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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION

P. Valeriy and Deque

time limit per test: 6 seconds² memory limit per test: 256 megabytes

Recently, on the course of algorithms and data structures, Valeriy learned how to use a deque. He built a deque filled with n elements. The i-th element is a_i (i = $1, 2, \ldots, n$). He gradually takes the first two leftmost elements from the deque (let's call them A and B, respectively), and then does the following: if A > B, he writes A to the beginning and writes B to the end of the deque, otherwise, he writes to the beginning B, and A writes to the end of the deque. We call this sequence of actions an operation.

For example, if deque was [2, 3, 4, 5, 1], on the operation he will write B=3 to the beginning and A=2 to the end, so he will get [3, 4, 5, 1, 2].

The teacher of the course, seeing Valeriy, who was passionate about his work, approached him and gave him q queries. Each query consists of the singular number m_j $(j=1,2,\ldots,q)$. It is required for each query to answer which two elements he will pull out on the m_j -th operation.

Note that the queries are independent and for each query the numbers A and B should be printed in the order in which they will be pulled out of the deque.

Deque is a data structure representing a list of elements where insertion of new elements or deletion of existing elements can be made from both sides.

Input

The first line contains two integers n and q ($2 \le n \le 10^5$, $0 \le q \le 3 \cdot 10^5$) — the number of elements in the deque and the number of queries. The second line contains n integers $a_1, a_2, ..., a_n$, where a_i ($0 \le a_i \le 10^9$) — the deque element in i-th position. The next q lines contain one number each, meaning m_j ($1 \le m_i \le 10^{18}$).

Output

For each teacher's query, output two numbers A and B — the numbers that Valeriy pulls out of the deque for the m_i -th operation.

Examples

input	Сору
5 3	
1 2 3 4 5	
1	
2	
10	
output	Сору
1 2	
2 3	
5 2	
2 march	6

input	Сору
2 0 0 0	
output	Сору

Note

Consider all 10 steps for the first test in detail:

1. [1, 2, 3, 4, 5] — on the first operation, A and B are 1 and 2, respectively. So, 2 we write to the beginning of the deque, and 1 — to the end.

We get the following status of the deque: [2,3,4,5,1].

2.
$$[2,3,4,5,1] \Rightarrow A=2, B=3$$
.

- [3,4,5,1,2]
- 4. [4, 5, 1, 2, 3]
- 5. [5, 1, 2, 3, 4]
- 6. [5, 2, 3, 4, 1]
- 7. [5, 3, 4, 1, 2]
- 8. [5, 4, 1, 2, 3]
- 9. [5, 1, 2, 3, 4]
- 10. $[5, 2, 3, 4, 1] \Rightarrow A = 5, B = 2.$

<u>ICPC Assiut University Training -</u> <u>Juniors Phase 1 Sheets-2022</u>

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- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search, Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

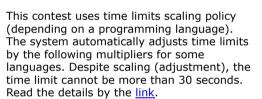
Juniors Phase 1 Practice #2 (STL

<u>1)</u>

Finished Practice



→ About Time Scaling



ightarrow Virtual participation

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Start virtual contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win ➤

Choose File No file chosen

Submit

→ Last submissions		
Submission	Time	Verdict
310220203	Mar/12/2025 10:43	Accepted
310220082	Mar/12/2025 10:42	Wrong answer on test 1
310182973	Mar/12/2025 03:10	Wrong answer on test 4