DMOPC '21 Contest 10 P5 - Number Theory

Time limit: 2.0s **Memory limit:** 256M

Find an odd integer n with $1 < n < 10^{18}$ such that $d(\varphi(n)) = \varphi(d(n))$.

For any positive integer m,

- $\varphi(m)$ is the number of integers between 1 and m inclusive that are coprime to m.
- $d(m)$ is the number of positive divisors of m.

Input Specification

There is no input for this problem.

Output Specification

Output n.

Scoring

If your output is improperly formatted, n is even, or n does not satisfy $1 < n < 10^{18}$ and $d(\varphi(n)) = \varphi(d(n))$, you will receive 0 points.

Otherwise, your score will be $\min(5 \cdot (37 - \lceil \log_4(n) \rceil), 100)$. For full points, n must be less than 4^{17}.

Sample Output

```
6
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Explanation

Note that $d(\varphi(6)) = d(2) = 2$ and $\varphi(d(6)) = \varphi(4) = 2$, so this value of n satisfies $d(\varphi(n)) = \varphi(d(n))$.

Unfortunately, this value of n is not odd, so it would score 0 points.