IIUPC 2012

# Problem B: RMQ Overkill

Range minimum query problems are getting more and more common everyday. I used to consider them as hard problems some years ago, but not anymore. So I decided to make this harder for everyone. Today you are given a sequence (with **0**-based indexing) of non-negative integers which contains no more than **10000** elements and where each integer is less than **10**. For each possible query (**i** , **j**) where (**0 ≤ i ≤ j <10000**) [**N** is the size of the sequence], you have to find the minimum integer in that range, and add the minimums for all those queries together. When you are done that, mod the sum with **1000000007** and print.

## Input

There will be multiple cases (no more than **120**). You must read for cases until **EOF**.
For each case :
First line, an integer **N** (**1 ≤ N ≤ 10000**), the size of the array.
Second line, a string of **N** characters where i-th character denotes the i-th element of the sequence.

## Output

For each case, one line containing an integer, **R**, the result described above.

| Sample Input | Output for Sample Input |
|---|---|
| 3<br>143<br>3<br>413<br>3<br>121 | 13<br>11<br>7 |
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## Output Explanation

**First case** : all possible queries and there results are, (**0**,**0**)=>**1**, (**0**,**1**)=>**1**, (**0**,**2**)=>**1**, (**1**,**1**)=>**4**, (**1**,**2**)=>**3**, (**2**,**2**)=>**3** . So, **R = 1 + 1 + 1 + 4 + 3 +3 = 13**.

**Second case** : all possible queries and there results are, (**0**,**0**)=>**4**, (**0**,**1**)=>**1**, (**0**,**2**)=>**1**, (**1**,**1**)=>**1 ,** (**1**,**2**)=>**1**, (**2**,**2**)=>**3 .** So, **R = 11.**

**Third case** : all possible queries and there results are, (**0**,**0**)=>**1**, (**0**,**1**)=>**1**, (**0**,**2**)=>**1**, (**1**,**1**)=>**2**, (**1**,**2**)=>**1**, (**2**,**2**)=>**1**. So, **R = 7.**