1. (10%) Explain and give an example of the following terms:

   a. (3%) CAI (Computer Assisted Instruction)

   b. (3%) Web-log (BLog)

   c. (4%) Wiki

2. (5 %) Translate the following infix expression into prefix expression：

   N/L+(T-C*98)

3. (25%) Consider the following C program

   ```
   int A(int m, int n){
   if (m%n==0)
        return n ;
   else return A(n, m%n) ;
   }
   ```

   a. (5%) What is the value of A(24, 18) ?

   b. (5%) In general, what does function A compute when given two integers m and n ?

   c. (15%)Rewrite the above program without using recursion.

4. （10%）Consider the following：

   ```
   int Fib（int n）{
   if（n == 0）return（1）;
   if（n == 1）return（1）;
   if（n>1）return（Fib（n-1）+Fib（n-2））;
   }
   ```

   What is Fib(5) ? How many times that the function Fib will be executed in order to evaluate Fib(5) ? Explain your answer.

5. (7%) Describe the difference between User Datagram Protocol (UDP) and Transmission Control Protocol (TCP).

6. (7%) Socket is an entity for sending and receiving message between two end points on the Internet. Describe what attributes you should specify when you try to use a socket to send a message to a remote host.

7. (4%) Which one of the following sorting methods use divide-and-conquer strategy?

   (a) insertion sort　(b) quick sort　(c) heap sort　(d) counting sort

8. (4%) Given a binary search tree, which one of the following traversals will generate a sorted file?

   (a) Preorder　(b) postorder　(c) inorder　(d) level-order

第 9-15 題請從(a)-(j)中選出其所需之資料結構或演算法

   (a). Stack　(b) Queue　(c) Splay Tree　(d) Lexicographic search tree
   (e) AVL Tree　(f) B-tree　(g) Red-black tree (h) Kruskal's algorithm
   (i) Dijkstra's algorithm (j) Topological sorting

9. (4%) The maze problem that needs to keep track of the path visited.

10. (4%) The database query optimizer that needs to the index of the location of words in memories.

11. (4%) The dictionary look-up function that needs the index of words.

12. (4%) The process scheduler of operating systems that needs to dispatch processes in the order of arrival time.

13. (4%) A network routing protocol in which the routing algorithm must select a shortest path from source nodes to destination nodes.

14. (4%) A calculator that must deal with the operator precedence and parenthesis

15. (4%) The database system that is used in a hospital in which the data of patients accessed will be accessed again frequently.

注意：背面有試題