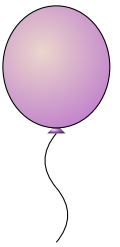


H: Pseudo-Random Number Generator

Time limit: 0.3 second



Donald loves nature. Being a programmer, Donald writes programs to simulate the growth of trees or to build realistic 3D landscapes. For this purpose, Donald needs a good pseudo-random number generator. He devises the following method to produce an infinite sequence of 40-bit unsigned integers (the lines in green are comments).

```
M := 1 << 40 // = 240 = 1 099 511 627 776
S(0) := 0x600DCAFE // = 1 611 516 670
S(n + 1) := (S(n) + (S(n) >> 20) + 12345) % M
```

On the last line, $x \gg 20$ denotes the quotient of the Euclidean division of x by 2^{20} and $x \% M$ denotes the remainder of the Euclidean division of x by M .

As a very first test to decide if this is indeed a good pseudo-random number generator, Donald wishes to count the number of even values produced by this sequence, in order to check whether this is close enough to 50%. Your help will be welcome.

Input

The input consists of a single line, containing an integer N .

Limits

The input satisfies $0 \leq N < 2^{63}$.

Output

The output should contain a single line with a single integer corresponding to the number of even values in the sequence $S(0), S(1), \dots, S(N - 1)$.

Sample Input 1

3

Sample Output 1

2

Sample Input 2

500000000

Sample Output 2

250065867