Project Euler #70: Totient permutation

This problem is a programming version of Problem 70 from projecteuler.net

Euler's Totient function, $\phi(n)$ [sometimes called the phi function], is used to determine the number of positive numbers less than or equal to n which are relatively prime to n. For example, as $1, 2, 4, 5, 7,$ and $8,$ are all less than nine and relatively prime to nine, $\phi(9) = 6$.

The number 1 is considered to be relatively prime to every positive number, so $\phi(1) = 1$. Interestingly, $\phi(87109) = 79180$, and it can be seen that 87109 is a permutation of 79180.

Find the value of n, $1 < n < N$, for which $\phi(n)$ is a permutation of n and the ratio $n/\phi(n)$ produces a minimum.

Input Format

Input contains an integer N

Constraints

$100 \leq N \leq 10^7$

Output Format

Print the answer corresponding to the test case.

Sample Input

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100
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Sample Output

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21
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