Programming Assignment 2: Quadratic Equation Solver

Consider the quadratic equation $ax^2 + bx + c = 0$ of integer coefficients a, b, and c, where $a \neq 0$. The solution of the quadratic equation is given as $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Write a C program to input integer coefficients a, b, and c of the quadratic equation, print the quadratic equation, and then compute and output the solution of the quadratic equation. Your program must do the following steps:

1. The quadratic equation must be printed in the *pretty printing format*. For example, ***not*** to print a term, if its coefficient is zero; ***not*** to print the "+" sign, if coefficient b or c is negative; ***not*** to print value 1 of coefficient a or b and print only the necessary sign, if its value is 1 or -1.
2. Consider the solution cases of multiple real root, two real roots, and two complex roots.
3. Print the solution using fixed-point format with four digits after the decimal point. Also, consider the *pretty printing format* of the solution.

Write comments in your program solution. Also, write a report to explain how you develop your assignment solution, in particular, how to produce pretty printing of the quadratic equation and solution. Homework assignment 2 is due by **23:59 pm, Sunday, October 15**. Use **assgn2_DXXXXXXX.c** for your source code file and **assgn2_DXXXXXXX.pdf** for your report. where DXXXXXXX is your student ID. Submit the source code and the report to **iLearn**.

Example of program execution:

```
Solving roots of equation a*X^2+b*X+c = 0.

Please enter three integer coefficients a, b, and c: 5 0 0

The multiple real root of equation 5X**2=0 is 0.0000.
```

```
Solving roots of equation a*X^2+b*X+c = 0.

Please enter three integer coefficients a, b, and c: 1 -12 36

The multiple real root of equation X**2-12X+36=0 is 6.0000.
```

```
Solving roots of equation a*X^2+b*X+c = 0.

Please enter three integer coefficients a, b, and c: -5 2 0

The real roots of equation -5X**2+2X=0 are 0.0000 and 0.4000.
```

```
Solving roots of equation a*X^2+b*X+c = 0.

Please enter three integer coefficients a, b, and c: -1 0 9

The real roots of equation -X**2+9=0 are -3.0000 and 3.0000.
```

```
Solving roots of equation a*X^2+b*X+c = 0.
Please enter three integer coefficients a, b, and c: 1 6 -9
The real roots of equation X**2+6X-9=0 are 1.2426 and -7.2426.
```

```
Solving roots of equation a*X^2+b*X+c = 0.
Please enter three integer coefficients a, b, and c: 5 0 6
The complex roots of equation 5X**2+6=0 are 1.0954i and -1.0954i.
```

```
Solving roots of equation a*X^2+b*X+c = 0.
Please enter three integer coefficients a, b, and c: 1 -2 3
The complex roots of equation X**2-2X+3=0 are 1.0000+1.4142i and 1.0000-1.4142i.
```

```
Solving roots of equation a*X^2+b*X+c = 0.
Please enter three integer coefficients a, b, and c: 1 5 7
The complex roots of equation X**2+5X+7=0 are -2.5000+0.8660i and -2.5000-0.8660i.
```