

Toggle and Count

Time Limit: 1.0s **Memory Limit:** 256M

Ersel has a string of length \mathbf{N} is given and there are 2 different operations he has defined on this operation.

- **toggle $l\ r$:** Inverts all characters from the l^{th} position to the r^{th} . (Including l and r , 1s become 0 and 0s come 1)
- **count:** Prints the length of the longest non-decreasing subsequence of string.

Ersel spends too much time executing those operations. Can you help Ersel and write a program that executes those operations quickly?

Input

The first line contains two integers \mathbf{N} and \mathbf{M} . These integers indicate the length of the string and the number of queries, respectively.

The second line of input contains a string of length \mathbf{N} which consists of only "0" and "1".

Next \mathbf{M} lines contain the queries **t** and **c**.

- $1 \leq l \leq r \leq \mathbf{N} \leq 10^6$
- $1 \leq \mathbf{M} \leq 10^6$

Output

For each query **count**, print an answer on a single line.

Examples

Input 1:

```
2 3
01
c
t 1 2
c
```

Output 1:

```
2
1
```

Input 2:

```
5 5
10101
c
t 2 4
c
t 1 3
c
```

Output 2:

```
3
4
5
```

Explanation

- **10101**

The first query is **c**. The longest subsequence is the substring **001** which consists of **2.**, **4.** and **5.** characters of the strings and its length is **3**.

The second query is **t**, and **2** and **4** are given as parameters. After numbers from **2.** position to **4.** position is inverted, the string becomes **11011**.

- **11011**

The third query is **c**. The longest subsequence is the substring **1111** which consists of **1.**, **2.**, **4.** and **5.** characters of the strings and its length is **4**.

The fourth query is **t**, and **1** and **3** are given as parameters. After numbers from **1.** position to **3.** position is inverted, the string becomes **00111**.

- **00111**

The fifth and the last query is **c**. The longest subsequence is the substring **00111** which consists of all characters of the strings and its length is **5**.