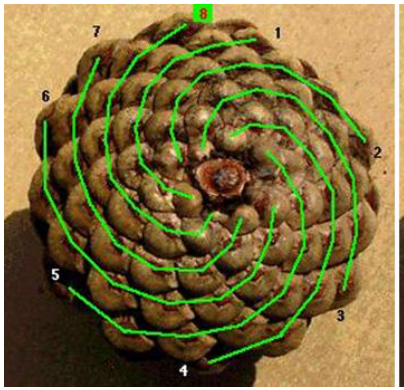
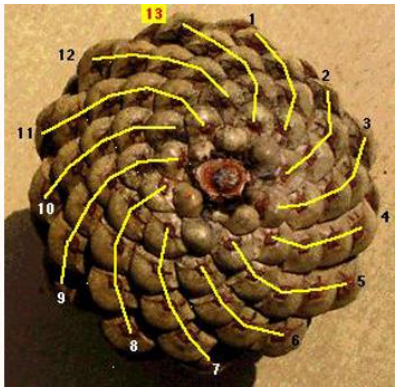
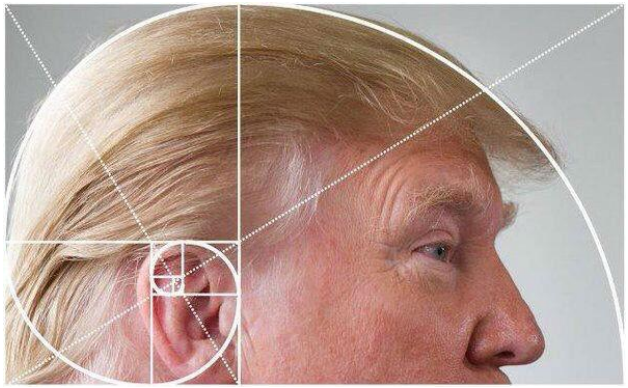
HW1 Big Fibonacci

http://acm.cs.nthu.edu.tw/problem/11364/







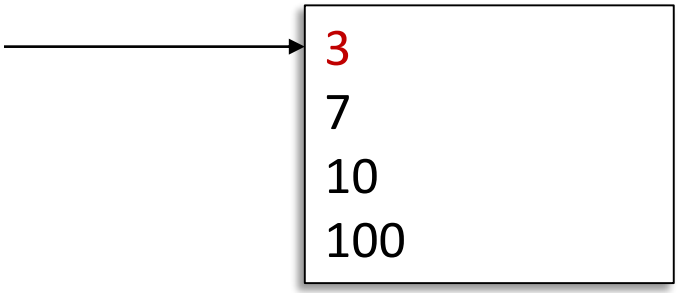
Fibonacci Numbers

- 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89
  - $x_0 = 0$
  - $x_1 = 1$
  - $x_n = (x_{n-2} + x_{n-1})$

- We want to write a program to analyze these numbers

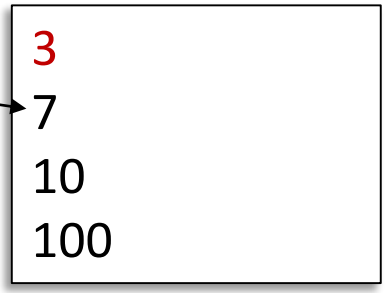
Input

- The first number describes the amount of Fibonacci numbers we want to find



Input

- For each following integer
  - Find the smallest Fibonacci number with that many of decimal digits
  - e.g.,
    - 7 → 1346269
    - 10 → 1134903170
    - 100 → 134471966758615318141971664172456788689085069627576798710629447201788497441033206952450482474743775 7



Then …

- For each Fibonacci number
  - Analyze the occurrence of its decimal digits

		0	1	2	3	4	5	6	7	8	9
7	1346269	0	1	1	1	1	0	2	0	0	1
10	1134903170	2	3	0	2	1	0	0	1	0	1
100	134471966….	7	11	7	5	15	8	12	17	10	8

i.e., '0' appears twice in "1134903170"

Required Output

7 **1346269** 0 1 1 1 1 0 2 0 0 1↵
10 **1134903170** 2 3 0 2 1 0 0 1 0 1↵
100 **134471966758615318141971664172456788689085069627576798710629447201788497441033206952450482474743775 7** 11 7 5 15 8 12 17 10 8↵

Available Resources

- List of the first 300 Fibonacci numbers
  - http://www.maths.surrey.ac.uk/hosted-sites/R.Knott/Fibonacci/fibtable.html
- List of 301st - 500th Fibonacci numbers
  - http://www.maths.surrey.ac.uk/hosted-sites/R.Knott/Fibonacci/fibtable301.html
- Fibonacci calculator
  - http://www.maths.surrey.ac.uk/hosted-sites/R.Knott/Fibonacci/fibCalcX.html

Requirement

- Please upload two files to LMS
  - Don't need to use zip or rar to pack the files
  - main.cpp
    - You are free to use either C or C++
  - README.txt
    - First line: the SID
    - Second line: the number of passed test cases (0~10)

SID	Submit Time	Status	Source
1484746	March 14, 2017, 10:10 a.m.	All Accepted (10/10)	C++
1484679	March 13, 2017, 10:29 p.m.	All Accepted (10/10)	C++
1484678	March 13, 2017, 10:29 p.m.	Compile Error	C++

Grading

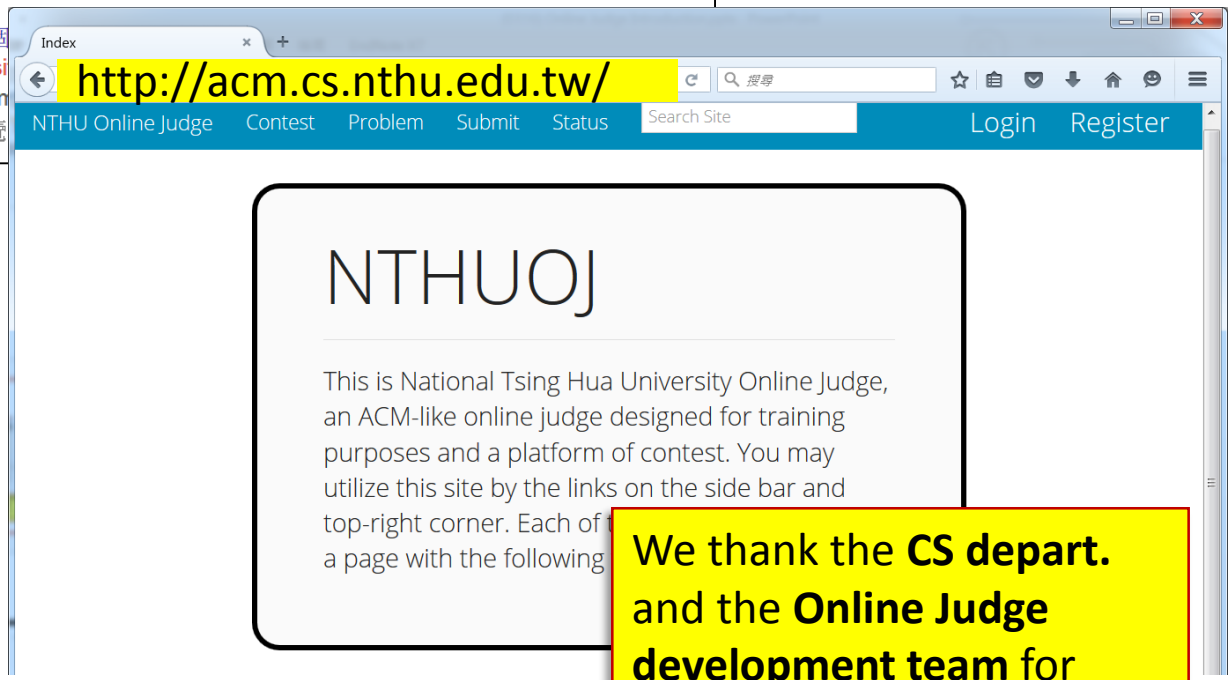
- Grades
  - By default 50 + 5 * the number of passed test cases
  - According to the number of passed test cases on Online Judge
- Deadline 4/9
  - -10% late penalty per week (up to -40%)
  - +10% bonus if you complete the homework 1 week before the deadline (i.e., by 4/2)
  - According to the upload time to LMS

Grading

- 0 credit for all similar (i.e., plagiarized) codes (no matter which one is original)
  - Don't ask others for codes
  - Don't directly copy codes on the Internet
  - Don't submit others' codes to either iLMS or Online Judge
  - Don't publish your codes or give your codes to others

Online Judge

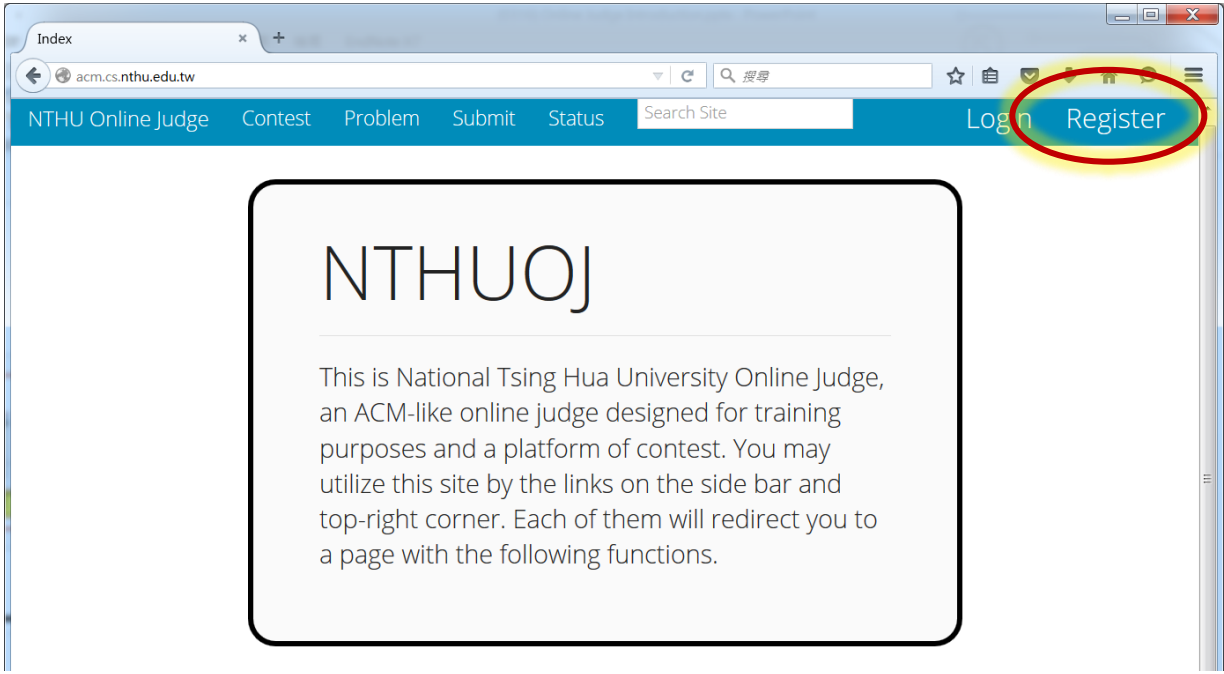
NTHU Online Judge



We thank the **CS depart.** and the **Online Judge development team** for supporting this service.

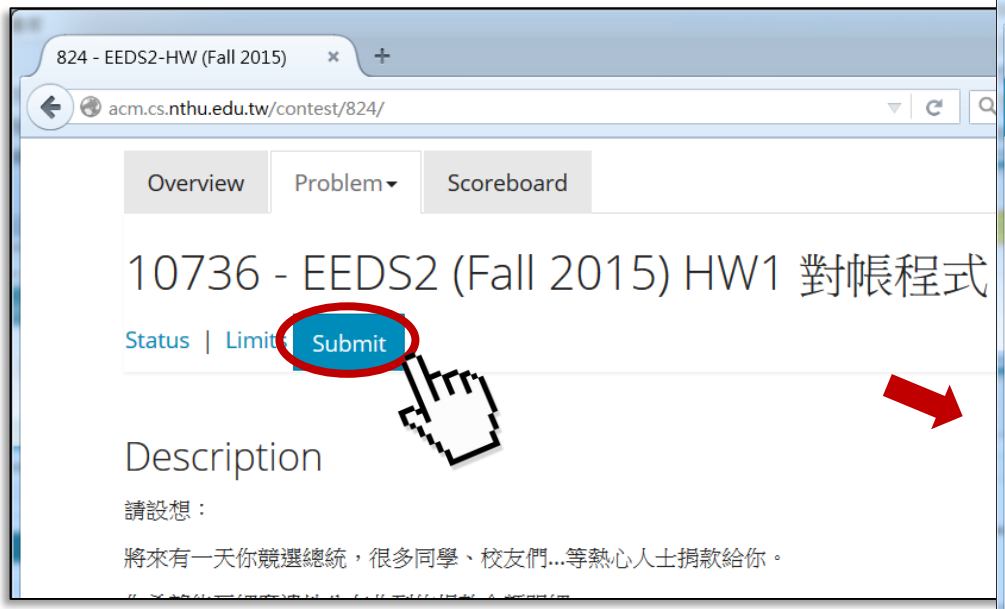
Register

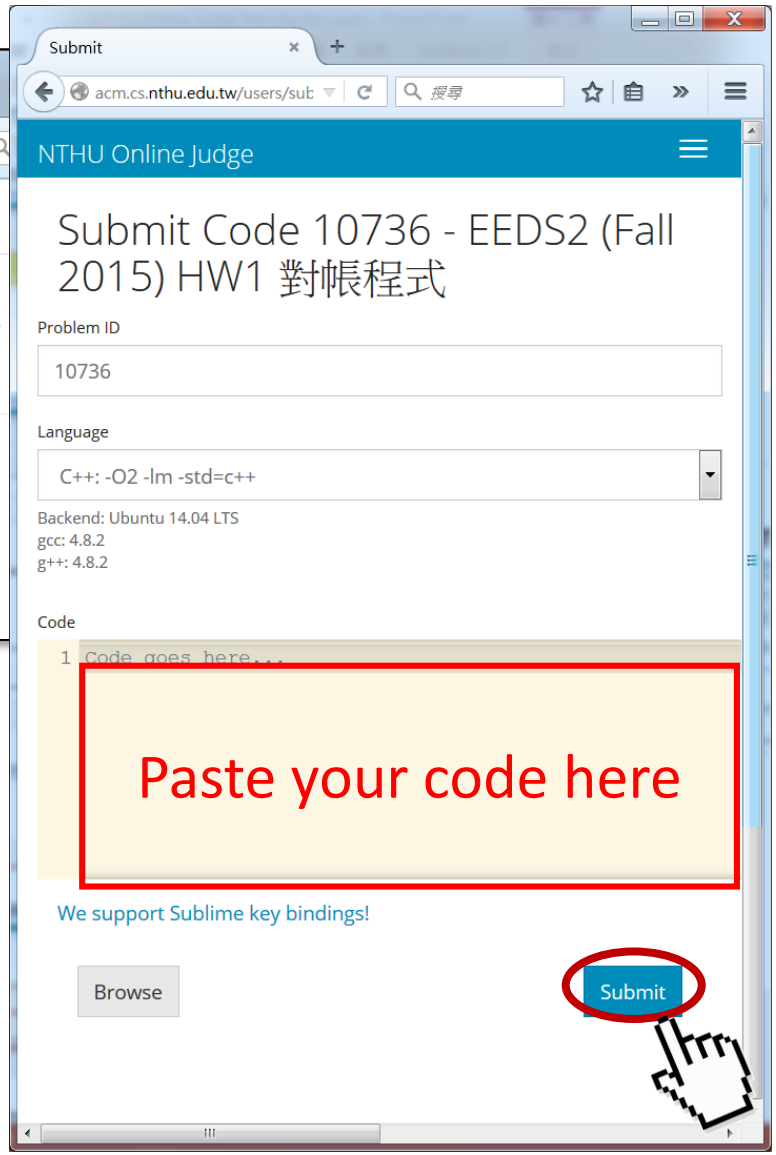
- Register your ID:
  DS2+studentID
  e.g., DS2102030405



HW Description

Submit Your Code





Check Out Your Results

Status of 1000 - The A+B Problem

Submit ID	Date	Username	Problem	Status	Source
1196052	2015-03-14 13:44:31	SC29182	1000 - The A+B Problem	All Accepted (2/2)	C
1196039	2015-03-14 13:37:56	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1196038	2015-03-14 13:37:19	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1195796	2015-03-13 14:12:21	DS2test	1000 - The A+B Problem	Judging by nthuoj-vm1	C++
1195795	2015-03-13 14:06:59	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1195791	2015-03-13 13:55:07	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1195790	2015-03-13 13:54:50	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1195755	2015-03-13 11:26:07	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1195750	2015-03-13 11:23:58	DS2test	1000 - The A+B Problem	Not Accepted (0/2)	C++
1195748	2015-03-13 11:20:16	hadesshark	1000 - The A+B Problem	All Accepted (2/2)	C++

Hints

- Develop, test, and debug programs on your preferred platforms, e.g.,
  - Code::Blocks → most recommended
    - http://www.codeblocks.org/downloads/26
      → codeblocks-xx.xx**mingw**-setup.exe
  - Visual Studio or (Visual Studio express)
  - Linux/Mac environments
  - STOP using Dev-C++, which is NOT under maintenance any more

Hints

- Online Judge can display compile errors
- Redirect stdin (cin) and stdout (cout) to files during development
  - #include <fstream>
  - freopen("t1.txt", "r", stdin);
  - freopen("o1.txt", "w", stdout);
- Be careful of extra space and newline characters
  - Online judge performs character to character matching to determine whether the output is correct

Hints

- Non-standard libraries and some functions (such as file IO) are not supported in NTHU OJ
- Please post your questions in the iLMS 討論區
  - Don't directly post your code
  - Don't ask TAs to help debugging
  - You should simplify and generalize your qeustion
- Online Judge contains many other exercises
  - You can also try them