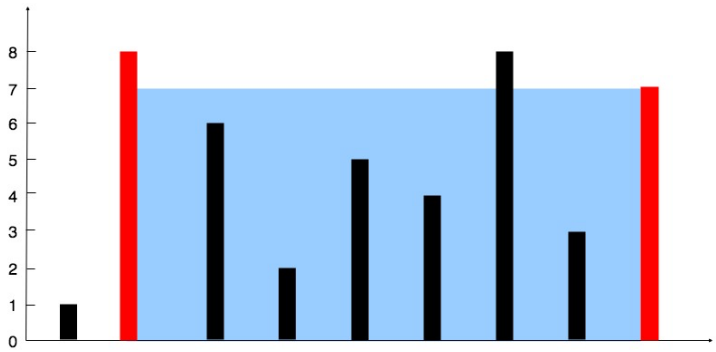
考試規定

1. 使用 Dev-C++ 考試，我們會以 Dev-C++ 作為批改標準。
2. 請將每題撰寫不同檔案中，並以「學號_題號.c」的方式命名。
3. 題目共有四題，得分根據隱藏測資通過比例給分。
4. 交卷時將四題一起上傳到網大的作業繳交區，無須壓縮。
5. 每題都會有一個範例輸入檔，你的程式此檔案做為輸入，並將結果輸出到標準輸出（命令視窗）。

1. Container With Most Water (25%)

Input an integer array *height* of length *n*, the maximum size of the array is 100. Let user continuously input until user input -1. There are *n* vertical lines drawn such that the two endpoints of the i^{th} line are (i, 0) and (i, height[i]).
Find two lines that together with the x-axis form a container, such that the container contains the most water.
Return the maximum amount of water a container can store.

Input: 1 8 6 2 5 4 8 3 7 -1
Output: 49
Explanation: The above vertical lines are represented by array [1,8,6,2,5,4,8,3,7]. In this case, the max area of water the container can contain is 49.



Example Input:
1 8 6 2 5 4 8 3 7 -1
1 1 -1

Example Output:
49
1

2. Roman to Integer (25%)

Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.

Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

For example, 2 is written as II in Roman numeral, just two ones added together. 12 is written as XII, which is simply X + II. The number 27 is written as XXVII, which is XX + V + II.

Roman numerals are usually written largest to smallest from left to right. However, the numeral for four is not IIII. Instead, the number four is written as IV. Because the one is before the five we subtract it making four. The same principle applies to the number nine, which is written as IX. There are six instances where subtraction is used:

I can be placed before V (5) and X (10) to make 4 and 9.
X can be placed before L (50) and C (100) to make 40 and 90.
C can be placed before D (500) and M (1000) to make 400 and 900.

Input a roman numeral, convert it to an integer.

Example Input:
III
LVIII
MCMXCIV

Example Output:
3
58
1994

3. Intersection of Two Arrays (25%)

Input two integer arrays *nums1* and *nums2*, the maximum size of the array is 100. Let user continuously input until user input -1. Output an array of their intersection. Each element in the result must be unique and you may output the result in ascending order.

Example Input:

1 2 2 1 -1
2 2 -1
4 9 5 -1
9 4 9 8 4 -1
3 2 1 4 7 -1
7 3 1 0 8 -1

Example Output:

2
4 9
1 3 7

4. Number of Segments in a String (25%)

Given a string s, return the number of segments in the string.

A segment is defined to be a contiguous sequence of non-space characters.

Example Input:
Hello, my name is John
Hello

Example Output:
5
1