



SNS COLLEGE OF ENGINEERING
Kurumbapalayam (Po), Coimbatore – 641 107



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING-IOT Including CS&BCT
UNIT-I

DATABASE SYSTEM ARCHITECTURE

A transaction is a collection of operations that performs a single logical function in a database application. 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.

Storage Management

- ✓ A storage manager is a program module that provides the 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 following tasks:
- ✓ Interaction with the file manager
- ✓ Efficient storing, retrieving, and Storage Management
- ✓ A storage manager is a program module that provides the 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 following tasks:
- ✓ Interaction with the file manager
- ✓ Efficient storing, retrieving, and updating of data Database Administrator
- ✓ Coordinates all the activities of the database system; the database administrator has a good understanding of the enterprise's information resources and needs:
- ✓ Schema definition
- ✓ Storage structure and access method definition
- ✓ Schema and physical organization modification
- ✓ Granting user authority to access the database
- ✓ Specifying integrity constraints
- ✓ Acting as liaison with users
- ✓ Monitoring performance and responding to changes in requirements Database Users

Users are differentiated by the way they expect to interact with the system.

- ✓ Application programmers: interact with system through DML calls.
- ✓ Sophisticated users - form requests in a database query language
- ✓ Specialized users - write specialized database applications that do not fit into the traditional data processing framework
- ✓ Naive users - invoke one of the permanent application programs that have been written previously

File manager

manages allocation of disk space and data structures used to represent information on disk.

Database manager



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The interface between low level data and application programs and queries.

Query processor

translates statements in a query language into low-level instructions the database manager understands. (May also attempt to find an equivalent but more efficient form.)

DML precompiler

converts DML statements embedded in an application program to normal procedure calls in a host language. The precompiler interacts with the 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. Great emphasis should be placed on developing a good design and efficient implementation of the dictionary.

Indices: provide fast access to data items holding particular values.



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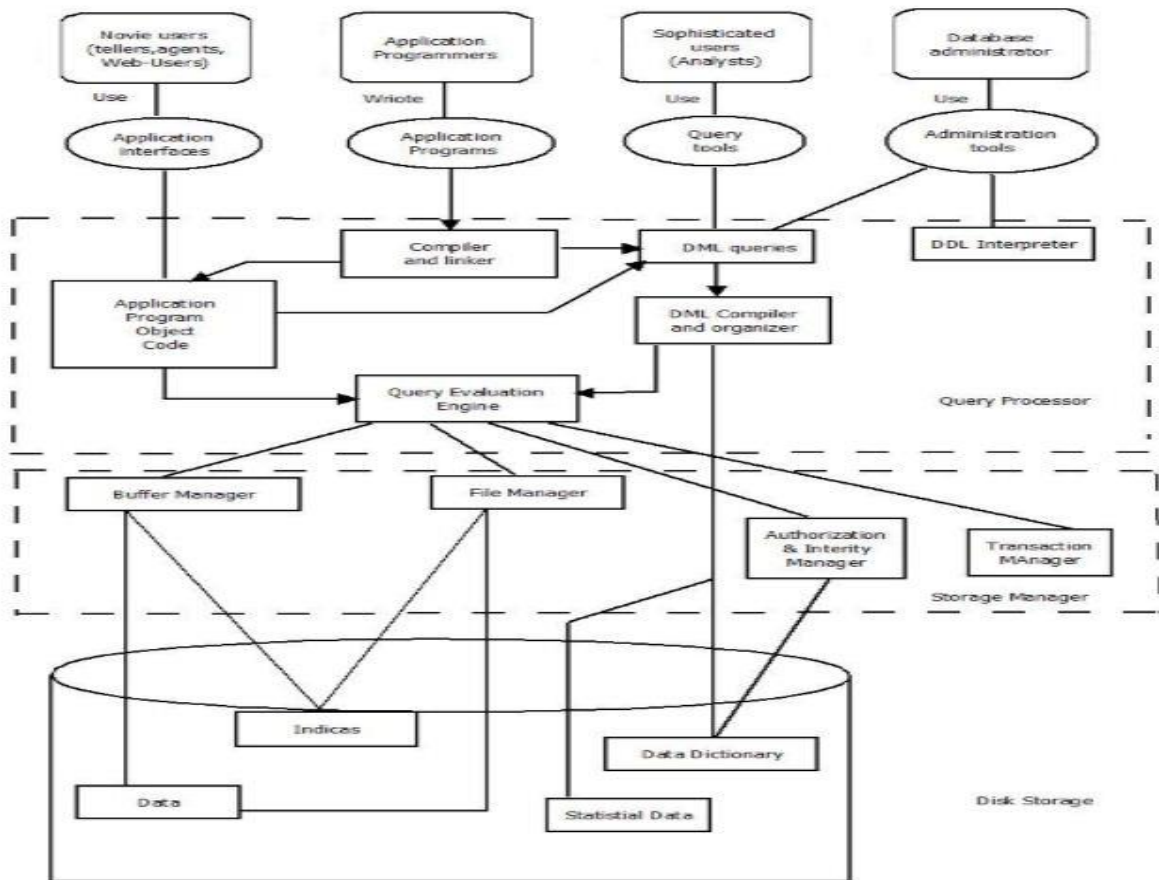


Fig1. Database System Architecture.



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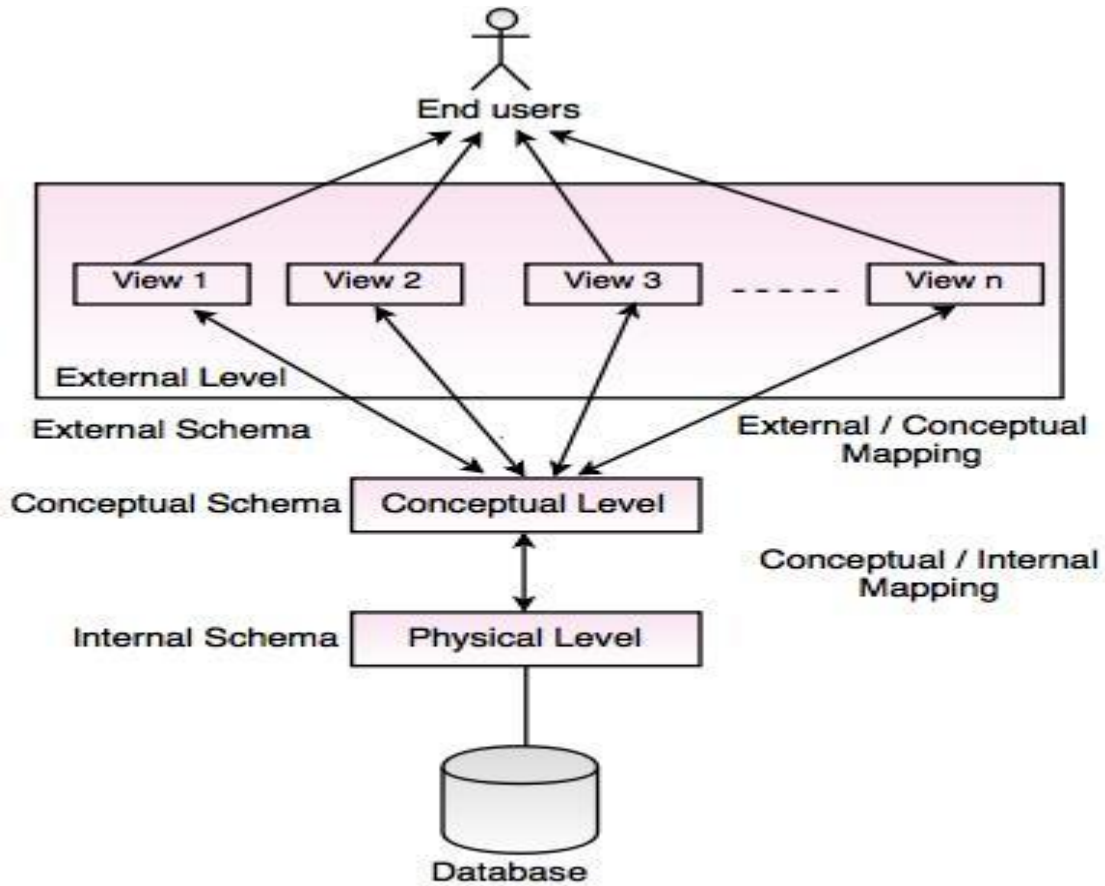


Fig. Three Level Architecture of DBMS

BASICS BUILDING BLOCKS

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