

3281 Contest

The MCA Programming Contest differs from the ACM Contest in its scoring. In the MCA, each problem is graded and, if correctly solved, scores a number of points related to its difficulty. The system will not allow a team to resubmit again a solved problem. The team with the most points wins. If teams are tied on points, the tie is broken in favour of the team with the fewer correct solutions. If teams are still tied, the tie is broken in favour of the team with the fewer total submissions. If teams are still tied, the tie is broken in favour of the team with the smaller team number.

Your task is to find out the overall team ranking according to the above rules.

Input

Input for this problem consists of a sequence of one or more scenarios. Each scenario describes a contest.

- The first line consists of 2 integers separated by a single space, T and P , $1 \leq T \leq 10$, $1 \leq P \leq 10$, giving the number of teams taking part (T), and the number of problems used (P). Teams are numbered consecutively from 1, problems are lettered consecutively from uppercase A.
- The second line contains P integers, separated by single spaces, giving the points score for each problem, in letter order. Each score will be in the range 1 to 100 (inclusive).
- The third line consists of a single integer, S , $1 \leq S \leq 200$, giving the total number of submissions during the contest.
- There then follow S lines, each containing details of a single submission. The data for a submission are, in order: the team number, problem letter, followed by uppercase 'A' for accepted or uppercase 'R' for rejected, all separated by single spaces.

The input will be terminated by a line consisting of two zeros (0), separated by a single space. This line should not be processed.

Output

For each scenario, output the scenario number, starting with 1, on a single line. Follow that by the teams and their points, each on a single line, in order of their rankings (as defined by the rules above). For each team, output the team number, followed by a single space, followed by their score.

Sample Input

```
2 2
5 10
2
1 A A
2 B A
2 2
5 10
3
1 B A
2 B A
```

```
1 A R
2 3
5 5 10
3
1 A A
1 B A
2 C A
3 3
5 5 5
5
1 A A
1 B R
2 B A
2 C R
3 C A
0 0
```

Sample Input

```
1
2 10
1 5
2
2 10
1 10
3
2 10
1 10
4
3 5
1 5
2 5
```