(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2713   Roll No.

B.Tech.

(SEM. VII) ODD SEMESTER THEORY
EXAMINATION 2012-13
DISTRIBUTED DATABASE

Time : 3 Hours   *Total Marks : 100*

Note :—Attempt **all** questions. All questions carry equal marks.

1. Attempt any **two** questions :

    (a) (i)   Define recoverable schedule. Why is recoverability of schedules desirable ? Explain it with suitable example.

        (ii) Discuss the cascading abort with suitable example. How will you avoid it ?

    (b) (i)   Discuss the view serializable schedule with suitable example.

        (ii) Explain conflict operation and conflict equivalence.

    (c) Write short notes on the following :

        (i)   Distributed serializability

        (ii) Objectives of data distribution.

2. Attempt any **two** questions :

    (a) Discuss the Multi-Version Timestamp Ordering algorithm. What are the advantages and disadvantages of this algorithm ?

(b) (i) Define granularity of a lock. Explain up gradation and down gradation of locking.

(ii) Describe Quorum based protocol for distributed concurrency control.

(c) (i) Discuss how a unique global timestamp is generated in a distributed system.

(ii) Discuss the lost update and dirty read anomaly.

3. Attempt any **two** questions :

(a) Consider the following schemas :

Global schema : Guest (guest-id, name, block-loc, room-no.)

Fragment schema : Guest 1 (having guest-id $\leq$ = 20) and Guest 2(having guest-id > 20)

Allocation schema : Guest 1 at site 1, 2 and Guest 2 at site 3, 4.

Write SQL statement for query "retrieve the names and room no. of all guests whose block location is south" that must show following transparencies :

(i) Location but not replication transparency

(ii) Replication but not location transparency

(iii) Both location and replication transparency.

(b) (i) Under which situation, will it be beneficial to have replication or fragmentation of data ?

(ii) Describe the correctness rules that must be considered during data fragmentation.

(c) (i) Differentiate between short duration and long duration transaction with suitable example.

(ii) Explain Homogeneous and Heterogeneous distributed database system.

4. Attempt any **two** questions :

(a) Describe 2-Phase Commit Protocol with the state transition diagram for it. What are the demerits of this protocol ?

(b) Generate an algorithm for synchronous checkpointing in a Distributed Database System.

(c) Discuss the following with suitable example :

(i) Orphan messages

(ii) Inconsistent messages.

5. Attempt any **two** questions :

(a) With the help of suitable example, justify the following statement :

(i) "Semi join can be used to reduce the cost of a join operation in a distributed environment".

(ii) "Join operation should be done after selection, projection, and union operations for distributed database systems".

(b) Discuss the objectives of distributed query processing. Explain the various phrases in distributed query processing in detail.

(c) Explain Ho-Ramamoorthi algorithm for deadlock detection. What are the phantom deadlocks ? Does this algorithm detect the phantom deadlock ?