DBMS

→ Basic introduction
  ↳ Defi^n
  ↳ 2 tier, 3 tier Architecture

3 Schema, 3 level of Abstraction

↓

Data independence

Schema - a logical representation of data that shows how the data in a database should be stored logically.

↳ What are the various data model to store the database?

1. Network.
2. Heirarchical
3. Relational → store data in table form
4. ER - imp. topic
5. object oriented

(2 basic, structure; How to store data, How to show relationship)

imp

→ E-R Model (Conceptual schema)

Blueprint ER model

1. Attributes
2. Relationship

↓

types of Relationship

→ Basics of keys

↳ primary key
↳ candidate
↳ super key
↳ Foreign key

→ Normalization
1. closure method
2. Functional Dependancy
3. 1 NF, 2 NF, 3 NF, BCNF

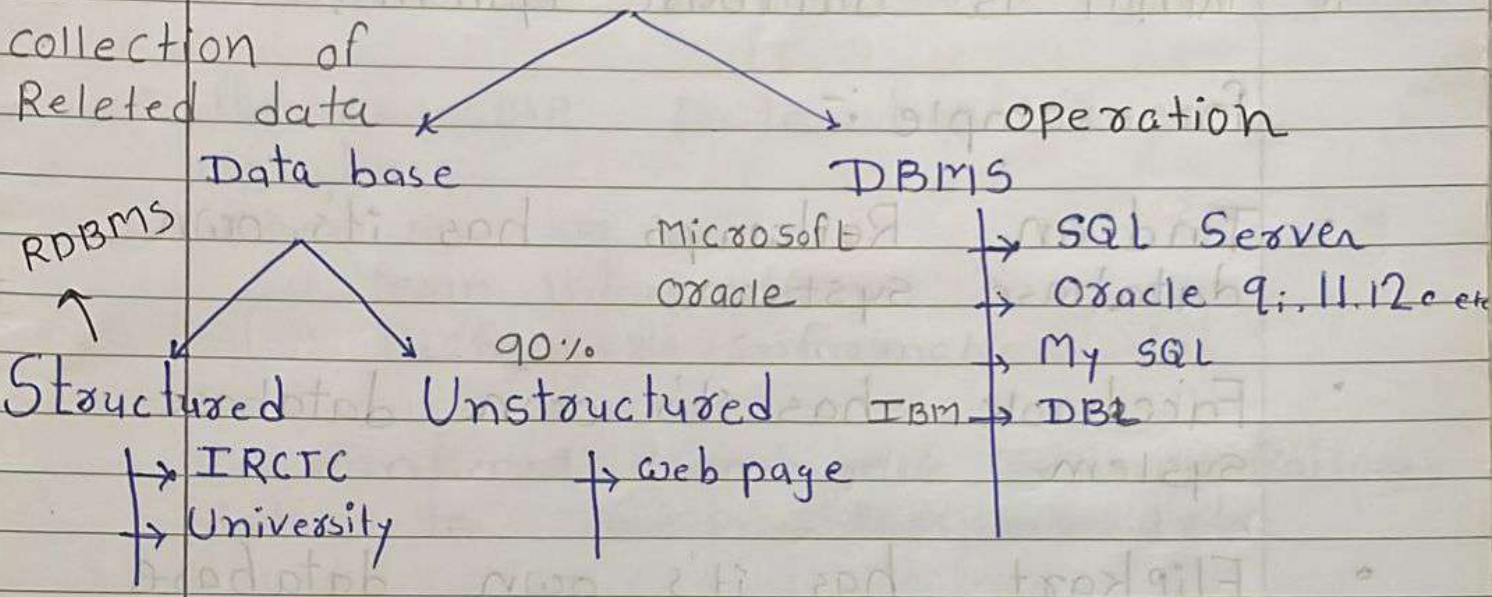
→ Transaction control & Concurency
1. ACID
2. R-W W-R, W-W
3. Conflict serializability

→ SQL and Relational algebra

DDL
DML
DCL
constraint
Aggregate fun
Join
Nested Query

DBMS

Database System



* all the top companies the major MNC Companies,
  - Face book
  - Google
  - Amazon

All this work is going on the Database

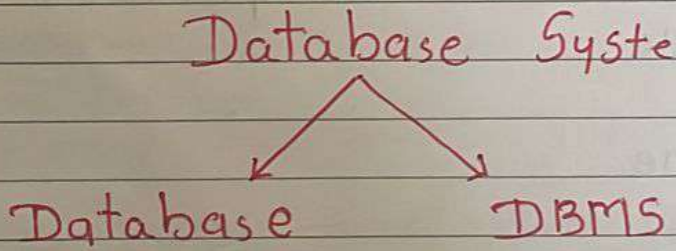
From the interview point of view very imp.

1. Database System

* What is database system?

for example :-

- Indian Railways has it's own database system.
- Facebook has it's own database system
- Flipkart has it's own database system.



Database system has 2 terms
- Database
- DBMS

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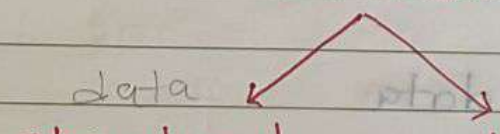
* Database

* What is database ?

→ database is collection of related data

- for example irctc has it's own database
  when we log in
  - Train information
  - Passengers information

we can not combine Indian Railway data to Indian Passport data



① Structured

What is structured ?

- such database which I can store in any particular shape or in particular structure.

example :- IRCTC data, University data. } Particular Structure

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* which structures are used for structure data base

RDBMS (Relational database management system)

* DBMS

(database management system)

we save data in back end in hard drive server

- what we will do with this data ?

user fetch this data
- update
- insert
- delete

on an average perform operation insertation, deletion, update

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To, Perform these all the operation we do have system.

So, that system we called DBMS

DBMS have collection of operation which provide easiness to the user
So, user can easily perform operation

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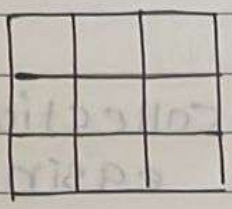
* Structured data

- to store the data we need structure and that structure is relation

Relation
↓
table



- differen method but most usuable method is Relation table.

Now when I am storing the data in the form of relation then I also need some management system.
example : IRCTC

* RDBMS

(Relational Database management system)

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* Unstructured data
- no predefine structure for store data.

Media, audio, web pages, images

File Vs DBMS

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* What was the problem in that system did, which was removed by DBMS

↳ what are the advantage in DBMS that is remove old system

in 1970

how to access the data there,

user manage data by using file system.

In OS Inbuilt file system such as CIFS, NFS file system is used.

We & can create file sub folder and make a hirachy to store data.

* But, why we are using DBS?

Because we are now using the client server architecture.

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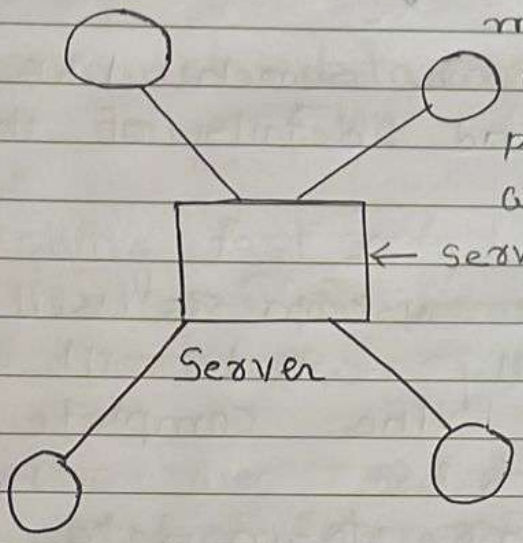
client server architecture means my data is not only with me I am not only accessing my data my data is at a centralized location and all over the world user are using that data



Note:- when all over the world user use and trying to access this data at that time we can not use file system.

Reason

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System vs DBMS

1) When we search the data
eg. like IRCTC

if we searching a train in IRCTC

1 KB we search 1 KB data
i have to find details of the particular train

↳ if the file system is used there then actually what will happen, I will get the complete file.
which files ?
↳ file of entire train data.

I just want to search 1 KB of data but how much data is coming to me,

25 GB

25 GB is coming in my system

↳ Unnecessarily memory is being used.

and I have to search 1KB data

complex thing.

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DBMS

↳ Your 25 GB data is with the server

Now what user will do?
↳ write a query
on the basis of that query

how much data will come to him only 1 KB.

- Searching fast
- Utilization of memory is also efficient

2> whenever we search the data by file system we require Attribute.
need
↳ file name
↳ file location
↳ file permission

Attributes that I am accessing data,
I need meta data of that data first.
when I'll get meta dat
c:/folder.

We need this location

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DBMS

↳ But in DBMS we don't need any location it is totally independent.

user don't know where the data is located.

↳ user will write one query by using any platform
can be web appln

IRCIC → open
send request
and that request goes to the Server
and server respond to to request.

for request we don't need any attribute to respond.

- Means DBMS providing easness

3) Concurrency ?

What is concurrency ?
↳ Concurent Access

multiple people at the same time Accessing the data

eg. IRCTC

if we are accessing indian Railways booking a train,

You are alone using IRCTC ?
NO,

Somany transaction are going on at a time
at this ~~tim~~ time so many user using or accessing the data is called the concurrency.

there is no protocol in file system

inconsistancy dye to concurrency

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DBMS

↳ But DBMS provide the proper protocol

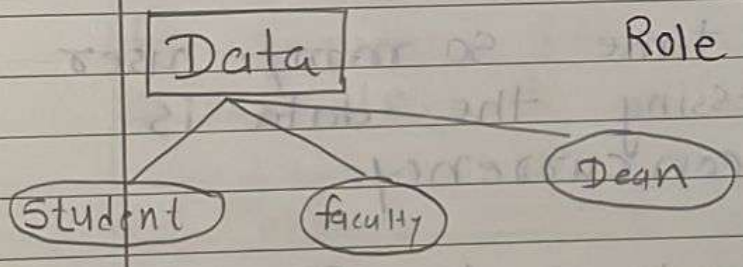
RR → np
RW → P
WR → P
WW → P

} this topic covered in transaction control and concurrency

4) Security → Role base

if I am accessing a data then any one can access this data

eg. University
student Pro Dean



Role base access control

DBMS provide security But there is no security in file based system

who handle file system?
↓
OS

there is no level by level security

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⑤ Data Redudancy

Redudancy ?
↳ data duplicacy

i Stroe data in file
Same data 4 time

eg. Excell
1 Ram
1 Ram
1 Ram

OS check 1 file save 2 time with same name
multiple file with diff name we can store
But content will be the same

DBMS
↳
there is lot of constraints
primary key
foreign key
data integrity

ensure that data is not redundant
I can store unique data