

Fight Against Numbers

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 1024 mebibytes

Star and Marco got themselves into a world where they are being attacked by swarms of numbers! Fortunately, the friends know what to do.

Each number is first served with a shot from Marco's binary blaster to expose the number's binary notation. After that, Star performs a power move one or more times: she reverses the binary notation of the number and then subtracts one. When the number becomes zero, it shatters to pieces.

The heroes have just entered the fight with a number n . How many power moves would it take to shatter this number to pieces?

Reversing works as follows: the first digit of the binary notation exchanges places with the last one, the second with the second-to-last, and so on. If leading zeroes appear in the result, they are discarded.

Input

The first line contains an integer n ($1 \leq n \leq 10^9$).

Output

Print a single integer: how many times would Star have to perform the power move so that the number n becomes zero and shatters to pieces.

Examples

<i>standard input</i>	<i>standard output</i>	<i>explanation</i>
4	1	$4_{10} = 100_2$ $100_2 \rightarrow 001_2 \rightarrow 0$
3	2	$3_{10} = 11_2$ $11_2 \rightarrow 11_2 \rightarrow 10_2$ $10_2 \rightarrow 01_2 \rightarrow 0$
11	3	$11_{10} = 1011_2$ $1011_2 \rightarrow 1101_2 \rightarrow 1100_2$ $1100_2 \rightarrow 0011_2 \rightarrow 10_2$ $10_2 \rightarrow 01_2 \rightarrow 0$