**Experiment Number:1.1**

|  |  |
| --- | --- |
| **Student Name**: | **UID:** |
| **Branch:**  CSE-AML | **Section & Group**: |
| **Semester:** 3 | **Date**: 30/09/2022 |
| **Course Name**: Programming in JAVA | **Course Code**: 21CSH-244 |

**1. Aim/Overview of the practical:**

Write a Java program that prints all real solutions to the quadratic equation ax2 +bx+c=0.Read in a,b,c and use the quadratic formula .If the discriminate b2-4ac is negative,display a message that there are no real solutions

**2. Task to be done:**

We take input for a,b ,c and calculate the discriminate and if its negative it displays that there are no real roots

**3. Algorithm:**

**Step: 1.** Start

**Step: 2.** Declare three variables (coefficients a, b and c) and taking input from the user.

**Step: 3.** Use the basic mathematical formulas to find the Determinant.

**Step: 4.** If det ==0 print(“the roots are real and equal”).

**Step: 5.** ElseIf det >0 print(“the roots are real and unequal”).

**Step: 6.**  else det ==0 print(“the roots are imaginary”).

**Step: 7.**  print the roots using basic formulas.

**Step: 8.** Stop.

**4. Pseudocode (For Programming):**

Import java.io.;

Class Quadratic{

Public static void main(String args[])throws IOException

{Declare a,b,c,x1,x2,det;

Input(a,b,c);

det=(b\*b)-(4\*a\*c1);

if(det==0){print(“roots are real and equal”);

x1=x2=-b/(2\*a);

print(“roots are”x1,x2);} elseif(det>0){

print(“roots are real and unequal”)

x1=(-b+Math.sqrt(det))/(2\*a); x2=(-b-Math.sqrt(det))/(2\*a);

print(“roots are” x1, x2); } else{

print(“roots are imaginary”);}

**5. Code (For Programming)**

import java.io.\*;

class Quadratic

{

public static void main(String args[])throws IOException

 {

double x1,x2,det,a,b,c;

InputStreamReader obj=new InputStreamReader(System.in);

BufferedReader br=new BufferedReader(obj);

System.out.println("enter a,b,c values");

a=Double.parseDouble(br.readLine());

b=Double.parseDouble(br.readLine());

c=Double.parseDouble(br.readLine());

det=(b\*b)-(4\*a\*c);

if(det==0)

{

System.out.println("roots are real and equal");

x1=x2=-b/(2\*a);

System.out.println("roots are "+x1+","+x2);

}

else if(det>0)

{

System.out.println("roots are real and unequal");

 x1=(-b+Math.sqrt(det))/(2\*a);

x2=(-b-Math.sqrt(det))/(2\*a);

 System.out.println("roots are"+x1 +x2);

}

else

{

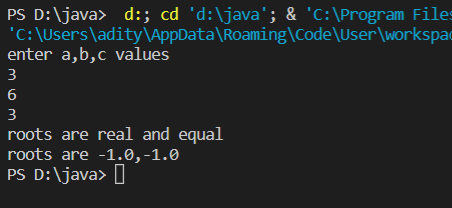
 System.out.println("roots are imaginary");

 }

 }

}

**6. Result/Output/Writing Summary:**



**Learning outcomes (What I have learnt):**

**1.** Learnthow to use Java compiler.

**2.** Learnt the basic syntax of Java.

**3.**Learnt how to print string and take user input.

**4.**Learnt how to use Mathematical formulas to get desired output.

**5**.Learnt how to imply conditional statements.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
|  |  |  |  |