Exercise #04

- You don't need to turn in your homework, but you should practice all problems because they may probably appear in the later exam. 作業自己練習不用交，之後考試可能會出現類似題目

Problem 1.

- ☐ Use loop and switch, write a program to input the value of month (1..12) continuously, and output the **season** name. When the value of month <= 0, break the loop.

Winter	January
Winter	February
Spring	March
Spring	April
Spring	May
Summer	June
Summer	July
Summer	August
Autumn	September
Autumn	October
Autumn	November
Winter	December

Problem 2.

- ☐ Use nested for loop to print the following patterns

```
(A)
*
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***
****
*****
******
*******
********
*********
**********

(B)
**********
*********
********
*******
******
*****
****
***
**
*

(C)
**********
 *********
  ********
   *******
    ******
     *****
      ****
       ***
        **
         *

(D)
         *
        **
       ***
      ****
     *****
    ******
   *******
  ********
 *********
**********
```

Problem 3.

- ☐ A **square number** or **perfect square** is an integer that is the square of an integer. For example, 9 is a square number, since it can be written as 3 × 3. Write a program to list the numbers between 1 to 100,000 that the number plus 100 and plus 268 is a perfect square, respectively.
  - ☐ 一個整數 a，a 加上 100 後是一個完全平方數，a 加上 268 又是一個完全平方數， 找 1...100,000 之間有多少符合條件？
- ☐ Use sqrt() function. #include <math.h>

Problem 4.

- Input an integer n, find all factors of n. Your program should check the input is valid or not. n should be greater than 0.
  - 寫一個程式，輸入正整數 n, 找出 n 的所有正因數，輸入請加入防呆機制(判斷正整數才執行)，避免使用者輸入錯誤
  - 註: 假如 n/m，結果是無餘數的整數，那麼我們稱 m 就是 n 的因數。
  - Ex. Factors of 30 are 1，2，3，5，6，10，15，30。