

Problem E

DIVISIBILITY FACTOR

Time limit: 0.5 seconds

Let the numeric string Σ be a mysterious cipher. Within this sequence, there exists an enigmatic quality, the so-called *divisibility factor*, tethered to a prime number \mathbb{P} . This factor is defined as the count of distinct pairs of positions $\{i, j\}$ ($1 \leq i \leq j \leq |\Sigma|$), where the number formed by the digits in the string Σ between positions i and j , inclusive, is divisible by the prime \mathbb{P} .

For example, the divisibility factor of the string $\Sigma = 101010$ with respect to $\mathbb{P} = 5$ is 12. The pairs $\{i, j\}$ and corresponding substrings are: $\{1, 2\} : 10$, $\{1, 4\} : 1010$, $\{1, 6\} : 101010$, $\{2, 2\} : 0$, $\{2, 4\} : 010 \equiv 10$, $\{2, 6\} : 01010 \equiv 1010$, $\{3, 4\} : 10$, $\{3, 6\} : 1010 \equiv 10$, $\{4, 4\} : 0$, $\{4, 6\} : 010 \equiv 10$, $\{5, 6\} : 10$ and $\{6, 6\} : 0$. Note that a number with leading zeros is considered equal to the corresponding number without leading zeros.

Task: Given a numeric string S and a prime number \mathbb{P} , you are required to answer Q queries of the form: find the divisibility factor for the substring of S from position l to position r inclusive.

Input

The first line contains a single prime number \mathbb{P} ($\mathbb{P} \leq 10^9 + 7$).

The second line contains a non-empty numeric string S ($|S| \leq 10^5$).

The third line contains a single positive integer Q , which is the number of queries ($Q \leq 10^5$).

Each of the next Q lines specifies one query and contains two integers l and r , which are the left and right boundaries of the substring whose divisibility factor is of interest ($1 \leq l \leq r \leq |S|$).

Output

For each query, print a single integer on a separate line that is the divisibility factor of the corresponding substring.

Sample Input	Sample Output
5	0
101010	12
5	1
1 1	4
1 6	0
2 2	
2 4	
3 3	