

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.

09/10/2020

1 BM/acs
Swetha Patil

LAB program-1

To find the roots of quadratic equation using Java.

```
import java.util.Scanner;  
class RootsOfQuadraticEquation {  
    public static void main(String[] args) {  
        int a, b, c;  
        double dis, x1, x2;  
        Scanner myobj = new Scanner(System.in);  
        System.out.println("Enter the values of a, b and c");  
        a = myobj.nextInt();  
        b = myobj.nextInt();  
        c = myobj.nextInt();  
        dis = b*b - 4*a*c;  
        if (a == 0 && b == 0)  
            System.out.println("No roots exist");  
        else if (dis > 0)  
            System.out.println("The roots of quadratic  
equation are");  
            x1 = (-b + Math.sqrt(b*b - 4*a*c)) / (2*a);  
            x2 = (-b - Math.sqrt(b*b - 4*a*c)) / (2*a);  
            System.out.println("x1 = " + x1 + " \n x2 = " + x2);  
        else if (dis == 0)  
            System.out.println("The Roots of quadratic  
equation are");
```

$$\text{if } x_1 \neq -b / (2*a);$$

$$x_2 = -b / (2*a);$$

System.out.println("x₁ = x₂ = " + x₁);

if (dis < 0)

System.out.println("No real roots exist");

}

}

else {

root1 = (-b + dis) / (2 * a);

root2 = (-b - dis) / (2 * a);

System.out.println("Roots are " + root1 + " and " + root2);

else {

System.out.println("Roots are complex numbers");

else {

System.out.println("Roots are real numbers");

else {

System.out.println("Roots are imaginary numbers");

else {

System.out.println("Roots are rational numbers");

else {

System.out.println("Roots are irrational numbers");

else {

System.out.println("Roots are rational numbers");

else {

System.out.println("Roots are irrational numbers");

Command Prompt

Microsoft Windows [Version 10.0.18363.418]
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C:\Users\SWETHA PATIL D>e:

E:\>cd java

E:\java>javac Rootsofquadraticequation.java

E:\java>java Rootsofquadraticequation

Enter the values of a,b and c

1

-1

-6

The roots of quadratic equation are

x1=3.0

x2=-2.0

E:\java>_

Lab 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 SGPA of a student.

16/10/2020

IBM19CS168
Swetha.Paty

LAB program 2

```
import java.util.Scanner;
class Student {
    String USN;
    String name;
    int credits[] = new int[10];
    int marks[] = new int[10];

    void accept()
    {
        int i;
        Scanner myobj = new Scanner(System.in);
        System.out.println("Enter the USN of student");
        USN = myobj.nextLine();
        System.out.println("Enter name");
        name = myobj.nextLine();
        System.out.println("Enter the credits and marks");
        for(i=0; i<5; i++) // for 5 subjects
        {
            System.out.println("Enter the credits for Subject "+(i+1));
            credits[i] = myobj.nextInt();
            System.out.println("Enter the marks of subject "+(i+1)+":");
            marks[i] = myobj.nextInt();
        }
    }

    void display()
    {
        System.out.println("USN : "+USN);
        System.out.println("Name : "+name);
        for(int i=0; i<5; i++)
        {
            System.out.println("Credits of subject "+(i+1)+" : "+credits[i]);
        }
    }
}
```

```

        System.out.println("Marks of subject" + (i+1) + ":" + marks[i]));
    }

double calc_sgpa()
{
    int grade_points[] = new int[10], i;
    for(i=0; i<5; i++)
    {
        if(marks[i] >= 90)
            grade_points[i] = 10;
        if(marks[i] >= 80 & marks[i] < 90)
            grade_points[i] = 9;
        if(marks[i] >= 70 & marks[i] < 80)
            grade_points[i] = 8;
        if(marks[i] >= 60 & marks[i] < 70)
            grade_points[i] = 7;
        if(marks[i] >= 50 & marks[i] < 60)
            grade_points[i] = 6;
        if(marks[i] >= 40 & marks[i] < 50)
            grade_points[i] = 4;
        if(marks[i] >= 0 & marks[i] < 40)
            grade_points[i] = 0;
    }

    double numerator=0, sum_credits=0, sgpa;
    for(i=0; i<5; i++)
    {
        numerator += grade_points[i] * credits[i];
        sum_credits += credits[i];
    }

    sgpa = numerator / sum_credits;
    return sgpa;
}

```

```

}

class Student_program
{
    public static void main(String [] args)
    {
        double SGPA;
        Student S = new Student();
        S.accept();
        S.display(); SGPA = calc_sgpa();
        System.out.println("SGPA is :" + SGPA);
    }
}

```

```
E:\java>javac Student_Program.java
```

```
E:\java>java Student_Program
Enter the usn of student
18M19CS168
Enter the name of student
Swetha
Enter the credits and marks
Enter the credits for Subject1:
5
Enter the marks of Subject1:
95
Enter the credits for Subject2:
4
Enter the marks of Subject2:
94
Enter the credits for Subject3:
4
Enter the marks of Subject3:
89
Enter the credits for Subject4:
4
Enter the marks of Subject4:
88
Enter the credits for Subject5:
3
Enter the marks of Subject5:
91
USN:18M19CS168
Name:Swetha
Credits of Subject1:5
Marks of Subject1:95
Credits of Subject2:4
Marks of Subject2:94
Credits of Subject3:4
Marks of Subject3:89
Credits of Subject4:4
Marks of Subject4:88
Credits of Subject5:3
Marks of Subject5:91
SGPA is: 9.6
```

```
E:\java>java Student_Program
```

Lab 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.

6/11/2020

Lab program-3

IBM19CS162
Swetha Paty

```
import java.util.*;  
class Book {  
    String name;  
    String author;  
    int numPages;  
    double price;  
    Book () {  
        this.name = " ";  
        this.author = " ";  
        this.numPages = 0;  
        this.price = 0.0;  
    }  
    void accept ()  
    { Scanner sc = new Scanner(System.in);  
        System.out.println("Enter name & author");  
        name = sc.nextLine();  
        author = sc.nextLine();  
        System.out.println("Enter pages & price");  
        numPages = sc.nextInt();  
        price = sc.nextDouble();  
    }  
    public String toString()  
    { return ("details: book name:" + name + "author:" +  
            author + "price :" + price + "pages=" + pages);  
    }  
}
```

```
B Class Book1 {  
    Public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter number of books");  
        int num = sc.nextInt();  
        Book obj[] = new Book[num];  
        for (int i=0; i<num; i++) {  
            obj[i] = new Book();  
            obj[i].accept();  
            System.out.println(obj[i]);  
        }  
    }  
}
```

CD

```
E:\javalabprograms>javac Book1.java
E:\javalabprograms>java Book1
enter number of books
2
enter name and author of book
Higher engineering mathematics
B V Ramana
enter pages and price of book
1000
1000
details:
book name:Higher engineering mathematics
author:B V Ramana
price=1000.0
number of pages:1000
enter name and author of book
abc
xyz
enter pages and price of book
2500
1500.5
details:
book name:abc
author:xyz
price=1500.5
number of pages:2500
E:\javalabprograms>
```

Lab 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 contain only the method printArea() that prints the area of the given shape.

09/11/2020

Lab Program-4

```
import java.util.*;
abstract class Shape {
    int i, j;
    abstract void printArea(double i, double j);
}

class Rectangle extends Shape {
    void printArea(double i, double j) {
        System.out.println("Area of rectangle = " + (i * j));
    }
}

class Triangle extends Shape {
    void printArea(double i, double j) {
        System.out.println("Area of triangle = " + (1.0 / 2.0 * i * j));
    }
}

class Circle extends Shape {
    void printArea(double i, double j) {
        System.out.println("Area of circle = " + (3.142 * i * j));
    }
}

class Labprogram4 {
    public static void main(String[] args) {
        double l, b, base, h, r;
        Scanner sc = new Scanner(System.in);
        Rectangle rc = new Rectangle();
        Triangle t = new Triangle();
        Circle c = new Circle();
        l = sc.nextDouble(); b = sc.nextDouble(); rc.printArea(l, b);
        base = sc.nextDouble(); h = sc.nextDouble(); t.printArea(base, h);
        r = sc.nextDouble(); c.printArea(r, r);
    }
}
```

```
E:\>cd javalabprograms
```

```
E:\javalabprograms>javac Labprogram4.java
```

```
E:\javalabprograms>java Labprogram4
```

```
Enter the length and breadth of the rectangle
```

```
10
```

```
20
```

```
Area of rectangle= 200.0
```

```
Enter the base and height of the triangle
```

```
50
```

```
43
```

```
Area of triangle= 1075.0
```

```
Enter the radius of the circle
```

```
25
```

```
Area of circle= 1963.75
```

```
E:\javalabprograms>_
```

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 Curr-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in

order to achieve the following tasks:

- a) Accept deposit from customer and update the balance.
- b) Display the balance.
- c) Compute and deposit interest
- d) Permit withdrawal and update the balance

Check for the minimum balance, impose penalty if necessary and update the balance.

Lab program-5

09/11/2020
import java.util.Scanner;
class Account {
 String cus_name;
 int act_no;
 int acct_type;
 double balance;
 double deposit;
 void accept()
 {

Scanner sc = new Scanner(System.in)

System.out.println("Enter your name, account no, balance")

cus_name = sc.nextLine();

act_no = sc.nextInt();

balance = sc.nextDouble();

void display()
 {

System.out.println("Name: " + cus_name + "\n")

Account no. : " + act_no + "\nBalance: " + balan

void deposit()
 {

Scanner sc = new Scanner(System.in);

System.out.println("Enter the amount to be deposited");

deposit = sc.nextDouble();

balance = balance + deposit;

class Saving_act extends Account {

double interest; double rate = 10;

double comp_interest()
 {

System.out.println("Enter the time");

double time = sc.nextInt();

double interest = balance * (Math.pow(1 + rate / 100, time));

}

void updatebalance()

{ Balance = balance + compInterest();

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

} return;

void withdraw()

{ double amt;

Scanner sc = new Scanner(System.in);

amt = sc.nextDouble();

if (amt > balance)

{ System.out.println("withdrawal is not possible");

} else

{ System.out.println("amount has been withdrawn");

balance = balance - amt;

}

double displaybalance()

{ return balance;

}

class Current_acct extends Account {

double amt, penalty = 50;

double minBalance = 500.0;

```

void checkBalance() {
    if (balance < minBalance)
        { System.out.println("Penalty is imposed");
          - balance = balance - penalty;
        }
    else
        { return;
        }
}

void withdraws() {
    amt = sc.nextDouble();
    if (amt > balance)
        System.out.println("withdrawal is not possible");
    else
        { balance = balance - amt;
          checkBalance();
        }
}

class Bank {
    public static void main(String[] args) {
        int acct-type;
        Savings-acct s = new Savings-acct;
        Current-acct c = new Current-acct;
        System.out.println("choose the type of account");
        1. Savings\n 2. Current");
        if (acct-type == 1)
            { s.accept();
              s.display();
              s.deposit();
              s.withdraw();
            }
        if (acct-type == 2)
            { c.accept();
              c.display();
              c.deposit();
              c.withdraw();
            }
    }
}

```

```
E:\javalabprograms>java Bank
Choose the type of account
1.Savings account
2.Current account
2
Enter your name
swetha patil
Enter your account number
987654321
Enter balance
500
Name: swetha patil
Account number: 987654321
Balace: 500.0
Cheque book facility will be given
What do you like to do?
1.Deposit money
2.Withdraw money
3.Display balance
4.Exit
1
Enter the amount to be deposited
500
Rupees 500.0 has been deposited
What do you like to do?
1.Deposit money
2.Withdraw money
3.Display balance
4.Exit
2
Enter the amount to be withdrawn
600
A penalty of 50.0is imposed as your balance is less than the minimum balance
What do you like to do?
1.Deposit money
2.Withdraw money
3.Display balance
4.Exit
3
The balance amount is 350.0
What do you like to do?
1.Deposit money
2.Withdraw money
3.Display balance
```

Lab Program 6

Solve this program and write the procedure you have used to execute this in your observation.

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.

20/11/2020

Lab - program - 6

Student.java

1BM19CS168
Swetha, Patil
Swetha

```
package CIE;
import java.util.Scanner;
public class Student {
    public String usn;
    public String name;
    public int sem;
    Scanner sc = new Scanner(System.in);
    public void accept() {
        System.out.println("Enter the USN:");
        usn = sc.nextLine();
        System.out.println("Enter the name:");
        name = sc.nextLine();
        System.out.println("Enter the semester");
        sem = sc.nextInt();
    }
    public void display() {
        System.out.println("USN:" + usn);
        System.out.println("Name:" + name);
        System.out.println("Sem:" + sem);
    }
}
```

Internals.java :-

```

package CIE;
import java.util.Scanner;
public class Internals extends Student
{
    Scanner sc = new Scanner(System.in)
    public int[] CIE_marks = new int[5];
    public int i;
    public void accept_CIE()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the CIE marks:");
        for(i=0; i<5; i++)
        {
            CIE_marks[i] = sc.nextInt();
        }
    }
}

```

External.java

```

package SEE;
import CIE;
import java.util.Scanner;
public class External extends CIE.Student
{
    public int SEE_marks[] = new int[5]
    public int i;
    Scanner sc = new Scanner(System.in)
    public void accept_SEE()
    {
        System.out.println("Enter the SEE marks for five subjects");
        for(i=0; i<5; i++)
        {
            SEE_marks[i] = sc.nextInt();
        }
    }
}

```

```
import CIE.*;
import SEE.*;
import java.util.Scanner;
public class Labprogram6
```

{

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

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

```
        int n, i, j;
```

```
        System.out.println("Enter the number of students");
```

```
        n = sc.nextInt();
```

```
        CIE.Internal[] in = new CIE.Internal[n];
```

```
        SEE.External[] ex = new SEE.External[n];
```

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

{

```
            in[i] = new CIE.Internal();
```

```
            ex[i] = new SEE.External();
```

```
            in[i].accept();
```

```
            in[i].accept - cie();
```

```
            ex[i].accept - see();
```

A

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

B

```
    in[i].display();
```

```
    for (j=0; j<5; j++)
```

{

```
        System.out.println("Final marks in  
subject "+(j+1)+": "+in[i].cie_marks);
```

```
+ (in[i].cie_marks + (ex[i].see_marks[j]))/2
```

{}

Procedure

- * First creating folders, CIE and SEE in my working directory javalabprograms.
- * ** creating files, Student.java and Internals.java in folder CIE.
- * Creating file External.java in folder SEE.
- * Creating ~~final~~ a file, Labprograms.java in my working directory above the packages CIE and SEE.

```
E:\>cd javalabprograms  
E:\javalabprograms>javac Labprogram6.java  
E:\javalabprograms>java Labprogram6  
Enter the number of students:  
2  
Enter the details of student1  
Enter the USN:  
1bm19cs001  
Enter your name:  
abc  
Enter the semester:  
3  
Enter the cie marks of subject1:  
48  
Enter the cie marks of subject2:  
36  
Enter the cie marks of subject3:  
42  
Enter the cie marks of subject4:  
50  
Enter the cie marks of subject5:  
45  
Enter the SEE marks of subject1:  
90  
Enter the SEE marks of subject2:  
95  
Enter the SEE marks of subject3:  
86  
Enter the SEE marks of subject4:  
83  
Enter the SEE marks of subject5:  
92  
The details of student1 are:  
USN: 1bm19cs001  
Name: abc  
Semester: 3  
Final marks of Student1 in subject1:93.0  
Final marks of Student1 in subject2:83.5  
Final marks of Student1 in subject3:85.0  
Final marks of Student1 in subject4:91.5  
Final marks of Student1 in subject5:91.0  
Enter the details of student2
```

```
Enter the details of student2
Enter the USN:
1bm19cs002
Enter your name:
xyz
Enter the semester:
3
Enter the cie marks of subject1:
45
Enter the cie marks of subject2:
41
Enter the cie marks of subject3:
35
Enter the cie marks of subject4:
39
Enter the cie marks of subject5:
29
Enter the SEE marks of subject1:
96
Enter the SEE marks of subject2:
86
Enter the SEE marks of subject3:
76
Enter the SEE marks of subject4:
78
Enter the SEE marks of subject5:
81
The details of student2are:
USN: 1bm19cs002
Name: xyz
Semester: 3
Final marks of Student2 in subject1:93.0
Final marks of Student2 in subject2:84.0
Final marks of Student2 in subject3:73.0
Final marks of Student2 in subject4:78.0
Final marks of Student2 in subject5:69.5
```

E:\javalabprograms>

Lab Program-7

Write a program to demonstrate generics
with multiple object parameters.

27/11/2020

Lab - Program - 7

IBM19CS168
Swetha.Paty

```
class Generic<T1, T2>
{
    T1 obj1
    T2 obj2
```

```
Generic(T1 obj1, T2 obj2) {
    this.obj1 = obj1;
    this.obj2 = obj2;
}
```

```
void showtypes()
{
    System.out.println("Type of T1 is " + obj1.getClass()
        .getName());
    System.out.println("Type of T2 is " + obj2.getClass()
        .getName());
}
```

```
T1 getObject1()
{
    return obj1;
}
```

```
T2 getObject2()
{
    return obj2;
}
```

```
}
```

```
class Labprogram7 {
    public static void main(String[] args) {
        Generic<Integer, String> ob = new
            Generic<Integer, String>(44, "Swetha");
        ob.showtypes();
        int a = ob.getObject1();
        int a
        String str = ob.getObject2();
        System.out.println("Value of 1st parameter : "
            + a);
        System.out.println("Value of 2nd parameter : " + str);
    }
}
```

Command Prompt

Microsoft Windows [Version 10.0.18363.418]
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C:\Users\SWETHA PATIL D>e:

E:\>cd javalabprograms

E:\javalabprograms>javac Labprogram7.java

E:\javalabprograms>java Labprogram7

Type of T1 is java.lang.Integer

Type of T2 is java.lang.String

Value of 1st parameter is: 44

Value of 2nd parameter is: Swetha Patil

E:\javalabprograms>

Lab Program-8

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 cases both father and son's age and throws an exception if son's age is \geq father's age.

Lab - Programs - 8

```
class WrongAge extends Exception {  
    public String toString() {  
        return "Ages are not valid";  
    }  
}
```

```
class Father {  
    int father-age;  
    Father(int father-age) {  
        this.father-age = father-age;  
    }  
}
```

```
class Son extends Father {  
    int son-age;  
    Son (int father-age, int son-age) {  
        super(father-age);  
        this.son-age = son-age;  
    }  
}
```

```
void check() throws WrongAge {  
    if (father-age < 0 || son-age < 0 ||  
        son-age >= father-age)  
        throw new WrongAge();  
}
```

Class LabPrograms

```
public static void main(String [] args) {
    Son ob1 = new Son(30, 5);
    Son ob2 = new Son(-1, 10);

    try {
        ob1.check();
        System.out.println("Ages are acceptable");
    } catch (WrongAge e) {
        System.out.println("Caught exception "+e);
    }

    try {
        ob2.check();
        System.out.println("Ages are acceptable");
    } catch (catch WrongAge e) {
        System.out.println("Caught exception:" + e);
    }
}
```

C:\ Command Prompt

Microsoft Windows [Version 10.0.18363.418]
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C:\Users\SWETHA PATIL D>e:

E:\>cd javalabprograms

E:\javalabprograms>javac Labprogram8.java

E:\javalabprograms>java Labprogram8
Ages of father and son are acceptable
Caught Exception: Ages are not valid

E:\javalabprograms>■

LAB PROGRAM 9

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.

Lab Program - 9

1BM19CS168
Swetha
Swetha. Paty

class Thread1 implements Runnable {

 Thread t1;

 Thread1() {

 t1 = new Thread(this, "First Thread");

 t1.start();

}

 public void run() {

 try {

~~for~~ { while (true)

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

 Thread.sleep(10000);

}

}

 catch (InterruptedException e) {

 System.out.println ("Thread1 interrupted");

}

 System.out

}

}

class Thread2 implements Runnable {

 Thread t2;

 Thread2() {

 t2 = new Thread(this, "Second thread");

 t2.start();

```
public void run() {
    try {
        while(true)
        { System.out.println ("CSE");
          Thread.sleep(2000);
        }
    } catch (InterruptedException e)
    { System.out.println ("Thread 2 interrupted");
    }
}
```

```
class Labprogram {
    public static void main (String[] args) {
        System.out.println ("Press control + c to stop");
        Thread t1 = new Thread1 ();
        Thread t2 = new Thread2 ();
    }
}
```

```
E:\javalabprograms>javac Labprogram9.java
```

```
E:\javalabprograms>java Labprogram9
```

```
Press control+c to stop
```

```
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```

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Lab Program-10

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 ArithmeticException. Display the exception in a message dialog box.

IBM19CS168

Swetha. Patil
3rd sem 'D' sec

Lab - Program 10

```
import java.awt.*;
import java.awt.event.*;
class DialogBox extends Dialog implements ActionListener
{
    Labprogram10 l;
    DialogBox(Frame Parent, String title)
    {
        Super(Parent, title, false);
        l = (Labprogram10)Parent;
        setLayout(new FlowLayout());
        setSize(250, 100);
        add(new Label(l.msg));
        Button b = new Button("Ok");
        add(b);
        b.addActionListener(this);
    }
    public void actionPerformed(ActionEvent ae)
    {
        dispose();
    }
}
public class Labprogram10 extends Frame implements
ActionListener
{
    TextField num1, num2, res;
    String num3;
    Button div;
    String msg = "";
}
```

```
public Labprogram10()
{
    SetLayout(new flowlayout());
    num1 = new Textfield(12);
    num2 = new Textfield(10);
    res = new Textfield(8);
    Label number1 = new Label("Num1:", Label.RIGHT);
    Label number2 = new Label("Num 2:", Label.RIGHT);
    Label result = new Label("Result:", Label.RIGHT);
    div = new Button("Divide");
    add(number1);
    .add(num1);
    add(number2);
    add(num2);
    add(div);
    add(result);
    add(res);
    num1.addActionListener(this);
    num2.addActionListener(this);
    div.addActionListener(this);
    res.addActionListener(this);
    add(windowlistener(new windowAdapter()));
}
public void windowclosing(WindowEvent e) {
    System.exit(0);
}
```

```
public void actionPerformed(ActionEvent ae)
{
    String s = ae.getActionCommand();
    if (s.equals("Divide"))
        res.setText("divide");
}
```

```
String divide()
```

```
{
    int n;
    int n1, n2;
    try {
        n1 = Integer.parseInt(num1.getText());
        n2 = Integer.parseInt(num2.getText());
        try {
            n = n1 / n2;
            num3 = String.valueOf(n);
            return num3;
        }
    }
}
```

```
catch (ArithmaticException e)
```

```
{
    msg = "Cannot divide Num1 by zero";
    DialogBox d = new DialogBox(this, Exception);
    d.setVisible(true);
    return "";
}
```

```
catch (NumberFormatException nf)
```

```
{
    msg = "The input numbers should be integers";
}
```

```
DialogBox d = new DialogBox(this, "Exception message box");
d.setVisible(true);
return "";
}
```

```
public static void main(String[] args)
{
    LabProgram10 appwin = new LabProgram10();
    appwin.setSize(new Dimension(380, 180));
    appwin.setTitle("Division");
    appwin.setVisible(true);
}
```



Division



Num1: 100

Num2: 25

Divide

Result

4



Division



Num1: 100

Num2: 0

Divide

Result



Exception message box



Divide by zero error

OK

ft Corporation



Division



Num1: am

Num2: 15

Divide

Result:



Exception message box



Input numbers should be integers

OK