

Code No: 07A4EC14

R07**Set No. 2****II B.Tech II Semester Examinations, December 2010****DATABASE MANAGEMENT SYSTEMS****Common to Information Technology, Computer Science And Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. (a) Give a note on storage manager component of database system structure.
(b) Make a comparison between Database system and File system. [8+8]
2. (a) Explain Different states of Transaction?
(b) Explain shadow-copy technique for atomicity and durability? [8+8]
3. (a) What is a Trigger? What are it's uses? What are the differences between triggers and constraints.
(b) Consider the following schema:
Suppliers (sid : integer, sname: string, address: string)
Parts (pid : integer, pname: string, color: string)
Catalog (sid : integer, pid : integer, cost: real)
The key fields are underlined. The catalog relation lists the price changes for parts by supplies. Write the following queries in SQL.
 - i. Find the pnames of parts for which there is some supplier.
 - ii. Find the snames of suppliers who supply every part.
 - iii. Find the pnames of parts supplied by raghu supplier and no one else.
 - iv. Find the sids of suppliers who supply only red parts. [8+8]
4. Explain dependency preserving decomposition into 3NF? [16]
5. Compare different types of file organizations? [16]
6. (a) Define all the variations of the join operation. Why is the join operation given special attention? Cannot we express every join operation in terms of Cross-product, Selection and Projection?
(b) Relational Calculus is said to be a declarative language, in contrast to algebra, which is a procedural language. Explain the distinction. [8+8]
7. (a) A company database needs to store data about employees, departments and children of employees. Draw an ER diagram that captures the above data.
(b) What is identifying Relationship set? Explain. [10+6]
8. (a) Explain logical undo Logging?
(b) Explain Transaction Rollback? [8+8]

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R07**Set No. 4****II B.Tech II Semester Examinations, December 2010****DATABASE MANAGEMENT SYSTEMS****Common to Information Technology, Computer Science And Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

1. (a) Make a comparison between Database system and file system.
(b) What is a Data Model? Explain about a Relational Data Model. [8+8]
2. What is Transaction? Explain ACID properties of Transaction? [16]
3. (a) Explain Different types of failures?
(b) Explain Recovery & Atomicity? [8+8]
4. (a) Discuss about Tuple Relational Calculus in detail.
(b) Write the following queries in Tuple Relational Calculus for following Schema.
Sailors (sid: integer, sname: string, rating: integer, age: real)
Boats (bid: integer, bname: string, color: string)
Reserves (sid: integer, bid: integer, day: date)
 - i. Find the names of sailors who have reserved a red boat
 - ii. Find the names of sailors who have reserved at least one boat
 - iii. Find the names of sailors who have reserved at least two boats
 - iv. Find the names of sailors who have reserved all boats. [8+8]
5. (a) Explain join dependencies.
(b) Explain 4 NF with Example. [8+8]
6. (a) Explain conceptual design for large Databases.
(b) Define the terms: Entity Set, Role, Relationship set, Aggregation. [8+8]
7. Why is the choice of indexes a central aspect of physical database design? [16]
8. (a) Consider the following Relations
Student (snum: integer, sname: string, major: string, level: string, age: integer)
Class (name: string, meets_at: time, room: string, fid: integer)
Enrolled (snum: integer, cname: string)
Faculty (fid: integer, fname: string, deptid: integer)
Write the following queries in SQL.
 - i. Find the names of students not enrolled in any class.
 - ii. Find the names of students enrolled in the maximum number of classes.
 - iii. Print the level and the average age of students for that level, for each level.

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- iv. Print the level and the average age of the students for that level, for all levels except JR.
- (b) Explain following in brief
 - i. Triggers
 - ii. Assertions

[12+4]

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1. (a) What is the difference between tuple Relational Calculus and Domain Relational calculus?
(b) Relational Algebra and Relational calculus are said to be equivalent in expressive power. Explain what it means, and how it is related to the notion of relational completeness. [8+8]
2. Explain Log-Record Buffering in detail. [16]
3. (a) Explain how to differentiate attributes in Entity set?
(b) Explain all the functional dependencies in Entity sets? [8+8]
4. (a) Explain storage manager component of Database System structure.
(b) Explain the Database users and user interfaces. [8+8]
5. (a) What DBMS component read writes data from main memory & What is the unit of I/O?
(b) What is file Organization? Explain
(c) What is An Index? Explain [8+4+4]
6. (a) Explain Locks?
(b) Explain serializability order? [8+8]
7. (a) Consider the following Relations
Student (snum: integer, sname: string, major: string, level: string, age: integer)
Class (name: string, meets_at: time, room: string, fid: integer)
Enrolled (snum: integer, cname: string)
Faculty (fid: integer, fname: string, deptid: integer)
Write the following queries in SQL.
 - i. Find the names of all juniors (level = JR) who are enrolled in a class taught by I. teach.
 - ii. Find the age of the oldest student who is either a History major or enrolled in a course taught by I. teach.
 - iii. Find the names of all classes that either meet in a room R128 or have five or more students enrolled.
 - iv. Find the number of all students who are enrolled in two classes that meet at the same time.

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- (b) What is a trigger and what are its 3 parts. Explain in detail. [12+4]
8. (a) A company database needs to store data about employees, departments and children of employees. Draw an ER diagram that captures the above data.
- (b) Discuss aggregation versus ternary Relationships. [10+6]

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1. (a) What is grouping? Is there a counterpart in Relational Algebra? Explain this feature and discuss the interaction of the HAVING and WHERE clauses. Mention any restrictions that must be satisfied by the fields that appears in the GROUP BY Clause.
- (b) What are the differences between Integrity Constraints and Triggers? [10+6]
2. (a) What is the relationship between files & indexes?
- (b) What is the search key for an index?
- (c) What is Data entry in an index? [8+4+4]
3. (a) Explain Schedule?
- (b) Explain Non-Serial schedule?
- (c) Explain serializability with example? [4+4+8]
4. Explain the difference between system crash and disaster? [16]
5. (a) How does a Relational Calculus query "describe" result tuples? Discuss the subset of first - order predicate logic used in tuple relational calculus , with particular attention to universal and existential quantifiers, bound and free variables, and restriction on the query formula.
- (b) What is the difference between Tuple Relational Calculus and domain relational calculus. [8+8]
6. (a) Explain DBMS? Explain Database system Applications.
- (b) Make a comparison between Database system and File system. [8+8]
7. (a) Why is designing a Database for large Enterprise especially hard? Explain
- (b) What is the composite Attribute? How to model it in the ER diagram? Explain with an example. [8+8]
8. (a) What is a minimal cover for a set of Functional dependency's?
- (b) Describe an algorithm for computing the minimal cover of a set of Functional dependency's, and illustrate it with an example? [10+6]
