

Lab Program 1:

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```
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 values for  
        a, b, c");  
        a = s.nextInt();  
        b = s.nextInt();  
        c = s.nextInt();  
    }  
  
    void compute()  
    {  
        while (a == 0)  
        {  
            System.out.println ("Not a quad. equa.");  
            System.out.println ("Enter a non zero value");  
            Scanner s = new Scanner (System.in);  
            a = s.nextInt();  
        }  
    }  
}
```

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

if ($d == 0$)

$$r_1 = (-b) / (2 * a);$$

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

```
System.out.println("Root1 = Root2 = " + r1);
```

else if ($d > 0$)

$$r_1 = ((-b) + (\text{Math.sqrt}(d))) / (\text{double})(2 * a)$$

$$r_2 = ((-b) - (\text{Math.sqrt}(d))) / (\text{double})(2 * a)$$

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

```
System.out.println("Root1 = " + r1 + " Root2 = " + r2);
```

}

else if ($d < 0$)

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

$$r_1 = (-b) / 2 * a;$$

~~$$r_2 = \text{Math.sqrt}(-d) / (2 * a)$$~~

~~```
System.out.println("Root1 = " + r1 + " + i" + r2);
```~~
~~```
System.out.println("Root2 = " + r1 + " + i" + r2);
```~~

}

}

class Quadratic Main

public static void main (String args[])

Quadratic q = new Quadratic();

q.getd();

q.compute();

}

Output:

Enter coefficient abc : 1 5 2
roots are real & distinct

root1 = 4.5615328

root2 = 4.56155281

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