Bharathidasan University

Centre for Differently Abled Persons

Tiruchirappalli - 620024.

- Programme Name : Bachelor of Computer Applications
- Course Code : 23UCAEC04A
- Course Title : Database Management Systems
- Semester : IV
- Unit : Unit I
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Online
Computing
DBMS
****
Business

DATA STORAGE AND QUERYING

The DBS is partitioned into modules which deal with the responsibility of the overall system

The Functional components of the DBS can be divided into 2

(i). Storage Manager

(ii). Query Processor components

1. STORAGE MANAGER

- interface between the low-level data stored in the database and the application programs

The storage manager components include:

(i) Authorization and integrity manager:

- Satisfies integrity constraints and checks the authority of users to access data.

(ii) Transaction manager:

- Check that the database remains in a consistent state.

(iii) File manager

- manages the allocation of space on disk storage and the data structures used to represent information stored on disk.

(iv). Buffer manager:

Handle data that is bigger than main memory

(i) Data files, which store the database itself.

(ii) Data dictionary, which stores metadata about the structure of the database

(iii) Indices, which can provide fast access to data items.

2. QUERY PROCESSOR

Components:

i. DDL interpreter

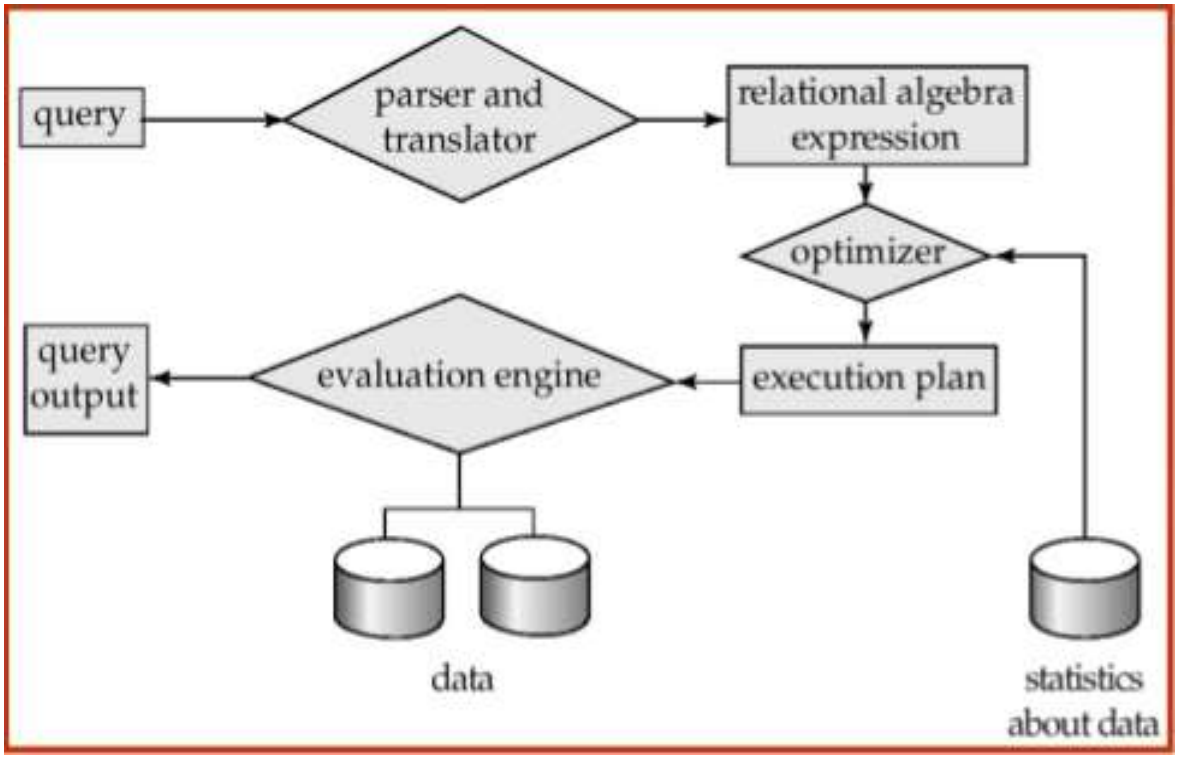
- Interprets DDL statements and records the definitions in the data dictionary.

ii. DML compiler

- Translates DML statements in a query language into low-level instruction

iii. Query evaluation engine

- executes low-level instructions generated by the DML compiler.




Database
Administrator
RBtech

Database Administrator

Creating, maintaining, querying, and tuning the database of the organization.

There are various types of DBA's including:

1. Administrative DBA:

- Maintain and run the databases and servers of the organization.

2. Development DBA:

- They work on developing SQL queries and stored procedures

3.Data Architect:

- They design schemas, build data structures, table indexes, and relationships.

4. Data Warehouse DBA:

-They merge data from numerous data sources and store them in a data warehouse.

The role of the DBA:

- Defining the Schema (திட்டம்)
- Defining Storage Structure and Access Method
- Defining Backup / Recovery Procedures

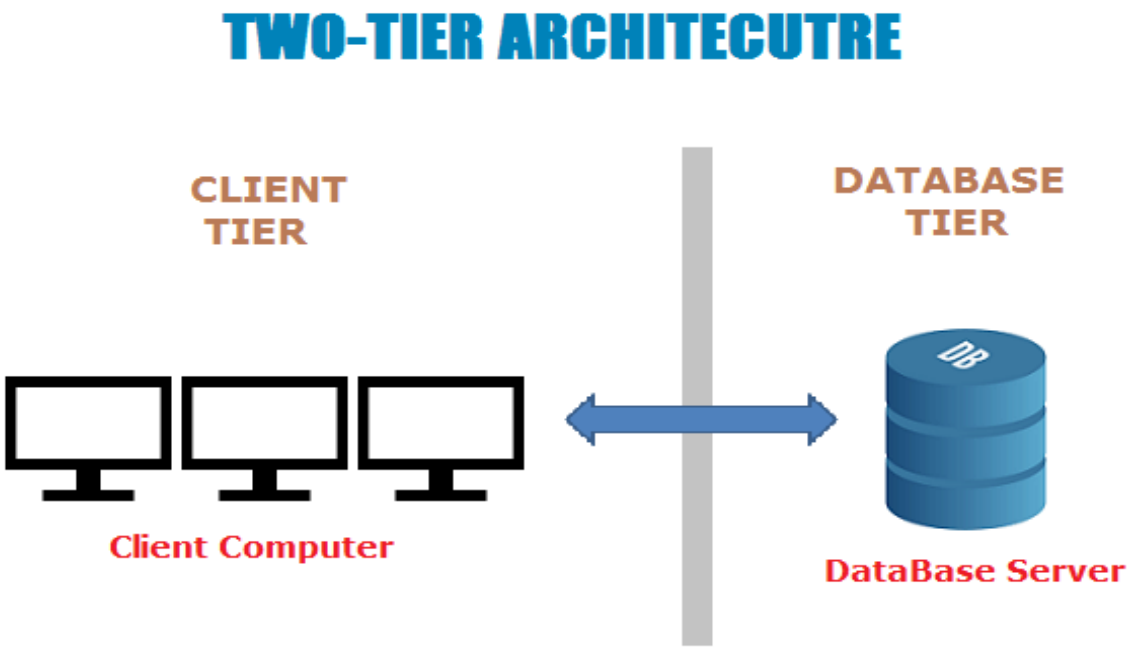

DATABASE ARCHITECTURE
BIG
DATA
WEB
BUSINESS
TECHNOLOGY
STOCK
SOFTWARE
INTERNET
CODE
SCIENCE
MEDIA
ANALYSIS
SERVICE
APP
FAST
INFORMATION
INFO
COMMUNICATION
MARKET
DIGITAL
ANALYTICS
FLOW
SYSTEM
MOBILE
DIAGRAM

DATABASE ARCHITECTURE

DB applications are partitioned into 2 or 3 parts:

1. Two-tier architecture

It is a Client – Server architecture

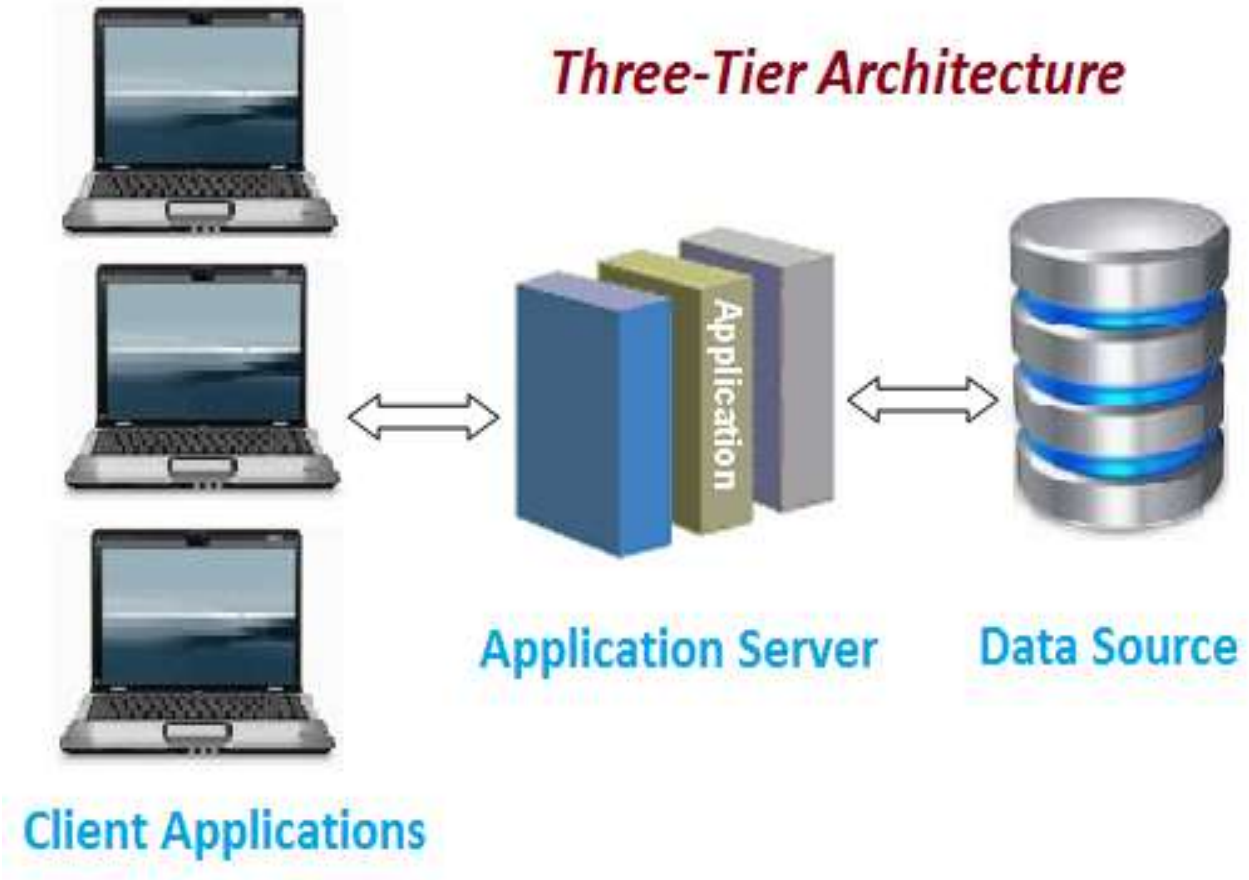


2. Three-tier architecture:

business logic is kept in server-side application

3-tier architecture has following layers

- Presentation layer (your PC, Tablet, Mobile
- Application layer (server)
- Database Server


Three-Tier Architecture
Application
Application Server
Data Source
Client Applications


DBMS
DBMS
DBMS
stands for
DataBase
Management
System

What is Database?

collection of inter-related data

- Insert new data
- retrieve old data
- delete data

Example: College Database.

What is DBMS?

- Database management system is software that is used to manage the database.

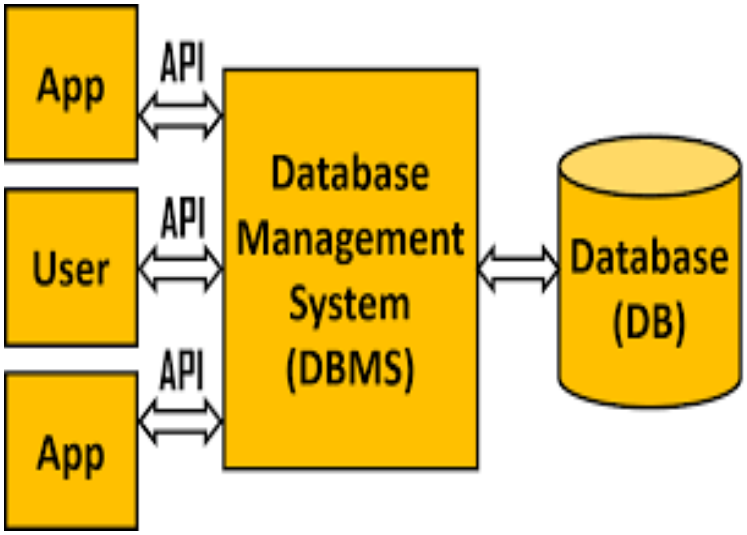
- It is a software tool to organize (create, retrieve, update, and manage) data in a database.

Drawback of file system

1. Data redundancy
2. Difficult in accessing data

Database Application

- Banking – all transaction
- Airlines – reservation, schedule.
- Universities – registration, grades



Characteristics of DBMS

1. Real world entity – used in real world
2. Relation based table - relation between the tables

Advantage of Database

1. It controls database redundancy and share among multiple users
2. It provides backup and recovery subsystem.

DATA DICTIONARY

Data dictionary consists of metadata

Metadata – data about data

It contains following information

- Name of the tables in the database
- Constraints of a table
- Owner and Columns of the tables
- Last updated and accessed information of the object

VIEW OF DATA

- provide users with an Abstract view of the data.

- Hides certain details of how data is stored and maintained

Data Abstraction

- developers hide the complexity from users through several levels of abstraction

Levels of Abstraction

1. Physical level:

describes how the data are actually stored

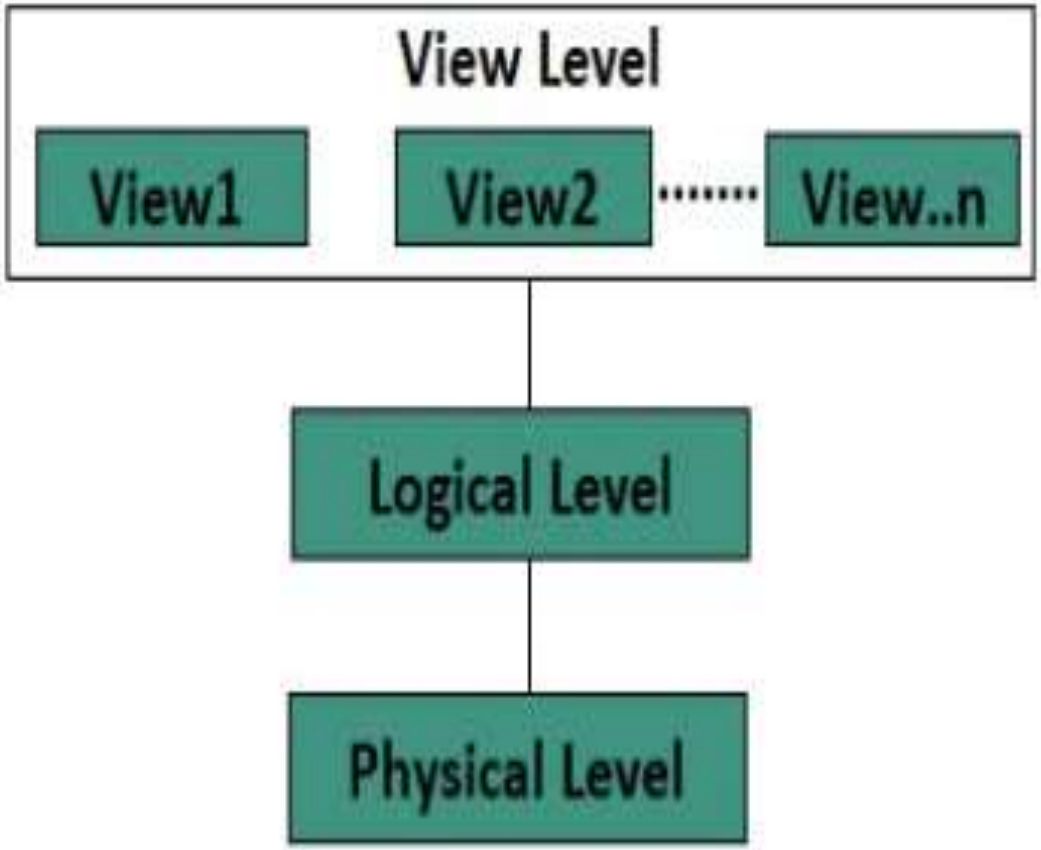
2. Logical level:

describes what data are stored in database, and the relationships among the data.

3. View level:

describes only the part of the entire dB

Example: ATM


View Level
View1
View2
.....
View..n
Logical Level
Physical Level

MAPPING CARDINALITY

Mapping Cardinality Constraints

- Express the number of entites to which another entity can be associated through a relationship set

  One to One

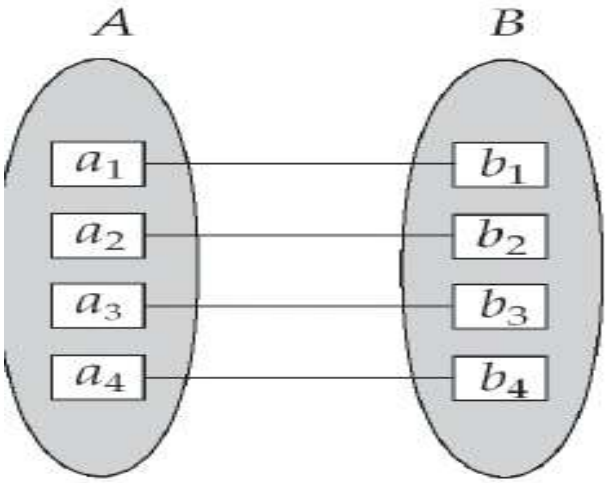
  One to Many

  Many to One

  Many to Many

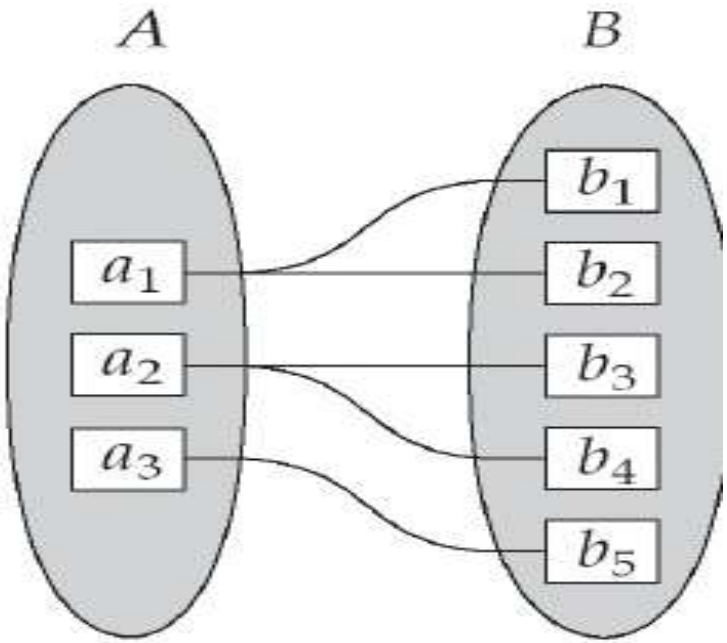
1. One to One

- In one-to-one mapping, an entity in element A is associated with one entity in element B.



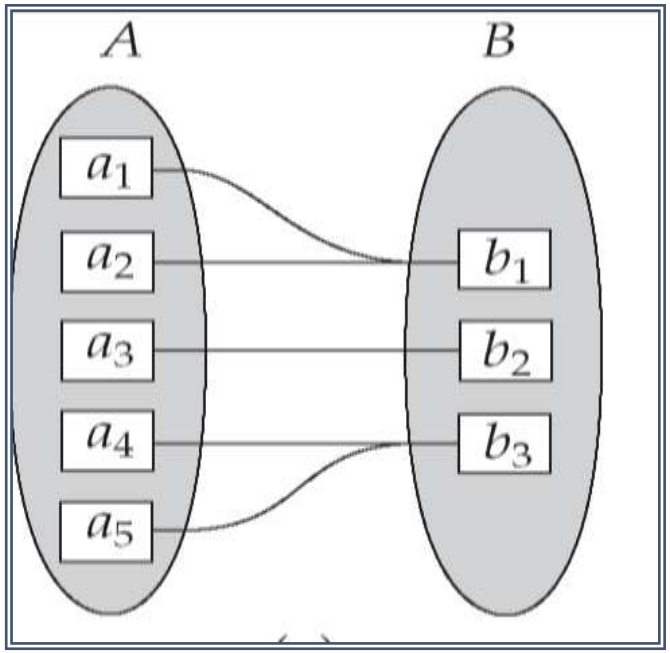
2. One to Many

- In one-to-many mapping, an entity in element A is associated with more entity in element B.



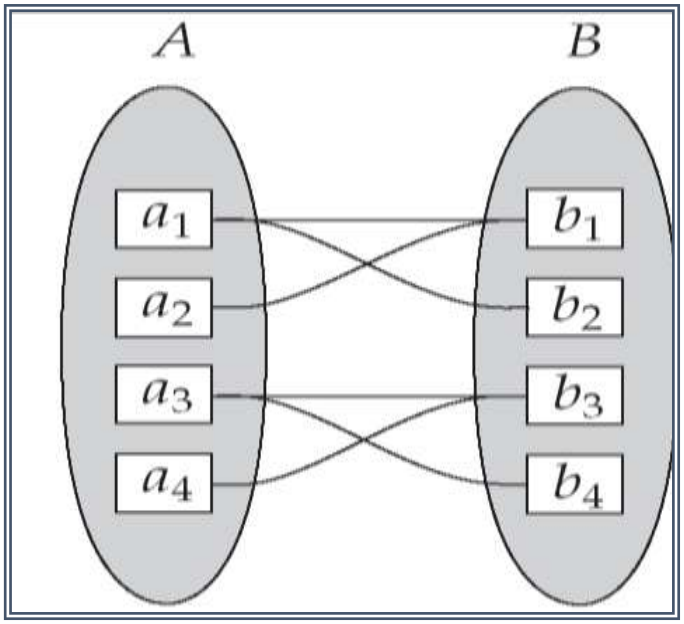
3. Many to One

- More than one entity in element A is mapped with one entity in element B



4. Many to Many

- More than one entity in element A is mapped with more than one entity in element B



THANK YOU