

Lecture - 2Entity Relationship (ER) Model

- An Entity Relationship model is a data model that is used to design relationship database.
- Its main component is Entity Relationship diagram which create graphical representation of the entity & the relationship b/w them.

Data Associations (ER models)

(a) Entity; An entity is a "thing" or object in the real world that is distinguishable from all other objects.

Exam: ~~Each~~ Each employee in a organisation is a Entity.

- An entity has a set of properties, and values for some set of properties that may uniquely identify an entity.
 Person → Id
 → Mobile no.

- An entity set is a set of entities of the same type that share their same properties or attributes.

Bank → Employees (eid)
 → Customer (Bank A/c no).

(b) Attributes;

- An entity is represented by a set of attributes.
- Attributes are descriptive properties possessed by each member of an entity set.
- For each attribute, there is a set of permitted values, called the domain.

[Student] Entity

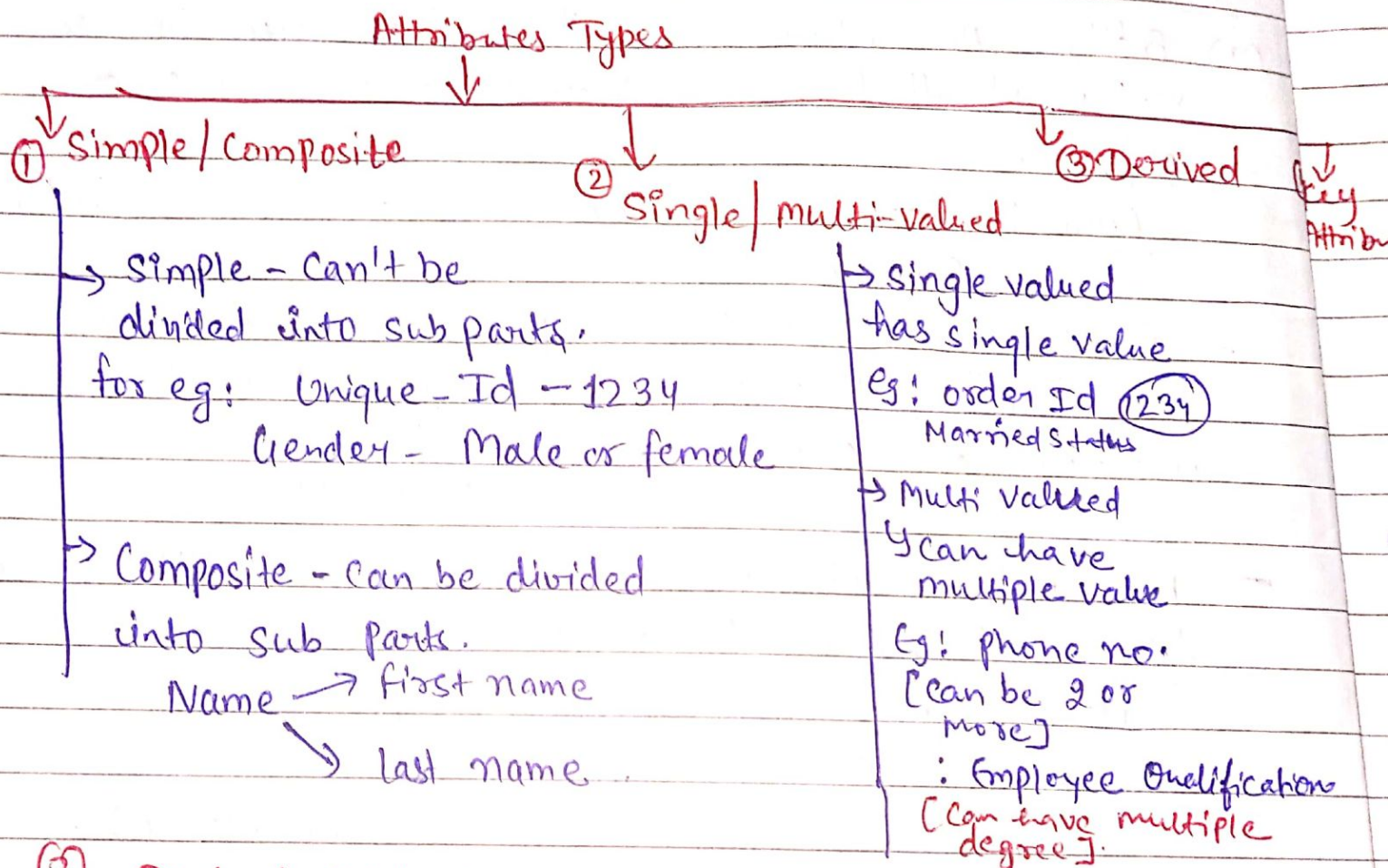
<ul style="list-style-type: none"> - Std. id - Std. name - Std. address - Std. class 	}	All these are Attributes.
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Domain

Std-Id → like take value (0-1000), (abcd-xyz)
Std-name → [0-9] [1-2] (a to z)

Domain (Above values, these attribute can accept)

Types of Attributes



③ Derived Attribute

- 2 or more attributes of an entity may relate to each other in such a manner that one or more of them becomes attribute, while other become dependent on the basis of attribute.

Ex ①

Exam 1: In employee table (Entity) Basic pay (attribute)
HR & DA are derived attributes.

Exam ②

Age → Current date
DOB →
Derived attribute.

Key Attributes

A key attribute is the unique, distinguishing characteristic of the entity.

for ~~an~~ Example: EmpId is a key attribute in Employee table.

A key attribute is also known as Identifier.


It is defined by assigning a primary key to it.


Weak Entity; A weak entity is the entity that cannot be uniquely identified by its attributes alone. Generally it uses a foreign key in conjunction with one of its attributes to identify a record uniquely.


↓
Key Attributes


ER Model (Entity Relationship Model)

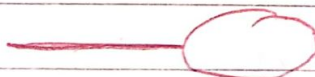
Notations used

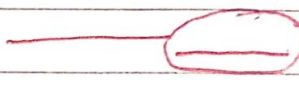
① Entity type → 


② Weak Entity → 

③ Relationship → 

④ Identifying Relationship type 

⑤ Attribute — 

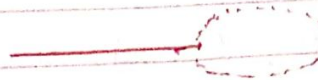
⑥ Primary Key — 

⑦ Multi valued attribute — 

⑧ Composite attribute



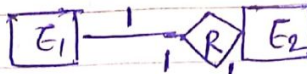
⑨ Derived attribute



⑩ Total participation of E_2 in R



⑪ Cardinality



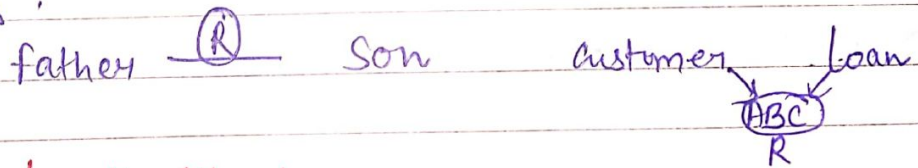
Strong & weak Entity Sets.

↓
It is an entity set that has primary key

→ It is an entity set which does not have sufficient attributes to form primary key.

Relationship Sets.

A relationship is an association among several entities.



Connectivity/Cardinality;

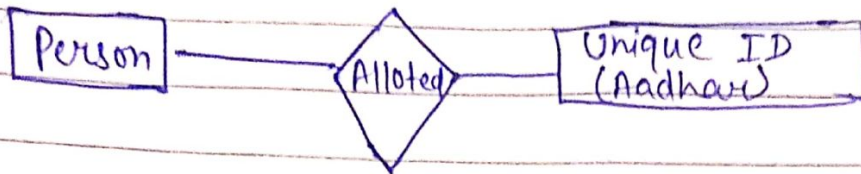
It describes the mapping of associated entity instances in the relationship.

or

It expresses the no of entities to which an entity can be associated via a relationship set.

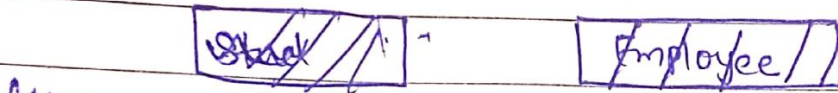
Types of Relationships.

① One to one Relationship

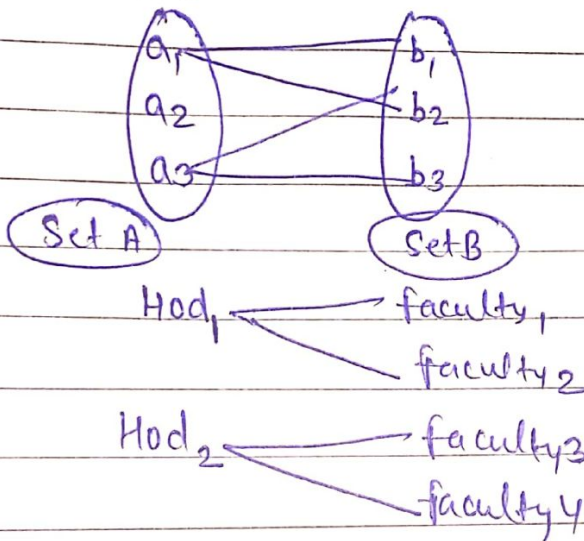


Exam One person can get only one unique Id no. & one Id no issued to someone cannot be issued to somebody else.

② One to Many Relationship

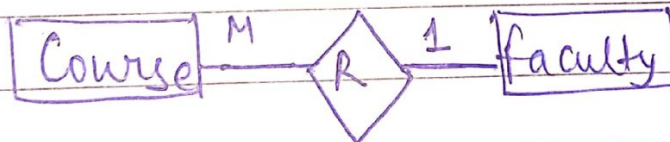


Exam



③ Many to one.

Exam

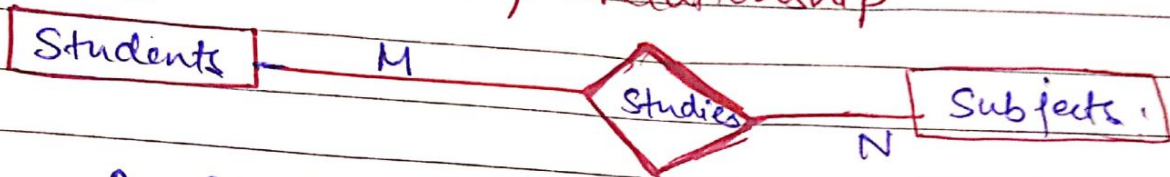


M - represents many

[Here, we means that one faculty can teach many courses, subject] but ~~the~~ at the same time one faculty teach only one Subject or any course].

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Date	

Many to Many Relationship



Exam

A Student of B.Com(A) has to study more than one subject during 3 yrs of his duration in the college at same time, the same subject can be studied by many students.