```
{
System.out.println("The roots are imaginary");
}
}
else
{
System.out.println("Invalid Inputs");
}
}
}
```

OUTPUT

Enter the value of a 0

Enter the value of b 1

Enter the value of c 2

Invalid output

~~Enter the value of a~~

Enter the coefficient a, b, c 1, 2, 1

Roots are real and equal Roots are r1=r2 -1.0

Enter the coefficient a, b, c 1, 5, 1

The roots are real and distinct

Enter the coefficient a, b, c 1, 2, 3

The roots are imaginary

Program 1

a) Develop a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read a, b, c and use the quadratic formula.

```
import java.util.*;
import java.math.*;
public class Quadratic
{
 public static void main (String args[])
 {
 Scanner in = new Scanner (System.in);
 System.out.println ("Enter the values of a");
 double a = in.nextDouble();
 System.out.println ("Enter the value of b");
 double b = in.nextDouble();
 System.out.println ("Enter the value of c");
 double c = in.nextDouble();
 if (a != 0)
 {
 double d = b*b - (4*a*c);
 if (d > 0.0)
 {
 double s1 = (-b + math.pow (d, 0.5) / (2.0*a));
 double s2 = (-b - math.pow (d, 0.5) / (2.0*a));
System.out.println ("The roots are real and distinct");
System.out.println ("The roots are " s1 + " and " + s2);
}
else if (d == 0.0)
{
double s1 = -b (2.0*a);
System.out.println ("The roots are real and equal");
System.out.println ("The root is " + s1);
```