Parvatibai Chowgule College of Arts & Science

(Autonomous)

MSc-IT-PART-I 2019-20

Advanced Database Management Systems

Max Marks: 20 Duration: 1 Hour

1: Consider the following two statements about database transaction schedules:

I. Strict two-phase locking protocol generates conflict serializable schedules that are also recoverable.

II. Timestamp-ordering concurrency control protocol with Thomas’ Write Rule can generate view serializable schedules that are not conflict serializable

Which of the above statements is/are TRUE?

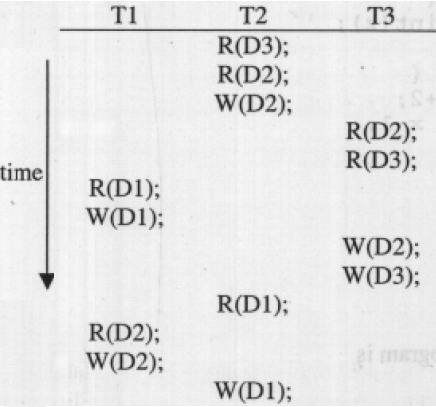
a. I only

b. II only

c. Both I and II

d. Neither I nor II

2: Consider three data items D1, D2 and D3 and the following execution schedule of transactions T1, T2 and T3. In the diagram, R(D) and W(D) denote the actions reading and writing the data item D respectively.  Which of the following statements is correct?



a. The schedule is serializable as T2; T3; T1  
b. The schedule is serializable as T2; T1; T3  
c. The schedule is serializable as T3; T2; T1

d. The schedule is not serializable

3: 11.Which of the following scenarios may lead to an irrecoverable error in a database system ?

a. A transaction writes a data item after it is read by an uncommitted transaction

b. A transaction reads a data item after it is read by an uncommitted transaction

c. A transaction reads a data item after it is written by a committed transaction

d. A transaction reads a data item after it is written by an uncommitted transaction

4: Consider the following database schedule with two transactions, T1 and T2.

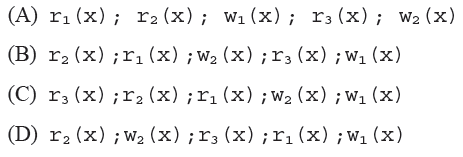
**S = r2(X); r1(X); r2(Y); w1(X); r1(Y); w2(X); a1; a2;**

where ri(Z) denotes a read operation by transaction Ti on a variable Z, wi(Z) denotes a write operation by Ti on a variable Z and ai denotes an abort by transaction Ti . Which one of the following statements about the above schedule is TRUE?

a. S is non-recoverable  
b. S is recoverable, but has a cascading abort  
c. S does not have a cascading abort

d. S is strict

5: Consider the following four schedules due to three transactions (indicated by the subscript) using read and write on a data item x, denoted by r(x) and w(x) respectively. Which one of them is conflict serializable.



a. A  
b. B  
c. C  
d. D

5: A bank offers its account holders 7% interest if their balance is above Rs. 10000, else 6%. To

achieve this, each of the following SQL statements is executed as separate transactions t 1 and

t 2 .

t 1 : update account set balance = balance \* 1.6 where balance <= 10000

t 2 : update account set balance = balance \* 1.7 where balance > 10000

Then t 1 and t 2

a. must be executed one after the other but either order is acceptable

b. must be executed one after the other but with t 1 going first

c. must be executed one after the other but with t 2 going first

d. can be executed concurrently

6. Given a schedule for transactions t 1 and t 2 we can say that

a. the schedule can be serialized if t 1 and t 2 resulted from the use of two-phase locking

b. the transactions compute the correct result if t 1 executed only after t 2 committed

c. the transactions compute the correct result if t 1 and t 2 executed concurrently but did

not access any common data items

d. all of the above statements are correct