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1BM19CS154
Bath - C3

Lab - Program - 1.

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 discriminate b^2-4ac is negative, display a message stating that there are no real solutions.

Algorithm

step 1: START

step 2: [Read the values of a, b, c]
INPUT a, b, c

step 3: if (a = 0)
PRINT Enter valid quadratic equation
endif

Step 4: $d = b^2 - 4ac$

Step 5: if (d = 0)
PRINT Equal roots
OUTPUT $\frac{-b}{2a}$
if (d > 0)
PRINT Two real roots
OUTPUT $\frac{-b+\sqrt{d}}{2a}$, $\frac{-b-\sqrt{d}}{2a}$
if (d < 0)
PRINT no real roots, $\frac{-b}{2a}+\sqrt{-d}i$, $\frac{-b}{2a}\mp\sqrt{-d}i$
endif

Step 6: STOP

```
import java.util.Scanner

class quadratic {
public static void main(String args[])
{ float a, b, c, d;
System.out.println("Enter coefficient of x^2 & x and constant
of a quadratic equation");
Scanner ob = new Scanner(System.in);
a = ob.nextFloat();
b = ob.nextFloat();
c = ob.nextFloat();
~~if (a==0){System.out.println("Enter valid coefficients");}~~
if d = (Math.pow(b,2))-(4*a*c));
if (d==0) { System.out.println("The equation has two equal roots
which are "+(b/(2*a)); }
if (d>0) { System.out.println("The equation has two real
roots which are "+ -b + sqrt(d) / (2*a) +" "+ -b - Math.sqrt(d) / (2*a) }

if (d<0) { System.out.println("No real roots, The equation
has two imaginary roots"+ -b/(2*a) +")+i("+ Math.sqrt(-d)/2*a +")

and ("+ -b/(2*a) +")-i("+ Math.sqrt(-d)/(2*a) +")"); }

}
}
```

Sample output

Enter coefficient of x^2, x and constant of quadratic equation

1 5 3

The equation has two real roots which are