Problem PC
Where the Lantern Lights are Dimming

Time limit: 3 seconds
Memory limit: 1024 megabytes

Problem Description

The Lantern Festival features many lanterns on display. In the darkness of the night, they cast beautiful shadows and reflections, attracting numerous visitors to come and go. With so many lanterns on display simultaneously, it's impossible to showcase the unique features of each. As such, the organizers switch on the lights of some lanterns while turning off others in rotation. At any given time, some lanterns are illuminated while others rest. Additionally, some lanterns remain perpetually off due to malfunctions, missing their chance to dazzle.

To engage the visitors in the Lantern Festival, the organizers also hold a scoring event. If a visitor is **very satisfied** with the festival, they will receive a pack of stickers worth 3 points each, and they will affix one 3-point sticker to each lantern on display. If they feel **satisfied**, they will receive a pack of 1-point stickers and place one on each displaying lantern. If they are **disappointed** with the festival, they will get a pack of -2 point stickers and apply one to each displaying lantern. In other words, those lanterns that are resting and not illuminated won't have an opportunity to receive any stickers from this visitor. After the festival ends, please help write a program to calculate the total points from all the stickers on the lanterns.

Input Format

The input begins with a line containing two integers, n and m. The next n lines describe the initial state of n lanterns, numbered from 0 to $n-1$. Each of these lines contains two integers: s_i and p_i. s_i represents the state of the lantern:

- 1 if the i-th lantern is initially on,
- 0 if it is off,
- -1 if it is out of order (meaning it is perpetually off and cannot be turned on)

p_i indicates the total points from stickers that are already on the i-th lantern.

The following m lines represent m events given in chronological order, each corresponding to one of two even types: switching or scoring.

- Lines beginning with the letter `W` signify a switching event. They have two subsequent integers, l_j and r_j, which imply that the state of lanterns numbered in the range $[l_j, r_j]$ (inclusive) will be toggled.

- Lines beginning with the letter `C` denote a scoring event by a visitor. These lines have a single subsequent integer, $q_j \in \{-2, 1, 3\}$, indicating the sticker score assigned by the visitor. Every lantern currently on display receives a sticker with q_j points from the visitor.

Output Format

Output a single integer that is the total points from all the lanterns after the festival.

Technical Specification

- $1 \leq n \leq 1,000,000$
- $1 \leq m \leq 1,000,000$
- $s_i \in \{-1, 0, 1\}$
- $-10,000 \leq p_i \leq 10,000$
- $0 \leq l_j \leq r_j < n$
- $q_j \in \{-2, 1, 3\}$

Sample Input 1

```
3 3
0 0
0 0
0 0
W 0 2
W 1 1
C 3
```

Sample Output 1

```
6
```

Sample Input 2

```
5 5
1 5
0 0
-1 2
1 0
0 -2
C 1
W 0 4
C -2
W 1 3
C 3
```

Sample Output 2

```
9
```