## UNIT – III

## TRANSACTION AND CONCURRENCY CONTROL

1. What is transaction?

A transaction is collection of operations that f orm logical unit of work .A database system must ensure proper execution of transaction despite failures either the entire transaction executes or none of it does.

2. Define atomicity?

Either all operations of the transaction are refl ected properly in the database or none are.

3. Define Durability?

A transaction completes successfully then changes I t has made to the database persist even if there are system failure.

4. What is transaction-management component?

Ensuring atomicity is the responsibility of the database system itself specifically, it is handled by a component called the transaction-management component.

5. List the properties of traction.

1. Atomicity 2. consistency 3. Isolation 4. Durability.

6. Define concurrency control?

Serializability of schedules generated by concurrently executing transactions can be ensure through one of a variety of mechanisms called concurrency control.

7. What are the tow operation access data in transaction?

Read(x)- transfer data item x from database.

Write(x)- transfer data item x from the local buffer.

8. What do you mean by read only transaction?

The data base operation in a transaction do not update the database but only retrieve data, the transaction is called a read-only transaction.

9. What are the steps followed in Executing read(x)command in transaction?

1. Find the address of the disk block that containsitem x.

2. Copy that disk block in to a buffer in main memory.

3. Copy item x from the buffer to the program variable named x.

10. What are the steps followed in executing write(x) command in transaction?

1. find the address of disk block that contain itemx.

2. Copy that disk block into buffer in main memory.

3. Copy item x from the program variable named x into its correct location in the buffer

4. Store the update block from the buffer back to disk.

11. List out the transaction states?

i) active ii) Partially Committed iii) Failed iv) Abort v) committed.

12. What are the need for concurrency?

i) Improved throughput and resource utilization

ii) Reduced waiting time.

13. Define Schedule.

The chromosomal order in which instructions are executed in the system.

14. When the schedule is called serial?

Each serial schedule consists of a sequence of instruction from various

transaction where the instruction belonging to one single transaction appear together in that schedule.

15. When two operation in schedule are said to be conflict?

i) Two operation belong to different transaction

ii) Two operation access the same item x

iii) At least one of the operation is write-item(x)

16. Define cascading rollback?

An uncommitted transaction has to be roll back because it read an item from a transaction that failure.

17. When the schedule is said to cascade less?

A schedule is said to be cascadeless or avoid cascading roll back if every transaction in the schedule reads only items that were written by committed transactions.

18. Define serializability.

Any schedule produced by concurrent processing of set of transaction will have an effect equivalent to a schedule produce when these transaction are rule serially is some order of guarantees this called seralizability.

19. When the seralizability is equivalent?

Transaction is serializable if it is equivalent to some serial schedule of the same n transaction.

20. When two schedule are called result equivalent?

Two schedule are called result equivalent if they produce the same final state of the database.

21. How to find the schedule is conflict serialization or non using procedure graph?

The graph has a cycle then schedules not conflictserialization if the graph contain no cycle thee schedule is conflict serialization.

22. Define Concurrency control?

The system to control the interacting among the concurrency transactions and this control is a achieved through one of the varying of mechanism called concurrency control.

23. Define lock?

Lock is variable associated with a data item. Lock are used as a means of

synchronizing the access by concurrent transaction to the database item. 24. Define lock table?

System maintain record for the items that are currently locked in lock table that which could be organized as a hash file.

25. What you mean by lock conversion?

A transaction that already holds a lock on item xis allowed under certain condition to voncery the Locke from one locked state to another.

26. List out the two-phase locking?

1) Growing phase: A transaction may obtain locks but may not replace any lock.

2) Shrinking phase: A transition may release lock but may not obtain any new locks.

27. When the system is said to deadlock?

A system is in a deadlock state if there exists a set of transactions such that every transition in the set is waiting for another transition in the set.

28. What are the method for delay deadlock?

(i) Deadlock prevention (ii) Deadlock detection and deadlock recovery

29. Define timestamps?

Timestamp are typically based on the order in which transition are stared.

30. What are the different method for deadlock prevention?

i) Wait-die II) Would-wait

31. How detect the deadlock?

A deadlock exists in the system if and only if thewait-for graph contains a cycle.

32. What are the method to follow the recovery from deadlock?

1.Selection of a victim 2. Roll back. 3. Starvation

33. List out type of failure?

1) Transaction failure 2) System crash 3) Disk failure

34. List out the draw backs of shadow-page?

1) Commit overhead 2) Data fragmentation 3)Garbage collection

## 16/10/8 Marks Questions

1.Describe about testing of Serializability.

2.Explain the deferred and immediate modification versions of the log based recovery scheme.

3.What are different types of schedules are acceptable for recoverability.

4.Discuss on strict, two-phase locking protocol and time stamp-based protocol.

5.Explain Time stamp-Based Concurrency Control protocol and the modificationsimplemented in it.

6.Describe shadow paging recovery techniques.

7. How can you implement atomicity in transactions? Explain.

8.Describe the concept of serializability with suitable example.

9. How concurrency is performed? Explain the protocol that is used to maintain the

concurrency concept