Példa előadás

Előadó neve
Cég/Intézmény neve

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Hofstadter-Conway $10,000 Sequence

The recursive sequence defined by the recurrence relation

$$a(n) = a(a(n-1)) + a(n - a(n-1))$$

with $a(1) = a(2) = 1$. The first few values are 1, 1, 2, 2, 3, 4, 4, 4, 5, 6.

Collatz Problem

A problem posed by L. Collatz in 1937, also called the $3x+1$ mapping, $3n+1$ problem. Let a_0 be an integer. Then the Collatz problem asks if iterating

$$a_n = \begin{cases} 1/2a_{(n-1)} \text{ for } a_{(n-1)} \text{ even;} \\ 3a_{(n-1)} + 1 \text{ for } a_{(n-1)} \text{ odd} \end{cases}$$

always returns to 1 for positive a_0.

Kimberling Sequence

Given a sequence S_i as input to stage i, form sequence $S_{(i+1)}$ as follows:

1. For $k \in [1, \ldots, i]$, write term $i + k$ and then term $i - k$.
2. Discard the ith term.
3. Write the remaining terms in order.

Starting with the positive integers, the first few iterations are therefore

$\boxed{1}$	2	3	4	5	6	7	8	9	10	11
2	$\boxed{3}$	4	5	6	7	8	9	10	11	12
4	2	$\boxed{5}$	6	7	8	9	10	11	12	13
6	2	7	$\boxed{4}$	8	9	10	11	12	13	14
8	7	9	2	$\boxed{10}$	6	11	12	13	14	15