E. Interesting Game

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Two best friends Serozha and Gena play a game.

Initially there is one pile consisting of n stones on the table. During one move one pile should be taken and divided into an arbitrary number of piles consisting of $a_1 > a_2 > ... > a_k > 0$ stones. The piles should meet the condition $a_1 - a_2 = a_2 - a_3 = ... = a_{k-1} - a_k = 1$. Naturally, the number of piles k should be no less than two.

The friends play in turns. The player who cannot make a move loses. Serozha makes the first move. Who will win if both players play in the optimal way?

Input

The single line contains a single integer n ($1 \le n \le 10^5$).

Output

If Serozha wins, print k, which represents the minimal number of piles into which he can split the initial one during the first move in order to win the game.

If Gena wins, print "-1" (without the quotes).

Examples

input
3

output
2

input
6

output
-1

input
100

output
8

Codeforces Beta Round #73 (Div. 2 Only)

Finished

Practice

⭐

→ **Virtual participation**

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ **Practice**

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ **Submit?**

Language: [GNU G++11 5.1.0 ▼]

Choose file: [Choose File] No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit]

→ **Problem tags**

No tags yet

No tag edit access

→ **Contest materials**

- Announcement ✕
- Tutorial #1 ✕
- Tutorial #2 ✕