

EE3980 演算法

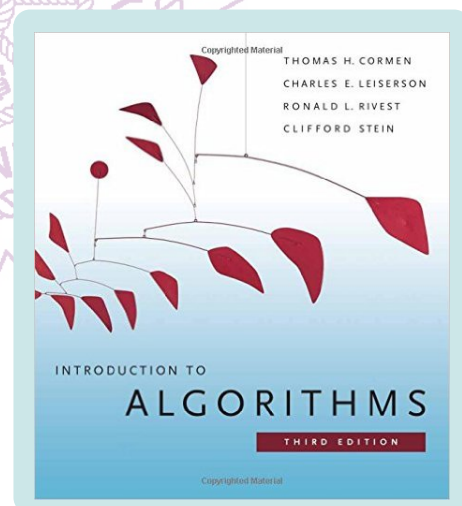
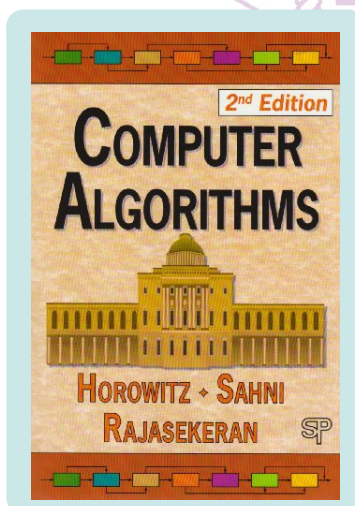
Algorithms

EE/NTHU

February 26, 2018

Algorithms – Course Information

- **Class time:** M3,M4,W2: lectures and discussions.
- **Class room:** 台達館 211.
- **Text books**
 - *Computer Algorithms*, by E. Horowitz, S. Sahni, and S. Rajasekeran, 2nd edition, Silicon Press, 2008.
 - *Introduction to Algorithms*, T.H. Cormen, C.E. Leiserson, R.L. Rivest, and C. Stein, 3rd edition, MIT Press, 2009.
- **Office hours:** Thursday 10 - 11:30 AM.
 - Or by appointment (michang@ee.nthu.edu.tw).



Course Info

Unit 1. Analysis

- 1.1 Foundations
- 1.2 Analysis
- 1.3 Analysis, II
- 1.4 Mathematical backgrounds

Unit 2. Data structures

- 2.1 Stack, queue and trees
- 2.2 Sets and graphs

Unit 3. Divide and conquer

- 3.1 Divide and conquer
- 3.2 Sorts
- 3.3 More on divide and conquer

Unit 4. Tree and graph traversal

- 4.1 Breadth First Search
- 4.2 Depth First Search

Unit 5. The greedy method

- 5.1 The greedy method
- 5.2 The greedy method, II
- 5.3 The greedy method, III

Unit 6. Dynamic programming

- 6.1 Dynamic Programming
- 6.2 Dynamic Programming, II
- 6.3 Dynamic Programming, III

Unit 7. All-space searching methods

- 7.1 Backtracking
- 7.2 Branch and bound

Unit 8. Lower bound theory

Unit 9. \mathcal{NP} -hard and \mathcal{NP} -complete

Unit 10. Approximation algorithms

Unit 11. Algebraic problems

Evaluation

• Evaluation

Category	% each	Number	Total
Homework	4.5	12	54
Midterm	14	2	28
Final	18	1	18
Absence	-1	-	-

• Homework:

- Could be a significant loading,
- C programming and report writing.

• Mid-term exams:

- Apr. 9,
- May 7,
- Machine tests at EECS 406

• Final exam:

- Jun. 11,
- Machine test at EECS 406

Homework

- Homework is designed for you to practice what you have learned in class.
- Grading criteria:
 - **Ontime submission** (20%),
 - Due on 11:59 PM of the day specified on the announcement.
 - **Solution correctness** (50%),
 - **Program and report writing** (30%),
 - Legibility and efficiency,
 - Clearness and logic,
 - Solution approach and comments.
- Download and submit on EE workstations.
- Discussions with classmates encouraged but no plagiarism.
 - Write your own programs.
- Algorithms are solving specific problems
 - They should be language independent.
 - When implemented they become functions, procedures, or subroutines.
 - Applicable in structure programming and object oriented programming.
- We will practice implementing algorithms in more basic C programming language.
 - Programming guidelines are also the same as before.

Handouts and Homework

- Class handouts can be found on EE workstation.
 - Download (ftp) through daisy (140.114.24.31).
 - Directory: `~ee3980/notes`
 - `lec00.pdf`,
 - `lec10.pdf`,
 - `lec21.pdf`, ...
- Homework can be found in each homework directory.
 - `~ee3980/hw01`,
 - `~ee3980/hw02`,
- Homework should be turned in on EE workstations.
- Submission command:

```
$ ~ee3980/bin/submit hw01 hw01.c hw01a.pdf
```

- To check homework or exam grades:

```
$ ~ee3980/bin/score
```