Fibonacci Sequence

Fibonacci sequence is defined as follow: $F_1 = 1$, $F_2 = 2$, $F_i = F_{i-1} + F_{i-2}$ $(i > 2)$.

Each natural number X can be expressed by the maximum numbers that are less than or equal to X in Fibonacci sequence: $X = a_1 x F_1 + a_2 x F_2 + \ldots$ Therefore, in Fibonacci system, X is known as: $a_n a_{n-1} \ldots a_1$. For example, $1 = 1_F$, $2 = 10_F$, etc. If we write all natural numbers successively in Fibonacci system, we will obtain a sequence like this: 1_1_0... This is called "Fibonacci bit sequence of natural numbers".

Your task is counting the numbers of times that bit 1 appears in the first N bits of this sequence.

Input

Line 1: An integer N ($1 <= N <= 10^{15}$)

Output

Line 1: An integer K is the result

Example

Input:
2

Output:
2