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PROBLEMS SUBMIT STATUS STANDINGS CUSTOM TEST

B. K-Sort

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

You are given an array of integers a of length n.

You can apply the following operation any number of times (maybe, zero):

- First, choose an integer k such that $1 \leq k \leq n$ and pay k+1 coins.
- Then, choose **exactly** k indices such that $1 \leq i_1 < i_2 < \ldots < i_k \leq n$.
- Then, for each x from 1 to k, increase a_{i_n} by 1.

Find the minimum number of coins needed to make a non-decreasing. That is, $a_1 \leq a_2 \leq \ldots \leq a_n$.

Input

Each test contains multiple test cases. The first line of input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains a single integer n ($1 \le n \le 10^5$) — the length of the array a

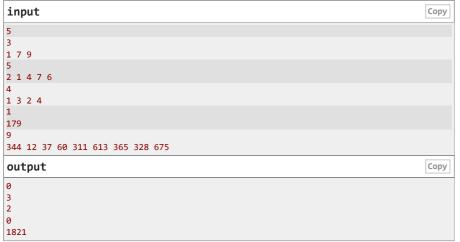
The second line of each test case contains n integers a_1,a_2,\ldots,a_n $(1\leq a_i\leq 10^9)$ — the elements of the array a.

It is guaranteed that the sum of n over all test cases does not exceed 10^5 .

Output

For each test case, output a single integer — the minimum number of coins needed to make a non-decreasing.

Example



Note

In the first test case, a is already sorted, so you don't have to spend any coins.

In the second test case, the optimal sequence of operations is:

• Choose k=2 and the indices 2 and 5: $[2, 1, 4, 7, 6] \rightarrow [2, 2, 4, 7, 7]$. This costs 3 coins.

It can be proven that it is not possible to make a non-decreasing by spending less than 3 coins.

EPIC Institute of Technology Round Summer 2024 (Div. 1 + Div. 2)

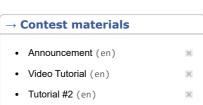
Finished

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