

題目

A well-known trick to know if an integer N is a multiple of nine is to compute the sum S of its digits. If S is a multiple of nine, then so is N. This is a recursive test, and the depth of the recursion needed to obtain the answer on N is called the 9-degree of N. Your job is, given a positive number N, determine if it is a multiple of nine and, if it is, its 9-degree.

我們知道要怎麼確定一個整數是不是 9 的倍數 - 如果它每位數的總和是9的倍數 , 那它就是9的倍數 。 這種檢驗的方法其實是一種遞迴的方法 , 而且我們把這種方法遞迴的深度稱作 N 的 9-degree 。

你的工作就是,給你一個正整數N,判斷他是不是9的倍數,而且如果他是9的倍數的另一個實際。

輸入與輸出

Input: The input is a file such that each line contains a positive number. A line containing the number 0 is the end of the input. The given numbers can contain up to 1000 digits.

Output: The output of the program shall indicate, for each input number, if it is a multiple of nine, and in case it is, the value of its nine-degree. See the sample output for an example of the expected formatting of the output.

輸入:

輸入含有多組測試資料。每組測試資料一列包含一個正數 N。

當 N=0 時代表輸入結束;輸入的數最大可以 到1000位數。

輸出:

對於每一組測試資料,請輸出它是否是 9 的倍數及它的 9-degree。

範例測資

Input

Output

程式碼說明

Step 1:輸入測資

變數	備註
S	輸入的正整數

```
5 string s;
6 while(cin>>s,s!="0") {
```

程式碼說明

Step 2:計算總和並判斷是否

為9的倍數

變數	備註
S	輸入的正整數
total	每位數的總和
degree	遞迴深度

程式碼說明

Step 3:計算遞迴深度並輸出

變數	備註
S	輸入的正整數
total	每位數的總和
degree	遞迴深度

```
while(total!=9) {
    int t=0;
    while (total>0) {
        t+=total*10;
        total/=10;
    }
    total=t;
    degree++;
}
cout<<"is a multiple of 9 and has 9-degree "<<degree<".\n";</pre>
```

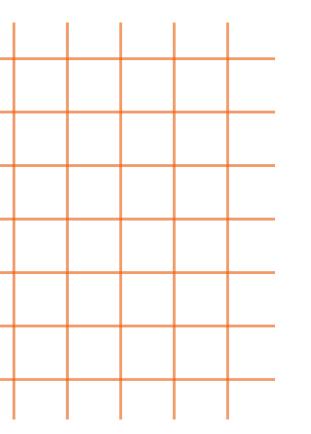
完整程式碼

```
#include<string>
 2
        #include<iostream>
 3
       using namespace std;
      □int main(){
            string s;
 5
            while(cin>>s,s!="0"){
 6
                cout<<s<<" ";
8
                int total=0, degree=1;
9
                for(int i:s)
10
                    total+=i-'0';
11
12
                if(total%9!=0){
                     cout<<"is not a multiple of 9.\n";
13
                     continue;
14
15
16
                while(total!=9) {
                    int t=0;
17
18
19
20
21
22
23
24
                    while (total>0) {
                         t+=total%10;
                         total/=10;
                     total=t;
                    degree++;
                cout<<"is a multiple of 9 and has 9-degree "<<degree<<".\n";
25
```

資料來源

英文題目: https://vjudge.net/problem/UVA-10922

中文題目: https://zerojudge.tw/ShowProblem?problemid=d672



THANKYOU

