E. Fibonacci Number

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

John Doe has a list of all Fibonacci numbers modulo 10^{13}. This list is infinite, it starts with numbers 0 and 1. Each number in the list, apart from the first two, is a sum of previous two modulo 10^{13}. That is, John's list is made from the Fibonacci numbers' list by replacing each number there by the remainder when divided by 10^{13}.

John got interested in number f $(0 \le f < 10^{13})$ and now wants to find its first occurrence in the list given above. Help John and find the number of the first occurence of number f in the list or otherwise state that number f does not occur in the list.

The numeration in John's list starts from zero. There, the 0-th position is the number 0, the 1-st position is the number 1, the 2-nd position is the number 1, the 3-rd position is the number 2, the 4-th position is the number 3 and so on. Thus, the beginning of the list looks like this: $0, 1, 1, 2, 3, 5, 8, 13, 21, ...$

Input

The first line contains the single integer f $(0 \le f < 10^{13})$ — the number, which position in the list we should find.

Please, do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Output

Print a single number — the number of the first occurrence of the given number in John's list. If this number doesn't occur in John's list, print -1.

Examples

input
13
output
7

input
377
output
14