UVA10093

題目

Have you heard the fact “The base of every normal number system is 10”? Of course, I am not talking about number systems like Stern Brockot Number System. This problem has nothing to do with this fact but may have some similarity.

您聽說過“每個普通數字系統的基數都是 10”這個事實嗎？當然，我不是在談論像Stern Brockot Number System這樣的數字系統。這個問題與這個事實無關，但可能有一些相似之處。

題目

You will be given an N based integer number R and you are given the guaranty that R is divisible by (N - 1). You will have to print the smallest possible value for N. The range for N is 2 ≤ N ≤ 62 and the digit symbols for 62 based number is (0..9 and A..Z and a..z). Similarly, the digit symbols for 61 based number system is 0..9 and A..Z and a..y) and so on.

您將獲得一個基於 N 的整數 R，並保證 R 可被 (N – 1) 整除。您必須輸出 N 的最小可能值。N 的範圍是 2 ≤ N ≤ 62，基於 62 的數字的數字符號是（0..9 和 A..Z 和 a..z）。同樣，基於 61 的數字系統的數字符號是 0..9 和 A..Z 和 a..y) 等等。

輸入

Each line in the input file will contain an integer (as defined in mathematics) number of any integer base (2..62). You will have to determine what is the smallest possible base of that number for the given conditions. No invalid number will be given as input.

輸入中的每一行將包含任何整數(2..62) 的整數（如數學中定義）。您必須確定在給定條件下該數字的最小可能數是多少。不會輸入無效數字。

輸出

If number with such condition is not possible output the line ‘such number is impossible!’ For each line of input there will be only a single line of output. The output will always be in decimal number system.

如果沒有具有這種條件的數字，請輸出“such number is impossible!”，對於每一行輸入，只有一行輸出。輸出將採用十進制。

範例測資

Input：

3
5
A

Output：

4
6
11

程式碼說明

```
6       string s;
7       while(getline(cin,s)){
8           int totalnum=0,ans=1,t;
9           for(char &i:s){
10              t=0;
11              if('a'<=i&&i<='z'){
12                  t=i-'a'+36;
13              }else if('A'<=i&&i<='Z'){
14                  t=i-'A'+10;
15              }else if('0'<=i&&i<='9'){
16                  t=i-'0';
17              }
18              if(t>ans)
19                  ans=t;
20              totalnum+=t;
21          }
```

Step 1：輸入測資並轉成十進位

變數	註解
s	輸入的測資
totalnum	s的總和
ans	所求的N

程式碼說明

```
22          for(ans;ans<=62;ans++){
23              if(totalnum%(ans)==0){
24                  cout<<ans+1<<endl;
25                  break;
26              }
27          }
28          if(ans==63)
29              cout<<"such number is impossible!\n";
```

Step 2：找到最小的N並輸出

變數	註解
s	輸入的測資
totalnum	s的總和
ans	所求的N

完整程式碼

```cpp
#include<iostream>
#include<string>
using namespace std;

int main(){
    string s;
    while(getline(cin,s)){
        int totalnum=0,ans=1,t;
        for(char &i:s){
            t=0;
            if('a'<=i&&i<='z'){
                t=i-'a'+36;
            }else if('A'<=i&&i<='Z'){
                t=i-'A'+10;
            }else if('0'<=i&&i<='9'){
                t=i-'0';
            }
            if(t>ans)
                ans=t;
            totalnum+=t;
        }
        for(ans;ans<=62;ans++){
            if(totalnum%(ans)==0){
                cout<<ans+1<<endl;
                break;
            }
        }
        if(ans==63)
            cout<<"such number is impossible!\n";
    }
}
```

資料來源

英文題目：
https://vjudge.net/problem/UVA-10093

Thank you for listening!