Course Orientation

Contact Information

- Instructor: Dr. Min-Zheng Shieh
  - E-mail: mzshieh at nctu.edu.tw
  - Office Hours: 3GH @ EC330 (by appointment only)
- Course website:
  - e3.nctu.edu.tw
  - 2016 Winter Camp
  - 2015 Summer Camp
- Teaching Assistants:
  - Pin-Chang Pan
  - Li-Cheng Lan

Tracks

We provide different tracks for the students.

- Beginner track
  - Lectures for beginners will be on Friday nights (TBD)
- Junior track
  - Video lectures
  - The program assignments are the problems in 2015 Summer Camp
  - Discussion in class
- Senior track
  - Practice
  - Participation
  - Preparation

Prerequisites

- Basic ability to program in one of the following languages
  - C
  - C++
    - The course materials are mainly written in C++11
  - Java
- Basic mathematics
  - Arithmetics
  - Binary representation of integers
- Very basic knowledge of computer systems
  - Machine cycle
  - Memory
  - Call stack

Goal

- To improve students' ability in programming and problem solving.
- To encourage students to participate in programming contests or any other activities.

Textbook and Reference

- No textbook
- Reference
  - Hangouts
  - Websites
  - Lecture video
  - Competitive programming by Steven Halim & Felix Halim
  - Introduction to Algorithms by Cormen, Leiserson, Rivest, Stein

Tentative Topic

- Contest related topics
- I/O
- C++ STL & Java Collections
- Enumeration
- Data Structures
- Divide and Conquer
  - Sorting
  - Binary Search
  - Exponentiation by Squaring
  - Extended Euclidean Algorithm
- Greedy
- Dynamic Programming

Tentative Topic (cont.)

- Graph Representation
- Graph Traversal
- Trees and Disjoint Sets
- Minimum Spanning Trees
- Shortest Paths
- Network Flows
- Prime Numbers
- String Processing
- Advanced Data Structures
  - Treap
  - Splay Trees
- Computational Geometry

Grading Policy: Beginner Track

- Programming Assignments: 20%
  - There will be many problems.
  - For solving x problem, you will get min(x,20) points.
- Midterm: 40%
- Final: 40%
- Bonus: up to 100%
  - If you can convince the instructor that you deserve it, then you will get it.
- No cheating
- No adjustment

Grading Policy: Junior Track

- Programming Assignments: 0%
- Discussion: 20%
  - Report your progress
  - Propose your ideas
  - Discuss why your program does not work
- Midterm: 40%
- Final: 40%
- Bonus: up to 100%
  - If you can convince the instructor that you deserve it, then you will get it.
- No cheating
- No adjustment

Grading Policy: Senior Track

- Participation & Practice: 50%
- Preparing midterm: 25%
- Preparing final: 25%
- Bonus: up to 100%
  - If you can convince the instructor that you deserve it, then you will get it.
- No cheating
- No adjustment
- Subject to change

Midterm and Final: Beginners and Juniors

- Use different problem sets
- At least 5 hours for at least 6 problems

Solved	Point
1	20
2	30
3	35
4	38
5	39
6	40

Summary

- You should not take this course if you cannot accomplish the first two programming assignments on your own.
- Beginner Track & Junior Track:
  - 15 + 1 + 1 = 55
  - 20 + 1 + 1 = 60
  - 20 + 1 + 2 = 70
  - 20 + 2 + 2 = 80
  - 20 + 3 + 3 = 90
  - Getting >95 is not easy
  - Expected withdrawal rate: >30%
- Senior Track:
  - Please discuss the grading policy with the instructor before the end of course registration.