HW6(deadline:2014/12/4)

10. In a binary tree, what is the maximum number of nodes that can be found in level 3? In level 4? In level 12?

18. A binary tree has eight nodes. The postorder and inorder traversals of the tree are given below. Draw the tree.

    Postorder: FECHGDBA

    Inorder: FCEABHDG

*只要寫出一種 case 就可以了

22. Draw the corresponding binary tree of Figure 6-21(b).

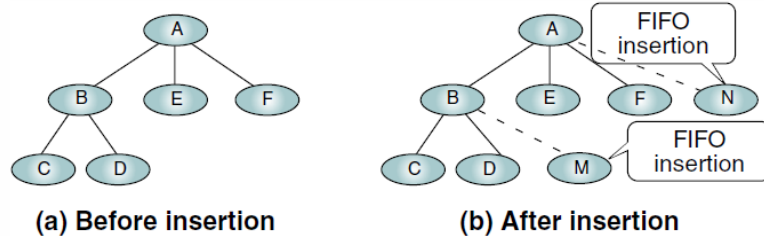(a) Before insertion   (b) After insertion

FIGURE 6-21   FIFO Insertion into General Trees

26. Find the infix, prefix, and postfix expressions in the expression tree of Figure 6-27.
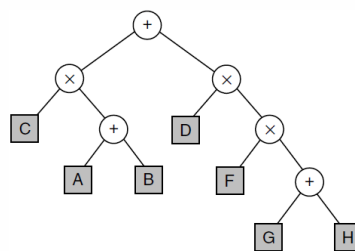

FIGURE 6-27   Expression Tree for Exercise 26

28. Draw the expression tree and find the infix and postfix expressions for the following prefix expression:

$$\times \; - \; A \; B \; + \; \times \; C \; D \; / \; E \; F$$

32. Write an algorithm that counts the number of nodes in a binary tree.

*此題為手寫，寫 pesudo code

38. Rewrite the binary tree preorder traversal algorithm using a stack instead of recursion.

*此題為手寫，寫 pesudo code

48. Write the C implementation for the Huffman algorithm developed in Project 47. After it has been built, print the code. Then write a C program to read characters from the keyboard and convert them to your Huffman code. Include a function in your program that converts Huffman code back to text. Use it to verify that the code entered from the keyboard was converted correctly.

*6.48 題的 table 已經建好放在資料夾中，檔名為 HW6.txt， 可以用這個讀檔
另外這題請做兩個功能
1. 輸入英文字母並顯示encode的結果
2. 輸入code並轉換回英文字母
且這題重點在 tree 的建立及搜尋
所以不能在編碼完後存一個 array 來比對輸入的英文字母或 code
要每次用 tree 的搜尋功能找到最後結果
助教會trace大家的code，沒有依照要求也只能拿到8成分數

48 題的參考

47. Write a pseudocode algorithm to build a Huffman tree. Use the alphabet as shown in Table 6-3.

Character	Weight	Character	Weight	Character	Weight
A	7	J	1	S	6
B	2	K	1	T	8
C	2	L	4	U	4
D	3	M	3	V	1
E	11	N	7	W	2
F	2	O	9	X	1
G	2	P	2	Y	2
H	6	Q	1	Z	1
I	6	R	6		

TABLE 6-3   Huffman Character Weights for Project 47