

05 Hr **55** Min
12 Sec**Guidelines**

Coding Area

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Coding Area

A**B****C****D****E****F****ONLINE EDITOR (C)**

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 $N \leq 5$
2. Max Base = 36
3. Face values for symbols:
Symbol \Rightarrow Value in base 10
0 \Rightarrow 0
1 \Rightarrow 1
2 \Rightarrow 2
....
9 \Rightarrow 9
A \Rightarrow 10
B \Rightarrow 11
....
Z \Rightarrow 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.

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