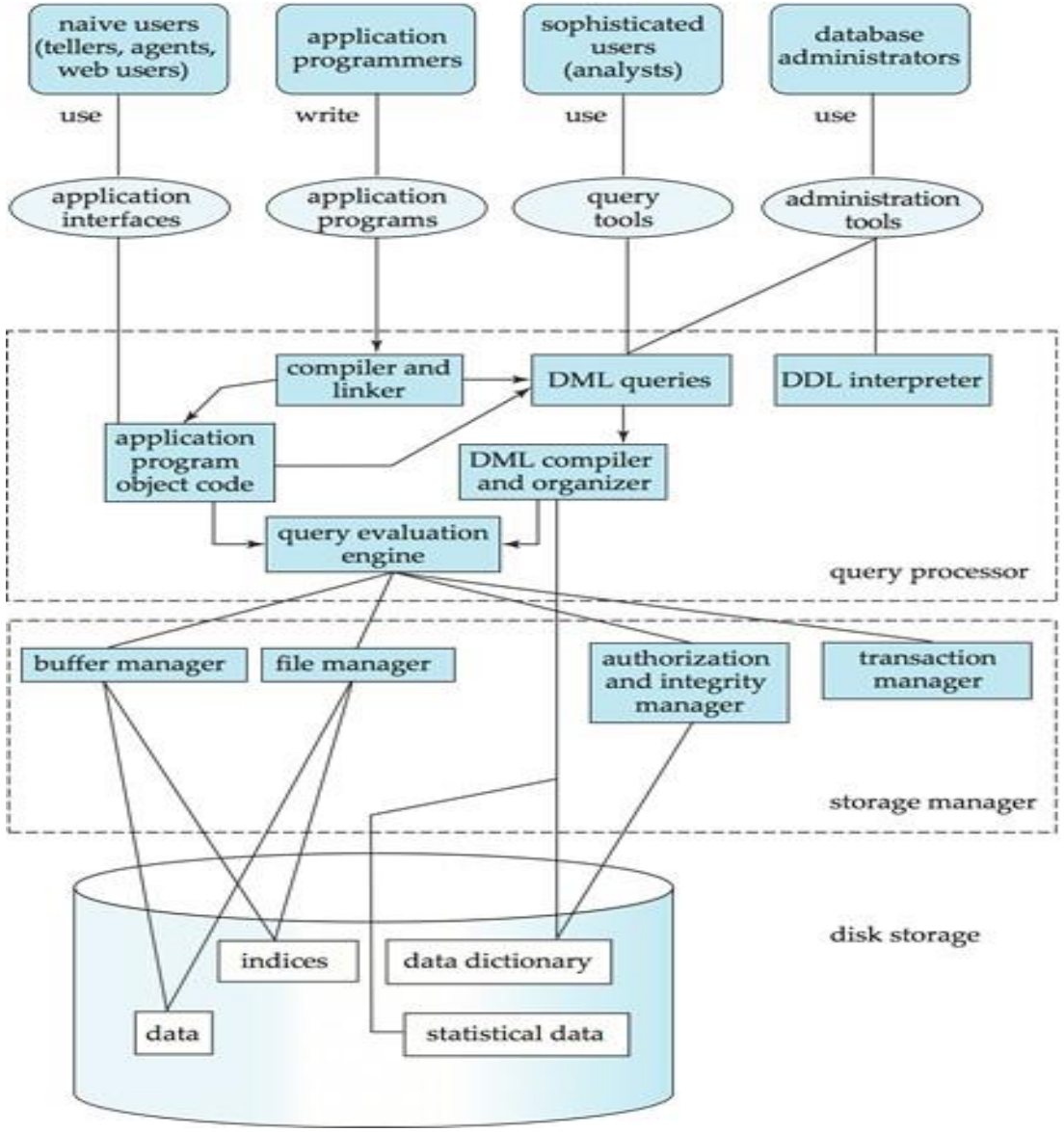
Database Architecture – Part 2

Database System Structure



Database Structure- Functional Components

- Functional components of a database system can be broadly divided into
  - storage manager and
  - query processor

Storage Manager

- The storage manager provides
  - interface between the low-level data stored in the database and the application programs and queries submitted to the system.

- The storage manager is responsible for
  - the interaction with the file manager.
  - translates the various DML statements into low-level file-system commands.
  - storing, retrieving, and updating data in the database.

Storage Manager

The storage manager components include:

- **Authorization and integrity manager**
  - tests for the satisfaction of integrity constraints and checks the authority of users to access data.
- **Transaction manager**
  - ensures that the database remains in a consistent (correct) state despite system failures, and concurrent transaction executions proceed without conflicting.
- **File manager**
  - manages the allocation of space on disk storage and the data structures used to represent information stored on disk.
- **Buffer manager**
  - responsible for fetching data from disk storage into main memory, and deciding what data to cache in main memory.

Storage Manager

- As part of the physical system implementation, the storage manager implements the following data structures:
    - **Data files,**
    - **Data dictionary,**
    - **Indices**

The Query Processor

The query processor components include:

- **DDL interpreter**

  interprets DDL statements and records the definitions in the data dictionary.

- **DML compiler**

  translates DML statements in a query language into an evaluation plan consisting of low-level instructions that the query evaluation engine understands.

- **Query evaluation engine**

  executes low-level instructions generated by the DML compiler.

Thank You