

Exercise #07

- You don't need to turn in your homework, but you should practice all problems because the similar problems 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.

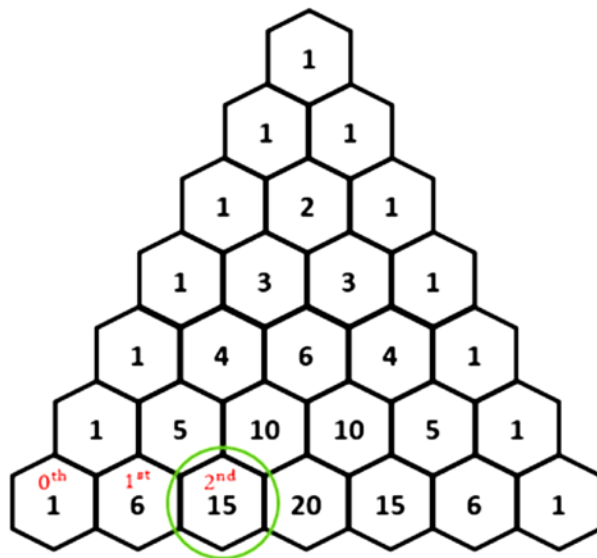
- ☐ Roll a dice 100,000 times and summarizing the results in an array to see whether the random number generator actually produces random numbers.

Problem 2.

- ☐ Generate six random numbers between 1..49. (no duplicate)
 - 電腦隨機產生樂透號碼，從 01~49 中任意產生 6 個號碼，不能重複

Problem 3.

- ☐ Write a program that prompts for the height, and then print the Pascal's triangle
 - ☐ Hint: Use two 1-D arrays



Problem 4.

- ☐ A palindrome is a string that prints the same forward and backwards.
 - The same implies that: case does not matter. Only consider alphabetic and numeric characters. Punctuation, whitespace, and other characters are ignored. Ex. "Madam I'm Adam" is thus a palindrome.
 - Write a program to input a string str and determine whether str is a palindrome or not.

Problem 5.

- ☐ Given an array A of integers, output true if and only if we can partition the array into three non-empty parts with equal sums. Otherwise, output false.
- ☐ Formally, we can partition the array if we can find indexes $i+1 < j$ with $(A[0] + A[1] + \dots + A[i]) = (A[i+1] + \dots + A[j]) = (A[j+1] + \dots + A[n-1])$.

$$A[i] == A[i+1] + A[i+2] + \dots + A[j-1] == A[j] + A[j-1] + \dots + A[A.length - 1])$$

☐ Example 1:

▣ Input: [0,2,1,-6,6,-7,9,1,2,0,1] Output: true

▣ Explanation: $0 + 2 + 1 = -6 + 6 - 7 + 9 + 1 = 2 + 0 + 1$

☐ Example 2:

▣ Input: [0,2,1,-6,6,7,9,-1,2,0,1] Output: false

☐ Example 3:

▣ Input: [3,3,6,5,-2,2,5,1,-9,4] Output: true

▣ Explanation: $3 + 3 = 6 = 5 - 2 + 2 + 5 + 1 - 9 + 4$