

Project Euler #95: Amicable chains

This problem is a programming version of [Problem 95](#) from [projecteuler.net](#)

The proper divisors of a number are all the divisors excluding the number itself. For example, the proper divisors of **28** are **1, 2, 4, 7**, and **14**. As the sum of these divisors is equal to **28**, we call it a perfect number.

Interestingly the sum of the proper divisors of **220** is **284** and the sum of the proper divisors of **284** is **220**, forming a chain of two numbers. For this reason, **220** and **284** are called an amicable pair.

Perhaps less well known are longer chains. For example, starting with **12496**, we form a chain of five numbers:

$$12496 \rightarrow 14288 \rightarrow 15472 \rightarrow 14536 \rightarrow 14264 (\rightarrow 12496 \rightarrow \dots)$$

Since this chain returns to its starting point, it is called an amicable chain.

Find the smallest member of the longest amicable chain with no element exceeding N .

Input Format

First and only line contains N

Constraints

$$6 \leq N \leq 10^6$$

Output Format

Print the corresponding answer.

Sample Input

10

Sample Output

6