Programming Fundamentals

COMP1011

Instructors Info

Dr. Xiao HUANG

Office Hrs: Fri 11:20 - 12:20

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Dr. Dennis Y. W. LIU

Office Hrs: Wed 15:20 - 16:20

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Course Info

Section1: Wed 12:30 - 15:20
Section2: Fri 8:30 - 11:20

Labs on Mon: 12:30 - 13:20(I);
13:30 - 14:20(II);
16:30 - 17:20(III);
17:30 - 18:20(IV)

Microsoft Teams

TA Info

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Overview

The objectives of this subject are: 1) To provide students with knowledge on the fundamental elements in computer programming; 2) To introduce advanced computer programming techniques necessary for developing more sophisticated computer application programs.

Grading Scheme

25%	Assignments
30%	Four In-class Tests
20%	Mini-project
25%	Final Exam (open-book, how to prepare for open-book assessments?)

The assessment and grading criteria will be given in details in the assignment descriptions. Adjustment of the final grade, due to, e.g., the overall performance of the class, is at the discretion of the instructors.

Learning Objectives

Upon completion of the subject, students will be able to:

- Understand programming elements for solving computing-related problems
- Possess the ability to design and develop efficient computer programs for solving problems
- Possess the ability and knowledge to learn other high level programming languages independently
- Develop skills in problem solving using systematic approaches
- Identify and develop problem solutions in a logical manner
- Solve complex problems in groups and develop group work

Academic Integrity

Academic Integrity refers to the honest and ethical manner in which academic work is done, whether it is an assignment, an examination, an oral presentation, or a project or report. PolyU views Plagiarism as a serious disciplinary offence. It is a fundamental value that all students at PolyU are expected to uphold. Academic Integrity is central to the ideals of this course. Students are expected to be independently familiar with the Regulations of Academic Integrity and to recognize that their work in the course is to be their own original work that truthfully represents the time and effort applied. Violations of the Regulations are most serious and will be handled in a manner that fully represents the extent of the Regulations and that befits the seriousness of its violation.

Finish all lab exercises and assignments BY YOURSELF ALONE. Code with high similarity (in terms of structures and coding patterns) is also regarded as plagiarism. ZERO mark will be applied to both copyee and copier.

Grading Policy

Assignments and project reports have to be uploaded using BlackBoard. If homework is submitted after its due time, it will be considered a full day late. There will be a 10% deduction for homework that is up to two days late, and a 20% deduction for homework that is three days late. We will not accept any homework that is more than three days late. Plan your time carefully, and don't wait until the last minute to start an assignment so you have time to ask questions and get help. For assignments, in-class tests, and final exam, extensions and makeups will only be given in documented cases of serious illness or other emergencies. Leaving a phone message or sending an e-mail without confirmation is not acceptable.

Class Schedule (Tentative)

MODULE 1: C++ Basics

Week 1 (Jan 20 / 22)	Introduction to Computer Processing and C++ Programming	
Week 2 (Jan 27 / 29)	Control Structures I	
Week 3 (Feb 3 / 5)	Control Structures II	In-class Test1 (Feb 5 Fri, 10:50 - 11:20am, for Weeks 1 & 2)
Week 4 (Feb 10 / 12)	Control Structures III [Happy Lunar New Year] No live lectures for Fri section, students are welcome to attend classes on Wed	Pre-recordings available for Fri section make-up
Week 5 (Feb 17 / 19)	[Happy Lunar New Year] No live Lectures	
Week 6 (Feb 24 / 26)	Arrays and Functions	
Week 7 (Mar 3 / 5)	Character and String Processing	In-class Test2 (Mar 5 Fri, 10:50 - 11:20am, for Weeks 3, 4, & 6)

MODULE 2: Advanced Concepts in Programming

Week 8 (Mar 10 / 12)	Introduction to Source Version Control (Git)	
Week 9 (Mar 17 / 19)	Memory Addresses and Pointers	
Week 10 (Mar 24 / 26)	Pointers II and Structure	In-class Test3 (Mar 26 Fri, 10:50 - 11:20 AM, for Weeks 7, 8, & 9)
Week 11 (Mar 31/Apr 2)	Fundamentals of Object-Oriented Programming (OOP) [Happy Easter] No live lectures for Fri section, students are welcome to attend classes on Wed	Pre-recordings available for Fri section make-up

MODULE 3: Data Structures and Algorithms

Week 12 (Apr 7 / 9)	Recursion and Data Structures - Linked Lists	
Week 13 (Apr 14 / 16)	Linked Lists II and Basic Algorithms - Searching	
Week 14 (Apr 21 / 23)	Basic Algorithms - Sorting	In-class Test4 (Apr 23 Fri, 10:50 - 11:20am, for Weeks 10, 11, 12, & 13)
Apr 29 - May 15	FINAL EXAM for all content	

Policy for Online Tests and Exam

- Open-book. Open-notes. Open-Internet.
- No communication in any means with others (including your classmates and people not in your class) is allowed.
- The given time will be tight. Even good students would have no extra time to communicate and search. The suggested time for each question is given.
- The online system presents one question at a time. It is not allowed to change the answer to a question that has already been submitted.
- The order of questions is random. Several versions may be designed for each question.

- If any one of your answers includes the content in another version of the question (it means that you are cheating), you would get 0 in the entire test or exam.

IDE: Visual Studio Code

Windows setup: `https://code.visualstudio.com/docs/languages/cpp`

MacOS setup: `https://code.visualstudio.com/docs/cpp/config-clang-mac`

Textbook

Deitel, H. and Deitel, P. (2016), C++ How to Program, 10th Edition, Prentice Hall. [Main Textbook; an older/newer version is also OK; not compulsory to buy; lecture notes and online resources are sufficient]

Cay S. Horstmann, C++ For Everyone, 2nd Edition, Wiley.

Herbert Schildt (2002), C++: The Complete Reference, 4th Edition, McGraw-Hill Osborne Media.

V. Anton Spraul, Think Like a Programmer: An Introduction to Creative Problem Solving, No Starch Press, 2012.

`http://www.cplusplus.com/`

`https://www.tutorialspoint.com/cplusplus/`

Diversity and Inclusivity Statement

We consider this online classroom to be a place where you will be treated with respect, and we welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Resources and Support Section at 2766 6800 or srss.info@polyu.edu.hk, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please e-mail also the instructors as soon as possible in order to set up a time to discuss your learning needs.