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07MCA34

Third Semester MCA Degree Examination, June/July 2011
Database Management Systems

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. What is a DBMS? Explain the function of a DBA. **(08 Marks)**
   b. With neat diagram, explain the 3 – schema architecture. **(08 Marks)**
   c. List various classifications of database management systems. **(04 Marks)**

2 a. Define the following terms and give one example to each : i) Entity   ii) Derived attributes   iii) Relationship   iv) Total participation. **(08 Marks)**
   b. Create an E – R model for the following description :
      i) An INVOICE is written by a SALES REP. Each sales representative can write many invoices. But each invoice is written by a single sales representative.
      ii) The INVOICE is written for a single customer. However each customer can have many invoices.
      iii) An INVOICE can include many detailed lines and each line describes PRODUCT bought by the customer.
      iv) The PRODUCT information is stored in PRODUCT entity. (Assume suitable attributes). **(12 Marks)**

3 a. Explain the following integrity constraints : i) Key constraints   ii) Entity integrity constraints   iii) Referential integrity constraints. **(06 Marks)**
   b. Explain the following relation algebra operations with examples : i) SELECT   ii) NATURAL JOIN   iii) Aggregate function COUNT. **(06 Marks)**
   c. Consider the relation schema as following :
      Works (PName, CName, Salary)
      Lives (PName, Street, City)
      Located In (CName, City)
      Manager (PName, MgrName).   Write relational algebra expression for following queries.
      i) Find the names of persons who works for company 'IBM'.
      ii) Find the names persons who do not work for IBM.
      iii) Find names of person who live and work in the same city.
      iv) Find names of companies, that are located in every city, where the company HP is located in. **(08 Marks)**

4 a. Map the given E-R model to the corresponding relation model. **(08 Marks)**
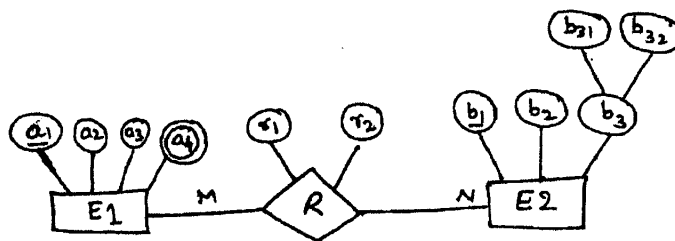
b. With proper syntax, discuss various data definition commands supported by SQL. **(10 Marks)**

c. What is role of CHECK IN constraint in SQL? Give an example. **(02 Marks)**

5 a. Referring the schema of relations given, write the SQL statements for the following queries:

(15 Marks)
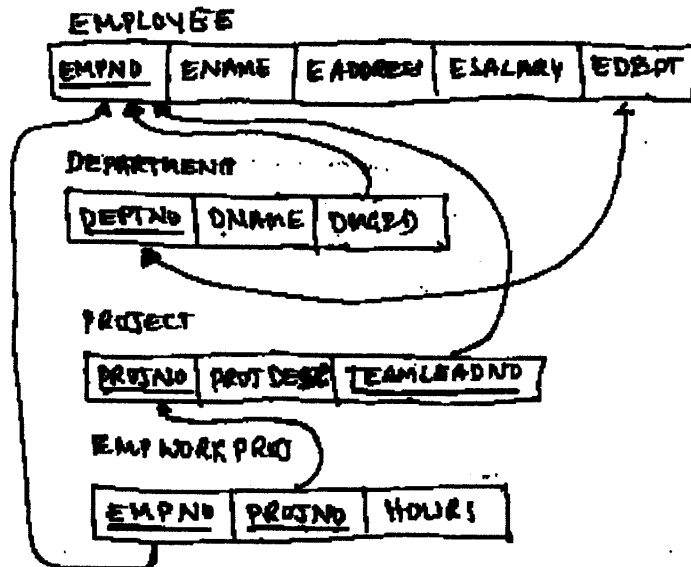
i) Display list of employees working on a specific project.

ii) Display list of projects loaded by specific team leader.

iii) Display employee details getting first and second highest salary.

iv) Generate list of projects and number of employees working on that project ordered by project ids.

v) Generate list of employees who are not working on any project.

b. Write advantages of embedded SQL. Give an example. **(05 Marks)**

6 a. Discuss various anomalies, with suitable example. **(10 Marks)**

b. Differentiate between 3NF and BCNF. **(05 Marks)**

c. List all Armstrong's inference axioms and prove any one. **(05 Marks)**

7 a. Define transaction. Explain ACID properties of transaction. **(08 Marks)**

b. How consistency property of the transaction is evaluated? **(04 Marks)**

c. Discuss the ARIES recovery algorithm. **(08 Marks)**

8 Write short notes on the following :

a. Client server systems.

b. Union compatible relations.

c. Triggers in SQL.

d. 2PL protocol. **(20 Marks)**

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