Problem K. Kids Aren't Alright

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

As unlikely as it may seem, a crazy guy on the phone claims to have kidnapped your precious child. You don't really believe him, as all your children (possibly none) are playing in front of you right now, safe and sound. Anyway, you're fairly curious about the situation, so you ask the criminal what he wants for releasing his hostage.

As boring as it may seem, the kidnapper asks for money. Just money. You are about to hang up the phone in disappointment when something peculiar attracts your attention. Your interlocutor is not telling you the exact amount he wants. Instead, he proposes you a riddle.

As ridiculous as it may seem, the riddle is:

"*How many non-empty sets of positive integers exist such that their greatest common divisor is 1, while their least common multiple is m?*".

Then, the abductor tells you that the answer to this riddle, taken modulo 998244353, is the exact amount of money he wants for returning your imaginary offspring.

You're now wondering about the rates at the kidnapping market, since you've been away from this kind of affairs for quite some time. Not that you're going to pay the snatcher a single penny, though.

Input

The only line of the input contains a single integer m ($1 \le m \le 10^{18}$).

Output

Output a single integer — the amount of money you've been asked for.

Examples

standard input	standard output
6	7
100	322

Note

In the first example test case, all suitable sets are $\{1, 6\}$, $\{2, 3\}$, $\{1, 2, 3\}$, $\{1, 2, 6\}$, $\{1, 3, 6\}$, $\{2, 3, 6\}$, and $\{1, 2, 3, 6\}$.