

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION

Q. Cut and Paste

time limit per test: 2 seconds🕒
memory limit per test: 256 megabytes

We start with a string s consisting only of the digits 1, 2, or 3. The length of s is denoted by $|s|$. For each i from 1 to $|s|$, the i -th character of s is denoted by s_i .

There is one cursor. The cursor's location ℓ is denoted by an integer in $\{0, \dots, |s|\}$, with the following meaning:

- If $\ell = 0$, then the cursor is located before the first character of s .
- If $\ell = |s|$, then the cursor is located right after the last character of s .
- If $0 < \ell < |s|$, then the cursor is located between s_ℓ and $s_{\ell+1}$.

We denote by s_{left} the string to the left of the cursor and s_{right} the string to the right of the cursor.

We also have a string c , which we call our clipboard, which starts out as empty. There are three types of actions:

- The Move action.** Move the cursor one step to the right. This increments ℓ once.
- The Cut action.** Set $c \leftarrow s_{\text{right}}$, then set $s \leftarrow s_{\text{left}}$.
- The Paste action.** Append the value of c to the end of the string s . Note that this doesn't modify c .

The cursor initially starts at $\ell = 0$. Then, we perform the following procedure:

- Perform the Move action once.
- Perform the Cut action once.
- Perform the Paste action s_ℓ times.
- If $\ell = x$, stop. Otherwise, return to step 1.

You're given the initial string s and the integer x . What is the length of s when the procedure stops? Since this value may be very large, only find it modulo $10^9 + 7$.

It is guaranteed that $\ell \leq |s|$ at any time.

Input

The first line of input contains a single integer t ($1 \leq t \leq 1000$) denoting the number of test cases. The next lines contain descriptions of the test cases.

The first line of each test case contains a single integer x ($1 \leq x \leq 10^6$). The second line of each test case consists of the initial string s ($1 \leq |s| \leq 500$). It is guaranteed, that s consists of the characters "1", "2", "3".

It is guaranteed that the sum of x in a single file is at most 10^6 . It is guaranteed that in each test case before the procedure will stop it will be true that $\ell \leq |s|$ at any time.

Output

For each test case, output a single line containing a single integer denoting the answer for that test case modulo $10^9 + 7$.

Example

input	Copy
4 5 231 7 2323 6 333 24 133321333	
output	Copy
25 1438 1101 686531475	

ICPC Assiut University Training - Juniors Phase 1 Sheets-2022

Public

Participant

→ **Group Contests**

- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search , Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

Juniors Phase 1 Practice #2 (STL 1).

Finished

Practice

→ **About Time Scaling**

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the [link](#).

→ **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 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

→ **Submit?**

Language: GNU G++20 13.2 (64 bit, win

Choose file:

Choose File

 No file chosen

Submit

→ **Last submissions**

Submission	Time	Verdict
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Note

Let's illustrate what happens with the first test case. Initially, we have $s = 231$. Initially, $\ell = 0$ and $c = \varepsilon$ (the empty string). The following things happen if we follow the procedure above:

- Step 1, *Move once*: we get $\ell = 1$.
- Step 2, *Cut once*: we get $s = 2$ and $c = 31$.
- Step 3, *Paste $s_\ell = 2$ times*: we get $s = 23131$.
- Step 4: $\ell = 1 \neq x = 5$, so we return to step 1.

- Step 1, *Move once*: we get $\ell = 2$.
- Step 2, *Cut once*: we get $s = 23$ and $c = 131$.
- Step 3, *Paste $s_\ell = 3$ times*: we get $s = 23131131131$.
- Step 4: $\ell = 2 \neq x = 5$, so we return to step 1.

- Step 1, *Move once*: we get $\ell = 3$.
- Step 2, *Cut once*: we get $s = 231$ and $c = 31131131$.
- Step 3, *Paste $s_\ell = 1$ time*: we get $s = 23131131131$.
- Step 4: $\ell = 3 \neq x = 5$, so we return to step 1.

- Step 1, *Move once*: we get $\ell = 4$.
- Step 2, *Cut once*: we get $s = 2313$ and $c = 1131131$.
- Step 3, *Paste $s_\ell = 3$ times*: we get $s = 2313113113111311311131131131$.
- Step 4: $\ell = 4 \neq x = 5$, so we return to step 1.

- Step 1, *Move once*: we get $\ell = 5$.
- Step 2, *Cut once*: we get $s = 23131$ and $c = 13113111311311131131$.
- Step 3, *Paste $s_\ell = 1$ times*: we get $s = 2313113113111311311131131131$.
- Step 4: $\ell = 5 = x$, so we stop.

At the end of the procedure, s has length 25.

316662357	Apr/22/2025 13:01	Accepted
316662167	Apr/22/2025 12:59	Time limit exceeded on test 42
316662058	Apr/22/2025 12:58	Time limit exceeded on test 17
316622133	Apr/22/2025 04:15	Accepted
316621830	Apr/22/2025 04:08	Accepted
316621400	Apr/22/2025 03:58	Accepted
316621265	Apr/22/2025 03:54	Accepted
316620887	Apr/22/2025 03:44	Accepted
316620783	Apr/22/2025 03:42	Time limit exceeded on test 17
316620647	Apr/22/2025 03:38	Wrong answer on test 6

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