

LAB PROGRAM 1 – QUADRATIC EQUATIONS

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

SOURCE CODE:

```
import java.util.*;

class quadratic
{
    public static void main(String args[])
    {
        double a, b, c;
        double root1, root2;

        System.out.println("enter 'a' value");
        Scanner sc = new Scanner(System.in);
        a = sc.nextDouble();
        System.out.println("enter 'b' value");
        b = sc.nextDouble();
        System.out.println("enter 'c' value");
        c = sc.nextDouble();

        double determinant = ((b*b) -(4*a*c));
        if(determinant > 0)
        {
            root1 = (-b + Math.sqrt(determinant))/(2*a);
            root2 = (-b - Math.sqrt(determinant))/(2*a);
            System.out.format("root1 = %2f and root 2 = %2f",root1, root2);
        }
        else if(determinant == 0)
        {
            root1 = root2 = -b/(2*a);
            System.out.format("root 1 = root 2 = %2f", root1);
        }
    }
}
```

```

}
else
{
double real = -b/(2*a);
double imaginary = Math.sqrt(-determinant)/(2*a);
System.out.format("root 1 = %2f + i(%2f)", real, imaginary);
System.out.format("root 2 = %2f - i(%2f)", real, imaginary);
}
}
}

```

OUTPUT:

1.

```

C:\Users\Admin\Desktop\1BM21CS247>java quadratic
enter 'a' value
6
enter 'b' value
10
enter 'c' value
-1
root1 = 0.094627 and root 2 = -1.761294
C:\Users\Admin\Desktop\1BM21CS247>

```

2.

```

C:\Users\Admin\Desktop\1BM21CS247>java quadratic
enter 'a' value
1
enter 'b' value
2
enter 'c' value
1
root 1 = root 2 = -1.000000
C:\Users\Admin\Desktop\1BM21CS247>

```

3.

```
C:\Users\Admin\Desktop\1BM21CS247>java quadratic
enter 'a' value
3
enter 'b' value
4
enter 'c' value
5
root 1 = -0.666667 + i(1.105542)root 2 = -0.666667 - i(1.105542)
C:\Users\Admin\Desktop\1BM21CS247>
```