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Lab-1

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- ① Develop a Java program that prints all real solution of the quadratic eq. $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is (-ve), display a message stating that there are no real solutions.

```
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");
```~~

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

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

```
 a = s.nextInt();
```

```
}
```

```
d = b*b - 4*a*c;
```

{ if ( $a == 0$ )

$$r1 = (-b) / (2 * a)$$

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

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

} else if ( $a > 0$ )

$$r1 = ((-b) + (\text{Math.sqrt}(d))) / (\text{double})(2 * a);$$

$$r2 = ((-b) - (\text{Math.sqrt}(d))) / (\text{double})(2 * a);$$

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

System.out.println ("Root 1 = " + r1 + " Root 2 = " + r2);

} else if ( $d < 0$ )

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

$$r1 = (-b) / (2 * a);$$

$$r2 = \text{Math.sqrt}(-d) / (2 * a);$$

System.out.println ("Root 1 = " + r1 + " + i " + r2);

System.out.println ("Root 1 = " + r1 + " - i " + r2);

} class QuadraticMain

{ public static void main (String args[])

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```
Quadratic q = new Quadratic();
q. get();
q. compute();
```

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}

Output:

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1. Enter the coefficient a, b, c.

3      1      2

roots are imaginary

root 1 = 0.0 + i 0.7993052538854537

root 2 = 0.0 - i 0.7993052538854531

2. Enter the coefficient a,b,c

1      4      1

root 1 = -2.0 + 9NaN

root 2 = -2.0 - iNaN

3. Enter the coefficient a,b,c.

1      2      1

roots are real and equal

root 1 = root 2 = -1.0

- ② To write a program in Java to find the area of a rectangle and verify the same with various inputs (length, breadth)

```

import java.util.*;
class RectangleArea {
 public static void main (String args[])
 {
 int length, breadth;
 length = Integer.parseInt(args[0]);
 breadth = Integer.parseInt(args[1]);
 int area = length * breadth;
 System.out.println ("length of rectangle = " + length);
 System.out.println ("breadth of rectangle = " + breadth);
 System.out.println ("area of rectangle = " + area);
 }
}

```

Op : length of rectangle = 10  
 breadth of rectangle = 12  
 area of rectangle = 120

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