Spring 2020 Object Oriented Programming

Objective

Learn the **modern C++** including its object-oriented features.

Lecture Format

Weekly lectures are given to facilitate learning of fundamental and advanced principles of the C++ programming language. There are also lab hours followed after each lecture. Lab and homework assignments are given in a regular basis. You are expected in general to spend 5 to 8 hours per week before and after the class to comprehend the subject and complete assignments.

Lecture and Lab Sessions

Lecture & Lab: 09:10 – 12:20, Thursday, C&INC 212.

Lecturer and Teaching Assistants

Lecturer

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Reference Materials

- Bjarne Stroustrup and Herb Sutter (2018) C++ Core Guidelines. <URL: http://isocpp.github.io/CppCoreGuidelines/CppCoreGuidelines >
- ChangKun Ou, Modern C++ Tutorial (2020) <URL: https://github.com/changkun/modern-cpp-tutorial>
- GeeksforGeeks webpage (2020) C++ Programming Language. <URL: https://www.geeksforgeeks.org/c-plus-plus/ >
- Margit ANTAL (2018) Modern C++ Object Oriented Programming. <URL: http://www.ms.sapientia.ro/~manyi/teaching/c++/CPP_v1.2.pdf >
- Allen B. Downey (2012) C++ Version, How to think like a computer scientist. <URL: http://www.greenteapress.com/thinkcpp/thinkCScpp.pdf >

- Robert Lafore (2002) Object-Oriented Programming in C++ (4th Edition).
- Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides (1995) Design Patterns, Elements of Reusable Object-Oriented Software.

Course Webpage

You should access the course materials from the course website via the login page of the NTU Cool system https://cool.ntu.edu.tw. For those who would like to audit (旁聽) the course, please inform TAs to add your login permission to the course website.

Grades

Midterm exam: 25%

Final exam: 30%

Term Project: 20%

Lecture

Lecture Notes

The lecture notes are scheduled to be uploaded to the course webpage by the Tuesday night before the lecture.

Lab

There are lab practices during the remining time after lecture. It is very important to practice the course materials to master the programming language.

HW

There are also homeworks for practices. The hw problems will be announced after the lecture.

Exams

The midterms and final are during lecture hours of the particular dates, at the lecture room. The exams are Open Notes and Open Books. However, it is not open internet. You are expected to bring your University ID during exams.

Tentative Schedule

Week	Date	Content	Note
1	03/5	Course Introduction Getting Started with C++ (I)	
2	03/12	Getting Started with C++ (II) Variables and Basic Types	
3	03/19	String, Vector and Array	
4	03/26	Functions and Recursion	
5	**04/02**	-	**Holiday**
6	**04/09**	**First Midterm**	
7	04/16	Dynamic Memory & Class and Object	
8	04/23	More on Constructors, and the operators and destructors.	
9	04/30	OO and Inheritance	
10	05/07	The Rule of three for Inheritance, and Polymorphism	
11	**05/14**	**Second Midterm**	
12	05/21	Sequential Containers	**Project Announcement**
13	05/28	Algorithms	
14	06/04	Lambda Expression and Stream Iterators	
15	06/11	Associative Containers	
16	**06/18**	**Final Exam**	
17	**06/25**	-	**Holiday**
18	07/02	Design Patterns Structural Pattern: Adapter Creational Pattern: Abstract Factory Behavioral Pattern: Observer	Self-Study Material