

→ import java.util.Scanner; ^{or a user}

class Welb {

double a;

double b;

double c;

}

```
class PrintInfo {
```

```
    static void print() {
```

```
        System.out.println("Name: Dishu H");
```

```
        System.out.println("Csu: 1B123C5095");
```

```
    }
```

```
}
```

```
public class QuadraticEquation {
```

```
    public static void main(String[] args) {
```

```
        PrintInfo.print();
```

```
        Scanner scanner = new
```

```
        Scanner(System.in);
```

```
        Coeff coeff = new Coeff();
```

```
        System.out.println("Enter the coefficients of a, b, c:");
```

```
        System.out.print("Enter coefficient a:");
```

```
        coeff.a =
```

```
        scanner.nextDouble();
```

```
        while (coeff.a == 0) {
```

```
            System.out.println("Not a quadratic equation. Please enter
```

```
            a non zero value, for a:");
```

```
            coeff.a =
```

```
            scanner.nextDouble();
```

```
        }
```

```
        System.out.print("Enter coefficient b:");
```

```
        coeff.b =
```

```
        scanner.nextDouble();
```

```
        System.out.print("Enter coefficient c:");
```

```
        coeff.c =
```

```
        scanner.nextDouble();
```

```
        double d = coeff.b * coeff.b - 4
```

```
        * coeff.a * coeff.c;
```



```

if(d==0){
    double r1 = -coeff.b / (2 * coeff.a);
    system.out.println("roots are real and equal.");
    system.out.println("root 1 and root 2: " + r1);
}
else if(d>0)
{
    double r1 = (-coeff.b + math.sqrt(d)) / (2 * coeff.a);
    double r2 = (-coeff.b - math.sqrt(d)) / (2 * coeff.a);
    system.out.println("roots are equal and unique.");
    system.out.println("root 1: " + r1);
    system.out.println("root 2: " + r2);
}
else
{
    double realPart = -coeff.b / (2 * coeff.a);
    double imaginaryPart = math.sqrt(-d) / (2 * coeff.a);
    system.out.println("roots are imaginary.");
    system.out.println("root 1: " + realPart + " + i" + imaginaryPart + "i");
    system.out.println("root 2: " + realPart + " - " + imaginaryPart + "i");
}
scanner.close();
}
}

```

Saw
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output: ~~Enter the value of a, b, c:~~ ¹⁰ 110.1

1 8 12

the eqn has 2 real roots: -6, -10

* Enter the value of a, b, c:

-4 12 -9

the eqn has 1 real root: 1.5

* Enter the value of a, b, c:

1 -3 10

the eqn has complex roots: 1.5, 2.783