09/10/20 | Java Lab

Develop a java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c & use the quadratic formula. If discriminate $b^2 - 4ac$ is negative, display a message starting that are no real sol^n

Algorithm

Step 1 :- Input a, b, c

Step 2 :- $D = b*b - 4*a*c$

Step 3 :- If $(D > 0)$
        print Real Roots
        roots are $(-b + sqrt(D)/(2*a))$
        roots are $(-b - sqrt(D)/(2*a))$

    else if $(D == 0)$
        Print roots are equal
        roots is $(-b)/((2*a))$

    else

①

print Imaginary roots

Roots are $(-b + isqrt(-D))/(2*a)$;

roots ar $(-b - isqrt(-D))/(2*a)$

Step 4: STOP

Program :-

```
import java util*;
import java lang*;

public class quadratic

{
        private static double a;
        private static double b;
        private static double c;
        public static void read ()
    {
        Scanner sc = new scanner(system.in)
        System.out.print ln (" Enter the
                            Co-Efficient a"):
        a = sc.next Double ();
```

②

```java
System.out.println ("Enter the co-efficient b");
    b = sc.nextDouble();
System.out.println ("Enter the co-efficient c");
    c = sc.nextDouble();
System.out.println ("Enter the co-efficient
}                                                b
public static void calc()
    {
        read();
        double d = b* b - 4 * a * c);
        if (d > 0)
        {
            System.out.print ls (" Roots are Real &
            distinct")
            System.out.println (" First root is "+
                        (-b + Math.sqrt(d))/ (2*a));
            System.out.println (" First root is" +
                        (-b - Math.sqrt(d))/ (2*a));
        }
        else if (d == 0)
        {
            System.out.println ("Rook are equal");
            System.out.println (" Roots are "+ (-b) /(2*a));
        }
}
```

③

```java
else
{
System.out.println ("Roots are imaginary");
System.out println (" Roots are " + -b/(2*a) +
                    "+" + "i" + (Math.sqrt(d)/
                    (2*a));

System.out.println (" Roots are " + -b/(2*a)+"-"
                    + "i" + (Math.sqrt (-d))/2*a);
}
}

public static void main (String [ ] args)
{
    calc ();
}
}
//
```