

Ludic Numbers (hard)

Find the number of [Ludic numbers](#) less than or equal to N .

Input

The first line contains an integer N ($1 \leq N \leq 10^{11}$).

Output

Output the number of Ludic Numbers less than or equal to N .

Example

Input

100000000000

Output

3603128157

Note

- See [LUDIC1](#) for an easier version.
- Other references for the Ludic numbers: [Ludic numbers](#) or [A003309](#).