

Fall 2017

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: 1113, 11F College of Commerce (商院261113)
- Lecture Time and Location:
  - Weekly sessions
  - Mandarin Session: Thursday 234 (9:10-12:00am, 商院260312)
  - English Session: Thursday D56 (1:10-4:00pm, 商院260312 )
- 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 6<sup>th</sup> edition, by Michael T. Goodrich and Roberto Tamassia, John Wiley & Sons, Inc.
- Online resources:  
<http://www.wiley.com/go/global/goodrich>
- 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:
  - 方元廷, leo45042003@gmail.com
  - 田韻杰, 106356004@nccu.edu.tw
  - **Monday 12:10-2:00pm**
  - Location: 逸仙樓 5F 資管系PC 教室



# Course Objectives

- A next (and important) step in programming

You will learn

- the concepts, implementations, 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 implement new data abstractions and use existing library components
- feel comfortable programming in Java
- be a stronger programmer



# Course Requirements



- Homework and Labs: 40%
  - You will have a small programming homework (most likely it will be every week)
  - 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
- Midterm Exam (close book): 30%
  - You are allowed to bring an A4 size note.



# Course Requirements

- 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/ Discuss with your classmates, TAs, and senior students

## **NO NO:**

- No direct copies of others' code (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
  - Object-oriented design and abstract data type
  - Text/Pattern matching
  - Class project announcement
- Text book: Ch1, Ch2, and Ch12

In the following two weeks, please make sure that you

- can write and execute a small java code using Eclipse  
(TAs will teach Eclipse in the lab on 9/18)
- 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 Search
- Text Book: Ch4, Ch10, Ch11, Ch12



# Road map....

*December – Step on advanced data structures*

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



# Road map....

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

- Jan. 11: Project demo
- Jan. 18: Final code due. Make up exam (if needed)

