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Roll No 53

DBMS

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Practical No 01

Aim :— ER modeling and normalization Decide a case study related to real time application in group 2-3 student and form a problem statement for application to be developed propose a conceptual Design using ER features using tools like GRD plus, ER (win etc.

Objective :— To learn or perform a entity relationship diagram according to problem statement.

Hardware Requirement :— ~~Ubuntu~~ Any CPU i3, i5 256MB Rom & 2GB HDD

Software Requirement :— Ubuntu 20.4 LTS , MySQL.

Theory :— Data model :- The data model describes the structure of a database. It is a collection of conceptual tools for describing data relationship and Consistency Constraints and various type of data mode.

1> object based logical model
2> Record based logical model
3> Physical model.

* Entity Relationship model :— The entity relationship data model Perceives the real world as consisting of basic object called entities and relationship among these object. It was developed to facilitate design by allowing specifi-tion of an enterprise schema which represent the overall logical structure of database.

* features of ER-model :—

1) Entity relationship model is a high level conceptual model.

2) It allows us to describe the data involved in a real world enterprise in terms of objects and their relationships

3) It is widely used to develop an initial design of database.

a) It describes data as a collection of entities relationship and attributes.

* Basic Concepts :— The E-R data model employs three Basic notation ① entity sets ② relationship ③ attributes.

① Entity set :— An entity is a thing or object in the real word that is distinguishable from all other object for example each person in an enterprise is an entity has a set properties and the value from some set of properties. may uniquely identify on entity. Book is entity and its properties (called as attributes) bookcode booktitle, price etc.

② Attributes :— An entity is represented by a set of attributes are descriptive properties passessed by each member of an entity set. e.g. customer is a entity and its attributes are customer id, customer name etc.
- following are the attribute type.

a> simple and composite attribute :— simple attributes are the attributes can't divided into sub parts eg. customerid eas etc.

b> single-valued & multi-valued Attribute :—
The attribute having unique value is single -valued attribute eg. empno, custoerid regdno etc.

c> Derived Attribute :- The values for this type of attribute can be derived from the values of exit Sting attributes e.g. age which can be deried from current date.

d> Null attribute :- The attribute value which is not known to user is called null valued attribute.

* Relationship sets :- A - relationship is an association among several entities. A relationship set is a set of relationship of the same type formality it is on relation on $n > 2$ entity sets of E1, E2 --- En are entity set then a relationship set R is subset of $\{(e_1, e_2, -- e_n) \mid e_1 (E_1, e_2, E_2, e_n, E_n\}$ where $(e_1, e_2 - e_n)$ is relationship e.g.

┌──────────┐   ◇──────◇   ┌──────┐
│ Customer │──────│borrow│──────│ loan │
└──────────┘   ◇──────◇   └──────┘
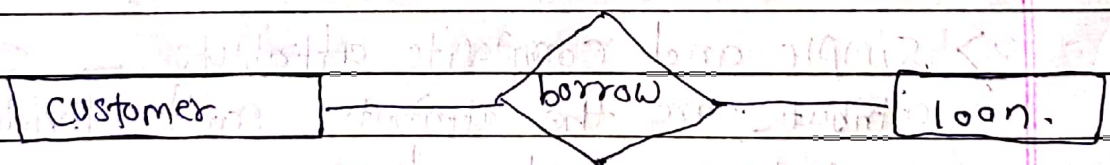
* mapping Cardinalities : - mapping cordinalities or cardinities ratio express the number of entities to which another entity can be associated or relationship mapping can Cordinalities are more useful in describing binary relationship sets.
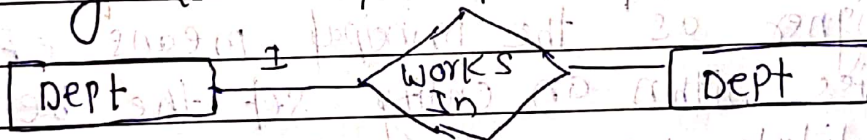
① one to one :— An entity in A is associated with most one entity in B and on entity in B is associated with at most on entity in A.

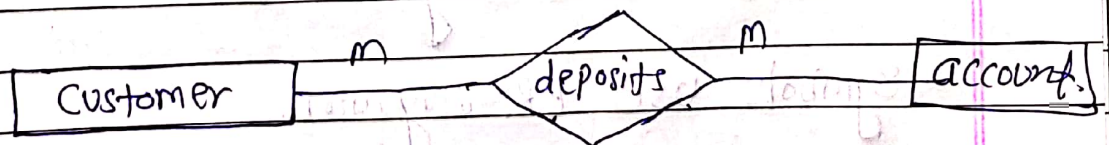Eg. relationship between college & principal.
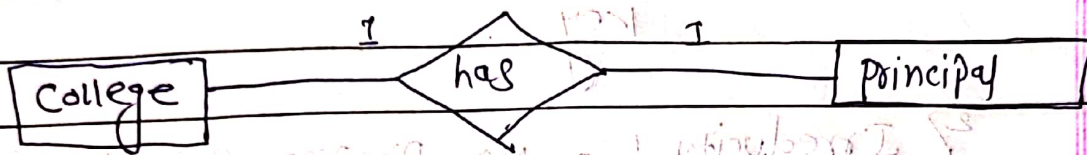
② one two many An entity in a associated with any number of entities in B An entity in B is associated with at the most one entity in A.

e.g. Relationship between dept and Faculty

④ many to many :— Entities in A & B are associated with any number of entities from each other.

*keys :—

① super key :— A super key is a set of one or more attribute that taken collectively allow us to identify uniquely an entity in the entity set.

② Condidate key :— In a relation R a Condidate key for R is subset of the set of attributes of R which have the following properties.

1) Uniqueness :— No two distinct tuples in R have the same valves for the Condidate key.

2) Irreducity ! - No proper subset of the cordinate key has the uniqueness property that is the Condiate key e.g (cname, tino)

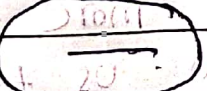③ primary key :— The primary key is the Condidate key that is chosen by the database designer as the principal means of identifying entities within an entity set the remaining condidate keys if any are called Alternate key the logical structure of database using ER - model graphically with the help of on E-R - diagram.
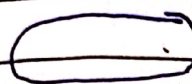
- Symbols use ER-diagram.

☐ — Entity

( ) pervived Attribute

[Collection] → weak entity

⟨ ⟩ Key Attribute

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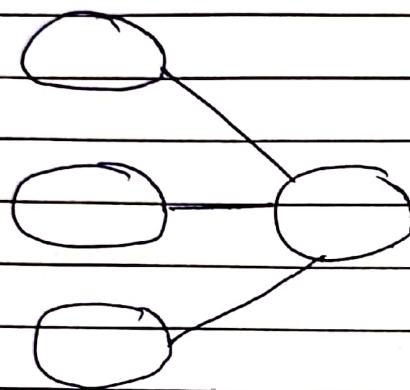
$\boxed{}$ — Attribute
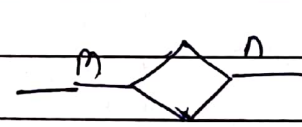
$\diamondsuit$ — Relationship

$\bigcirc$ — Multivalued attribute
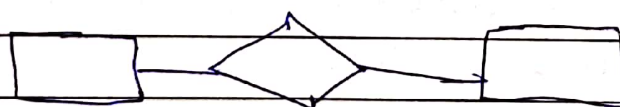
$\diamondsuit$ — Identying Relationship.
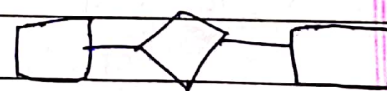
— Composite Attribute

$1 \longrightarrow \diamondsuit \longrightarrow 1$ — One to one

$1 \longrightarrow \diamondsuit \longrightarrow m$ — One to many

$m \longrightarrow \diamondsuit \longrightarrow n$ — one to many

total participition

partial participation

Conclusion :— Hence, we studied about the Data model, Basic concepts of ER - Model & Symbols used in ER - diagram etc.