

- (一) The following figure shows a design for customer order entry screen.

PVF CUSTOMER ORDER			
ORDER NO.	61384	CUSTOMER NO.:	1273
NAME:	Contemporary Designs		
ADDRESS:	123 Oak St.		
CITY STATE ZIP:	Austin, TX 28384		
ORDER DATE:	11/04/93	PROMISED DATE:	11/21/93
PRODUCT NO.	DESCRIPTION	QUANTITY ORDERED	UNIT PRICE
M128	Bookcase	4	200.00
B381	Cabinet	2	150.00
R210	Table	1	500.00

Order entry screen

- (10%) a) Please define several entity types, and draw an E-R diagram.
 (10%) b) Please transform the E-R diagram into a set of relations in 3NF.
- (二) (10%) Briefly describe some types of transparency in a distributed database environment.
- (三) (5%) a) Briefly describe the "Call-by-Reference" mechanism in C or PASCAL language.
 (10%) b) Use C or PASCAL language to write a function(procedure) that orders the stored values of three characters. Suppose, for example, that c1, c2, c3 are character variables having the values 'C', 'B', and 'D', respectively. Then the function call `order(&c1,&c2,&c3)` should cause the stored values of c1, c2, and c3 to be 'B', 'C', and 'D', respectively.
- (四) Given the following list:
- 14, 15, 5, 9, 8, 19, 2, 6, 16, 4, 20, 17, 10, 13, 7
- (5%) a) Please construct a binary search tree.
 (5%) b) Please traverse this tree in postorder.
 (4%) c) How many leaf nodes in this tree? what is the level of this tree?
 (6%) d) Please give an appropriate node representation for this binary search tree in C or PASCAL language.

(五) True and False

- (2%) a) The prefix representation of $A + B * C + D - E * F$ is $-++A*BCD*EF$
- (2%) b) Generally, an array representation is better than the pointer variables for the list representation because the size of pointer variables is fixed once they are declared.
- (2%) c) A POP operation is required when a main program is calling a subprogram via stack operation.
- (2%) d) A recursive program is more efficient than a non-recursive program as far as programmer's efficiency concern.
- (2%) e) In average case, the heapsort operation is more efficient than the quick sort operation.

(六) Short answer questions:

- (7%) a) Please describe the OSI reference model for the computer networks.
- (3%) b) Please give 3 performance evaluation parameters for the computer networks.
- (5%) c) Please name 3 word processing packages, choose the one you would use when writing thesis, and give the reasons why you choose it.
- (5%) d) Please explain: computer graphics, geometric modeling, and computer aided design.
- (5%) e) Briefly describe: Dynamic Data Link.