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- (1) Explain the differences in programming complex number assignments using C and C++:

There are two of the most significant differences beyond the code I implemented: Class and Namespace.

Class is definitely one of the most special things among the features C++ has. It provides private, protected, and public permission to control the access of the members inside the class and greatly increases the safety when using C++ in case of touching or modifying anything unwanted, which cannot be done by the C language.

Another one bringing tremendous change is namespace, undoubtedly. With namespace, it can solve the conflicts brought by functions with the same name, which remained a problem in the C language previously, and provide the scope for type, function, variable, etc. to be identified inside it.

- (2) Discuss the advantages and/or disadvantages of programming in C++:

One of the advantages of C++ is its weak typing, for sure. With weak typing, we could easily use cin/cout to input/output the things we would like to send. In contrast, strong typing, which is mostly used in the C language, causes a lot of trouble and forces us to think about the type while coding. Furthermore, for instance, in C++11 and higher versions, there is a type called "auto" to assert the type of the variables automatically, and it can save a lot of time for us by shortening the time to think about the type of the variables and typing.

Another advantage that has to be mentioned is the Standard Template Library (STL). Inside the Standard Template Library (STL), there are multiple things, like queue, stack, vector, etc., to be chosen to use in C++11 or higher versions, and it enhances the convenience of coding since we don't have to build a complete data structure on our own but use the clear, safe, and fast code already implemented

by others.

In this program, I separate the requirement into 2 parts, which are main function, Complex class, respectively.

Complex Class

This class provides the necessary operations we need to do the complex arithmetic. Inside this class, we have:

- Friend
Let the non-member functions, like `iostream`, `+*/`, `==`, and `!=`, have the permission to access the member inside Complex class.
- Private:
 1. `real`: a real number of a complex number.
 2. `imaginary`: a real number of a complex number.
- Public:
 1. Default constructor, copy constructor, and destructor
 2. Overloading the functions, like `+*/`, `==`, `!=`, etc., required in the assignment.
 3. Create functions, like `getRe`, `getIm`, `setRe`, `setIm`, and `cabs`, to fulfill the required operations.

Main function

This part is much easier than the previous one since we just have to implement the main function as a requirement. Therefore, I use the quadratic formula solution to solve the real number the user inputs and return the solution with the root(s) and verifier to guarantee that the answer I give is correct.