



**SOS IN COMPUTER SCIENCE & APPLICATION
JIWAJI UNIVERSITY**

Class : MBA (E-Commerce) II Semester

Subject : DBMS

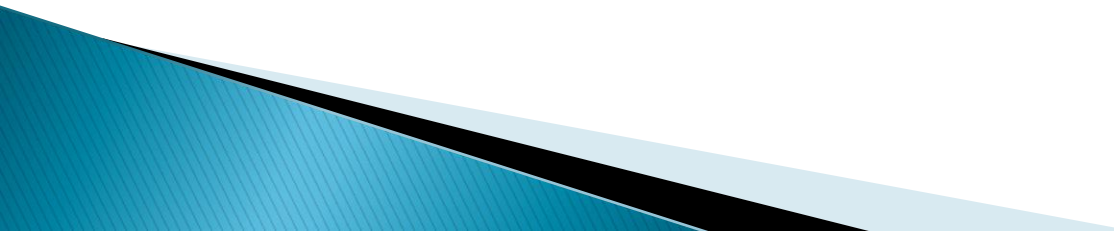
Paper Code: (203)

Topic: (i) Types Of Crashes/Failure in DBMS

(ii) Brief Introduction of Crash Recovery

Types Of Crashes in DBMS

Crashes can be broadly classified as -

- 1.Transaction crash/ failure
 - 2.System crash/ failure
 - 3.Disk crash/ failure
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Transaction Failure

The transaction failure occurs when it fails to execute or when it reaches a point from where it can't go any further. If a few transaction or process is obstructed, then this is called as transaction failure.

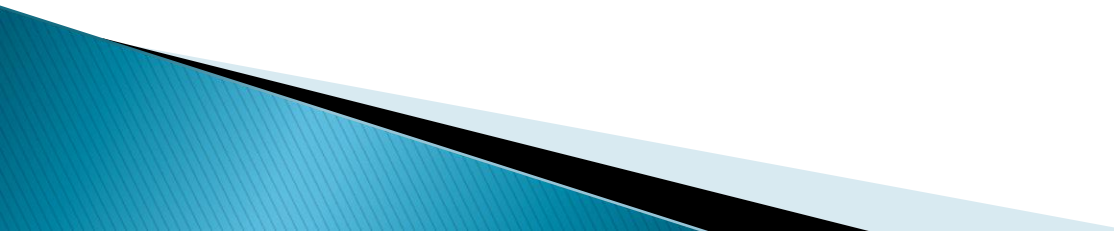


Transaction Failure (Cont.)

- ▶ Reasons for a transaction failure could be
 - (a) Logical errors:** If a transaction cannot complete due to some code error or an internal error condition, then the logical error occurs.

Transaction Failure (Cont.)


(b) Syntax error: It occurs where the DBMS itself terminates an active transaction because the database system is not able to execute it. **For example,** The system aborts an active transaction, in case of deadlock or resource unavailability.



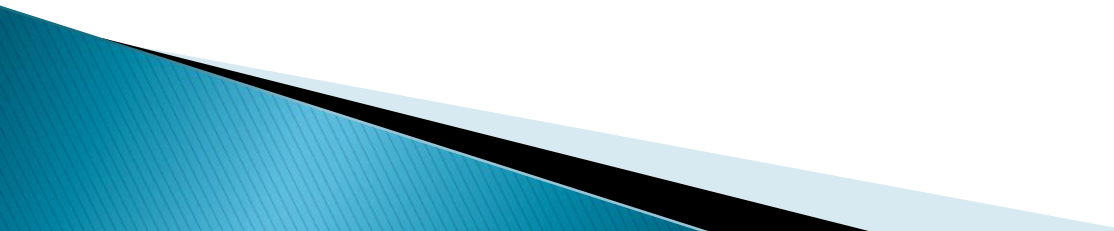
System Crash

- System failure can occur due to power failure or other hardware or software failure. **Example:** Operating system error.
- In the system crash, non-volatile storage is assumed not to be corrupted.

Disk Failure

- It occurs where hard-disk drives or storage drives used to fail frequently. It was a common problem in the early days of technology evolution.
 - Disk failure occurs due to the formation of bad sectors, disk head crash, and unreachability to the disk or any other failure, which destroy all or part of disk storage.
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CRASH RECOVERY

- ▶ **Crash recovery** is the process by which the database is moved back to a consistent and stable state.
 - ▶ This is done by rolling back incomplete transactions and completing committed transactions that were still in memory when the **crash** occurred
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CRASH RECOVERY (CONT.)

When a DBMS recovers from a crash, it should maintain the following –

- ▶ It should check the states of all the transactions, which were being executed.
- ▶ A transaction may be in the middle of some operation; the DBMS must ensure the atomicity of the transaction in this case.

CRASH RECOVERY (CONT.)

- ▶ It should check whether the transaction can be completed now or it needs to be rolled back.
- ▶ No transactions would be allowed to leave the DBMS in an inconsistent state.
