(Not so) Easy Guessing Game

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	16 megabytes

This is an interactive problem, please refer ***Notes*** *for more information.*

Alice and Bob are at yet another guessing game. Bob chooses a number k between 1 and n ($1 \le n \le 10^9$). Now, Alice makes a guess g:

if $g < k$, Bob responds with *lesser* and changes k to $k - \lfloor \frac{k-g}{2} \rfloor$

if $g > k$, Bob responds with *greater* and changes k to $k + \lfloor \frac{g-k}{2} \rfloor$

if $g = k$, Bob responds with *guessed* and Alice wins the game.

Alice is allowed to make not more than 16 guesses.

Input

A single integer n ($1 \le n \le 10^9$) such that the number k chosen by Bob is $1 \le k \le n$.

Output

Print your guess g ($1 \le g \le n$) in a single line.

Interaction Protocol

To every g that you print, the judge may give one of the three responses- *greater*, *lesser*, *guessed*. As soon as you receive *guessed*, you have to terminate your program else you may receive any verdict. You are allowed to make not more than 16 guesses and **must** terminate your program irrespective of the response after the 16^{th} guess.

Example

standard input	standard output
16 lesser greater guessed	8 12 10

Note

The initial number chosen by Bob was 9. Guessing 8 updates k to $9 - \lfloor \frac{9-8}{2} \rfloor = 9$. The next guess 12 updates k to $9 + \lfloor \frac{12-9}{2} \rfloor = 10$. The number is guessed correctly in the next step.

This is an interactive problem. You have to use a `flush` *operation right after printing each line. For example, in C++ you should use the function* `fflush(stdout)`*, in Java —* `System.out.flush()`*, in Pascal —* `flush(output)` *and in Python —* `sys.stdout.flush()`*.*

Additionally, `endl` *suffices in C++. For further help, refer* `https://codeforces.com/blog/entry/45307` *which contains further information and link to a sample interactive problem.*