Course Introduction

Fundamental Computer Programming- C++ Lab (II)

元智大學 資訊工程學系
Department of Computer Science & Engineering

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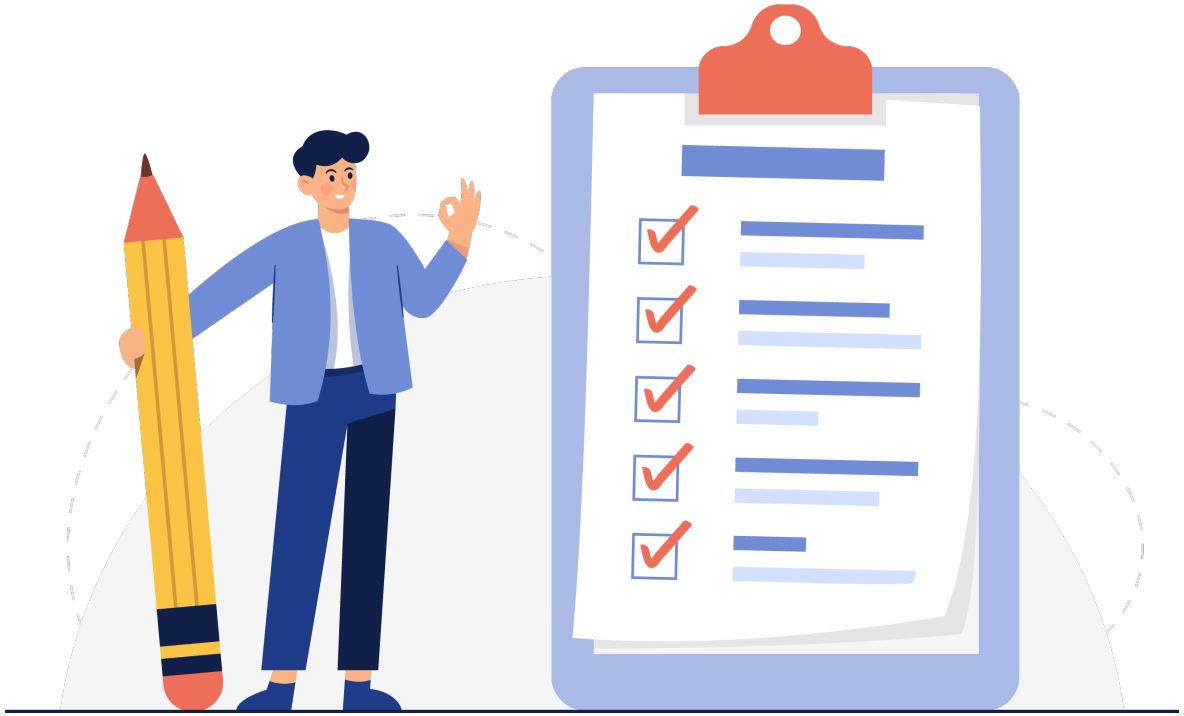
Course outline

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:** 5 ~ 7 homework
  - No late submission
  - Can use any IDE (Dev-C++, Visual Studio, Codeblocks)
  - Can not implement external library (if the question is not mention it)
- **Midterm Exam:** Solving Problems
- **Final Exam:** Solving Problems
- **In-class:** Attendance

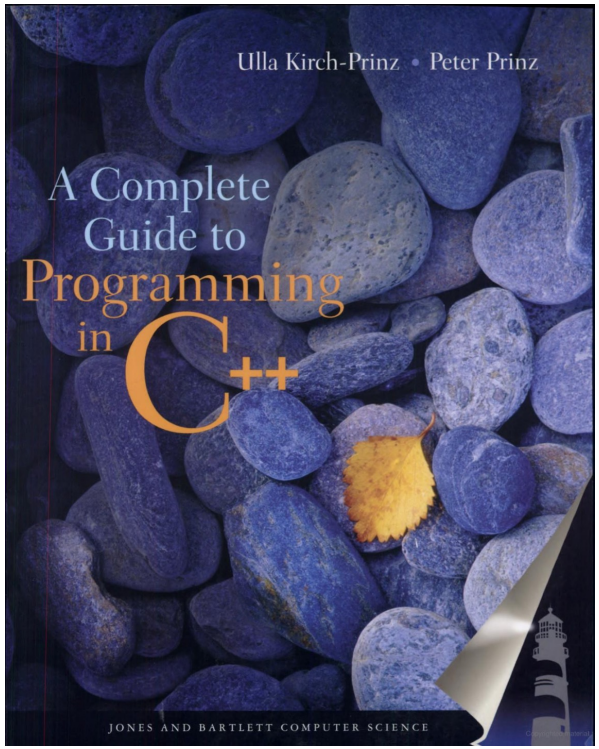
Midterm Assignment:

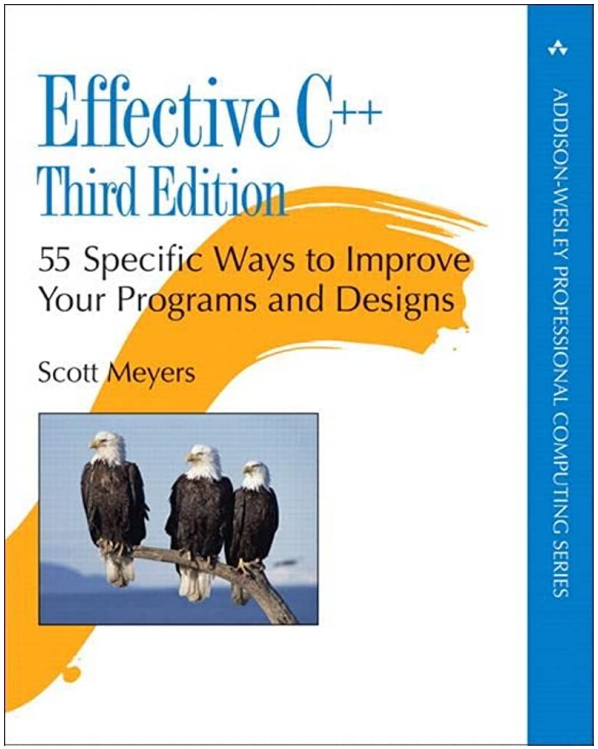
60% Homework + 40% Midterm Exam

Final Assignment:

30% Homework + 30% Midterm Exam + 30% Final Exam + 10% In-class

References


Ulla Kirch-Prinz • Peter Prinz
A Complete Guide to Programming in C++
JONES AND BARTLETT COMPUTER SCIENCE


Effective C++
Third Edition
55 Specific Ways to Improve Your Programs and Designs
Scott Meyers
ADDISON-WESLEY PROFESSIONAL COMPUTING SERIES

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*…*n
- S1 = $1 + \frac{1}{2} + \cdots + \frac{1}{n}$
- S2 = $1 + \frac{1}{2!} + \cdots + \frac{1}{n!}$

Exercise 3

Write a program to reverse a 1-dimensional array.

Input: Please input n: 8

1 2 3 4 5 7 9 10

Output: 10 9 7 5 4 3 2 1

Exercise 4

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

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

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

Score	Letter Grade
>= 9.0	A
>= 8.0 && < 9.0	B+
>= 7.0 && < 8.0	B
>= 6.0 && < 7.0	C+
>= 5.0 && < 6.0	C
>= 4.5 && < 5.0	D+
>= 4.0 && < 4.5	D
< 4.0	F

Output:

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

Thank you for your attention