

제 10 회 대학생 프로그래밍 경시대회



Problem I Ranking

Association of e-Sports manages the ranking of N registered players. The ranking is determined by points which each player can get playing games. Ranking points are accumulated points, and a player with high ranking points ranks high. The player with the highest ranking points ranks the first. The other player's ranking is sum of the number of players with higher ranking points and 1. Each player is identified 1 to N . For example, let (10, 15, 20, 8, 12) be ranking points for players from 1 to N ($N = 5$), then ranks are (4, 2, 1, 5, 3) for each player from 1 to 5. Next, three players get some points in a competition like the following. Each pair means (player, point).

(1, 25), (2, 20), (5, 10)

After the competition, player 1, 2 and 5 add the points and the ranking points become (35, 35, 20, 8, 22). So, ranks are (1, 1, 4, 5, 30).

Association of e-Sports announces a result of each competition every time. Write a program which manages the rankings of players and answers to the query about the current ranking.

Input

Your program is to read from standard input. The input consists of T test cases ($0 < T < 21$) and T is given in the first line. The first line of each test case contains N ($1 \leq N \leq 100,000$) indicating the number of players. Players are identified from 1 to N . The next line contains M ($1 \leq M \leq 200,000$) indicating the number of results for competitions and queries. The next M line gives results of competitions or queries one per a line. A results of a competition is "R j k", it means player j got k points. A query is "Q j", it asks for player j's ranking. k is an integer larger than or equal to 1. The answer to the query should be the ranking at the time. Assume that each player has 0 ranking point initially, and accumulated ranking points do not exceed 1,000,000,000.

Output

Your program is to write to standard output. Print exactly on line for each test case.

The following shows sample input and output for two test cases.

Sample Input	Output for the Sample Input
2	2
3	2
5	3
R 2 11	3
Q 3	1

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R 3 16	4
R 1 15	3
Q 1	
5	
13	
R 1 10	
R 2 15	
Q 3	
R 3 20	
Q 1	
R 4 8	
R 5 12	
R 1 25	
Q 1	
R 2 20	
R 5 10	
Q 3	
Q 5	