USN: 1BM19CS137 Date : 02/10/2020

```
// Java program to find roots of a quadratic equation

import java.util.Scanner;
import static java.lang.Math.*;


class quadratic
{
  public static void main(String args[])
  {
    Scanner sc = new Scanner(System.in);
    System.out.print("Enter the value of a ::");
    float a = sc.nextFloat();

    System.out.print("Enter the value of b ::");
    float b = sc.nextFloat();

    System.out.print("Enter the value of c ::");
    float c = sc.nextFloat();
    if (a == 0)
    {
      System.out.println("Invalid");
      return;
    }

    float d = b*b - 4*a*c;
    float sqrt_val = (float)Math.sqrt(abs(d));
    float root1= (-b + sqrt_val) / (2 * a);
    float root2=(-b - sqrt_val) / (2 * a);

    if(d == 0)
    {
      System.out.println("Roots are real and equal :: "+root1);
    }

    else if (d > 0)
    {
      System.out.print("Roots are real and different \n");
      System.out.print(root1 + "\n"+ root2);
    }

    else
    {
      System.out.print("Roots are complex \n");
      System.out.print( -b / ( 2 * a ) + " + i"+ sqrt_val + "\n" + -b
      /( 2 * a )+ " - i" + sqrt_val);
    }
  }
```

}

```
PS D:\sem3\ooj_lab\3> javac .\quadratic.java
PS D:\sem3\ooj_lab\3> java quadratic
Enter the value of a ::1
Enter the value of b ::2
Enter the value of c ::1
Roots are real and equal :: -1.0
PS D:\sem3\ooj_lab\3> java quadratic
Enter the value of a ::0
Enter the value of b ::2
Enter the value of c ::5
Invalid
PS D:\sem3\ooj_lab\3> java quadratic
Enter the value of a ::2
Enter the value of b ::4
Enter the value of c ::4
Roots are complex
-1.0 + i4.0
-1.0 - i4.0
PS D:\sem3\ooj_lab\3>
```