Another Contest 1 Problem 1 - Binary String Operations

Time limit: 0.3s **Memory limit:** 256M

Given a binary string, support the following two operations:

`Update(i, l)` - take the substring starting at index `i` of length `l` within the binary string and reverse it. The reverse of string `0001` is `1000`. Given the string `0001`, `Update(1, 3)` changes the string to `0100`.

`Query(i, l)` - take the substring starting at index `i` of length `l` within the binary string, and compute the length of the longest substring that only contains 1's. In the event the substring does not contain the digit 1, the `Query` should return 0.

Constraints

$1 \leq N, Q \leq 10^5$

$0 \leq i_q < N$

$1 \leq l_q \leq N$

$i_q + l_q \leq N$

Input Specification

The first line of input contains two positive integers, N and Q.

The next line contains a binary string of length N.

The next Q lines each contain three integers, t_q, i_q, and l_q. If t_q is equal to 1, then the next operation to perform is `Update(i_q, l_q)`. Otherwise, t_q will be equal to 2, and the next operation to perform is `Query(i_q, l_q)`.

Output Specification

For each `Query` operation, output the answer on its own line. Output answers to `Query` operations in the order they're presented in the input.

In the event no `Query` operations are requested, do not output anything.

Sample Input

```
4 3
0101
2 1 3
1 2 2
2 1 3
```

Sample Output

```
1
2
```