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. – Information Technology

VTR UGE2021- (CBCS)

Academic Year: 2025–2026 SUMMER

SEMESTER - SS2526

Course Code : 10211IT201

Course Name : Database System concepts

Slot No :S 1 2 L 5

DBMS TASK - 1 REPORT

TASK:**Conceptual Design through FTR**

Submitted by:

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TASK 1: Conceptual Design through FTR

Aim:

To design a **Conceptual Entity Relationship (ER) Model** using fundamental database design methodology by identifying entities, attributes, relationships, cardinalities, keys, and constraints, and to represent them using an ER diagram tool. (drawio, lucidchart)

Algorithm:

Design ER Diagram using Creately:

- Go to https://creately.com/diagram.
- Use ER template, add entities, attributes, keys, and relationships with proper cardinality.

Question:

Using basic database design methodology and ER modeler, design Entity Relationship Diagram by satisfying the following sub tasks:

1. **a** Identifying the entities.
1. **b** Identifying the attributes.
1. **c** Identification of relationships, cardinality, type of relationship.
1. **d** Reframing the relations with keys and constraint.
1. **e** Using creately, develop ER/EER diagram

1.a Identifying the Entities

The major **entities** are:

1. **CricketBoard**
2. **Team**
3. **Player**
4. **Match**
5. **Ground**
6. **Umpire**

1.b Identifying the Attributes

Sample Output (EntityName(Attribute1, Attribute2,...)):

1. **CricketBoard**(*BoardID*, Name, Address, Contact_No)
2. **Team**(*TeamID*, Name, Coach, Captain)
3. **Player**(*PlayerID*, FName, LName, Age, DateofBirth, PlayingRole)
4. **Match**(*MatchID*, Date, Time, Result)
5. **Ground**(*GroundID*, Name, Location, Capacity)
6. **Umpire**(*UmpireID*, FName, LName, Age, DateofBirth, Country)

1.c Identification of Relationships, Cardinality, Type of Relationship-(ER Diagram)

Relationship	Entities Involved	Cardinality	Type
Organizes	CricketBoard – Match	1:M	One-to-Many
Plays	Team – Match	M:N	Many-to-Many
Belongs To	Player – Team	M:1	Many-to-One
Occurs At	Match – Ground	M:1	Many-to-One
Officiates	Umpire – Match	M:N	Many-to-Many

1.d Reframing the Relations with Keys and Constraints

Below are the **relations** with **Primary Keys (PK)** and **Foreign Keys (FK)** defined:

1. **CricketBoard** (*BoardID*, Name, Address, Contact_No)
2. **Team**(*TeamID*, Name, Coach, Captain)
3. **Player**(*PlayerID*, FName, LName, Age, DateofBirth, PlayingRole, **TeamID**)
    - FK: TeamID → Team.TeamID
4. **Match**(*MatchID*, Date, Time, Result, **GroundID**, **BoardID**)
    - FK: GroundID → Ground.GroundID
    - FK: BoardID → CricketBoard.BoardID
5. **Ground**(*GroundID*, Name, Location, Capacity)

6. **Umpire**(*UmpireID*, FName, LName, Age, DateofBirth, Country)
7. **MatchTeam**(*MatchID*, *TeamID*)
    - Composite PK: MatchID + TeamID
    - FK: MatchID → Match.MatchID
    - FK: TeamID → Team.TeamID
8. **MatchUmpire** (*MatchID*, *UmpireID*)
    - Composite PK: MatchID + UmpireID
    - FK: MatchID → Match. MatchID
    - FK: UmpireID → Umpire.UmpireID

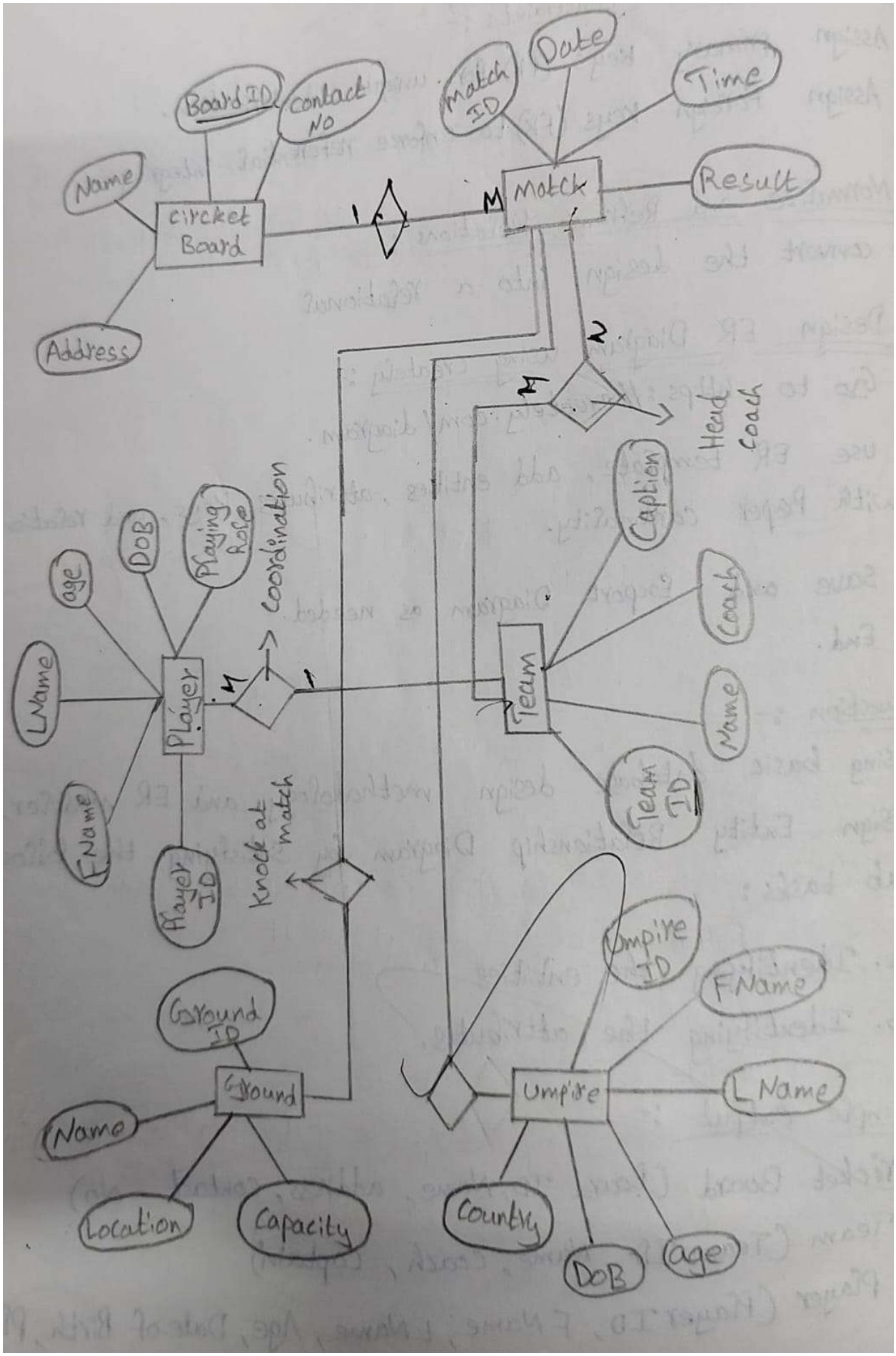
1.e Using Creately – Develop ER/EER Diagram

➤ **Steps to create ER Diagram on Creately:**

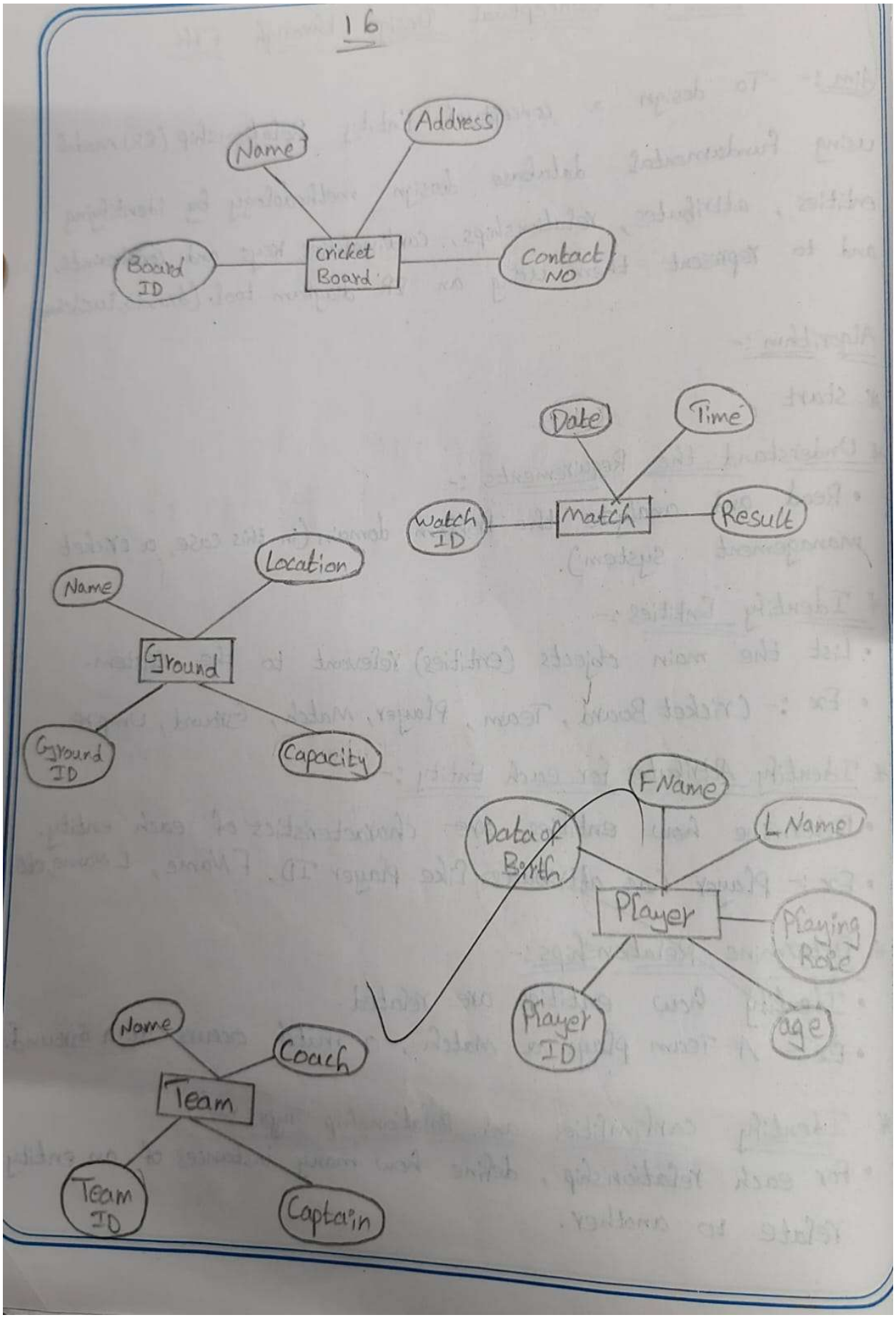
1. Go to https://creately.com/diagram (Lucidchart)
2. Select **ER Diagram Template**
3. Add entities (CricketBoard, Team, Player, Match, Ground, Umpire)
4. Add attributes under each entity (underline primary keys)
5. Draw relationships and indicate cardinality (1:1, 1:N, M:N)
6. Use connectors and label relationships (e.g., "Organizes", "Plays", "Belongs To")
7. Save or export as PDF/Image

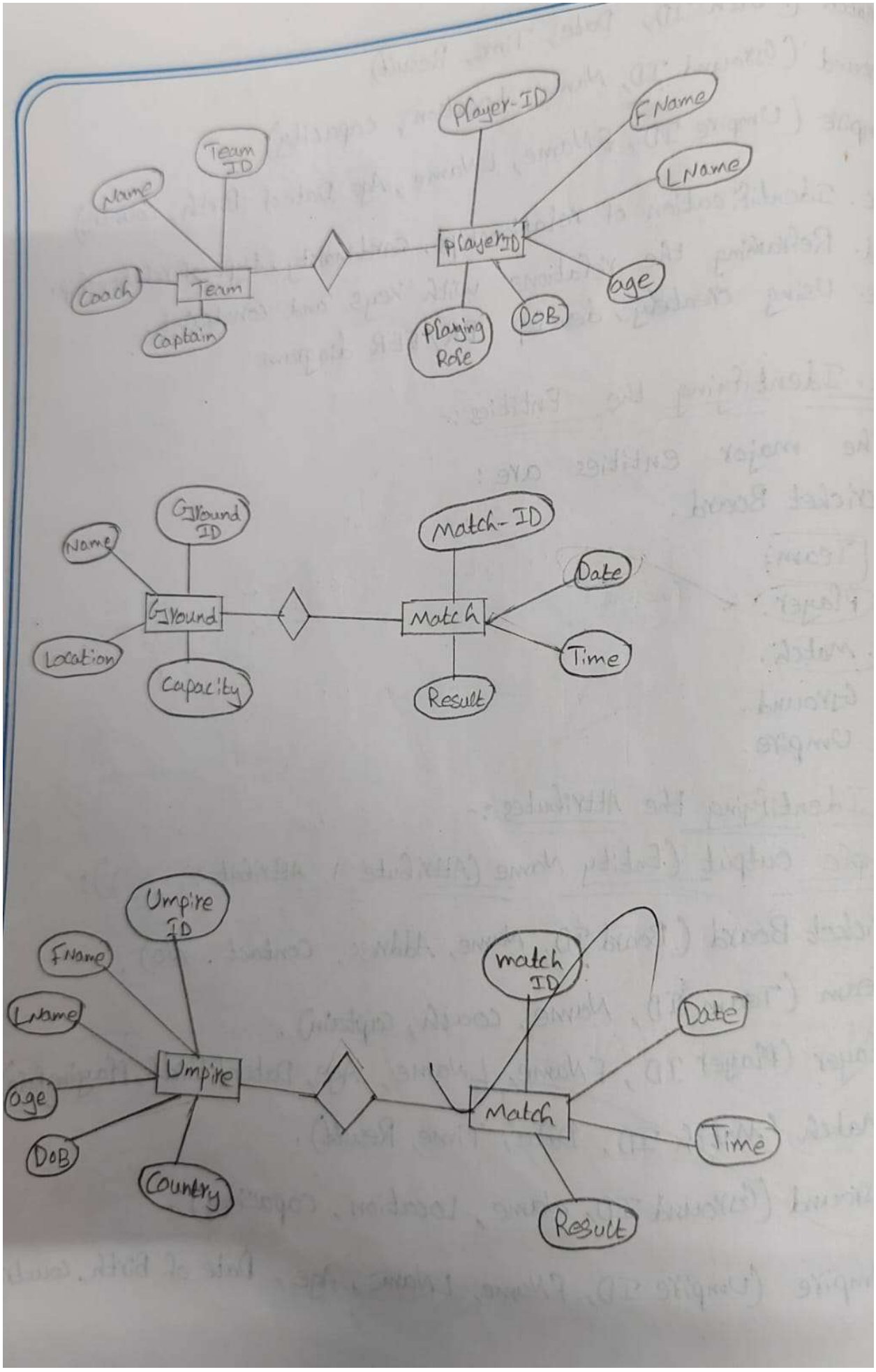
Summary Table of All Entities

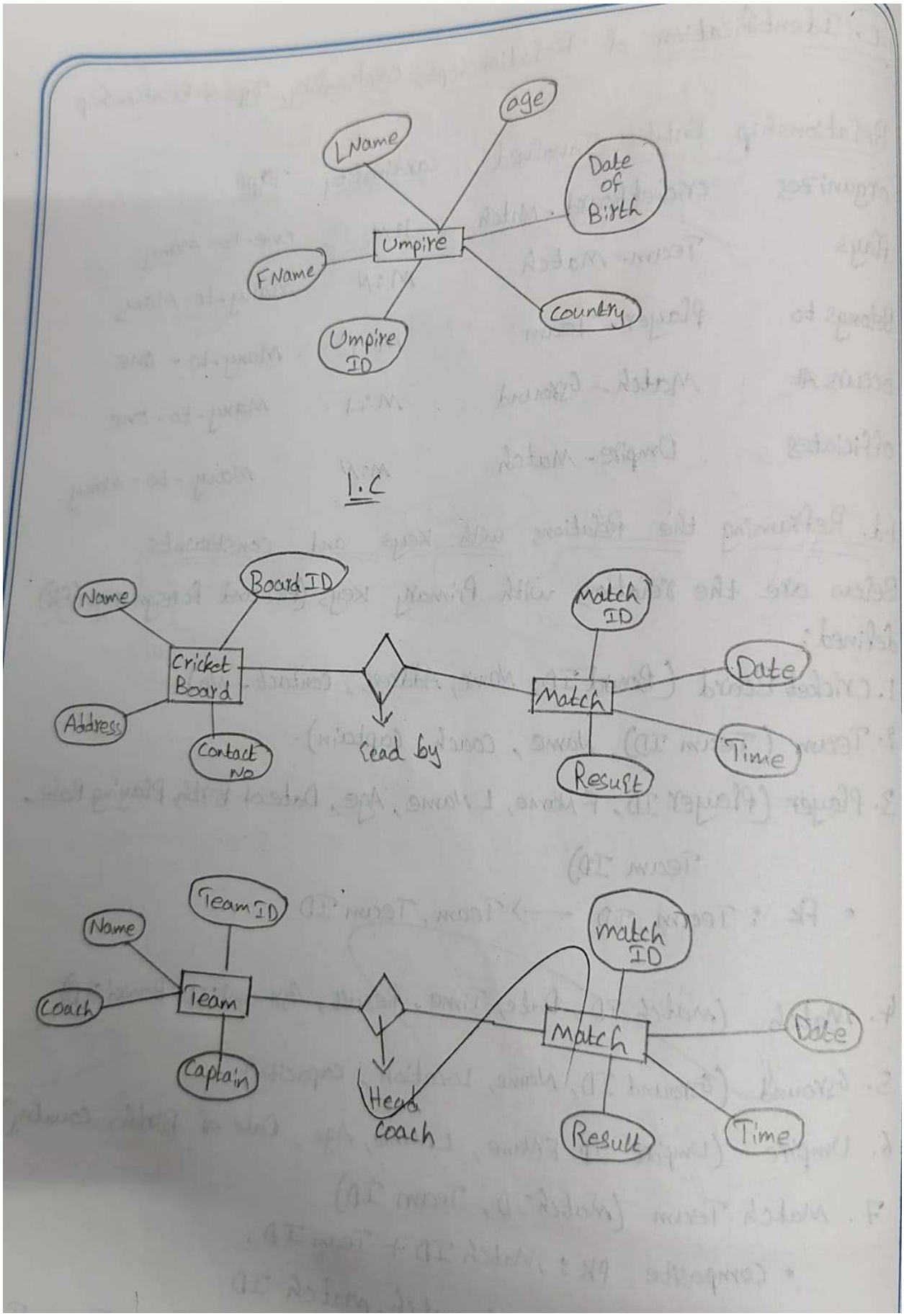
Entity	Primary Key	Foreign Key(s)
CricketBoard	BoardID	—
Team	TeamID	—
Player	PlayerID	TeamID → Team.TeamID
Match	MatchID	GroundID, BoardID
Ground	GroundID	—
Umpire	UmpireID	—
MatchTeam	MatchID + TeamID	MatchID, TeamID
MatchUmpire	MatchID + UmpireID	MatchID, UmpireID


Board ID
Contact No
Name
Address
Cricket Board
1
M
Match
Match ID
Date
Time
Result
N
M
Head Coach
Caption
Coach
Name
Team ID
Team
Coordination
M
1
Player
DOB
Playing Role
age
LName
FName
Player ID
Knock at match
Ground ID
Ground
Name
Location
Capacity
Umpire ID
FName
LName
Umpire
Country
DOB
age

16


Name
Address
Board ID
Cricket Board
Contact NO
Date
Time
Watch ID
Match
Result
Location
Name
Ground
Ground ID
Capacity
FName
Data of Birth
L Name
Player
Playing Role
Player ID
age
Name
Coach
Team
Team ID
Captain


Player-ID
FName
Team ID
LName
Name
Player ID
Coach
Team
age
Captain
Playing Role
DoB
GRound ID
Match-ID
Name
Date
GRound
Match
Location
Time
Capacity
Result
Umpire ID
match ID
FName
Date
LName
Umpire
Match
age
Time
DoB
Country
Result



Result:

Thus, ER diagram was draw successfully using Lucid chart.