

## Problem 5. Exams

In the Computer Science course of a given university there are  $N$  professors (numbered from 1 to  $N$ ) and  $N*N$  classes (numbered from 1 to  $N*N$ ). It is known that professor No.  $k$  is lecturer in classes with numbers -  $k, N + k, 2 * N + k \dots (N - 1) * N + k$ . Because of the low attendance, the administration of the university decided to allow a student to take the exams only if he or she has attended at least one course taught by each professor.

$N$  roommates (again numbered from 1 to  $N$ ), studying in this university didn't know about this new policy. Every one of them visited different courses - the first one visited courses with numbers 1,2,3,..., $N*N$ , the second one 2,4,6,..., ..., and the  $N$ -the one visited courses with numbers  $N, 2 * N, 3 * N, \dots, N*N$ .

Knowing that  $K$  of these roommates were allowed to take the exams, write a program **exams** which prints the smallest possible  $N$ , or 0 if such  $N$  doesn't exist.

### Input:

On the first line of the input file **exams.in** there is only one integer  $K$ .

### Output

The output file **exams.out** consists of only one number:  $N$ . You should print 0 if such number doesn't exist.

*Note: when printing long integers use printf with "%l64d" or cout.*

### Constraints:

$$1 \leq K \leq 2,000,000,000$$

**Time Limit: 0.5s**

### Example:

<b>exams.in</b>	<b>exams.out</b>
8	15