

Course Introduction

Fundamental Computer Programming- C++ Lab (II)



元智大學 資訊工程學系

Department of Computer Science & Engineering

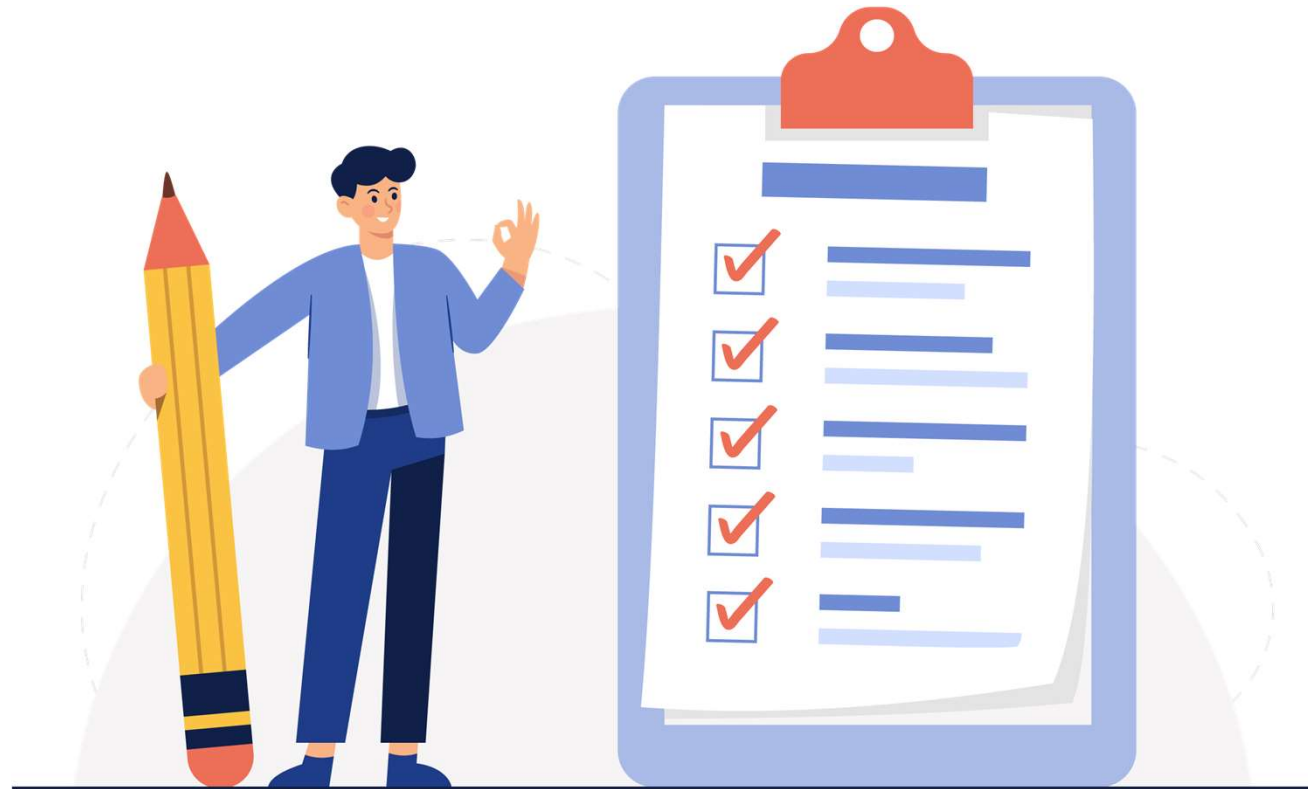
Lecturer: Ho Quang Thai

Course outline

Chapter 1	Introduction of Object-Oriented Design
Chapter 2	Starting with C++
Chapter 3	Function in C++
Chapter 4	Class and Object in C++
Chapter 5	Constructor and Destructor
Chapter 6	Operator Overloading
Chapter 7	Inheritance in C++
Chapter 8	Pointer to Object and Virtual Functions
Chapter 9	Input-Output and Manipulator in C++
Chapter 10	File Handling in C++
Chapter 11	Template Programming
Chapter 12	Exception Handling in C++

Prerequisites

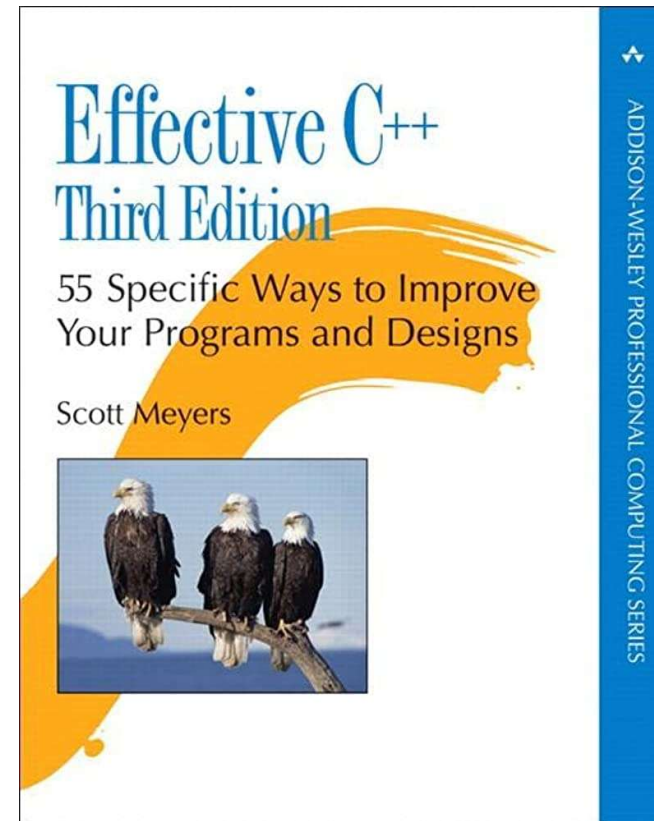
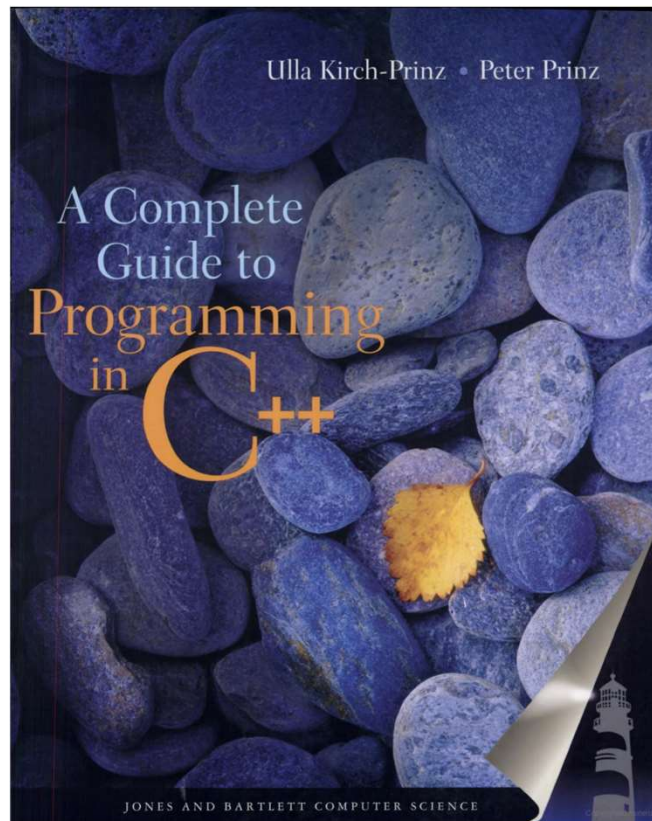
- Programming language:
 - C++ (Basic I)



Course Grading

- **Homework:** 50%
- **Midterm Exam:** 20%
 - Solving problems on lab computer
- **Final Exam:** 20%
 - Solving problems on lab computer
- **In-class:** 10%
 - Attendance

References



Q&A

Questions and Answer

WARM UP



EXERCISES

Exercise 1

Write a program to input from keyboard 3 numbers a , b and c . Display the entered values in ascending order using only one extra variable.

Input: 34 12 28

Output: 12 28 34

Exercise 2

Write a program to calculate the following sums:

- $S0 = n! = 1 * 2 * \dots * n$
- $S1 = 1 + \frac{1}{2} + \dots + \frac{1}{n}$
- $S2 = 1 + \frac{1}{2!} + \dots + \frac{1}{n!}$

Exercise 3

Write a program to reverse a 1-dimensional array.

Input: Please input n: 8

Output: 10 9 7 5 4 3 2 1

1 2 3 4 5 7 9 10

Exercise 4

Write a program to print to the screen the first n items of *Fibonacci* sequence using a recursive function.

$$F_n = \begin{cases} 1 & \text{if } n = 0 \text{ or } n = 1 \\ F_{n-2} + F_{n-1} & \text{if } n \geq 2 \end{cases}$$

Input: Input n: 6

Output: 1 1 2 3 5 8

Exercise 5

Define a structure

```
struct profile{  
    string fullname;  
    double score;  
    string grade;  
};
```

Write a program to input the name and score of n students.
Letter Grade is calculated by the following on the right
Calculate letter grade for n students and print as example

Output:

FULL NAME	SCORE	GRADE
Lin Jia-Hao	7.5	B
Huang Mei-Ling	4.7	D+
Chen Zhi-Yong	9.2	A

Score	Letter Grade
≥ 9.0	A
$\geq 8.0 \ \&\& \ < 9.0$	B+
$\geq 7.0 \ \&\& \ < 8.0$	B
$\geq 6.0 \ \&\& \ < 7.0$	C+
$\geq 5.0 \ \&\& \ < 6.0$	C
$\geq 4.5 \ \&\& \ < 5.0$	D+
$\geq 4.0 \ \&\& \ < 4.5$	D
< 4.0	F

Thank you for your attention