Problem C – Calorie Intake Calculator for Planet E-13

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Planet E-13 orbits around a star in a far away galaxy named UAZ. In the calendar used in that planet, a year has 1000 days divided in 20 months of 50 days each. Their inhabitants can go for several days without eating, but on the days they eat, by law they have to write on a diary, which is at most 200000 pages long, a list of what they eat and the total number of calories consumed for the items written in the page. They have the rule to write in a page only what is eaten on a specific date, but it can happen that on a given date, they eat more that can be written on a single page so there could be several pages for the same date.

From time to time, inhabitants are asked how many calories they ate on up to 100000 date ranges selected from the dates they have registered on their diary. Your work is to help the inhabitants to answer such queries as fast as possible.

Input

The first line contains four elements separated by a space: N ($1 \leq N \leq 200000$), Q ($1 \leq Q \leq 100000$), *InitDate*, *FinalDate*. N is an integer representing the number of pages in the diary containing data, Q is an integer representing the number of queries the inhabitant will be asked, *InitDate* and *FinalDate* represent the first and last date registered in the diary in the format YYYY/MM/DD, where YYYY is the year, MM is the month number and DD is the day number. The following N lines have 3 element separated by a space: R DR TC, where R indicates that the line represents a page in the diary, DR represents the date of such page in the diary (in the format YYYY/MM/DD) and TC ($1 \leq TC \leq 1,000$) represents the total number of calories consumed in what is listed in such page. These N lines are provided in increasing order by date. The following Q lines have 3 elements separated by a space: Q FD LD, where Q indicates that the line represents a query, FD represents the first date and LD represents the last date in the date range queried (both in the format YYYY/MM/DD), ($InitDate \leq FD \leq LD \leq FinalDate$). In each of the dates provided in the input, YYYY represents the year (with possible values ranging from 0000 to 9999), MM represents the month number (with possible values ranging from 01 to 20) and DD represents the day in the month (with possible values ranging from 01 to 50).

Output

For each of the Q queries, your program should print a single line with an integer number representing the number of calories consumed in the range queried.

Sample input 1	Sample output 1
10 8 2008/11/13 2008/12/23	4650
R 2008/11/13 743	2672
R 2008/11/22 829	578
R 2008/11/30 131	0
R 2008/11/30 239	2473
R 2008/11/36 435	2672
R 2008/11/38 839	2672
R 2008/11/50 79	3501
R 2008/11/50 371	
R 2008/12/01 578	
R 2008/12/23 406	
Q 2008/11/13 2008/12/23	
Q 2008/11/24 2008/12/08	
Q 2008/12/01 2008/12/05	
Q 2008/12/02 2008/12/22	
Q 2008/11/22 2008/11/38	
Q 2008/11/25 2008/12/14	
Q 2008/11/25 2008/12/06	
Q 2008/11/16 2008/12/08	