Week 1
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18/11/22

Quadratic Equation

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

public class Quadratic {
    public static void main(String args[]) {
        float a, b, c, d;
        double root1, root2;
        Scanner s = new Scanner(System.in);
        System.out.println("Enter coefficients:");
        a = s.nextInt(); a = s.nextFloat();
        b = s. b = s.nextFloat();
        c = s.nextFloat();
        d = (b*b - (4*a*c));
        if (a==0) {
            System.out.println("Not a quadratic equation");
        }
        else if (d>0) {
            root1 = (-b + Math.sqrt(d))/(2*a);
            root2 = (-b - Math.sqrt(d))/(2*a);
            System.out.println("Real and distinct roots
                are :" + root1 + " and " + root2); }
        else if (d<0) {
            root1 = -b/(2*a);
            root2 = d/(2*a);
            System.out.println("Imaginary roots are:" + root1 +
            "+i" + root2 + "and " + root1 + "-i " + root2); }
        else {
            root1 = -b/(2*a);
            System.out.println("Real root is:" + root1);}
    }
}
```

Output:

1. Enter coefficient :
1 -4 8
Imaginary roots are : 2.0+ i (-80) and 2.0+ -i(-8)

2. Enter coefficients :
0 5 6
Not a quadratic equation
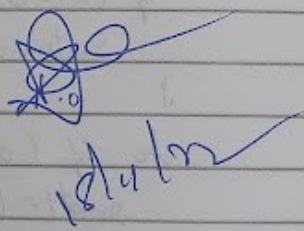
3. Enter coefficients :
1 10 5
Real and distinct roots are : -0.5278 and -9.4721

4. Enter coefficients :
2 4 2
Real root is -1.0 and -1.0

18/4/m

```
C:\Users\bmsce\Desktop\1BM21CS032\OOJ>java Quadratic
Enter coefficients:
1 -4 8
Imaginary roots and distinct are:2.0+i-8.0 and 2.0-i-8.0

C:\Users\bmsce\Desktop\1BM21CS032\OOJ>java Quadratic
Enter coefficients:
0 5 6
Not a quadratic equation

C:\Users\bmsce\Desktop\1BM21CS032\OOJ>java Quadratic
Enter coefficients:
1 10 5
Real and distinct roots are:-0.5278640450004204 and -9.47213595499958

C:\Users\bmsce\Desktop\1BM21CS032\OOJ>java Quadratic
Enter coefficients:
2 4 2
Real roots are:-1.0and-1.0
```