Q. 6 (a) Explain the design and architecture of STARBUST data base management system. [10]

(b) Explain the ODAPTER client- server architecture and compare ODAPTER with open ODB client server architecture [10]

Q. 7 (a) Explain small talk binding in ODMG- 93.

(b) Explain the concept routines and inheritance in SQL 3.

(c) Explain the type constructor in SQL3 with help of an example.

(d) How SET table, MULTISET table and LIST table are created using SQL 3? Explain it with help of an example [5+5+5+5=20]

Q. 8 Write short notes on

(a) SDM data base.

(b) O2 object oriented data base model [10+10=20]

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M. Tech. II - Sem. (Main / Back) Exam., June-July 2016

Computer Engineering

2MCS1 Advanced Database Management Systems

Common SE, CS

Time: 3 Hours **Maximum Marks: 100**

Min. Passing Marks: 33

Instructions to Candidates

Attempt any five questions. Marks of questions are indicated against each question. Draw neat and comprehensive sketches wherever necessary to clearly illustrate your answer. Assume missing data suitably if any and specify the same.

1 NIL 2 NIL

Q. 1 (a) Explain the ACID properties of transaction. Explain the usefulness of each. [8]

(b) Consider the following two transaction

T_1 read (A)

read (B)

if A = 0 then B = B + 1.

write (B)

T_2 read (B).

read (A).

if B = 0 then A = A + 1.

write (A)

Let the consistency requirement be A = 0 ∨ B = 0 with A = 0 ∧ B = 0 the initial values.

(i) Show that every serial execution involving these two transaction preserves the consistency of the data base.

(ii) Show a concurrent execution of T_1 and T_2 that produces a non serializable schedule.

(iii) Is there a concurrent execution of T_1 and T_2 that produces a serializable schedule? [4+4+4=12]

Q.2 (a) Consider the following two transactions.


```
T1:  read (A)
     read (B)
     if A = 0 then   B := B + 1;
     write (B)

T2:  read (B);
     read (A);
     if B = 0 then   A := A + 1;
     write (A)
```

Add lock and unlock instruction to transaction T_1 and T_2 so that they obtained the two phase locking protocol. Can the execution of these transactions result in a deadlock. Justify your answer [10]

(b) Explain the purpose of the Check points mechanism. How often should Check points be performed? How does the frequency of Check points affect

(i) System performance when no failure occurs

(ii) The time it takes to recover from a system crash

(iii) The time it takes to recover from disk crash [2+2+2+2+2=10]

Q. 3 (a) Consider a distributed system with two sites, A and B. Can site A distinguish among the following?

(i) B goes down

(ii) The link between A and B goes down

(iii) B is extremely overloaded and response time is 100 times longer than normal.

What implications does your answer have for recovery in distributed systems? [10]

(b) What are the different architectural approaches of object orientation in DBMS? Explain each in detail. [10]

Q. 4 (a) Explain the Semantic association model (SAM) in detail [10]

(b) Compare and contrast various semantic data base models [10]

Q. 5 (a) Explain the concept of overriding, overloading and late binding [3+3+3=9]

(b) Discuss performance issue in OODBMS with help of examples; explain how performance can be achieved [8+3]