Programming Midterm Preview

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CSCI2100A Data Structures

https://edx.keep.edu.hk/courses/course-v1:CUHK+CSCI2100A+2018_02/info

Time & Venue

- Time: **March 29th**, Friday, 6:00 p.m. - 9:00 p.m.
- Venue: **SHB 924**
- Please arrive around 5:20 p.m. to check your account information and find your seat. We will have a warming-up session from 5:30 p.m. - 6:00 p.m. Every student is assigned to a seat with a paper of user account info.
- Can bring any printed materials
- Scope: before and include hashing

Instructions I

1. The programming midterm is an open-book and open-notes examination. You may bring what you can carry on printed (hard copy) materials. You MUST not take anything that can record program code electronically to the examination venue. You will not need a calculator for any calculation.

2. The operation system will be Ubuntu. The computer configuration will have these basic editors: vi/vim, gedit, CodeBlocks and Visual Studio Code. This system includes GDB for debugging.

3. You can use all the functions provided by standard C library as long as you've included the corresponding header file.

http://www.codeblocks.org/

https://code.visualstudio.com/

Instructions II

4. The examination will begin when the Chief TA starts the clock and will end when the Chief TA stops the clock, which is usually three hours after the starting time including any missing time due to technical or other difficulties.

5. The time limit for each problem is 1 second. The CPU can execute around 10^9 operations in 1 second.

6. If there are no special instructions, all input integers and output integers are in the range from -2^{31} to $2^{31} - 1$.

7. You are suggested to work on Problem A first and then others afterwards. The problems can be divided into three increasing difficult levels from the perspective of algorithm as judged by the instructors: [A], [B, C, D, E, F], and [G]. If you get stuck in one problem, try to solve the next one.

- For a problem with N=10^6 and K=10^4, if your program has the time complexity of O(NK)~10^{10}, then your may have the **Time Limit Exceeded** error message. You need to find a more optimal algorithm, such as with O(N logK)~10^7.

Instructions III

8. Anyone who attempts to spam the server either through excessive submissions, allocating large amount of unnecessary memory, etc. will be penalized severely.
9. Please switch your mobile phones to silent mode and place it under your seat, you are not allowed to use them during the exam.
0. If you want to go to the restroom, please ask the TAs for permission first.
1. If you leave early from the examination without informing the TAs, you will not be able to come back to the examination.

Environment

- The operation system will be Ubuntu Linux 16.04 LTS, with **GUI**.
- And the computer configuration will have these basic editors:
  - vi/vim, Emacs, Nano
  - Gedit (with GUI), CodeBlocks, Visual Studio Code
- How to debug with terminal? See more in Tutorial 7
- https://www.thegeekstuff.com/2012/10/gcc-compiler-options/
  - Compile the c file: **gcc a.c –o a**
  - run the object file: **./a**
  - If you have test files: a.in and a.out, then you can run the file with:
  - **./a < a.in > myout**
  - To compare your program myout and the ground truth output with:
  - **diff myput a.out**

Submit Tool

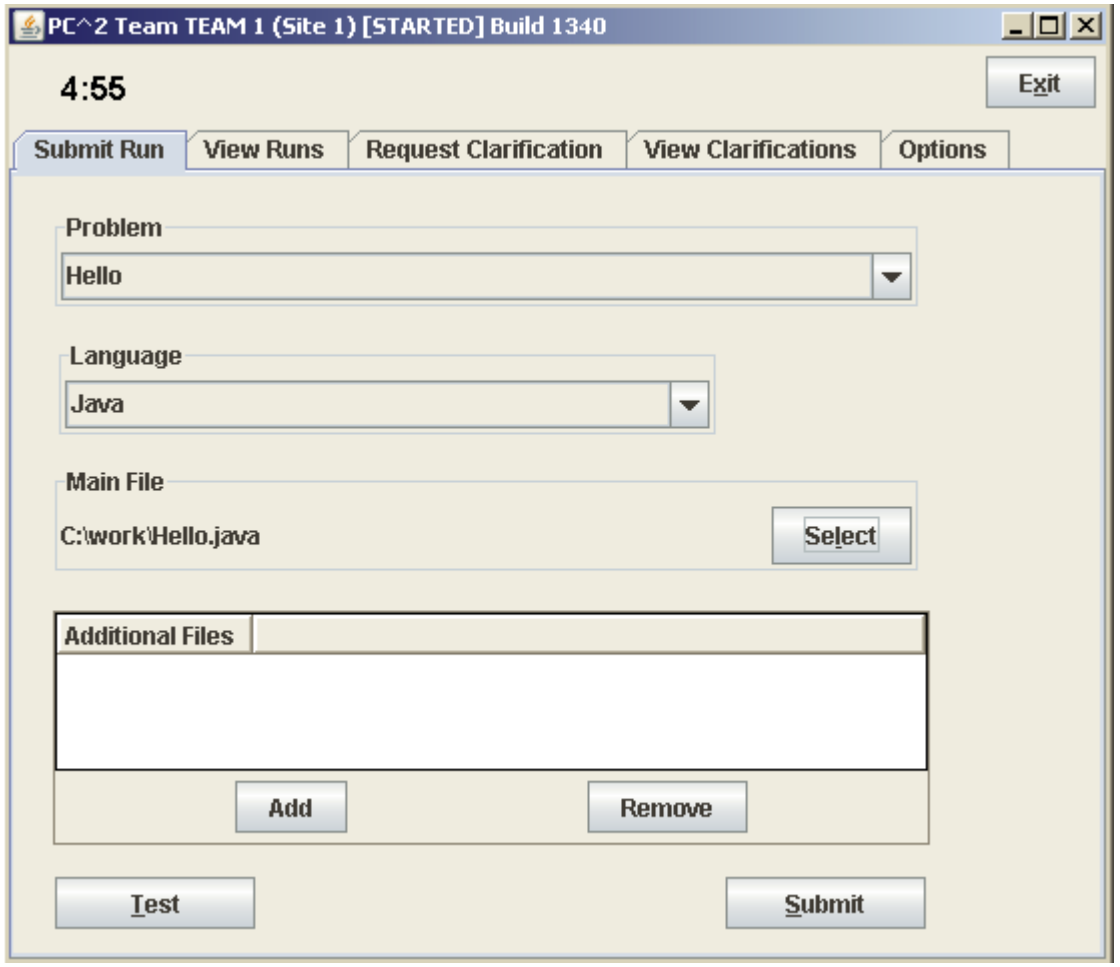
- We will use a GUI base tool to help to submit your program ——PC^2 (ACM-ICPC official tools)
- It is simple and robust.
- All things can be done by just several clicks.

login to PC^2


PC^2 Login
California State University, Sacramento
Programming Contest Control System
Name
Password
Login
Exit
SACRAMENTO STATE
PC^2 version 9
acm International Collegiate Programming Contest
IBM
event sponsor

Submitting a Program to the Judges

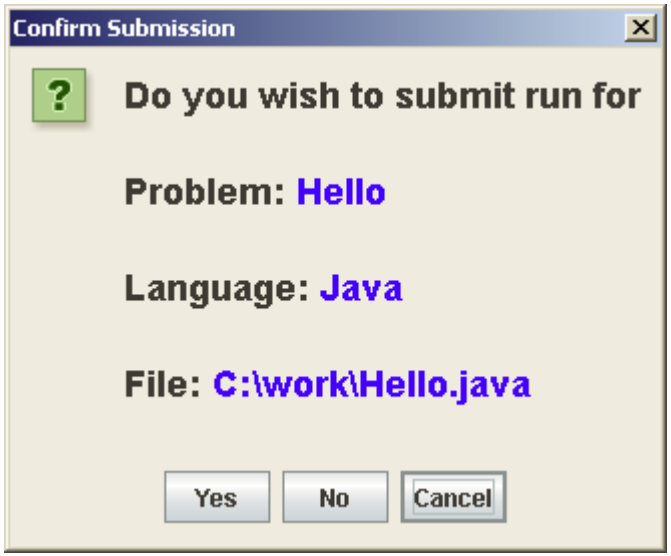
- Clicking on the **SUBMIT RUN**
- Clicking in the **Problem** box will display a drop-down list of the contest problems
- Clicking in the **Language** box to choose Language (only **C** in our midterm)
- Click on the **Select** button, select your **source code** **e.g. A.c,** (only C in our midterm)

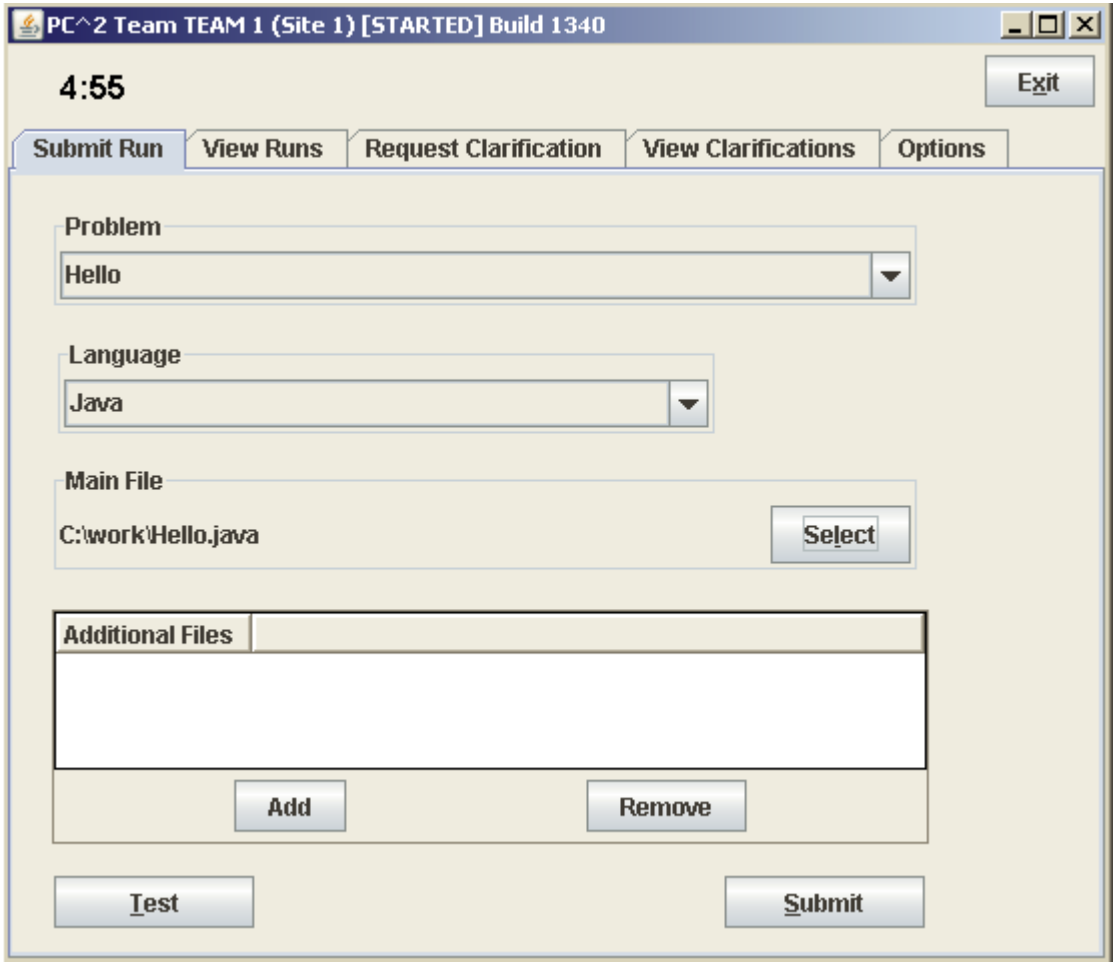


Test Runs

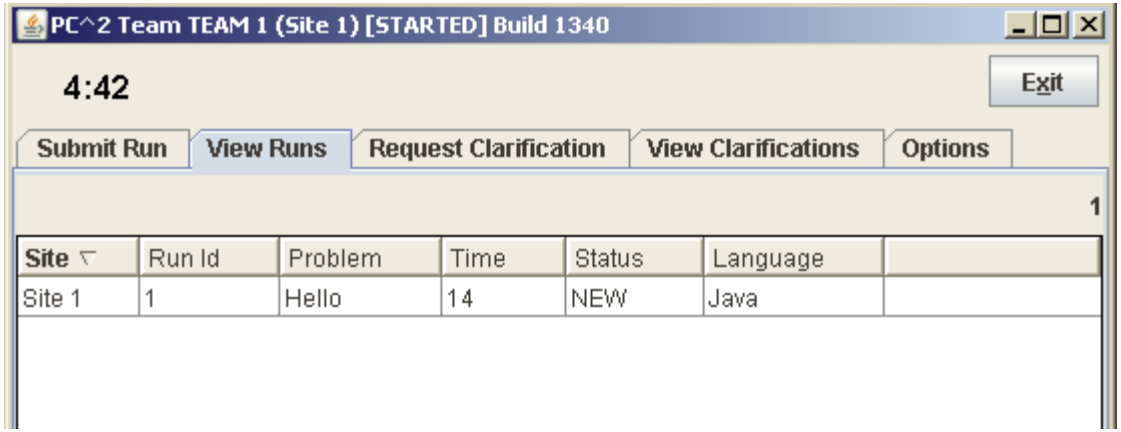
- Click the **Test** button
- This will make a "**TEST RUN**", meaning it will compile and execute your program *on **your machine***.

- Once you are satisfied with the results of your Test Run, click the **Submit** button.





Run Results


PC^2 Team TEAM 1 (Site 1) [STARTED] Build 1340
4:42
Exit
Submit Run
View Runs
Request Clarification
View Clarifications
Options
1
Site
Run Id
Problem
Time
Status
Language
Site 1
1
Hello
14
NEW
Java


Run Judgement Received
Judge's Response
Problem: Hello
Language: Java
Run Id: 20
Judge's Response: Yes
OK

Ranking

- Number of problems solved
- You can open the Firefox browser to see the ranking page.
- Penalty

Rank	Name	Solved	Time	A	B	C	D	E	F	G	Total att/solv
1	team63	7	422	1/4	1/9	1/17	2/154	1/87	1/42	2/69	9/7
2	team65	6	586	1/4	7/152	1/35	1/117	1/65	1/93	2/--	14/6
3	team84	4	458	1/12	2/118	2/122	2/146	0/--	0/--	0/--	7/4
4	team103	3	143	1/22	1/37	1/84	0/--	1/--	0/--	0/--	4/3
5	team30	3	171	1/28	1/91	1/52	0/--	3/--	0/--	0/--	6/3
6	team17	3	350	2/69	2/86	1/155	0/--	0/--	0/--	0/--	5/3
7	team55	2	216	0/--	1/58	1/158	0/--	0/--	0/--	0/--	2/2

Details of Penalty

- Penalty = no. of minutes passed + no. of wrong submissions x 10

Example:

- If you have 3 **incorrect submissions** for Q.2, and you get a **correct submission** at 6:32 p.m.
- Penalty for Q2 = 32 + 3 x 10
- Grade for each question depends on penalty
- If you don't have any correct submission, you will get 0 for that question

Score

- Then we will compute the score based on the whole ranking.

Problem Solved	Penalty	Score
7	422	100
6	495	97
6	582	96
6	586	95
5	237	93
5	239	93
5	316	92
5	325	92
5	347	91
5	383	91
5	467	90
4	194	85
4	219	84
4	239	84
4	290	84
4	327	83
4	336	83
4	340	83
4	355	82
4	379	82
4	458	81
4	494	81
4	544	80

Thanks & Good Luck!