WEEK1

Program 1

DATE: PAGE:

```
import java.util.scanner;
class Quad
{
  public static void main (String args[])
  {
    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 = " + r1);
System.out.println("r2 = " + 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" + r2 + " and " + r1 + " - i" + r2);
}
}
}
```

O/P

Enter the coefficients a, b, c

0

1

2

Invalid input for d

Enter the coefficients a, b, c

1

2

3

The roots have no real solution & are imaginary

-1.0 + i1.4142135623730951

-1.0 - i1.4142135623730951

Enter the coefficients a, b, c

1

2

1

The roots are real & equal

roots are r1 = r2 = -1.0

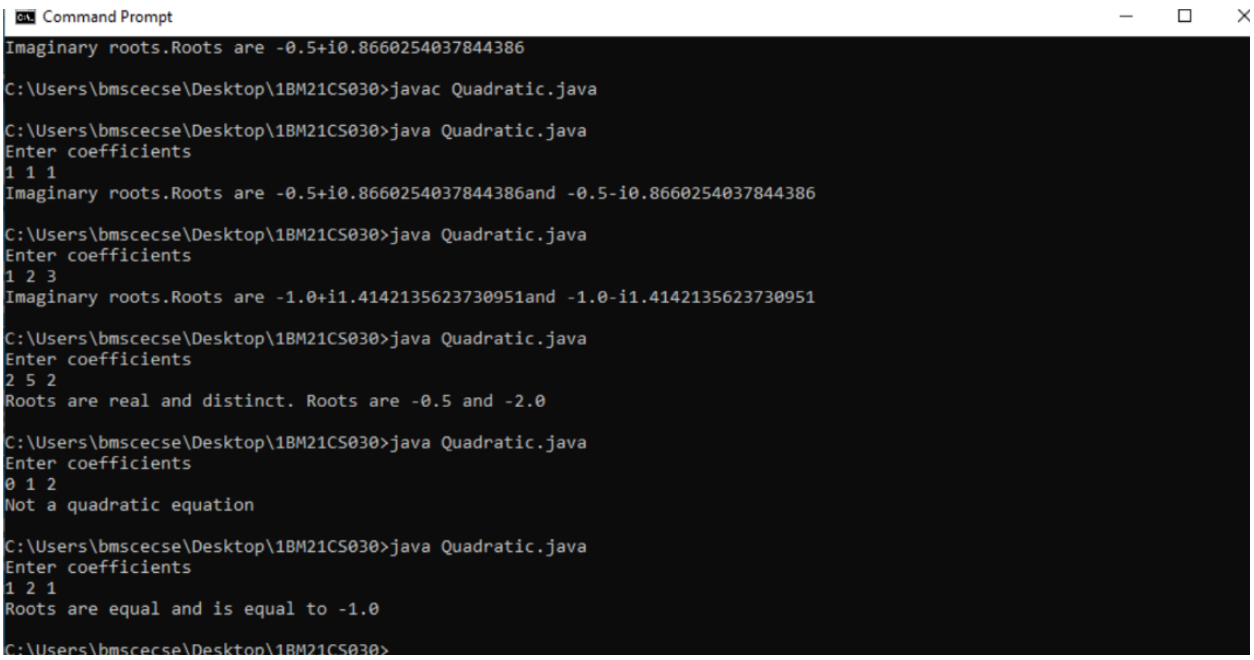
Enter the coefficients a, b, c

1

4

1

The roots are real and distinct


Command Prompt
Imaginary roots.Roots are -0.5+i0.8660254037844386
C:\Users\bmscecse\Desktop\1BM21CS030>javac Quadratic.java
C:\Users\bmscecse\Desktop\1BM21CS030>java Quadratic.java
Enter coefficients
1 1 1
Imaginary roots.Roots are -0.5+i0.8660254037844386and -0.5-i0.8660254037844386
C:\Users\bmscecse\Desktop\1BM21CS030>java Quadratic.java
Enter coefficients
1 2 3
Imaginary roots.Roots are -1.0+i1.4142135623730951and -1.0-i1.4142135623730951
C:\Users\bmscecse\Desktop\1BM21CS030>java Quadratic.java
Enter coefficients
2 5 2
Roots are real and distinct. Roots are -0.5 and -2.0
C:\Users\bmscecse\Desktop\1BM21CS030>java Quadratic.java
Enter coefficients
0 1 2
Not a quadratic equation
C:\Users\bmscecse\Desktop\1BM21CS030>java Quadratic.java
Enter coefficients
1 2 1
Roots are equal and is equal to -1.0
C:\Users\bmscecse\Desktop\1BM21CS030>