Program Design (I)

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Introduction

This is an introductory course on how to program in C. The scope of this course ranges from the fundamentals of C to Strings. The rest of the topics of C will be covered in the Program Design (II). C is a procedural computer programming language and has hugely influenced many programming languages, such as C++, Java, and C#, which are all widely used nowadays. Hence, understanding the fundamental concepts of C and knowing how to use C in a program is beneficial for learning most of the new programming languages in the future.

Learning Objectives

The course introduces fundamental concepts, techniques, and tools of C. The design of the homework and the final project is to help students practice how to use C for computer problem-solving and how to build and execute a computer program in C successfully.

The expected learning outcomes of this course are:

- Understanding the history and basic concepts of C
- Knowing how to write and build computer programs in C using the fundamental computational concepts (e.g., loops, functions, and pointers)
- Design and develop computer programs in C to solve problems

Basic Information

Instructor

- Fu-Yin Cherng (程芺茵): fuyincherng@cs.ccu.edu.tw; https://fuyincherng.github.io/

Lectures

- 13:15-14:30 **Tuesday** and **Thursday**. Room 101, College of Engineering (I) (工院一館101教室)

Textbook

- C Programming: A Modern Approach by K. N. King, 2nd edition, 2008, W. W. Norton & Company.
- Please respect intellectual property rights; do not illegally photocopy textbooks (請尊重智慧財產權, 不得非法影印教師指定之教科書籍).

Grading

- Individual homework 1- 2: 20%

- You will get a half score on your homework if you submit it **one** day after the deadline, and you will receive **25% points** if you hand in the homework two days (or more) after the deadline.
      - All the homework should be done individually.
  - Individual final project: 20%
  - Midterm exam: 30%
  - Final exam: 30%
  - *Bonus: 10%*
      - Class participation by interacting through eCourse2's discussion forum and Slido
      - Students who were helpful and diligent were recognized by TAs
      - If you take the Collegiate Programming Examination (CPE) in these two years, the number of passed questions will be the number you can get for the extra bonus
      - Finish questions on the platforms like https://zerojudge.tw/ or https://leetcode.com/ and upload the proof on eCourse2. Students can earn one extra point for every 10 questions completed.
          - For Zerojude, the finished questions that start with "a" (e.g., a001 and a982) are not counted in the bonus.
      - **The highest score after adding the bonus points will not exceed 100**
  - If you have a re-grading request, please contact the TAs and instructor directly.
  - **Students found to have engaged in plagiarism will receive a zero score for the course and may be subject to further disciplinary action as per university guidelines.**

Tentative Schedule

Week	Date	Note	Lecture	Textbook
1	9/9		Course Introduction	
	9/11		Introduction of C	
2	9/16		C Fundamentals	Ch 2.1 - 2.4
	9/18		C Fundamentals	Ch 2.4 - 2.8
3	9/23		Formatted Input/Output	Ch 3.1
	9/25	Homework 1	Formatted Input/Output	Ch 3.2
4	9/30		Expressions	Ch 4.1 - 4.5
	10/2		Selection Statements	Ch 5.1 - 5.2
5	10/7		Selection Statements Loops	Ch 5.2 - 5.3 Ch 6.1 - 6.2
	10/9		Loops	Ch 6.3
6	10/14		Basic Programming Process, Debugging, and how to use GitHub	
	10/16		Basic Type	Ch 7.1 - 7.2
7	10/21		Basic Type	Ch 7.4 - 7.6

	10/23	Homework 2	Arrays	Ch 8.1
8	10/28		Arrays	Ch 8.2 - 8.3
	10/30		Functions	Ch 9.1 - 9.2
9	11/4		Review for Midterm Exam	
	11/6		Midterm Exam	
10	11/11		Functions	Ch 9.3
	11/13		Functions	Ch 9.4 - 9.6 Ch 10.1 - 10.2
11	11/18		Function	Ch 9.6
	11/20		Pointers	Ch 10.3 - 11.1
12	11/25		Pointers	Ch 11.1 - 11.3
	11/27		Pointers	Ch 11.4 - 12.1
13	12/2		Pointers and Arrays	Ch 12.2 - 12.5
	12/4		Pointers and Arrays	Ch 12.2 - 12.5
14	12/9		String	Ch 13.1 - 13.3
	12/11		String	Ch 13.4- 13.7
15	12/16	Final Exam	Final Exam during Programming Lab	
	12/18	Final Exam	Final Exam during Programming Lab	
16	12/23		Final Project Demo	
	12/25		Final Project Demo	