

**Ollscoil na hÉireann, Gaillimh**

**National University of Ireland, Galway**

**Autumn Examinations 2002**

**Final Year Commerce Examination**

**Database Technologies (MS310)**

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Time allowed: TWO hours

Answer **QUESTION FIVE** and **TWO** other questions.

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**Question 1**

Transaction management is a vital function of a database management system (DBMS) and is critical to assuring data integrity, particularly in a multi-user, distributed environment.

Describe the transaction management problems that can arise with a multi-user, distributed database. In your answer consider mechanisms, which should be engaged to prevent these problems?

**(30 marks)**

**Question 2**

Outline the primary concerns relating to the security of organizational databases, and illustrate how SQL commands may be used to enforce security. In your answer describe how views can be used to restrict unauthorised access to confidential data?

**(30 marks)**

**Question 3**

"An essential requirement of a database management system is that it should assure data integrity". Outline the basic implications of this statement in terms of expected system functionality. In your answer give examples of how SQL can help ensure the various types of integrity .

**(30 marks)**

**Question 4**

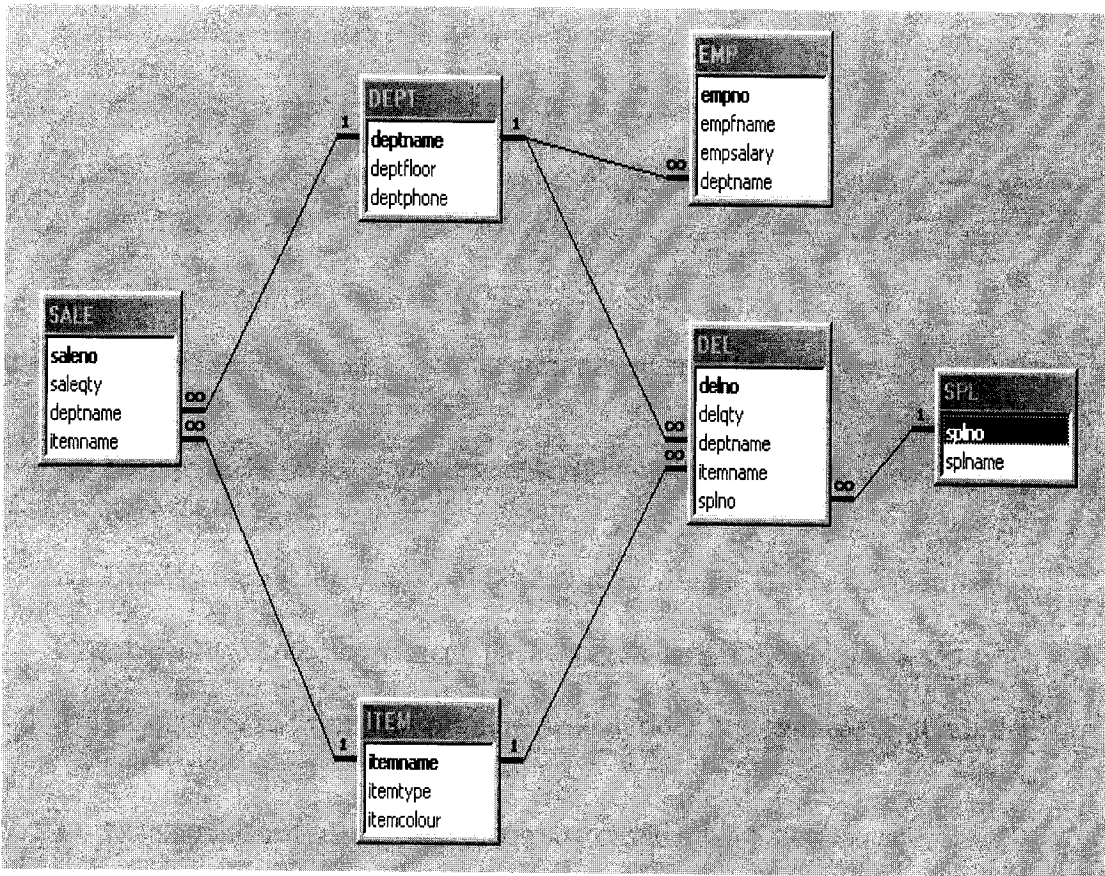
Outline the concept of "distributed computing" and discuss the data management issues, which need to be resolved in such a scenario.

(30 marks)

**Question 5**

Given the following tables and relationships, you are required to provide the SQL commands necessary to execute the transactions (a) to (t) below. You may use ANSI SQL or Microsoft Access SQL where there are dialect versions. **It is recommended that you clearly state any assumptions that you make.**

(40 marks)



Legend

DEPT = Department  
DEL = Delivery

EMP = Employee  
SPL = Supplier

- a) Display the names of all employees in the marketing department
  - b) Which items are sold by departments on the second floor
  - c) Display the salary of Niall's manager
  - d) Display numbers and names of those employees who earn more than their manager.
  - e) Count the number of direct employees of each manager (Hint: use a self join)
  - f) Display the departments having an average salary over EU 25,000.
  - g) Display the name and salary of the managers with more than two employees.
  - h) Display the suppliers that deliver compasses.
  - i) Display the suppliers who do not deliver compasses.
  - j) Display the items delivered by exactly one supplier (i.e. list the items always delivered by the same supplier).
  - k) List the suppliers that deliver at least 10 items.
  - l) For each item, give its type, the departments that sell the item, and the floor location of these departments.
  - m) Display each item delivered to at least two departments by each supplier that delivers it.
  - n) Display the average salary of the employees in the Clothes department.
  - o) Display for each department, the average salary if the employees.
  - p) Display for each employee on the second floor, the average salary of the employees.
  - q) Display the overall average of the salaries in all departments.
  - r) Display the names of items sold on floors other than the second floor.
  - s) Display the items sold by at least two departments on the second floor.
  - t) Display the names of the employees who earn more than any employee in the Marketing department.
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