SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING-IOT Including CS&BCT

COURSE NAME : 19SB504   DATABASE MANAGEMENT SYSTEMS

III YEAR / V SEMESTER

Unit IV-   **TRANSACTIONS MANAGEMENT**

Topic :**TRANSACTION RECOVERY, SAVE POINTS**

TRANSACTION RECOVERY

✓ Transaction recovery in a Database Management System (DBMS) is essential to **ensure that the database remains consistent and reliable** in the face of system failures.

✓ It involves the process of **restoring the database** to a consistent state after a system failure, such as a hardware crash or a software error, has occurred.

✓ There are **two main components** of transaction recovery in a DBMS:

    1. Rollback

    2. Forward Recovery

1. Rollback Recovery

- ✓ Rollback recovery is the process of **undoing the changes** made by a transaction that was in progress at the time of the failure.

- ✓ When a system failure occurs, any transactions that were in progress but not yet completed need to be rolled back to their **previous state to maintain the integrity** of the database.

Example of Rollback Recovery

✓ Imagine a **banking application** where you're transferring money from one account to another.

✓ Transaction T1 deducts $100 from Account A, and T2 adds $100 to Account B.

✓ If a system failure occurs between these two steps, the DBMS will need to roll back both T1 and T2 to their previous states, ensuring that neither Account A nor Account B reflects any changes made by these transactions.

2. Forward Recovery

Forward recovery is the process of **reapplying the changes that were successfully completed and committed** by transactions before the system failure.

It ensures that the database reflects the state it would have been in had the system failure not occurred.

Example of Forward Recovery:

- ✓ Continuing with the banking application example, suppose T3 deposits $50 into Account C, and T4 withdraws $30 from Account D.

- ✓ If these transactions were successfully completed and committed before a system failure, the DBMS will reapply their changes after recovery to ensure that Account C has an additional $50, and Account D is $30 less than their previous balances.

SAVE POINTS

✓ Savepoints in a Database Management System (DBMS) are a feature that allows you to **set intermediate points within a transaction** to which you can **later roll back** if needed.

✓ Savepoints provide a way to create a kind of **"checkpoint"** within a transaction, which can be useful in complex operations where you want to **partially undo changes without rolling back** the entire transaction.

key points about savepoints

1. Setting Savepoints
2. Rolling Back to Savepoints
3. Committing a Transaction
4. Nested Savepoints
5. Use Cases
6. Savepoint Names

Example Of Savepoints

- ✓ Suppose you're transferring money between two bank accounts within a single transaction:

- ✓ Set a savepoint before deducting money from Account A.

- ✓ Deduct money from Account A.

- ✓ Set another savepoint before adding money to Account B.

- ✓ Add money to Account B.

Thank You…….

TRANSACTIONS MANAGEMENT/
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