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Class: 3A

Lab 1: Quadratic Equation

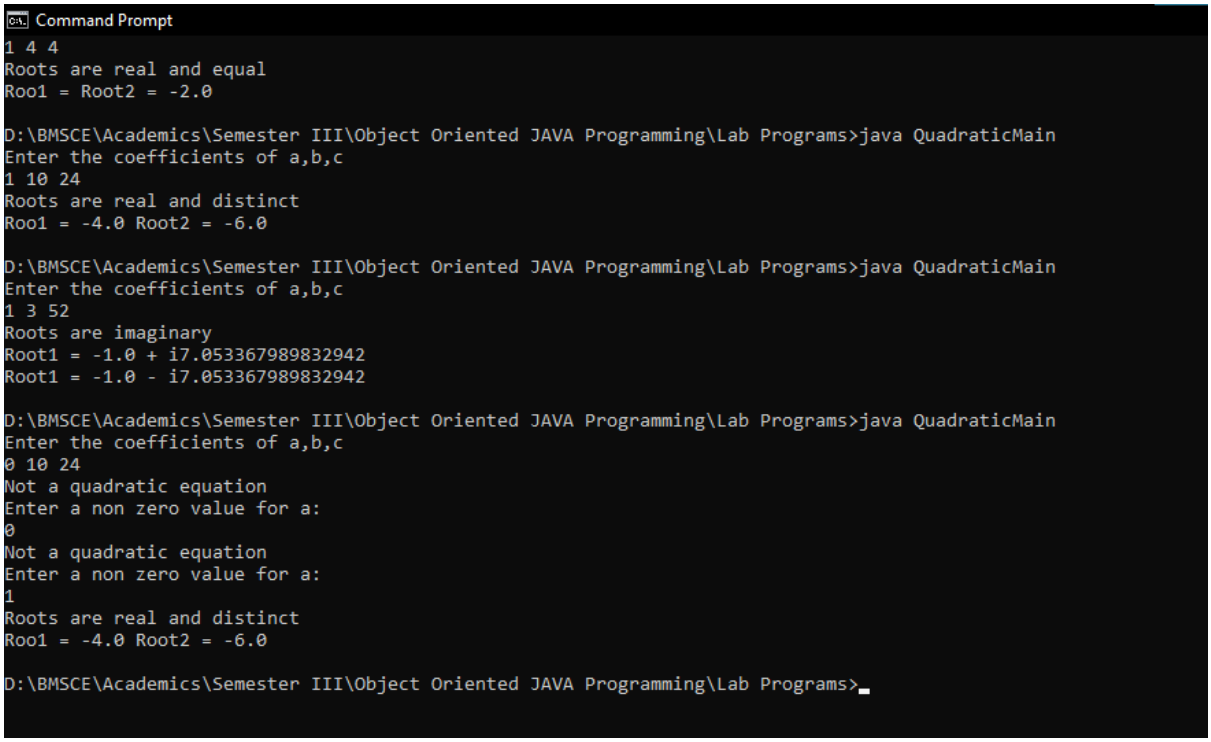
Lab 1 Question: Write a java program to compute the roots of a quadratic equation.

Program:

```
import java.util.Scanner;

class Quadratic
{
	int a, b, c;
	double r1, r2, d;
	void getd()
	{
		Scanner s = new Scanner(System.in);
		System.out.println("Enter the coefficients of a,b,c");
		a = s.nextInt();
		b = s.nextInt();
		c = s.nextInt();
		while(a==0)
		{
			System.out.println("Not a quadratic equation");
			System.out.println("Enter a non zero value for a: ");
			a = s.nextInt();
		}
	 }
```

```
	void compute()
	{

		d = b*b-4*a*c;
		if(d==0)
		{
			r1 = (-b)/(2*a);
			System.out.println("Roots are real and equal");
			System.out.println("Roo1 = Root2 = " + r1);
		}
		else if(d>0)
		{
			r1 = ((-b)+(Math.sqrt(d)))/(double)(2*a);
			r2 = ((-b)-(Math.sqrt(d)))/(double)(2*a);
			System.out.println("Roots are real and distinct");
			System.out.println("Roo1 = " + r1 + " Root2 = " + r2);
		}
		else if(d<0)
		{
			System.out.println("Roots are imaginary");
			r1 = (-b)/(2*a);
			r2 = Math.sqrt(-d)/(2*a);
			System.out.println("Root1 = " + r1 + " + i"+r2);
			System.out.println("Root1 = " + r1 + " - i"+r2);
		}
	 }
}

class QuadraticMain
{
	public static void main(String args[])
	{
		Quadratic q = new Quadratic();
		q.getd();
		q.compute();
	}
}
```

Output:


Command Prompt
1 4 4
Roots are real and equal
Roo1 = Root2 = -2.0
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>java QuadraticMain
Enter the coefficients of a,b,c
1 10 24
Roots are real and distinct
Roo1 = -4.0 Root2 = -6.0
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>java QuadraticMain
Enter the coefficients of a,b,c
1 3 52
Roots are imaginary
Root1 = -1.0 + i7.053367989832942
Root1 = -1.0 - i7.053367989832942
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>java QuadraticMain
Enter the coefficients of a,b,c
0 10 24
Not a quadratic equation
Enter a non zero value for a:
0
Not a quadratic equation
Enter a non zero value for a:
1
Roots are real and distinct
Roo1 = -4.0 Root2 = -6.0
D:\BMSCE\Academics\Semester III\Object Oriented JAVA Programming\Lab Programs>