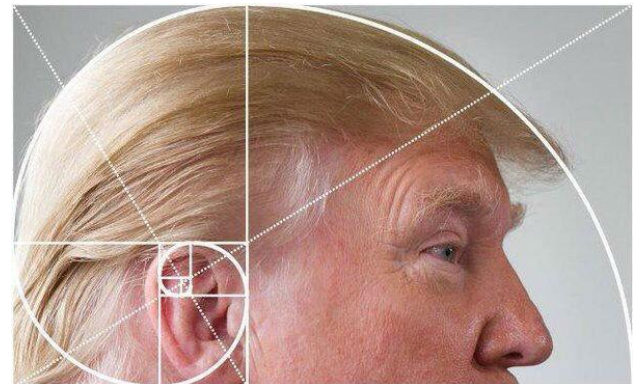
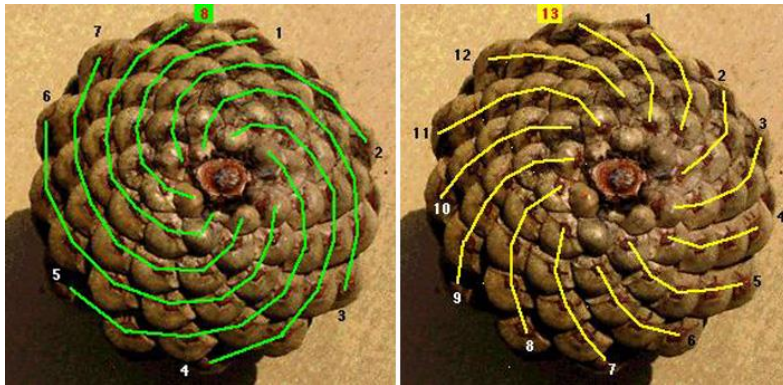


# HW1 Big Fibonacci

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



# Fibonacci Numbers

- 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89

- $x_0 = 0$

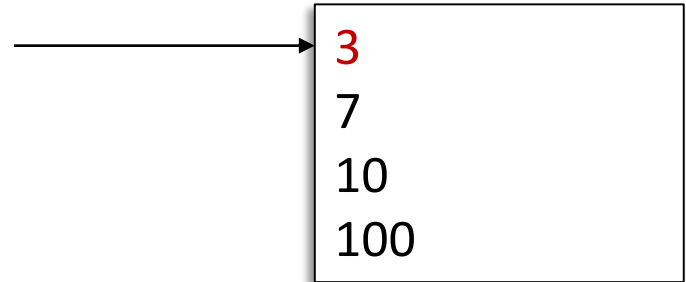
- $x_1 = 1$

- $x_n = (x_{n-2} + x_{n-1})$

- 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

3  
7  
10  
100

- e.g.,

- 7 → 1346269

- 10 → 1134903170

- 100 →

13447196675861531814197166417245678

86890850696275767987106294472017884

974410332069524504824747437757

# 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 1344719667586153181419716641724567886890850696275767 987106294472017884974410332069524504824747437757 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 301<sup>st</sup> - 500<sup>th</sup> 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

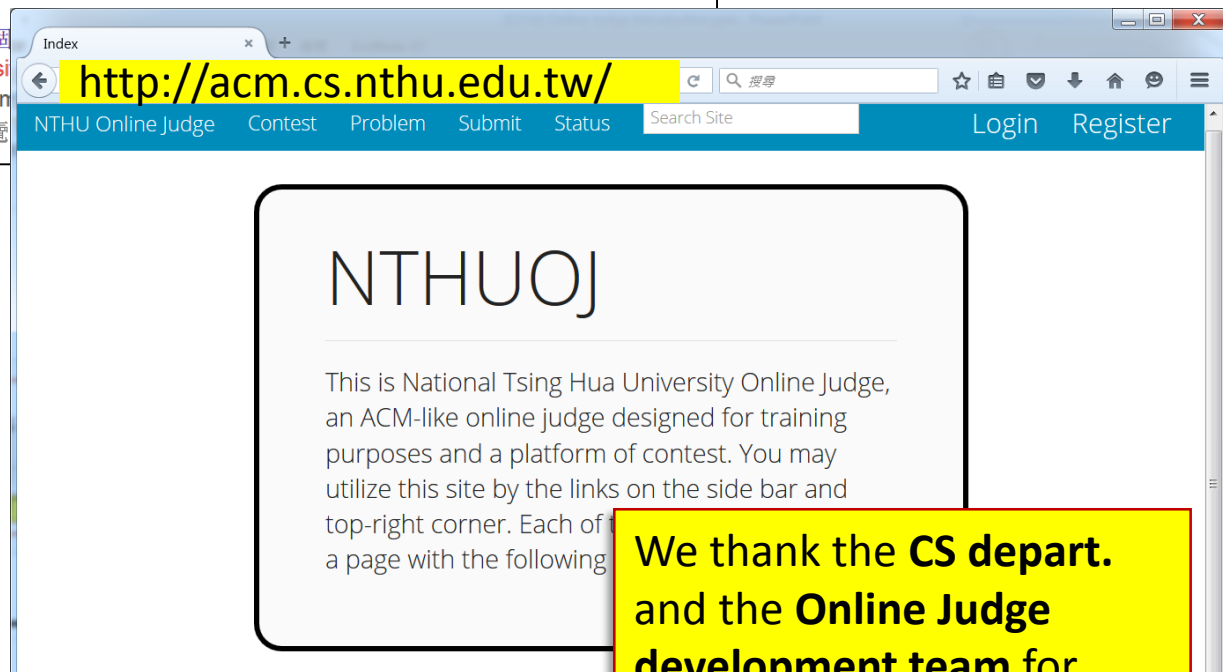
- Grades
  - By default  $50 + 5 * \text{the number of passed test cases}$
  - According to the number of passed test cases on Online Judge
- Deadline 4/9
  - -10% late penalty per week (up to -40%)
  - +10% bonus if you complete the homework 1 week before the deadline (i.e., by 4/2)
  - According to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

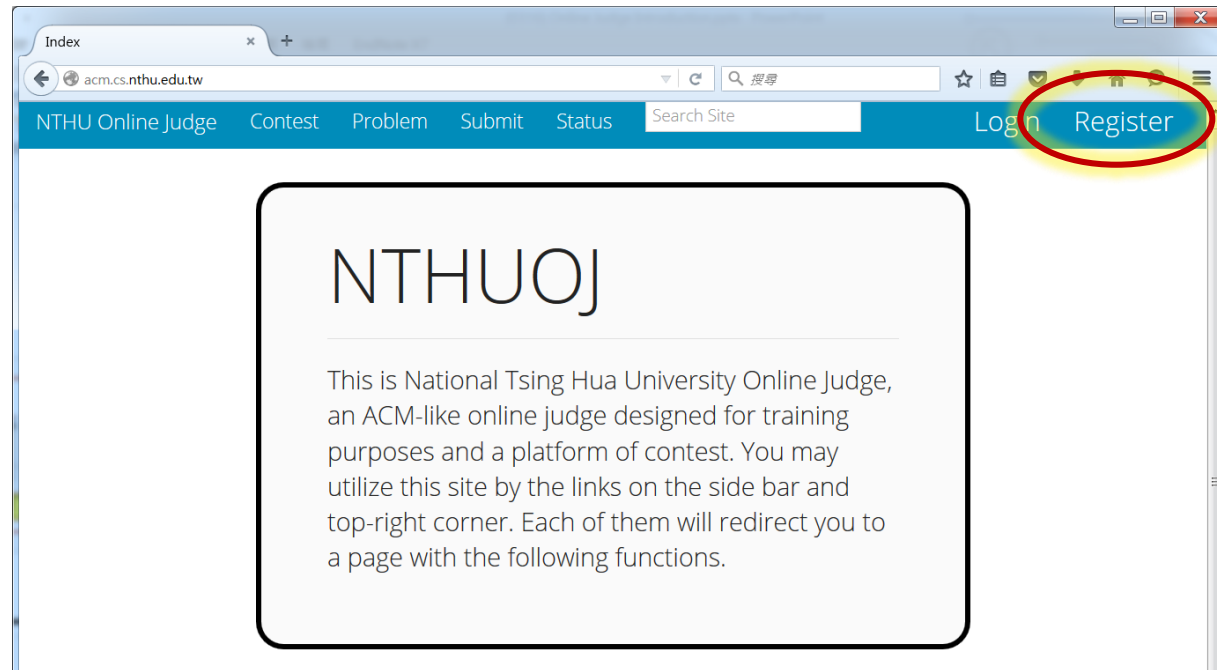
# NTHU Online Judge




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

# Register

- Register your ID:  
DS2+studentID  
e.g., **DS2**102030405



# HW Description



The screenshot shows a web browser window with the address bar containing 'acm.cs.nthu.edu.tw/contest/824/'. The page has three tabs: 'Overview', 'Problem', and 'Scoreboard'. The main content area displays the title '10736 - EEDS2 (Fall 2015) HW1 對帳程式' and three buttons: 'Status', 'Limits', and 'Submit'. Below the title is a section titled 'Description' with the following text:

請設想：

將來有一天你競選總統，很多同學、校友們...等熱心人士捐款給你。

你希望能巨細靡遺地公布收到的捐款金額明細。

因此，你需要寫個程式，幫忙核對競選服務處記錄的捐款數額 vs 銀行的對帳單。

Below the description is a section titled 'Input' with the following text:

第一個數字是：競選服務處共記錄了幾筆捐款數額 (sample input 的例子是 28 筆)。

接下來逐一列出競選服務處所記錄下的數額。

接著的數字是：銀行的對帳單共有幾筆捐款數額 (sample input 的例子是 27 筆)。

接下來逐一列出銀行的對帳單所記錄下的數額。

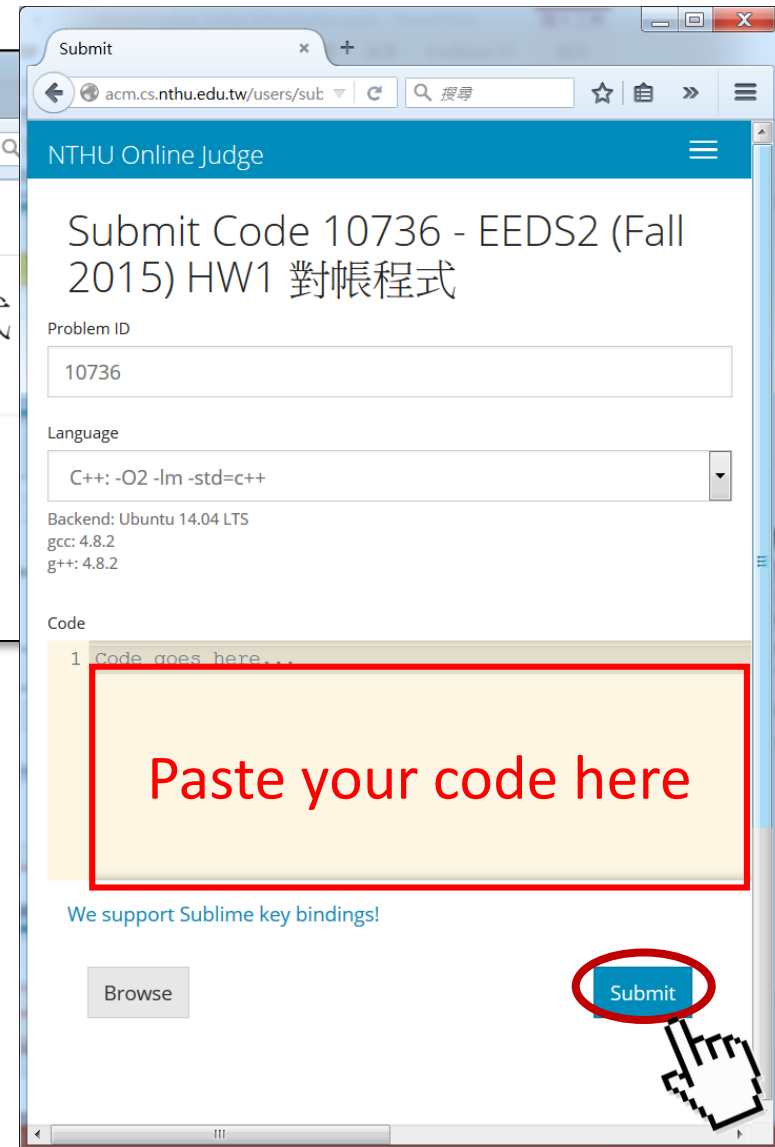
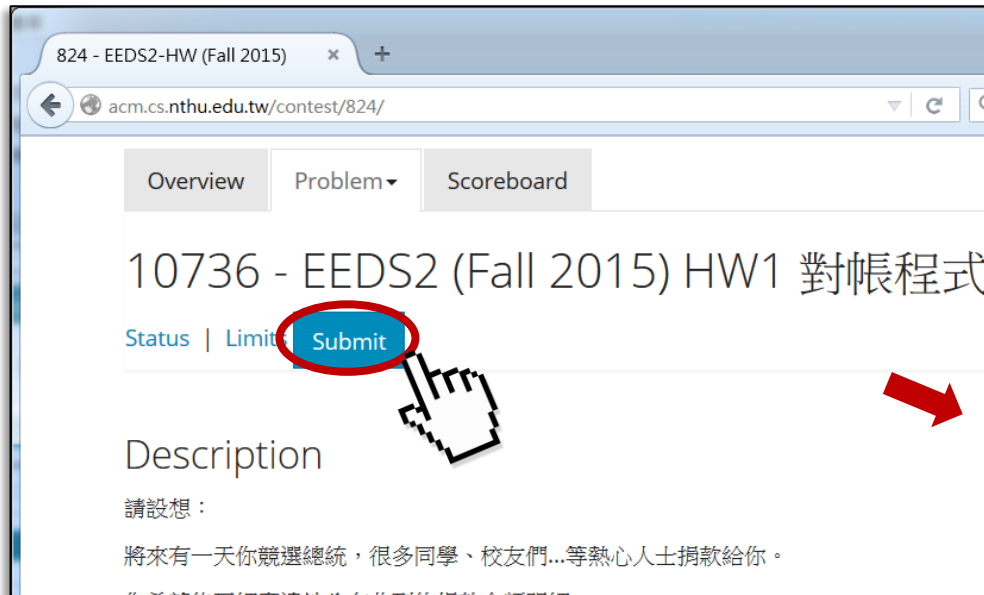
Below the input section is a section titled 'Output' with the following text:

請把競選服務處所記錄的捐款數額由小至大排序。同樣的，也把銀行對帳單的捐款數額由小到大排序。

如下圖所示，先印出兩者各有幾筆數額 (以 sample input 為例，會如下圖印出分別是 28 與 27 筆)。

接著，把兩份數字相互比較、逐行並列印出、並且把不一致的地方標記X (以 sample input 為例，會如下圖所示，銀行對帳單(右邊欄)多了 1460與 2190，但少了 1330、1720、及2170)

# 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	<a href="#">1000 - The A+B Problem</a>	All Accepted (2/2)	C
1196039	2015-03-14 13:37:56	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1196038	2015-03-14 13:37:19	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1195796	2015-03-13 14:12:21	DS2test	<a href="#">1000 - The A+B Problem</a>	Judging by nthuoj-vm1	C++
1195795	2015-03-13 14:06:59	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1195791	2015-03-13 13:55:07	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1195790	2015-03-13 13:54:50	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1195755	2015-03-13 11:26:07	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1195750	2015-03-13 11:23:58	DS2test	<a href="#">1000 - The A+B Problem</a>	Not Accepted (0/2)	C++
1195748	2015-03-13 11:20:16	hadesshark	<a href="#">1000 - The A+B Problem</a>	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.xxmingw-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 question
- Online Judge contains many other exercises
  - You can also try them