Lab Program 1

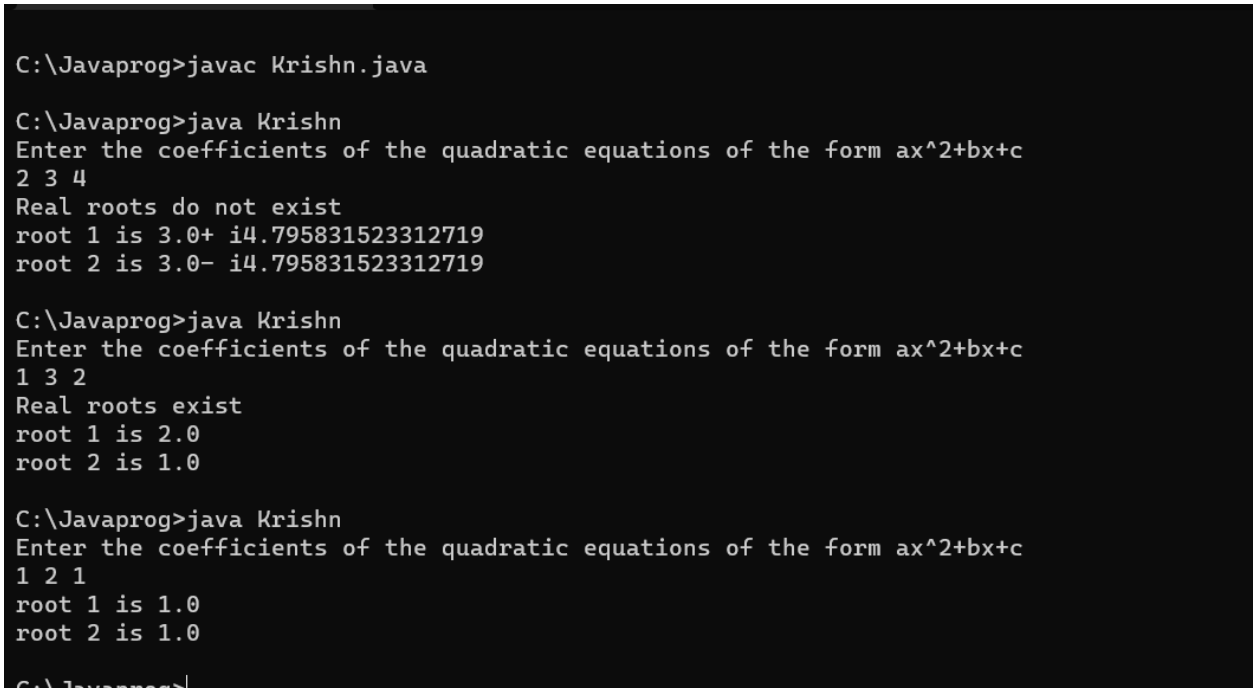
Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c = 0. Read in a, b, c and use the quadratic formula. If the discriminate b2 -4ac is negative, display a message stating that there are no real solutions.

Source Code:

```
import java.util.*;
import java.lang.*;
class Krishn{
public static void main(String args[])
{
System.out.println("Enter the coefficients of the quadratic equations of the form ax^2+bx+c");
Scanner sc =new Scanner(System.in);
double a=sc.nextDouble();
double b=sc.nextDouble();
double c=sc.nextDouble();
double d,r1,r2;
if (a==0)
{
System.out.println("Enter correct coefficients");
}
else
{
d=b*b-4*a*c;
if(d>0)
```

```
{
System.out.println("Real roots exist");
r1=(b+Math.sqrt(d))/2*a;
r2=(b-Math.sqrt(d))/2*a;
System.out.println("root 1 is "+r1);
System.out.println("root 2 is "+r2);
}
else if(d<0)
{
System.out.println("Real roots do not exist");
r1=b/2*a;
r2=(Math.sqrt(-d))/2*a;
System.out.println("root 1 is "+r1+"+ i" +r2);
System.out.println("root 2 is "+r1+"- i" +r2);
}
else
{
r1=r2=b/2*a;
System.out.println("root 1 is "+r1);
System.out.println("root 2 is "+r2);
}
}
}
}
```

Output:


C:\Javaprog>javac Krishn.java
C:\Javaprog>java Krishn
Enter the coefficients of the quadratic equations of the form ax^2+bx+c
2 3 4
Real roots do not exist
root 1 is 3.0+ i4.795831523312719
root 2 is 3.0- i4.795831523312719
C:\Javaprog>java Krishn
Enter the coefficients of the quadratic equations of the form ax^2+bx+c
1 3 2
Real roots exist
root 1 is 2.0
root 2 is 1.0
C:\Javaprog>java Krishn
Enter the coefficients of the quadratic equations of the form ax^2+bx+c
1 2 1
root 1 is 1.0
root 2 is 1.0