**Group Presentation Topics on Database Transaction Recovery Techniques**

**NB:** Write at least 4 pages in hand writing and discuss in detail

**Presentation date:** 12/05/2025

# Group 1:

* Check pointing and recovery in detail with example?
* Shadow paging
* Tell your story how you recovery when your device fails

# Group 2:

* + Write-ahead logging
  + Two-phase commit protocol
* Crash Recovery using Log-Based Recovery Methods
* Real-life scenarios, steps taken during crash

# Group 3:

* + Distributed transactions
  + Recovery in distributed systems
  + Backup and restore

# Group 4

* + Replication and failover
  + Recovery from software and hardware failures
  + Crash consistency and atomic commit

# Group 5

* + Concurrency control and isolation in databases
  + Log-based recovery
  + Redo and undo logging

# Group 6

* + Media recovery
  + ARIES recovery algorithm

# Group 7

* + Point-in-time recovery
  + Incremental and differential backups
  + Rollback and roll forward recovery

# Group 8

* + Error detection and correction in storage systems
  + Cloud-based disaster recovery and business continuity planning
* Comparison of Recovery Techniques in Popular DBMS (MySQL, PostgreSQL, Oracle)
* Who uses what? Efficiency, limitations

# Group 9

* + Data replication and mirroring
  + Backup and recovery in distributed databases
  + Fault tolerance

**Types of Failures in Database Systems**

* System crash, transaction failure, disk failure
* Detection and classification of failures

# Group 10

* + The Purpose of Database Recovery:
  + Describe Logging, Log manager, Recovery Manager

Recovery

Manager

Log

Manager

Transactio n

Query Processor

Data

**Buffer**

**Manager**

**Group 11**

* + Replication and failover:
  + Data durability:
  + Monitoring and Auditing:
  + How recovery mechanisms uphold these properties

# Group 12(reserve)

* + - Two main techniques for recovery from non-catastrophic transaction failures**:**
    - Recovering from System Crash