Complete Bipartite

Given the complete bipartite graph with the number of vertices in two distinct subsets are n and m. Output the list of edges in the lexicographic order

Input

The first line contains two integers n, m ($0 < n, m \leq 10^3$).

The second line contains n distinct integers a_i ($0 \leq a_i \leq 10^9$) that represent vertices of the first subset

The second line contains m distinct integers b_j ($0 \leq bj \leq 10^9$ that represent vertices of the second subset.

** 50% of test cases has ($0 \leq ai \leq n-1$, $n \leq bj \leq n+m-1$).*

** 90% of test cases has ($0 \leq ai, b_j \leq n+m-1$).*

Output

Output the edges of the graph in lexicographic order.

Sample

Input	Output
3 2 0 3 1 4 2	0 2 0 4 1 2 1 4 2 3 3 4
3 2 0 1 2 3 4	0 3 0 4 1 3 1 4 2 3 2 4