National Taipei University of Technology
Computer Science and Information Engineering

Data Structures

Fall 2021

https://istudy.ntut.edu.tw/learn/index.php
Microsoft Teams Group Code: mfqpiyi
(Course Name: 110-1_資料結構_292167)

Data structures play an important role in computer science and can make the program or systems work efficiently in terms of time and space. This course introduces the fundamental structures and some advanced ones, including arrays, stacks, queues, linked lists, maps and dictionaries, hash tables, priority queues, trees as well as graphs. In addition, the analysis tools and design issues for data structures will be discussed.

General

- **Time:** Tue 13:10-15:00 and Thu 11:10-12:00
- **Place:** Room 327, 6th Lecture Building
- **Instructor:**

  劉傳銘(Chuan-Ming Liu)
  Office: Technology and Research Building 1530
  Office Hours: Wed 13:10-15:00 and Fri 10:10-12:00, or by appointment
  Email: ds.taipeitech@gmail.com (or cmliu@ntut.edu.tw)
  Phone: 02-2771-2171 ext. 4251

- **TA:**

  溫心瑜(Xin-Yu Wen)
  Office: Technology and Research Building 1226
  Office Hours: Tue 08:10-12:00 or by appointment
  Email: ds.taipeitech@gmail.com
  Phone: 02-2771-2171 ext. 4262

Topics

This course is mainly aimed at introducing the data structures commonly used in programming languages. Topics include:

- Introduction and Recursion
- Analysis Tools
- Arrays, Stacks, and Queues
- Linked Lists
- Trees
- Priority Queues
- Maps and Dictionaries
- Search Trees
- Graphs

Material

- **Textbook**:
  - Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser, Data Structures and Algorithms in Python, Wiley, 2013, ISBN-13: 978-1118290279
- **References**:
  1. Robert Kruse, Clovis Tondo, and Bruce Leung, Data Structures & Program Design in C, 2nd edition, Prentice-Hall, 2008. ISBN:978-986-154-730-5
  2. Ellis Horowitz, Sartaj Sahni, and Susan Anderson-Frees, Fundamentals of Data Structures in C, 2ndedition, Silicon Press, 2008. ISBN:0-929306-40-6.
  3. Michael T. Goodrich and Roberto Tamassia, Data Structures and Algorithms in JAVA, 4th edition, John Wiley & Sons, 2006. ISBN: 0-471-73884-0.
  4. Sartaj Sahni, Data Structures, Algorithms, and Applications in JAVA, 2nd edition, Silicon Press, 2005. ISBN: 0-929306-33-3.
  5. Frank M. Carranno and Walter Savitch, Data Structures and Abstractions with Java, Prentice Hall, 2003. ISBN: 0-13-017489-0.

Lecture notes: Available online

Course Work

- Assignments (40%): 6-8 homework sets and CPE tests
  - CPE, Collegiate Programming Examination, http://cpe.cse.nsysu.edu.tw/index.php
- Midterm (25%)
- Final exam (35%)

Course Policy

- No late assignments are acceptable.
- Regarding your assignment grades, contact the TA within 10 days the assignment is handed back. After this period, your assignment stays as graded.
- Cheating directly affects the reputation of the Department and the University and lowers the morale of other students. Cheating in homework and exam will not be tolerated. An automatic grade of 0 will be assigned to any student caught cheating. Presenting another person's work as your own constitutes cheating.
- The following activities are specifically forbidden on all graded course work:
  - Theft or possession of another student's solution or partial solution in any form (electronic, handwritten, or printed).
  - Giving a solution or partial solution to another student, even with the explicit understanding that it will not be copied.
  - Working together to develop a single solution and then turning in copies of that solution (or modifications) under multiple names.

First Things to Do

- Please go to https://forms.gle/qa4YKypVDvRWmfPU7 for a short survey and filling in your email address. All the announcements will be distributed using emails and posted on the web site.
- Please use the course email: *ds.taipeitech@gmail.com* to send your questions.
- Microsoft Teams Group Link: https://tinyurl.com/ygwoaka2