
Problem A. Graph Counting

Input file: *standard input*
Output file: *standard output*
Time limit: 5 seconds
Memory limit: 256 mebibytes

Consider undirected graphs on $2n$ vertices with no loops and no multiple edges. We will say that a graph G is **good** if there is no perfect matching in G , but for any edge not in G , if we add it to G , the resulting graph will have a perfect matching.

Your goal is to calculate the number of different good graphs on $2n$ vertices modulo 998 244 353.

Two graphs are different if they are non-isomorphic, meaning that one graph can not be transformed into another by relabeling the vertices.

Input

The first line of the input contains one integer n ($1 \leq n \leq 500\,000$). Recall that $2n$ is the number of vertices in graph.

Output

Print one integer: the number of different good graphs on $2n$ vertices modulo 998 244 353.

Examples

standard input	standard output
2	2
353535	331835697

Note

Graphs for $2n = 4$:

