

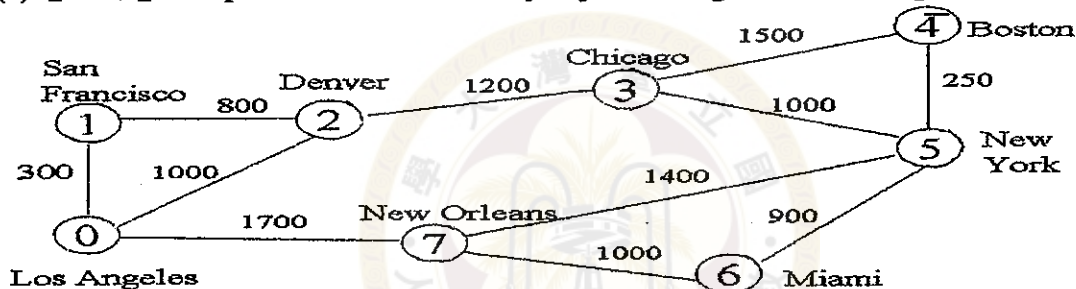
共 10 大題。總分 100 分。

(1) 【10 分】 Show the fast transpose algorithm by the following sparse matrices.

$$\begin{bmatrix} 15 & 0 & 0 & 0 & 91 & 0 \\ 0 & 11 & 0 & 0 & 0 & 0 \\ 0 & 3 & 0 & 0 & 0 & 28 \\ 22 & 0 & -6 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -15 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

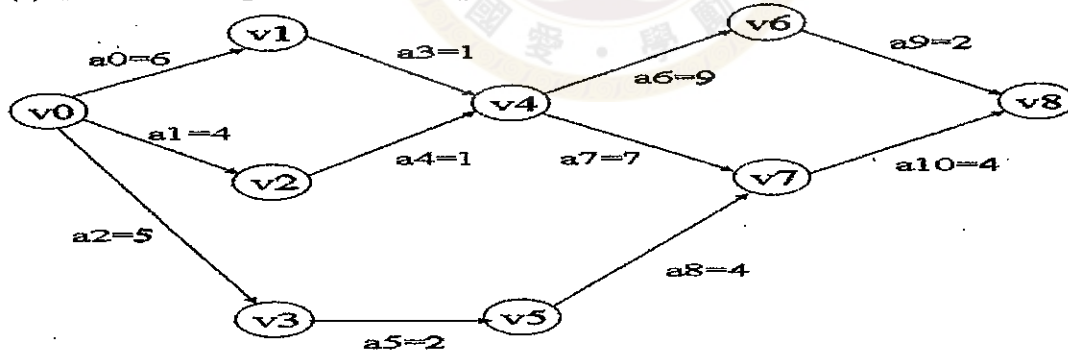
(2) 【10 分】 Show the fast string matching method by the pattern "abcabca" and the input string "abcabcacaabcaabcabcbcabcbacabca".

(3) 【10 分】 Compute the SSAD result by Dijkstra's algorithm starting from Boston.



(4) 【10 分】 As above, compute the MST result by Sollin's algorithm.

(5) 【10 分】 Compute the critical path of the following AOE network.



(6) 【10 分】 Use a C-like language to declare the Pointer-Based Polynomial ADT called "POLY" by a "single link list with dummy head node".

(7) 【10 分】 As above, write a procedure to use the POLY data structure to store a sequence of integer-pairs (coef, exp) read from the text file "poly.txt".

(8) 【10 分】 Give an in-order expression $(1*2+3)*(4+5)*6$. Write a procedure to generate its post-order representation.

(9) 【10 分】 Input a sequence of birthdays (Jan,9), (Dec,7), (Jun,5), (Feb,3), (Nov,8), (Jan,4), (Oct,8), (Dec,1), (Jan,6). Show the steps to do quick sort.

(10) 【10 分】 As above, step-by-step construct the binary search tree.