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| --- | --- |
| import java.util.Scanner; | |
|  | | import java.lang.Math; | |
|  | |  | |
|  | | class QuadraticEquation{ | |
|  | |  | |
|  | | public static void main(String [] args){ | |
|  | | int a,b,c; | |
|  | | int d=0; | |
|  | | Scanner scanner = new Scanner(System.in); | |
|  | |  | |
|  | | System.out.println("Enter the coefficients of the quadratic equation in the form a, b,c where ax2 + bx + c=0"); | |
|  | | a = scanner.nextInt(); | |
|  | | b = scanner.nextInt(); | |
|  | | c = scanner.nextInt(); | |
|  | |  | |
|  | | d = ((int)Math.pow(b,2)- 4\*a\*c); | |
|  | | double result1 = (-b + Math.pow(d,0.5))/(2\*a); | |
|  | | double result2 = (-b - Math.pow(d,0.5))/(2\*a); | |
|  | |  | |
|  | | if(d==0){ | |
|  | | System.out.println("The roots are real and equal"); | |
|  | | System.out.println("The root is:" + " " + result1 ); | |
|  | | } | |
|  | | else if(d>0){ | |
|  | | System.out.println("The roots are real and distinct"); | |
|  | | System.out.println("The roots are: "); | |
|  | | System.out.println("root 1 " + result1); | |
|  | | System.out.println("root 2" + result2); | |
|  | | } | |
|  | | else{ | |
|  | | double factor = (Math.sqrt(Math.abs(d))) / (2\*a); | |
|  | | System.out.println("The roots are imaginary"); | |
|  | | System.out.println("The roots are: "); | |
|  | | System.out.println("root 1 " + -b/(2\*a) + "+i " + factor); | |
|  | | System.out.println("root 2 " + -b/(2\*a) + "-i " + factor); | |
|  | | } | |
|  | |  | |
|  | | } | |
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|  | |  | |
|  | | } | |

