

Properties of Database (DB) :-

1. Self Explanation.
2. Independence of data and Program.
3. Support for multiple users.
4. Support for multiple users.

file.txt / file.mps.
↑
file type.

fopen ("file.txt", "mode")

for text files

modes {
r → read.
w → write (overwritten)
a → append (at the end)
r+ → read and write (won't create a file that does)
w+ → read & write (^{not exists} would)
a+ → read and write (" " (at the end))

for binary files.

rb
wb
ab
rb+
wb+
ab+

} same functionality as for text files.

- fopen returns file pointer.
- data type of file pointer is FILE

FILE *f;

f = fopen ("file.txt", "mode");
close(f);

→ `getc`
`putc` } r/w a char
`getw` } character.
`putw` } integer.
`fscanf` (`f`, "`%d`")
`fprintf` (`f`, "`%d`", `k`)
`fseek`
`tell`
`rewind`
`gets` } r/w a string.
`puts`

`(f, c)`
 ↓
 file ptr → where to put value.

`gets (s, fp)`
 ↓
 string/value that you want to get.
 or
 string variable.
 ↓
 file pointer.
 ↓
 no. of bytes.

`gets (s, x, fp)`
 ↓
 string variable.
 ↓
 no. of ~~bits~~ bytes.
 ↓
 file ptr.
 ↓
 Stores x characters from where the file pointer is to the variable s.

1. `getc (s, fp)`
 stores a character where the file pointer is to variable s (of char type)

`fseek` → helps us to change positⁿ of file pointer.

~~`fseek (fp, 2)`~~
 moves the fp ahead by 2 bytes.

$fseek(fp, x, SEEK_SET)$ → pointer will be at start

$SEEK_CUR$ → pointer will be at current posⁿ

$SEEK_END$ → pointer will be at end. Here.

to move forward → put x positive.

to move backward → put x negative

अगर $SEEK_END$ है तो एड्रेस को $SEEK_END$ से बढ़ाना
wanna Happen.

x is no. of bytes.

In case of any other data type or structure.
Let A

to move ahead by x records of type A.
you need to write $x * \text{Size of (A)}$.

Basically $fseek$ sets the fp to a required position of our choice. and then if

eg. file.txt has Hello world.

after moving fp ahead by 6 bytes.

i.e. if fp is pointing to w.

by the use of $fseek$.

and now if we ~~write puts~~
write India with help of puts
we will get.

Hello India.

Basically rewriting will take place.

forward. keeps the fp to start position.

Q1 In a single file. try to have all these four records.

Student (Name, Roll no, Branch, Seat no.)

Course (Title Course No., Dept, Credit)

Section (Section No, Course, Sem, Year, Faculty)

Grade (Roll no, course No, Grade)

Consider a file having student details only.

Q2 If on the basis of Roll no. you want to get fetch whole record, how you wanna do that?

Q3 What is Ram's branch? who teaches IDBMS in Section 2.

who teaches IDBMS in Section 2?

what is Ram's grade for IDBMS?

who taught IDBMS to Ram?

Queries like who got highest marks and all can also be there.

1. Networked Systems.

1. Persistence of data.
2. Redundancy.
3. Unauthorized access.
4. Querying.
5. Backup and recovery.
6. Multiple users accessing data.
7. Representing relationship among data.

8) Integrity constraints.

9) Procedures - Inference.

used - triggers, stored procedures, stored functions.

10) Deduction.

need to be called.

used - triggers

Side effects :-

1) Enforcing standard DBA

2) Reduction in coding time

3) Flexibility.

② Relational Database

80% or more are relational DB

③ Object oriented DB.

④ graph DB.

Data Independence.

Data models.

Type of data.

Size

Constraints

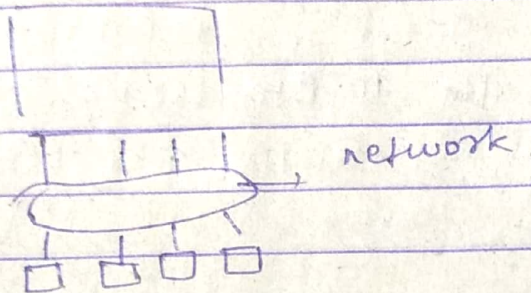
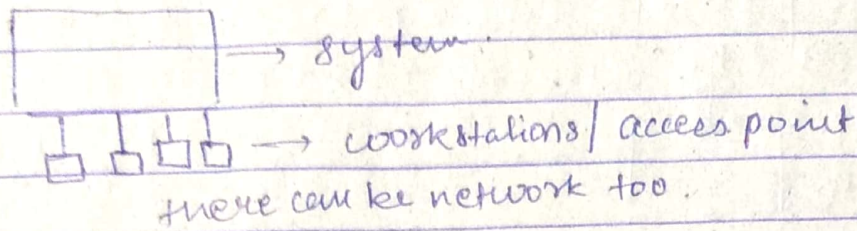
} high level model.

Storage strategy. } low level model.

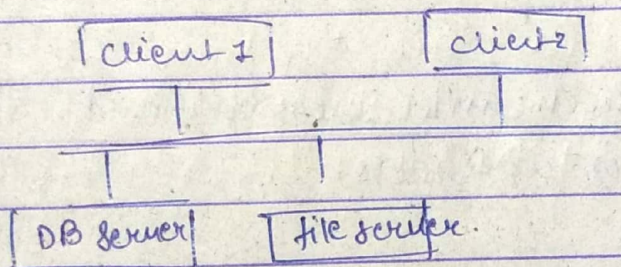
SR Diagrams.

Architecture

→ centralised.

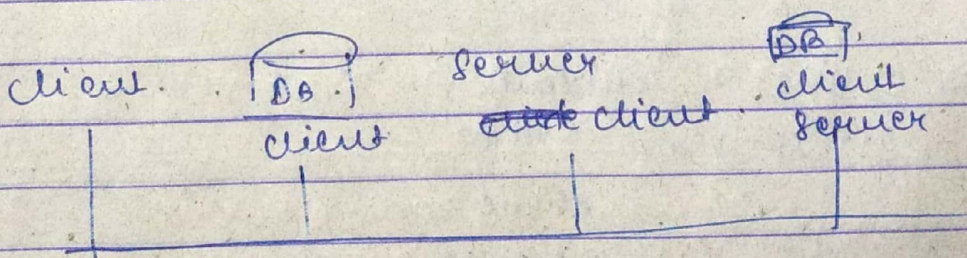


→ Client Server Architecture.



Here servers are also distributed ^{per. one} but in centralised.

→ 2 Tier client server.

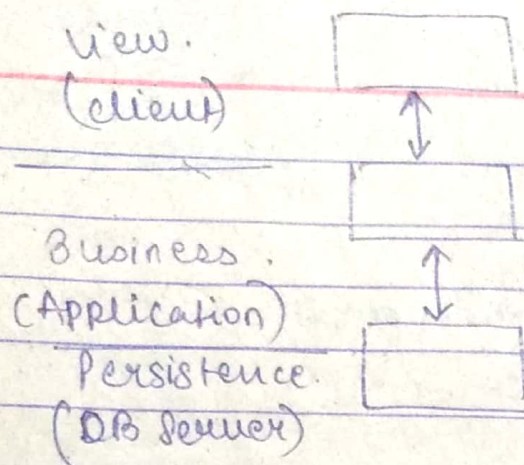


→ 3 Tier Client server

this can be extended to n-tier architecture.

we can make this by making as many independent layers we can

also. MVC
(Model view controller)



! client server cannot talk to DB server directly.

→ Cloud.

Entity-Relationships Model.

data → something which can be measured and recorded. and is verifiable.

entity →

Relationship →

(entity → entity → Student
attributes → Roll no
phone
Address
Name

unique

[Rollno]

[Name]

[Student]

[Address]

[Phone No]

unique

entity

attributes

If any attribute is unique for an entity, then that attribute is called key attribute (eg. roll no, phone no).
For an entity, there can be more than one key attribute.

eg. A student can have more than one phone no.

In this case too phone no. is key attribute. bcoz each phone no. uniquely identifies each entry.

Hence here phone no. is multivalued attribute as well as key attribute.

Representation of multi valued attribute.

eg. Phone No { ---, ---, --- }

in curly braces

Stored Attribute

DOB

Marks

Derived Attribute

Age

Grade

i.e., we can find Derived Attribute with the help of Stored attribute.

Complex Attributes :-

Value set.

Entity set.

- A database represents some aspect of the real world, sometimes called the mineworld or the universe of discourse (UOD). Changes to the mineworld are reflected in the database.
- DBMS → collection of programs that enables users to create and maintain database. A DBMS is general purpose software system that facilitates the process of defining, constructing, manipulating and sharing databases among various users and applications.
- Defining a database involves specifying the data types, structures and constraints of the data to be stored in the database. The DB defⁿ or descriptive info. is all stored in DB in the form of DB catalog or dictionary called meta-data.

Simplified
Database
system
environment

