

Lab Program :

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.

Import java.util.Scanner;

```
public class Main {  
    public static void main (String[] args) {  
        double a,b,c,  
        root1, root2; double det;  
    }
```

```
Scanner sc = new Scanner (System.in);  
System.out.println ("Enter the value of b:");  
b = sc.nextDouble();
```

```
System.out.println ("Enter the value of a:");  
a = sc.nextDouble();
```

```
System.out.println ("Enter the value of c:");  
c = sc.nextDouble();
```

```
det = b*b - 4*a*c;  
if (det > 0) {
```

```
    root1 = (-b + Math.sqrt (b*b - 4*a*c))/2*a;  
    System.out.println ("First root is :" + root1);  
    System.out.println ("Second root is :" + root2);  
    else if (det == 0) {  
        root1 = -b/2*a; }  
    }
```

System.out.println ("Both roots are same and are
equal to :" + root1); }

else if (det < 0) {

System.out.println ("Real roots don't exist");

} } }

Algorithm :

Start +

double a, b, c, root1, root2, det

input a, b, c

det = b * b - 4 * a * b

if (det > 0)

root1 = $(-b + \sqrt{b \times b - 4ac}) / 2 \times a$

root2 = $(-b - \sqrt{b \times b - 4ac}) / 2 \times a$

print root1, root2

else if (det = 0)

root1 = $-b / (2 \times a)$

print root1

else

print "Imaginary root"

End

LAB 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.

Import Java.util.Scanner;

```
Class Student {  
    private String USN;  
    private String name;  
    private int n;  
    private double SGPA = 0;  
    private int total Credits = 0;  
    Scanner ss = new Scanner(System.in);  
    void Details () {  
        System.out.println ("Enter USN of the student");  
        USN = ss.nextLine();  
        System.out.println ("Enter Name of the student");  
        name = ss.nextLine();  
        System.out.println ("Enter no of subjects");  
        n = ss.nextInt();  
        int credits [] = new int [n];  
        double marks [] = new double [n];  
        System.out.println ("Enter details of the subjects");  
        for (int i=0; i<n; i++) {  
            System.out.println ("Enter credits allotted to subject "+  
                (i+1));  
            marks [i] = ss.nextInt();  
        }  
        calculate (credits [i], marks [i], i);  
        calculate (int credit, double mark, int j) {  
    }
```

```
total Credits = Total Credits + credit;
if ( mark >= 90 && mark <= 100)
    SGPA = SGPA + (10 * Credit);
else if ( mark >= 80 && mark <= 89)
    SGPA = SGPA + (9 * credit);
else if ( mark >= 70 && mark <= 79)
    SGPA = SGPA + (8 * credit);
else if ( mark >= 60 && mark <= 59)
    SGPA = SGPA + (7 * credit);
else if ( mark >= 50 && mark <= 49)
    SGPA = SGPA + (6 * credit);
else if ( mark >= 40 && mark <= 39)
    SGPA = SGPA + (5 * credit); else
        System.out.println ("Failed in subject " +(j+1));
void display () {
    System.out.println ("Details of the student");
    System.out.println ("Name :" + name);
    System.out.println ("USN :" + USN);
    System.out.println ("SGPA of student " + (SGPA / total
    Credits)); } }
public class Lab 2 {
    public static void main (String args []) {
        Student s1 = new Student ();
        s1.Details ();
        s1.Display (); } }
```

Algorithm :

Start
Input USN, Name, no. of subjects and the details of subjects i.e. credits and marks for USN, name, n,
credit[i] marks[i].
Set totalcredits = totalcredits + credit[i]
Set SGPA = SGPA + (credit * number) where number =
10, 9, 8, 6, 7, 5 acc to marks.
Else print "Failed in subject".
Print "Details of the student", name, USN and the
Calculated SGPA of the student.
End.

Command Prompt

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Lenovo>cd desktop
C:\Users\Lenovo\Desktop>javac Main.java
C:\Users\Lenovo\Desktop>java Main
Enter the value of b:
5
Enter the value of a:
1
Enter the value of c:
1
First root is:-0.20871215252200009
Second root is:-4.7912878474779195
C:\Users\Lenovo\Desktop>_
```

and are equal to:" +root1);

exist");

```
C:\Users\Lenovo>cd desktop  
C:\Users\Lenovo\Desktop>javac Lab2.java  
C:\Users\Lenovo\Desktop>java Lab2  
Enter USN of the student  
131  
Enter Name of the student  
ritvika  
Enter no of subjects  
2  
Enter details of the subjects:  
Enter credits allotted to the subject 1  
4  
Enter marks in the subject 1  
89  
Enter credits allotted to the subject 2  
3  
Enter marks in the subject 2  
78  
Details of the Student  
Name :ritvika  
USN: 131  
SGPA of student 8.571428571428571
```

```
import java.util.Scanner;  
class Book {  
    String name;  
    String author;  
    int price;  
    int numPaper;  
    Book ()
```

```
} }  
Book (String name, String author, int price, int numPaper)  
{  
    this.name = name;  
    this.author = author;  
    this.price = price;  
    this.numPaper = numPaper;
```

⑤

Void accept {

Answers = new stories (solutions);
questions = old problems (enrichments);
problems = new answers (solutions);
enrichments = old questions (problems).

"the price of the best";

question, such, pursuit ("else the number of pages of the best").

public static void main (String ss[]) {

When our parents ("double input": $n_1 + n_2$); then our friends ("add the number of books", etc.)

+ (1 + T) \cdot p_{out} \cdot ("After the delivery of

Run:

MAIN

MAIN.java

"C:\Program Files\Java\jdk1.8.0_261\bin\java.exe" ...
Sample input:20 9

Enter age of Ram:

Enter years:

24

Enter months:

4

Enter age of Shyam:

Enter years:

23

Enter months:

6

Ram is elder than Shyam

Process finished with exit code 0

Structure

Favorites

Run 1000 Problems Build Terminal
Build completed successfully in 1 m 20 s (2 minutes ago)

MAIN

Enter the price of the book

2000

Enter the number of pages of the book

500

Enter the details of 2 book

OBAMA

Enter the name of the book

PETER

Enter the author of the book

HARRY

Enter the price of the book

999

Enter the number of pages of the book

300

Details of book 1

Name: HARRY
Author: ROWLING
Price: 2000

Number of pages: 500

Details of book 2

Name: OBAMA
Author: PETER
Price: 999

Number of pages: 300

Process finished with exit code 0

Run

1 TODO

Problems

Build

Terminal

Run

Completed successfully in 26 s 577 ms (3 minutes ago)

part1 - MAIN.java

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Windows

part1 src MAINMAIN.java

Project Project Run: MAIN MAIN.java

```
"C:\Program Files\Java\jdk1.8.0_261\bin\java.exe" ...
```

Enter employee ID

Jasmine

Enter employee name

Enter number of hours worked by the employee

300

Enter basic salary of employee

66000

Enter HRA percent

12

Enter DA percent

10

Enter IT percent

9

Gross salary of the employee is 77800.0

Process finished with exit code 0

2 Favorites 7 Structure

4: Run TODO Problems Build Terminal

Build completed successfully in 2 m 31 s (2 minutes ago)

File Edit Code Analyze Refactor Build Run Tools VCS Window Help

Project MAIN

MAIN.java

"C:\Program Files\Java\Jdk1.8.0_261\bin\Java.exe" . . .

Sample Input:

Name: Heights

Author: Anne

Price: 299

Number of pages: 345

Enter the number of books

Enter the details of 1 book

Enter the name of the book

HARRY

Enter the author of the book

ROWLING

Enter the price of the book

2999

Enter the number of pages of the book

345

Enter the details of 2 book

Enter the name of the book

HEARTS

Enter the author of the book

JKROW

Enter the price of the book

3000

Enter the number of pages of the book

3000

▶ 4: Run

☰ TODO

◀ Build

■ Terminal

Build completed successfully in 26 s 577 ms [3 minutes ago]

1.48 4

import java .util .Scanner ;
abstract class Shape {
int length , breadth ;
void paintArea ()

} }

class Rectangle extends Shape {
double areaR ;
void paintArea () {
areaR = (length * breadth) ;

System.out.println ("The area of rectangle is " + areaR + "cm^2");

} }

class Triangle extends Shape

{
double areaT ;

void paintArea () {

areaT = (0.5) * (length * breadth) ;

System.out.println ("The area of Triangle is " + areaT + "cm^2");

} }

class Circle extends Shape {

double areaC ;

void paintArea () {

areaC = (3.14) * (length * length) ;

System.out.println ("The area of circle is " + areaC + "cm^2");

} }

Class Main {

```
public static void main (String args [] ) {  
    Scanner A = new Scanner (System .in );  
    Rectangle R1 = new Rectangle ();  
    Circle C1 = new Circle ();  
    System.out.println ("Enter the length and breadth of which  
    u have to find the area of rectangle in cm\n");  
    R1.length = A.nextInt ();  
    R1.breadth = A.nextInt ();  
    System.out.println ("Enter the length and breadth of which u have  
    to find the area of triangle in cm\n");  
    T1.length = A.nextInt ();  
    T1.breadth = A.nextInt ();  
    System.out.println ("Enter the length of which u have to  
    find the area of circle in cm\n");  
    C1.length = A.nextInt ();  
    R1.printArea ();  
    T1.printArea ();  
    C1.printArea ();  
}  
}
```

Command Prompt

Microsoft Windows [Version 6.1.7601]

Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Lenovo>cd desktop

C:\Users\Lenovo\Desktop>javac Main.java

C:\Users\Lenovo\Desktop>java Main

Enter the length and breadth of which u have to find the area of rectangle

4 7

Enter the length and breadth of which u have to find the area of triangle

7 6

Enter the length of which u have to find the area of circle in cm

3

The area of rectangle is 28.0 cm²

The area of Triangle is 21.0cm²

The area of circle is 28.26cm²

C:\Users\Lenovo\Desktop>

LAB-5

```
import java.util.Scanner;  
  
class Bank  
{  
    int deposit_balance;  
    String customername;  
    String Account_Number;  
    String Account_Type;  
    int Balance = 27890;  
  
    void accept () {  
        Scanner s = new Scanner (System.in);  
        System.out.println ("Enter the customer name\n");  
        customername = s.next();  
        System.out.println ("Enter the Account Number\n");  
        Account_Number = s.next();  
        System.out.println ("Enter the Account type\n");  
        Account_Type = s.next();  
    }  
  
    void display () {  
        System.out.println ("CUSTOMER NAME:" + customername);  
        System.out.println ("ACCOUNT NUMBER:" + Account_Number);  
        System.out.println ("ACCOUNT TYPE :" + Account_Type);  
    }  
}  
  
class curr_acct extends Bank {  
    int updated_balance;  
    int After_withdrawal;
```

```
int updated - lost - cbalance ;  
int cdepo - ba () {  
    updated - balance = Balance + deposit - balance ;  
    return updated - balance ; }  
int ccwith - ba () {  
    After - cwithdrawn = ((updated - balance) - (withdraw - balance));  
    return After - cwithdrawn ; }  
int minimum () {  
    if ((After - cwithdrawn) <= (2000)) {  
        updated - lost - cbalance = ((After - cwithdrawn) - (200));  
        System.out.println ("you have minimum balance below 2000  
so u have lost 200 rs");  
    return updated - lost - cbalance ; }  
    else  
    return After - cwithdrawn ; } }  
class sav - acct extends Bank {  
    int supdated - balance ;  
    int After - swithdrawn ;  
    int updated - lost - sbalance ;  
    int compound - interest ;  
    int sdepo - ba () {  
        supdated - balance = Balance + deposit - balance ;  
        return supdated - balance ; }  
    int interest () {
```

```
double r = 0.08;
int n = 12;
int t = 5;
compound - interest = (int)
((updated - balance) * (Math. pow ((1 + (r/n)), (n*t))));  
return compound - interest; }

int minimum () {
if ((After - withdrawal) <= (1000)) {
updated - lost - sbalance = ((After - withdrawal) - (100));
return updated - lost - sbalance; }

else
return After - withdrawal; } }

class Transactions {
public static void main (String args []) {
Scanner r = new Scanner (System . in);
Curr - acct CA = new curr - acct ();
CA. accept ();
System . out . println ("Enter the money u want to deposit in current -  
account in rupees ");
CA. deposit - balance = r. nextInt ();
CA. display ();
System . out . println ("After your deposition of "+ CA. deposit -  
balance + " Now your total balance is Rs - " + CA. cdep - ba ());
System . out . println ("Enter the money you want to withdraw  
in rupees ");
```

CA. withdraw - balance = r. nextInt () ;

System.out.println ("After you withdraw of
" + CA. withdraw - balance + "\n Now your total balance is
RS - " + CA. with - ba () ;

System.out.println ("After checking
if you have minimum balance are not your updated total
balance is RS - " + CA. minimum () } ;

sav - acct SA = new sav - acct () ; SA. accept () ;

Sys tem.out.println ("Enter the money u want to deposit in
Saving account ") ;

SA. deposit - balance = r. nextInt () ;

SA. display () ;

System.out.println ("After your deposition of

" + SA. deposit - balance + "\n Now your total balance is

RS - " + SA. sdepo - ba () ;

System.out.println ("Enter the money you want to withdraw
in Saving account ") .

SA. withdraw - balance = r. nextInt () ;

System.out.println ("After your withdrawal of

RS - " + SA. withdraw - balance + "\n Now your total balance is

RS - " + SA. with - ba () ;

System.out.println ("After decking if u have minimum balance are

not your updated total balance is

RS - " + SA. minimum () } ;

3 3

Command Prompt - java Transactions

Enter the customer name

rituika

Enter the Account Number

3324

Enter the account type

savings

Enter the money u want to deposit in current account in rupees

CUSTOMER NAME : rituika

ACCOUNT NUMBER : 3324

ACCOUNT TYPE : savings

After your depositions of 10000

Now your total balance is RS-37890

Enter the money you want to withdraw in rupees

2000

After your withdrawal of 2000

Now your total balance is RS-35890
After checking if u have minimum balance are not your updated total balance is RS-35890

Enter the customer name