

D. Lipschitz Sequence

time limit per test: 1 second
memory limit per test: 256 megabytes

A function $f : \mathbb{R} \rightarrow \mathbb{R}$ is called Lipschitz continuous if there is a real constant K such that the inequality $|f(x) - f(y)| \leq K \cdot |x - y|$ holds for all $x, y \in \mathbb{R}$. We'll deal with a more... discrete version of this term.

For an array $h[1..n]$, we define it's Lipschitz constant $L(h)$ as follows:

- if $n < 2$, $L(h) = 0$
- if $n \geq 2$, $L(h) = \max \left\lceil \frac{|h[j] - h[i]|}{j - i} \right\rceil$ over all $1 \leq i < j \leq n$

In other words, $L = L(h)$ is the smallest non-negative integer such that $|h[i] - h[j]| \leq L \cdot |i - j|$ holds for all $1 \leq i, j \leq n$.

You are given an array a of size n and q queries of the form $[l, r]$. For each query, consider the subarray $s = a[l..r]$; determine the sum of Lipschitz constants of **all subarrays** of s .

Input

The first line of the input contains two space-separated integers n and q ($2 \leq n \leq 100\,000$ and $1 \leq q \leq 100$) — the number of elements in array a and the number of queries respectively.

The second line contains n space-separated integers $a[1..n]$ ($0 \leq a[i] \leq 10^8$).

The following q lines describe queries. The i -th of those lines contains two space-separated integers l_i and r_i ($1 \leq l_i < r_i \leq n$).

Output

Print the answers to all queries in the order in which they are given in the input. For the i -th query, print one line containing a single integer — the sum of Lipschitz constants of all subarrays of $a[l_i..r_i]$.

Examples

input	Copy
10 4 1 5 2 9 1 3 4 2 1 7 2 4 3 8 7 10 1 9	
output	Copy
17 82 23 210	

input	Copy
7 6 5 7 7 4 6 6 2 1 2 2 3 2 6 1 7	

Codeforces Round 333 (Div. 2)

[Finished](#)
[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 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](#)

→ Clone Contest to Mashup

You can clone this contest to a mashup.

[Clone Contest](#)

→ Submit?

Language: GNU G++17 7.3.0

Choose file: [Choose File](#) No file chosen

[Submit](#)

→ Contest materials

- Tutorial (en)