

UNIVERSITY OF ENGINEERING & MANAGEMENT, KOLKATA

Course Name : Database Management System



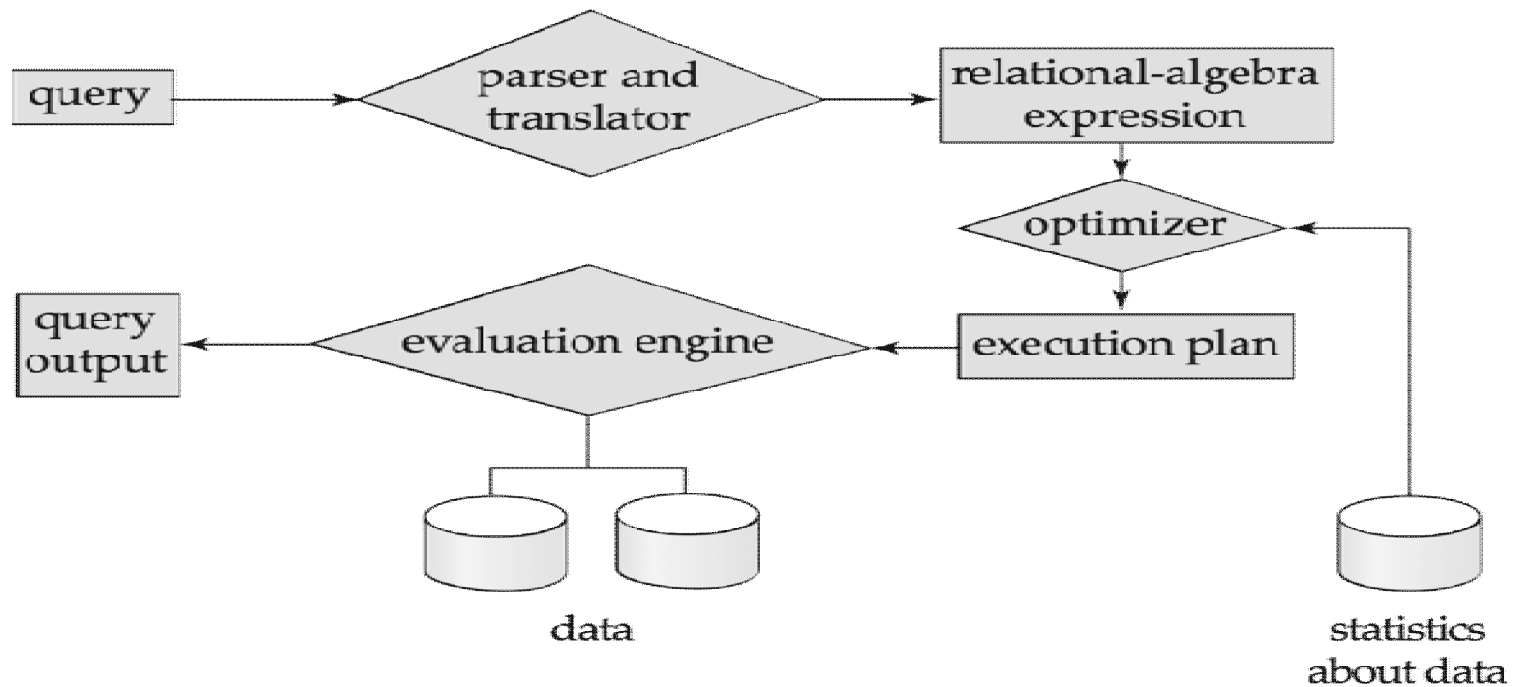
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Module 1: Query Processing and Transaction Management

Query Processing

1. Parsing and translation
2. Optimization
3. Evaluation

Query Processing



Query Processing (Cont.)

- Alternative ways of evaluating a given query
 - Equivalent expressions
 - Different **algorithms** for each operation
- Cost difference between a good and a bad **way of evaluating** a query can be enormous

Query Processing (Cont.)

- Need to estimate **the cost of operations**
 - Depends critically on statistical information about relations which the database must maintain
 - Need to estimate statistics for intermediate results to compute cost of complex expressions

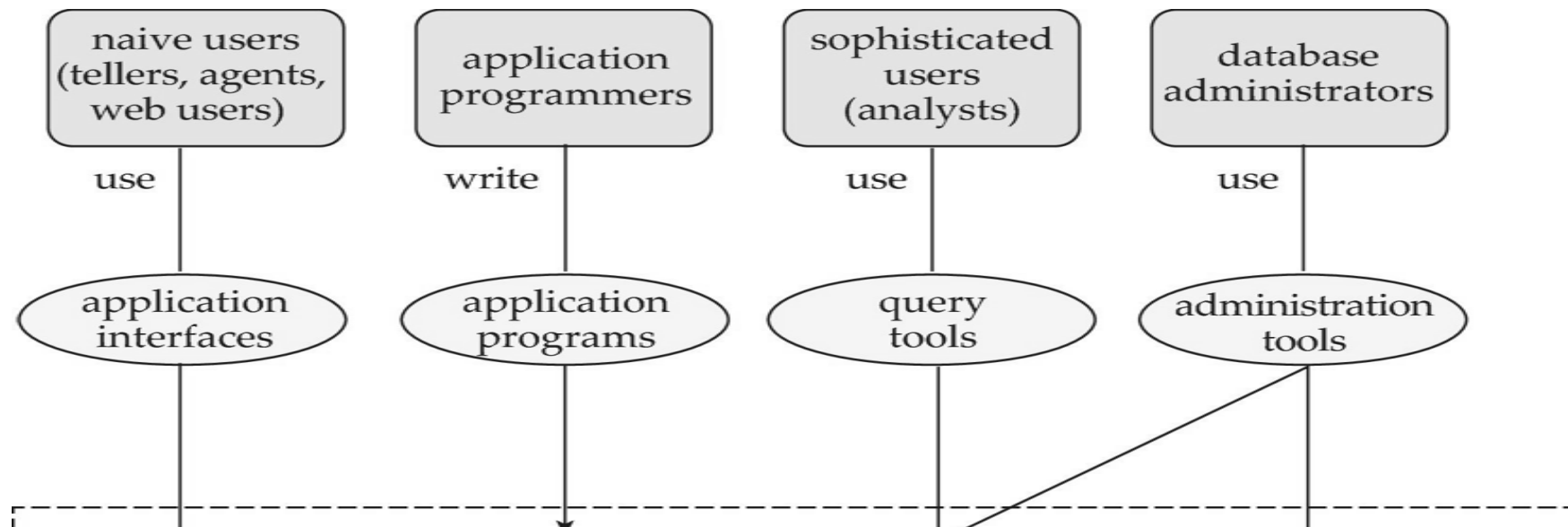
Transaction Management

- What if the system fails?
- What if more than one user is concurrently updating the same data?
- A **transaction** is a **collection of operations** that performs a single logical function in a database application

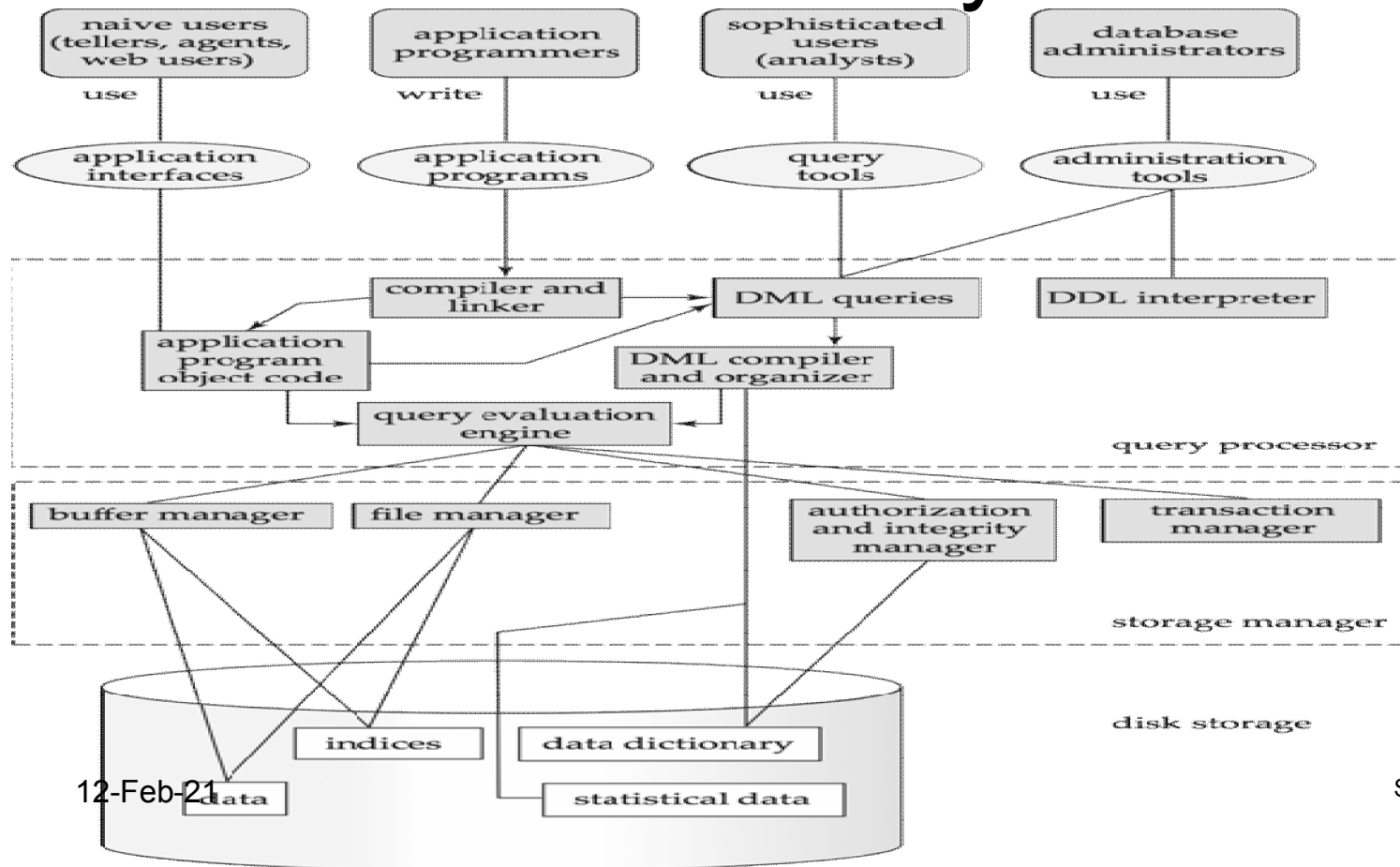
Transaction Management

- **Transaction-management component** ensures that the **database remains in a consistent** (correct) state despite system failures (e.g., power failures and operating system crashes) and transaction failures.
- **Concurrency-control manager** controls the interaction among the concurrent transactions, to ensure the consistency of the database.

Database Users and Administrators



Database System Internals



12-Feb-21

Database Architecture

The architecture of a database systems is greatly influenced by the underlying computer system on which the database is running:

- Centralized
- Client-server
- Parallel (multi-processor)
- Distributed

Thank You



Exam/Quiz Link for DBMS Theory **Lecture 6**: <https://forms.gle/uwVvpKR2BJm1m2hC6>