HMIC 2025/5

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Twitch Solves ISL

Episode 162

Problem

Compute the smallest integer $k > 45$ for which there exists a sequence a_1, a_2, a_3, ..., a_{k-1} of positive integers satisfying the following conditions:

- $a_i = i$ for all integers $1 \le i \le 45$;

- $a_{k-i} = i$ for all integers $1 \le i \le 45$, and

- for any odd integers $1 \le n \le k - 45$, the sequence a_n, a_{n+1}, ..., a_{n+44} is a permutation of $\{1, 2, \ldots, 45\}$.

Video

Solution

To be written.