**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 …. ( **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**,…,**N\*N.**

Knowing that **K** of these roommates were allowed to take the exams, write a program **exams** whichprints 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 “%I64d” or cout.*

**Constraints:**

1 **K**  2,000,000,000

**Time Limit: 0.5s**

**Example:**

|  |  |
| --- | --- |
| **exams.in** | **exams.out** |
| 8 | 15 |