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10CS54

Fifth Semester B.E. Degree Examination, Dec.2015/Jan.2016**Database Management System**

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Write a note on various types of end users who use DBMS. (08 Marks)
b. Explain the three level DBMS architecture, with a neat diagram. Why do we need mappings between schema levels? Explain mapping in DBMS architecture. (12 Marks)
- 2 a. Explain the ER notations used for various constructs in database schema (10 Marks)
b. With respect to ER model, explain with example
i) Composite attributes
ii) Cardinality ratio
iii) Participation constraints
iv) Binary relationship (10 Marks)
- 3 a. Discuss the various type of JOIN operations. Why is theta join required? (06 Marks)
b. Consider the following relational schema;
users (uid, uname, cost)
groups (gid, title, category, n, gsize, owner)
posts (pid, uid, gid, tid, ptext, pdate)
Write the following queries in relational algebra.
i) Show the text and number of all the posts made by user number 4 before March 1, 2007.
ii) Show the names of the all the users who responded to post number 2.
iii) Show the uid and cost of all the users who are group owners and posted a thread on 1.1.2003. (09 Marks)
c. Explain the SELECT and PROJECT operations in relational algebra with example. (05 Marks)
- 4 a. Explain the following :
i) Primary key
ii) Foreign key
iii) Candidate key (06 Marks)
b. Consider the following relations:
Hotel (hotelno, name, address)
Room (roomno, hotelno, type, price)
Booking (hotelno, guestno, datefrom, dateto, roomno)
Guest (guestno, name, address)
Write the SQL statements for the following :
i) List the names and addresses of all guest booked the hotel, which is located in Chandigarh, alphabetically ordered by name.
ii) List all family rooms with a price below Rs 400 per night, in ascending order of price in hotel "RVH"
iii) How many hotels are there? (09 Marks)

Important Note : 1. On completing your answers, do not draw diagonal cross lines on the remaining blank spaces.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8=50$, will be treated as malpractice.



- c. Explain with example in SQL
- Drop command
 - Delete command

(05 Marks)

PART – B

- 5 a. What is a view? Explain how to create the view and how view can be dropped? (08 Marks)
- b. Explain the following
- Embedded SQL
 - Database stored procedure

(12 Marks)

- 6 a. Explain informal design guidelines for relation schemas. (06 Marks)
- b. What is the need for normalization? Explain the first, second and third normal forms with examples. (14 Marks)

- 7 a. Consider the schema
 $R = (A, B, C, D, E)$. Suppose the following functional dependencies hold
- $E \rightarrow A$
 $CD \rightarrow E$
 $A \rightarrow BC$
 $B \rightarrow D$

State whether the following decomposition of R are lossless join decomposition or not, Justify.

$\{(A, B, C), (A, D, E)\}$

$\{(A, B, C), (C, D, E)\}$

(10 Marks)

- b. Explain the following
- Inclusion dependencies
 - Domain key Normal Form

(10 Marks)

- 8 a. Explain why a transaction execution should be atomic? Explain ACID properties by considering the following transaction

T_i : read (A);
A := A - 50;
write (A);
read (B);
B := B + 50;
write (B);

(10 Marks)

- b. Briefly discuss on the two phase locking protocol used in concurrency control. (10 Marks)

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