Yet Another MST Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 megabytes

Let us define $\textbf{mex}(S)$ as the minimal non-negative integer which is not contained in S.

You are given a permutation p consisting of n elements from 0 to $n-1$. You also have m segments $[l_i, r_i]$ which you use to build a graph in the following way:

- For each pair of vertices $i \neq j$, you add an edge with cost equal to the **mex** of the union of values of the permutation on segments $[l_i, r_i]$ and $[l_j, r_j]$. More formally, the cost is equal to $\textbf{mex}\left(\{p_k | k \in [l_i, r_i] \cup [l_j, r_j]\}\right)$.

Find the minimum spanning tree of the described graph.

Input

The first line contains 2 integers n, m $(2 \leq n, m \leq 3 \cdot 10^5)$ — length of the permutation and number of segments.

The second line contains n integers p_i $(0 \leq p_i \leq n-1)$ — description of permutation p.

Next m lines contain pairs of integers l_i, r_i $(1 \leq l_i \leq r_i \leq n)$ — description of the segments.

Output

In a single line, output the answer to the problem.

Examples

standard input	standard output
6 4 3 1 5 2 0 4 3 6 1 2 2 5 4 6	8
2 2 0 1 1 2 1 2	2