

String fertilization

[The original version of this problem (in Spanish) can be found at <http://dc.uba.ar/events/icpc/download/problems/tap2014-problems.pdf>]

Strings are like plants in that they require a lot of loving care to grow. In this problem we will follow the evolution of a garden with N strings during a period covering T seasons. The strings in the garden are numbered from 1 to N , and are all initially empty. Each season we will perform two tasks in our garden:

- At the beginning of the season, we may *prune* the garden by deleting the C characters on the rightmost end of each of the N strings in the garden.
- After the pruning is done, we *fertilize* the garden so that each of the N strings grows by appending one character (possibly different for each string) to its rightmost end.

At the end of the season, a good string gardener always takes a moment to contemplate his/her work. In order to do this, we take a number P from 1 to N and then dedicate ourselves to appreciate the beauty of the string that stands at position P when we sort the N strings in the garden alphabetically from smallest to largest (breaking draws arbitrarily by putting first the strings identified with smaller numbers).

These moments of contemplation should be a well-deserved resting time for the gardener, so we don't want to waste time sorting the strings in the garden to identify the one we want to appreciate. Can you help us find it?

Input

The first line contains two integer numbers N and T , representing the number of strings in the garden and the number of seasons we follow their evolution, respectively ($2 \leq N \leq 100$ and $1 \leq T \leq 10^4$). The following T lines describe one season each, in the same order in which they take place.

The description of each season consists of a number C , a string S and another number P ($1 \leq P \leq N$). The number C is non-negative and represents the number of characters that are deleted during the pruning period at the beginning of the corresponding season (so it can be zero in case that no pruning is performed in that season). The string S contains exactly N characters s_1, s_2, \dots, s_N , being the i -th character s_i the one that should be appended to the rightmost end of the string identified by the number i (s_i is a lower-case letter of the English alphabet for $i = 1, 2, \dots, N$). Finally, the number P represents the position of the string we would like to appreciate at the end of the season, when we sort the N strings in the garden as explained in the problem statement.

Output

Print **T** lines, one for each season described in the input. The **i**-th line should contain the number identifying the string we want to appreciate at the end of the **i**-th season, for **i = 1, 2, ..., T**.

Example 1

Input:

```
2 4
0 aa 1
0 ba 1
1 ba 2
2 aa 2
```

Output:

```
1
2
1
2
```

Example 2

Input:

```
26 26
0 abcdefghijklmnopqrstuvwxyz 1
1 bcdefghijklmnopqrstuvwxyz a 2
1 cdefghijklmnopqrstuvwxyz ab 3
1 defghijklmnopqrstuvwxyz abc 4
1 efghijklmnopqrstuvwxyz abcd 5
1 fghijklmnopqrstuvwxyz abcde 6
1 ghijklmnopqrstuvwxyz abcdef 7
1 hijklmnopqrstuvwxyz abcdefg 8
1 ijklmnopqrstuvwxyz abcdefgh 9
1 jklmnopqrstuvwxyz abcdefghi 10
1 klmnopqrstuvwxyz abcdefghij 11
1 lmnopqrstuvwxyz abcdefghijk 12
1 mnopqrstuvwxyz abcdefghijkl 13
1 nopqrstuvwxyz abcdefghijklm 14
1 opqrstuvwxyz abcdefghijklmn 15
1 pqrstuvwxyz abcdefghijklmno 16
1 qrstuvwxyz abcdefghijklmnop 17
1 rstuvwxyz abcdefghijklmnopq 18
1 stuvwxyz abcdefghijklmnopqr 19
1 tuvwxz abcdefghijklmnopqrs 20
1 uvwxz abcdefghijklmnopqrst 21
1 vwxyz abcdefghijklmnopqrstu 22
1 wxyz abcdefghijklmnopqrstuv 23
```

1 xyzabcdefghijklmnopqrstuvw 24

1 yzabcdefghijklmnopqrstuvw 25

1 zabcdefghijklmnopqrstuvwxy 26

Output:

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1