# F. Longest Strike

time limit per test: 1 second
memory limit per test: 256 megabytes

Given an array $a$ of length $n$ and an integer $k$, you are tasked to find any two numbers $l$ and $r$ ($l \leq r$) such that:

- For each $x$ ($l \leq x \leq r$), $x$ appears in $a$ at least $k$ times (i.e. $k$ or more array elements are equal to $x$).
- The value $r - l$ is maximized.

If no numbers satisfy the conditions, output `-1`.

For example, if $a = [11, 11, 12, 13, 13, 14, 14]$ and $k = 2$, then:

- for $l = 12$, $r = 14$ the first condition fails because $12$ does not appear at least $k = 2$ times.
- for $l = 13$, $r = 14$ the first condition holds, because $13$ occurs at least $k = 2$ times in $a$ and $14$ occurs at least $k = 2$ times in $a$.
- for $l = 11$, $r = 11$ the first condition holds, because $11$ occurs at least $k = 2$ times in $a$.

A pair of $l$ and $r$ for which the first condition holds and $r - l$ is maximal is $l = 13$, $r = 14$.

## Input

The first line of the input contains a single integer $t$ ($1 \leq t \leq 1000$) — the number of test cases. The description of test cases follows.

The first line of each test case contains the integers $n$ and $k$ ($1 \leq n \leq 2 \cdot 10^5$, $1 \leq k \leq n$) — the length of the array $a$ and the minimum amount of times each number in the range $[l, r]$ should appear respectively.

Then a single line follows, containing $n$ integers describing the array $a$ ($1 \leq a_i \leq 10^9$).

It is guaranteed that the sum of $n$ over all test cases does not exceed $2 \cdot 10^5$.

## Output

For each test case output $2$ numbers, $l$ and $r$ that satisfy the conditions, or "`-1`" if no numbers satisfy the conditions.

If multiple answers exist, you can output any.

## Example

**input** Copy

```
4
7 2
11 11 12 13 13 14 14
5 1
6 3 5 2 1
6 4
4 3 4 3 3 4
14 2
1 1 2 2 2 3 3 3 3 4 4 4 4 4
```

**output** Copy

```
13 14
1 3
-1
1 4
```

**Codeforces Round 790 (Div. 4)**
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

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

Choose file: Choose File No file chosen

Submit

→ Last submissions

| Submission | Time | Verdict |
|---|---|---|
| 229201341 | Oct/22/2023 13:40 | Accepted |

→ Problem tags

data structures greedy implementation sortings two pointers *1300

No tag edit access

→ Contest materials

- Announcement (en)
- Tutorial (en)