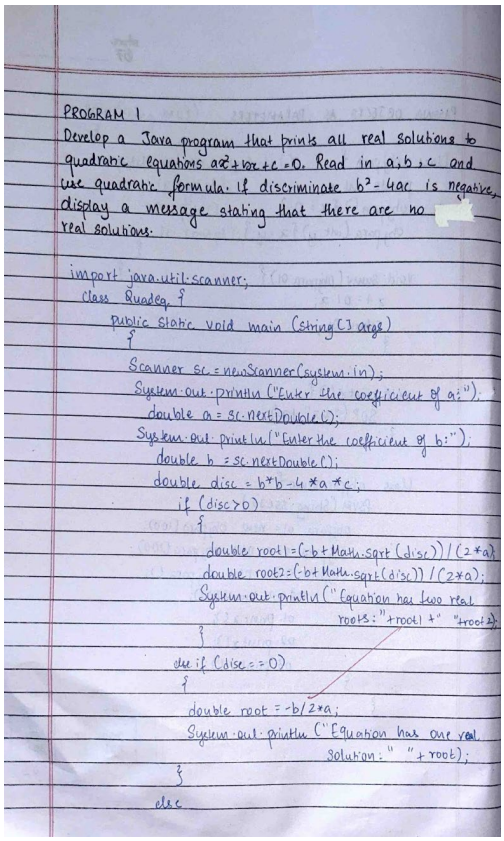
QUADRATIC EQUATION

```
import java.util.Scanner;

class Quad_Eq_cal{
   public static void main(String [] args){
      int y=0;
      Scanner sc=new Scanner(System.in);
      System.out.println("General form  of a quadratic equation is ax^2+bx+c=0");
      do{
         System.out.print("\nEnter value of a=");
         int a=sc.nextInt();
         System.out.print("Enter value of b=");
         int b=sc.nextInt();
         System.out.print("Enter value of c=");
         int c=sc.nextInt();
         float d=(float)(Math.pow(b,2)-4*a*c);
         if(d<0){
            System.out.println("There are no real solutions");
         }
         else if(d==0){
            System.out.println("It has one repeated root(2 equal roots):");
            float r=-b/(2.0f*a);
            System.out.println("x="+r);
         }
         else{
            System.out.println("It has two distinct roots:");
            double r1=((-b+Math.sqrt(d))/(2*a));
```

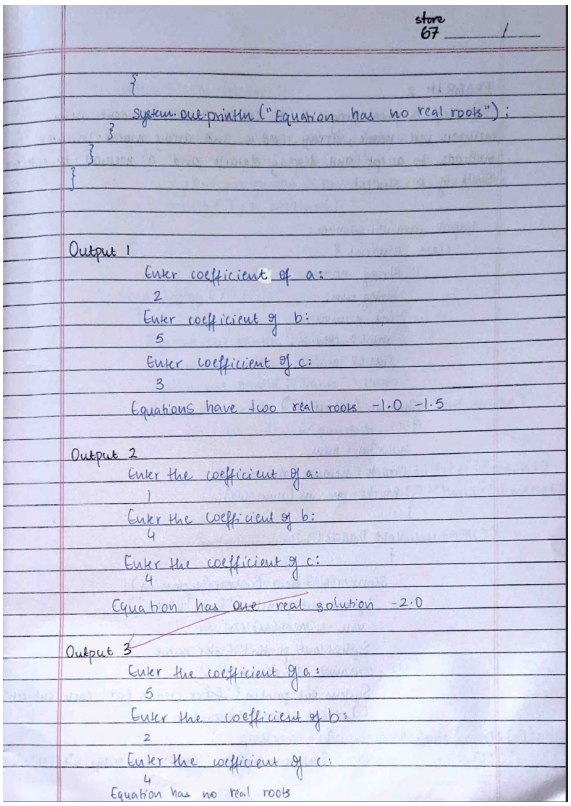
```
            System.out.println("x1="+r1);
            double r2=((-b-Math.sqrt(d))/(2*a));
            System.out.println("x2="+r2);
        }
        System.out.println("\nDo you want to calculate again?(yes=0 and no=1): ");
        y=sc.nextInt();
    }while(y==0);
  }
}
```



PROGRAM 1

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

```
import java.util.Scanner;
class Quadeq {
    public static void main (String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the coefficient of a:");
        double a = sc.nextDouble();
        System.out.println("Enter the coefficient of b:");
        double b = sc.nextDouble();
        double disc = b*b-4*a*c;
        if (disc>0)
        {
            double root1=(-b+Math.sqrt(disc))/(2*a);
            double root2=(-b+Math.sqrt(disc))/(2*a);
            System.out.println("Equation has two real
                roots:"+root1+" "+root2);
        }
        else if (disc==0)
        {
            double root = -b/2*a;
            System.out.println("Equation has one real
                solution: "+root);
        }
        else
```



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```
        {
            System.out.println("Equation has no real roots");
        }
    }
}
```

Output 1

```
Enter coefficient of a:
2
Enter coefficient of b:
5
Enter coefficient of c:
3
Equations have two real roots -1.0 -1.5
```

Output 2

```
Enter the coefficient of a:
1
Enter the coefficient of b:
4
Enter the coefficient of c:
4
Equation has one real solution -2.0
```

Output 3

```
Enter the coefficient of a:
5
Enter the coefficient of b:
2
Enter the coefficient of c:
4
Equation has no real roots
```