Problem E – Egotistical Command Chain

The ICPC is an organization made up of lots of competitive programmers, but it's very chaotic, so you have been tasked with assigning a command chain. A command chain can be seen as a directed graph where the vertex (i, j) indicates that the i-th competitive programmer can give orders to the j-th competitive programmer.

You know competitive programmers are very egotistical people, so they will be mad unless they have power over at least a_i people (this number can be different for each person). But if they have control over more than a_i persons, they will go mad with power, so you want to make the command chain so that every person has control over exactly a_i persons. You also don't want to have a cycle, that means, a path following the edges of the graph, such that you begin and end on the same person.

We say a person i has power over a person j if there is a sequence of people $b_1, b_2, \ldots, b_k$ such that $b_1 = i$, $b_k = j$, and b_h can give orders to b_{h+1} for all $1 \leq h < k$. Notice that a person always has power over itself.

To save resources, and so it is not that complicated, you can use at most 10^6 edges on your graph.

Input

The first line of input contains an integer N ($1 \leq N \leq 10^5$) — The number of people in the organization.

The second line of input contains N integers a_i ($1 \leq a_i \leq N$) ($a_1 + a_2 + \ldots + a_N \leq 10^6$) — The i-th integer is the number of people that the i-th programmer must have power over.

Output

If it's impossible to create the command chain with the restrictions of the problem, print `-1`.

Otherwise, print m — The number of edges in your graph. On the next m lines print two integers u_i and v_i indicating that u_i can give orders to v_i.

It can be proven that with the conditions of the problem, it is possible to construct the graph with at most 10^6 edges.

Sample input 1	**Sample output 1**
5 5 1 1 1 1	4 1 2 1 3 1 4 1 5

Sample input 2	**Sample output 2**
5 5 5 5 5 5	-1