

## E. Mahmoud and Ehab and the xor-MST

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Ehab is interested in the bitwise-xor operation and the special graphs. Mahmoud gave him a problem that combines both. He has a complete graph consisting of  $n$  vertices numbered from 0 to  $n - 1$ . For all  $0 \leq u < v < n$ , vertex  $u$  and vertex  $v$  are connected with an undirected edge that has weight (where is the [bitwise-xor operation](#)). Can you find the weight of the minimum spanning tree of that graph?

You can read about complete graphs in [https://en.wikipedia.org/wiki/Complete\\_graph](https://en.wikipedia.org/wiki/Complete_graph)

You can read about the minimum spanning tree in [https://en.wikipedia.org/wiki/Minimum\\_spanning\\_tree](https://en.wikipedia.org/wiki/Minimum_spanning_tree)

The weight of the minimum spanning tree is the sum of the weights on the edges included in it.

### Input

The only line contains an integer  $n$  ( $2 \leq n \leq 10^{12}$ ), the number of vertices in the graph.

### Output

The only line contains an integer  $x$ , the weight of the graph's minimum spanning tree.

### Example

input
4
output
4

### Note

In the first sample: The weight of the minimum spanning tree is  $1+2+1=4$ .