

WEEK 1:

Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.

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Develop a Java Program that prints all the real solutions to the quadratic equation $ax^2 + bx + c = 0$.
Read in a, b, c and use the quadratic formula.
If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

```
import java.util.Scanner;
public class QuadraticEquation {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter coefficient a: ");
        double a = sc.nextDouble();
        System.out.println("Enter coefficient b: ");
        double b = sc.nextDouble();
        System.out.println("Enter coefficient c: ");
        double c = sc.nextDouble();
        double discriminant = b*b - 4*a*c;

        if (discriminant > 0) {
            double root1 = (-b + Math.sqrt(discriminant)) / (2*a);
            double root2 = (-b - Math.sqrt(discriminant)) / (2*a);
            System.out.println("Roots are real and distinct");
            System.out.println("Root 1 = " + root1);
            System.out.println("Root 2 = " + root2);
        }
        else if (discriminant == 0) {
```

```

double root = -b/(2*a);
System.out.println("Roots are real and equal");
System.out.println("Root = " + root);
    }
else {
    System.out.println("There are no real solutions");
    }
}

```

⇒ Enter coefficient a:
1
Enter coefficient b:
2
Enter coefficient c:
1
Roots are real and equal
Root = -1.0

⇒ Enter coefficient a:
1
Enter coefficient b:
1
Enter coefficient c:
1
There are no real solutions.

⇒ 1, 2, 3
no real solutions.

```

import java.util.Scanner;
public class QuadraticEquation{
    public static void main(String[] args){
        Scanner sc=new Scanner(System.in);

        System.out.println("Enter coefficient a:");
        double a=sc.nextDouble();

        System.out.println("Enter coefficient b:");
        double b=sc.nextDouble();

        System.out.println("Enter coefficient c:");
        double c=sc.nextDouble();

        double discriminant=b*b-4*a*c;

        if(discriminant>0){
            double root1=(-b+Math.sqrt(discriminant))/(2*a);
            double root2=(-b-Math.sqrt(discriminant))/(2*a);
            System.out.println("Roots are real and distinct");
            System.out.println("Root 1="+root1);
            System.out.println("Root 2="+root2);
        }
        else if(discriminant==0){
            double root=-b/(2*a);
            System.out.println("Roots are real and equal");
            System.out.println("Root="+root);
        }
        else{
            System.out.println("There are no real solutions");
        }
    }
}

```

```
}  
}
```



prgm 1 quadratic eq - Notepad

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```
import java.util.Scanner;  
public class QuadraticEquation{  
    public static void main(String[] args){  
        Scanner sc=new Scanner(System.in);  
        System.out.println("Enter coefficient a:");  
        double a=sc.nextDouble();  
        System.out.println("Enter coefficient b:");  
        double b=sc.nextDouble();  
        System.out.println("Enter coefficient c:");  
        double c=sc.nextDouble();  
        double discriminant=b*b-4*a*c;  
  
        if(discriminant>0){  
            double root1=(-b+Math.sqrt(discriminant))/(2*a);  
            double root2=(-b-Math.sqrt(discriminant))/(2*a);  
            System.out.println("Roots are real and distinct");  
            System.out.println("Root 1="+root1);  
            System.out.println("Root 2="+root2);  
        }  
        else if(discriminant==0){  
            double root=-b/(2*a);  
            System.out.println("Roots are real and equal");  
            System.out.println("Root="+root);  
        }  
        else{  
            System.out.println("There are no real solutions");  
        }  
    }  
}
```


C:\Windows\System32\cmd.exe

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Enter coefficient a:

1

Enter coefficient b:

2

Enter coefficient c:

1

Roots are real and equal

Root=-1.0

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C:\Users\Srinivas\OneDrive\Desktop\BMS\

Enter coefficient a:

1

Enter coefficient b:

1

Enter coefficient c:

1

There are no real solutions

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