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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, compulsorily draw diagonal cross lines on the remaining blank pages.  
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  
 i) Drop command  
 ii) 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  
 i) Embedded SQL  
 ii) 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  
 i) Inclusion dependencies  
 ii) 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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