Problem C
Instruction Anagram

A robot is placed at the origin of a 2D coordinate plane (i.e. position $(0, 0)$). The robot is given a string S containing N characters in $\{\texttt{N}, \texttt{E}, \texttt{S}, \texttt{W}\}$ as its instructions. For each character from the beginning of the string, the robot has to move 1 unit to the following direction:

- If the character is `N`, the robot has to move 1 unit to the positive y-axis direction.
- If the character is `E`, the robot has to move 1 unit to the positive x-axis direction.
- If the character is `S`, the robot has to move 1 unit to the negative y-axis direction.
- If the character is `W`, the robot has to move 1 unit to the negative x-axis direction.

You do not know the string S. However, you know another string P that is an anagram of S (i.e. P has the same number of `N`, `E`, `S`, `W` characters as S). You also have M data points: $T_{1...M}$, $X_{1...M}$, and $Y_{1...M}$. For all i, you know that the robot is at position (X_i, Y_i) after moving exactly T_i units.

You want to know the number of possible string S that satisfies all the information you know.

Input

Input begins with a line containing two integers: N M ($1 \leq M \leq N \leq 400\,000$) representing the number of characters in P and the number of data points, respectively. The next line contains a string P containing N characters in the set $\{\texttt{N}, \texttt{E}, \texttt{S}, \texttt{W}\}$. The next M lines each contains three integers: T_i X_i Y_i ($1 \leq T_i \leq N$; $-T_i \leq X_i, Y_i \leq T_i$) representing the data points. It is guaranteed that $T_i < T_{i+1}$ for all i.

Output

Output in a line an integer representing the number of possible string S that satisfies all the information you know modulo $998\,244\,353$. If there is no possible string S (possibly due to misinformation), output `0`.

Sample Input #1

```
4 2
SNEN
2 1 1
4 1 1
```

Sample Output #1

```
4
```

Explanation for the sample input/output #1

The possible string S that satisfies all the information you know are $\{\texttt{NENS}, \texttt{NESN}, \texttt{ENNS}, \texttt{ENSN}\}$.

Sample Input #2

```
5 1
SSSSN
4 0 -4
```

Sample Output #2

```
1
```

Explanation for the sample input/output #2

The only possible string S that satisfies all the information you know is SSSSN.

Sample Input #3

```
7 1
NNNNSSS
4 1 -1
```

Sample Output #3

```
0
```

Explanation for the sample input/output #3

There is no possible string S that satisfies all the information you know.