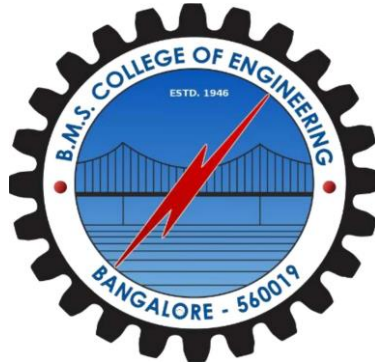


B.M.S. College of Engineering

(Autonomous College Affiliated to Visvesvaraya Technological University,
Belgaum) Bull Temple Road, Basavanagudi, Bengaluru – 560019



**Department of
Computer Science & Engineering (CSE)**

Lab Programs Report

Course Title: Object Oriented

Java Programming

Course Code: 23CS3PCOOJ

BY

Vismay pawar (1BM22CS331)

B.M.S. College of Engineering

(Autonomous College Affiliated to Visvesvaraya Technological University,
Belgaum) Bull Temple Road, Basavanagudi, Bengaluru – 560019



**Department of
Computer Science & Engineering (CSE)**

CERTIFICATE

This is to certify that the report on “**Java Lab Programs**” has been carried out by **vismay pawar N** bearing USN **1BM22CS331** as a part of AAT for the course **Object Oriented Java Programming** with course code **23CS3PCOOJ**, Computer Science and Engineering from Visvesvaraya Technological University, Belgaum during the year 2023–24. It is certified that all corrections/suggestions indicated for Internal Assessments have been incorporated in the report.

Vismay Pawar N
1BM22CS331

Shravya AR
Assistant Professor
Department of CSE
BMSCE, Bengaluru-19

WEEK 1

Program 1: Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.

CODE:

```
import java.util.*;
public class QuadraticEquationSolver
{
    public static void main(String args[])
    {
        float a, b, c, d=0.0f, r1=0.0f, r2=0.0f;
        System.out.println("Enter values of a, b, c: ");
        Scanner read= new Scanner(System.in);
        a=read.nextFloat();
        b=read.nextFloat();
        c=read.nextFloat();
        if(a==0 || b==0 || c==0)
        {
            System.out.println("Invalid Input");
        }
        else
        {
            d=b*b-4*a*c;
            if(d>0)
            {
                r1=(float)(-b+Math.sqrt(d))/(2*a);
                r2=(float)(-b-Math.sqrt(d))/(2*a);
                System.out.println("Roots are real and distinct\nR1= "+r1+"\tR2= "+r2);
            }
            else if(d<0)
            {
                System.out.println("Roots are imaginary");
            }
            else
            {
                r1=-b/(2*a);
                r2=r1;
                System.out.println("Roots are real and equal\nR1= "+r1+"\tR2= "+r2);
            }
        }
        System.out.println("Name: Vismay Pawar N\nUSN: 1BM22CS331");
    }
}
```

```
}
```

OUTPUT:

```
Enter values of a, b, c:
```

```
2
```

```
3
```

```
4
```

```
Roots are imaginary
```

```
Name: Vismay Pawar N
```

```
USN: 1BM22CS331
```

```
Enter values of a, b, c:
```

```
2
```

```
0
```

```
5
```

```
Invalid Input
```

```
Name: Vismay Pawar N
```

```
USN: 1BM22CS331
```

```
Enter values of a, b, c:
```

```
1
```

```
6
```

```
1
```

```
Roots are real and distinct
```

```
R1= -0.17157288 R2= -5.8284273
```

```
Name: Vismay Pawar N
```

```
USN: 1BM22CS331
```

Enter values of a, b, c:

1

2

1

Roots are real and equal

R1= -1.0 R2= -1.0

Name: Vismay Pawar N

USN: 1BM22CS331

Enter values of a, b, c:

2

3

4

Roots are imaginary

Name: Vismay Pawar N

USN: 1BM22CS331

WEEK 2

Program 2: Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate S222GPA of a student.

CODE:

```
import java.util.*;
public class Student {
    String name, usn;
    int credits[], marks[];
    public void display(double res) {
        System.out.println("Name : " + name);
        System.out.println("USN : " + usn);
        for (int i = 0; i < credits.length; i++) {
            System.out.println("Subject " + (i + 1) + " : \t Marks= " + marks[i] + "\t Credits= " + credits[i]);
        }
        System.out.println("\nSGPA : " + res);
    }
    public double sgpa() {
        double tc = 0;
        double tgp = 0;
        for (int i = 0; i < credits.length; i++) {
            tc += credits[i];
            tgp += calgp(marks[i]) * credits[i];
        }
        return (tgp / tc);
    }
    public double calgp(int m) {
        if (m >= 90) {
            return 10;
        } else if (m >= 80) {
            return 9;
        } else if (m >= 70) {
            return 8;
        } else if (m >= 60) {
            return 7;
        } else if (m >= 50) {
            return 6;
        } else {
            return 0;
        }
    }
}
public static void main(String args[]) {
    Scanner read = new Scanner(System.in);
    Student ob = new Student();

    System.out.print("\nEnter name: ");
    ob.name = read.nextLine();
}
```

```

System.out.print("\nEnter USN: ");
ob.usn = read.next();

System.out.print("\nEnter no. of subjects: ");
int n = read.nextInt();
ob.credits = new int[n];
ob.marks = new int[n];

System.out.println("Enter marks and credits:");
for (int i = 0; i < n; i++) {
    System.out.println("Marks for subject " + (i + 1) + ": ");
    ob.marks[i] = read.nextInt();
    System.out.println("Credits for subject " + (i + 1) + ": ");
    ob.credits[i] = read.nextInt();
}

double res = ob.sgpa();
ob.display(res);
System.out.println("Name: Vismay pawar N \nEnter USN: 1BM22CS331");
}
}

```

```

Enter name: Vismay pawar N

Enter USN: 1BM22CS331

Enter no. of subjects: 5
Enter marks and credits:
Marks for subject 1:
90
Credits for subject 1:
4
Marks for subject 2:
95
Credits for subject 2:
3
Marks for subject 3:
98
Credits for subject 3:
2
Marks for subject 4:
98
Credits for subject 4:
3
Marks for subject 5:
98
Credits for subject 5:
4

```

Name : Vismay pawar N

USN : 1BM22CS331

Subject 1 : Marks= 90 Credits= 4

Subject 2 : Marks= 95 Credits= 3

Subject 3 : Marks= 98 Credits= 2

Subject 4 : Marks= 98 Credits= 3

Subject 5 : Marks= 98 Credits= 4

SGPA : 10.0

Name: Vismay pawar N

USN: 1BM22CS331

Process finished with exit code 0

WEEK 3

Program 3: Create a class Book which contains four members: name, author, price, num_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString() method that could display the complete details of the book. Develop a Java program to create n book objects.

CODE:

```
import java.util.Scanner;
class Book {
    private String name;
    private String author;
    private double price;
    private int pages;

    // Constructor
    Book(String name, String author, double price, int pages) {
        this.name = name;
        this.author = author;
        this.price = price;
        this.pages = pages;
    }

    // Setters and getters
    void setName(String name) {
        this.name = name;
    }

    String getName() {
        return name;
    }

    void setAuthor(String author) {
        this.author = author;
    }

    String getAuthor() {
        return author;
    }

    void setPrice(double price) {
        this.price = price;
    }
}
```

```

double getPrice() {
    return price;
}

void setPages(int pages) {
    this.pages = pages;
}

int getPages() {
    return pages;
}

// toString method to display book details
public String toString() {
    return "Book Details:\nName: " + name + "\nAuthor: " + author + "\nPrice: " + price + "\nNo. Of pages: " + pages;
}
}

public class BookTest {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);

        // Prompt user for the number of books
        System.out.println("Enter the number of books");
        int n = sc.nextInt();
        sc.nextLine(); // Consume newline character

        // Create an array to store the books
        Book[] books = new Book[n];

        // Input book details
        for (int i = 0; i < n; i++) {
            System.out.println("Enter details of book number " + (i + 1));
            System.out.println("Name: ");
            String name = sc.nextLine();
            System.out.println("Author: ");
            String author = sc.nextLine();
            System.out.println("Price: ");
            double price = sc.nextDouble();
            System.out.println("No. Of pages: ");
            int pages = sc.nextInt();
            sc.nextLine(); // Consume newline character

            // Create Book object and store in array
            books[i] = new Book(name, author, price, pages);
        }

        // Display book details
        for (int i = 0; i < n; i++) {

```

```

        System.out.println(books[i].toString());
    }

    // Closing the scanner
    sc.close();

    // Display author's name and USN
    System.out.println("Name: Vismay pawar N \nUSN: 1BM22CS331");
}
}

```

```

Enter the number of books
2
Enter details of book number 1
Name:
The Silent Voice
Author:
John Green
Price:
500
No. Of pages:
300
Enter details of book number 2
Name:
Violet Evergarden
Author:
Subhash Chandra Bose
Price:
800
No. Of pages:
390
Book Details:
Name: The Silent Voice
Author: John Green
Price: 500.0
No. Of pages: 300
Book Details:
Name: Violet Evergarden
Author: Subhash Chandra Bose
Price: 800.0
No. Of pages: 390
Name: Vismay pawar N
USN: 1BM22CS331

```

Program 4: Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape.

CODE:

```
import java.util.*;
abstract class Shape{
    int x,y;
    void printArea()
    {
    }
}
class Rectangle extends Shape
{
    Rectangle(int l,int b)
    {
        x=l;
        y=b;
    }
    void printArea()
    {
        int area=x*y;
        System.out.println("Rectangle Area is :"+ area);
    }
}
class Triangle extends Shape
{
    Triangle(int l,int h)
    {
        x=l;
        y=h;
    }
    void printArea()
    {
        double area = 0.5*x*y;
        System.out.println("Triangle Area is :"+area);
    }
}
```

```

}
class Circle extends Shape
{
    Circle(int r)
    {
        x=r;
    }
    void printArea()
    {
        double area= Math.PI*x*x;
        System.out.println("Circle Area is :" +area);
    }
}
class ShapeTest
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter length and breadth");
        int a= s.nextInt();
        int b= s.nextInt();
        Shape ob=new Rectangle(a,b);
        ob.printArea();
        Shape ob1=new Triangle(a,b);
        ob1.printArea();
        System.out.println("Enter radius");
        int r=s.nextInt();
        Shape ob2=new Circle(r);
        ob2.printArea();
        System.out.println("Name: Vismay Pawar N \nUSN: 1BM22CS331");
    }
}

```

```
Enter length and breadth
4
4
Rectangle Area is :16
Triangle Area is :8.0
Enter radius
4
Circle Area is :50.26548245743669
Name: Vismay Pawar N
USN: 1BM22CS331
```

WEEK 4

Program 5: Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed.

Create a class Account that stores customer name, account number and type of account. From this derive the classes Cur-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks:

- Accept deposit from customer and update the balance.
- Display the balance.
- Compute and deposit interest
- Permit withdrawal and update the balance
Check for the minimum balance, impose penalty if necessary and update the balance.

CODE:

```
import java.util.Scanner;

class Account {
    String customerName;
    int accountNumber;
    String accountType;
    double balance;

    Account(String name, int number, String type, double initialBalance) {
        customerName = name;
        accountNumber = number;
        accountType = type;
        balance = initialBalance;
    }

    void deposit(double amount) {
        if (amount > 0) {
            balance += amount;
            System.out.println("Deposit of INR " + amount + " successful");
        } else {
            System.out.println("Invalid deposit amount. Please enter a positive value.");
        }
    }

    void displayBalance() {
        System.out.println("Account Number: " + accountNumber);
        System.out.println("Customer Name: " + customerName);
        System.out.println("Account Type: " + accountType);
        System.out.println("Balance: INR " + balance);
    }

    void withdraw(double amount) {
        if (balance >= amount) {
            balance -= amount;
            System.out.println("Withdrawal of INR " + amount + " successful");
        } else {
            System.out.println("Insufficient funds");
        }
    }

    void computeInterest() {
    }

    void checkMinimumBalance(double minBalance, double serviceCharge) {
    }
}

class SavAcct extends Account {
    double interestRate = 0.05;
```

```

SavAcct(String name, int number, String type, double initialBalance) {
    super(name, number, type, initialBalance);
}

void computeInterest() {
    double interest = balance * interestRate;
    balance += interest;
    System.out.println("Interest of INR " + interest + " added to the account");
}
}

class CurAcct extends Account {
    double minBalance = 1000;
    double serviceCharge = 50;

    CurAcct(String name, int number, String type, double initialBalance) {
        super(name, number, type, initialBalance);
    }

    void checkMinimumBalance(double minBalance, double serviceCharge) {
        if (balance < minBalance) {
            System.out.println("Service charge of INR " + serviceCharge + " imposed");
            balance -= serviceCharge;
        }
    }
}

public class Bank {
    public static void main(String[] args) {
        System.out.println("Name : Vismay pawar N\n USN:1BM22CS331");
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of users: ");
        int numUsers = scanner.nextInt();

        Account[] accounts = new Account[numUsers];
        for (int i = 0; i < numUsers; i++) {
            System.out.println("\nUser " + (i + 1));
            System.out.print("Enter customer name: ");
            scanner.nextLine();
            String name = scanner.nextLine();
            System.out.print("Enter account number: ");
            int accNumber = scanner.nextInt();
            System.out.print("Enter initial deposit amount: INR ");
            double initialDeposit = scanner.nextDouble();
            System.out.print("Enter account type (Savings/Current): ");
            scanner.nextLine();
            String accType = scanner.nextLine();
            if (accType.equalsIgnoreCase("Savings")) {
                accounts[i] = new SavAcct(name, accNumber, accType, initialDeposit);
            }
        }
    }
}

```



```

    } else if (accType.equalsIgnoreCase("Current")) {
        accounts[i] = new CurAcct(name, accNumber, accType, initialDeposit);
    } else {
        System.out.println("Invalid account type entered. Defaulting to Account.");
        accounts[i] = new Account(name, accNumber, "Account", initialDeposit);
    }
}

```

```

boolean exit = false;
while (!exit) {
    System.out.println("\nChoose an option:");
    System.out.println("1. Deposit");
    System.out.println("2. Withdraw");
    System.out.println("3. Display Balance");
    System.out.println("4. Compute Interest (Savings only)");
    System.out.println("5. Exit");
    System.out.print("Enter your choice: ");
    while (!scanner.hasNextInt()) {
        System.out.println("Invalid input. Please enter a number.");
        scanner.next();
    }
    int choice = scanner.nextInt();
    switch (choice) {
        case 1:
            System.out.print("Enter account number: ");
            int accNum = scanner.nextInt();
            System.out.print("Enter deposit amount: INR ");
            double depositAmount = scanner.nextDouble();
            for (Account acc : accounts) {
                if (acc.accountNumber == accNum) {
                    acc.deposit(depositAmount);
                }
            }
            break;
        case 2:
            System.out.print("Enter account number: ");
            accNum = scanner.nextInt();
            System.out.print("Enter withdrawal amount: INR ");
            double withdrawAmount = scanner.nextDouble();
            for (Account acc : accounts) {
                if (acc.accountNumber == accNum) {
                    acc.withdraw(withdrawAmount);
                }
            }
            break;
        case 3:
            System.out.print("Enter account number: ");
            accNum = scanner.nextInt();
            for (Account acc : accounts) {
                if (acc.accountNumber == accNum) {
                    acc.displayBalance();
                }
            }
            break;
    }
}

```

```

    }
}
break;
case 4:
    System.out.print("Enter account number (for Savings account): ");
    accNum = scanner.nextInt();
    for (Account acc : accounts) {
        if (acc.accountNumber == accNum && acc instanceof SavAcct) {
            ((SavAcct) acc).computeInterest();
        }
    }
    break;
case 5:
    exit = true;
    break;
default:
    System.out.println("Invalid choice. Please enter a valid option.");
}
}
}
}

```

```
Name : Vismay pawar N
USN:1BM22CS331
Enter the number of users: 1

User 1
Enter customer name: Vismay
Enter account number: 123
Enter initial deposit amount: INR 5000
Enter account type (Savings/Current): Savings

Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 1
Enter account number: 123
Enter deposit amount: INR 5000
Deposit of INR 5000.0 successful

Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 3
Enter account number: 123
Account Number: 123
Customer Name: Vismay
Account Type: Savings
Balance: INR 10000.0
```

```
Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 2
Enter account number: 123
Enter withdrawal amount: INR 7000
Withdrawal of INR 7000.0 successful
```

```
Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 3
Enter account number: 123
Account Number: 123
Customer Name: Vismay
Account Type: Savings
Balance: INR 3000.0
```

```
Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 4
Enter account number (for Savings account): 123
Interest of INR 150.0 added to the account
```

```
Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 2
Enter account number: 123
Enter withdrawal amount: INR 5000
Insufficient funds
```

```
Choose an option:
1. Deposit
2. Withdraw
3. Display Balance
4. Compute Interest (Savings only)
5. Exit
Enter your choice: 5
```

WEEK 5

Program 6: Create a package CIE which has two classes- Student and Internals. The class Personal has members like usn, name, sem. The class internals has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

CODE:

```
package CIE;
import java.util.*;
public class Student{
    public String name;
    public String usn;
    public int sem;
    public void accept()
    {
        Scanner input=new Scanner(System.in);
        System.out.println("Enter name, usn and semester: ");
        name= input.nextLine();
        usn= input.nextLine();
        sem= input.nextInt();
    }
}

package CIE;
public class Internals
{
    public int int_marks[]=new int[5];
}

package SEE;
import CIE.Student;
public class External extends Student
{
    public int ext_marks[]=new int[5];
}
import java.util.*;
```

```

import CIE.*;
import SEE.*;
public class FinalMarks
{
public static void main(String args[])
{
int final_marks[]=new int[5];
Scanner sc=new Scanner(System.in);
System.out.println("Enter no. of students: ");
int n=sc.nextInt();
CIE.Internals obj[]=new CIE.Internals[n];
SEE.External obj1[]=new SEE.External[n];
for(int i=0;i<n;i++)
{
obj[i]=new CIE.Internals();
obj1[i]=new SEE.External();
System.out.println("Enter details of student "+(i+1));
obj1[i].accept();
for(int j=0;j<5;j++)
{
System.out.println("Enter Internal & final marks ofsubject"+(j+1));
obj[i].int_marks[j]=sc.nextInt();
obj1[i].ext_marks[j]=sc.nextInt();
final_marks[j]=obj[i].int_marks[j]+ obj1[i].ext_marks[j];
}
System.out.println("Final marks of "+obj1[i].name);
for(int k=0;k<5;k++)
{
System.out.println("Course "+(k+1)+" : "+final_marks[k]);
}
}
}
}

```

```

C:\Users\amrut\Desktop\java\packages>javac -d . Student.java
C:\Users\amrut\Desktop\java\packages>javac -d . Internals.java
C:\Users\amrut\Desktop\java\packages>javac -d . External.java

```

```
Enter no. of students:
2
Enter details of student 1
Enter name, usn and semester:
Amrutha
1BM22CS036
3
Enter Internal & final marks ofsubject1
48
45
Enter Internal & final marks ofsubject2
43
43
Enter Internal & final marks ofsubject3
46
40
Enter Internal & final marks ofsubject4
39
48
Enter Internal & final marks ofsubject5
43
41
Final marks of Amrutha
Course 1: 93
Course 2: 86
Course 3: 86
Course 4: 87
Course 5: 84
```

```
Enter details of student 2
Enter name, usn and semester:
Chris
1BM22CS104
3
Enter Internal & final marks ofsubject1
38
35
Enter Internal & final marks ofsubject2
42
38
Enter Internal & final marks ofsubject3
46
45
Enter Internal & final marks ofsubject4
41
43
Enter Internal & final marks ofsubject5
37
45
Final marks of Chris
Course 1: 73
Course 2: 80
Course 3: 91
Course 4: 84
Course 5: 82
```


WEEK 6

Program 7: Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called “Father” and derived class called “Son” which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge() when the input age<0. In Son class, implement a constructor that takes both father and son’s age and throws an exception if son’s age is >=father’s age.

CODE:

```
import java.util.*;
class WrongAge extends Exception
{
    String message;
    public WrongAge(String msg)
    {
        this.message=msg;
        System.out.println(msg);
    }
}
class Father
{
    int f_age;
    Father(int f_age) throws WrongAge
    {
        if(f_age<0)
        {
            throw new WrongAge("Age cant be less than 0");
        }
        this.f_age=f_age;
    }
}
class Son extends Father
{
    int s_age;
    Son(int f_age,int s_age) throws WrongAge
    {
        super(f_age);
        if(f_age<=s_age)
        {
            throw new WrongAge("Father can't be younger than son");
        }
        this.s_age=s_age;
    }
}
class AgeTest
```

```

{
    public static void main(String args[])
    {
        int f,s;
        Scanner input=new Scanner(System.in);
        System.out.println("Enter age of father and son");
        f=input.nextInt();
        s=input.nextInt();
        try{
            Father ob1=new Father(f);
            Son ob2=new Son(f,s);
        } catch(WrongAge e)
        {
            System.out.println("Caught");
        }
        System.out.println("Name:Vismay pawar N \tUSN:1BM22CS331");
    }
}

```

```

Enter age of father and son
50
25
Name:Vismay pawar N      USN:1BM22CS331

```

```

Enter age of father and son
25
50
Father can't be younger than son
Caught
Name:Vismay pawar N      USN:1BM22CS331

```

```
Enter age of father and son
-30
34
Age cant be less than 0
Caught
Name:Vismay pawar N      USN:1BM22CS331
```

Program 8: Write a program which creates two threads, one thread displaying “BMS College of Engineering” once every ten seconds and another displaying “CSE” once every two seconds.

CODE:

```
class DisplayThread extends Thread {
    private String message;
    private int intervalMillis;
    public DisplayThread(String message, int intervalMillis) {
        this.message = message;
        this.intervalMillis = intervalMillis;
    }
    public void run() {
        while (true) {
            try {
                System.out.println(message);
                Thread.sleep(intervalMillis);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
}

public class Demo {
    public static void main(String[] args) {
        DisplayThread thread1 = new DisplayThread("BMS College of Engineering", 10000); // 10 seconds
        DisplayThread thread2 = new DisplayThread("CSE", 2000); // 2 seconds
        thread1.start();
        thread2.start();
        System.out.println("Name:Vismay pawar N \tUSN:1BM22CS331");
    }
}
```

```
Name:Vismay pawar N      USN:1BM22CS331
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
```

WEEK 7

Program 9: Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a `NumberFormatException`. If Num2 were Zero, the program would throw an `Arithmetic Exception` Display the exception in a message dialog box.

CODE:

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
class SwingDemo{
    SwingDemo()
    {
        JFrame jfrm= new JFrame("Divider app");
        jfrm.setSize(265,150);
        jfrm.setLayout(new FlowLayout());
        jfrm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        JLabel jlab=new JLabel("Enter the divider and dividend: ");
        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();
```

```

//add in order
jfrm.add(err);//to display error
jfrm.add(jlab);
jfrm.add(ajtf);
jfrm.add(bjtf);
jfrm.add(button);
jfrm.add(alab);
jfrm.add(blabb);
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)
    {
        if (err.getText()!=null)
            err.setText("");
        try
        {
            int a=Integer.parseInt(ajtf.getText());
            int b=Integer.parseInt(bjtf.getText());
            int ans= a/b;

            alab.setText("\nA= "+a);
            blabb.setText("\nB= "+b);
            anslab.setText("\nAns= "+ans+"    Vismay pawar N [1BM22CS331]");
        }
        catch(NumberFormatException e)
        {
            alab.setText("");
            blabb.setText("");
            anslab.setText("Vismay pawar N [1BM22CS331]");
            err.setText("Enter only Integers!");
        }
        catch(ArithmeticException e)
        {
            alab.setText("");
            blabb.setText("");
            anslab.setText("Vismay pawar N [1BM22CS331]");
            err.setText("B should be NON zero!");
        }
    }
}

```

```

});

//display frame
jfrm.setVisible(true);
}

public static void main(String args[])
{
    //create frame on event dispatching thread
    SwingUtilities.invokeLater(new Runnable()
    {
        public void run()
        {
            new SwingDemo();
        }
    });
}
}

```

