Problem I. Not Another Range Query Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

What age is it that you are still solving traditional range query problems?

Little Cyan Fish, the biggest fan of range query problems, would like to find the best range query task in the year 3202. Luckily, he discovers a problem with binary strings. He adores binary strings, as they led to the *Best Problem* back in 2202.

For a binary string $s = s_1 s_2 \cdots s_n$ of length n, let's denote $L(s)$ as the set of all indices i $(1 \le i \le n)$ that satisfy $i = 1$ or $s_i \neq s_{i-1}$. For instance, $L(\texttt{0011100}) = \{1, 3, 6\}$, $L(\texttt{00101101}) = \{1, 3, 4, 5, 7, 8\}$, and $L(\texttt{000}) = \{1\}$. Specifically, if $s = \varepsilon$ is an empty string, then we have $L(\varepsilon) = \varnothing$, which is an empty set.

Let $f(s)$ be the string obtained by removing all characters in s whose indices are in $L(s)$. The table below shows several examples of the function f.

Binary String s	**The set** $L(s)$	**Removed Characters**	**Binary String** $f(s)$
0011100	$\{1,3,6\}$	$\underline{0}0\underline{1}11\underline{0}0$	0110
00101101	$\{1,3,4,5,7,8\}$	$\underline{0}0\underline{101}1\underline{01}$	01
000	$\{1\}$	$\underline{0}00$	00
01	$\{1,2\}$	$\underline{01}$	ε
ε	$\{\}$		ε

The problem that Little Cyan Fish found asks him to determine the length of the string $f^k(s)$, where $f^k(s)$ is defined as follows:

$$f^k(s) = \begin{cases} f^{k-1}(f(s)) & k \ge 1 \\ s & k = 0 \end{cases}$$

Little Cyan Fish would like to create a range query problem with it. So, he gives you a string $s = s_1 s_2 \cdots s_n$ and q queries. In each query, you are given three integers l, r, and k. Your task is to output the length of the string $f^k(s[l \cdots r])$, where $s[l \cdots r]$ is $s_l s_{l+1} \cdots s_r$.

Input

The first line contains two integers n and q $(1 \le n, q \le 5 \times 10^5)$, representing the length of the string s and the number of queries Little Cyan Fish would like to perform.

The next line of the input contains a binary string s $(|s| = n,\ s_i \in \{0, 1\})$.

The following q lines describe the queries. For the i-th line of these lines, it contains three integers l, r, k $(1 \le l \le r \le n, 0 \le k \le n)$.

Output

For each query, output a single line contains a single integer, indicating the length of $f^k(s[l \cdots r])$.

Example

standard input	standard output
9 7 100110001 2 5 1 3 6 1 4 8 2 2 7 1 1 9 1 1 9 0 1 9 8	2 1 1 3 4 9 0

Note

In the first query, $s[2\cdots5] = \texttt{0011}$, and $f(\texttt{0011}) = \texttt{01}$. So the answer is 2.

In the second query, $s[3\cdots6] = \texttt{0110}$, and $f(\texttt{0110}) = \texttt{1}$. So the answer is 1.

In the third query, $s[4\cdots8] = \texttt{11000}$, and $f^2(\texttt{11000}) = f(\texttt{100}) = \texttt{0}$. So the answer is 1.

In the fourth query, $s[2\cdots7] = \texttt{001100}$, and $f(\texttt{001100}) = \texttt{010}$. So the answer is 3.

In the fifth query, $s[1\cdots9] = \texttt{100110001}$, and $f(\texttt{100110001}) = \texttt{0100}$. So the answer is 4.

In the sixth query, $s[1\cdots9] = \texttt{100110001}$, and $f^0(\texttt{100110001}) = \texttt{100110001}$. So the answer is 9.

In the seventh query, $s[1\cdots9] = \texttt{100110001}$, and $f^8(\texttt{100110001}) = f^7(\texttt{0100}) = f^6(\texttt{0}) = f^5(\varepsilon) = \varepsilon$. So the answer is 0.