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Problem B. Graph

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

We call an undirected graph with n vertices "good" when for all $1 \le u, v \le n$, there exists at least one path between u, v, i.e., $u = x_1, x_2, \ldots, x_m = v$ such that $\gcd(u, v) = \gcd(x_1, x_2, \ldots, x_m)$.

We call an undirected graph with n vertices "perfect" when it is "good" and the number of edges in the graph is minimal. That is to say, any other "good" graph with n vertices has no less number of edges than this graph.

You need to count the number of "perfect" graphs with n vertices.

Since the answer could be very large, you only need to find it modulo 998 244 353.

Input

The input contains only one single integer n ($2 \le n \le 10^{11}$) — the number of vertices in the "perfect" graph you need to count.

Output

The output contains only one single integer, representing the answer modulo 998 244 353.

Example

standard input	standard output
4	8