Code No: 124CQ

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, December - 2017
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, IT)

Time: 3 Hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)   What are five main functions of a database administrator?   [2]
   b)   List and explain the database system applications.   [3]
   c)   Define a trigger. What are the differences between row level and statement level triggers?   [2]
   d)   How are queries expressed in SQL?   [3]
   e)   List the benefits of BCNF and 3NF.   [2]
   f)   Write the Properties of Decompositions.   [3]
   g)   Why is recoverability of schedules desirable?   [2]
   h)   Suppose that there is a database system that never fails. Is a recovery manager required for this system?   [3]
   i)   How is data organized in a hash based index?   [2]
   j)   Give a brief note on Static Hashing.   [3]

PART - B

(50 Marks)

2.a)   What is a partial key? How is it represented in ER diagram? Give an example.
   b)   Define query. Explain the data manipulation language in detail.   [5+5]

OR

3.a)   Explain how to build ER model for university with entities department, instructor, student, and class. Instructors and students belong to one department only. Instructors and students related to a class with many to many relations. Assume suitable attributes. Explain how the ER model can be translated to relations.
   b)   List and explain the design issues of entity relationship.   [5+5]

4.   Consider the following schema
       instructor (ID, name, dept_name),
       teaches (ID, course_id, sec_id, semester, year),
       section (course_id, sec_id, semester, year),
       student (ID, name, dept_name),
       takes (ID, course_id, sec_id, semester, year, grade)
       Write the following queries in SQL
       a) Find the names of the students not registered in any section
       b) Find the names of the instructors not teaching any course
       c) Find the total number of courses taught department wise
       d) Find the total number of courses registered department wise.   [10]

OR

5.a)   Make a comparison between the tuple relational calculus and domain relational calculus.

  b)   What are nested queries? What is correlation in nested queries? Explain.   [5+5]

6.   Discuss how schema refinement through dependency analysis and normalization can improve schemas obtained through ER design.   [10]

OR

7.   Why is a table whose primary key consists of a single attribute automatically in 2NF when it is in 1NF? Explain.   [10]

8.   Discuss about log based recovery with immediate update and deferred update with suitable examples.   [10]

OR

9.   When a transaction is rolled back under timestamp ordering, it is assigned a new timestamp. Why can it not simply keep its old timestamp?   [10]

10.a)   Give a brief note on Indexed Sequential Access Methods.

  b)   Make a comparison between the primary index and a secondary index.   [5+5]

OR

11.   Where does a DBMS store persistent data? How does it bring data into main memory for processing? What DBMS component reads and writes data from main memory, and what is the unit of I/O?   [10]

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