

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 discriminate $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

29/09/2020

Example 1

classmate

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```
import java.util.Scanner;
import static java.lang.Math.*;
class Quadratic {
    public static void main (String [] args) {
        double a, b, c, D, r1, r2, real, imaginary;
        Scanner R = new Scanner (System.in);
        System.out.println ("Enter the coefficient");
        a = R.nextDouble();
        b = R.nextDouble();
        c = R.nextDouble();
        D = (b*b) - (4*a*c);
        if (D == 0)
        {
            r1 = r2 = -b/(2*a);
            System.out.println ("Roots are = "
                                + r1 + " and " + r2);
        } else if (D > 0)
        {
            r1 = (-b + sqrt(D))/(2*a);
            r2 = (-b - sqrt(D))/(2*a);
        }
```

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.836]
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C:\Windows\system32>cd C:\Program Files\Java\jdk1.8.0_261\bin
C:\Program Files\Java\jdk1.8.0_261\bin>javac Quadratic.java
C:\Program Files\Java\jdk1.8.0_261\bin>java Quadratic
Enter the coefficient
1
4
4
Roots are = -2.0 and -2.0

C:\Program Files\Java\jdk1.8.0_261\bin>javac Quadratic.java
C:\Program Files\Java\jdk1.8.0_261\bin>java Quadratic
Enter the coefficient
1
-3
-10
Roots are = 5.0 and -2.0

C:\Program Files\Java\jdk1.8.0_261\bin>javac Quadratic.java
C:\Program Files\Java\jdk1.8.0_261\bin>java Quadratic
Enter the coefficient
1
1
1
There are no real solutions
real and imaginary Roots are = -0.5 and 0.8660254037844386
C:\Program Files\Java\jdk1.8.0_261\bin>
```

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.

06/00/2020

classmate

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Develop a java program to create a
Class student with members USN, name,
an array credits and an array marks. Include
methode to accept and display details and a
methode to calculate SGPA of a student

```
import java.util.Scanner;
```

```
class student
```

```
{
```

```
    private int usn;
```

```
    private String name;
```

```
    private int credits[];
```

```
    private double marks[];
```

```
    private double sum=0;
```

```
    private double SGPA;
```

```
    private double credit-Points;
```

```
    private double SUM=0;
```

```
void getDetails()
```

```
{
```

```
    System.out.println("Enter student details: \n");
```

```
    Scanner SI = new Scanner (System.in);
```

```
    usn = SI.nextInt();
```

```
    name = SI.next();
```

```
    credits = new int[8];
```



```
marks = new double [8];  
for (int i = 0; i < 8; i++)
```

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```
{  
    System.out.println("Enter credits [" + i + "]:");  
    credits[i] = SI.nextInt();  
    System.out.println("Enter marks [" + i + "]:");  
    marks[i] = SI.nextDouble();  
    Sum = Sum + credits[i];  
    credit-points = credits[i] * marks[i];  
    Sum = Sum + credit-points;  
    SGrpA = Sum / sum;  
}
```

```
}
```

```
void printDetails()
```

```
{  
    System.out.println("name: " + name);  
    System.out.println("USN no: " + USN);  
    for (int i = 0; i < 8; i++)  
    {  
        System.out.println("credits: " +  
            credits[i]);  
        System.out.println("marks: " +  
            marks[i]);  
    }  
    System.out.println("SGrpA = " + SGrpA);  
}
```

```
class StudentMain
```

```
{
```

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

```
        Student s1[] = new Student(1);
```

```
        for (int i = 0; i < 1; i++)
```

```
        {
```

```
            s1[i] = new Student();
```

```
            s1[i].getDetails();
```

```
            s1[i].printDetails();
```

```
        }
```

```
    }
```

```
}
```

```
Administrator: Command Prompt
90
Student details:
USN:01
Name:arfa
Marks in each subject:
Subject 1:90
Subject 2:89
Subject 3:89
Subject 4:90
SGPA: 9.434782608695652

C:\Program Files\Java\jdk1.8.0_261\bin>javac StudentMain.java

C:\Program Files\Java\jdk1.8.0_261\bin>java StudentMain
Enter student details
USN:
01
Name:
nisha
Enter the number of subjects:
3
Enter credits and marks attained by the student in each subject
04
78
89
90
04
89
Student details:
USN:01
Name:nisha
Marks in each subject:
Subject 1:78
Subject 2:90
Subject 3:89
SGPA: 9.294117647058824

C:\Program Files\Java\jdk1.8.0_261\bin>
```

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.

Loop programs

classmate

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```
import java.util.*;  
class Book {  
    String name;  
    String author;  
    int price;  
    int num-pages;  
    Book() {  
        this.name = "LOLITA";  
        this.author = "VOLLMER";  
        this.price = 458;  
        this.num-pages = 89;  
    }  
    void get() {  
        {
```

```
Scanner b = new Scanner(System.in);  
System.out.println("Enter the name of the book");  
name = b.next();  
System.out.println("Enter the author of the book");  
author = b.next();  
System.out.println("Enter the price of the book");  
price = b.nextInt();  
System.out.println("Enter the number of pages  
of the book");
```



```
Administrator: Command Prompt
C:\Program Files\Java\jdk1.8.0_261\bin>javac BookMain.java
C:\Program Files\Java\jdk1.8.0_261\bin>java BookMain
Stored book details :Book Title :LOLITA No of pages :89 Author :VOLDMER Price : 458
Enter the number of books
3
Enter the details of book 1
Enter the name of the book
sherlocks
Enter the author of the book
watson
Enter the price of the book
139
Enter the number of pages of the book
789
Enter the details of book 2
Enter the name of the book
herper
Enter the author of the book
herper
Enter the price of the book
78
Enter the number of pages of the book
90
Enter the details of book 3
Enter the name of the book
adventure
Enter the author of the book
william
Enter the price of the book
67
Enter the number of pages of the book
90
Details of book 1
Book Title :sherlocks No of pages :789 Author :watson Price : 139
Details of book 2
Book Title :herper No of pages :90 Author :herper Price : 78
Details of book 3
Book Title :adventure No of pages :90 Author :william Price : 67
C:\Program Files\Java\jdk1.8.0_261\bin>
```

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.

03/11/2020

④

```
① import java.util.Scanner;
abstract class shape
{
    int length, breadth;
    void printArea();
}

class Rectangle extends shape
{
    double areaR;
    void printArea() {
        areaR = (length * breadth);
        System.out.println("The area of rectangle is " + areaR);
    }
}

class Triangle extends shape
{
    double areaT;
    void printArea() {
        areaT = (0.5 * (length * breadth));
        System.out.println("The area of triangle is " + areaT);
    }
}
```

```

class circle extends shape
{
    double area;
    void printArea() {
        area = (3.14) * (length * length);
        System.out.println("The area of circle is " + area);
    }
}

```

```

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

```

T1. breadth = A.nextInt();
System.out.println("Enter the length or radius of
which you have to find the area of circle
cm 1a");

C1: length = A.nextInt();

R1. printArea();

T1. printArea();

C1. printArea();

}

}


```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18302.836]
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C:\Windows\system32>cd C:\Program Files\Java\jdk1.8.0_261\bin\
C:\Program Files\Java\jdk1.8.0_261\bin>javac Area.java
C:\Program Files\Java\jdk1.8.0_261\bin>java Area
Enter the length and breadth of which u have to find the area of rectangle in cm
1
2
Enter the length and breadth of which u have to find the area of triangle in cm
1
2
Enter the length of which u have to find the area of circle in cm
1
The area of rectangle is 2.0cm^2
The area of Triangle is 1.6cm^2
The area of circle is 3.14cm^2
C:\Program Files\Java\jdk1.8.0_261\bin>
```

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 Curr-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.

5

2

```
import java.util.Scanner;
```

```
class Bank
```

```
{
```

```
    int deposit-balance;
```

```
    int withdraw-balance;
```

```
    String customer-name;
```

```
    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");
```

```
        customer_name = 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 : " + customer_name)
```

```

System.out.println("Account Number: " + Account Number);
System.out.println("Account- Type: " + Account-Type);
}
}

```

```

class curr-acc extends Bank {
    int updated-balance;
    int After-c-withdrawn;
    int updated-lost-balance;
    int cdepo-ba() {
        updated-balance = Balance + deposit-balance;
        return updated-balance;
    }
}

```

```

int cwith-ba() {
    After-c-withdrawn = (updated-balance) -
                        (withdraw-balance);
    return After-c-withdrawn;
}

```

```

int minimum() {
    if ((After-c-withdrawn) <= (2000))
    {
        updated-lost-balance = (After-c-withdrawn)
                                - (2000);
    }
}

```



```
System.out.println("you have minimum balance below  
2000 so u have lost 200 rs");  
return updated - lost - balance;  
}
```

```
else  
return After - withdrawn;  
}
```

```
}  
Close Sav - acc + extends Bank {
```

```
int updated - balance;
```

```
int After - withdrawn;
```

```
int updated - lost - balance;
```

```
int compound - interest;
```

```
int depo - bal();
```

```
updated + balance = balance + deposit - balance;
```

```
return updated - balance;
```

```
}
```

```
int interest ()
```

```
{
```

```
double r = 0.08;
```

```
int n = 12;
```

```
int t = 5;
```



```
compound-interest = (int) (supposed-balance)
+ (Math.pow(1 + (r/n)), (n*t));
```

```
return compound-interest;
}
```

```
int switch-bac() {
```

```
After-switchdrawn = ((compound-interest) -
(withdrawal-balance));
```

```
return After-switchdrawn;
```

```
}
```

```
int minimum() {
```

```
{
```

```
if ((After-switchdrawn) <= (1000))
```

```
{ updated-lost-balance = ((After-switchdrawn)
- (100));
```

```
return updated-lost-balance;
```

```
}
```

```
else
```

```
return After-switchdrawn;
```

```
}
```

```
}
```

```
class Transactions {
```

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

```
Scanner r = new Scanner(System.in);
```

```
curr-acc = CA = new curr-acc();
```

```
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 + " in now your total  
balance is RS- " + CA.calpo - bn());
```

```
}
```

```
}
```

```
Administrator: Command Prompt - java Transactions
The area of circle is 153.86cm^2
C:\Program Files\Java\jdk1.8.0_261\bin>javac Transaction.java
C:\Program Files\Java\jdk1.8.0_261\bin>java Transactions
Enter the customer name
arfa
Enter the Account Number
56789
Enter the Account type
personal
Enter the money u want to deposit in current account in rupees
678
CUSTOMER NAME : arfa
ACCOUNT NUMBER : 56789
ACCOUNT TYPE : personal
After your deposition of 678
Now your total balance is RS-28568
Enter the money you want to withdraw in rupees
28000
After your withdrawal of 28000
Now your total balance is RS-568
you have minimum balance below 2000 so u have lost 1000 rs
After checking if u have minimum balance are not your updated total balance is RS-368
Enter the customer name
```