GFSSOC '15 Winter S1 - OR-deal

Time limit: 0.5s **Memory limit:** 64M

One of ButaneBot's intended functions is to perform an OR-sum on a large range of numbers. More specifically, ButaneBot should be able to read in a number N, compute $1 \mid 2 \mid \ldots \mid N$, and output that number in base 2. However, whenever ButaneBot tries to execute his OR-sum function, he malfunctions and explodes. Can you help ButaneBot by recoding this function?

Reminder: A bitwise OR takes two bit patterns of equal length and performs the logical inclusive OR operation on each pair of corresponding bits. The result in each position is 0 if both bits are 0, and otherwise the result is 1.

For example

```
   0101 (decimal 5)
OR 0011 (decimal 3)
 = 0111 (decimal 7)
```

Input Specification

The only line of input will contain a single integer N.

Constraints

Subtask 1 [40%]

$N \leq 500\,000\,000$

Subtask 2 [60%]

$N \leq 10^{10}$

Output Specification

Output the OR-sum from 1 to N as a binary number.

Sample Input

```
1
```

Sample Output

```
1
```

Explanation for Sample Output

The OR-sum from 1 to 1 is simply 1. 1 in binary is once again 1.

Note: The input will overflow an integer in some languages.