Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)
School of Computing
B.Tech. – Computer Science and Engineering

VTR UGE2021- (CBCS)

Academic Year: 2025–2026

SUMMER SEMESTER -SS2526

SDG 4: Quality Education
Course Code : 10211CS207

Course Name : Database Management Systems

Slot No : S1L4

DBMS TASK - 2 REPORT

Title: Generating Design of other traditional database model

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TASK 2

Generating Design of other traditional database model

Aim:

Creating Hierarchical/Network model of the database by enhancing the sound abstract data by performing following tasks using forms of inheritance:

a. Identify the specificity of each relationship, find and form surplus relations.

b. Check is-a hierarchy/has-a hierarchy and performs generalization and/or specialization relationship.

c. Find the domain of the attribute and perform check constraint to the applicable.

d. Rename the relations.

e. Perform SQL Relations using DDL, DCL commands.

a. Identify the specificity of each relationship, find and form surplus relations.

Entity Identification:

- CricketBoard has multiple Teams
- Team consists of multiple Players
- Match involves multiple Teams and is played on a Ground
- Umpire supervises the Match

Specificity Analysis:

- CricketBoard ↔ Team → One-to-Many
- Team ↔ Player → Many-to-Many → Team_Player
- Match ↔ Team → Many-to-Many → Match_Team
- Match ↔ Ground → One-to-One

Surplus Relations (Associative Tables):

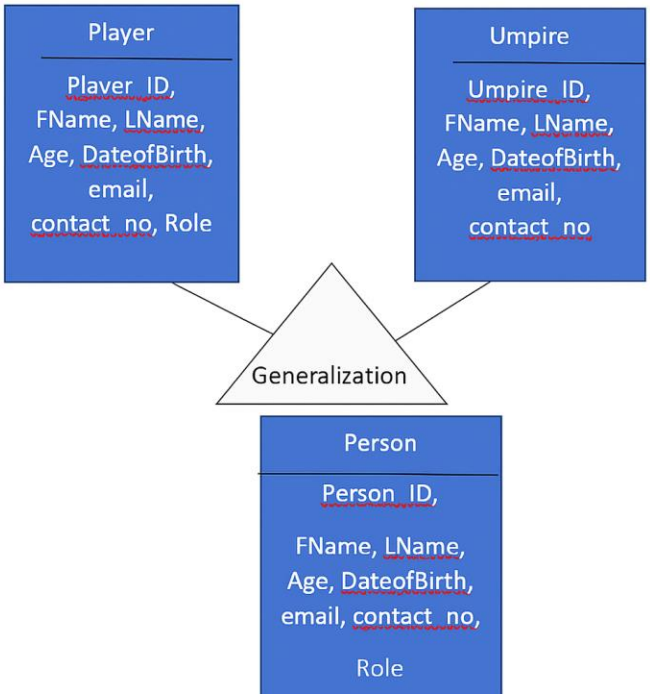
- Team_Player(TeamID, PlayerID)
- Match_Team(MatchID, TeamID)

b. Check is-a hierarchy/has -a hierarchy and performs generalization and/or specialization relationship.

Generalization

In the ER diagram for the Tamil Nadu Cricket Board (TNCA) described earlier, we can identify potential generalizations based on common attributes or relationships among entities. Here's an example of a possible generalization:

Entities:
Player
Umpire
Attributes:
The above entities have common attributes like First_Name, Last_Name, Date_of_Birth, age, Contact_No, and Email.
Potential Generalization:
Create a superclass called "Person" to represent the common attributes shared by Player and Umpire. The "Person" entity would have the following attributes:
Person_ID (primary key)
First_Name
Last_Name
Date_of_Birth
Age
Contact_Number
Email
Subclasses:
Player: Inherited attributes from "Person" and add specific attributes like Player_ID.
Umpire: Inherited attributes from "Person" and add specific attributes like Umpire_ID.



By using generalization, we can reduce data redundancy, improve data integrity, and simplify the structure of the ER diagram. This approach also allows for easier maintenance

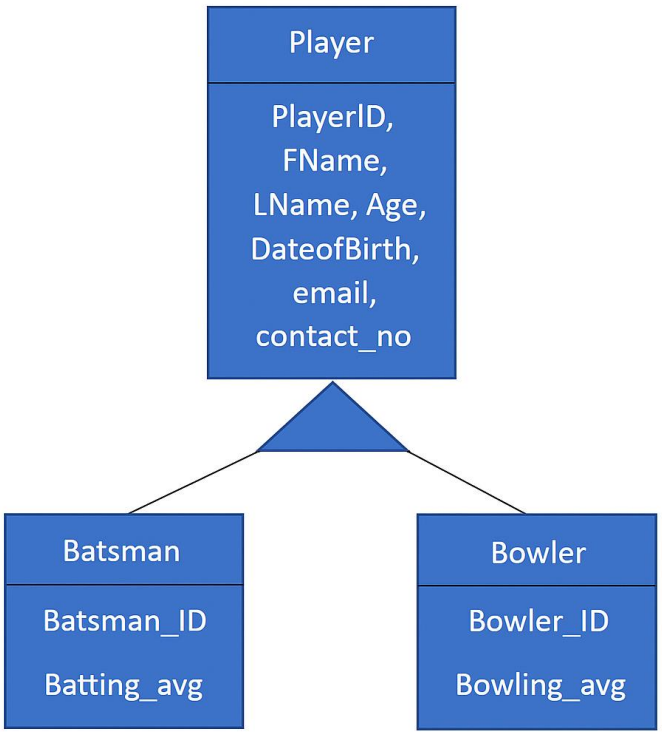
and updates, as changes made to the attributes shared by all "Person" entities will be automatically reflected in the subclasses.

Specialization

In the context of Entity-Relationship (ER) diagrams, specialization refers to the process of defining subtypes within an entity type. It allows, to represent entities that have specific attributes or relationships distinct from the general attributes or relationships of the parent entity.

In the case of the Tamil Nadu Cricket Board Association, let's consider the specialization of the "Player" entity into two subtypes: "Batsman" and "Bowler." This specialization is based on the specific roles that players can have in cricket.

Here's the modified ER diagram with the specialization:



2. c Find the domain of the attribute and perform check constraint to the applicable.

Attribute	Domain	Check Constraint Example
Age	Integer	CHECK (Age >= 18)

Contact_No	VARCHAR(10–15)	CHECK (LENGTH(Contact_No) BETWEEN 10 AND 15)
Email	VARCHAR	CHECK (Email LIKE '%@%.%')
Capacity	Integer	CHECK (Capacity > 0)
PlayingRole	VARCHAR	CHECK (PlayingRole IN ('Batsman', 'Bowler', 'All-Rounder', 'Wicket-Keeper'))

SQL> ALTER TABLE Player ADD CONSTRAINT check_con CHECK (age>= 18);

Table altered.

2.d Rename the relations:

Renaming a table (relation) in SQL can be accomplished using the ALTER TABLE statement with the RENAME TO clause. The specific syntax for renaming tables varies slightly between different database management systems.

Here's the syntax for renaming a column in the Table:

SQL> Alter table Umpire RENAME column contact_no TO phone_no;

Table altered.

SQL> DESC Umpire

Name	Null?	Type
UMPIREID		VARCHAR2(10)
FNAME		VARCHAR2(30)
LNAME		VARCHAR2(30)
AGE		NUMBER(5,2)

DATEOFBIRTH	DATE
COUNTRY	VARCHAR2(30)
EMAIL	VARCHAR2(40)
PHONE_NO	NUMBER

2.e Perform SQL Relations using DDL, DCL commands.

DCL stands for "Data Control Language," which is a subset of SQL (Structured Query Language) used to control access to data in a database. DCL commands are responsible for managing user permissions, granting privileges, and controlling data security within a database system. There are two primary DCL commands:

1. Grant
2. Revoke

GRANT:

The GRANT command is used to provide specific privileges to users or roles, allowing them to perform certain actions on database objects (e.g., tables, views, procedures). Privileges may include SELECT, INSERT, UPDATE, DELETE, EXECUTE, and more.

SQL> create user Raj identified by kumar;

User created.

SQL> grant resource to raj;

Grant succeeded.

SQL> grant create session to raj;

Grant succeeded.

SQL> conn

Enter user-name: raj

Enter password:

Connected.

SQL> create table emp(eno number,ename varchar(10));

Table created.

SQL> conn system/manager

Connected.

SQL> grant all on Umpire to Raj;

Grant succeeded.

Result:

Thus the Hierarchical model and Network model has been successfully created.