

Lights [III]

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output
points: 100 · problem code: lights3 · author: glipR

The blurb for this problem is the same as Lights [I], save for the statement of the problem.

You stand before an infinitely long corridor containing lights and their respective switches. You'd like to turn a subset of the lights on using little robots that will flick certain switches infinitely along the corridor.

In this third problem, you'll be sending an infinite number of robots. The i^{th} robot will flick switches according the the following rule:

Robot i flicks light switch j if $2i - 1$ divides j . In other words, the i^{th} robot flicks every $(2i - 1)^{\text{th}}$ switch.

A light switch stays on if after all robots are done, it has been flicked an odd number of times. For example, Light Switch #4 is on because it was flicked by Robot 1. While Light Switch #3 is off because it was flicked by Robots 1 and 2.

Input

Input will contain a single integer n , representing how many lights we'll be considering

Output

Output will contain a single integer, representing the total number of lights at position at or before the n^{th} light that are on at the end of execution

Constraints

- $1 \leq n \leq 10^{18}$

Examples

Input

3

Output

2

Explanation

3 is the only light switch that is turned off.

Input

6

Output

3

Explanation

1, 2, 4 are the only light switch that is turned on.

Input

10

Output

5

Explanation

1, 2, 4, 8, 9 are the only light switches that are turned on.