



Please subscribe to the official Codeforces channel in Telegram via the link: [https://t.me/codeforces\\_official](https://t.me/codeforces_official).


[PROBLEMS](#) [SUBMIT CODE](#) [MY SUBMISSIONS](#) [STATUS](#) [HACKS](#) [ROOM](#) [STANDINGS](#) [CUSTOM INVOCATION](#)

## C. Banh-mi

time limit per test: 1 second  
 memory limit per test: 256 megabytes  
 input: standard input  
 output: standard output

JATC loves Banh-mi (a Vietnamese food). His affection for Banh-mi is so much that he always has it for breakfast. This morning, as usual, he buys a Banh-mi and decides to enjoy it in a special way.

First, he splits the Banh-mi into  $n$  parts, places them on a row and numbers them from 1 through  $n$ . For each part  $i$ , he defines the *deliciousness* of the part as  $x_i \in \{0, 1\}$ . JATC's going to eat those parts one by one. At each step, he chooses arbitrary remaining part and eats it. Suppose that part is the  $i$ -th part then his *enjoyment* of the Banh-mi will increase by  $x_i$  and the deliciousness of all the remaining parts will also increase by  $x_i$ . The initial enjoyment of JATC is equal to 0.

For example, suppose the deliciousness of 3 parts are  $[0, 1, 0]$ . If JATC eats the second part then his enjoyment will become 1 and the deliciousness of remaining parts will become  $[1, \_, 1]$ . Next, if he eats the first part then his enjoyment will become 2 and the remaining parts will become  $[\_, \_, 2]$ . After eating the last part, JATC's enjoyment will become 4.

However, JATC doesn't want to eat all the parts but to save some for later. He gives you  $q$  queries, each of them consisting of two integers  $l_i$  and  $r_i$ . For each query, you have to let him know what is the maximum enjoyment he can get if he eats all the parts with indices in the range  $[l_i, r_i]$  in some order.

All the queries are independent of each other. Since the answer to the query could be very large, print it modulo  $10^9 + 7$ .

### Input

The first line contains two integers  $n$  and  $q$  ( $1 \leq n, q \leq 100\,000$ ).

The second line contains a string of  $n$  characters, each character is either '0' or '1'. The  $i$ -th character defines the deliciousness of the  $i$ -th part.

Each of the following  $q$  lines contains two integers  $l_i$  and  $r_i$  ( $1 \leq l_i \leq r_i \leq n$ ) — the segment of the corresponding query.

### Output

Print  $q$  lines, where  $i$ -th of them contains a single integer — the answer to the  $i$ -th query modulo  $10^9 + 7$ .

### Examples

input	Copy
4 2 1011 1 4 3 4	
output	Copy
14 3	

input	Copy
3 2 111 1 2 3 3	

### Codeforces Round #520 (Div. 2)

Finished

#### → Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

Register for practice

#### → Virtual participation



Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

#### → Problem tags

greedy implementation math \*1600  
 No tag edit access

#### → Contest materials

- Announcement 
- Tutorial 

output

Copy

3  
1

### Note

In the first example:

- For query 1: One of the best ways for JATC to eat those parts is in this order: 1, 4, 3, 2.
- For query 2: Both 3, 4 and 4, 3 ordering give the same answer.

In the second example, any order of eating parts leads to the same answer.

---

[Codeforces](#) (c) Copyright 2010-2018 Mike Mirzayanov  
The only programming contests Web 2.0 platform  
Server time: Dec/08/2018 18:37:00<sup>UTC+5.5</sup> (d1).  
Desktop version, switch to [mobile version](#).  
[Privacy Policy](#)

Supported by



ITMO UNIVERSITY