L

Last Blood

Input: Standard Input
Output: Standard Output

In many programming contests, special prizes are given to teams who solved a particular problem first. We call the first accepted solution "First Blood".

It's an interesting idea to set prizes for "Last Blood". Then people won't submit their solutions until the last minute. But this is dangerous: if the solution got "Wrong Answer" or even "Time limit exceeded", it may be too late to correct the solution.

You may argue that once a submission got "Accepted", the team can send it again, but in this problem, we only consider the earliest accepted solution of a team for each problem, so re-sending an accepted solution does NOT help!

Given all the submissions in a contest, your task is to find out the "Last Blood" prizes for each problem.

Input

There is only one test case. The first line contains three integer n, t, m (5<=n<=12, 10<=t<=100, 1<=m<=1000), the number of problems, teams and submissions. Each of the following m lines describes one submission: time (0<=time<=300), teamID(1~t), problem (A~L) and verdict("Yes" or "No"). Submissions are sorted in time order. That means for two submissions of the same "time" field, the submission that comes later in the input is received later in the contest (maybe only a few seconds later). No two submissions are received in exactly the same time.

Output

For each problem, print the last blood's time and teamID.

Sample Input	Output for Sample Input
5 10 18 0 2 B No 11 2 B Yes 20 3 A Yes 35 8 E No 40 8 E No 45 7 E No 50 10 A Yes 100 4 A No 120 6 B Yes 160 2 E Yes 180 2 A Yes 210 3 B Yes 240 10 B No 250 10 B Yes 270 2 B Yes 295 8 E Yes 295 7 E Yes 299 10 D Yes	A 180 2 B 250 10 C - - D 299 10 E 295 7

Problemsetter: Rujia Liu, Special Thanks: Md. Mahbubul Hasan