

LAB-1 Program

- Q) Program to develop a java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$
Read in a, b, c and use all quadratic Formula

```
→ import java.util.Scanner;  
import java.lang.Math;
```

```
class quadratic
```

```
{
```

```
    int a, b, c;
```

```
    double b;
```

```
    double r1, r2;
```

```
void run()
```

```
{
```

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

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

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

```
    System.out.println("Enter value For c: ");
```

```
    c = S.nextInt();
```

```
    if (a == 0)
```

```
        System.out.println("Not a quadratic equation");
```

```
    }
```

```
System.out.println("Enter value for b: ");  
b = S.nextInt();
```



```
else {
```

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

```
    if (d == 0) {
```

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

```
        System.out.println("Roots are real and equal\nRoot : " + r1 + "\n");
```

```
    }
```

```
else if (d > 0) {
```

```
    r1 = ((-b) + Math.sqrt(d)) / (2 * a);
```

```
    r2 = ((-b) - Math.sqrt(d)) / (2 * a);
```

```
    System.out.println("Roots are real and distinct\nRoots: r1 = " + r1 + " & r2 = "
```

```
    + r2 + "\n");
```

```
}
```

```
else {
```

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

```
    r2 = Math.sqrt(-d) / (2 * a);
```

```
    System.out.println("Roots are imaginary\nRoots: "
```

```
    + r1 + "j + " + r2 + "\n");
```

```
}
```

```
}
```

```
}
```

```
}
```

```
class week 1 {
```



```
public static void main(String[] args) {  
    quadratic q = new quadratic();  
    q.run();  
}
```

}

Output:

Enter value For a:

1

Enter value For b:

6

Enter value For c:

5

Real and Distinct Roots

$$r_1 = -5.0$$

$$r_2 = -1.0$$