1) Develop a java program that prints all real solutions to quadratic equation ax^2+bx+c=0. And show all the cases

```
import java.util.*;
class quadratic
{
  public static void main(String args[])
{
    double a,b,c;
    double firstRoot,secondRoot;

    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the value of a ::");
     a = sc.nextDouble();

    System.out.println("Enter the value of b ::");
     b = sc.nextDouble();

    System.out.println("Enter the value of c ::");
     c = sc.nextDouble();

    double determinant = (b*b)-(4*a*c);
    double s = Math.sqrt(determinant);

     if(determinant>0)
     {
     firstRoot = (-b + s)/(2*a);
     secondRoot = (-b - s)/(2*a);
     System.out.println("Roots are real and distinct");
     System.out.println("Roots are :: "+ firstRoot +" and "+secondRoot);
    }
     else if(determinant == 0)
```

```
        {
         System.out.println("Roots are equal");
        System.out.println("Root is :: "+(-b)/(2*a));
      }
      else
      {
       firstRoot = (-b/(2*a));
       System.out.println("Roots are imaginary");
       System.out.println(firstRoot+"+i "+(Math.sqrt(Math.abs(determinant)))/(2*a));
       System.out.println(firstRoot+"-i "+(Math.sqrt(Math.abs(determinant)))/(2*a));
       }

   }
}
```

```
C:\Users\Admin\Desktop>java quadratic
Enter the value of a ::
1
Enter the value of b ::
2
Enter the value of c ::
3
Roots are imaginary
-1.0+i 1.4142135623730951
-1.0-i 1.4142135623730951

C:\Users\Admin\Desktop>java quadratic
Enter the value of a ::
1
Enter the value of b ::
2
Enter the value of c ::
1
Roots are equal
Root is :: -1.0

C:\Users\Admin\Desktop>java quadratic
Enter the value of a ::
1
Enter the value of b ::
3
Enter the value of c ::
1
Roots are real and distinct
Roots are :: -0.3819660112501051 and -2.618033988749895

C:\Users\Admin\Desktop>
```