# UVA11332

### 題目

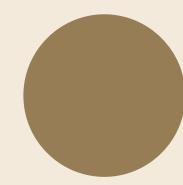
For a positive integer n, let f(n) denote the sum of the digits of n when represented in base 10. It is easy to see that the sequence of numbers n, f(n), f(f(n)), f(f(f(n))), . . . Eventually becomes a single digit number that repeats forever. Let this single digit be denoted g(n).

For example, consider n = 1234567892.

Then:

$$f(n) = 1+2+3+4+5+6+7+8+9+2 = 47$$
  
 $f(f(n)) = 4+7=11$   
 $f(f(f(n))) = 1+1=2$   
Therefore,  $g(1234567892) = 2$ .

對於所有正整數n,我們定義一函數f(n)為n 的每一個十進位數字的總和,若再把f(n)代入函數中可得最到n, f(n), f(f(n)), f(f(f(n))), . . . . 最後得到僅有一位數字的值,並定義該值為g(n)。



## 輸入與輸出

Input: Each line of input contains a single positive integer n at most 2,000,000,000. Input is terminated by n = 0 which should not be processed.

Output: For each such integer, you are to output a single line containing g(n).

輸入:輸入的每一行會有一個正整數n,其值最大到2,000,000,000。輸入是以0值做為結束,該值不需要輸出。

輸出:輸出g(n)。

# 範例測資

#### Input

#### Output

## 程式碼說明

Step 1:輸入測資

```
4    int n;
5    while (cin>>n, n!=0) {
```

已宣告變數	註 解
n	輸入的數字

### 程式碼說明

Step 2: 將g(n)算出來並輸出

```
% while (n>=10) {
    int t=0;
    while (n>0) {
        t+=n%10;
        n/=10;
        11
        }
        n=t;
    }
    cout<<n<<endl;</pre>
```

已宣告變數	言主 角罕
n	輸入的數字
t	f(n)

### 完整程式碼

```
#include<iostream>
 2
       using namespace std;
 3
       int main() {
 4
           int n;
 5
           while (cin >> n, n! = 0) {
 6
                while (n>=10) {
                     int t=0;
 8
                     while (n>0) {
 9
                          t+=n%10;
10
                         n/=10;
11
12
                     n=t;
13
14
                cout<<n<<end1;
15
16
```

## 資料來源

英文題目:

https://vjudge.net/problem/UVA-11332

中文題目:

https://zerojudge.tw/ShowProblem?problemid=c813

## Thank You