

Module 1

Deque's of Alex**Description**

Once upon a time, Alex was learning about deque data structure in his algorithms and data structures course. He had a deque containing n elements, with the i -th element being a_i (where $i = 1, 2, \dots, n$).

He used to take the first two leftmost elements from the deque, let's call them A and B , and perform the following operation: if $A > B$, he wrote A to the beginning and wrote B to the end of the deque, otherwise, he wrote B to the beginning and A wrote to the end of the deque. This sequence of actions was called an operation.

For instance, if the deque was $[6, 7, 8, 9, 10]$, Alex would write $B=7$ to the beginning and $A=6$ to the end, thus getting $[7, 8, 9, 10, 6]$.

One day, Alex's professor, who was impressed by his enthusiasm, gave him q queries, each containing a singular number m_j (where $j = 1, 2, \dots, q$). Alex was required to answer which two elements he would pull out on the m_j -th operation. For each query, the numbers A and B should be printed in the order in which they would be pulled out of the deque.

Note that the queries were independent, and for each query, the numbers should be printed in the order in which they would be pulled out of the deque.

Input Format

The first line contained two integers n and q — the number of elements in the deque and the number of queries. The second line contained n integers a_1, a_2, \dots, a_n , where a_i represented the deque element in the i -th position. The next q lines contained one number(m_j) which represented how many process it needs to be repeat.

Constraint

$2 \leq n \leq 2 \cdot 10^2$, $0 \leq q \leq 20$, $0 \leq a_i \leq 10^4$, $1 \leq m_j \leq 10^{15}$

Output

For each query, Alex had to **output two numbers A and B** — the numbers that he would pull out of the deque for the m_j -th operation. If the output needed to be blank, Print **Input Not Valid**.

Sample Input 0

```
6 3
6 7 8 9 10 11
1
2
10
```

Sample Output 0

```
6 7
7 8
11 10
```

Sample Input 1

```
3 0
1 1 0
```

Sample Output 1

```
Input Not Valid
```