

Problem I Exclusive or

Given n , find the value of

$$\sum_{i=1}^{n-1} i \oplus (n - i).$$

Note: \oplus denotes bitwise exclusive-or.

Input

A single integer n ($2 \leq n < 10^{500}$).

Output

A single integer, the value of the sum.

Sample input 1

3

Sample output 1

6

Sample input 2

4

Sample output 2

4