

Contest Duration: 2025-11-08(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251108T2100&p1=248>) - 2025-11-09(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251108T2240&p1=248>) (local time) (100 minutes)

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## G - One Time Swap 2

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 575 points

### Problem Statement

You are given an integer sequence  $A = (A_1, A_2, \dots, A_N)$  of length  $N$ .

For a pair of integers  $(l, r)$  ( $1 \leq l < r \leq N$ ), let  $f(l, r)$  be the integer sequence obtained by swapping the  $l$ -th element and the  $r$ -th element of  $A$ .

Generate a sequence of integer sequences  $B = (B_1, B_2, \dots, B_{\frac{N(N-1)}{2}})$  of length  $\frac{N(N-1)}{2}$  by the following procedure:

- Prepare an empty sequence  $B = ()$ .
- For each pair of integers  $(l, r)$  ( $1 \leq l < r \leq N$ ), add  $f(l, r)$  to  $B$ .
- Sort  $B$  in lexicographical order of sequences.

You are given  $Q$  queries; process them in order. The  $i$ -th query is as follows:

- Given an integer  $k$ , find one pair of integers  $(l, r)$  ( $1 \leq l < r \leq N$ ) such that  $B_k = f(l, r)$  and output it.

► What is lexicographical order of sequences?

### Constraints

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

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- $1 \leq A_i \leq N$
  - $1 \leq k \leq \frac{N(N-1)}{2}$
  - All input values are integers.
- 

## Input

The input is given from Standard Input in the following format:

```
N Q
A1 A2 ... AN
query1
query2
:
queryQ
```

Each query is given in the following format:

```
k
```

## Output

Output  $Q$  lines. The  $i$ -th line should contain the answer to the  $i$ -th query in the following format:

```
l r
```

If there are multiple solutions, any of them will be considered correct.

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## Sample Input 1

Copy

```
4 3
1 2 1 2
1
3
5
```

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## Sample Output 1

Copy

```
2 3
2 4
1 2
```

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$$f(1, 2) = (2, 1, 1, 2), f(1, 3) = (1, 2, 1, 2), f(1, 4) = (2, 2, 1, 1), f(2, 3) = (1, 1, 2, 2), f(2, 4) = (1, 2, 1, 2), f(3, 4) = (1, 2, 2, 1).$$

The sequence  $B$  obtained by sorting these six sequences in lexicographical order is  $B = ((1, 1, 2, 2), (1, 2, 1, 2), (1, 2, 1, 2), (1, 2, 2, 1), (2, 1, 1, 2), (2, 2, 1, 1))$ .

- For the 1-st query, the only  $(l, r)$  such that  $B_1 = (1, 1, 2, 2) = f(l, r)$  is  $(l, r) = (2, 3)$ .
- For the 2-nd query,  $(l, r)$  such that  $B_3 = (1, 2, 1, 2) = f(l, r)$  are  $(l, r) = (1, 3), (2, 4)$ . In this case, either one will be considered correct.
- For the 3-rd query, the only  $(l, r)$  such that  $B_5 = (2, 1, 1, 2) = f(l, r)$  is  $(l, r) = (1, 2)$ .

## Sample Input 2

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```
10 10
1 1 2 7 6 3 5 7 3 3
21
36
9
17
13
24
7
45
33
1
```

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## Sample Output 2

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```
6 8
2 4
5 7
9 10
8 9
3 9
5 9
1 8
2 10
4 10
```

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