Prajakta Potil
Roll No-48

DBMS

Lab Assignment No-1

- Title :-

    ER Modelling & Normalization.

- Aim :-

    Define conceptual design using ER features using tools like ERD plus, ER win etc. (Identifying entities, relationships, both entities attributes, keys, cardinalities, generalization, specialization etc). Convert ER diagram into relational tables & normalize Relational data model.

- Theory :-

i) Entity - Relationship (ER) Model :-
    It is one of several high-level or semantic, data models used in database design. The goal is to create simple description of data that closely matches how users & developers think of data.

ii) Database can be modeled as collection of entities, relationship among entities.

iii) Entity is real world object that exists & is distinguishable from other objects.

iv) Relationship is association among several (two or more) entities.

v) Entities are represented by means of their properties, called attributes.

vi) Entity set is set of entities of same type that share same properties

vii) Each entity set has key & each attribute has domain.

- Types of attribute:

1) simple attribute:
   They are atomic values, which cannot divided further. eg. Customer's ID.

2) Composite Attribute:
   They are made of more than one simple attribute eg. customer's name may have first name, middle-name, last name.

3) Single-value attribute:
   It contain single value eg. customer_ID

4) Multi-value attribute:
   They may contain more than one values
   eg. Phone no, Email address.

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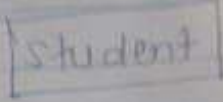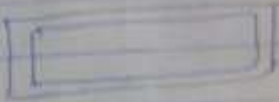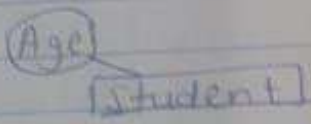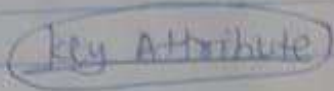
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Aniakta Patil   Rollno's 48

ER Component	Description	Notation
Entity - Strong	Simple rectangular box	Student
Entity - weak	Double rectangular box	
Relationships between Entities	Rhombus Symbol Strong / Rhombus within rhombus - weak	
Attributes	Elipse symbol connected to entity	Age / Student
key attribute For Entity	Underline attribute name inside ellipee	key Attribute
Derived Attribute For	Dotted ellipse inside main ellipse entity	
Multivalued Attribute	Double Ellipse for Entity	

5) Derived attributes

They are attributes that do not exist in physical database, but their values are derived from other attributes present in database. eg Age can be decided from data-of-birth
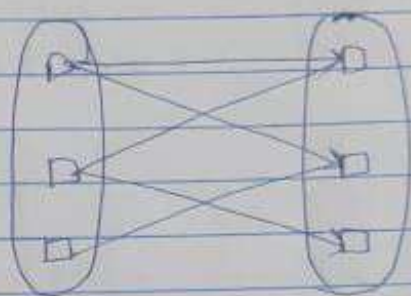
• Relational Model :-

i) It is depiction of how each piece of stored information relates to other stored information
ii) It shows how tables are linked, what type of links are betⁿ tables, what keys are used, what info is referenced betⁿ tables.
iii) It's essential part of developing normalized database structure to prevent repeat of redundant data storage.

• Different types of keys-

i) Super key   iv) foreign key
ii) Primary key   v) Alternate key
iii) Candidate key   vi) Composite key

3) Many to many relationship:
    It is many to many relationships
that create relationship betn two tables.
Each record of first table can relate to
any record in second table.

• ER design issues:
i) Use of entity set or attribute depend on
    structure of real-world enterprise i'e being
    modelled & semantics associated.
ii) It is difficult to examine if object can be
    best expressed by entity set.
iii) It is difficult to choose binary or n'ary
    relationship set
iv) Decision of placing specified attribute as
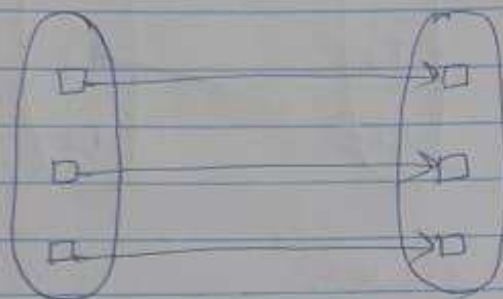   relationship or entity attribute being modeled.

• Conclusion:
    Thus we have studied how to use &
design ER diagram.

- Types of Relationships:

1) One to one Relationship (1:1)
    It is used to create relationship betn two tables in which single row of first table can only be related to one & only one records of second table.

2) One to many Relationship :
    It is used to create relationship betn two tables. Any single rows of first table can be related to one or more rows of second table, but rows of second tables can only relate to only one row in first table.