Lab Program 1:

Develop a Java program that prints all real solutions to the quadratic equation

ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the

discriminate b2

-4ac is negative, display a message stating that there are no

real solutions.

```java
import java.util.Scanner;
class Quadratic_eq
{
        public static void main(String args[])
{
                double a,b,c,d,r1,r2;
                System.out.println("Enter the value of coefficient");
                Scanner s = new Scanner(System.in);
                a=s.nextDouble();
                b=s.nextDouble();
                c=s.nextDouble();

                d=(b*b)-4*a*c;
                if(a==0)
                System.out.println("invalid input");

                else if(d>0)
                {
```

```java
r1=(-b + Math.sqrt(d))/(2*a);

r2=(-b - Math.sqrt(d))/(2*a);

System.out.println("roots are real and distint , values are:" + r1 + "and" + r2);

}

else if (d==0)

{

r1 = -b/(2*a);

System.out.println("roots are equal and value is " + r1);

}

else

System.out.println("roots are not real");

}

}
```

OUTPUT:

```
C:\Users\BMSCE\Desktop\1BM21CS060>java Quadratic_eq
Enter the value of coefficient
1
2
1
roots are equal and value is -1.0

C:\Users\BMSCE\Desktop\1BM21CS060>java Quadratic_eq
Enter the value of coefficient
2
1
2
roots are not real

C:\Users\BMSCE\Desktop\1BM21CS060>java Quadratic_eq
Enter the value of coefficient
3
5
2
roots are real and distint , values are:-0.6666666666666666and-1.0
```

WHEN A=0

```
C:\Users\BMSCE\Desktop\1BM21CS060>java Quadratic_ec
Enter the value of coefficient
0
0
0
invalid input
```

Quadratic equation

```java
import java.util.Scanner;

class Quadratic_eq {

Public static void main (String args[])
{

    double a,b,c,d,x1,x2;

    System.out.println("Enter the value of coefficient");
    Scanner s = new Scanner(System.in);

    a = s.nextDouble();
    b = s.nextDouble();
    c = s.nextDouble();

    d = (b*b) - 4*a*c;

    if (d>0)
    {
    x1 = (-b + Math.sqrt(d)) / (2*d);
    x2 = (-b - Math.sqrt(d)) / (2*a);
                            real and distint"
    System.out.println("roots are "+ x1 + "and "+ x2);
    }

    else if (d==0)
    {

    x1 = -b/(2*a);
    System.out.println(" roots are equal and value is "
                    + x1);

    }
```

else
System.out.Println ("roots are not real");

}

}

Output :

Enter the value of the coefficient

2

2

2

roots are not real

Enter the value of coefficient

3

5

2

roots are real and distint, values are : -0.666 and -1.0

Enter the value of coefficient.

1

2

1

roots are equal and value is -1.0