All edges are assumed to be undirected.

Problem setup: When considering a new index p_i, add up to two edges: add (i, j), such that j is maximized, $1 \leq j < i$, and $p_j > p_i$, and add (i, k) such that k is minimized, $i < k \leq n$, and $p_k > p_i$. If no such j exists, do not add (i, j), and likewise for k.

Observations: For no edge to be added to an index, $p_1, \ldots, p_i$ must be monotonically increasing, and $p_i, \ldots, p_n$ must be monotonically decreasing.

We count the number of acyclic permutations, rather than counting the number of cyclic permutations.