


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Section - 11

Explain the overall database structure.

Database system structure are partitioned into modules for different functions. Some functions (example file system) may be provided by the operating system.

- **file manager** manages allocation of disk space and data structure used to represent information on disk
- **Data base Manager**: The interface b/w low-level data and application programs and queries.
- **Query Processor**: translate statements in a query language into low-level instructions the database manager understands.
The query processor simplifies and facilitates access to data.
The query processor include the following component
 - DDL interpreter
 - DML compiler

The DDL interpreter interprets DDL statements and records the definition in the data dictionary.



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

The DML Compiler also performs query optimization, query evaluation engine executes low level instructions generated by the DML Compiler.

- DML Precompiler : converts DML statements embedded in an application program to normal procedure calls in a host language.
The precompiled interacts with query processor
- DDL Compiler : converts DDL statements to a set of tables containing metadata stored in a data dictionary

In addition, several data structures are required for physical system implementation

- Data files : store the database itself
- Data dictionary : stores information about the structure of the database
It is used heavily

- Indices : Provide fast access to data items holding particular values

- Storage Manager

The storage manager is important because database typically require a large amount of storage space.

It is very important efficient use of storage.

→ A storage manager is a program module that provides the interface between the low-level data stored in the database and the application program and the queries submitted to the system.

The storage manager is responsible for the interaction with the file manager.

The storage manager translates the various DML statements into low-level file system Commands.

The storage manager components include the following:-

- Authorization and integrity manager
- Transaction Manager
- File Manager
- Buffer Manager

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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 state and allowing concurrent transaction to proceed without conflicting

File manager: manages the allocation of space on disk storage and the data structure used to represent information stored on disk

Buffer Manager: It is responsible for fetching the data from disk storage into main memory and deciding what data to cache in main memory.

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