PROJECT PHASE - 1

T20 Ipl

Team : Deoxyribonucleic acid
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Introduction

The Indian Premier League (IPL) is a professional Twenty20 cricket league , contested by eight teams based out of eight different Indian cities . Inorder to decide the winner amongst the teams , number of matches won by each team and several other details must be stored .

Purpose

The purpose of the database is to easily store and access information like the schedule of the matches , their venues , points scored by teams , stats of players , other details of teams and umpires .

Users

- Parametric End users : They access the ipl website to use the database , to know the details of matches like winners and standings .
- BCCI : Any update or modification in the database player stats is done by the database management .

Applications

Without the database , it would be impossible for the BCCI to announce the winners . So it is required to produce winners season wise , and for the audience to watch the matches for entertainment.

Database Requirements

Entities

1. Players:
    - First_Name
    - Last_Name
    - Player_ID (primary key)
    - Current_Team
    - Previous_Teams(multivalued)
    - Base_Price
    - Age
    - Batting_Style
    - Bowling_Style

2. Teams:
    - Team_name (candidate key,because team names are also unique)
    - Team_code (CSK,RCB ...etc)(primary key)
    - Owner
    - Home_Ground
    - Debut
    - Years_active(multivalued)
    - Trophies(no_of_trophies,{win_years}) (composite attribute)
    - Coach
    - Captain
    - {Squad(year,{Squad_members(player_Id,First_Name,Last_Name)})}
    - Team_gallery

3. Venues:
    - Venue_Name(Candidate Key)
    - Venue_ID (primary key,Super Key)
    - Seating_capacity
    - Contact_number
    - Images
    - Address(location,city,state,pin) (composite attribute)
    - {Ticket_Prices}
    - Home_Team
4. Umpires:
    - First_Name
    - Last_Name
    - Umpire_ID(primary key)

- Age
- Country

5. Matches:Candidate Key -->Year+Timing ,Primary Key,Super Key--->Year+Match_ID
    - Year
    - Match_ID
    - Timing(date,day,month,time) (composite attribute)
    - Venue_Name
    - Venue_Id
    - Team1_Code
    - Team2_Code
    - Match_Status
      Constraints:done or yet to be done or cancelled
    - Winner_Team
      constraints : Team1_Code or Team2_Code or Draw
    - Player_of_the_match
    - Umpire_Details(First_Name,Last_Name)

6. Points_Table: Primary key ---> Year
    - Year
    - {Table(Team_name,Team_code,No_Matches_Played,No_Won,No_Lost,No_Tied, Net_RR,Total_Pts)}

Weak Entities:

1. Batting_Stats:(Primary key--->Year+Player_ID)
    - Year
    - Player_last_name
    - Player_first_name
    - Player_ID (Foreign key)
    - No_of_matches
    - No_of_innings
    - Total_Runs
    - Highest_Score
    - Balls_faced
    - Strike_Rate(derived Attribute--->(Total_Runs/Balls_faced)*100)
    - No_of_fours
    - No_of_sixs
    - No_of_centuries
    - No_of_half-centuries
    - Total_Not_outs
    - Average (derived---> Total_Runs/Total_Not_outs)

2. Bowling_Stats:(Primary Key--->Year+Player_ID)
    - Year
    - Player_last_name
    - Player_first_name
    - Player_ID (Foreign key)
    - No_of_matches
    - No_of_innings
    - No_of_overs_bowled
    - Total_Runs_Conceded
    - Total_Wickets
    - Best_Bowling_in_Innings
    - Economy (derived---->Total_Runs_Conceded/No_of_overs_bowled)
    - Average (derived---->Total_Runs_Conceded/Total_Wickets)
    - Strike_Rate(derived----> ((No_of_overs_bowled*6)/Total_Wickets)

3. MVP (Primary Key -->Year+Player_ID)
    - Year
    - Player_First_Name
    - Player_Last_Name
    - Player_ID (foreign key)
    - Player_Team
    - Matches
    - Wickets
    - Dots
    - Total_no_fours
    - Total_no_sixs
    - Catches
    - Run_outs
    - Stumpings
    - Points (derived from matches,Wickets,Dots,Total_no_fours,Total_no_sixs,Catches,Run_outs,Stumpings)

Relationships

1. Teams --------- Matches (**Team** plays **Match)**
    - This is a binary relationship.

- The degree is 2.
- The cardinality ratio is M:N
- Cardinality Constraints , Teams (M,M) →Matches (N,N)

2. Players --------- Teams (**Player** belongs to this **Team** currently.**) (**constraint:A player can belong to only one team for a season.)
    - This is a binary relationship
    - The degree is 2.
    - The cardinality Ratio is N:1
    - Cardinality Constraints, Players (N,N) → Teams (1,1)

3. Umpires--------Matches (**Umpire** umpires a **Match)**
    - This is a binary relationship
    - The degree is 2.
    - The cardinality Ratio is M:N.
    - Cardinality Constraints,Umpires (M,M) → Matches (1,N)

4. Matches -------- Venues**(Match** is held at a **Venue)**
    - This is a binary relationship.
    - The degree is 2.
    - The cardinality ratio is N:1.
    - Cardinality constraints, (1,N) → Venue (1,1)
5. Players --------- Batting_Stats (**Player** has his **Batting_Stats)**
    - This is a binary relationship
    - The degree is 2.
    - The cardinality ratio is N:1.
    - Cardinality Constraints, Players (N,N) → Batting_Stats (1,1)

6. Players ------- Players (bonus)
    - **Player(Players entity)** is a captain to another **Player(Players entity).**
    - The same Players entity participates in Captain role and player role.

Ternary Relationship:

Match at **Venue** is umpired by **Umpire.**

- Ternary relationship b/w Matches,Venues and Umpires.

Quaternary Relationship:(N>3 Relationship)

- There is a quaternary relationship b/w Players,Teams,Bowling_Stats,Batting_Stats.

Player belonging to a **Team** has his **Bowling_Stats** and **Batting_stats.**

Sub-Classes:

- For the Players entity Overseas_Players and Indian_Players are subclasses.Overseas_Players subclass has the attribute Country_Of_Player,and Indian_Players subclass has the attribute State_Of_Player.

Functional Requirements

1. Retrieval
    a. i . Selection - Retrieve complete data tuples of Batting_Stats of players or the data tuples of Venues .
    Ii. Projection - Venue_Id of all the matches with Winner_Team = RCB .
    Iii. Aggregate - Average age of the Players , maximum number of centuries scored by players
    Iv. Search - search “Virat” , search “Roy”
    b. Analysis
    I . Maximum of the total runs of players , whose team won >=7 matches in the season .
    Ii . Percentage of victories of RCB with Venue_Name = M. Chinnaswamy Stadium .

2. Modifications

a. Insert - Insert umpire in the Umpires Table. Insert player in the Players Table.
b. Update - Update the no_of matches played by a player in Batting_Stats. Update Match_Status in the Matches Table . Modify captain in the Teams Table.
c. Delete - Delete player in the Players Table.