

LAB 1
Develop a Java program that prints all real solutions to the quadratic equation $an^2 + bn + c = 0$. 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.

```
import java.util.*;
import java.util.Scanner;
class quadeqn
{
    public static void main(String ss[])
    {
        float a, b, c;
        float x1, x2, D;
        Scanner xx = new Scanner(System.in);
        System.out.println("Enter the value of a, b and c");
        a = xx.nextInt();
        b = xx.nextInt();
        c = xx.nextInt();
        D = ((b*b)) - (4*a*c));
        if (D == 0)
        {
            x1 = (-b / (2*a));
            x2 = x1;
            System.out.println("Roots are real and equal");
            System.out.println("The roots of the equation are : " + x1 + " and " + x2);
        }
        else if (D > 0)
        {
            x1 = (float)((-b) + Math.sqrt(D)) / (2*a);
            x2 = (float)((-b) - Math.sqrt(D)) / (2*a);
        }
    }
}
```

System.out.println("Roots are real and distinct");
The roots of the equation are: " x_1 " and " x_2 ";
else
System.out.println("There are no real solutions");

}

```
C:\Users\Acer\Documents\JAVA>javac Lab1.java
C:\Users\Acer\Documents\JAVA>java quadeqn
Enter the value of a,b and c
1
3
-4
Roots are real and distinct
The roots of the equation are : 1.0 and -4.0
C:\Users\Acer\Documents\JAVA>java quadeqn
Enter the value of a,b and c
1
-18
81
Roots are real and equal
The roots of the equation are : 9.0 and 9.0
C:\Users\Acer\Documents\JAVA>java quadeqn
Enter the value of a,b and c
4
5
6
There are no real solutions
C:\Users\Acer\Documents\JAVA>
```

LAB 2

Develop a Java program to create a class student with member USN, name, an array credits and an array mark. Include methods to accept and display details and a method to calculate CGPA of a student.

```

import java.util.*;
import java.util.Scanner;
class Student
{
    String USN;
    String name;
    int credits[];
    int marks[];
    float gpa[];
    int i, n;

    void accept()
    {
        Scanner xx = new Scanner(System.in);
        System.out.println("Enter the number of subjects");
        n = xx.nextInt();
        credits = new int[n];
        marks = new int[n];
        gpa = new float[n];
        System.out.println("ENTER STUDENT DETAILS");
        System.out.print("Enter student USN");
        System.out.print("Enter student name");
        USN = xx.next();
        System.out.print("Enter student marks in " + n + " subjects");
        System.out.print(" + n + " subjects");
        for (i = 0; i < n; i++)
    }
}

```

```
System.out.println("Enter credits of subject "+(i+1));
credits[i] = xx.nextInt();
System.out.println("Enter marks of subject "+(i+1));
marks[i] = xx.nextInt();
```

}

}

```
void display()
```

{

```
System.out.println("The STUDENT NAME = "+name);
System.out.println("The USN = "+usn);
for(i=0; i<n; i++)
System.out.println("Credits for subject "+(i+1)+" = "+  
    credits[i]+ " & Marks in subject "+(i+1)+" = "+  
    marks[i] + " & Gpa = "+gpa[i]);
```

}

```
void calculateGPA()
```

{

```
int totalCredits = 0;
```

```
int totalMarks = 0;
```

```
float gpa;
```

```
for(i=0; i<n; i++)
    totalCredits = totalCredits + credits[i];
```

```
for(i=0; i<n; i++)
    totalMarks = totalMarks + marks[i];
```

```
if((marks[i] >= 90) & (marks[i] <= 100))
    gpa[i] = 10;
```

```
else if(marks[i] < 90)
```

```
    if((marks[i] >= 80) & (marks[i] < 90))
        gpa[i] = 9;
```

```
else if((marks[i] >= 70) & (marks[i] < 80))
    gpa[i] = 8;
```

```

else if (marks[i] >= 60 & marks[i] < 70)
    gpa[i] = 7;
else if (marks[i] >= 50 & marks[i] < 60)
    gpa[i] = 5;
else if (marks[i] >= 40 & marks[i] < 50)
    gpa[i] = 4;
else
    gpa[i] = 0;

}
for (i = 0; i < n; i++)
{
    totalmarks = totalmarks + (credits[i] * gpa[i]);
    sgpa = float(totalmarks / totalcredits);
    System.out.println("SGPA = " + sgpa);
}

```

```

class student
{
    public static void main (String [] args)
    {
        Student s1 = new Student();
        s1.accept();
        s1.calsgpa();
        s1.display();
    }
}

```

```
Command Prompt
C:\Users\Acer\Documents\JAVA>java main
Enter the number of subjects
4
ENTER STUDENT DETAILS

Enter student USN
1BM19CS000
Enter student name
xyz
Enter student marks in 4 subjects
Enter credits of subject 1
4
Enter marks of subject 1
95
Enter credits of subject 2
4
Enter marks of subject 2
90
Enter credits of subject 3
5
Enter marks of subject 3
86
Enter credits of subject 4
3
Enter marks of subject 4
75

SGPA = 9.3125

STUDENT NAME = xyz
USN = 1BM19CS000

credits for subject 1 = 4      marks in subject 1 = 95 gpa = 10
credits for subject 2 = 4      marks in subject 2 = 90 gpa = 10
credits for subject 3 = 5      marks in subject 3 = 86 gpa = 9
credits for subject 4 = 3      marks in subject 4 = 75 gpa = 8
```

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 object. Include a `toString()` method that could display the complete details of the book. Develop a Java program to create n book objects.

Import `java.util.Scanner`
class Book

```

{
    String name;
    String author;
    float price;
    int numPages;
    Scanner ss = new Scanner(System.in);
    Book()
    {
        name = "";
        author = "";
        price = 0.0f;
        numPages = 0;
    }
    void accept()
    {
        System.out.println("Enter the book NAME : ");
        name = ss.nextLine();
        System.out.println("Enter the AUTHOR of the book : ");
        author = ss.nextLine();
        System.out.println("Enter the PRICE of the book : ");
        price = ss.nextFloat();
        System.out.println("Enter the NUMBER OF PAGES in the book : ");
        numPage = ss.nextInt();
    }
    public String toString()
    {
        return (name + "\t\t" + author + "\t\tRs." + price + "\t\t"
               numPage);
    }
}

```

class Bookman

{ public static void main (String [] args)

{ Scanner ss = new Scanner (System.in);

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

int n = ss.nextInt();

Book b[] = new Book [n];

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

{ b[i] = new Book ();

System.out.println ("ENTER THE DETAILS OF BOOK " +

+ (i+1) + " ");

b[i].accept ();

System.out.println ("\n\n");

}

System.out.println ("----- DETAILS OF ALL BOOKS -----");

System.out.println ("NAME \t AUTHOR \t PRICE");

System.out.println ("-----");

System.out.println ("NUMBER OF PAGES \n");

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

{ System.out.println (b[i]);

}

}

```
Administrator: C:\Users\Acer\Documents\JAVA>
```

```
C:\Users\Acer\Documents\JAVA>javac Lab3.java
```

```
C:\Users\Acer\Documents\JAVA>java Booksmain
```

```
Enter the number of books :
```

```
2
```

```
ENTER THE DETAILS OF BOOK 1
```

```
Enter the book NAME :
```

```
xxx
```

```
Enter the AUTHOR of the book :
```

```
xyz
```

```
Enter the PRICE of the book :
```

```
500
```

```
Enter the NUMBER OF PAGES in the book :
```

```
120
```

```
ENTER THE DETAILS OF BOOK 2
```

```
Enter the book NAME :
```

```
yyy
```

```
Enter the AUTHOR of the book :
```

```
abc
```

```
Enter the PRICE of the book :
```

```
800
```

```
Enter the NUMBER OF PAGES in the book :
```

```
300
```

```
<-----DETAILS OF ALL BOOKS----->
```

NAME	AUTHOR	PRICE	NUMBER OF PAGES
xxx	xyz	Rs.500.0	120
yyy	abc	Rs.800.0	300

```
C:\Users\Acer\Documents\JAVA>
```

LAB A

Develop a Java program to create a class bank that maintains two kind of account for its customers, one called saving account and the other current account. the saving account provides compound interest and withdrawal facility but no cheque book facility. the current account provides cheque book facility but no interest. current account holder 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 over - act and Sav - acc 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
- Permit withdrawal and update the balance
- Check for the minimum balance, impose penalty if necessary and update the balance

```
import java.util.*;  
import java.util.Scanner;  
class Account  
{  
    Scanner xx = new Scanner(System.in);  
    String customer_name, type_of_account;  
    long account_number;  
    double balance = 5000;  
    void accept()  
    {  
        System.out.println("Enter customer name");  
        customer_name = xx.next();  
        System.out.println("Enter Account number");  
        account_number = xx.nextLong();  
    }  
}
```

void deposit()

{
 cout < "dep";
 system.out.println("Enter the amount to be deposited");
 dep = xx.nextInt();
 balance += dep;
 System.out.println("Balance = " + balance);
}

void withdrawal()

{
 cout < "withdrawal";
 System.out.println("Enter the amount to be withdrawn");
 withdrawal = xx.nextInt();
 balance -= withdrawal;
 System.out.println("Balance = " + balance);
}

class Current extends Account

{ void penalty()

{ if (balance < 2000)

 balance -= 100;
 System.out.println("Penalty of 100 Rs is taken for maintaining -
 less balance");

 System.out.println("Balance = " + balance);

class SavAct extends Account

{ void interest()

{
 double i;
 i = balance * 0.02;

 balance += i;

 System.out.println("Interest = " + i);

 System.out.println("Total Balance = " + balance);

}

class Bank

```
public static void main (String args[])
{
    Scanner xx = new Scanner (System.in);
    CurrentAct c = new CurrentAct();
    SavAct s = new SavAct();

    for (;;)
    {
        System.out.println ("Enter your choice\n1. Saving account\n2. Current account");
        int choice = xx.nextInt();
        if (choice == 1)
        {
            c.Accept();
            System.out.println ("Enter your choice\n1. Deposit\n2. Withdraw");
            int n = xx.nextInt();
            switch (n)
            {
                case 1: s.deposit();
                case 2: s.withdraw();
                break;
            }
        }
        else if (choice == 2)
        {
            c.Accept();
            System.out.println ("Enter your choice\n1. Deposit\n2. Withdraw");
            int n = xx.nextInt();
            switch (n)
            {
                case 1: s.deposit();
                case 2: s.withdraw();
                break;
            }
        }
        else
        {
            System.out.println ("Entered wrong option");
        }
    }
}
```

switch (n) {
 case 1: c.deposit();
 break;
 case 2: c.withdraw();
 break;
 case 3: c.penalty ();
 break;
 default: System.out.println("Entered wrong option");
}

System.out.println("Operation Done")

System.out.println("Final Balance")

switch (n) {
 case 1: c.deposit();
 break;

case 2: c.withdraw();
 break;

case 3: c.penalty ();
 break;

default: System.out.println("Entered wrong option");
}

System.out.println("Operation Done")

System.out.println("Final Balance")

System.out.println("Final Balance after operation")

switch (n) {
 case 1: c.deposit();
 break;

case 2: c.withdraw();
 break;

case 3: c.penalty ();
 break;

default: System.out.println("Entered wrong option");
}

```
1000
Balance=4000.0
Enter your choice
1.Saving account
2.current account
1
Enter customer name
xyz
Enter Account number
123
Enter your choice
1. Deposite
2. Withdraw
1
Enter the amount to be deposited
1000
Balance=7120.0
Intrest=142.4
Total Balance=7262.4
Enter your choice
1.Saving account
2.current account
2
Enter customer name
abc
Enter Account number
456
Enter your choice
1. Deposite
2.Withdrawl
2
Enter the amount to be withdrawn
3500
Balance=500.0
Penalty of 100 Rs is taken for maintaining less balance
Balance=400.0
Enter your choice
1.Saving account
2.current account
1
Enter customer name
pqr
Enter Account number
789
Enter your choice
1. Deposite
2.Withdrawl
1
```

Enter customer name and Account number

Enter customer name

xyz

Enter Account number

123

Enter your choice

1. Deposite

2. Withdraw

1

Enter the amount to be deposited

1000

Balance=7120.0

Intrest=142.4

Total Balance=7262.4

Enter your choice

1.Saving account

2.current account

2

Enter customer name

abc

Enter Account number

456

Enter your choice

1. Deposite

2.Withdrawl

2

Enter the amount to be withdrawn

3500

Balance=500.0

Penalty of 100 Rs is taken for maintaining less balance

Balance=400.0

Enter your choice

1.Saving account

2.current account

1

Enter customer name

pqr

Enter Account number

789

Enter your choice

1. Deposite

2. Withdraw

2

Enter the amount to be withdrawn

1000

Balance=6262.4

Enter your choice

1.Saving account

LAB 5

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 class extends the class Shape. Each one of the classes contains the method printArea() that prints the area of the given shape.

Import java.util.Scanner;
abstract class Shape

{
 Double a, b;
 abstract void printArea();

}
class Rectangle extends Shape

{
 Double n, y;
 Rectangle(Double a, Double b)
 { n = a; y = b; }
 void printArea()
 {

 System.out.println("Area of the Rectangle = " + (n * y));
 }

}
class Triangle extends Shape

{
 Double n, y;
 Triangle(Double a, Double b)
 { n = a; y = b; }
 void printArea()
 {

 System.out.println("Area of the Triangle = " + (0.5 * n * y));
 }

}

class Circle extends Shape

```
{  
    Double r;  
    Circle (Double r)  
    { r = r; }  
    void printArea()  
    {  
        System.out.println ("Area of the Circle = " + (3.14 * r * r));  
    }  
}
```

class abstract area

```
public static void main (String[] args)
```

```
{ Scanner xx = new Scanner (System.in);
```

```
Double w, n, y, z, p;  
System.out.println ("Enter length and width of  
rectangle ");
```

```
w = xx.nextDouble();
```

```
x = xx.nextDouble();
```

```
Rectangle R = new Rectangle (w, x);
```

```
R.printArea();
```

```
System.out.println ("Enter height and base of triangle ");
```

```
y = xx.nextDouble();
```

```
z = xx.nextDouble();
```

```
Triangle t = new Triangle (y, z);
```

```
t.printArea();
```

```
System.out.println ("Enter the radius of Circle ");
```

```
p = xx.nextDouble();
```

```
Circle C = new Circle (p);
```

```
C.printArea();
```

```
}
```

```
}
```

```
C:\Users\Acer\Documents\JAVA>javac Lab5.java
C:\Users\Acer\Documents\JAVA>java abstractarea
Enter length and width of rectangle
5
6
Area of the Rectangle = 30.0
Enter height and base of triangle
2
3
Area of the Triangle = 3.0
Enter the radius of circle
7
Area of the Circle = 153.86
C:\Users\Acer\Documents\JAVA>
```

LAB 6.

Create a package CSE which has two classes - student and External.
The class student has members IPkE . usn, name, sem. The class
Internals (derived class of student) has an array that stores the
External marks scored by five courses of the current semester
of the student. Create another package SFE which has the
class External which is a derived class of student. This class
has an array that stores the SFE marks scored by five
courses of the current semester of the student. Import the
two packages in a file that declares the final marks of a
student in all five courses.

PACKAGE CSE:

```
package CSE;  
import java.util.Scanner;  
public class Student  
{  
    public String usn;  
    public String name;  
    public int sem;  
    Scanner xx = new Scanner(System.in);  
    public void student()  
    {  
        System.out.println("Enter Student's USN:");  
        usn = xx.nextLine();  
        System.out.println("Enter Student's NAME:");  
        name = xx.nextLine();  
        System.out.println("Enter Student's SEMESTER:");  
        sem = xx.nextInt();  
    }  
}
```

3

```

1. package CIE;
import java.util.Scanner;
public class Internals extends Student
{
    public Double marks[] = new Double [5];
    {
        public Double marks[] = new Double [5];
        put();
        public void Internals()
        {
            for(i=0; i<5; i++)
            {
                system.out.println("Enter the Internals marks");
                scored in subject "+(i+1));
                marks[i] = xx.nextDouble();
            }
        }
    }
}

```

PACKAGE SEE:

```

package SEE;
import CIE.*;
import java.util.Scanner;
public class Externals extends CIE.Student
{
    Scanner xx = new Scanner (System.in);
    public Double see[] = new Double [5];
    put();
    public void Externals()
    {
        for(j=0; j<5; j++)
        {
            system.out.println("Enter the External marks");
            scored in subject "+(j+1));
            see[j] = xx.nextDouble();
            see[j] = see[j]/2;
        }
    }
}

```

MAIN CLASS :

```
import CIE.*;
import SEE.*;
import java.util.Scanner;
class finalmarks
{
    public static void main (String args[])
    {
        int m, k;
        Scanner xx = new Scanner (System.in);
        System.out.println ("Enter the number of students");
        m = xx.nextInt();
        CIE.Externals e[] = new CIE.Externals[m];
        SEE.Externals o[] = new SEE.Externals[m];
        for (k=0; k<m; k++)
        {
            o[k] = new CIE.Externals();
            e[k] = new SEE.Externals();
            System.out.println ("ENTER DETAILS OF STUDENT " + (k+1));
            o[k].student();
            e[k].Internals();
            e[k].Externals();
        }
        for (k=0; k<m; k++)
        {
            for (int l=0; l<5; l++)
            {
                System.out.println ("Total marks of Student " + (k+1)
                    + " in subject " + (l+1) + " = " +
                    (o[k].marks[l] + e[k].see[l]));
            }
        }
    }
}
```

```
C:\Users\sagar G:\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>javac Lab6.java
javac: file not found: Lab6.java
Usage: javac <options> <source files>
use -help for a list of possible options

C:\Users\sagar G:\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>javac Lab6.java

C:\Users\sagar G:\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>java finalmarks
Enter the number of students
2
ENTER DETAILS OF STUDENT 1
Enter Student's USN :
18M19CS001
Enter Student's NAME :
xyz
Enter Student's SEMESTER :
2
Enter the Internals marks scored in subject 1
46
Enter the Internals marks scored in subject 2
48
Enter the Internals marks scored in subject 3
47
Enter the Internals marks scored in subject 4
45
Enter the Internals marks scored in subject 5
49
Enter the Externals marks scored in subject 1
95
Enter the Externals marks scored in subject 2
94
Enter the Externals marks scored in subject 3
98
Enter the Externals marks scored in subject 4
97
Enter the Externals marks scored in subject 5
96
ENTER DETAILS OF STUDENT 2
Enter Student's USN :
18M19CS002
Enter Student's NAME :
```

```
 Command Prompt
Enter the Externals marks scored in subject 5
96
ENTER DETAILS OF STUDENT 2
Enter Student's USN :
1BM19CS002
Enter Student's NAME :
abc
Enter Student's SEMESTER :
2
Enter the Internals marks scored in subject 1
35
Enter the Internals marks scored in subject 2
36
Enter the Internals marks scored in subject 3
38
Enter the Internals marks scored in subject 4
39
Enter the Internals marks scored in subject 5
42
Enter the Externals marks scored in subject 1
70
Enter the Externals marks scored in subject 2
78
Enter the Externals marks scored in subject 3
79
Enter the Externals marks scored in subject 4
85
Enter the Externals marks scored in subject 5
91
Total marks of Student 1 in Subject 1 = 93.5
Total marks of Student 1 in Subject 2 = 95.0
Total marks of Student 1 in Subject 3 = 96.0
Total marks of Student 1 in Subject 4 = 93.5
Total marks of Student 1 in Subject 5 = 97.0
Total marks of Student 2 in Subject 1 = 70.0
Total marks of Student 2 in Subject 2 = 75.0
Total marks of Student 2 in Subject 3 = 77.5
Total marks of Student 2 in Subject 4 = 81.5
Total marks of Student 2 in Subject 5 = 87.5
C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>
```

LAB 7
Write a program to demonstrate generics with multiple object parameters.

```
class TwoGen<A, B>
{
    A ob1;
    B ob2;
    TwoGen(A ob1, B ob2)
```

```
    {
        ob1 = ob1;
        ob2 = ob2;
```

```
}
```

```
void showTypes()
```

```
    {
        System.out.println("Type of A is " + ob1.getClass().getClassName().getName());
        System.out.println("Type of B is " + ob2.getClass().getClassName().getName());
```

```
System.out.println("Type of B is " + ob2.getClass().getClassName().getName());
```

```
}
```

```
A getOb1()
```

```
    {
        return ob1;
```

```
}
```

```
B getOb2()
```

```
    {
        return ob2;
```

```
}
```

```
class Generics
```

```
{ public static void main(String args[])
}
```

```
    {
        TwoGen<Integer, String> tObj = new TwoGen<
            Integer, String>(15, "Generics");
```

~~tgObj~~

```
tgObj.showTypes();  
int x = tgObj.getOb1();  
System.out.println("value: "+x);  
String str = tgObj.getOb2();  
System.out.println("value: "+str);
```

3

y

```
C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJOA)\Documents\JAVA>java Generics
Type of A is java.lang.Integer
Type of B is java.lang.String
value: 15
value: Generics
```

```
C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJOA)\Documents\JAVA>
```

(A8)
Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class "Father" and derived class called "Son" which extends the base class. In Father class, implements a constructor which takes the age and throws the exception Wrong Age () when the input age = father age.

Import java.util.*;
class WrongAge extends Exception

{ public String toString ()

{ return "Exception - INVALID AGE"; }

}

class Father

{ int father_age;

Father (int a) throws WrongAge

{ Scanner sc = new Scanner (System.in);
System.out.println ("Enter Father's age : ");
father_age = sc.nextInt();
if (father_age <= 0)

{ throw new WrongAge (); }

}

else

{ System.out.println ("VALID AGE");
System.out.println ("Father's age = " + father_age);
System.out.println ("Son's age = " + a); }

}

3

3

class Son extends Father

Put Son-age;
Son (Put a). throws wrong Age

- Super(α);
Som-age = α ;

class Math

```
h public static void main (String args [])
```

System.out.println("Under Son's age:");

try

```
Son S1 = new Son(new Scanner(System.in));
    .nextInt());
```

cash (Wrong Age e)

```
System.out.println(e);
```

3

y

```
Command Prompt C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>java Main
Enter son's age :
19
Enter Father's age :
50
VALID AGE
Father's age = 50
Son's age = 19
C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>java Main
Enter son's age :
40
Enter Father's age :
35
Exception - INVALID AGE
C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>
```

LAB 9

Write a program which creates two threads, one thread displays
-BMS college of Engg Greeting once every ten seconds and
another displaying CSE once every two seconds.

class NewThread implements Runnable

{

 thread t;

 NewThread()

 t = new Thread(this, "NThread");

 t.start();

 public void run()

 try

 for (int n=1; n>0; n++)

 System.out.println("CSE");

 Thread.sleep(2000);

 }

 catch (InterruptedException e)

 System.out.println("Thread 1 interrupted");

 }

 }

}

 uses thread2

 public static void main(String args[])

 NewThread n1 = new NewThread();

 try

 for (int n=1; n>0; n++)

System.out.println("BMS College of Engineering");
Thread.sleep(10000);

}
catch (InterruptedException e) {
}

h System.out.println("Thread2 .Interrupted ");
}

}
}

```
C:\Users\sagar G\Dropbox\My PC (LAPTOP-DFE3MJ0A)\Documents\JAVA>java Thread2
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
CSE
CSE
```

LAB 10

Write a program that creates a user interface to perform integer division. 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 ArithmeticException. Display the exception in a message dialog box.

```
import java.awt.*;
```

```
import java.awt.event.*;
```

```
import javax.swing.*;
```

class IntegerDivision extends Frame implements ActionListener
implements ActionListener - ver 1

```
TextField n1, n2, res;
```

```
Label l1, l2, lres;
```

```
Button b;
```

```
public IntegerDivision()
```

```
{
```

```
setLayout(new FlowLayout(1));
```

```
Label l1 = new Label("Number 1", Label.RIGHT);
```

```
Label l2 = new Label("Number 2", Label.RIGHT);
```

```
Label lres = new Label("RESULT", Label.RIGHT);
```

```
l1.setBounds(10, 10, 100, 30);
```

```
n1.setBounds(10, 40, 100, 30);
```

```
l2.setBounds(10, 70, 100, 30);
```

```
n2.setBounds(10, 100, 100, 30);
```

```
lres.setBounds(10, 130, 100, 30);
```

```
res.setBounds(10, 160, 100, 30);
```

```
b.setBounds(10, 190, 100, 30);
```

```
add(l1);
```

```
add(n1);
```

```
add(l2);
```

```
add(n2);
```

```
add(res);
```

```
add(b);
```

```
add(lres);
add(res);
b. add ActionListener(this);
addWindowListener(new WindowAdapter() {
    public void windowClosing(WindowEvent e) {
        System.exit(0);
    }
});
```

```
3
public void actionPerformed(ActionEvent ae) {
    if (ae.getSource() == b) {
        try {
            int num1 = Integer.parseInt(lv1.getText());
            int num2 = Integer.parseInt(lv2.getText());
            int num3 = num1 / num2;
            res.setText(String.valueOf(num3));
        } catch (NumberFormatException ne) {
            JOptionPane.showMessageDialog(this, ne, "ERROR", JOptionPane.ERROR_MESSAGE);
        } catch (ArithmaticException a) {
            JOptionPane.showMessageDialog(this, a, "ERROR", JOptionPane.ERROR_MESSAGE);
        }
    }
}
```

```
4
public static void main(String args[]) {
    JButton button = new JButton("CALCULATE");
    button.addActionListener(this);
    button.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent ae) {
            Dimension d = new Dimension(400, 400);
            frame.setSize(d);
            frame.setTitle("BETTER DIVISION OF TWO NUMBERS");
            frame.setVisible(true);
        }
    });
}
```

class WindowAdapter1 extends WindowAdapter {
 public void windowClosing(WindowEvent we)
 {
 System.exit(0);
 }
}

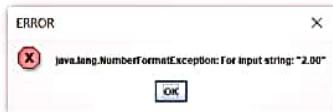
INTEGER DIVISION OF TWO NUMBERS

NUMBER 1 NUMBER 2 RESULT

- D X

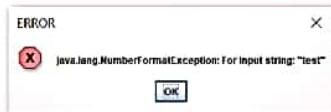
INTEGER DIVISION OF TWO NUMBERS

NUMBER 1 NUMBER 2 DIVIDE RESULT



INTEGER DIVISION OF TWO NUMBERS

NUMBER 1 NUMBER 2 DIVIDE



INTEGER DIVISION OF TWO NUMBERS

NUMBER 1 NUMBER 2 DIVIDE RESULT

