

**Baseball Elimination** Given the standings in a sports league at some point during the season, determine which teams have been mathematically eliminated from winning their division.

In the baseball elimination problem, there is a league consisting of  $N$  teams. At some point during the season, team  $i$  has  $w_i$  wins and  $r_{ij}$  games left to play against team  $j$ . A team is eliminated if it cannot possibly finish the season in first place or tied for first place. The goal is to determine exactly which teams are eliminated.

Team	Wins	Loss	Left	Against			
				0	1	2	3
Atlanta (0)	83	71	8	0	1	6	1
Philadelphia (1)	80	79	3	1	0	0	2
New York (2)	78	78	6	6	0	0	0
Montreal (3)	77	82	3	1	2	0	0

Figure 1: Sample Point table

**Montreal** is mathematically eliminated since it can finish with at most 80 wins and Atlanta already has 83 wins. **Philadelphia** is also mathematically eliminated. It can finish the season with as many as 83 wins, which appears to be enough to tie **Atlanta**. But this would require **Atlanta** to lose all of its remaining games, including the 6 against **New York**, in which case **New York** would finish with 84 wins. We note that **New York** is not yet mathematically eliminated despite the fact that it has fewer wins than **Philadelphia**.

### Input:

Input consists of Multiple lines. First line have variable  $N$  that denotes number of teams. Following  $N$  lines will have team name labeled/indexed as  $\{0,1...N-1\}$ , number of wins,number of loses, remaining games to be played and distribution of remaining games against each teams. Figure 1 describes a sample input for required program.

### Output:

Output will be team name  $\{0,1...N-1\}$ , separated by space. e.g. 0 2 if 0 and 2 are the teams eliminated.

Output for Figure 1 :

1 2

**Assumptions.** Assume that no games end in a tie,no rainouts, Ignore wildcard possibilities,assume that there are no whitespace characters in the name of a team.

**Ref :** 1) <https://www.cs.princeton.edu/courses/archive/spr03/cs226/assignments/baseball.html>

2) <https://github.com/nastra/AlgorithmsPartII-Princeton/tree/master/baseball>