

Given an integer n , find each x such that:

- $0 \leq x \leq n$
- $n + x = n \oplus x$

where \oplus denotes the [bitwise XOR](#) operator. Print the number of x 's satisfying the criteria.

For example, if $n = 4$, there are four values:

- $4 + 0 = 4 \oplus 0 = 4$
- $4 + 1 = 4 \oplus 1 = 5$
- $4 + 2 = 4 \oplus 2 = 6$
- $4 + 3 = 4 \oplus 3 = 7$.

Function Description

Complete the sumXor function in the editor below. It should return the number of values determined, as an integer.

sumXor has the following parameter(s):

- n : an integer

Input Format

A single integer, n .

Constraints

- $0 \leq n \leq 10^{15}$

Subtasks

- $0 \leq n \leq 100$ for 60% of the maximum score.

Output Format

Print the total number of integers x satisfying the criteria.

Sample Input 0

5

Sample Output 0

2

Explanation 0

For $n = 5$, the x values 0 and 2 satisfy the conditions:

- $5 + 0 = 5$, $5 \oplus 0 = 5$
- $5 + 2 = 7$, $5 \oplus 2 = 7$

Sample Input 1

10

Sample Output 1

4

Explanation 1

For $n = 10$, the x values 0, 1, 4, and 5 satisfy the conditions:

- $10 + 0 = 10$, $10 \oplus 0 = 10$
- $10 + 1 = 11$, $10 \oplus 1 = 11$

- $10 + 4 = 14$, $10 \oplus 4 = 14$
- $10 + 5 = 15$, $10 \oplus 5 = 15$