Department Of Information Technology

A.Y. 2023-24
Class: SE-ITA/B, Semester: III

Subject: **Structured Query Lab**

Experiment – 2: Design the Relational model for ER diagram

1. **Aim: To** design a relational model for the chosen system using open source tool.

2. **Objective:**Define problem statement and Construct the conceptual model for real life application. The students should be able to clearly identify attributes, entities
- Understand Cardinality
- Identify and apply concepts of Generalization, Specialization and Association

3. **Outcome:** L303.1: Define problem statement and Construct the conceptual model for real life application
4. **Prerequisite:** Understanding of entities, attributes and relationship.

5. **Requirements: Draw.io**

6. **Pre-Experiment Exercise:**
   Brief Theory
   Explain the steps for converting ER model to Relational Model

   Mapping ER model to Relational Model

   Steps for converting ER model into Relation model

   Step1: Convert all strong entity sets into relations (tables)

   Step2: Mapping of weak entity types

   Note: 1. Create separate relation and include all simple attributes

   2. Add primary key of the owner entity set into weak entity set

   Step3: Mapping 1:1 Relationship types

   Method1: Foreign key approach

   Let R and S be two entity sets

   1.Identity the entity set with total participation (say s)

   2. Add primary key of R and S as Foreign key

Step 4: Mapping 1: N Relationship types

Let R and S be the entity sets (with 1:N) where S is having total participation in relationship

Add primary key of R in S as foreign key (ie primary key from "1 " side to "N" side as foreign key

Step 5: Mapping M:N relationship types

Create a third relation containing the primary keys of both the entity sets and descriptive attributes (if any)

Step6: Mapping Multivalued attributes

For each multivalued attribute, create a separate relation

Add primary key of the entity set in new relation as foreign key

The foreign key attribute and multivalued attributes will become composite key

Explain basic terms used in Extended Entity Relationship (EER).
Namely Generalization, specialization and aggregation with example

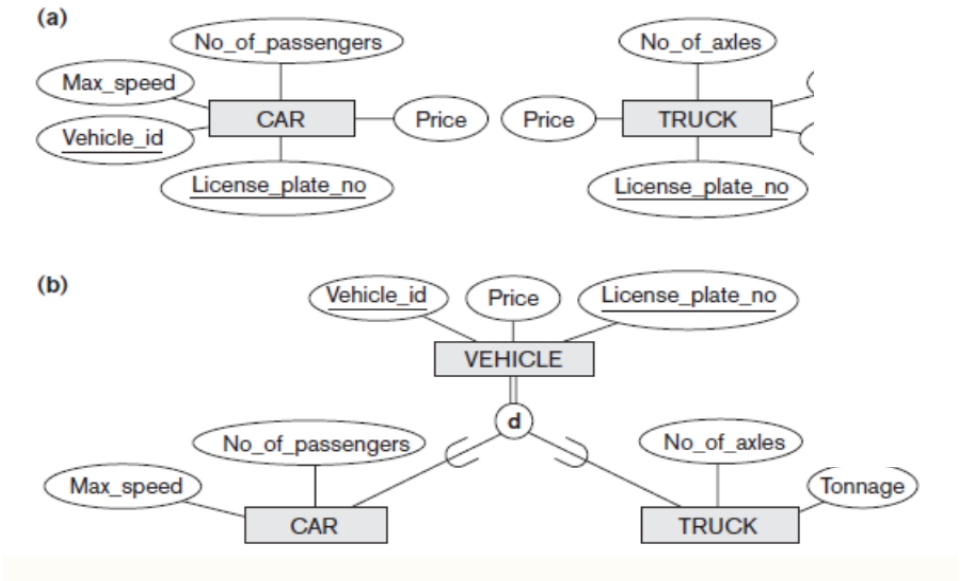

Fig:1 Example of Generalization, Specialization and Aggregation

Explain what a Relational Model is and how to make one.

Mapping EER Model Constructs to Relations Model

Step 7: Options for Mapping Specialization or Generalization.

Step : Mapping of Union Types (Categories).

7. **Laboratory Exercise:**
   A. **Procedure:**
      i)Draw ER diagram for Company Database System.
      ii) Draw EER diagram for the Company Database System..
      iii) Stepwise design a relational model for Company Database System..

   B. **Result/Observation/Program code: Attach printouts of above diagram**

8. **Post Experimental Exercise-**
   A. Questions:
      1. Write the step for Designing Relational model
      2. Compare ER and EER Diagram
   B. Conclusion:
      1. Write what was performed in the experiment
      2. Write the significance of the studied topic

   C. References:
      [1] Elmasri and Navathe, “Fundamentals of Database Systems”, 5th Edition, PEARSON Education.
      [2] Korth, Silberchatz, Sudarshan, “Database System Concepts”, 6th Edition, McGraw – Hill