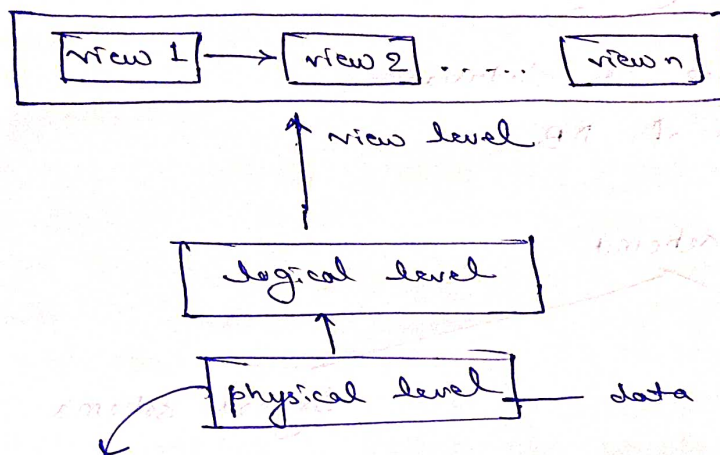


Abstract data -



administrator - decides if the data should be centralized or distributed.

- keeps data in physical level and controls everything

logical level - what data is stored and to how much data is stored

- administrator abstracts data from logical level

view level - user oriented. how the data should be shown to each user depending on the authority of the user

Logical data independence - change in logical level doesn't reflect in view level

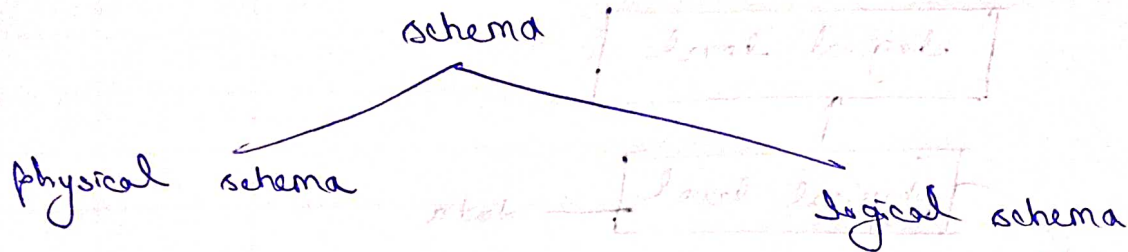
i.e. data entity and data attributes.

Physical data independence - physical data change

Should not affect view or logical level. ex - type of storage i.e. queue, stack.

Schema and Instance :-

- logical structure of database
- overall design of DB



↳ B-tree, B+ tree

↳ tabular form

↳ no. of rows, column

↳ name of rows & columns

instance - the collection of information stored in a database at a particular moment.

schema - description of DB, which is specified during DB design and isn't expected to change frequently.

DDL

DML

create DB schema and also
define constraints

used to delete, update the
data in DB.

creates and defines columns

update one or two rows at
a time

commands :

create
alter
drop
rename
truncate

commands :

retrieve
select
insert
update
delete

DCL → data control language

grant : grant permissions

revoke : revoke permissions

constraints:

primary key
foreign key

unique

not null

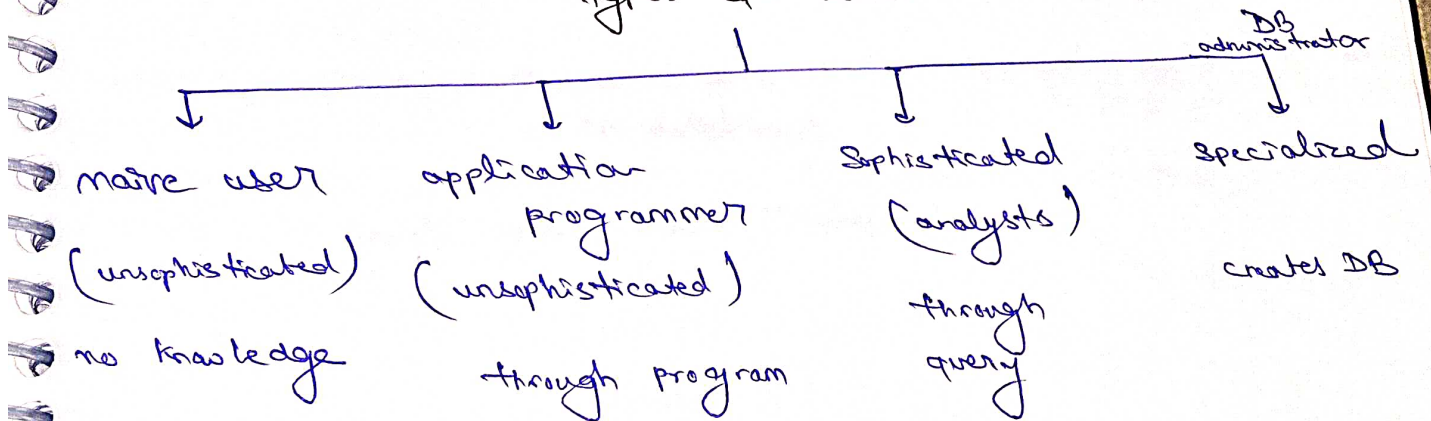
TCL → transaction control language

commit

roll back

Save point

types of users



Responsibilities of DBA -

- installation, upgrade, administration, monitoring, securing
- development and design of DB strategies
- system monitoring
- improving performance and capacity
- planning for future expansion

DML compiler → optimisation also occur

buffer manager → fetching data from disk to main

↳ manages which ^{memory} data is cached in main memory

file manager → manages the data stored in disc

transaction manager → ensure database remains in stable state despite of any conflict or failure

↓
ensures consistency of state

storage manager → storing, retrieving and updating data in database

Three levels of data independence

i) physical

ii) logical

iii) user

29/March

Data models →

1. Entity - relationship model : used to represent entity set along with their relation and attributes.

entity : real world object that are distinguishable from others

entity set : group of entities

attributes : characteristics / properties of entities

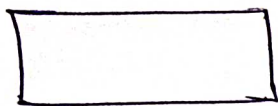
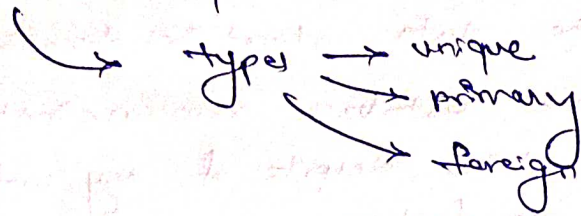
domain : unique set of values given to an attribute

relationship : association of two or more entities

relationship set : set of similar relationships

- relationship is used to represent entity set along with their relation and attributes.

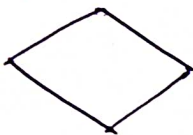
key : an attribute or set of attributes which is unique.



entity



attribute



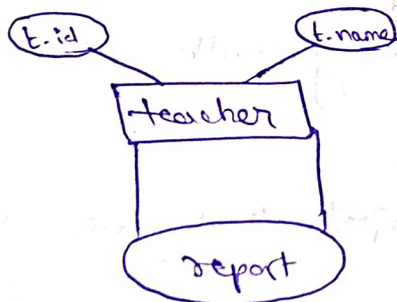
relationship



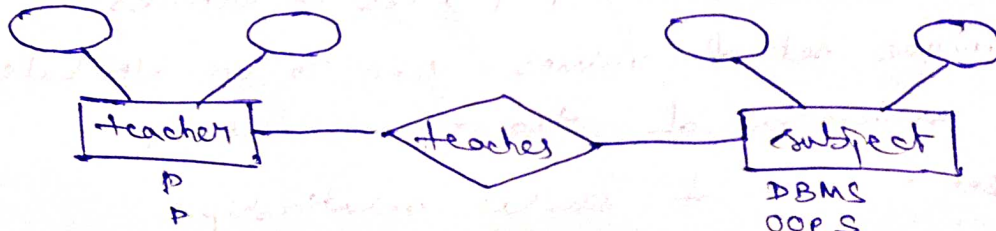
connection line

Types of relationships :

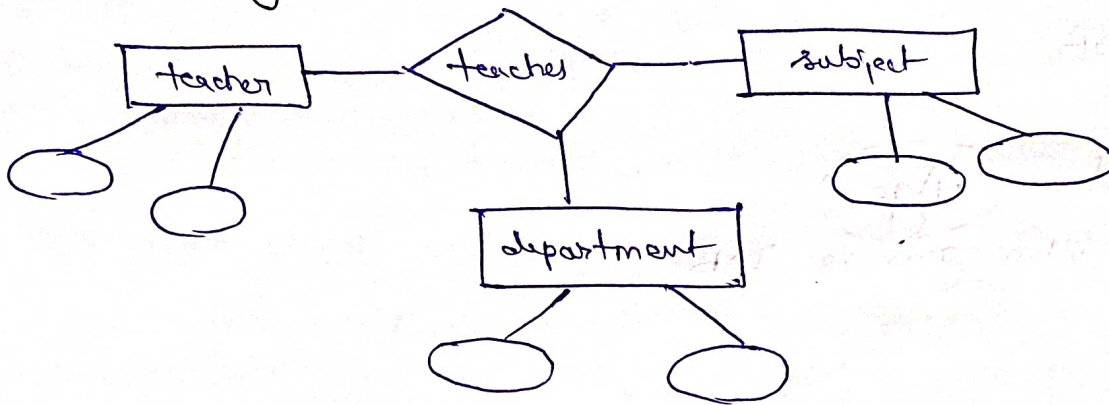
i) unary → relation b/w entities of same entity sets



ii) binary →



iii) ternary \rightarrow



2)

Mapping Cardinality \rightarrow in binary relationship \rightarrow max. no. of relationship instance in which an entity can participate

- one to one \rightarrow citizen has AADHAR card
- one to many \rightarrow manager manages team
- many to one \rightarrow credit cards of customer
- many to many \rightarrow customers purchase products

Classification of ~~entities~~ attributes

3 April.

1. single valued and multivalued

↓
Age
DOB
DOD

↓
Name
Mobile no.
DO Marriage

2. simple and composite

↓
address
salary

↓
street no. house no. city
HRA TA DA

3. stored :

DOB

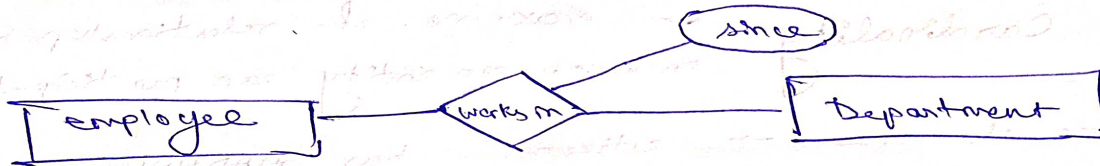
4. Derived :

Age
when given is DOB

5. key :

roll no.
id.

6. Descriptive : which describes relationship set.



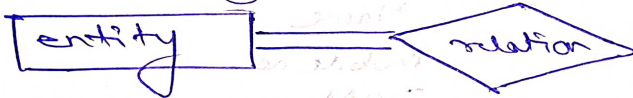
here, since is the descriptive attribute.

↓
records info. abt the relationship

Participation Constraint

i) total participation → each entity present in entity set must participate in at least one relationship.

representation : by double line or bold line

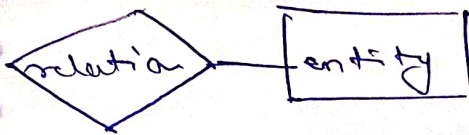


eg.



ii) partial participation \rightarrow each entity in the entity set may or may not participate in relationship instance of the relationship set.

representation : by single line



strong entity

- i) has primary key
- ii) independent

iii) represented single rectangle

iv) relationship represented by single diamond

v) it has either total participation or not

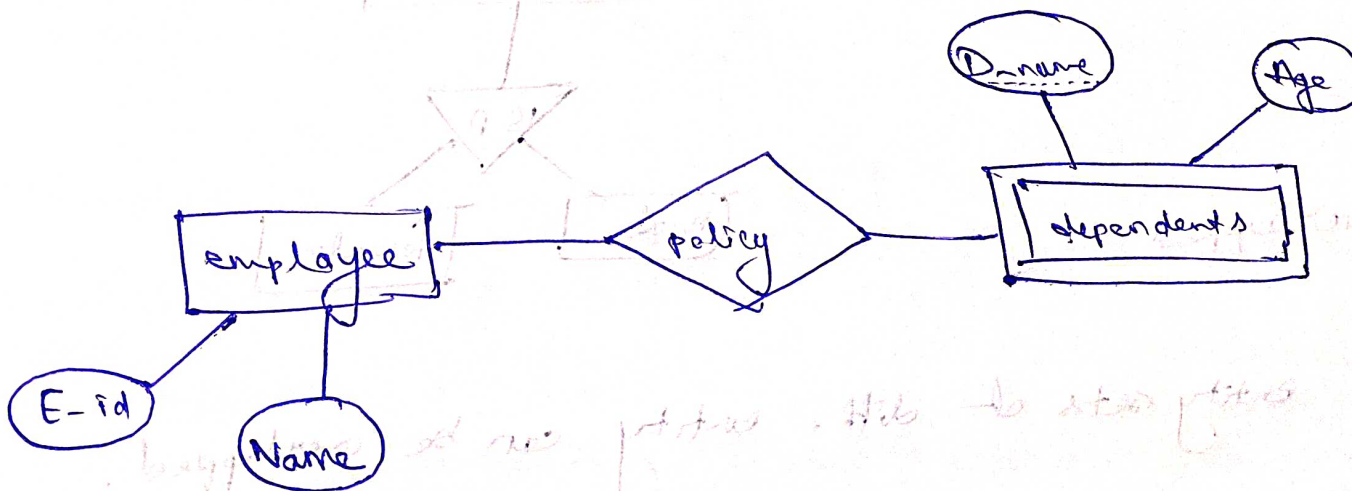
weak entity

- no primary key
- dependent

double rectangle

double diamond

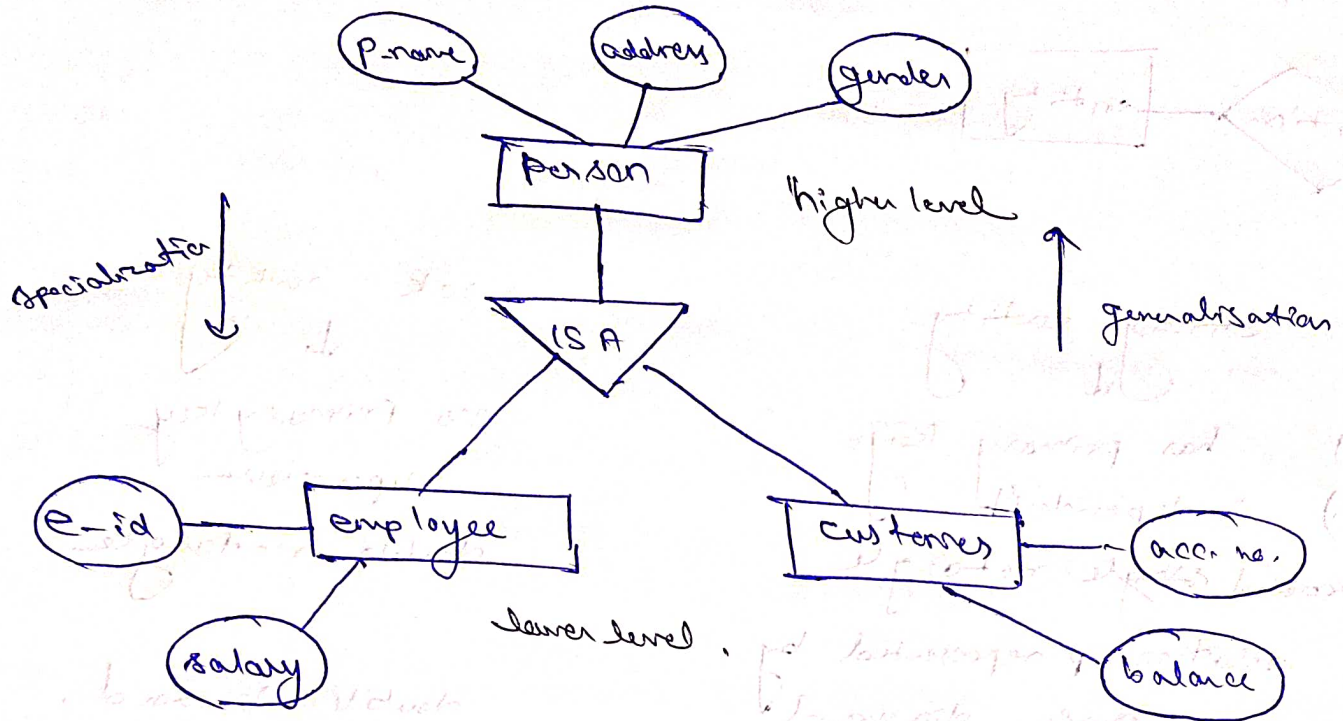
eg.



ER diagram

Features →

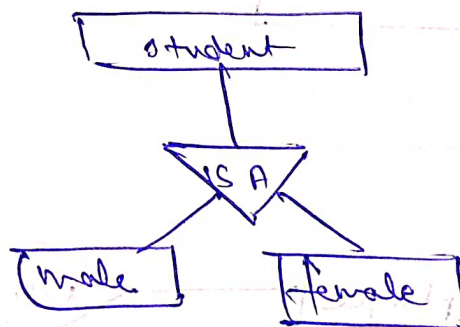
- i) specialization
- ii) generalization



specialization is of two types → • disjoint

specialized into two mutually exclusive / not overlap

eg.



overlapped

entity sets of diff. entity can be overlapped.

- iii) higher level and lower level entity
iv) attribute inheritance →

higher level attributes can be inherited by lower level ~~entity~~ entity.

- v) aggregation → a relationship set participating in other relationships.

