

Legendre's Conjecture

Problem ID: a03p08legendresconjecture

A conjecture is a proposition or conclusion based upon incomplete information to which no proof has been found. In other words, it has neither been proved nor disproved.

Legendre's Conjecture states that there is always at least one prime number between any two consecutive natural numbers' squares. Write a program that prompts for an integer n . Then, using a while loop, or while loops, it lists the primes between n^2 and $(n + 1)^2$. The conjecture has been verified for all n , where $1 \leq n \leq 2 \cdot 10^9$.

Hint: Use nested while loops.

Another hint: Reuse code you already wrote in the previous question.

Input

Input consists of one line containing one integer n , where $1 \leq n \leq 300$.

Output

Output all the prime numbers between n and n^2 in ascending order, where each prime is on its own line.

Sample Input 1

10

Sample Output 1

Primes in the range 100 and 121 are:
101
103
107
109
113

Sample Input 2

18

Sample Output 2

Primes in the range 324 and 361 are:
331
337
347
349
353
359

Sample Input 3

2

Sample Output 3

Primes in the range 4 and 9 are:
5
7

Sample Input 4

204

Sample Output 4

Primes in the range 41616 and 42025 are:
41617
41621
41627
41641
41647
41651
41659
41669
41681
41687
41719
41729
41737
41759
41761
41771
41777
41801
41809
41813
41843
41849
41851
41863
41879
41887
41893
41897
41903
41911
41927
41941
41947
41953
41957
41959
41969
41981
41983
41999
42013
42017
42019
42023

Sample Input 5

4

Sample Output 5

Primes in the range 16 and 25 are:
17
19
23