Code No: R5411208

IV B.Tech I Semester(R05) Regular/Supplementary Examinations, December 2009
DISTRIBUTED DATA BASES
(Common to Information Technology and Computer Science & Systems Engineering)

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain with neat diagram the reference architecture for distributed databases.

   (b) Given the global relations
   SUPPLIER(SNUM,NAME,CITY)SUPPLY(SNUM,PNUM,DEPTNUM,QUAN)
   Give the derived fragmentation for SUPPLY. Explain how to determine the tuples of SUPPLY which correspond to the suppliers of the given city.[8+8]

2. Give an example of global schema, fragmentation schema and additional semantic knowledge, and explain how this information can be used for deducing the simplification of a query.[16]

3. (a) Discuss the problems with query optimization in DDB.

   (b) Explain the following with examples

   i. Cartesian

   ii. Selection

   iii. Join and Semi-join

   iv. Group-By. [8+8]

4. (a) Write about transaction management in DDB.

   (b) Write about the concurrency control based on locking in distributed databases.

   [8+8]

5. (a) Explain false deadlocks in detail?

   (b) Explain Deadlock prevention in distributed databases?

   (c) Explain the differences between preemptive and non preemptive methods?

   [4+6+6]

6. (a) Explain about Nonblocking 2-phase-commitment protocol with state diagram.

   (b) Explain in detail 3-phase-commitment protocol with state diagram. [8+8]

7. Why do client-server object DBMSs primarily employ data shipping architecture while relational DBMSs employ function shipping?[16]

8. Explain about Transaction and Computation Model in detail with an example. [16]

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1. Write about the following:

   (a) Heterogeneous databases

   (b) Homogeneous databases

   (c) Conceptual schema

   (d) Physical schema. [4+4+4+4]

2. Explain how simplification of vertically fragmented relations can be done with example. [16]

3. (a) Discuss Non-distributed Join and Distributed Join.

   (b) Discuss how an optimization graph can be drawn for a given query. [8+8]

4. (a) Write about the atomicity of transactions in distributed databases with emphasis on failures and logs and recovery methods.

   (b) Explain the 2-phase commitment protocol. [8+8]

5. Explain the following:

   (a) Serializability in a centralized Database.

   (b) Classify 2- phase locking, time stamps and optimistic methods. [8+8]

6. Explain in detail about the following:

   (a) Detection of Inconsistencies

   (b) Resolution of Inconsistencies

   (c) Checkpoints. [6+4+6]

7. A new class of applications that object DBMSs support are interactive and deal with large objects. Which cache consistency algorithm is suitable for this class of applications operating across wide area networks?[16]

8. Explain the following :

   (a) Propagating updates

   (b) Client cache management. [8+8]

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1. Discuss the following:

   (a) Horizontal and vertical fragmentation

   (b) Conceptual and physical schema. [8+8]

2. Explain the following for Distributed Data bases

   (a) Operations in a parametric query

   (b) GROUP BY operation for evaluating aggregate functions. [8+8]

3. (a) Discuss Non-distributed Join and Distributed Join.

   (b) Discuss how an optimization graph can be drawn for a given query. [8+8]

4. (a) Write about the atomicity of transactions in distributed databases with emphasis on failures and logs and recovery methods.

   (b) Explain the 2-phase commitment protocol. [8+8]

5. (a) What is meant by “deadlock free”.

   (b) Explain the Conservative Timestamp Method.

   (c) Explain the “ignore obsolute write” rule. [2+10+4]

6. (a) What is Database Administration?

   (b) What are the technical aspects of database administration in a distr+ibuted environment?

   (c) What is Catalog and usage of Catalog in distributed databases?

   (d) When the Catalogs are updated? [2+4+8+2]

7. Give some heuristics that an object DBMS query optimizer that accepts OQL queries may use to determine how to decompose a query so that parts can be function shipped and other parts have to be executed at the originating client by data shipping.[16]

8. Some architectural models favor the definition of a global conceptual schema, whereas others do not. What do u think? Justify you selection with detailed technical arguments.[16]

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1. Explain the following:

   (a) Different ways to access distributed databases

   (b) Discuss the several advantages and limitations of global applications. [8+8]

2. Give an example of global schema, fragmentation schema and additional semantic knowledge, and explain how this information can be used for deducing the simplification of a query.[16]

3. (a) Discuss the objectives of Query processing optimization.

   (b) Explain the role of optimization graphs in DDB. [8+8]

4. (a) Discuss the architectural aspects of distributed transactions

   (b) Explain the following:

      i. Multiple copies of the data

      ii. Transaction failures. [8+8]

5. Explain in detail about Time and Timestamps in a Distributed Database? [16]

6. (a) Explain about Weighted majority locking approach with an example?

   (b) Explain about Primary copy locking approach with an example? [8+8]

7. Explain in detail Transaction Management in Object DBMSs? [16]

8. Explain about the concepts of Datawarehousing in detail. [16]