Code: 9A05401

R09

B.Tech IV Year II Semester (R09) Advanced Supplementary Examinations July 2015

DATABASE MANAGEMENT SYSTEMS

(Electronics and Control Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Distinguish between external view, conceptual view and physical view of a database.
(b) Outline data modeling in DBMS.

2 (a) Draw the ER diagram for a company data showing the cardinality ratios (1 to 1, 1 to many and many to many.
(b) Summarize different users of database.

3 (a) (i) List the names of all branches in loan schema:
(ii) List all customers having loan, account or both at bank.
(iii) List customer names in alphabetical order who have a loan at the Newyork branch.
For the following relational database write the expressions in SQL.
Customer (customername, custoemrstreet, customercity)
Branch (branchname, branchcity, assets)
Loan (branchname, loan number, amount)
Borrower (customername, loan number)
Account (branchname, account number, balance).
(b) Illustrate for a university database, how to arrive at the number of tables required to develop a student monitoring system and list the courses the student has registered with the associated instructor.

4 Build the following queries in relational algebra:
(i) Find the names of suppliers who supply some red part.
(ii) Find the sids of suppliers who supply some red or green part.
(iii) Find the sids of suppliers who supply some red part or are at 221 packer Ave.
Give the following schema:
Suppliers (sid: integer, sname: string, address: string)
Parts (pid: integer, pname: string, color: string)
Catalog (sid: integer, pid: integer, cost: real)

5 (a) Show with an example how a relation with multi-valued attribute can be transformed into 1^{st} normal form.
(b) Show a relation with full functional dependency and transitive dependency. Illustrate how such relation can be put in 3^{rd} normal form.

6 (a) Illustrate why does a DBMS interleave concurrent transactions.
(b) Illustrate when do two actions on the same data object conflict, detailing the anomalies that can be caused by conflicting actions (dirty reads, unrepeatable reads, lost updates).

7 Explain the purpose of the checkpoint mechanism. How often should checkpoints be performed? How does the frequency of checkpoints affect.
(a) System performance when no failure occurs.
(b) The time it takes to recover from a system crash.
(c) The time it takes to recover from a disk crash.

8 (a) State the purpose of indexing, detailing the mechanism of fetching data easily.
(b) Distinguish between tree based indexing and hash based indexing.

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