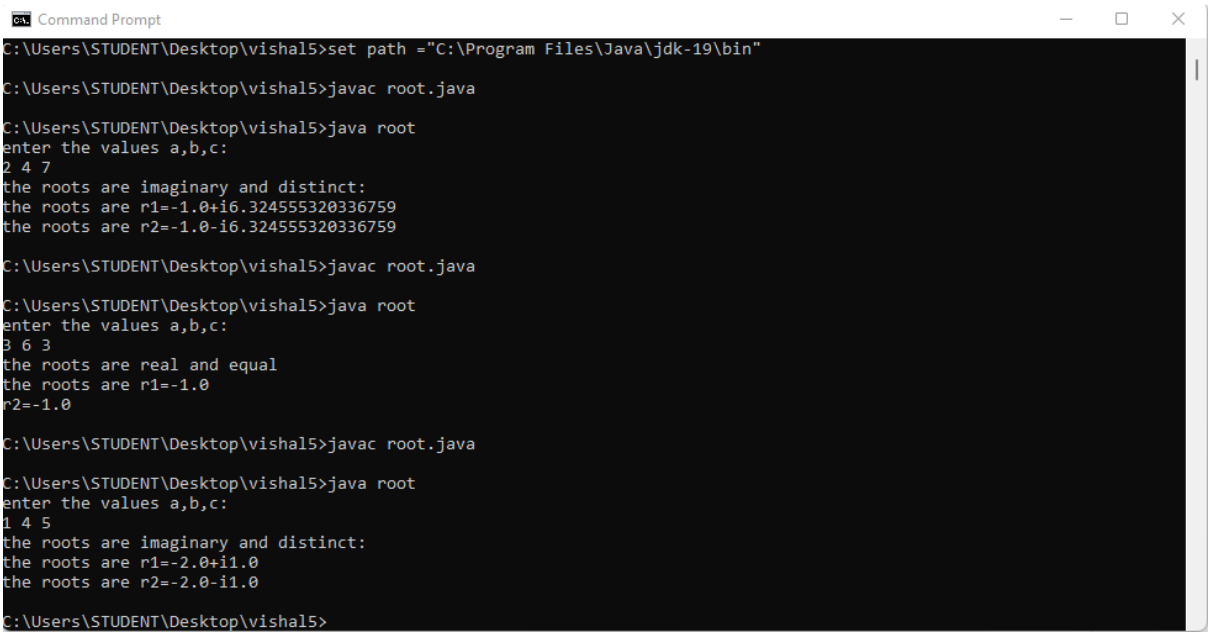
question1. Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2-4ac is negative, display a message stating that there are no real solutions.

Java program

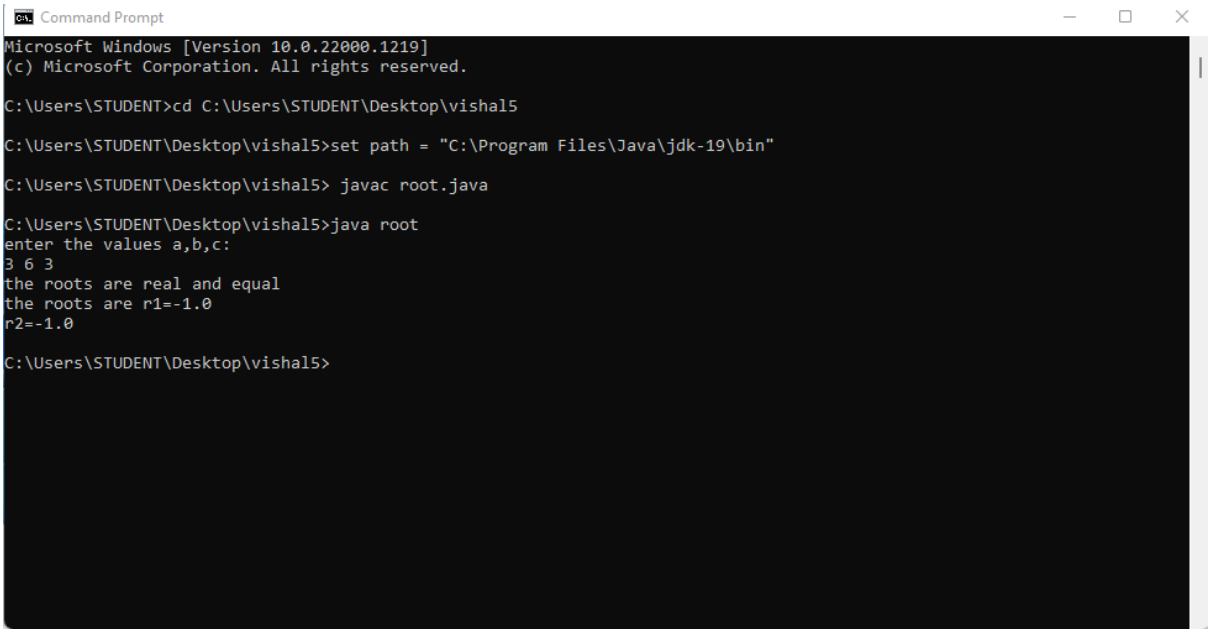
```
import java.util.*;
import java.lang.Math;

 class root {
    public static void main(String args[]){
            Scanner sc = new Scanner(System.in);
            System.out.println("enter the values a,b,c:");
            int a=sc.nextInt();
            int b=sc.nextInt();
            int c=sc.nextInt();
            int d=(b*b)-(4*a*c);
           double r1,r2;
           if(d==0)
{
           r1=r2=((-b)/(2*a));
           System.out.println("the roots are real and equal");
            System.out.println("the roots are r1="+r1);
            System.out.println("r2="+r2);
}
            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("the roots are r1="+r1);
                 System.out.println("r2="+r2);
}
else
{
            System.out.println("the roots are imaginary and distinct:");
             double x =(-b)/(2*a);
             double y = (Math.sqrt(-d)/2*a);
              System.out.println("the roots are r1="+x+ "+i" + y );
              System.out.println("the roots are r2="+x + "-i" + y);

            }
        }
}
```

Output:

1. **Imaginary and distinct**



2. **Real and equal**



3. **Real And Distinct**