Magic Cables

Max. score: 100

This problem is no longer available for practice. Apology for any inconvenience!

As Shopee is expanding its business, the infrastructure team is planning to set up a new cluster of servers.

There are N servers in the cluster, each of them with an ID of 1 through N. All the server nodes must be connected, meaning that any server must be able to talk to another server either directly or through server hops. Interestingly, the team found a new cable technology that introduces network latency based on the server IDs it is connected to. To be precise, the cable's latency is defined to be

$$\min\left(S_i \,\&\, S_j, S_i \oplus S_j\right)$$

where S_i and S_j are two different server ids ($\&$ and $\oplus$ are the bitwise-$\mathbf{AND}$ and bitwise-$\mathbf{XOR}$ operators respectively)

The infrastructure team is looking to find an optimal network configuration, where the sum of the cable's latencies is minimized.

Input format

Input consists only of a single number N $\left(2 \leq N \leq 10^5\right)$

Output format

Output the sum of the cable's latencies in the optimal network configuration

SAMPLE INPUT
4

SAMPLE OUTPUT
0

Explanation

Cables connecting 1,2 and 1,4 and 3,4 have a latency of 0. Hence sum of cables' latencies is 0.

Time Limit:	1.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Score is assigned when all the testcases pass.
Allowed Languages:	Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic