The 2018 Ethiopian Collegiate Programming Contest

Problem A
Black Chain
Time Limit: 0.1 Second

There is a linear chain of n black rings. The weight of every black ring is exactly 1g. We want to generate all possible weights from 1g to ng using this black chain. To do this, we need to remove some single rings from the chain. Since it is very difficult work to remove a single ring from the chain, we want to remove the minimum number of rings as possible. For example, consider the black chain with 7 rings as shown in Figure A.1. If ring 3 is removed, the chain would be separated into a single ring, a chain with rings from 1 to 2, and a chain with rings from 4 to 7 as shown in Figure A.2. Using them we can generate all weights from 1g to 7g as shown in Figure A.3.

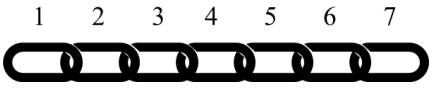

Figure A.1: A black chain with a length of 7.

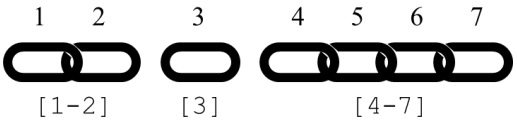

Figure A.2: A black chain separated into 3 pieces.

Weight	1g	2g	3g	4g	5g	6g	7g
Rings Configuration	[3]	[1-2]	[3] [1-2]	[4-7]	[3] [4-7]	[1-2] [4-7]	[3] [1-2] [4-7]

Figure A.3: Rings configurations for generating all weights from 1g to 7g.

Given a chain with n black rings, write a program to compute the minimum number of rings which should be removed for generating all weights from 1g to ng.

Input
Your program is to read from standard input. The input starts with a line containing an integer, n ($3 \leq n \leq 10^{18}$), where n is the number of rings in the black chain.

Output
Your program is to write to standard output. Print exactly one line which contains the minimum number of rings which should be removed for generating all weights from 1g to ng.

The following shows sample input and output for two test cases.

Sample Input 1	Output for the Sample Input 1
7	1

Sample Input 2	Output for the Sample Input 2
20	2