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Question Paper Code : 31305

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fourth Semester

Computer Science and Engineering

CS 2255/CS 46/CS 1254/080250009/10144 CS 406 — DATABASE MANAGEMENT SYSTEMS

(Common to Information Technology)

(Regulation 2008/2010)

(Common to PTCS 2255 – Database Management Systems for B.E. (Part-Time)
Third Semester – Computer Science and Engineering – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you mean by simple and composite attribute?
2. Define query.
3. State the difference between security and integrity.
4. Which operators are called as unary operators and why are they called so?
5. Define trivial functional dependency.
6. Define functional dependency.
7. Brief about cascading rollback.
8. What is a rigorous two phase locking protocol?
9. What is slotted page sheet? Draw the diagram.
10. What is the content of update log record?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the main characteristics of the database approach and how does it differ from traditional file system.
(ii) What are the three levels of abstraction in DBMS? (8 + 8)
Or
(b) (i) A database is being constructed to keep track of teams and games of a sports league. A team has a number of players, not all of whom participate in each game. It is described to keep track of players participating in each game in each team, the positions they played on that game and the result of game. Draw the ER diagram and list its entities and attributes. (10)
(ii) Briefly explain mapping cardinality in detail. (6)

12. (a) Consider the database schema
 Emp(emp-name, type, birthday, set of(Exam-names), set of (Skills))
 Children(emp-name, ch-name, birthday)
 Skills(type, set of (exam-names))
 Exams(exam-name, year, city)
 Write SQL statements for the following queries.
- (i) Find the names of all employees who have a birthday in March as their children.
 - (ii) Find those employees who took an examination for the skill type "typing" in the city "Chennai".
 - (iii) List all exam names, under specific skill type for the given employee other than his exam names.
 - (iv) Find the names of the city and year where the examination is going to held for the given skill type. (8)
 - (v) Explain referential integrity with an example. (8)
- Or
- (b) What is the need for building distributed database? Explain important issues in building distributed database with an example. Explain how distributed database is used in client/server environment. (16)
13. (a) (i) What is redundant data? What are the problems caused by redundant data? (6)
 (ii) Explain the process of normalization from 1NF to BCNF stage with example. (10)
- Or
- (b) Consider the relation R(A, B, C, D, E) with functional dependencies.
 $\{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$ Identify Super keys. Find Fc, F⁺. (16)
14. (a) Explain the following:
- (i) Different locking mechanism used in lock based concurrency control. (10)
 - (ii) Validation based protocol with an example. (6)
- Or
- (b) (i) What is the difference between conflict serializability and view serializability? Explain in detail with an example. (12)
 (ii) Briefly explain ACID property with an example. (4)
15. (a) What is RAID? Briefly explain different levels of RAID. Discuss the factors to be considered in choosing a RAID level. (16)
- Or
- (b) (i) Explain three kinds database tuning in detail. (6)
 (ii) Explain the structure of B⁺ tree and how to process queries in B⁺ tree. (10)