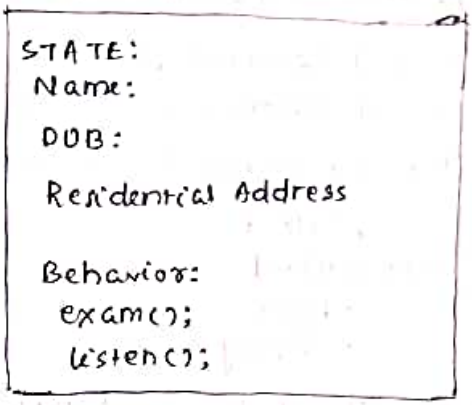
19.08.2023

## Object-oriented database/object database:

→ Object is a runtime entity.

→ An object-oriented database/object database is a database management system in which information is represented in the form of objects or data is stored in the form of objects which are the instances of a particular class.

→ An object has properties (we call it state) and methods (behavior) each object is identified using a unique object identifier.



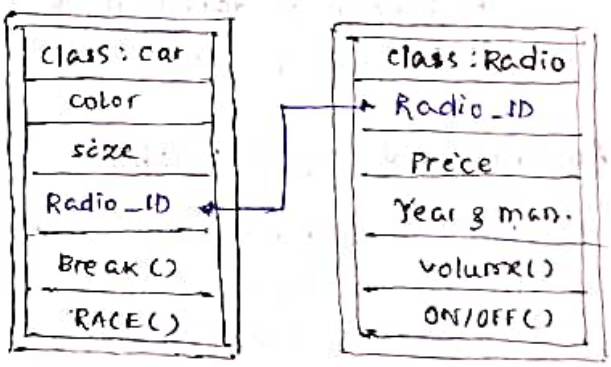

## Components of object-oriented database:

(i) **Object**: Object is a real time entity which have certain methods and behaviors and attributes; every object is uniquely identified in a particular environment.

(ii) **Method**: The behavior of the object is represented by using method. It represents a real world action such as finding a selected student's name, changing a student's name, calculating percentage etc...

(iii) **Class**: It is a collection of similar objects which share structure & behavior.

(iv) Inheritance

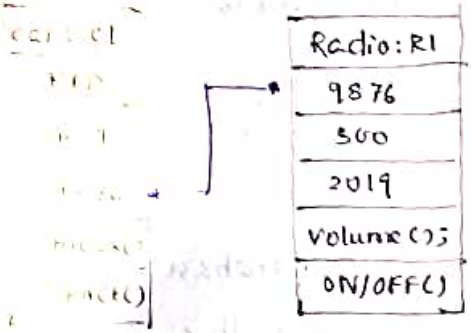



## Object relational database:

In object relational database, we will have to create classes & then we have to create a relation between the classes.

## Logical Database:

→ A logical database is a special type of advance business application & programming that is used to retrieve data from various tables and the data is interrelated to each other. A logical database provides a




→ It uses a hierarchical structure of tables. Its structures is organized in a tree like structure and the data is stored as records. They are connected to each other through edges or links.

→ Logical database contains open sql statements which are used to read data from the db

-2- (29.09.2023)

## Tasks of Logical Database

→ With the help of logical database we will read the same data from multiple programs.

→ A logical database defines the same user interface for multiple programs.

Logical database ensures the authorization checks for the centralized sensitive database.

## Data View of Logical Database:

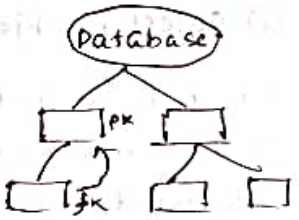
→ Logical database provides a particular view of logical database table.

→ Logical database is appropriately used when the structure of the database is large.

→ It is convenient to use flow i.e.

- Select
- Read
- Process
- display

then




- The data of logical database is hierarchical.
- The tables are related to each other using the foreign key relationship.

→ A logical database consists of logically related manner tables that are arranged in a hierarchical manner used for reading or retrieving data.

→ Logical db consists of three important elements (main):

a. Structure of db
b. Selection of data from db
c. Database program

## Advantages of Logical Database

→ We can select meaningful data from a large amount of data.

→ Logical database consists of central authorization which checks for database access is authorized or not.

## Disadvantages of Logical Database

→ Logical database takes more time when the required data is at the last. Then it takes more time to retrieve the data and thus it slows down the performance

## Web Database:

→ Web db is a system for storing and accessing information required for internet/webs.

- Web database is a system for storing and displaying information that is accessible from the internet/web.

or Web database is a system for storing information that can then be accessed by/via a website.

→ e.g.: Railway web database storing customer information.

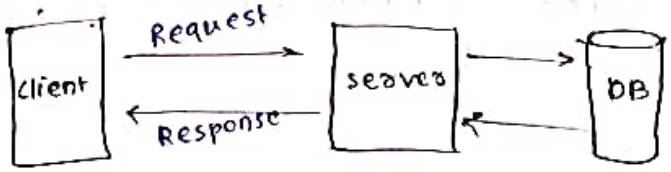
→ It consists of two types of access: 2-tier & 3-tier architecture.

In the client side certain programming language is used. (API) - server to communicate with db.

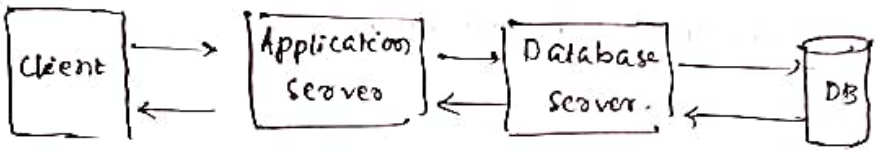
↓

includes a middle wire.

2-tier architecture




(2-tier arch.)




(3-tier arch.)

→ Clients are the computers that do not share any of its resources but request data and other services from the server computer.

& Server computer provides services to the client computer.

→ The user interface & application program are used to communicate with the database server.

- API - ODBC, JDBC - can be used by the client.
- Network is used for communication with the server.

3-tier Architecture

→ In 3-tier architecture, there is an intermediary level, meaning the architecture is generally split up between a client - that is the computer which requests the resources having a user interface for the presentation purpose.

→ The application server (aka middle layer) has the task of providing the requested resource, but by calling on another service.

→ The database server provides the application server with the data it requires.

→ e.g.: My SQL, Oracle, MS access etc--

Used: Banking System, Online shopping, Industry, Education

Advantages (of 2-tier model)

→ Direct & faster communication

→ Maintenance & understanding is easier

→ Compatible

Disadvantages (of 2-tier model)

→ Scalability i.e. it gives poor performance when there is a large no. of users.

→ Less secure as client can directly access the server.

Advantages (of 3-tier)

1. Enhance scalability due to distributed development of application server, now individual connection need not be made between client & server

2. Data integrity is maintained because there is a middle layer between client and server (Data corruption can be avoided/removed).

Disadvantages (of 3-tier)

1. Increase complexity it becomes difficult for these sort of interaction to take place due to presence of middle layer.

22.11.2023

(1-)

MJ

Define Data Model..
ER Diagram.. — show keys.

ACID properties.

centralized db
↳ bottleneck
decentralized
↳ fragmentation
replication

(4) Data Mining, Data Warehouse

exam: शनिवार

Q Construct an ER-diagram for car insurance company database: identify entities, attributes for each entity, relationship among entities. Represent necessary constraints in this database design process in details.

| Entities: | Attributes |
|---|---|
| Car | Model, Chasis no., Engine no., colour, capacity |
| Customer | first name, last name, ed, age |
| Insurance | Policy no., Expiry date, Amount |

Entity
Company
↳ customer info
damage response
(first party, third party