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SE-8071

B. E. II (Sem. III) (CO/IT) Examination

May / June – 2011

Database Management System

Time : 3 Hours] [Total Marks : 100

Instruction :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ B. E. 2 (Sem. 3) (CO/IT)

Name of the Subject :

☛ Database Management System

☛ Subject Code No. : 8 0 7 1 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

Student's Signature

Q.1 [A] Do as directed [10]

1. Define DBMS
2. What is Instance and Schema?
3. What do you mean by partial dependency?
4. Why are certain dependencies called "trivial functional dependencies "?
5. What is Primary Key constraint? How it differs from UNIQUE key constraint?

[B] Construct an SQL query for given database as shown below.(Any five) [10]

Employee (emp-name, street, city)
Works (emp-name, company-name, salary)
Company (company-name, city)
Manages (emp-name , manager-name)

1. List all employees name who work for L & T company.
2. Find Employees who work for Reliance and earn salary more than 10,000.
3. Count number of employee who work for Reliance.
4. Write insert query for schema Employee.
5. Change the city and street of employee " Rajesh".
6. Delete an employee from Employee table whose manager is " Mr. XYZ ".

Q. 2[A] Describe the disadvantages of traditional file system. [07]

[B] What is need of Normalization? Explain BCNF. [08]

OR

Q. 2[A] Discuss 3NF in detail. [07]

[B] Enlist and Explain Armstrong Axioms. Show other rules are derived from Armstrong axioms. Give examples. [08]

Q. 3 Answer following. (Any THREE) [15]

1. What are the main functions of database administrator?
2. Explain Data Definition Language.
3. Explain curser in PL/SQL.
4. Explain select and project operation of Relational Algebra with example.
5. Explain data dictionary

Q:4[A] **i) State True or False** **[06]**

(1) DBMS is a set of prewritten programs that are used to store , update and retrieve a database

(2) A transaction is a set of related operations that must be performed completely or not at all

(3) Two phase locking is a protocol that guarantees that if all the transactions obey it, all the possible interleaved schedules become serialisable.

(4) Data is better organised and is easily accessible by using DBMS
A table is a two-dimensional view of the database.

(5) Symmetric key cryptography is also called as secret key cryptography.

ii) Explain ACID properties of transactions **[04]**

[B] Consider a database consisting of 10 consecutive disk blocks (block 1, block 2, ..., block 10). Show the buffer state and a possible physical ordering of the blocks after the following updates, assuming that shadow paging is used, that the buffer in main memory can hold only three blocks, and that a least recently used (LRU) strategy is used for buffer management. **[10]**

read block 3 read
block 7 read block 5
read block 3 read
block 1 modify block
1 read block 10
modify block 5

Q:5 **Answer the following(Any Two)** **[14]**

(1) Explain Lock-Based Protocols

(2) What is cryptography? Explain the difference between symmetric & asymmetric key cryptography.

(3) Explain the difference between the three storage types—volatile, nonvolatile. and stable—in terms of I/O cost.

Q6 **Write Short notes on any four.** **[16]**

(1) FMS versus DBMS.

(2) Deadlock Detection

(3) View Serializability

(4) Validation Based Protocols

(5) Deadlock prevention schemes using timestamps