

CODER FIRST PROBLEM

CODER SANJAY is now ready to put up his first problem in his favorite website **SPOJ**.As it is his first problem,he wanted it to be easy so that most of them could get an **AC**.

The problem statement looks like this:

F(x) is a function whose properties are as follows.

1.**F(x)=0** at $x=0$.

2.**F(x)=1** at $x=1$.

3.**F(x)=2** at $x=2$.

4.**F(x)=0** if x is odd prime.

5.**F(a*b)=F(a)+F(b)**,where a,b are two positive integers and sum of a and b is minimum.

Your task is simple.You are to output the value of **F(x)** for the given input integer **x**.

CONSTRAINTS:

$0 < x < 100001$.

Input

The only line of input contains a single integer **x**.

Output

Output the value of **F(x)**.

Example

Input:

4

Output:

4