We are given two lists of integers $P = \{p_1, \ldots, p_\ell\}$ and $Q = \{q_1, \ldots, q_\ell\}$ of the same length, both are subsets of $\{1, \ldots, n\}$. We want to find a partition $\Pi = \{S_1, S_2, \ldots, S_p\}$ of the integers $\{1, \ldots, n\}$ into disjoint nonempty subsets, such that p_i and q_i belong to the same class of the partition, for all $i = 1, \ldots, \ell$:

More precisely, we perform the following sequence of steps:

Start with the partition into singleton sets:
$\Pi = \{S_1, S_2, \ldots, S_n\}$, where $S_j = \{j\}$.
for $j = 1, \ldots, \ell$:
    determine i_j such that $p_j \in S_{i_j}$.
    determine k_j such that $q_j \in S_{k_j}$.
    Replace Π by $\Pi \setminus \{S_{i_j}\} \setminus \{S_{k_j}\} \cup \{S_{i_j} \cup S_{k_j}\}$