

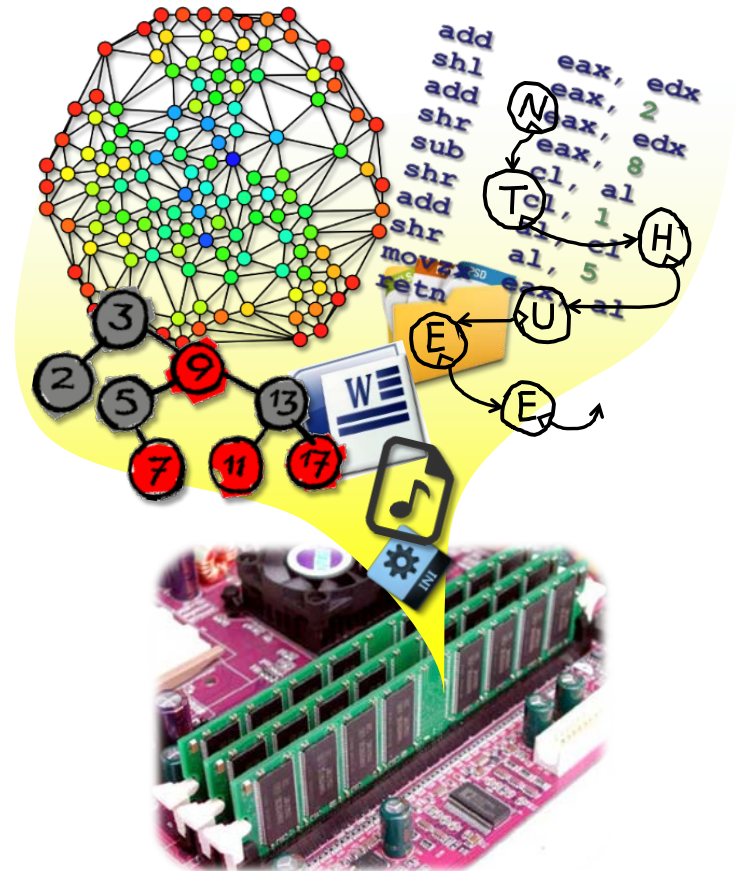
Data Structures

Intro to Online Judge

Prof. Ren-Shuo Liu

NTHU EE

Spring 2018



Quiz Rule

- Quiz time: 18:30 – 20:10, 100 min
- One available sample input / output
- 10 test cases (inputs / outputs), which are not available to students
- No Internet, but you can bring one A4 page note
- We will have a roll call in quiz time
- Register contest before 18:30!!

Register Contest

NTHU Online Judge

Contest

Problem

Submit

Status

Search Site



s106062513

Logout

NTHUOJ

This is National Tsing Hua University Online Judge, an ACM-like online judge designed for training purposes and a platform of contest. You may utilize this site by the links on the side bar and top-right corner. Each of them will redirect you to a page with the following functions.

Announcements

Any bug? Report here: <http://goo.gl/forms/jOeiwZdjku>

If you have any problem with your account, please email to nthucsoj@gmail.com

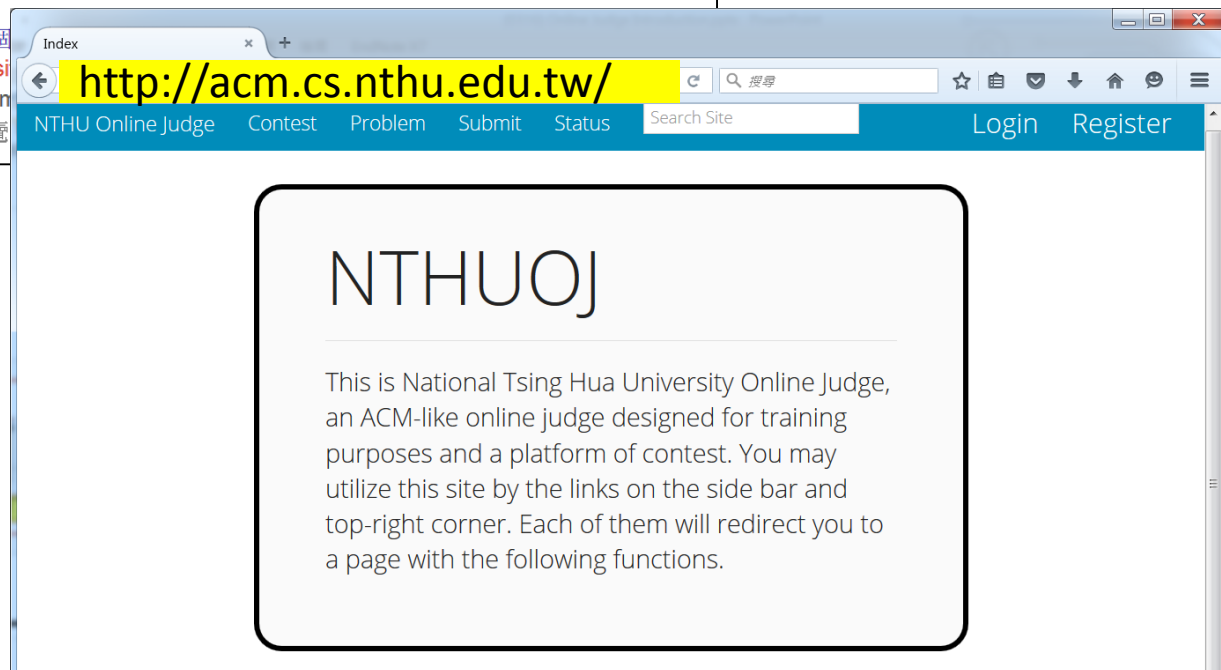
Partial Judge updates: <https://goo.gl/2tord8> (2017/10/13)

Running / Upcoming Contest

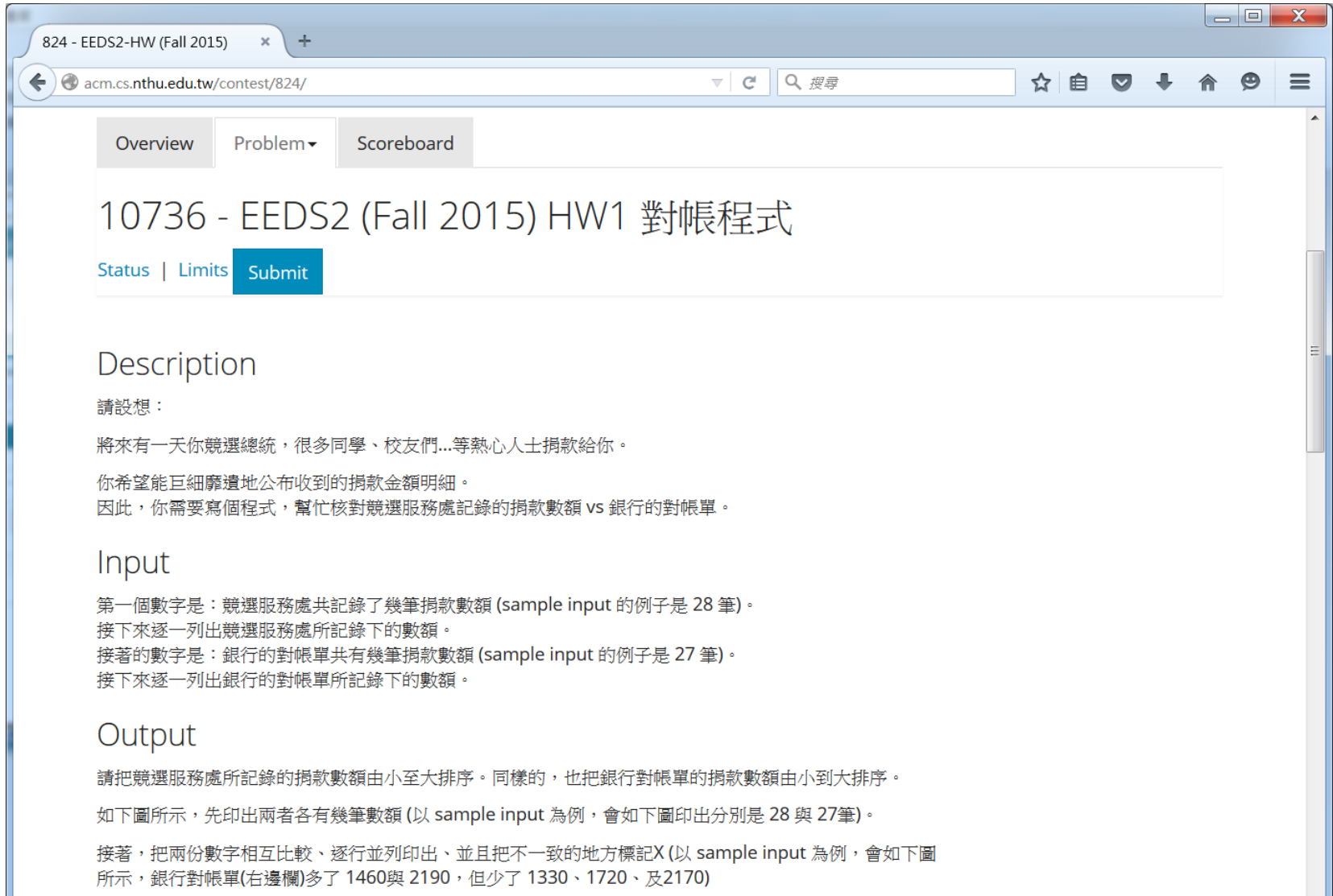
Register	Contest name	Remaining time	Upcoming
	1396 - test		01:21:50

Register contest before 18:30!!!!
Or you can't attend quiz.

NTHU Online Judge



Problem Descriptions



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 'Problem' tab is selected. The main content area displays the problem title '10736 - EEDS2 (Fall 2015) HW1 對帳程式' and three buttons: 'Status', 'Limits', and 'Submit'. Below the title is a 'Description' section 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。

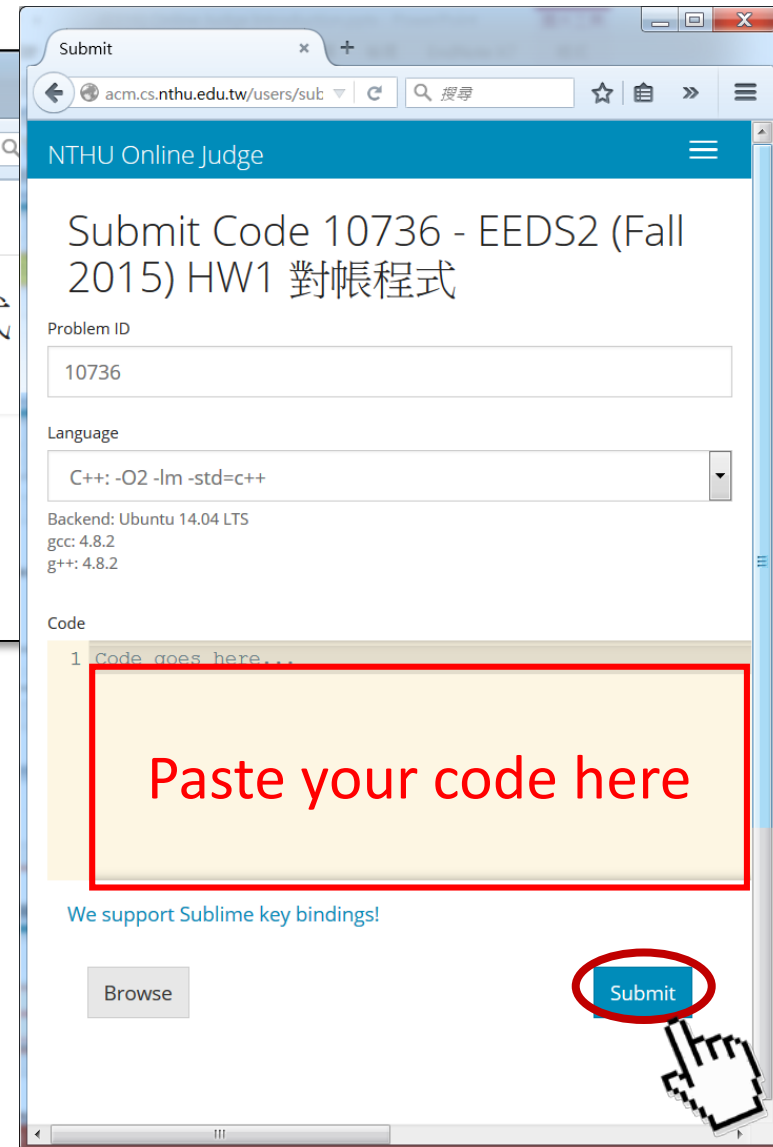
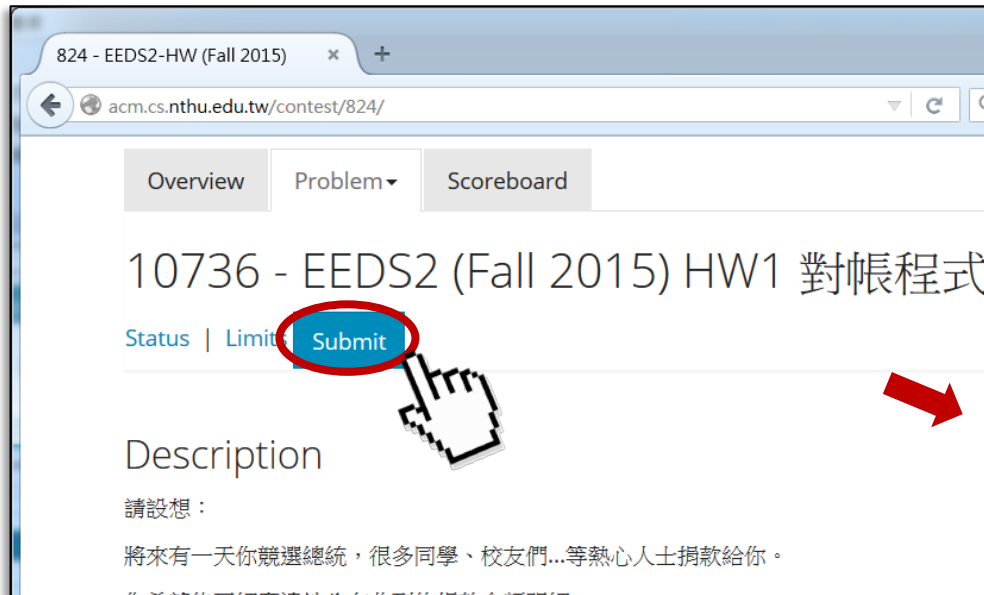
Below the description is an 'Input' section with the following text:

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 an 'Output' section 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	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++

Possible Results

- Compile Error
- Wrong Answer
- Runtime Error
- Restricted Function
- Representation Error
- Time limit exceeded



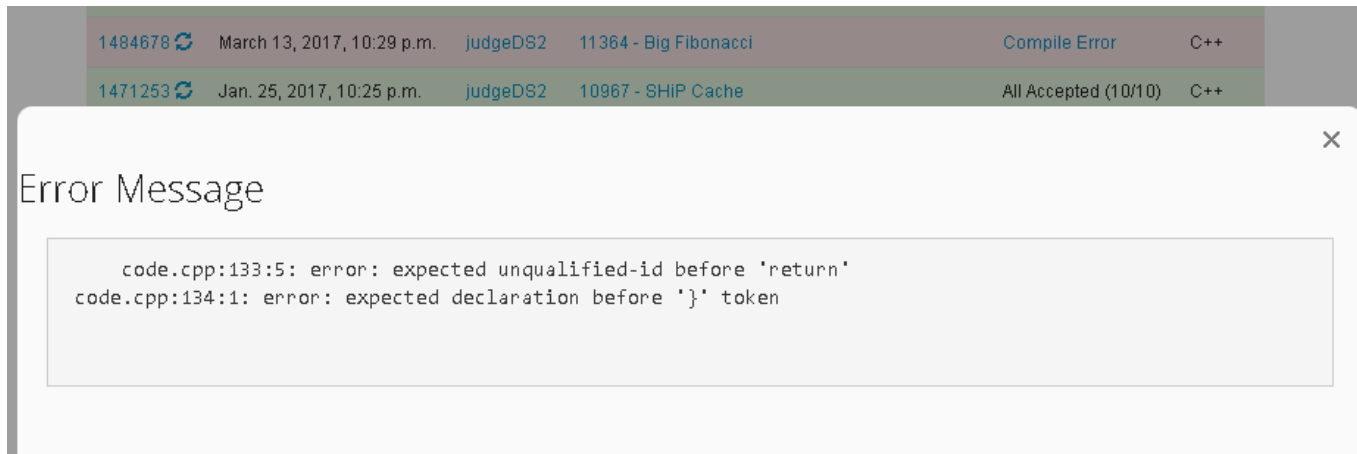
Per test case

Possible Results

- **Compile Error:** the code CANNOT be compiled
- **Wrong Answer:** the code can be compiled, but the outputs are not 100% identical to the expected results
- **Runtime Error:** the code can be compiled but faces errors during execution such as segmentation faults and division by zero
- **Restricted Function:** the code invokes some system-level functions such as `fopen()`
- **Representation Error:** the answer is almost correct except for some spaces or newline characters
- **Time limit exceeded:** it is probably that your code contains bugs that lead to infinite loops, or your algorithm is too complex

Compile Errors

- If the code cannot compile in your environment, either, you should read the error messages and resolve the errors in your environment.
- Online Judge can show what compile errors are



The screenshot displays a table of problem submissions and a detailed error message window. The table lists two submissions: one with ID 1484678, dated March 13, 2017, for problem 11364 - Big Fibonacci, which resulted in a 'Compile Error' in C++; and another with ID 1471253, dated Jan. 25, 2017, for problem 10967 - SHIP Cache, which was 'All Accepted (10/10)' in C++.

The error message window, titled 'Error Message', shows the following text:

```
code.cpp:133:5: error: expected unqualified-id before 'return'  
code.cpp:134:1: error: expected declaration before '}' token
```

Runtime Error

- If your main function return non-zero values, OJ views it as a runtime error
- For example, the following code results in "Runtime Error" instead of "Wrong Answer"

```
#include <iostream>
using namespace std;
int main()
{
    cout << "these are definitely wrong answers";
    return 1;
}
```

- Similarly, `exit(1)` is interpreted as a runtime error

Runtime Error

- Segmentation faults and division-by-zero are also runtime errors

```
#include <iostream>
using namespace std;
int a[100];
int main()
{
  for(int i=0; i<10000; i++){
    a[i] = 1;
  }
  return 0;
}
```

```
#include <iostream>
using namespace std;
int a[100];
int main()
{
  for(int i=-10000; i<10000; i++){
    a[i] = 1;
  }
  return 0;
}
```

Runtime Error

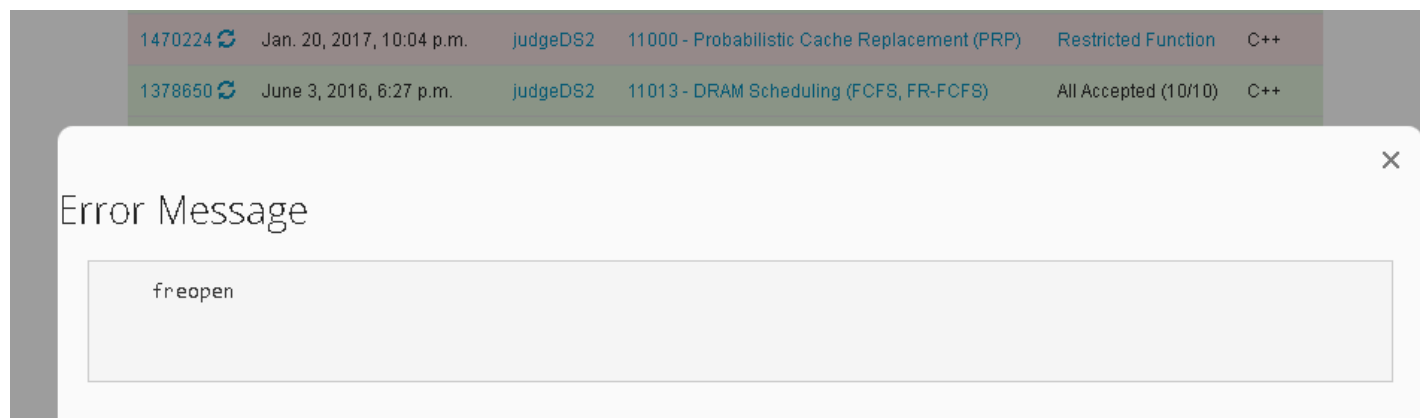
- If your program uses too much memory, OJ treats it as a runtime error

Runtime Error

- Runtime error means that your program does contain a bug
 - A bug that violates the policies of the OS
- Runtime errors are difficult to debug
 - Your program can behave strangely
 - For example, adding useless variables into a program may change program behaviors
- Tips: Writing a program carefully in the first place
 - Array index, pointers, boundary conditions

Restricted Function

- fork, vfork, pause, create, truncate, chmod, chown, lchown, access, link, symlink, unlink, mkdir, rmdir, tmpfile, fopen, freopen, fopen64, freopen64, popen, rename, remove, fstream, ifstream, ofstream, setrlimit, getrlimit, system, sleep, execl, execv, execl, execve, execlp, execvp
- OJ can display the function name



Wrong Answer

- You can feed sample inputs into your program and check whether the outputs are the same as the sample outputs
 - It is better to use a text comparison tool for comparing the outputs
- If your program work correctly with the sample inputs, you should check whether your program is not general enough to handle different inputs
- Runtime error can results in this situation, too

Time limit exceeded

- Your program contains an endless loop
- Your algorithm is not efficient enough
- Runtime error can result in this situation, too

Representation Error

- Answer is almost correct except for some spaces or newline characters

```
while(scanf("%15s", words) != EOF)
```

Hint

```
#include <iostream>
using namespace std;
int main(void)
{
    //read until EOF
    while(cin >> ... ) {
        //processing ...
        cout << ...
    }
    return 0;
}
```

```
#include <iostream>
using namespace std;
int main(void)
{
    //read until EOF
    while(scanf(...) != EOF) {
        //processing ...
        printf(...);
    }
    return 0;
}
```

The A+B Problem

```
#include <iostream>
using namespace std;
int main(void)
{
    int a, b;
    //read until EOF
    while(cin >> a >> b ) {
        //processing ...
        cout << a+b << endl;
    }
    return 0;
}
```

The A+B Problem

```
#include <stdio.h>
int main(void)
{
    int a, b;
    //read until EOF
    while(scanf("%d %d", &a, &b) != EOF) {
        //processing ...
        printf("%d\n", a+b);
    }
    return 0;
}
```

406



407



- We want 40 students to use R406 (Linux)