

## D. Invariance of Tree

time limit per test: 1 second  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

A tree of size  $n$  is an undirected connected graph consisting of  $n$  vertices without cycles.

Consider some tree with  $n$  vertices. We call a tree *invariant* relative to permutation  $p = p_1 p_2 \dots p_n$ , if for any two vertices of the tree  $u$  and  $v$  the condition holds: "vertices  $u$  and  $v$  are connected by an edge if and only if vertices  $p_u$  and  $p_v$  are connected by an edge".

You are given permutation  $p$  of size  $n$ . Find some tree size  $n$ , invariant relative to the given permutation.

### Input

The first line contains number  $n$  ( $1 \leq n \leq 10^5$ ) — the size of the permutation (also equal to the size of the sought tree).

The second line contains permutation  $p_i$  ( $1 \leq p_i \leq n$ ).

### Output

If the sought tree does not exist, print "NO" (without the quotes).

Otherwise, print "YES", and then print  $n - 1$  lines, each of which contains two integers — the numbers of vertices connected by an edge of the tree you found. The vertices are numbered from 1, the order of the edges and the order of the vertices within the edges does not matter.

If there are multiple solutions, output any of them.

### Examples

| input                    |
|--------------------------|
| 4<br>4 3 2 1             |
| output                   |
| YES<br>4 1<br>4 2<br>1 3 |

| input      |
|------------|
| 3<br>3 1 2 |
| output     |
| NO         |

### Note

In the first sample test a permutation transforms edge (4, 1) into edge (1, 4), edge (4, 2) into edge (1, 3) and edge (1, 3) into edge (4, 2). These edges all appear in the resulting tree.

It can be shown that in the second sample test no tree satisfies the given condition.