

LAB Program 2
Roots of a Quadratic Equation

12/12/2022

import java.util.Scanner;

class quadratic

{

int a, b, c;

double r1, r2, d;

void getd()

{

Scanner s = new Scanner(System.in);

System.out.println("Enter the coefficients of a,b,c");

a = s.nextInt();

b = s.nextInt();

c = s.nextInt();

}

void compute()

{

while(a==0)

{

System.out.println("Not a Quadratic equation");

System.out.println("Enter a non-zero value for a");

Scanner s = new Scanner(System.in);

a = s.nextInt();

}

$$d = b^2 - 4ac;$$

y (d==0)

{

$$r_1 = (-b) / (c^{2/3}a);$$

System.out.println("Roots are real & equal");

System.out.println("Root 1 = Root 2 = " + r1);

}

else if (cd > 0)

{

$$\gamma_2 = ((-b) + (\text{Math.sqrt(cd)})) / (\text{double}(2 * a));$$

$$\delta_2 = ((-b) - (\text{Math.sqrt(cd)})) / (\text{double}(2 * a));$$

System.out.println("Roots are real and distinct");

System.out.println("Root1 = " + \gamma_2 + " Root2 = " + \delta_2);

}

else if (cd < 0)

{

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

$$\gamma_2 = (-b) / (2 * a);$$

$$\delta_2 = \text{Math.sqrt}(-cd) / (2 * a);$$

System.out.println("Root1 = " + \gamma_2 + " + i " + \delta_2);

System.out.println("Root2 = " + \gamma_2 + " - i " + \delta_2);

}

3

3

class QuadraticMain

{

public static void main(String args[])

{

Quadratic = new Quadratic();

Q.getd();

Q.compute();

System.out.println("Answers are " + Q.getans() + " " + Q.getb());

3

3

output \rightarrow

1) Enter the coefficients of a, b and c

4

-4

1

Roots are real and equal

Root 1 = Root 2 = 1/2

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2) Enter the coefficient of a, b and c

2

-9

10

Roots are real and distinct

Root 1 = 7.7 Root 2 = 1.2

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3) Enter the coefficients of a, b & c

0

0.2

2

Not a quadratic equation

Enter a non-zero value for a

1

Roots are imaginary

Root 1 = -12 + i(8.4852)

Root 2 = -12 - i(8.4852)

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