

Practice S12P05: Prize

http://www.comp.nus.edu.sg/~cs1010/4_misc/practice.html

Week of release: Week 12

Objective: Structure, Searching and Sorting

Created by: Lim Wei Zhong

Task statement:

There are n ($1 \leq n \leq 300$) students in Mr Green's class, numbered 1 to n . For m ($1 \leq m \leq n$) weeks, Mr Green sets a weekly test. For each test, he makes sure that their scores are all distinct, and he awards one prize to the top student in the test who has not been awarded any prize yet. Given the weekly scores of every student, for each week, find the student who received the prize.

Example: $n=8$, $m=4$, and the scores in the table below:

Student	Week 1	Week 2	Week 3	Week 4
1	80	79	64	81
2	55	57	48	58
3	48	53	53	46
4	60	77	69	76
5	42	64	59	33
6	85	73	75	69
7	70	67	59	70
8	65	61	68	52

So for week 1, student 6 received the prize, week 2 student 1, week 3 student 4 and week 4 student 7.

Write a program **prize.c** which reads in the number of students and the number of weeks (both are integers in $[1, 300]$). It then reads in n rows of m integers whose values are in $[0, 100]$. Each row represents the scores a student obtained for the tests from week 1 to week m . This program then outputs a sequence of student numbers corresponding to the order in which the students received the prizes.

You should make use of the following structure type **student_t** in your program:

```
typedef struct {
    int id; // The student number
    int scores[MAX_SIZE]; // The test scores of the student
    int prize; // Whether the student has received a prize
} student_t;
```

Sample run:

Enter number of students: **8**

Enter number of weeks: **4**

Enter scores:

80 79 64 81

55 57 48 58

48 53 53 46

60 77 69 76

42 64 59 33

85 73 75 69

70 67 59 70

65 61 68 52

The prize sequence is:

6 1 4 7