JÁNOŠÍK

Available memory: 128 MB.

Jánošík, otherwise known as Robin Hood, takes the rich to distribute to the poor. Together with his gang they robbed a convoy carrying gold to the counts' castle and n caskets fell prey to robbers. After transporting their loot to the cave it turned out that i-th (for $i = 1, 2, \ldots, n$) casket contains exactly i money-bags full of gold.

In case a poor man comes to Jánošík asking for a few gold ducats, Jánošík utilises the following procedure. Firstly he chooses a non-empty casket that contains the smallest number of money-bags containing gold. In case the casket contains exactly only one money-bag, Jánošík hands it to the man in need, and sees him go away happily. Otherwise, if the casket contains an odd number of money-bags, Jánošík puts one of the money-bags in his pocket, and starts the whole process again. However, in case there is an even number of money-bags, Jánošík takes exactly half of them out and puts them in an empty casket (luckily the empty caskets are plentiful in the cave) and begins the whole procedure anew. Therefore if a penniless man comes to Jánošík, and in case he still will be in a possession of at least one non-empty casket, as a result of (possibly multiple) employment of Jánošík's procedure, the poor man is sure to get the money-bag full of gold. The poor would come to the Jánošík's cave until all the caskets are empty.

Fellow robbers from Jánošík's gang wonder if their leader does not ruin the good name of thugs with his behaviour. They want to know how many looted money-bags remain in Jánošík's pocket when all the caskets are empty.

Input

The first and only line of the input contains one integer n ($1 \leqslant n \leqslant 10^9$), which indicates the number of caskets robbed by Jánošík's gang.

Output

The first and only line of output should contain an integer representing the number of money-bags with gold, which will remain in Jánošík's pocket after emptying all the caskets.

Example

For the input data:

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5
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the correct result is:

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2
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