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.

CODE:

```
import java.util.Scanner;
class quadratic_equation
{
        public static void main(String args[])
        {
                double a,b,c,d,r1,r2;
                System.out.println("Ënter the value of coefficients: ");
                Scanner scan=new Scanner(System.in);
                a=scan.nextDouble();
                b=scan.nextDouble();
                c=scan.nextDouble();
                d=b*b-4*a*c;
                if(d>0)
                {
                 r1=(-b+Math.pow(d,0.5)/(2.0*a));
                 r2=(-b-Math.pow(d,0.5)/(2.0*a));
                 System.out.println("Roots are real and distinct"+" "+r1+" "+r2);
                }
                else if(d==0)
                {
                 r1=-b/2.0*a;
                 System.out.println("Roots are real and equal"+" "+r1);
                }
                else
                {
                System.out.println("Roots are imaginary");
                r1=-b/2.0*a;
                r2=Math.pow(Math.abs(d),0.5);
                System.out.println(r1+"+"+"i"+r2);
                System.out.println(r1+"-"+"i"+r2);
                }
        }
}
```

OUTPUT:

```
C:\Users\bmsce\Desktop\1BM21CS057>javac quadratic_equation.java

C:\Users\bmsce\Desktop\1BM21CS057>java quadratic_equation
??nter the value of coefficients:
1 2 1
Roots are real and equal -1.0

C:\Users\bmsce\Desktop\1BM21CS057>javac quadratic_equation.java

C:\Users\bmsce\Desktop\1BM21CS057>java quadratic_equation
??nter the value of coefficients:
2 3 4
Roots are not real

C:\Users\bmsce\Desktop\1BM21CS057>javac quadratic_equation.java

C:\Users\bmsce\Desktop\1BM21CS057>java quadratic_equation
??nter the value of coefficients:
4 6 2
Roots are real and distinct -5.75 -6.25

C:\Users\bmsce\Desktop\1BM21CS057>javac quadratic_equation.java

C:\Users\bmsce\Desktop\1BM21CS057>java quadratic_equation
??nter the value of coefficients:
4 6 2
Roots are real and distinct -5.75 -6.25

C:\Users\bmsce\Desktop\1BM21CS057>javac quadratic_equation.java

C:\Users\bmsce\Desktop\1BM21CS057>java quadratic_equation
??nter the value of coefficients:
1 2 3
Roots are imaginary
-1.0+i2.8284271247461903
-1.0-i2.8284271247461903
```