Object Oriented Java Programming.

1. Develop a java program that prints all real solutions to the Quadratic equation $ax^2+bx+c=0$ Read a, b, c and use the quadratic formula

```java
import java.util.Scanner;
class quad
{
public static void main (String args[])
{
int a,b,c; double r1, r2, d;
Scanner in = new Scanner(System.in);
System.out.println("Enter Co-ordinates of a");
a = in.nextInt();
System.out.println("Enter Co-ordinates of b");
b = in.nextInt();
System.out.println("Enter Co-ordinates of c");
c = in.nextInt();
while (a == 0)
{
System.out.println("Enter non zero value of a");
a = in.nextInt();
}
d = (b*b) - (4*a*c);
if(b==0)
{ r1 = (-b)/(2*a);
System.out.println("roots are real and equal");
System.out.println("r1 ="+r1 +"r2="+r2);
}

else if (d>0) {
r1 = ((-b)+(Math.sqrt((d)))/(double)(2*a));
r2 = ((-b) - (Math.sqrt((d))/(double)(2*a));
System.out.println("r1 ="+r1+"r2="r2).
System.out.println("roots are real and distinct");
}
```

```java
else
{
System.out.println("roots are imaginary");
r1 = (-b)/(2*a);
r2 = Math.sqrt((-d))/(2*a);
System.out.println("r1 = "+r1+" + i"+r2);
System.out.println("r2 = "+r1+" - i"+r2);
}
}
}
```

o/p

Enter co-ordinates of a
2
Enter co-ordinates of b
4
Enter co-ordinates of C
2.
roots are real and equal
r1 = 1.0   r2 = 1.0.

Enter co-ordinates of a
1
Enter co-ordinates of b
4
Enter co-ordinates of C
1
roots are real and distinct
r1 = 2.2679   r2 = 5.7320.

Enter co-ordinates of a
4
Enter co-ordinates of b
1
Enter co-ordinates of C
4

r1 = 0.0 + i 0.99
r2 = 0.0 - i 0.99.