Problem A. Submissions

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

The legend, example, and note of this problem are used fictitiously. Any resemblance to the actual contests, rules, submissions, or teams is coincidental.

In the International Challenging Puzzle Contest (ICPC), there are m submissions. You are given the list of m submissions ordered by time. A submission can be represented as a tuple (c, p, t, s), which means team c makes a submission on problem p at time t with status s. The status of a submission is either "accepted" or "rejected".

The score of a team is the pair of the number of problems solved by the team and the total time consumed† by the team. The larger the number of problems solved is, the higher the score is. If a tie occurs, the smaller the total time consumed is, the higher the score is.

If team c makes at least one submission with status "accepted" on problem p, we say that team c solves problem p. A team can get a gold medal if the number of teams with higher score is less than $\min(\lceil 0.1 \cdot n \rceil, 35)$, where n is the number of teams that solved **at least** one problem and $\lceil x \rceil$ denotes the smallest integer that is not smaller than x.

You need to find all the teams that can get a gold medal if **at most** one of the m submissions changes its status.

† The total time consumed is the sum of times consumed for all solved problems (0 if no problems are solved). The time consumed for a solved problem is the time of the first submission with status "accepted", plus 20 times the number of submissions on this problem before the first submission with status "accepted". Note that we say submission i is before submission j if and only if submission i appears earlier than submission j in the given list of m submissions.

Input

Each test contains multiple test cases. The first line contains a single integer t ($1 \le t \le 10^5$) denoting the number of test cases. For each test case:

The first line contains a single integer m ($1 \le m \le 10^5$) denoting the number of submissions.

The i-th of the following m lines contains c_i, p_i, t_i, and s_i which mean that team c_i makes a submission on problem p_i at time t_i with status s_i. Specifically:

- c_i is a string of length between 1 and 20 consisting of uppercase letters, lowercase letters, digits and underscores ('_'). Note that no two teams have the same name.
- p_i is an uppercase letter.
- t_i is a non-negative integer less than 300.
- s_i is a string, being either "`accepted`" or "`rejected`".

It is guaranteed that $t_i \le t_j$ for all $i < j$. Recall that if $t_i = t_j$ and $i < j$, we still say that the i-th submission came before the j-th submission.

It is guaranteed that the sum of m over all test cases does not exceed 10^5.

Output

For each test case:

Output one integer k on the first line, denoting the number of teams that can get a gold medal if at most one of the m submissions changes its status.

On the second line, output k distinct strings **in any order**, denoting the names of these k teams.

Examples

standard input	*standard output*
2 5 TSxingxing10 G 0 rejected TSxingxing10 B 83 accepted aoliaoligeiliao J 98 accepted TS1 J 118 accepted TS1 B 263 accepted 12 AllWayTheNorth A 0 rejected YaoYaoLingXian Y 10 accepted XuejunXinyoudui1 X 200 rejected XuejunXinyoudui1 X 200 accepted LetItRot L 215 accepted AllWayTheNorth W 250 accepted ImYourFan I 257 accepted ImYourFan Y 257 accepted AllWayTheNorth T 264 accepted XuejunXinyoudui1 J 294 accepted LetItRot I 299 accepted LetItRot I 299 rejected	2 TSxingxing10 TS1 4 AllWayTheNorth XuejunXinyoudui1 LetItRot ImYourFan

standard input	*standard output*
2 2 jiangly_fan A 1 accepted jiangly B 23 accepted 3 conqueror_of_tourist A 1 accepted conqueror_of_tourist A 2 accepted tourist B 23 accepted	2 jiangly_fan jiangly 1 conqueror_of_tourist

standard input	*standard output*
2 13 A A 1 accepted A X 1 accepted K K 1 rejected B B 2 accepted C C 2 accepted D D 2 accepted E E 2 accepted F F 2 accepted G G 2 accepted H H 2 accepted I I 2 accepted J J 2 accepted K K 2 rejected 12 A A 1 accepted A X 1 accepted B B 2 accepted C C 2 accepted D D 2 accepted E E 2 accepted F F 2 accepted G G 2 accepted H H 2 accepted I I 2 accepted J J 2 rejected K K 2 rejected	11 A K B C D E F G H I J 1 A

standard input	standard output
2 11 A A 1 accepted B B 1 accepted C C 2 accepted D D 2 accepted E E 2 accepted F F 2 accepted G G 2 accepted H H 2 accepted I I 2 accepted J J 2 accepted K K 2 accepted 12 A A 1 accepted A X 1 accepted K K 1 rejected B B 2 accepted C C 2 accepted D D 2 accepted E E 2 accepted F F 2 accepted G G 2 accepted H H 2 accepted I I 2 accepted J J 2 accepted	2 A B 2 A K

Note

In the first case of the first example, `TS1` solves two problems, so they can get a gold medal. `TSxingxing10` can get a gold medal if their first submission changes its status to "accepted".

In the second case of the first example, `AllWayTheNorth`, `XuejunXinyoudui1`, `LetItRot` and `ImYourFan` have the same score, two problems solved with 514 total time consumed. They can get gold medals simultaneously if no submission changes its status.