

Project Euler #245: Coresilience

This problem is a programming version of [Problem 245](#) from [projecteuler.net](#)

We shall call a fraction that cannot be cancelled down a **resilient** fraction.

Furthermore we shall define the **resilience** of a denominator, $R(d)$, to be the ratio of its proper fractions that are resilient; for example, consider $d = 12$. The 11 proper fractions with a 12 denominator are $1/12, 2/12, 3/12, \dots, 11/12$. Four of these cannot be cancelled down, so the resilience is $R(12) = 4/11$.

The resilience of a number $d > 1$ is then

$$R(d) = \frac{\varphi(d)}{d-1}$$

where φ is Euler's totient function.

We further define the **coresilience** of a number $n > 1$ as

$$C(n) = \frac{n - \varphi(n)}{n - 1}.$$

Given an integer N , find the sum of all integers $1 < n \leq N$ for which $C(n)$ is a unit fraction, that is, a fraction with a numerator of 1 after cancelling down.

Input Format

Each test file contains a single line containing a single integer N .

Constraints

$$2 \leq N \leq 10^{11}$$

Output Format

Print the integer value of the sum of all integers $1 < n \leq N$ for which $C(n)$ is a unit fraction.

Sample Input 0

5

Sample Output 0

10

Explanation 0

Integer 2 3 4 5
Euler Phi 1 2 2 4
Coresilience 1/11/22/31/4

The sum of integers with Coresilience a unit fraction: $2 + 3 + 5 = 10$.