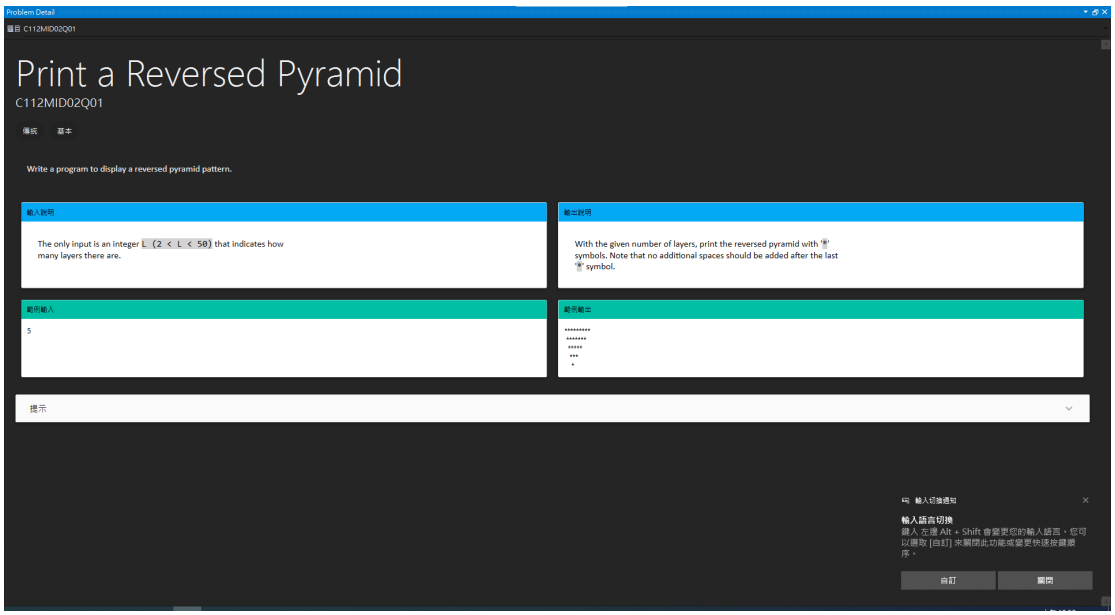
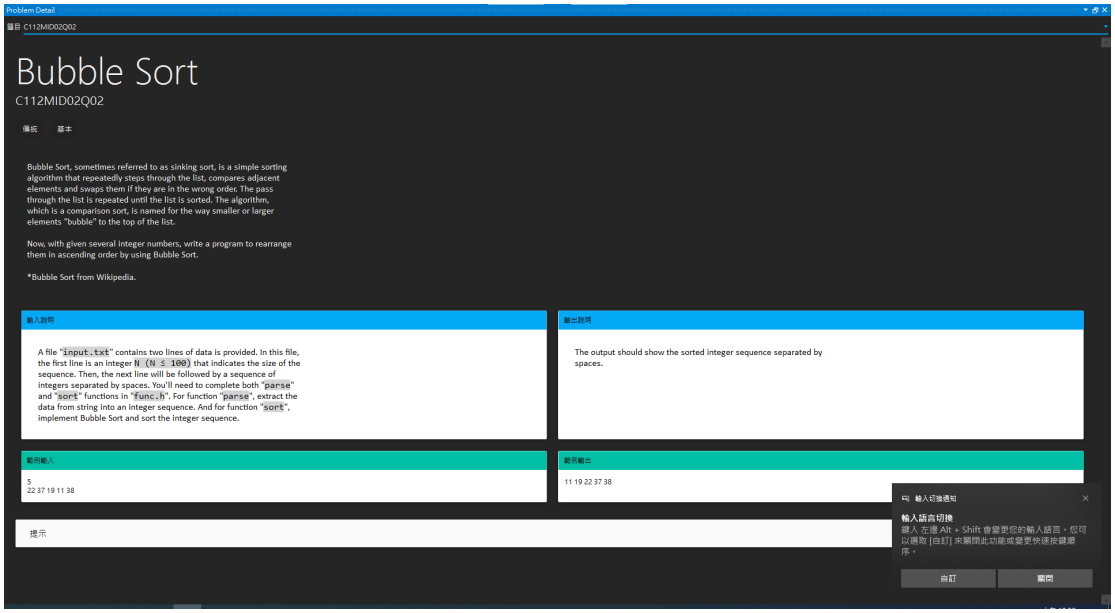
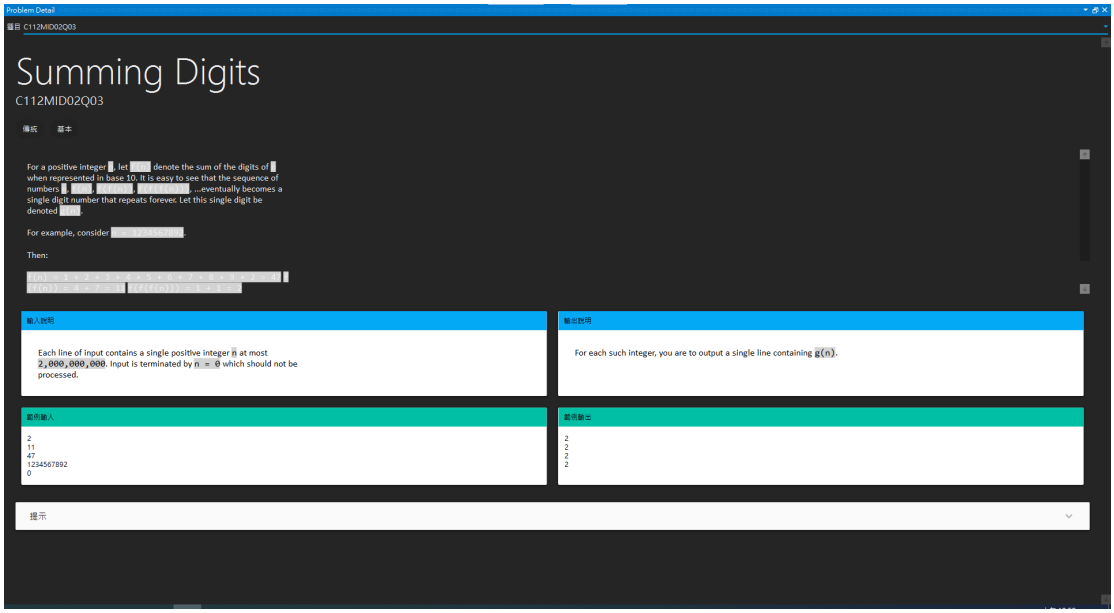
1


Problem Detail
題目 C112MID02Q01
Print a Reversed Pyramid
C112MID02Q01
傳統
基本
Write a program to display a reversed pyramid pattern.
輸入說明
The only input is an integer L (2 < L < 50) that indicates how many layers there are.
輸出說明
With the given number of layers, print the reversed pyramid with '*' symbols. Note that no additional spaces should be added after the last '*' symbol.
範例輸入
5
範例輸出
****
****
*****
***
*
提示
輸入切換通知
輸入語言切換
鍵入 左邊 Alt + Shift 會變更您的輸入語言，您可以選取 [自訂] 來關閉此功能或變更快速按鍵順序。
自訂
關閉

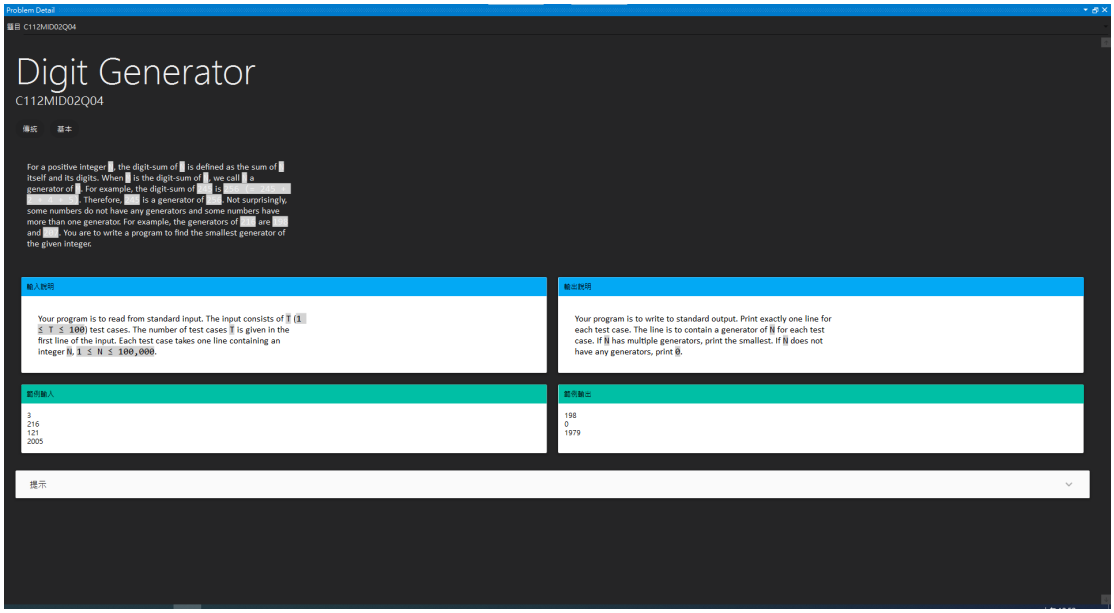
2


Problem Detail
題目 C112MID02Q02
Bubble Sort
C112MID02Q02
傳統
基本
Bubble Sort, sometimes referred to as sinking sort, is a simple sorting algorithm that repeatedly steps through the list, compares adjacent elements and swaps them if they are in the wrong order. The pass through the list is repeated until the list is sorted. The algorithm, which is a comparison sort, is named for the way smaller or larger elements "bubble" to the top of the list.
Now, with given several integer numbers, write a program to rearrange them in ascending order by using Bubble Sort.
*Bubble Sort from Wikipedia.
輸入說明
A file "input.txt" contains two lines of data is provided. In this file, the first line is an integer N (N ≤ 100) that indicates the size of the sequence. Then, the next line will be followed by a sequence of integers separated by spaces. You'll need to complete both "parse" and "sort" functions in "func.h". For function "parse", extract the data from string into an integer sequence. And for function "sort", implement Bubble Sort and sort the integer sequence.
輸出說明
The output should show the sorted integer sequence separated by spaces.
範例輸入
5
22 37 19 11 38
範例輸出
11 19 22 37 38
提示
輸入切換通知
輸入語言切換
鍵入 左邊 Alt + Shift 會變更您的輸入語言，您可以選取 [自訂] 來關閉此功能或變更快速按鍵順序。
自訂
關閉

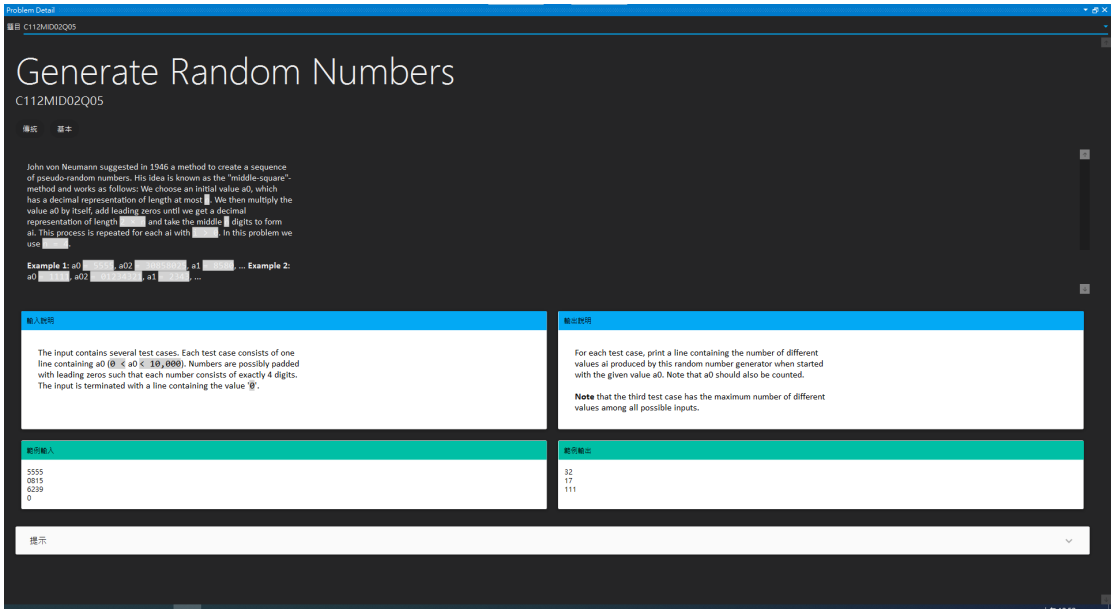
3


Problem Detail
題目 C112MID02Q03
Summing Digits
C112MID02Q03
傳統
基本
For a positive integer n, let g(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, g(n), g(g(n)), g(g(g(n))), ...eventually becomes a single digit number that repeats forever. Let this single digit be denoted f(n).
For example, consider n = 1234567892.
Then:
g(n) = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 2 = 47
g(g(n)) = 4 + 7 = 11
g(g(g(n))) = 1 + 1 = 2
輸入說明
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.
輸出說明
For each such integer, you are to output a single line containing g(n).
範例輸入
2
11
47
1234567892
0
範例輸出
2
2
2
2
提示

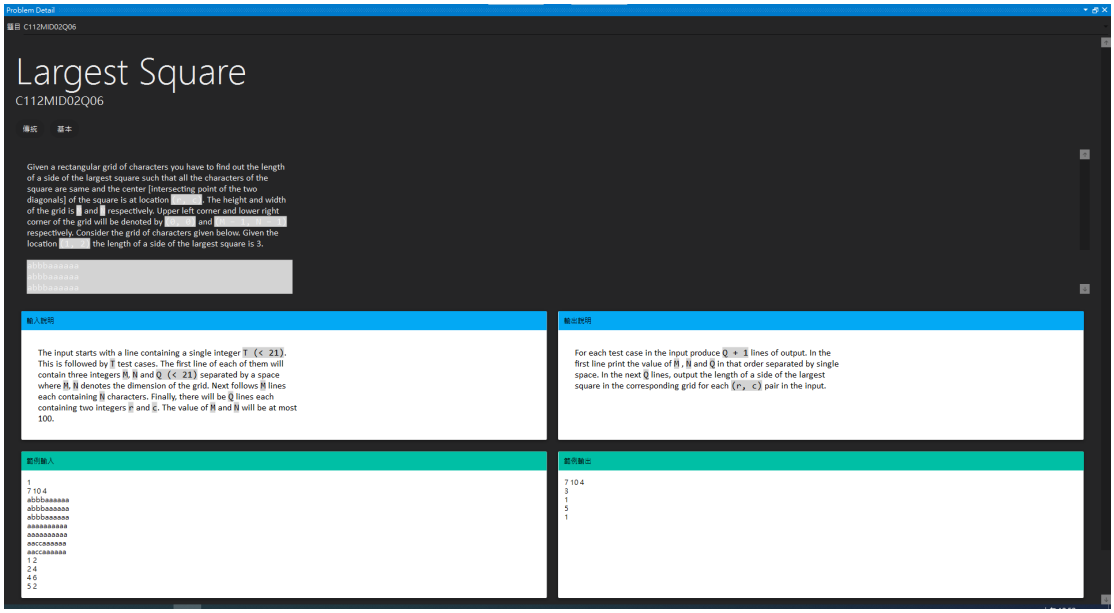
4


Problem Detail
題目 C112MID02Q04
Digit Generator
C112MID02Q04
傳統
基本
For a positive integer n, the digit-sum of n is defined as the sum of n itself and its digits. When n is the digit-sum of m, we call m a generator of n. For example, the digit-sum of 245 is 256 (245 + 2 + 4 + 5 = 256). Therefore, 245 is a generator of 256. Not surprisingly, some numbers do not have any generators and some numbers have more than one generator. For example, the generators of 216 are 198 and 207. You are to write a program to find the smallest generator of the given integer.
輸入說明
Your program is to read from standard input. The input consists of T (1 ≤ T ≤ 100) test cases. The number of test cases T is given in the first line of the input. Each test case takes one line containing an integer N, 1 ≤ N ≤ 100,000.
輸出說明
Your program is to write to standard output. Print exactly one line for each test case. The line is to contain a generator of N for each test case. If N has multiple generators, print the smallest. If N does not have any generators, print 0.
範例輸入
3
216
121
2005
範例輸出
198
0
1979
提示

5


Problem Detail
C112MID02Q05
Generate Random Numbers
C112MID02Q05
傳統
基本
John von Neumann suggested in 1946 a method to create a sequence of pseudo-random numbers. His idea is known as the "middle-square"-method and works as follows: We choose an initial value a0, which has a decimal representation of length at most 4. We then multiply the value a0 by itself, add leading zeros until we get a decimal representation of length 8 and take the middle 4 digits to form a1. This process is repeated for each ai with i > 0. In this problem we use 4.
Example 1: a0 = 5555, a02 = 30858025, a1 = 8580, ... Example 2: a0 = 6239, a02 = 38918521, a1 = 9185, ...
輸入說明
The input contains several test cases. Each test case consists of one line containing a0 (0 < a0 < 10,000). Numbers are possibly padded with leading zeros such that each number consists of exactly 4 digits. The input is terminated with a line containing the value '0'.
輸出說明
For each test case, print a line containing the number of different values ai produced by this random number generator when started with the given value a0. Note that a0 should also be counted.
Note that the third test case has the maximum number of different values among all possible inputs.
範例輸入
5555
0815
6239
0
範例輸出
32
17
111
提示

6


Problem Detail
C112MID02Q06
Largest Square
C112MID02Q06
傳統
基本
Given a rectangular grid of characters you have to find out the length of a side of the largest square such that all the characters of the square are same and the center [intersecting point of the two diagonals] of the square is at location (r, c). The height and width of the grid is H and W respectively. Upper left corner and lower right corner of the grid will be denoted by (1, 1) and (H, W) respectively. Consider the grid of characters given below. Given the location (4, 4) the length of a side of the largest square is 3.
abbbaaaaaa
abbbaaaaaa
abbbaaaaaa
輸入說明
The input starts with a line containing a single integer T (< 21). This is followed by T test cases. The first line of each of them will contain three integers H, W and Q (< 21) separated by a space where H, W denotes the dimension of the grid. Next follows H lines each containing W characters. Finally, there will be Q lines each containing two integers r and c. The value of H and W will be at most 100.
輸出說明
For each test case in the input produce Q + 1 lines of output. In the first line print the value of H, W and Q in that order separated by single space. In the next Q lines, output the length of a side of the largest square in the corresponding grid for each (r, c) pair in the input.
範例輸入
1
7 10 4
abbbaaaaaa
abbbaaaaaa
abbbaaaaaa
aaaaaaaaaa
aaaaaaaaaa
aaccaaaaaa
aaccaaaaaa
1 2
2 4
4 6
5 2
範例輸出
7 10 4
3
1
5
1