Algorithm:

if

good permutation of length n does not exist

if

for -3, -1

The Algorithm groups the into , , …, and produces a good permutation when

Time complexity:

Space complexity:

It remains to show that no good permutation exists when .

Suppose for contradiction that there is a good permutation of length . Observe that and

, so there must be four distinct integers such that and the good condition is satisfied

. Also note that and

. So we can find another four distinct integers similarly. By repeating this procedure, we know that is a multiple of 4, which contradicts the hypothesis.

Similarly, a contradiction can be derived for by noting that

must be .