Programming Assignment 1: Quadratic Equation Verification with Complex Number Operations

- **How I develop my assignment solution**

1. The process

To complete the assignment, I followed the steps when doing the programming practice: rational number. First finished the .h file and .c file, which was the most simple part in this assignment. Then finally came to the main file. In the main file, I divided it into two parts, calculation and verification. Moreover, I found that the calculation part was similar to the assignment: quadratic equation solver, which I had done last semester. However, there's a little difference between the two assignments. In this assignment, the value of the roots should be stored as complex numbers. It's more complicated than before because I had to consider multiple situations. For example the number of the roots or whether the real number or the imaginary number equal to zero. After completing the calculation part, I moved on to the verification part. The first step was substituting a root to the quadratic equation. The second step was checking whether the absolute value of the result was less than 0.00001 or not.

2. Problems I encountered

The most difficult part I thought in this program was calculating the value of the root and storing them as a complex number. In this part the problem I faced was that the function couldn't work properly so that when I called out the function in the main function and printed it out, the value became zero. The solution of this problem is that in the function I should use '->' instead of '.' while storing the value in c.re and c.im. The second question was that when verifying the roots, the result always failed. It turned out that when substituting a root to the quadratic equation, I forgot to time the root itself in the first term of the equation. I had to be more careful next time to avoid this kind of mistake.