Cricket Match Management System

Team:
Dhruv Shrimali, 2021A7PS0008P
Rudra Jewalikar, 2021A7PS0450P

ER diagram redundancies and conversion:

Redundancies

1) Belongs to relationship is a many to one relationship, so it is eliminated by adding Team_ID attribute to Player
2) Participates in relationship is a many to two relationship, so it is eliminated by adding team1_id and team2_id attributes to Matches
3) Achieves is a many to one relationship, it is eliminated by adding Player_ID attribute to score.
4) Has is a many to one relationship, it is eliminated by adding Match_ID attribute to Score

Relational Schema:

Tables:
1)Player
 Attributes:
        player_id (primary key)
        player_name
        player_age
        player_position
        team_id (foreign key referencing the Team table)

there are constraints to ensure that all the attributes are not null.

2)Team
Attributes:
        team_id (primary key)
        team_name
        coach_name

Home_ground

there are constraints to ensure that all the attributes are not null.

3)Match
Attributes:
      match_id (primary key)
      match_date
      location
      winner_team_id (foreign key referencing the Team table)

there are constraints to ensure that all the attributes are not null.

4)Score
Attributes:
      score_id (primary key)
      match_id (foreign key referencing the Match table)
      player_id (foreign key referencing the Player table)
      runs_scored
      wickets_taken
      overs_bowled

there are constraints to ensure that all the attributes are not null.

Player(**player_id**, player_name, player_age, player_position, team_id)
Team(**team_id**, team_name, coach_name, Home_ground)
Match(**match_id**, match_date, location, winner_team_id)
Score(**score_id**, match_id, player_id, Runs_scored, wickets_taken, overs_bowled)

There are four relations: Belongs to, Participates in, Has and Achieves
Player Belongs to a Team, 2 Teams Participate in a match, a Match Has Scores, a Player Achieves a Score.

<u>Functional Dependencies:</u>

<u>Team:</u>

- Team_id → coach_name, home_ground, team_name

<u>Issues</u>:

- It has a transitive dependency that was resolved by splitting the table to team and team_name

<u>Player</u>:

- Player_ID → player_name, player_age, player_position

<u>Matches</u>:

- Match_id → match_date, location, team1_id, team2_id, result

<u>Batting_Score</u>:

- Match_ID, Team_ID, Player_ID → Runs_Scored, Overs_Played

<u>Bowling_Score</u>:

- Match_ID, Team_ID, Player_ID → Wickets_Taken, Overs_Bowled

Match_Score:

- Match_ID, Team_ID → Runs_Scored, Wickets_Taken, Overs_Played

The tables are already in 2NF form(since multivalued attributes are not present and partial dependencies are also not present) , so we convert them to 3NF form

3NF Form:

Team:

- Team_id → coach_name, home_ground, team_name

Team_Name:

- Team_id → team_name

Issues:

- It had transitive dependency earlier that was resolved by splitting the table to team and team_name

Player:

- Player_ID → player_name, player_age, player_position

Matches:

- Match_id → match_date, location, team1_id, team2_id, result

<u>Batting_Score</u>:

- Match_ID, Team_ID, Player_ID → Runs_Scored, Overs_Played

<u>Bowling_Score</u>:

- Match_ID, Team_ID, Player_ID → Wickets_Taken, Overs_Bowled

<u>Match_Score</u>:

- Match_ID, Team_ID → Runs_Scored, Wickets_Taken, Overs_Played

<u>Normalized Schema:</u>

Player(**player_id**, player_name, player_age, player_position, team_id)
Team(**team_id**, team_name, coach_name, Home_ground)
Team-name(**team_id**, team_name)
Match(**match_id**, match_date, location, team1_id, team2_id, winner_team_id)
Batting_Score(**match_id**, **player_id**, runs_scored, overs_Played)
Bowling_Score(**match_id**, **player_id**, wickets_taken, overs_bowled)
Match_Score(**match_id**, **team_id**, runs_scored, wickets_taken, overs_played)

<u>SQL Queries:</u>

Functionalities:

- Insert a new player record
  INSERT INTO Player (player_name, player_age, player_position, team_id)
  VALUES ('Virat', 33, 'Batsman', 1);

- Update the team information such as coach name, home ground
  UPDATE Team SET coach_name = 'Ravi Shastri' WHERE team_id = 1;

	Time	Action	Response	Duration / Fetch Time
✔	178 23:55:51	UPDAT...	0 row(s) affected Rows matched: 1 Changed: 0 Warnings: 0	0.0036 sec

- Insert new match records
  UPDATE Matches SET result = 1 WHERE match_id = 1;

-

- Update previously added match records
  UPDATE matches SET result = 1 WHERE match_id = 1;

	Time	⌀ Response	Duration / Fetch Time
✔	183 00:02:51	U 0 row(s) affected Rows matched: 1 Changed: 0 Warnings: 0	0.0020 sec

- Find the highest runs_scored by a player
  SELECT MAX(runs_scored)
  FROM Batting_Score;

Result Grid   Filter Rows: Search   Export:

MAX(runs_score...
▶ 214

- Find the total number of matches won by each team
  SELECT t.team_name, COUNT(*) AS wins
  FROM Team_Name t
  INNER JOIN Matches m ON t.team_id = m.result
  GROUP BY t.team_name;

Result Grid   Filter Rows: Search   Export:

team_name	wins
▶ Afghanistan	1
Australia	3
England	2
India	1
Pakistan	1
South Africa	1
West Indies	1

- Find the average age of players in a team
  SELECT t.team_name, AVG(p.player_age) AS avg_age

```
FROM Team_Name t
INNER JOIN Player p ON t.team_id = p.team_id
GROUP BY t.team_name;
```

team_name	avg_age
Afghanistan	26.2727
Australia	31.3636
Bangladesh	29.0000
England	29.7273
India	30.4545
New Zealand	31.0909
Pakistan	29.0000
South Africa	36.3636
Sri Lanka	29.6364
West Indies	30.0909

- Find the highest wickets_taken by a player in a match

```
SELECT MAX(wickets_taken) FROM Bowling_Score;
```

MAX(wickets_tak...
5

- Find the team with the most number of runs_scored across all matches

```
SELECT t.team_name, SUM(m.runs_scored) AS total_runs
FROM Team_Name t, Match_Score m
WHERE m.team_id = t.team_id
GROUP BY t.team_name
ORDER BY total_runs
DESC LIMIT 1;
```

team_name	total_runs
England	836

- Find the player_name and player_position for all players in a specific team

```
SELECT player_name, player_position
FROM Player
```

WHERE team_id = 1;

player_name	player_positi...
Virat Kohli	Batsman
Rohit Sharma	Batsman
Jasprit Bumrah	Bowler
Ravindra Jadeja	All-rounder
Hardik Pandya	All-rounder
Mohammed Shami	Bowler
KL Rahul	Batsman
Yuzvendra Chahal	Bowler
Shikhar Dhawan	Batsman
Bhuvneshwar Kumar	Bowler
Rishabh Pant	Wicketkeeper...

- Find the team_name and coach_name for all matches won by a specific team
  SELECT n.team_name, t.coach_name
  FROM Team t
  JOIN Team_Name n ON t.team_id = n.team_id
  JOIN Matches m ON m.result = t.team_id
  WHERE t.team_id = 5;

team_name	coach_name
South Africa	Kane Williamson

- Find the match_date, location, and player_name for all matches played by a specific player
  SELECT Matches.match_date, Matches.location, Player.player_name
  FROM Matches
  INNER JOIN Batting_Score ON Matches.match_id = Batting_Score.match_id
  INNER JOIN Player ON Batting_Score.player_id = Player.player_id
  WHERE Player.player_name = 'Andrew Tye'
  UNION
  SELECT Matches.match_date, Matches.location, Player.player_name
  FROM Matches
  INNER JOIN Bowling_Score ON Matches.match_id = Bowling_Score.match_id
  INNER JOIN Player ON Bowling_Score.player_id = Player.player_id
  WHERE Player.player_name = 'Andrew Tye';

match_date	location	player_name
2023-04-11	Gaddafi Stadium	Andrew Tye
2023-04-15	Perth Stadium	Andrew Tye
2023-04-19	R. Premadasa Stadium	Andrew Tye

● Find the team_name, match_date, and runs_scored for all matches where a specific player scored more than 100 runs

SELECT Team_Name.team_name, Matches.match_date, Batting_Score.runs_scored
FROM Matches
INNER JOIN Batting_Score ON Matches.match_id = Batting_Score.match_id
INNER JOIN Player ON Batting_Score.player_id = Player.player_id
INNER JOIN Team_Name ON Player.team_id = Team_Name.team_id
WHERE Player.player_name = 'Virat Kohli' AND Batting_Score.runs_scored > 100;

team_name	match_date	runs_scored

Since the player did not score more than 100 runs in any match the table showed up empty.
When the player was changed to 'Rohit Sharma" and runs to be scored were changed to 50, output is shown:

team_name	match_date	runs_scored
India	2023-04-16	99

.

● Find the player_name, match_date, and wickets_taken for all matches where a specific player took more than 3 wickets

SELECT p.player_name, m.match_date, bs.wickets_taken
FROM Bowling_Score bs
INNER JOIN Player p ON bs.player_id = p.player_id
INNER JOIN Matches m ON bs.match_id = m.match_id
WHERE bs.wickets_taken > 3 AND p.player_name = 'Andrew Tye';

Since the player "Andrew Tye' didn't take more than 3 wickets in any match the table showed up empty.
When constraint was changed to more than 1 wickets, output was shown:

player_name	match_date	wickets_taken
Andrew Tye	2023-04-11	3
Andrew Tye	2023-04-15	2
Andrew Tye	2023-04-19	2

Google drive link:

https://drive.google.com/drive/folders/1C6T1Le6BZ0wDNZRSADtswC2BKUI5Ut6l?usp=share_link

(Drive contains ER diagram and videos.)