CCO Preparation Test 2 P3 - Subsets

Time limit: 0.6s **Memory limit:** 128M

When Bruce learned set theory, he assigned a homework question to his students.

Given a positive integer N, find the number of subsets of the whole set $\{1, 2, \ldots, N\}$ that satisfies the following constraint: if an integer x is in the subset, then the integers $2x$ and $3x$ are **not** in the subset. For example, given $N = 4$, the whole set is $\{1, 2, 3, 4\}$. The number of subsets satisfying the constraint is 8, including the empty set: $\emptyset$, $\{1\}$, $\{1, 4\}$, $\{2\}$, $\{2, 3\}$, $\{3\}$, $\{3, 4\}$, and $\{4\}$.

Input Specification

The input will consist of one integer N $(1 \leq N \leq 100\,000)$.

Output Specification

Output the number of subsets that satisfy the above constraints mod $1\,000\,000\,001$ $(= 10^9 + 1)$.

Sample Input

```
4
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Sample Output

```
8
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