

Problem I. Exclusive Or

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

Given n , find the value of

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

Here \oplus denotes bitwise exclusive-or.

Input

The input consists of single integer n ($2 \leq n < 10^{500}$).

Output

Print a single integer — the value of the sum.

Examples

standard input	standard output
3	6
4	4