DMOPC '17 Contest 5 P2 - Mimi and Binary

Mimi is playing with a string S, consisting of only `0`s and `1`s. Her little sister comes along and being very curious, asks Q questions about the binary string:

> If we consider the substring starting from the x_ith index, what is the leftmost index such that there are y_i occurrences of the digit z_i?

Help Mimi write a program to answer these queries.

Constraints

Let $|S|$ denote the length of string S.

For all subtasks, $1 \leq x_i, y_i \leq |S|$, and $0 \leq z_i \leq 1$.

Subtask 1 [20%]

$1 \leq |S| \leq 1\,000$
$1 \leq Q \leq 1\,000$

Subtask 2 [80%]

$1 \leq |S| \leq 200\,000$
$1 \leq Q \leq 200\,000$

Input Specification

The first line will contain the string S.
The next line of input will contain a single integer, Q.
The next Q lines will each contain three space-separated integers: x_i, y_i, and z_i, the ith query.

Output Specification

The output should contain Q integers, each on a newline. The ith integer should be either the leftmost index such that there are y_i occurrences of the digit z_i, or `-1` if no such index exists.

Sample Input

```
010100
3
1 2 0
1 2 1
1 3 1
```

Sample Output

```
3
4
-1
```