Max's Anger Contest Series 2 P3 - Array Anger

Time limit: 3.0s **Memory limit:** 1G
Java: 5.0s
Python: 5.0s

To stave off his boredom from ~~not~~ having a Communication Credit next term, Wesley decided to yell at his array (the closest thing to an intern).

He will yell Q queries at his array, A, of N integers. The queries take the form `OI L_i S_i`, where his array will answer the first R that satisfies $S_i \leq \text{Sum}_{[L_i,R_i]}$ or N if no valid R_i exists ($\text{Sum}_{[L,R]}$ denotes the sum of elements from the 1-indexed $[L, R]$ in the array).

Since no one wants to be Wesley's intern, you are voluntold to be the array.

Can you answer these queries to prevent more yelling?

Constraints

$1 \leq N \leq 2 \times 10^5$

$1 \leq Q \leq 5 \times 10^5$

$1 \leq A_i \leq 5 \times 10^3$

$1 \leq L_i \leq N$

$1 \leq S_i \leq 10^9$

Subtask 1 [30%]

$1 \leq N, Q \leq 10^3$

Subtask 2 [70%]

No additional constraints.

Input Specification

The first line will contain two integers, N and Q, the number of array elements and the number of queries, respectively.

The next line will contain N integers, A_i, the elements of the array.

The next Q lines will contain one of the above queries, L_i and S_i, the start of the query and the minimum sum of the subarray.

Output Specification

Output Q lines with R_i, the answers to the queries.

Sample Input

```
6 6
1 5 3 2 1 7
OI 1 50
OI 1 19
OI 4 1
OI 1 12
OI 1 10
OI 2 8
```

Sample Output

```
6
6
4
5
4
3
```