

C - Snuke the Wizard

Time Limit: 2 sec / Memory Limit: 1024 MB

Score : 500 points

Problem Statement

There are N squares numbered 1 to N from left to right. Each square has a character written on it, and Square i has a letter s_i . Besides, there is initially one golem on each square.

Snuke cast Q spells to move the golems.

The i -th spell consisted of two characters t_i and d_i , where d_i is 'L' or 'R'. When Snuke cast this spell, for each square with the character t_i , all golems on that square moved to the square adjacent to the left if d_i is 'L', and moved to the square adjacent to the right if d_i is 'R'.

However, when a golem tried to move left from Square 1 or move right from Square N , it disappeared.

Find the number of golems remaining after Snuke cast the Q spells.

Constraints

- $1 \leq N, Q \leq 2 \times 10^5$
- $|s| = N$
- s_i and t_i are uppercase English letters.
- d_i is 'L' or 'R'.

Input

Input is given from Standard Input in the following format:

```
N Q
s
t1 d1
⋮
tQ dQ
```

Output

Print the answer.

Sample Input 1

2019-05-23 (Thu)
23:23:42 +08:00

```
3 4
ABC
A L
B L
B R
A R
```

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Sample Output 1

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```
2
```

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- Initially, there is one golem on each square.
- In the first spell, the golem on Square 1 tries to move left and disappears.
- In the second spell, the golem on Square 2 moves left.
- In the third spell, no golem moves.
- In the fourth spell, the golem on Square 1 moves right.
- After the four spells are cast, there is one golem on Square 2 and one golem on Square 3, for a total of two golems remaining.

Sample Input 2

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```
8 3
AABCBDDBA
A L
B R
A R
```

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Sample Output 2

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```
5
```

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- After the three spells are cast, there is one golem on Square 2, two golems on Square 4 and two golems on Square 6, for a total of five golems remaining.
- Note that a single spell may move multiple golems.

Sample Input 3

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```
10 15
SNCZWRCEWB
B R
R R
E R
W R
Z L
S R
Q L
W L
B R
C L
A L
N L
E R
Z L
S L
```

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Sample Output 3

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2019-05-23 (Thu)
23:23:42 +08:00

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