SNS COLLEGE OF TECHNOLOGY, COIMBATORE-35

(AN AUTONOMOUS INSTITUTION)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

19CST202-DATABASE MANAGEMENT SYSTEM

UNIT-IV
Introduction
2 Mark Question

1.What are the ACID properties?

(Atomicity, Consistency, Isolation, Durability) is a set of properties that guarantee database transactions are processed reliably. In the context of databases, a single logical operation on the data is called a transaction. For example, a transfer of funds from one bank account to another, even though that might involve multiple changes (such as debiting one account and crediting another), is a single transaction.

2. What are two pitfalls (problem) of lock-based protocols?

- Deadlock
- Starvation

3. What is transaction?

Collections of operations that form a single logical unit of work are called transactions.

4. What are the two statements regarding transaction?

The two statements regarding transaction of the form: Begin transaction
End transaction

5. What are the properties of transaction?

The properties o f transactions are:

Atomicity Consistency Isolation Durability

6. What is recovery management component?

Ensuring durability is the responsibility of a software component of the base system called the recovery management component.

7. When is a transaction rolled back?

Any changes that the aborted transaction made to the database must be undone. Once the changes caused by an aborted transaction have been undone, then the transaction has been rolled back.

8. What are the states of transaction?

The states of transaction are
Active
Partially committed
Failed Aborted Committed
Terminated

9. List out the statements associated with a database transaction.

Commit work
Rollback work

10. What is a shadow copy scheme?

It is simple, but efficient, scheme called the shadow copy schemes. It is based on making copies of the database called shadow copies that one transaction is active at a time. The scheme also assumes that the database is simply a file on disk.

11. Give the reasons for allowing concurrency.

The reasons for allowing concurrency is if the transactions run serially, a short transaction may have to wait for a preceding long transaction to complete, which can lead to unpredictable delays in running a transaction. So concurrent execution reduces the unpredictable delays in running transactions.

12. What is average response time?

The average response time is that the average time for a transaction to be completed after it has been submitted.

13. What are the two types of serializability?

The two types of serializability is
Conflict serializability
View serializability

14. Define lock.

Lock is the most common used to implement the requirement is to allow a transaction to access a data item only if it is currently holding a lock on that item.

15. What are the different modes of lock?

The modes of lock are:
Shared
Exclusive

16. Define deadlock.

Neither of the transaction can ever proceed with its normal execution. This situation is called deadlock.

17. Define the phases of two phase locking protocol.

Growing phase: a transaction may obtain locks but not release any lock.

Shrinking phase: a transaction may release locks but may not obtain any new locks.

18. Define upgrade and downgrade.

It provides a mechanism for conversion from shared lock to exclusive lock is known as upgrade.

It provides a mechanism for conversion from exclusive lock to shared lock is known as downgrade.

20. What is meant by log-based recovery?

The most widely used structures for recording database modifications is the log. The log is a sequence of log records, recording all the update activities in the database. There are several types of log records.

21. What are uncommitted modifications?

The immediate-modification technique allows database modifications to be output to the database while the transaction is still in the active state. Data modifications written by active transactions are called uncommitted modifications.

22. Define shadow paging.

An alternative to log-based crash recovery technique is shadow paging. This technique needs fewer disk accesses than do the log-based methods.

23.Define page.

The database is partitioned into some number of fixed-length blocks, which are referred to as pages.

24. Explain current page table and shadow page table.

The key idea behind the shadow paging technique is to maintain two page tables during the life of the transaction: the current page table and the shadow p age table. Both the page tables are identical when the transaction starts. The current page table may b e changed when a transaction performs a write operation.

25. What are the drawbacks of shadow-paging technique?

- Commit Overhead
- Data fragmentation
- Garbage collection

26.Differentiate strict two phase locking protocol and rigorous two phase locking protocol.

In strict two phase locking protocol all exclusive mode locks taken by a transaction is held until that transaction commits.

Rigorous two phase locking protocol requires that all locks be held until the transaction commits.

27. What are the time stamps associated with each data item?

- W-timestamp (Q) denotes the largest time stamp if any transaction that executed WRITE (Q) successfully.
- R-timestamp (Q) denotes the largest time stamp if any transaction that executed READ (Q) successfully.