Dancing, again

Description

Every summer, HH will hold a summer camp called Happy Summer Camp. The happiest part of Happy Summer Camp is that every one will dance around the campfire on the last night of this camp.

Actually, there is a special show after dancing around the campfire. HH hires M master dancers and prepares N dance musics to form the show. However, for each dance music, it only requires some specify number of dancer. Also, for each dancer, he/she will accept that he/she only dances for some consecutive range of dance music. Therefore, scheduling each dancer makes HH dizzy.

However, HH still wants to make the show as good as possible. Thus, he defines happiness point to scale each assignment. Formally, if a dancer dances from l_i-th to r_i-th dance music, the happiness point of the dancer is the total number of times that his/her name appearing in the l_i-th to r_i-th dance music name(really weird, right?). Now, not only scheduling makes HH dizzy, but also calculating the happiness point bothers HH much. Therefore, HH asks you to help him calculate the happiness point.

Formally, appearance can be overlapped. For example, "aba" appears in "ababa" twice. Then, if name of the dancer is "aa" and names of chosen dance music are "aa", "aaa", "aaaa", the happiness will be 6 (1,2,3 from each dance music name).

Input

The first line contains an integer T indicating the total number of test cases. For each test case, first line contains two integer N and M. Following N lines, each line contain a string s_i indicating the name of i-th dance music. Following M lines, each line contain a string t_i, and two integers l_i, r_i indicating the name of i-th dancer, and his/her is going to perform l_i-th to r_i-th dance music.

- $1 \leq T \leq 100$
- $1 \leq N, M \leq 5 \times 10^4$
- $1 \leq |s_i|, |t_i| \leq 5 \times 10^4$
- In a testcase, $1 \leq \sum |s_i|, \sum |t_i| \leq 5 \times 10^4$,
- $1 \leq l_i \leq r_i \leq N$
- s_i, t_i only contain lowercase English letters.
- At most 15 testcases with $\max(\sum |s_i|, \sum |t_i|) > 100$.

Output

For each testcase, please output M lines. For i-th line, output the happiness points of i-th dancer.

Sample Input

```
2
1 1
ababa
aba 1 1
4 2
a
aa
aaa
aaaa
a 3 3
aa 1 4
```

Sample Output

```
2
3
6
```