

Fall 2019

Fang Yu

Software Security Lab.
Dept. Management Information
Systems,
National Chengchi University

Data Structures

Lecture 0



Syllabus



Course Information



- Instructor: 郁方 (Yu, Fang)
 - yuf@nccu.edu.tw
 - Office: 261113, 11F College of Commerce (商院261113)
- Lecture Time and Location:
 - Weekly sessions
 - Mandarin Session: Thursday 234 (9:10-12:00am, 商院260313)
 - English Session: Thursday D56 (1:10-4:00pm, 商院260313)
- You can find/download most of the course materials from the course web site:

<http://soslab.nccu.edu.tw/soslab/Courses.html>

Text book

- Data Structures and Algorithms in Java 6th edition, by Michael T. Goodrich and Roberto Tamassia, John Wiley & Sons, Inc.
- Online resources:

[http://bcs.wiley.com/he-bcs/Books?
action=index&itemId=1118771338&bcsId=8635](http://bcs.wiley.com/he-bcs/Books?action=index&itemId=1118771338&bcsId=8635)

- 代理商: 新月圖書公司/東華書局, 台北市重慶南路一段143號三樓 TEL: 02-23317856

Lab Information

- Weekly meeting
- TAs:
 - 詹之愷, 107356036@nccu.edu.tw
 - 陳怡君, 108356016@nccu.edu.tw
 - Monday 12:10-2:00pm
 - The first lab is scheduled on Monday, Sep. 16.
 - Location: 逸仙樓 5F 資管系PC 教室



Course Objectives

- A next (and important) step on programming

You will learn

- the main concept, implementation, and applications of fundamental data structures and algorithms

You will also learn

- how to develop Java applications using eclipse and java class library



At the end of this course,

You should

- understand common data structures and algorithms
- be able to develop new data abstractions and use existing library components
- feel comfortable programming in Java
- be a better programmer



Course Requirements

- Homework and Labs: 40%
 - You will have weekly homework to write some small programs
 - TAs will guide you in the lab
 - You need to upload your code using WM5 before the due date.
 - Late submission is accepted with penalty
- One Late-Midterm Exam (a closed book exam): 30%
 - Most likely, it will be in the early December
 - You are allowed to bring an A4 size note.



Course Requirements

- One Team Project: 30%
 - Topic: Lets Beat Google!
 - 3-5 students as a team (Send the list to your TAs)
 - Develop your application using Eclipse with SVN
 - You will get extra points for updating your code constantly
 - Each team needs to
 1. Get your code running (Upload source codes)
 2. Write the proposal and the final report
 3. Give a Demo at the end of this semester



To be successful

You need to work hard, and work step by step.

- Attend labs and lectures
- Write your own code
- Visit the course website frequently
- Submit HWs/Reports on time
- Share your experience with your classmates
- Discuss with TAs and senior students

NO NO:

- No direct copies of others' codes (We can figure it out!)
- At least re-type/compile/test the codes on your own!



Road map.



September - Get ready to do programming!

- Topics:
 - A brief overview of Java and eclipse
 - Coding practice and prescreen
 - Object-oriented design and abstract data type
 - Text/Pattern matching
 - Class project announcement
- Text book: Ch1, Ch2, and Ch12

In the following three weeks, please make sure that you

- can write and execute a small java code using Eclipse
(TAs will teach Eclipse in the lab on 9/16 and host a testing on 9/19 @ MIS PC Classroom)
- have a team and start to think about the project

Road map..



October – Introduce basic data structures and their implementations

- Topics:
 - Linked Lists
 - Queues
 - Stacks
 - Trees
 - Heaps
- Text Book: Ch3, Ch5, Ch6, Ch7, Ch8

Road map...

November – Introduce fundamental algorithms and their analyses

- Topics:
 - Analysis of Algorithms
 - Divide and Conquer
 - Dynamic Programming
 - Sorting and Searching
- Text Book: Ch4, Ch10, Ch11, Ch12



Road map....

December – Step on advanced data structures

- Topics:
 - Hash tables
 - Skip lists
 - Dictionaries and Maps
 - Graphics and Topologies
- Text book: Ch9, Ch10, Ch13, Ch15



Road map.....

January – It's show time. Lets beat Google!

- Topics:
 - Project demo
 - Final code and report due.
 - Makeup exam (if needed)

