

淡江大學九十一年度碩士班招生考試試題

系別：資訊管理學系

科目：資訊概論與程式設計

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- 1.(10%) Explain how the web server can keep the states of the client (browser) by session variables or cookies. What are the merits and demerits of these two methods?
- 2.(15%) Explain the following 3 methods of file organizations: sequential file, direct file, and indexed file organizations.
- 3.(15%) Number conversions:
- (a) (5%) What is the hexadecimal equivalent of -469 in 2's complement representation, or $(-469)_{10} = (?)_{16}$
- (b) (10%) What is the octal equivalent of 132.65, or $(132.65)_{10} = (?)_8$
- 4.(20%) In C++ and Java, there are three loop structures as follows,
 (i) while(C) { B; } (ii) do { B; } while(C); (iii) for(I; C; U) { B; }
 where C, B, I, and U are statements.
- (a) (5%) Briefly describe the functions of the C, B, I, and U statements in the loop structures.
- (b) (5%) What are the criteria for using each of the 3 loop structures?
- (c) (10%) Suppose we can use C, CBC, CBCBC to denote the first 3 minimal execution sequences of statements for the while structure. What are the first 3 minimal execution sequences of statements for the do while and for structures?
- 5.(20%) High level loop structures like while, do while and for can be implemented using low level conditional and unconditional jump structures like if(), goto and goto respectively. Please demonstrate this point by the following instructions:
- (a) (5%) Write a program to compute the factorial of N using the high level for loop structure.
- (b) (15%) Rewrite the program using only the low level if(), goto and goto branch structures.
- 6.(20%) Recursive programs can often be rewritten more efficiently by non-recursive ones. Please demonstrate this point by the following instructions:
- (a) (5%) Write a recursive program to compute C(n,m) as follows:
 $C(n,m) = C(n-1,m) + C(n-1,m-1)$, $C(x,x) = C(x,0) = 1$.
- (b) (10%) Write a non-recursive program to compute C(n,m).
- (c) (5%) Explain why program (b) is more efficient than program (a).

Note: In 5 and 6, you can write the program in any language you are familiar with.