

CPT108 Data Structure and Algorithms

Lecture 0

Course Introduction and Logistics

Outline

CPT108: What is it about?

Course organisation

- People

- Laboratory sessions

 - Gradle

- Textbook and Other Resources

- Assessment

Conduct in the Classroom

CPT108: What is this course about?

- ▶ More about the basics of *organising*, *accessing*, *managing data* and the *algorithms* to manipulate them
- ▶ Touches upon foundations of the fundamental concept of *program design* and *algorithm analysis*
 - ▶ Different kinds of data
 - ▶ *Data structures* for implementing with collections
 - ▶ *Complexities* and *correctness* of algorithms
 - ▶ Asymptotic analysis
 - ▶ Resizing arrays
 - ▶ Hashing
 - ▶ Sorting
 - ▶ Searching
 - ▶ etc.
 - ▶ *Implementation* of algorithms with appropriate data structure

CPT108: What is this course *NOT* about?

- ▶ *Programming languages*, such as *Java*, *C*, *C++*, *Python*, *R*, *MatLab*, etc., is *NOT* the focus of the course!
- ▶ Algorithms will be described using simple plain English or *pseudocode*
 - ▶ Translation of pseudocode into you favourite programming language should be a fairly straightforward task

People

- ▶ **Participants:** You
- ▶ **Instructor:** Dr. Ho-Pun Lam (Brian) (Room SD-439)
Email: ho.lam@xjtlu.edu.cn
- ▶ **TAs:** TBC

About You

- ▶ You should have some programming background, and should know what it means by *simple data type*, *if-then-else* statement, etc.
- ▶ We are not going to spend time in this class covering basic concepts such as: *for-loops*, *while loops*, etc.

Laboratories

- ▶ Laboratory sections:
 - ▶ 2 hours fortnightly starting from week 2
 - ▶ feature (coding) assignments submitted for credit
- ▶ Goals:
 - ▶ Provide a framework / background for your learning
 - ▶ Provide explanation / demonstrations / interactions to help your understanding
- ▶ Lectures and Lab sections are resources for your learning
 - ▶ SLIDES \neq TEXTBOOK \neq module contents
 - ▶ Attendance is crucial for your survival

Laboratories (cont.)

Tools Required

- ▶ Java Development Kit (JDK) – free download
- ▶ An Integrated Development Environment (IDE)
 - ▶ Any IDE is *OK*
 - ▶ Every IDE has its own *strength* and *limitation*
 - ▶ Be *flexible* on what IDE to be used
 - ▶ *Eclipse* will be used during the lab sections
- ▶ Gradle¹ – a build automation tool
- ▶ In addition, it is better if you could learn how to interact with the *terminal/console*!

¹Gradle: <http://gradle.org>

Laboratories (cont.)

Gradle

- ▶ A build automation tool that support multi-language software development
 - ▶ Helps team build, automate, and deliver software by controlling the development process
 - ▶ Supported by most modern IDEs
- ▶ Lab materials will be distributed under the Gradle framework.
- ▶ Information on how to import Gradle projects into IDEs is available at Learning Mall (LM).
- ▶ Gradle (version 8.5) is already installed on computers at the computer laboratory: [SC464](#).
- ▶ You are encouraged to install it onto your own computers by following the instructions available online: <https://gradle.org/install/>.

Laboratories (cont.)

The lab sections are hosted by the teaching assistant (TA)

- ▶ The teaching assistants (TAs) will introduce the (lab) assignments, review relevant material, and answer students' questions.
- ▶ However, they are **NOT** here to debug your program! You have to do this by **yourself**! This is what you need to learn!

Textbook

- ▶ There is *no* mandatory textbook in this course.
- ▶ **Optional textbook**
 - ▶ Thomas H. Cormen et al. (2022). *Introduction to Algorithms*. 4th. MIT Press
- ▶ **Reference books**
 - ▶ Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser (2014). *Data Structures and Algorithms in Java*. 6th. John Wiley & Sons, Inc.
 - ▶ Mark Allen Weiss (2013). *Data Structures and Problem Solving Using Java*. 4th. Pearson

Assessment

- ▶ Continuous Assessment: 30%
 - ▶ Laboratories: 18% ($6 \times 3\%$)
 - ▶ Assignments: 12% (1-2 assignments)
- ▶ Final Examination: 70%
- ▶ Resit Examination: 100%

Conduct in the Classroom

Classrooms are for learning. Teachers and students must work together so that the classroom is a good place to learn. You can help by following a few simple rules. These rules are mostly just common sense and common courtesy. By following them, you show respect to your fellow student as well as your teachers.



Please try to get to class on time. When you come in late, you disrupt your class. As a general rule, if you are more than 15 minutes late, you should not enter the classroom. If you arrive late, but need to see the instructor or pick up lecture notes, please return at the end of the class period.

Conduct in the Classroom (cont.)



Once in class, you stay until the class is over. If you know you have to leave early, ask the instructor's permission before the class starts.

You should not do things during class that disrupt the class or distract your classmates – such as talking while the instructor is lecturing. If you have a pager or cellular phone, turn it off when you are in class.



And please pay attention to the signs that tell you not to eat or drink in the classrooms.

Conduct in the Classroom (cont.)



Assignments, tests, and examinations are an integral part of the learning experience. Students who cheat disrupt during this process. The instructor has a responsibility to make cheating difficult, but cheating is wrong even when you can get away with it. Don't give in to the temptation to cheat, and be critical of those who do.

Your instructor has the authority to make other rules that he or she feels are necessary to help you learn. For example, some instructors may require that you attend a minimum number or percentage of their classes. If you do not follow these rules, it may affect your grade.



Conduct in the Classroom (cont.)

- ▶ You are investing several years of your life in your university education
- ▶ Learning to accept responsibility is an important part of that education.
- ▶ The classroom is a good place to begin showing that you are ready for the responsibilities of being an adult.

Thank you for your cooperation! 😊