ICPC 2014

Information Session

Contact Information

Coach:
Jiang Shaofeng (姜少峰)
CB LG101, sfjiang@cs.hku.hk
2nd year MPhil

Coordinator:
Dr. Hubert Chan
CB429, hubert@cs.hku.hk
Assistant Professor

Website: http://i.cs.hku.hk/~provinci

Outline

- Introduction to ICPC & contest plan
- How to proceed

ICPC Rules

- Eligibility: http://icpc.baylor.edu/download/regionals/rules/EligibilityDecisionTree-2014.pdf
- 5 hours, 10~ problems, 3 people (team), 1 computer
- Solving problems by submitting program (source code)
- Rank list is available during the whole contest
- The more the problems solved, the higher the ranks.
- For details, you may refer to the official website: http://cm.baylor.edu

Goal: World Finals

- World Finals
  - Compete with 100 teams come from all over the world!
  - How to advance: champion in regional contests
- Regional contests: Asia Pacific Regions
- Hong Kong Local Contest

Contest Plan

- Regional Contest
  - Early November.
  - Two Teams.
  - Bangkok if safe. Otherwise Daejeon.
  - Selection Contests: 24 Sep & 8 Oct, 6:30 pm – 9:30 pm
- Hong Kong Local Contest
  - Late June.
  - There will be selection contests.
  - Several Teams (at least 3).

Selection Contests

- Please register as a team of 3 people on or before 7:00 pm, 23 Sep, by sending your names, curriculums as well as your team name to me by email (sfjiang@cs.hku.hk).
- Contest Venue: HW 312
- We will use problems from past regional contests
- We will follow the ICPC rules, and use PC^2 as the judge system
- Languages available: C++, JAVA.
- No internet access is allowed during the contest.
- You can take paper-based notes.

Getting Started

Problem

- Sample Problem: http://uva.onlinejudge.org/index.php?option=com_onlinejudge&Itemid=8&page=show_problem&problem=36
- Problem Statement
- Input & Output specification: your solution (program) should completely follow the specification
- Input & Output Samples: use it to make sure you understand the problem

How do I submit a solution?

- Example: A+B problem
  http://poj.org/problem?id=1000

How does the judger work?

- For each of the problem, the judger will use a set of input & output data to test your program.
- I/O of the test data is strictly following the I/O specification.
- If you program can generate the correct answer within the time limit, you will get accepted.
- Otherwise, solution will be rejected and the reason will be returned.
- The test data is kept secret, and the data is generally strong enough to rule out the incorrect solutions.

Judge Results

- Accepted (AC): the solution passes all the test cases, and is regarded as correct. Congrats!
- Compilation Error (CE): the solution does not compile properly
- Wrong Answer (WA): the solution generates incorrect answers on some of the test data.
- Runtime Error (RE): the solution program crashes during the judging
- Time Limit Exceeded (TLE): the solution does not terminate within the time limit

Estimate the running time (avoid TLE)

- Normally, there is a time limit for each of the problems.
- What does 1sec mean?
  - For normal computers, it means 5*10^7 integer basic operations, or means 5*10^6 floating point basic operations.
- How do I estimate the number of operations?
  - Give an upper bound of time complexity.
  - Although time complexity cannot directly measure running time, use it as an estimation is usually accurate
  - If n is 10000, O(n^2) ~ 10000^2 = 10^8 > 5*10^7, so TLE
  - However, if O(n log n), then it should be fine

Submitting solutions using PC^2

- If you are doing a contest, probably you are using PC^2 (http://www.ecs.csus.edu/pc2/)
  - This is the case for regional contests, as well as our selection contest
  - User manual: http://www.ecs.csus.edu/pc2/doc/v9/PC2V9TeamGuide.pdf

Preparing for the Contest

Solve a lot of problems

- Try to solve 500 problems in your first year
- If you can solve 1000 problems, you are awesome!
- What problems should I solve?
- A good tool: uHunt.
  - http://uhunt.felix-halim.net/
  - It will analyze the problems that you solved, and recommend new problems for you to solve
  - Problems are from UVA Online Judge, which is a huge source of problems

Thanks!