

# DNA PROJECT

Team No. - 62

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## Introduction to mini-world:

Our mini-world is the Cricket World cup. Various **TEAMS** from different countries take part in the tournament. **PLAYERS** and **COACHES** together represent their country as **TEAMS**. **MATCHES** between two **TEAMS** are held in **STADIUMS**.

## Purpose of the database:

The database's purpose is to retrieve and update the information efficiently and economically. The database serves as a tool to see the statistics of a player, the matches won by a team. This provides a way for the team, coaches to analyze the team's performance and for the players to see their stats.

## Users of the database:

The users of the database are the players, teams, coaches, captains.

## Applications of the database:

The data stored in the database can be used by the players to see their performance so they can improve their performance. The teams and coaches can look upon the stats of players so they can strategize for the next match. The captain can use the database to decide who to play for the next match and who to rest.

## Database requirements:

### **ASSUMPTIONS:**

We have assumed that each player can be uniquely identified using jersey no (partial key) and the entity type TEAM which the player represents, so PLAYER is a weak entity type. We have assumed that no two players have the same jersey no in a particular team. Also, the COACHES entity type is uniquely identified by the TEAM they coach and name (partial key), so they are also a weak entity type. We have assumed that no two coaches for a team have the same name. Also, no two stadiums can have the same name and can be in the same location. We have assumed that only a single team represents a particular country. A team consists of at least 11 players and 16 players can be there for the team from whom the captain can select who to play in the matches. Only those players are considered that have a jersey no to represent their teams.

### **ENTITY:**

These are the entity types and attributes used in our mini-world.

### STADIUM (Strong Entity):

- Name (primary key) - VARCHAR (30): NOT NULL
- Location (candidate key) - VARCHAR (30): NOT NULL
- Area (yards) - DECIMAL (6,2): NOT NULL

### PLAYERS (Weak Entity):

- Name (composite attribute) - (First Name, Last Name) - VARCHAR (30): NOT NULL
- Jersey number (partial key) - INT: NOT NULL
- DOB – DATE: NOT NULL
- Age (derived attribute from DOB) - INT: NOT NULL
- Team (Foreign Key) - VARCHAR (30): NOT NULL

### MATCHES (strong entity):

- Match number (primary key) - INT: NOT NULL
- Team A – VARCHAR (30): NOT NULL
- Team B – VARCHAR (30): NOT NULL
- Stadium – VARCHAR (30): NOT NULL
- Date of the match - DATE: NOT NULL
- Time (afternoon or evening) - VARCHAR (30): NOT NULL
- Name of Man of the match - (composite attribute) - (First Name, Last Name) - VARCHAR (30):
- Team which wins the Match - VARCHAR (30)

### TEAMS (strong entity):

- Team (primary key) – VARCHAR (30): NOT NULL
- Jersey color (multivalued attribute) - VARCHAR (30): NOT NULL
- Name of the captain (composite attribute) - (First Name, Last Name) - VARCHAR (30): NOT NULL

### COACHES (weak entity):

- Name (composite attribute and partial key) - (First Name, Last Name) - VARCHAR (30): NOT NULL
- Nationality – VARCHAR (30): NOT NULL

### STATISTICS (strong entity)

- Player Name - VARCHAR (30): NOT NULL
- (Jersey no of player, Name of the Team which the player represents) (Primary Key) - (INT, VARCHAR (30)): NOT NULL
- Total Runs scored – INT
- Maximum runs scored – INT
- Number of bowls played – INT
- Number of Wickets taken – INT
- Number of bowls bowled – INT
- Total runs conceived – INT

### CAPTAIN (strong entity)

- Name (composite attribute) - (First Name, Last Name) - VARCHAR (30): NOT NULL
- Team (Primary key) - VARCHAR (30): NOT NULL
- Number of matches captained – INT: NOT NULL
- Number of wins – INT: NOT NULL

### **RELATIONSHIP TYPES:**

<u>Relation</u>	<u>Degree</u>	<u>Min-max constraint</u>
Teams, Captain and Players play Matches	4	-
Coaches coach Teams	2(identifying)	(1:1) (Coaches) (1: N) (Teams)
Matches are held in Stadiums	2	(1:1) (Matches) (1: N) (Stadiums)
Players represents Teams	2(identifying)	(1:1) (Players) (11:16) (Teams)
Players practice in Stadium	2	(0: N) (Players) (0: N) (Stadiums)
Captain captain's Team	2	(1:1) (Captains) (1:1) (Teams)

## Functional Requirements:

### **MODIFICATIONS:**

#### INSERT:

- I. Insert the matches in the MATCHES table and values for the attributes.

#### DELETE:

- I. Delete the matches that weren't played.

#### UPDATE:

- I. Update the total runs of a player in STATISTICS relation.
- II. Maximum runs scored by the player.

### **RETRIEVALS:**

#### **(A)**

#### SELECTION:

- I. Retrieve complete statistics of all players belonging to a team.
- II. Retrieve complete data of all the matches won by a team.
- III. Retrieve complete data of all matches played at a given stadium.

#### PROJECTION:

- I. Name of all teams that win the match on or after a given date.
- II. Name of all players having average run greater than 40.
- III. Nationality of all coaches of a given country.

#### AGGEREGATE:

- I. Calculate the average runs scored by each player of a given team.
- II. Calculate the total number of wickets taken by a team.
- III. Max total runs scored by a player in tournament.

#### SEARCH:

- I. Name all the players with “Dh” as prefix of their name.
- II. Name all the teams having suffix “tan”.

#### **(B)**

#### ANALYSIS:

- I. Number of players whose total score is above average in the tournament.
- II. The number of teams whose total wickets taken is less than the given number.