大同大學 95 學年度研究所碩士班入學考試試題

考試科目:計算機概論　　所別:資訊經營研究所　　

註:本次考試 不可以參考自己的書籍及筆記； 不可以使用字典； 不可以使用計算器。

1. Term Examination: (30%)

(a) absolute loader	(b) linking loader	(c) linkage editor
(d) dynamic linking loader	(e) parallel system	(f) distributed system
(g) blog	(h) web portal	(i) search engine
(j) official site	(k) RSS	(l) RISC
(m) CRM	(n) machine cycle	(o) DVD9

2. Suppose Algorithm 1 does $f(n)=n^2+4n$ steps in the worse case, and Algorithm 2 does $g(n)=29n+3$ steps in the worse case, for input of size n. For what input sizes is Algorithm 1 faster than Algorithm 2 (in the worse case)? (5%)

3. Consider the following recurrence equation. Please show that $T(n)$ = ? (5%)

$$T(n)=\begin{cases}1 & \text{if } n=1\\ T(\lfloor n/2 \rfloor)+cn & \text{otherwise}\end{cases}$$

4. Convert the prefix expression to postfix notation and evaluate the expression with A = 3, B = 5, C = 6, D = 8, E = 7. (10%)
   (a) - + - / A B C * D E * A C
   (b) || ! && A ! || < B C > C D < C E

5. What is best way to multiply a chain of matrices with dimensions that are 3*5, 5*2, 2*4, and 4*6? Show your work. (10%)

6. Let G be a directed graph whose vertices are the integers 1 through 8 and the edges are (1, 2), (1, 4), (1, 5), (1, 8), (2, 4), (2, 7), (2, 8), (3, 6), (4, 7), (5, 3), (6, 8), (7, 5). (20%)
   (a) Is G acyclic? If it is, please compute a topological ordering.
   (b) Draw the transitive closure.

7. List the order in which nodes are visited in the tree of Fig.1 (ignore the score at leaves) (10%)
   (a) Depth-first search
   (b) Breadth-first search

8. Illustrate the execution of the Ford-Fulkerson algorithm to get the maximum flow f in the network of Figure 2. (10%)

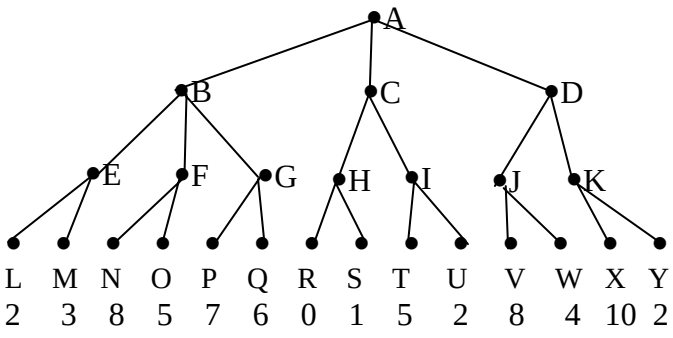

Fig. 1

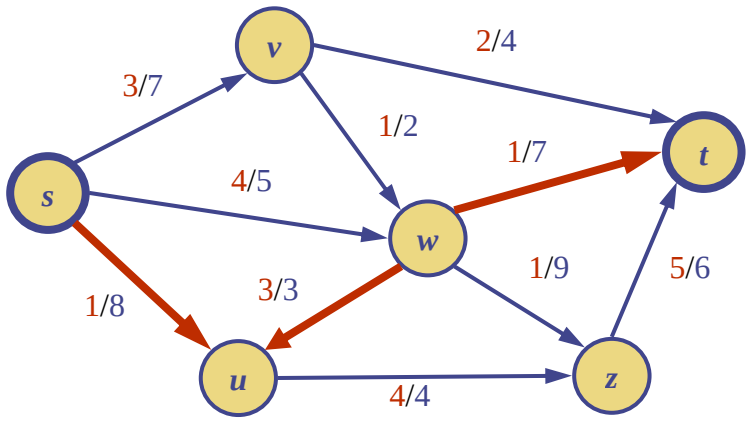

Figure 2