

Lab Program 1:

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 the quadratic formula. If the

discriminate b^2

$-4ac$ is negative, display a message stating that there are no

real solutions.

CODE SNIPPET:

```

import java.util.Scanner;
class quad
{
    public static void main(String xx[])
    {
        int a; int b;int c;
        double d;
        double r1,r2;
        Scanner s1=new Scanner(System.in);
        System.out.println("enter the values of a,b,c");
        a=s1.nextInt();
        b=s1.nextInt();
        c=s1.nextInt();
        d=b*b-(4*a*c);
        if(a==0)
        {
            System.out.println("the equation is not quadratic");
        }
        else if(d==0)
        {
            System.out.println("the roots are real and equal");
            r1=-b/(2*a);
            System.out.println(r1);
        }
        else if (d>0)
        {
            System.out.println("the roots are real and distinct");
            r1=(-b+Math.sqrt(d))/(2*a);
            r2=(-b-Math.sqrt(d))/(2*a);
            System.out.println(r1+", "+r2);
        }
        else
        {
            System.out.println("the roots are imaginary");
            r1=-b/(2*a);
            r2=Math.sqrt(Math.abs(d));
            System.out.println("the roots are" + " "+r1+"+"+"i"+"*"+Math.sqrt(r2)+"and"+r1+"- "+"i"+"*"+Math.sqrt(r2));
        }
    }
}

```

OUTPUT:

```
C:\Users\bmsce\Desktop\1BM21CS022>javac quad.java
```

```
C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
0 2 3
the equation is not quadratic
```

```
C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
3 -18 27
the roots are real and equal
3.0
```

```
C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
1 -1 -6
the roots are real and distinct
3.0, -2.0
```

```
C:\Users\bmsce\Desktop\1BM21CS022>java quad
enter the values of a,b,c
1 -2 5
the roots are imaginary
the roots are 1.0+i*2.0and1.0-i*2.0
```