Lab 2 – More Classes

Object Oriented Programming using C++

What you will learn

- Implementing classes
- File I/O
- More operator overloading
- Error checking

Coding exercise

1. Create a class called `complexNumber` that stores a complex number of the form a+bi, where i is $\sqrt{-1}$. a is the real and b is the imaginary part of the number[1]. You should be able to get the real and imaginary parts of the number. a and b can be negative, e.g., “3+4i”, “-3+4i”, “3-4i”, and “-3-4i”.
2. Implement the ability to add, subtract and multiply two `complexNumber` objects and save the result in another `complexNumber` object by overloading operators +, -, and *.
3. Overload the operators >> and << to input and output string of the form a+bi from the `complexNumber` object respectively.
4. Read a file called `complexInput.txt` (sample input file attached) containing numbers of the form (a+bi) followed by an operator followed by another complex number of the form (a+ib).
5. Perform the operations on the numbers you read and store the result in a new file called `complexOutput.txt` (sample output file included).
6. [Bonus - optional] Implement error checking on the input and reject/ignore values that are not in the format a+bi. Log this information in the output file. A sample wrong input file called `complexInputWrong.txt` is attached.

What to demo

- Create a driver program that tests all the functionality in the 6 points above. Make sure to test for edge cases.

Notes

You can look for help on the Internet but refrain from referencing too much. Please cite all your sources as comments in `cmpe126-lab2.cpp`.

[1] Introduction to complex numbers – https://www.youtube.com/watch?v=SP-YJe7Vldo