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PTIME - Prime Time

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For your math homework this week your teacher gave you five large numbers and asked you to find their prime factors. However these numbers aren't *nearly* large enough for someone with knowledge of programming like yourself. So you decide to take the factorial of each of these numbers. Recall that N! (N factorial) is the product of the integers from 1 through N (inclusive). It's your job now to create a program to help you do your homework.

Input

Each test case contains a number N ($2 \le N \le 10000$).

Output

The output should contain a line representing the prime factorization of the factorial given number, which should be of the form: $p_1 ^e_1 * p_2 ^e_2 * ... * p_k ^e_k$ where $p_1, p_2, ..., p_k$ are the distinct prime factors of the factorial of the given number in increasing order, and $e_1, e_2, ..., e_k$ are their exponents.

Example

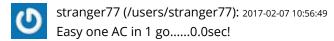
```
Input:
10

Output:
2^8 * 3^4 * 5^2 * 7^1
```

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- aeonflux (/users/aeonflux): 2016-12-11 16:39:17 no need of sieve..simple brute force works!!!!
- Anuj Arora (/users/anujiit): 2016-09-03 21:26:30
 AC in one go!!! 111th question

Last edit: 2016-09-03 21:27:14

- vinay12345 (/users/vinay12345): 2016-08-25 17:37:30 AC in one go ...0.00sec
- mkfeuhrer (/users/mkfeuhrer): 2016-06-14 23:33:55 AC in 1 go :-) my 100th :-) prime funn..!
- AD (/users/anurag_101): 2016-06-14 21:35:46 Easy one! Simple trial division will do.:D
- pranjalikumar9 (/users/pranjalikumar9): 2016-05-21 10:40:05
 De Polignac's :) learnt something new!
- sy_117 (/users/sy_117): 2016-04-05 23:50:26 wow such a nice ques nD i got AC in 0.0 sec !!!!! :P
- hanstan (/users/hanstananda): 2016-04-05 19:13:17
 Care the limit is for N more than 10000...
 Finally AC 0.00s
 - surya2196 (/users/surya2196): 2016-04-03 22:58:15 lolypop question

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Added by: Amlesh Jayakumar

(/users/amlesh_jk92)

Date: 2012-06-19
Time limit: 0.197s
Source limit: 50000B
Memory limit: 1536MB

Cluster: Cube (Intel G860) (/clusters/)

Languages: All except: ASM64

DWITE Programming Contest

Resource: 2012 (Own Problem)

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