



Game of Stones 1

locked

by IEEEXtreme

Problem

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Intended complexity $O(N)$ per game, $O(\text{Sum of } N)$ in total.

Solution:

The key observation is that in the losing configuration all the piles have 1 stone, and there will be exactly the "sum of stones in every pile in every game" such piles. Let's say that before a split there are X piles in total and after the split there will be $X+2$ piles.

In the example, there are $2 + 1 + 3 = 6$ piles and the losing configuration has $3 + 5 + 5 + 3 + 3 + 7 = 26$ piles. The number of splits will be $(26 - 6) / 2 = 10$. As Alice starts, she will split on turns 1, 3, 5, 7 and 9 and Bob on 2, 4, 6, 8, 10. After Bob's last split all the piles will only have 1 stone, so Alice loses.

Statistics

Difficulty: Hard

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