CodeVita
The TCS Global Coding Contest

Suresh

05 Hr 37 Min 32 Sec

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Prime Face

Problem Description

Accept a number N up to 5 digits long in the positional numeral system formed by symbols 0, 1, ... 9, A, ..., Z. Also, accept another symbol S other than zero. Separate N and S with a space. Considering N to be represented in the least base possible between 2 and 36, identify the smallest prime number greater than or equal to N that contains at least one occurrence of S in it in base S + 1. (Refer example section for a better understanding). Prime number should be identified with respect to Base 10 i.e. a regular prime number.

Constraints

1. Length of N <= 5

2. Max Base = 36

3. Face values for symbols:
Symbol => Value in base 10
0 => 0
1 => 1
2 => 2
....
9 => 9
A => 10
B => 11
....
Z => 35

Input Format

One line containing two integers, N and S separated with space.

Output

Print the smallest prime number greater than or equal to N that contains at least one occurrence of S in it, in base S + 1.

Test Case

Explanation

Example 1

Input

10 B

Output

B

Explanation

The least possible base for N is 2 and its value in that base is 2. We want the smallest prime number in base 12 (1 more than the face value of B, 11) that contains symbol B and is greater than or equal to 2. The first few numbers in ascending order in base 12 containing face value B are B (value 11), 1B (value 1 * 12 + 11 = 23), 2B (value 2 * 12 + 11 = 35): of these the smallest number that is prime is 11, which is greater than N. Hence, the output is B.

Example 2

Input

ZZ Z

Output

11Z

Explanation

The least possible base for N is 36 and its value in that base is 35 * 36 ^1 + 35 = 1295. The first few numbers in ascending order in base 36 (1 more than the face value of Z, 35) containing face value Z and greater than N are 10Z (1 * 36^2 + 0*36^1 + 35 = 1331, non-prime), 11Z (1 * 36^2 + 1 * 36^1 + 35 = 1367, a prime). Hence, the output is 11Z.

Upload Solution [Question : C]

☐ I, **suresh** confirm that the answer submitted is my own.

☐ Took help from online sources (attributions)

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