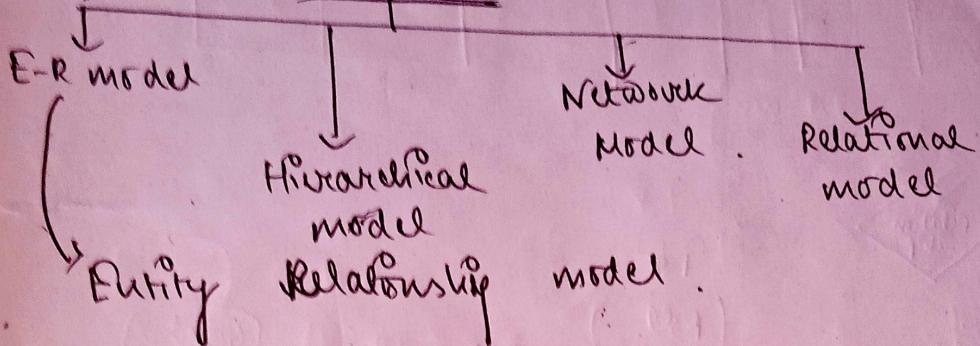


Date : - 20.10.21

Ch-7

Data Model



{ → Entity / Table

{ → attribute / ~~row~~ column

Strong → Relationship

→ Weak entity

→ Weak attribute

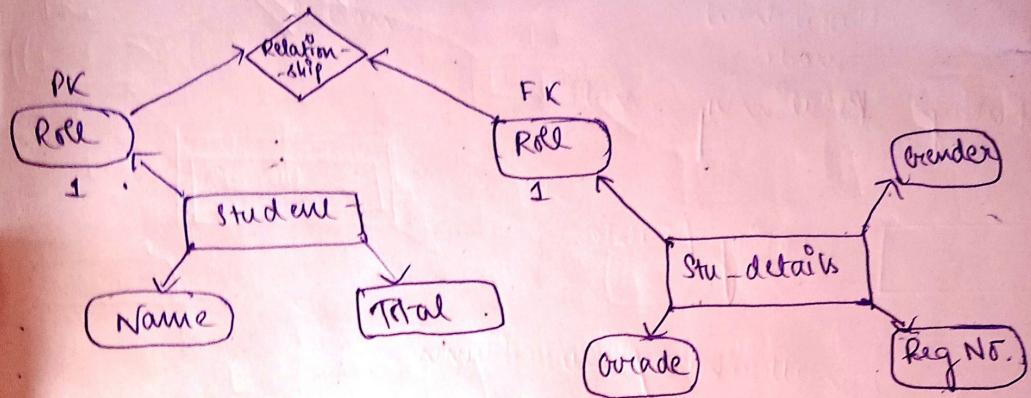
→ Weak relationship

↓ → Connector

ans

Student -		
Roll	Name	Total

Stu. details, PK			
Grade	Reg. No.	Gender	Roll



E-R Model of Student & Stu-details Table

Strong relationship
Strong Parity :- Within a DBMS system, minimum two relations are required, ~~the~~ within the first table primary key must be present - and in the second table foreign key must be present - to connect between two relations. When the above condition is satisfied, then this type of relationship is known as strong relationship.

Within a DBMS relation, if primary key is present - then the table or entity is known as strong entity.

Role				

Strong attribute :- Within a DBMS relation, the attribute or column which has primary key is known as strong attribute.

E-R Model :-

Advantages :-

- 1:1 relationship can be implemented.
- If new column or node is added to the model, the structure will not be complicated.

Disadvantage :-

- 1:M and M:N relationship can't be implemented in this relation.

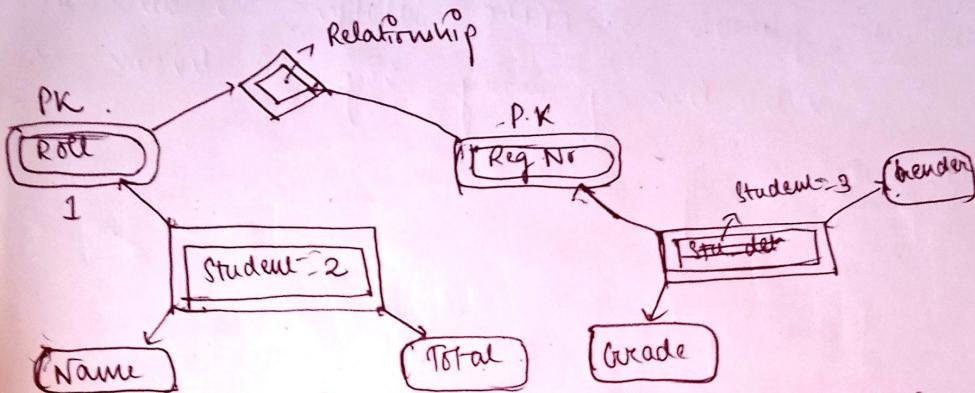
Hyp

P.K. Student-2

Role	Name	Total

Student-3

Grade	Reg. Nr	Gender



E-R Model of Student-2 and Student-3
(Weak Relationship)

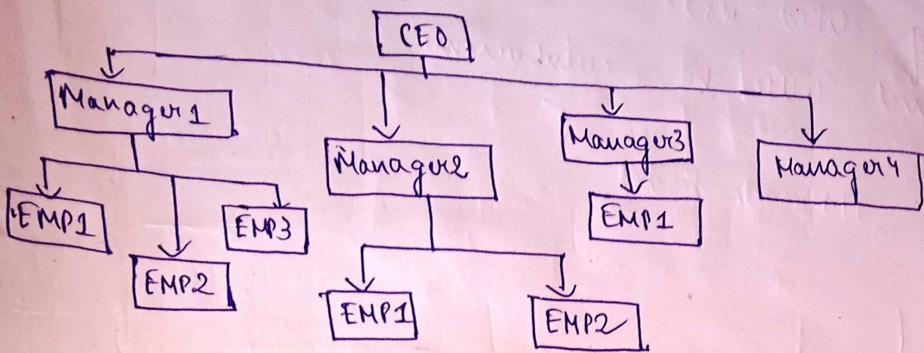
Weak Relationship :- Within DBMS system, if two tables have only primary key but there is no foreign key present in any of the table, then we have to create a relationship between those two tables where only primary key exists. This type of relationship is known as weak relationship.

Weak entity :- If there is no primary key present within a table, then the entity or table is known as weak entity.

Weak attribute :- If there is no primary key present with a given table, but a specific column should have primary key, then that column is

known as weak attribute / column.

Hierarchical Model



C \rightarrow M1 \rightarrow EMP1 \rightarrow M-L-I

C \rightarrow M2 \rightarrow EMP2 \rightarrow M-L-I

C \rightarrow M3 \rightarrow EMP1 \rightarrow M-L-I

CEO : All manager = 1:M

CEO : Manager1 = 1:1

CEO : Manager2 = 1:1

CEO : Manager3 = 1:1

CEO : Manager4 = 1:1

Manager1 : Emp3 = S-L-I

Manager1 : Emp2 = S-L-I

Manager1 : Emp1 = S-L-I

CEO : All manager = H-I

Hierarchical Model

Advantages :-

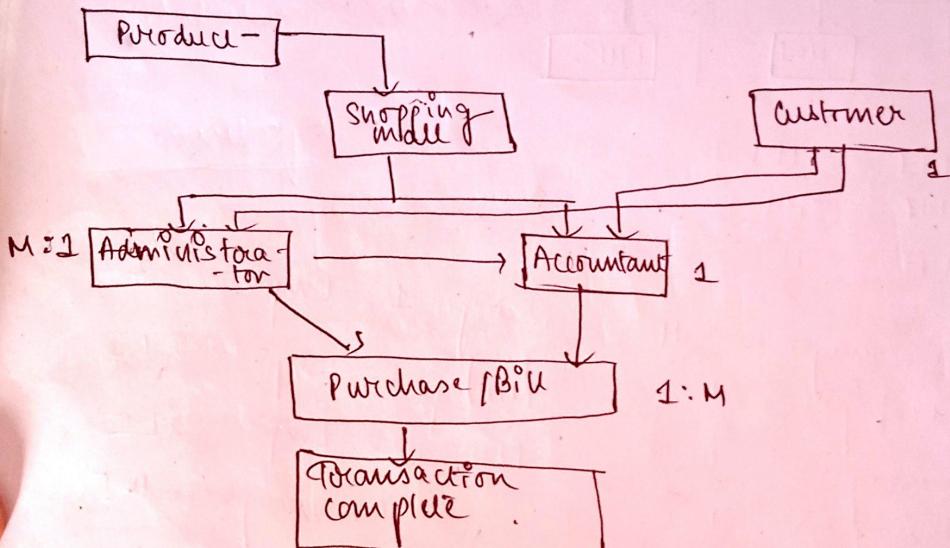
- 1:1 and 1:M relationship can be implemented in this model.
- S-L-I, M-L-I and H-I can be present within this model.

Disadvantages :-

- M:N relationship can't be implemented within this model.

- It is difficult to implement because it is a complex ~~tree~~ tree structure
- Search of child node is slower than parent node and little bit cumbersome

Network Model



Customer : Administrator \rightarrow 1:1

Customer : ~~Administrator~~ Administrator : Accountant \rightarrow 1:M
(M-1-I)

Administrator : Accountant : Purchase \rightarrow M:1.
(M-I)

Multiple customer : Multiple Administrator \rightarrow M:N

Advantage :-

- 1:1, 1:M, M:N relationship can be implemented
- All type of inheritance like S.I.P., M-L-I, M:2
- H.P. can be implemented.

Disadvantage :-

- It is difficult to implement.
- It is costly because many servers can be there.

DBMS

The software through which we can store the data on the database within a particular area, retrieve or fetch the data, search the data as well as insert or delete any data is known as DBMS. Ex → Oracle, MySQL, SQL Server, DB2, DBase, MS Access, FoxPro, FoxBase.

Oracle → user friendly + secure

MySQL → user friendly + open source

SQL Server → user friendly + Microsoft

{ DB2 } → IBM

{ DBase } → Microsoft + secured

MS Access → Microsoft + secured

FoxPro → Microsoft + secured

Foxbase → obsolete

Foxbase → obsolete

FoxPro, MS Access

Advantages of DBMS :-

- By using DBMS, security and privacy can be maintained.
- Redundant/duplicate data can't be stored within DBMS system.

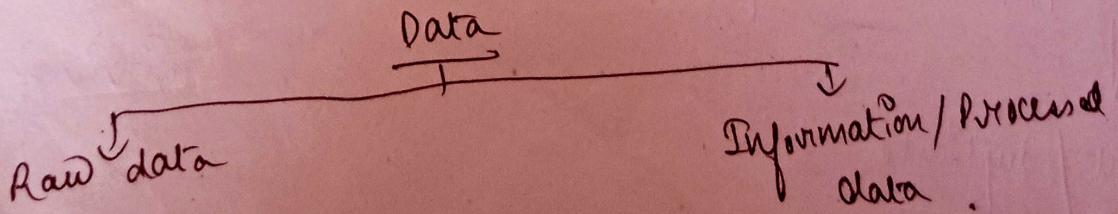
Advantages

- At a given time, many user can access the database.
(Multi-user can access the database as per the authorization given).

- Restore and backup of any data within a database can be more user-friendly by using DBMS.
- Update, add, delete or select of any data within a database is more fruitful.

Disadvantages :-

- As DBMS software must be stored in a computer, which has to be more powerful RAM, processor, paid software has to be installed within the server that's why it is more costly.
- As the server maintains centrally, so if any problem occurs, it will take time to solve.
- To maintain the server, expert - programmer & system administrator are required.
- To maintain and update the database server is little ~~little~~ bit cumbersome.



Data :- The relevant information of specific type is called data.

Raw data :- The unprocessed data of a DBMS system is known as raw data. Example :- 19/11/2001

Processed data :- The processed, meaningful data of a DBMS system is known as processed data.

Example :- 19-11-2001

Meta data :- The data about data or description of data is known as metadata.

Roll	Name	Total
1	Puskar	450
2	Anurita	470
3	Dipti	501

'Name' column is data and within the name column string/text/variable character is stored.

So it is metadata.

Property of an attribute is known as domain.
Here 'Roll' and 'Total' consist of number. So its domain is int-number.

'Name' → consists of 'text' / 'varchar', which is the domain.

Data Dictionary :- Within the DBMS system, the basic organization to define the data in sorted form. Is known as data dictionary.

Data control language (DCL) :-

1) Create :- This query is used to access the privilege of the data to the user.

2) Revoke :- This query is used to lock the permission for the user so that the user can't access the data.

3) Call back :- To undo the previous command, this query is used.

Roll back :- This query is used to execute the previous command. (Redo)

Schema (table) :- Description of database is known as schema.

create table student -

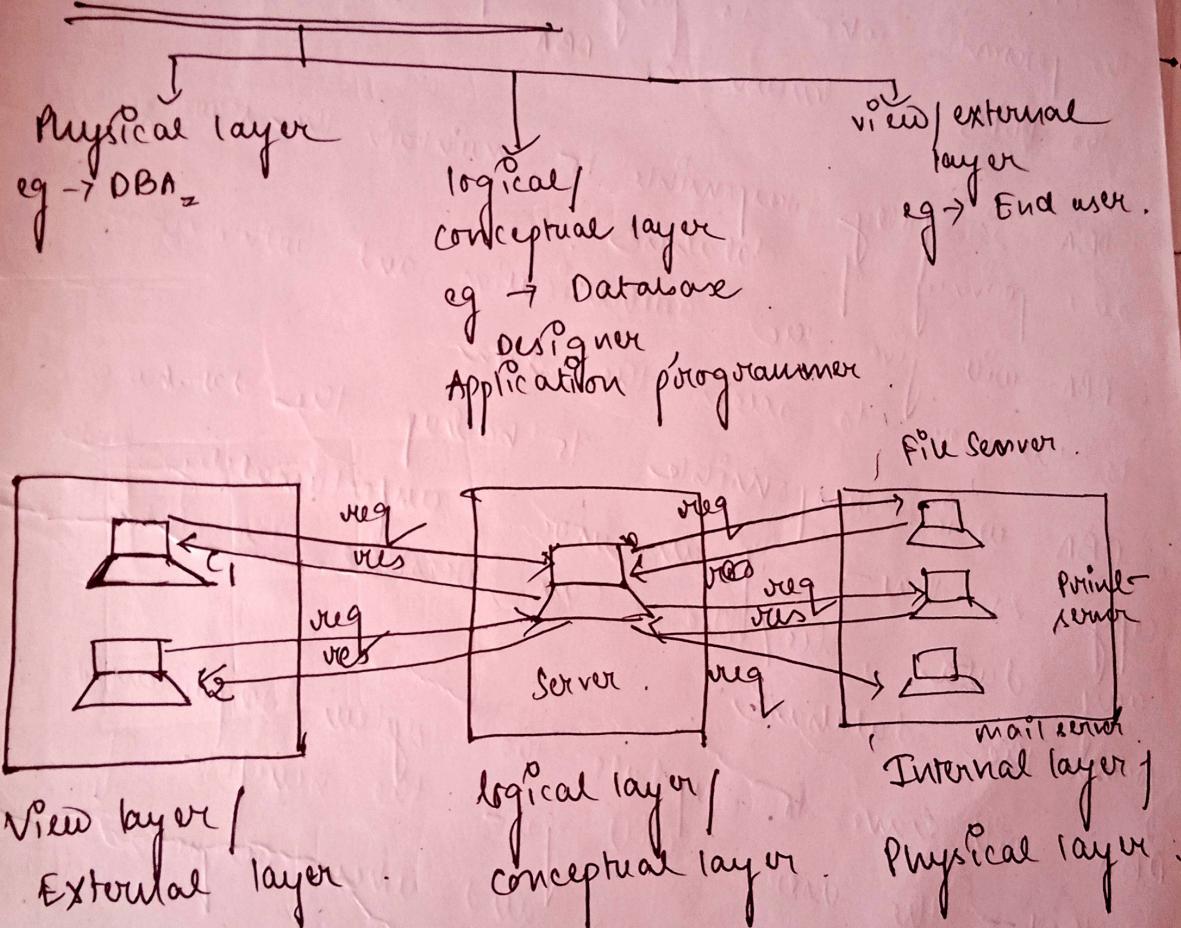
;

;

desc student ;
to show the description of schema.

Database Instance :- Within a specific time period, to make a relationship among all the elements in DBMS and its database state is known as database instance. Ex → same example of ER model (Table is actually the instance).

④ Three-Schema architecture.



Database designer :- ~~He~~ plans to create the schema (table of the database)

Application programmer :- ~~He~~ will make the application per our requirement.

- from software as

End user :- End user will use the database / application software to add ~~and~~ new data, edit the data, fetch/retrieve the data and delete the data as per our requirement.

* DBA :-

Database Administrator

The person who is fully responsible to maintain the DBMS is known as DBA.

- DBA is fully responsible to maintain the security and privacy of database.
- DBA will give the authentication and authorization to the user to access the data.
- DBA is responsible to backup the database copy, so that if an user can unfortunately delete or restore the data from the database.
- DBA will have to update the system requirement so that the user will get updating a software as and when required.