

Splay Tree

Time Limit: 4 Second
Memory Limit: 2048 MB

Splay tree is a type of balanced binary search tree invented by Daniel Sleator and Robert Tarjan. It can complete operations including insertion, deletion, and query in amortized $O(\log n)$. The key idea behind this data structure is the Splay operation, which supports rotating any given node in the tree to the root by performing a sequence of rotation operations while keeping the tree balanced.

With Splay operations, an Splay tree with n nodes can be transformed into many different shapes. As you have recently learned about this data structure, you are now wondering the number of different shapes an Splay tree with n node can have. Since this number can be very large, output its value modulo 998 244 353.

Hint: recall the definition of a balanced tree.

Input

The only line of input contains a single integer n ($1 \leq n \leq 10^5$) - the number of vertices in the Splay tree.

Output

Output a single integer denoting the number of different shapes of the Splay tree with n vertices, modulo 998 244 353.

Sample Inputs

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Sample Outputs

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