

2 Oct Date: / /

POOJA K

18M19CS111

Algorithm

1. Input values of a,b,c.
2. calculate determinant and square root of determinant.
3. if (determinant > 0) , then print roots are real and $r_1 = \frac{-b + \sqrt{D}}{2a}$ and

$$r_2 = \frac{-b - \sqrt{D}}{2a}$$

- if (determinant=0), then print roots are real and equal .

$$\text{root} = \frac{-b}{2a}$$

- if (determinant < 0), then print these all no real roots .

pooya k

// Find roots of quadratic equation

```
import java.util.*;
class Roots {
    public static void main (String args[]) {
        double r1=0, r2=0;
        Scanner sc = new Scanner (System.in);
        System.out.println ("Enter the value of a : ");
        double a = sc.nextDouble();
        System.out.println ("Enter value of b : ");
        double b = sc.nextDouble();
        System.out.println ("Enter value of c : ");
        double c = sc.nextDouble();

        double determinant = (b*b) - (4*a*c);
        double sqrt = Math.sqrt (determinant);

        if (determinant > 0) {
            r1 = (-b + sqrt) / (2*a);
            r2 = (-b - sqrt) / (2*a);
            System.out (" Roots are real ");
            System.out (" Roots are :: " + r1 + " and " + r2 );
        }
        else if (determinant == 0) {
            System.out (" Roots are real and equal ");
            System.out.println (" Root is :: " + (-b) / (2*a));
        }
        else if (determinant < 0) {
            System.out (" the equation has no real root ");
        }
    }
}
```

C:\ Command Prompt:

```
C:\Users\Pooja K\Desktop>java Roots  
Enter the value of a :  
Enter the value of b :  
Enter the value of c :  
6  
the equation has no real roots
```

```
C:\Users\Pooja K\Desktop>java Roots  
Enter the value of a :  
Enter the value of b :  
Enter the value of c :  
36  
Roots are real  
Roots are :: 6.0 and -6.0
```

```
C:\Users\Pooja K\Desktop>java Roots  
Enter the value of a :  
Enter the value of b :  
Enter the value of c :  
Roots are real and equal  
Root is :: -1.0
```

```
C:\Users\Pooja K\Desktop>
```

8/10/20

POOJA.15

1BM19CS11

Algorithm - Lab program 2:

1. Take values of usn, name, credits and marks of 6 subjects. etc.
2. Assign grade points to each subject.
3. Do (grade point * credits) for each subject.
4. Divide the obtained number with total number of credits to get sgpa.

Program :-

```
import java.util.Scanner;  
class Student {  
    String usn;  
    String name;  
    int credits[];  
    int marks[];  
    int n;  
  
    void accept()  
    {  
        Scanner s = new Scanner(System.in);  
        System.out.println("Enter student details");  
        System.out.println("USN: ");  
        usn = s.next();  
    }
```

```
System.out.println("Name:");
name = s.next();
System.out.println("Enter the number of
subjects:");
n = s.nextInt();
credits = new int[n];
marks = new int[n];
System.out.println("Enter credits and
marks obtained by student in each
subject");
for (int i=0; i<n; i++)
{
```

```
    credits[i] = s.nextInt();
    marks[i] = s.nextInt();
}
```

```
void display()
{
```

```
    System.out.println("Student details:");
    System.out.println("USN: " + usn);
    System.out.println("Marks in each subject:");
    for (int i=0; i<n; i++)
{
```

```
    System.out.println("Marks in each
    subject:");
    for (int i=0; i<n; i++)
{
```

```
    System.out.println("Subject" + (i+1) + ":"
    + marks[i]);
}
```

```
double calculate()
```

```
{
```

```
int tcp = 0, tc = 0
```

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

```
{
```

```
    tc = tc + credits[i];
```

```
    if (marks[i] == 50)
```

```
{
```

```
        tcp = tcp + ((marks[i] / 10) + 1) * credits[i];
```

```
}
```

```
else if (marks[i] >= 40 & & marks[i] < 50)
```

```
{
```

```
    tcp = tcp + (4 * credits[i]);
```

```
}
```

```
}
```

```
return (double) tcp / tc;
```

```
}
```

```
}
```

```
class StudentGPA
```

```
{
```

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

```
{
```

```
    Student s1 = new Student();
```

```
    s1.accept();
```

```
    s1.display();
```

```
    System.out.println("SGPA : " + s1.calculate());
```

```
}
```

```
}
```

```
Command Prompt
C:\Users\Pooja K\Documents>java Studentsgpa
Enter student details
USN:
1BM19CS111
Name:
Pooja
Enter the number of subjects:
4
Enter credits and marks attained by the student in each subject
Enter credits and marks attained in subject1
4
78
Enter credits and marks attained in subject2
5
98
Enter credits and marks attained in subject3
4
89
Enter credits and marks attained in subject4
4
85
Student details:
USN:1BM19CS111
Name:Pooja
Marks in each subject:
Subject 1:78
Subject 2:98
Subject 3:89
Subject 4:85
SGPA: 9.058823529411764

C:\Users\Pooja K\Documents>
```

```
import java.util.Scanner;  
class book {  
    String booktitle;  
    String author;  
    int no_of_pages;  
    double price;  
    Scanner sc = new Scanner(System.in);  
    book()  
    {  
        booktitle = " ";  
        author = " ";  
        no_of_pages = 0;  
        price = 0;  
    }
```

```
void getdet() {  
    System.out.print("Enter book title:");  
    booktitle = sc.nextLine();  
    System.out.print("Enter author name:");  
    author = sc.nextLine();  
    System.out.print("Enter price:");  
    price = sc.nextDouble();  
    System.out.print("Enter no of pages:");  
    no_of_pages = sc.nextInt();  
}
```

```
public String toString()  
{
```

```
return ("In Book name = " + bookTitle +  
       "In Author = " + author + "In Price = " + price +  
       "In Pages = " + no_of_pages);  
    }  
}
```

```
class Bookdemo {  
public static void main (String [] args) {  
    int n,i;  
    Scanner in = new Scanner (System.in)  
    System.out.print ("Enter no of books");  
    n = in.nextInt();  
    book [] b = new book [n];  
    for (i=0; i < n; i++)  
    {
```

```
        System.out.println ("Enter details of  
        Book " + (i+1));
```

```
        b [i] = new book ();  
        b [i].getdata();  
    }
```

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

```
        System.out.println (b [i]);  
    }
```

```
}
```

Command Prompt

```
Enter author name:abc
Enter price:500
Enter no of pages:456
Enter details of Book 2
Enter book title:null
Enter author name:null
Enter price:450
Enter no of pages:345
Enter details of Book 3
Enter book title:null
Enter author name:null
Enter price:250
Enter no of pages:678
```

```
Book name =null
Author =abc
Price =500.0
Pages =456
```

```
Book name =null
Author =null
Price =450.0
Pages =345
```

```
Book name =null
Author =null
Price =250.0
Pages =678
```

```
C:\Users\Pooja K\Desktop>_
```

6/11/20

Date _____

Page _____

LAB - 4

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IBM19CS111

Pr abstract class - shape
method - printArea()
3-classes - Rectangle, triangle, circle extends
shapes

Sol.

abstract class Shape {

int val1;

int val2;

Shape (int a, int b) {

val1 = a;

val2 = b;

}

abstract double area();

}

class Rectangle extends Shape {

Rectangle (int a, int b) {

super(a, b);

}

double area() {

return val1 * val2;

}

}

class Triangle extends Shape {

Triangle (int a, int b) {

super(a, b);

```

    }
    double area() {
        return (val1*val2)/2;
    }
}

```

```
class Circle extends Shape {
```

```
    Circle( int a, int b) {
```

```
        super(a,b);
```

```
}
```

```
    double area() {
```

```
        return 3.14*val1*val2;
```

```
}
```

```
}
```

```
class AreaofShapes {
```

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

```
    Rectangle rec = new Rectangle(5,8);
```

```
    Triangle tri = new Triangle(3,6);
```

```
    Circle cir = new Circle(4,4);
```

~~Decoupling~~

```
    Shape s = new Shape();
```

```
s = rec;
```

```
System.out.println("Area of rectangle is"
    + s.area());
```

```
s = tri;
```

```
System.out.println("Area of triangle is"
    + s.area());
```

```
s = cir;
```

```
System.out.println("Area of circle is " + s.area());
```

```
}
```

Command Prompt

C:\Users\Pooja K\Documents>javac Arofshapes.java

C:\Users\Pooja K\Documents>java Arofshapes

Area of rectangle is: 40.0
Area of triangle is:9.0
Area of Circle is:50.24

C:\Users\Pooja K\Documents>_

LAB - 5

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18M19CS111

// Bank account program

abstract class Account {

String cname, acctype;

long accno;

double bal;

final double minBal = 1000.0;

Account (String cname, long accno, double
bal, String acctype) {

this.accno = accno;

this.cname = cname;

this.bal = bal;

this.acctype = acctype;

}

abstract void addBal(double amt);

abstract void dispBal();

abstract void withdrawBal(double amt);

}

class CurrAcct extends Account {

CurrAcct (String cname, long accno, double bal) {

super(cname, accno, bal, "Current");

System.out.println("Name" + cname + "\t" +

accno + "\t" + acctype + "\t" + bal + "\t" + type + "\t" +

+ acctype);

}

```
void addBal (double amt) {  
    this.bal + = amt;  
}
```

```
void dispBal() {  
    System.out.println ("Your balance is :"  
        + this.bal);  
}
```

```
void checkBal() {  
    if (this.bal < minBal) {  
        System.out.println ("Insufficient balance,  
penalty imposed");  
        this.bal - = this.bal * 0.02;  
    }  
}
```

```
void withdrawl (double amt) {  
    this.bal - = amt  
    checkBal();  
}
```

```
class SavAcct extends Account {  
    SavAcct (String cname, long accno,  
    double bal) {  
        super (cname, accno, bal, "Savings");  
        System.out.println ("name:" + cname + "\taccno:  
        " + accno + "\tblance:" + bal + "\ttype:  
        " + acctype);  
    }  
}
```

```
void addBal (double amt) {  
    this.bal += amt;  
    addIntr();  
}
```

```
void addIntr() {  
    this.bal = this.bal * 0.07;  
}
```

```
void dispBal() {  
    System.out.println ("Your balance is:-  
        " + this.bal);  
}
```

```
void withdrawl(double amt) {  
    this.bal -= amt;  
}
```

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

```
        System.out.println ("Enter your details:");  
        System.out.println ("Name:");  
        String n = sc.nextLine();  
        System.out.println ("Account number:");  
        long y = sc.nextLong();
```

```
for(; ;)
    System.out.println("Type of account:\n"
        + 1. Current account \n 2. Savings account
        + 3. Exit");
```

```
int t = sc.nextInt();
```

```
if (t == 1) {
    System.out.println("The current account
        provides cheque book facility but no
        interest :");
```

```
Curr_acct c = new Curr_acct(2, 50000);
```

```
for(; ;)
```

```
{
```

```
System.out.println("1. Deposit \n 2. Display
        Balance \n 3. Withdraw \n 4. Exit");
```

```
int ch = sc.nextInt();
```

```
switch (ch) {
```

```
case 1: System.out.println("Enter amount
        to be added:");
```

```
amt = sc.nextDouble();
```

```
c = addBal(c, amt);
```

```
break;
```

```
case 2: c.dispBal();
```

```
break;
```

```
case 3: System.out.println("Enter the
        amount to be withdrawn:");
```

```
amt = sc.nextDouble();
```

```

c.withBal(amt);
break;
case 4: System.out.println();
default: System.out.println("Invalid choice");
}
}

else if (t2 == 2) {
System.out.println("The savings account
provides compound interest and withdrawl
facility but no cheque book facility.");
Sav-Accnt.s = new Sav-Accnt(x, y, 5000);
System.out.println("1: Deposit \n 2: Display
Balance \n 3: Withdraw \n 4: Exit");
int ch = sc.nextInt();
switch(ch) {
case 1: System.out.println("Enter the
amount to be added");
amt = sc.nextDouble();
s.addBal(amt);
break;
case 2:
s.dispBal();
break;
case 3: System.out.println("Enter the amount
to be withdrawn");
amt = sc.nextDouble();
s.withBal(amt);
break;
}
}

```

```
case 4: System.exit(0);  
default: System.out.println("Invalid  
choice");  
}  
}  
else if (t == 3)  
.System.exit(0);  
else  
System.out.println("Invalid choice! Try again");  
}  
}
```

Command Prompt

C:\Users\Pooja K\Documents>java Bank

Enter your details:

Name:

Pooja

Account Number:

123456789

Type of account:

1.Current account

2.Savings account

3.Exit

2

The savings account provides compound interest and withdrawal facilities but no cheque book facility.

name: Pooja accno: 123456789 bal: 5000.0 type: Savings

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

1

Enter the amount to be added:

2000

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

2

Your balance is: 7490.0

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

4

C:\Users\Pooja K\Documents>

Command Prompt - java Bank

C:\Users\Pooja K\Documents>java Bank

Enter your details:

Name:

Pooja

Account Number:

123456789

Type of account:

1.Current account

2.Savings account

3.Exit

1

The current account provides cheque book facility but no interest.

Name: Pooja accno: 123456789 bal: 50000.0 type: Current

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

1

Enter the amount to be added:

4000

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

2

Your balance is: 54000.0

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

3

Enter the amount to be withdrawn:

3000

1:Deposit

2:Display Balance

3:Withdraw

4:Exit

2

Your balance is: 51000.0

1:Deposit