CISC320 Spring 2018
Programming Assignment 2

You may use any of the following programming languages:

Java
C++ / C
Python
PLT Scheme (Racket subset)

If you would like to use a different one please let me know ahead of time. If you are using a specific library not included in the base distribution of the language please let me know ahead of time.

Testing

You will be given a file as input with the name "input.txt" and will be expected to output a file with the name "output.txt". Your program will be run with the provided test cases in the attached "input.txt" and some additional hidden test cases.

Grading

Grading will be 80% for correctness and 20% for performance. To receive full credit for performance you must use built-in data structures to achieve O(1) average case performance for each row of input. Your overall solution should run in average case O(c*log c + r) time, where c is the number of contestants and r is the number of rows of input (i.e. the number of submissions).

Problem

Want to compete in the Riddle Olympics? Then you had better know how to keep score! Contestants are ranked first by the number of riddles solved (the more the better), then by decreasing amounts of penalty time. If two or more contestants are tied in both riddles solved and penalty time, they are displayed in order of increasing team numbers.

A riddle is considered solved by a contestant if any of the submissions for that riddle was judged correct. Penalty time is computed as the number of minutes it took until the first correct submission for a riddle was received, plus 5 minutes for each incorrect submission prior to the correct solution (you may assume that no contestant submits a solution for the same riddle after getting it correct). Unsolved riddles incur no time penalties.

Input

The input consists of a snapshot of the judging queue, containing entries from some or all of contestants solving riddles. Each line of input consists of three numbers (max value of 2^31-1, i.e. a 32-bit integer) and a letter in the format: contestant riddle time L. Where L can be C, I, R, U, or E. These stand for Correct, Incorrect, clarification Request, Unjudged, and Erroneous submission. The last three cases do not affect scoring. The lines of input appear in the order in which the submissions were received.

Output

The output for each test case will consist of a scoreboard, sorted by the criteria described above. Each line of output will contain a contestant number, the number of riddles solved by the contestant and the total time penalty accumulated by the contestant. Since not all contestants are actually participating, only display those contestants who have made a submission.

Sample "input.txt"

```
1 2 10 I
3 1 11 C
1 2 19 R
1 2 21 C
1 1 25 C
```

Expected output for above (written to "output.txt")

```
1 2 51
3 1 11
```