

Module 4 - Exercises

1. Write a program that defines a class called **ComplNum** for [complex numbers](#) with two private attributes are **real** and **imag** (double).
 - a) Provide two overloaded versions for the constructor: a default constructor, and another one with two parameters to initialize attributes (require to use **this** keyword).
 - b) Overload - and -- operators to use for **ComplNum** objects as below:
 - object - object
 - object - double
 - double - object
 - object--;
 - --object;

Test all cases above in main() functions.

- c) Write a non-member friend function which accepts an **ComplNum** object and return its absolute value. Test it in main() function.
2. Define a class namely **BankAcc** with two public attributes are **name** (string) and **amount** (float).
 - a) Write a class constructor to initialize those attributes. Test it in main() by creating **three** bank account objects and use the constructor to initialize data for them. Then print out all information.
 - b) Write a public method for the class namely **withdraw(float num)** which allow a user to withdraw money from his/her account:
 - *If current amount \geq num: subtract amount value by num*
 - *If current amount $<$ num: return an error code, and print out an error message.*

Test the method inside the main function.

- c) Modify the program above so that it can save all data (one line for each account) into a file, whose **filename is given from the command line argument** (at the end of the program). If the user does not give the command line argument, don't save data.
- Example Run: **./a.exe data_file.dat**

3. Write a program that ask the user to input two strings **str1**, **str2** which may contain whitespace characters from the console. *// "hello how are you?"*
 - a) Reserve str1 and print it out.
For example, "Good Morning" → "gninroM dooG"
 - b) Convert all characters of str2 from lowercase to uppercase and vice versa, and print it out.
For example, "Hello World" → "hELLO wORLD"

Do the above tasks with character array (C-type string) and C++ string class, then convert to the other.