Scanner(System.in);
      System.out.println("Enter U, N, S:\n");
      usn=scan.nextLine();
      name=scan.nextLine();
      sem=scan.nextInt();
   }
}
package CIE;

public class Internals
{
   public int im[]=new int[5];
}
package SEE;
import CIE.Student;
public class External extends Student
{
   // instance variables - replace the example below with your own
   public int sm[]=new int[5];
}
import java.util.*;
```

```
import SEE.*;
import CIE.*;
public class FinalMarks
{
   public static void main(String args[])
   {System.out.println("Akshara Singa");
System.out.println("1BM22CS029");
      int fm[]=new int[5];
      Scanner sc= new Scanner(System.in);
      System.out.println("Enter n: ");
      int n=sc.nextInt();
      SEE.External st[]=new SEE.External[n];
      CIE.Internals s[]=new CIE.Internals[n];
      for(int i=0; i<n; i++)
      {
         st[i]=new SEE.External();
         s[i]=new CIE.Internals();
         System.out.println("Enter details "+(i+1));
         st[i].accept();
         for(int j=0; j<5; j++)
         {
            System.out.println("Enter im and sm of sub "+(j+1));
            s[i].im[j]=sc.nextInt();
            st[i].sm[j]=sc.nextInt();
            fm[j]=s[i].im[j]+st[i].sm[j];
         }
         System.out.println("Final marks of "+st[i].name);
         for(int k=0; k<5; k++)
         {
            System.out.println("Course "+(k+1)+" = "+fm[k]);
         }
      }
   }
```

}

```
C:\Users\STUDENT\Desktop\1bm22cs029\ooj>javac -d . finalMarks.java

C:\Users\STUDENT\Desktop\1bm22cs029\ooj>java finalMarks
Akshara
1bm22cs029
enter no of students:
2
Enter details1
Enter sem,usn and name:

2
1bm22cs029
Enter internal and see marks of sub1
45
45
Enter internal and see marks of sub2
49
49
Enter internal and see marks of sub3
47
47
Enter internal and see marks of sub4
43
43
Enter internal and see marks of sub5
46
46
Final marks of 1bm22cs029
Course1=90
Course2=98
Course3=94
Course4=86
Course5=92
```

8)import java.util.Scanner;

```
class WrongAge extends Exception {
    public WrongAge(String message) {
        super(message);
    }
}
class Father {
    int fatherAge;
```

```
    public Father(int fatherAge) throws WrongAge {
        if (fatherAge < 0) {
            throw new WrongAge("Age cannot be negative");
        }
        this.fatherAge = fatherAge;
    }
}
class Son extends Father {
    int sonAge;
    public Son(int fatherAge, int sonAge) throws WrongAge {
        super(fatherAge);
        if (sonAge >= fatherAge) {
            throw new WrongAge("Son's age must be less than Father's age");
        }
        this.sonAge = sonAge;
    }
}
public class fatherson {
    public static void main(String[] args) {
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter father's age and son's age: ");
        int fa=sc.nextInt();
        int sa=sc.nextInt();
        try {
            Son s = new Son(fa, sa);
            System.out.println("Father's age: " + s.fatherAge);
            System.out.println("Son's age: " + s.sonAge);
        } catch (WrongAge e) {
            System.out.println("Error: " + e.getMessage());
        }
    }
```

```
}
```

9)

```
class A extends Thread
{
   int t1,time;
   A(){
      t1=10000;
      time=21000;
   }
   public void run()
   {
      while(t1<=time)
      {
         System.out.println("BMS COLLEGE OF ENGINEERING");
         try {
            sleep(10000);
         } catch(Exception e) {
            System.out.println("error");
         }
         t1+=10000;
      }}
}
class B extends Thread{
   int t2,time;
   B(){
      time=21000;
      t2=2000;
   }
   public void run()
   {
      while(t2<=time)
```

```
    {
      System.out.println("CSE");
      try{
        sleep(2000);
      }
      catch(Exception e)
      {
        System.out.println("error");
      }
      t2+=2000;
    }}
}
class th
{
  public static void main(String args[])
  { System.out.println("Akshara.Singa");
System.out.println("1BM22CS029");
    A a=new A();
    B b=new B();
    a.start();
    b.start();
```

```
C:\Users\STUDENT\Desktop\1bm22cs029>javac demo.java

C:\Users\STUDENT\Desktop\1bm22cs029>java demo
Akshara.Singa
1BM22CS029
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
CSE
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
CSE
BMS COLLEGE OF ENGINEERING
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BMS COLLEGE OF ENGINEERING
BMS COLLEGE OF ENGINEERING
BMS COLLEGE OF ENGINEERING
BMS COLLEGE OF ENGINEERING
```

```
  }
```

10)import javax.swing.*;

import java.awt.*;

import java.awt.event.*;

class SwingDemo{

SwingDemo(){

JFrame jfrm = new JFrame("Divider App");

jfrm.setSize(275, 150);

jfrm.setLayout(new FlowLayout());

jfrm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

JLabel jlab = new JLabel("Enter the divider and divident:");

JTextField ajtf = new JTextField(8);

JTextField bjtf = new JTextField(8);

JButton button = new JButton("Calculate");

JLabel err = new JLabel();

JLabel alab = new JLabel();

JLabel blab = new JLabel();

JLabel anslab = new JLabel();

jfrm.add(err);

jfrm.add(jlab);

jfrm.add(ajtf);

jfrm.add(bjtf);

jfrm.add(button);

jfrm.add(alab);

jfrm.add(blab);

jfrm.add(anslab);

ActionListener l = new ActionListener() {

public void actionPerformed(ActionEvent evt) {

System.out.println("Action event from a text field");

}

};

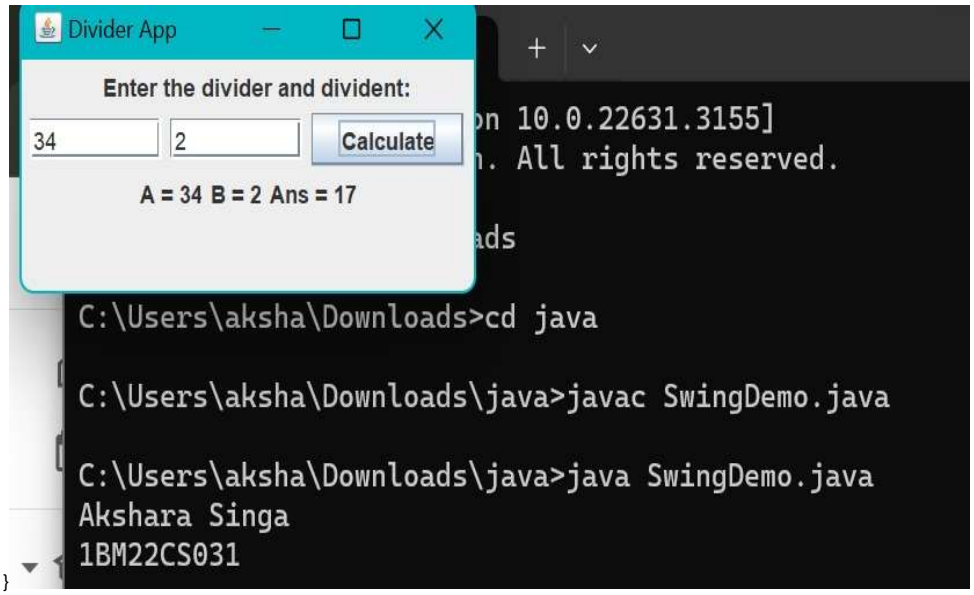
ajtf.addActionListener(l);

bjtf.addActionListener(l);

button.addActionListener(new ActionListener() {

```
public void actionPerformed(ActionEvent evt) {
try{
int a = Integer.parseInt(ajtf.getText());
int b = Integer.parseInt(bjtf.getText());
int ans = a/b;
alab.setText("\nA = " + a);
blab.setText("\nB = " + b);
anslab.setText("\nAns = "+ ans);
}
catch(NumberFormatException e){
alab.setText("");
blab.setText("");
anslab.setText("");
err.setText("Enter Only Integers!");
}
catch(ArithmeticException e){
alab.setText("");
blab.setText("");
anslab.setText("");
err.setText("B should be NON zero!");
}
}
});
jfrm.setVisible(true);
}
public static void main(String args[]){
System.out.println(“Akshara Singa”);
System.out.println(“1BM22CS029”);
SwingUtilities.invokeLater(new Runnable(){
public void run(){
new SwingDemo();
}
});
```

}


Divider App
Enter the divider and divident:
34
2
Calculate
A = 34 B = 2 Ans = 17
on 10.0.22631.3155]
n. All rights reserved.
ads
C:\Users\aksha\Downloads>cd java
C:\Users\aksha\Downloads\java>javac SwingDemo.java
C:\Users\aksha\Downloads\java>java SwingDemo.java
Akshara Singa
1BM22CS031

}