Programming assignment #3

圍棋大賽

1. Using **maximum flow**, implement the program in C/C++.

2. Analysis the time complexity.

Experiments

舉辦圍棋大賽,並給定目前階段的積分

下表中,每一行是一個選手的參賽訊息,

分別為:

1. Number:選手號碼

2. Wins:目前已贏得的場數

3. Loss:目前已輸掉的場數

4. Left:總剩餘場數

5. 與其他選手之間的剩餘場數

Number	Wins	Loss	Left	0	1	2	3
0	83	71	8	0	1	6	1
1	80	79	3	1	0	0	2
2	78	78	6	6	0	0	0
3	77	82	3	1	2	0	0

有些選手已確定無法奪冠,例如:3 號選手目前贏 77 場,還剩餘 3 場比賽,

就算之後的 3 場都贏了,仍比 1 號選手目前贏 80 場還少,因此註定不可能奪冠

請用 maximum flow 的方法得出有哪些選手還有機會奪冠

Ps.可以並列冠軍,且沒有和局

Your program must be able to read an input file. The I/O file names are arguments to your program; in other words, those file name can NOT be fixed. In command line, your program is invoked by:

./a.out   inputfile   outputfile

Input file example

```
4
0 83 71 8
1 80 79 3
2 78 78 6
3 77 82 3

0 1 6 1
1 0 0 2
6 0 0 0
1 2 0 0
```

第一行:選手數目

第二行到空白行之前:各選手的 wins,loss,left

空白行之後的矩陣:選手兩兩之間的剩餘場數

Output file example(有機會奪冠的選手號碼,由小到大依序列出,注意換行)

```
0
2
```

Output format 必須遵守規定否則 0 分計算

Report

1. No more than 3 pages.

2. Your report must contain:

    a. The flow chart or the pseudo code of you program.
    b. The experimental results and analysis.

    c. Time complexity

    ps. 助教公布的測資如果不夠，請自行產生測資來測實驗數據

Program Submission

1. Please use C/C++ language and your program must be written in only one source file.

2. Your source file and report file name must be named as "Student_ID_number_hw3.cpp" and"Student_ID_number_hw3.pdf".Please make sure that all characters of the filename are in **lower case**. For example, if your student number is 9711592, the name of your files should be "9711592_hw3.cpp" and "9711592_hw3.pdf".

3. 請繳交"Student_ID_number_hw3.cpp"跟"Student_ID_number_hw3.pdf"兩個檔案,不要壓縮

未按照繳交格式繳交作業的人會得到 **0** 分！！！

Grading

You need to submit both your source code and report. Remember the submission rules mentioned above, or you will get zero point!!!!

- Unique and compilable source code   70 %
    Case0+Case1   22%
    Hidden cases   48%
- Report   30 %

遲交一～兩天成績打 **8** 折

三～四天再打 **8** 折

以此類推,超過七天不能補交

Due Date

The upload dead line would be **at pm 11:59 on January 15, 2018**.