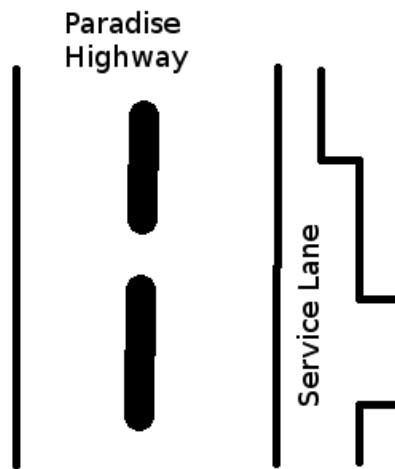


A driver is driving on the freeway. The check engine light of his vehicle is on, and the driver wants to get service immediately. Luckily, a service lane runs parallel to the highway. It varies in width along its length.



You will be given an array of widths at points along the road (*indices*), then a list of the indices of entry and exit points. Considering each entry and exit point pair, calculate the maximum size vehicle that can travel that segment of the service lane safely.

Example

$n = 4$

$width = [2, 3, 2, 1]$

$cases = [[1, 2], [2, 4]]$

If the entry index, $i = 1$ and the exit, $j = 2$, there are two segment widths of **2** and **3** respectively. The widest vehicle that can fit through both is **2**. If $i = 2$ and $j = 4$, the widths are $[3, 2, 1]$ which limits vehicle width to **1**.

Function Description

Complete the *serviceLane* function in the editor below.

serviceLane has the following parameter(s):

- *int n*: the size of the *width* array
- *int cases[t][2]*: each element contains the starting and ending indices for a segment to consider, inclusive

Returns

- *int[t]*: the maximum width vehicle that can pass through each segment of the service lane described

Input Format

The first line of input contains two integers, n and t , where n denotes the number of width measurements and t , the number of test cases. The next line has n space-separated integers which represent the array *width*.

The next t lines contain two integers, i and j , where i is the start index and j is the end index of the segment to check.

Constraints

- $2 \leq n \leq 100000$
- $1 \leq t \leq 1000$
- $0 \leq i < j < n$
- $2 \leq j - i + 1 \leq \min(n, 1000)$
- $1 \leq \text{width}[k] \leq 3$, where $0 \leq k < n$

Sample Input

```
STDIN      Function
-----
8 5        n = 8, t = 5
2 3 1 2 3 2 3 3 width = [2, 3, 1, 2, 3, 2, 3, 3]
0 3        cases = [[0, 3], [4, 6], [6, 7], [3, 5], [0, 7]]
4 6
6 7
3 5
0 7
```

Sample Output

```
1
2
3
2
1
```

Explanation

Below is the representation of the lane:

	HIGHWAY Lane	->	Width
0:	--		2
1:	---		3
2:	-		1
3:	--		2
4:	---		3
5:	--		2
6:	---		3
7:	---		3

1. **(0, 3):** From index **0** through **3** we have widths **2, 3, 1** and **2**. Nothing wider than **1** can pass all segments.

2. **(4, 6)**: From index **4** through **6** we have width **3**, **2** and **3**. Nothing wider than **2** can pass all segments.
3. **(6, 7)**: **3, 3** \rightarrow **3** .
4. **(3, 5)**: **2, 3, 2** \rightarrow **2**
5. **(0, 7)**: **2, 3, 1, 2, 3, 2, 3, 3** \rightarrow **1**.