Roll No	***22SW040 --> section: 01***
Subject	***DBS (lab)***
PSL Pro ect	***10 marks***
Teacher	***Ma'am Amrita***

Problem Area/Problem Definition

Currently, the Pakistan Super League (PSL) faces challenges in managing its vast array of data effectively.

This data includes information about teams, players, matches, stadiums, officials, and seasons. Here's a closer look at the problems:

1. **Manual Processes:** The league might be relying on manual methods, like paper-based records or simple spreadsheets, to store and manage data. This manual approach is prone to errors, such as typos or misplaced documents, leading to inconsistencies and inaccuracies in the data.

2. **Limited Accessibility:** With data scattered across different sources or stored in physical formats, accessing information becomes cumbersome. Team managers, league officials, and fans may struggle to retrieve the latest updates on player performance, match schedules, or league standings in a timely manner.

3. **Lack of Analysis:** Basic systems may lack robust analytical capabilities, hindering the league's ability to derive meaningful insights from its data. Without sophisticated tools for data analysis, the league misses out on opportunities to identify player trends, evaluate team strategies, or forecast future outcomes.

4. **Inefficient Decision-Making:** Without a centralized database system, decision-making processes within the league may be slow and inefficient. League officials may find it challenging to make informed decisions regarding player selections, match scheduling, or rule changes without access to comprehensive and up-to-date data.

5. **Scalability Concerns:** As the PSL continues to grow in popularity and complexity, the existing manual or basic systems may struggle to keep pace with the increasing volume of data and operational demands. This scalability concern could impede the league's ability to adapt and evolve effectively over time.

Proposed Solution

This is my proposed solutions to solve all the above problems and my project includes:

1. **Efficient Data Organization:** Instead of storing data in separate files or documents, a database system allows you to organize all PSL-related information in a central location. This makes it easier to manage and access data whenever needed.

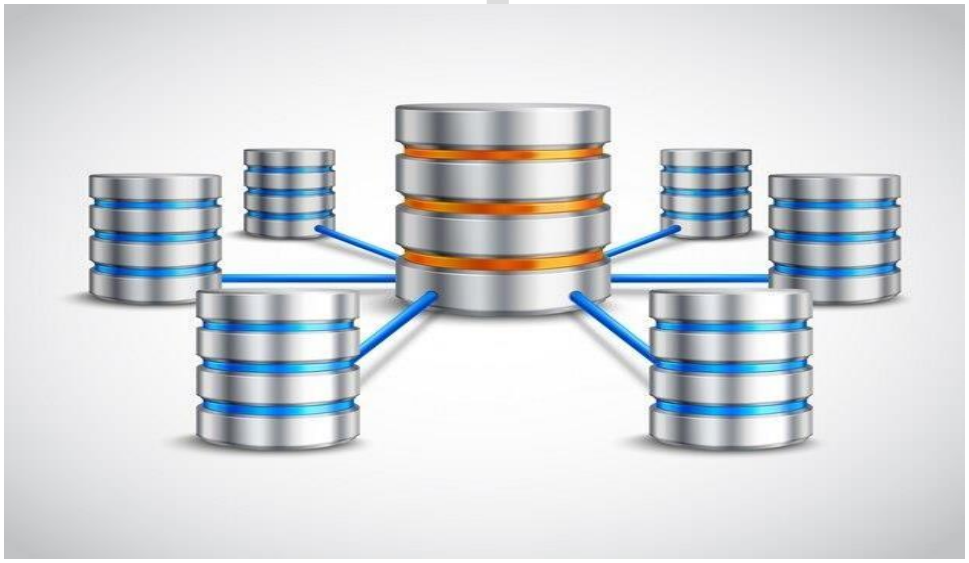
2. **Quick Retrieval of Information:** With a database, you can quickly retrieve specific information about players, teams, matches, and other aspects of the PSL. This efficiency is especially useful when you need to access data for analysis or reporting purposes.

3. **Ensuring Data Accuracy:** By enforcing data integrity rules, a database system helps maintain the accuracy and consistency of PSL data. This ensures that all information stored in the database is reliable and up to date.

4. **Enhanced Security:** A database system provides security features to control access to PSL data and protect it from unauthorized users. This is crucial for safeguarding sensitive information, such as player contracts or financial records.

5. **Scalability for Growth:** As your PSL project evolves and expands, a database system can easily scale to accommodate increasing amounts of data and user traffic. This scalability ensures that your project can grow seamlessly over time.

6. **Facilitating Data Analysis:** With a database system, you can perform complex queries and analytics to gain insights into various aspects of the PSL, such as player performance, team statistics, and fan engagement. This analysis helps you make informed decisions and improvements to the league.



Aims and Objectives

The Aims and Objectives of my project are listed below:

Aims

1. **Comprehensive Data Management:** Develop a robust database system to effectively manage all aspects of the Pakistan Super League, including player information, match schedules, team details, and more.

2. **Streamlined Information Access: Create** a user-friendly interface that allows stakeholders, such as team managers, players, and fans, to easily access and retrieve relevant information about players, teams, matches, and league standings.

3. **Enhanced Decision-Making:** Provide insightful analytics and statistics to team managers and coaches to facilitate strategic decision-making, such as player selection, game tactics, and team composition.

4. **Promotion of Fan Engagement:** Implement features that engage PSL fans by offering realtime updates, match highlights, player profiles, and interactive polls to enhance their overall viewing experience and sense of involvement with the league.

Objectives

1. **Database Design and Development:** Design and develop a relational database schema that accurately represents the various entities and relationships within the PSL ecosystem, ensuring data integrity and efficiency in storage and retrieval.

2. **User Interface Design:** Design an intuitive and visually appealing user interface (UI) that caters to the needs of different user roles, including administrators, team managers, players, and fans, with easy navigation and seamless interaction.

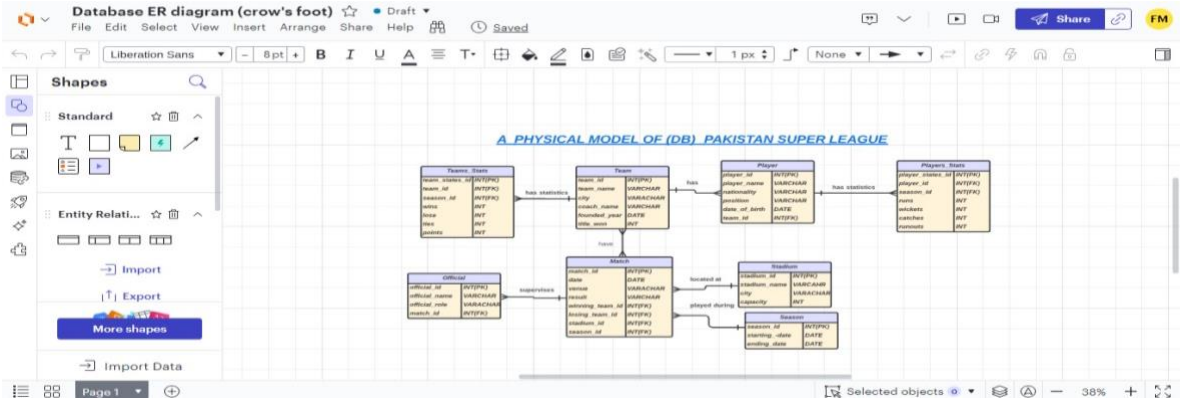
3. **Data Integration and Synchronization:** Implement mechanisms for real-time data integration and synchronization to ensure that the database reflects the latest updates, such as player transfers, match results, and schedule changes, across all platforms.

4. **Analytics and Reporting:** Develop analytical tools and reporting functionalities to generate insightful metrics and visualizations, such as player performance trends, team rankings, and match statistics, to support informed decision-making by stakeholders.

Tools Required

Lucid Chart: Lucid Chart is an essential tool for developing conceptual, logical, and physical models for my PSL project. It offers a user-friendly interface with a wide range of diagramming

features, allowing me to visually represent my database schema, entity-relationship diagrams, and more. With Lucid Chart, I can collaborate with team members in real-time, making it ideal for designing complex database structures.



MySQL Workbench and Server: MySQL Workbench and server are indispensable for developing my project by writing queries and code. It provides a comprehensive set of tools for database design, development, and administration. With these tools, I can create and manage database schemas, design tables, write SQL queries, and debug code efficiently. Its intuitive interface makes it suitable for both beginners and experienced developers alike. For screen shots you can refer to the developing and manipulating section.

Specification and Design

Entities:

1. Teams
2. Players
3. Stadiums
4. Seasons
5. Matches
6. Officials
7. Teams Stats
8. Players Stats

Attributes:

1. Teams:

- team_id (Primary Key)
- team name
- city
- coach name
- captain name
- title won
- founded year

2. Players:

- player id (Primary Key)
- player name
- nationality
- position
- date of birth
- team id (Foreign Key referencing Teams)

3. Stadiums:

- stadium id (Primary Key)
- stadium name
- city
- capacity

4. Seasons:

- season id (Primary Key)
- start year
- end year

5. Matches:

- match id (Primary Key)
- date
- venue
- result
- winning team id (Foreign Key referencing Teams)
- losing team id (Foreign Key referencing Teams)
- stadium id (Foreign Key referencing Stadiums)
- season id (Foreign Key referencing Seasons)

6. Officials:

- official id (Primary Key)
- official name
- role
- match id (Foreign Key referencing Matches)

7. Teams Stats:

- team stats id (Primary Key)
- team id (Foreign Key referencing Teams)
- season id (Foreign Key referencing Seasons)
- wins
- losses
- points

8. Players Stats:

- player stats id (Primary Key)

- player id (Foreign Key referencing Players)

- season id (Foreign Key referencing Seasons)

- runs

- wickets

- catches

- runouts

Relationships:

1. Teams (1) - (0 to many) Players

2. Teams (1) - (0 to many) Teams Stats

3. Players (1) - (0 to many) Players Stats

4. Matches (1) - (0 to many) Officials

5. Stadiums (1) - (0 to many) Matches

6. Seasons (1) - (0 to many) Matches

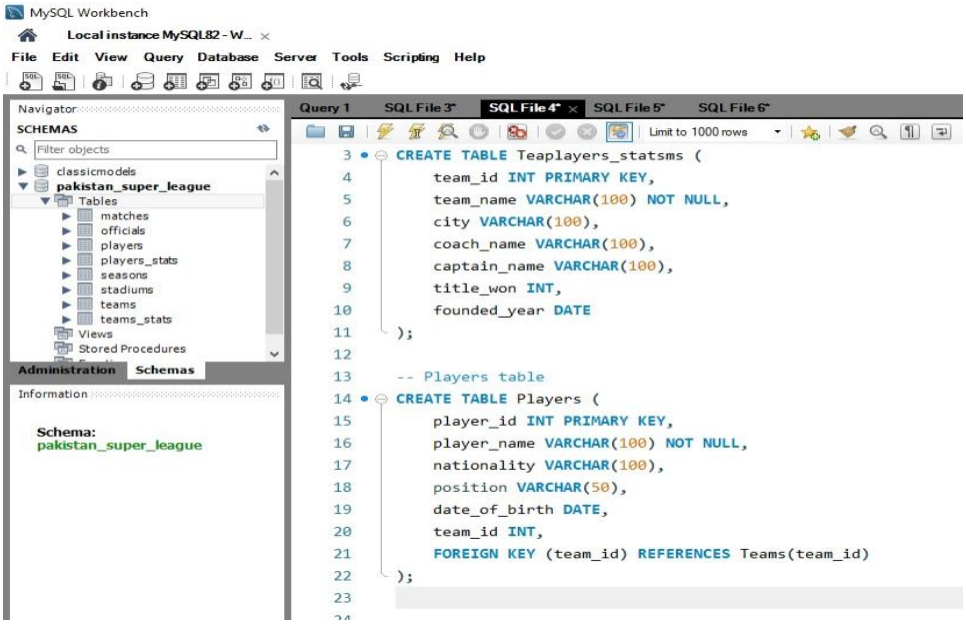
7. Teams (1) - (0 to many) Matches

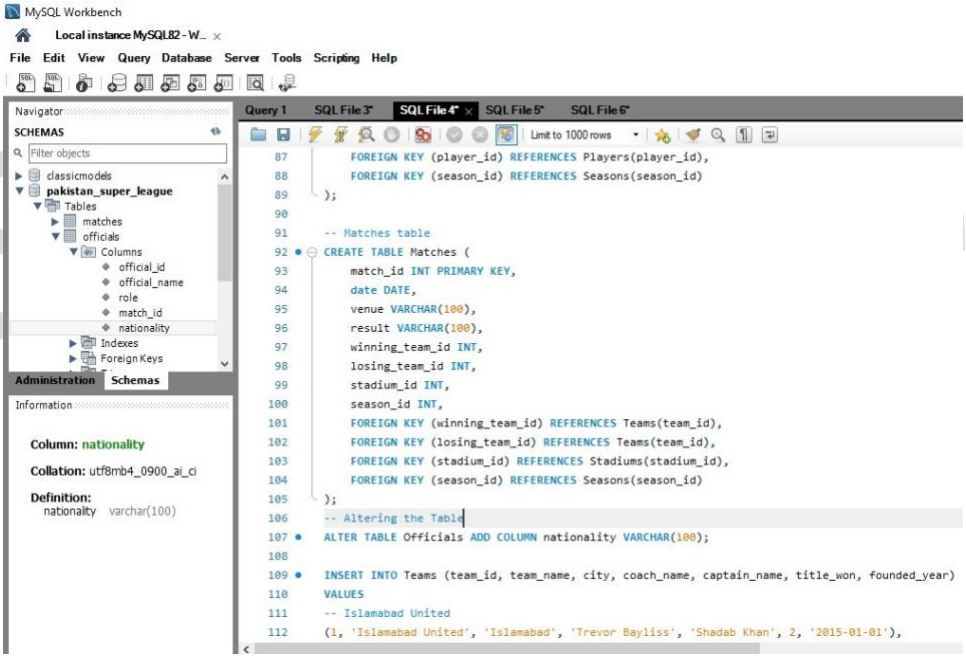
8. Seasons (1) - (0 to many) Teams Stats

9. Seasons (1) - (0 to many) Players Stats

Developing and Manipulating our PSL Database System

You can see the screen shoots how I develop and then manipulate my Project on PSL Database System


MySQL Workbench
Local instance MySQL82 - W...
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
classicmodels
pakistan_super_league
Tables
matches
officials
players
players_stats
seasons
stadiums
teams
teams_stats
Views
Stored Procedures
Administration Schemas
Information
Schema:
pakistan_super_league
Query 1 SQL File 3* SQL File 4* SQL File 5* SQL File 6*
Limit to 1000 rows
3 CREATE TABLE Teaplayers_statsms (
4 team_id INT PRIMARY KEY,
5 team_name VARCHAR(100) NOT NULL,
6 city VARCHAR(100),
7 coach_name VARCHAR(100),
8 captain_name VARCHAR(100),
9 title_won INT,
10 founded_year DATE
11);
12
13 -- Players table
14 CREATE TABLE Players (
15 player_id INT PRIMARY KEY,
16 player_name VARCHAR(100) NOT NULL,
17 nationality VARCHAR(100),
18 position VARCHAR(50),
19 date_of_birth DATE,
20 team_id INT,
21 FOREIGN KEY (team_id) REFERENCES Teams(team_id)
22);
23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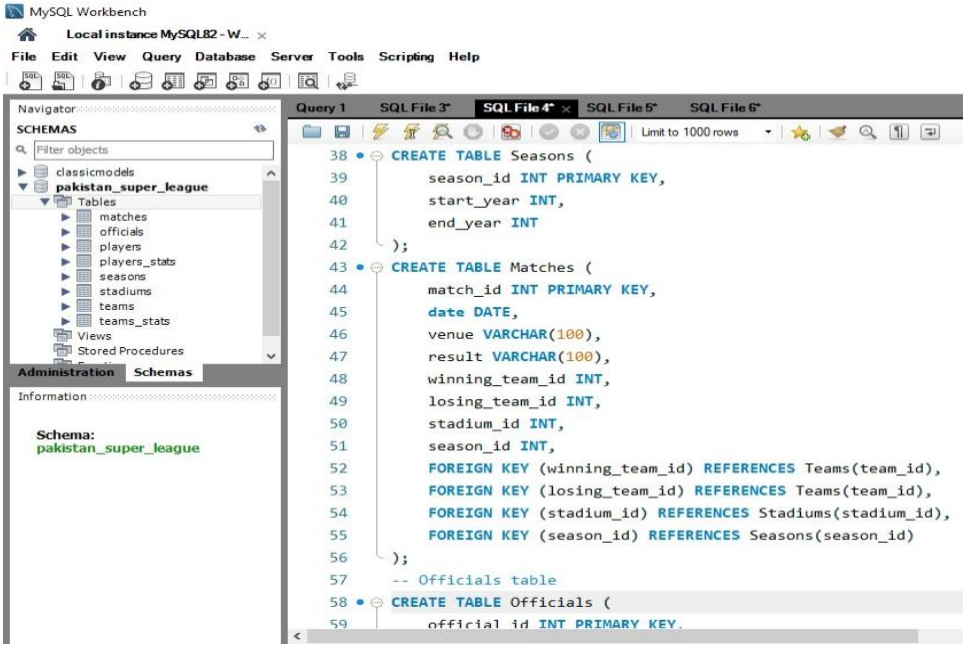
officials
Columns
official_id
official_name
role
match_id
nationality
Indexes
Foreign Keys
Administration Schemas
Information
Column: nationality
Collation: utf8mb4_0900_ai_ci
Definition:
nationality varchar(100)
Query 1 SQL File 3* SQL File 4* SQL File 5* SQL File 6*
Limit to 1000 rows
87 FOREIGN KEY (player_id) REFERENCES Players(player_id),
88 FOREIGN KEY (season_id) REFERENCES Seasons(season_id)
89);
90
91 -- Matches table
92 CREATE TABLE Matches (
93 match_id INT PRIMARY KEY,
94 date DATE,
95 venue VARCHAR(100),
96 result VARCHAR(100),
97 winning_team_id INT,
98 losing_team_id INT,
99 stadium_id INT,
100 season_id INT,
101 FOREIGN KEY (winning_team_id) REFERENCES Teams(team_id),
102 FOREIGN KEY (losing_team_id) REFERENCES Teams(team_id),
103 FOREIGN KEY (stadium_id) REFERENCES Stadiums(stadium_id),
104 FOREIGN KEY (season_id) REFERENCES Seasons(season_id)
105);
106 -- Altering the Table
107 ALTER TABLE Officials ADD COLUMN nationality VARCHAR(100);
108
109 INSERT INTO Teams (team_id, team_name, city, coach_name, captain_name, title_won, founded_year)
110 VALUES
111 -- Islamabad United
112 (1, 'Islamabad United', 'Islamabad', 'Trevor Bayliss', 'Shadab Khan', 2, '2015-01-01'),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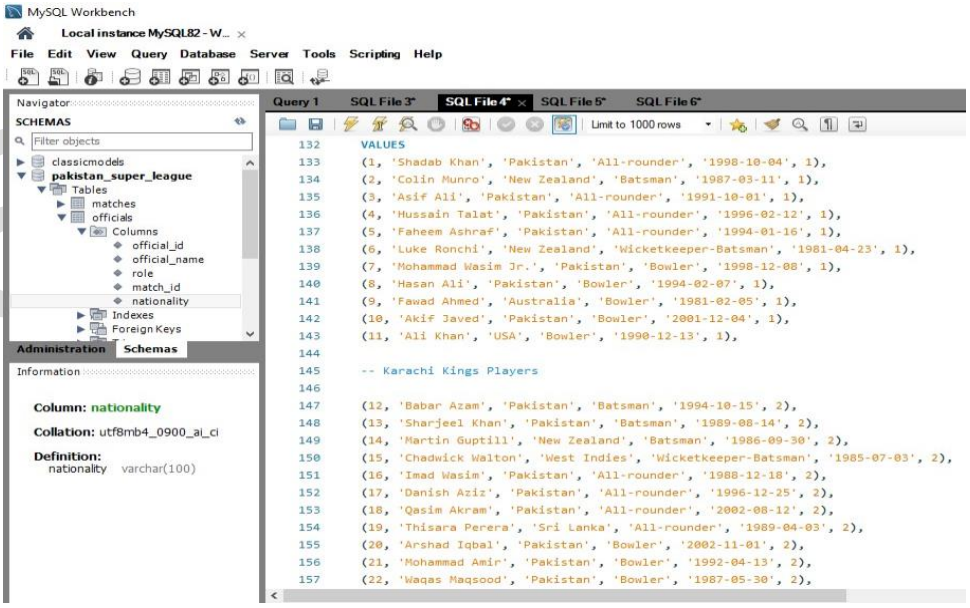
Information
Schema:
pakistan_super_league
Query 1 SQL File 3* SQL File 4* SQL File 5* SQL File 6*
Limit to 1000 rows
38 CREATE TABLE Seasons (
39 season_id INT PRIMARY KEY,
40 start_year INT,
41 end_year INT
42);
43 CREATE TABLE Matches (
44 match_id INT PRIMARY KEY,
45 date DATE,
46 venue VARCHAR(100),
47 result VARCHAR(100),
48 winning_team_id INT,
49 losing_team_id INT,
50 stadium_id INT,
51 season_id INT,
52 FOREIGN KEY (winning_team_id) REFERENCES Teams(team_id),
53 FOREIGN KEY (losing_team_id) REFERENCES Teams(team_id),
54 FOREIGN KEY (stadium_id) REFERENCES Stadiums(stadium_id),
55 FOREIGN KEY (season_id) REFERENCES Seasons(season_id)
56);
57 -- Officials table
58 CREATE TABLE Officials (
59 official_id INT PRIMARY KEY,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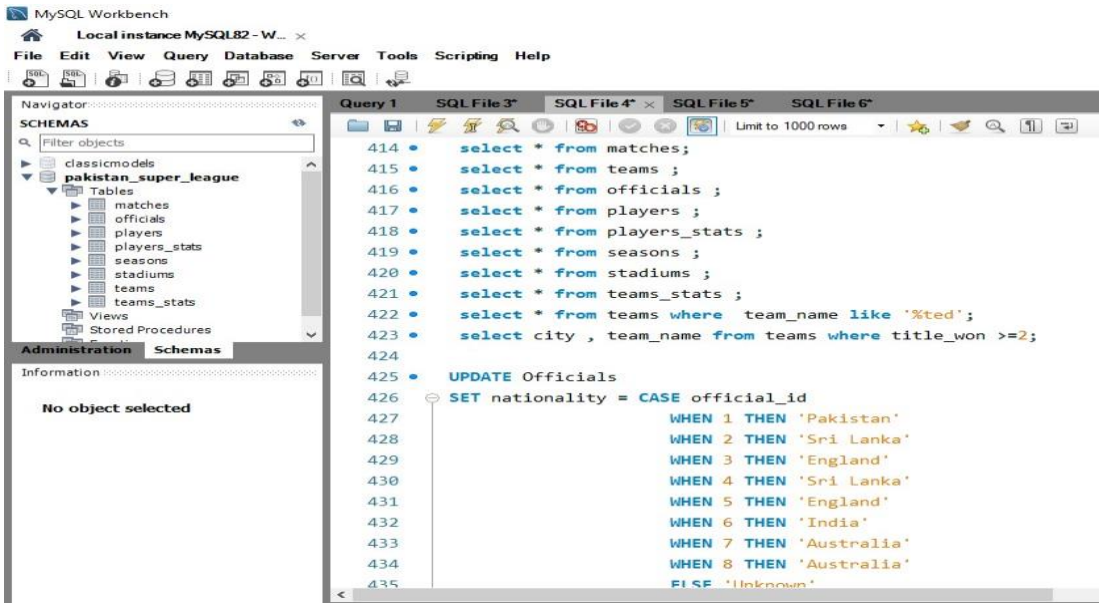
role
match_id
nationality
Indexes
Foreign Keys
Administration Schemas
Information
Column: nationality
Collation: utf8mb4_0900_ai_ci
Definition:
nationality varchar(100)
Query 1 SQL File 3* SQL File 4* SQL File 5* SQL File 6*
Limit to 1000 rows
132 VALUES
133 (1, 'Shadab Khan', 'Pakistan', 'All-rounder', '1998-10-04', 1),
134 (2, 'Colin Munro', 'New Zealand', 'Batsman', '1987-03-11', 1),
135 (3, 'Asif Ali', 'Pakistan', 'All-rounder', '1991-10-01', 1),
136 (4, 'Hussain Talat', 'Pakistan', 'All-rounder', '1996-02-12', 1),
137 (5, 'Faheem Ashraf', 'Pakistan', 'All-rounder', '1994-01-16', 1),
138 (6, 'Luke Ronchi', 'New Zealand', 'Wicketkeeper-Batsman', '1981-04-23', 1),
139 (7, 'Mohammad Wasim Jr.', 'Pakistan', 'Bowler', '1998-12-08', 1),
140 (8, 'Hasan Ali', 'Pakistan', 'Bowler', '1994-02-07', 1),
141 (9, 'Fawad Ahmed', 'Australia', 'Bowler', '1981-02-05', 1),
142 (10, 'Akif Javed', 'Pakistan', 'Bowler', '2001-12-04', 1),
143 (11, 'Ali Khan', 'USA', 'Bowler', '1990-12-13', 1),
144
145 -- Karachi Kings Players
146
147 (12, 'Babar Azam', 'Pakistan', 'Batsman', '1994-10-15', 2),
148 (13, 'Sharjeel Khan', 'Pakistan', 'Batsman', '1989-08-14', 2),
149 (14, 'Martin Guptill', 'New Zealand', 'Batsman', '1986-09-30', 2),
150 (15, 'Chadwick Walton', 'West Indies', 'Wicketkeeper-Batsman', '1985-07-03', 2),
151 (16, 'Imad Wasim', 'Pakistan', 'All-rounder', '1988-12-18', 2),
152 (17, 'Danish Aziz', 'Pakistan', 'All-rounder', '1996-12-25', 2),
153 (18, 'Qasim Akram', 'Pakistan', 'All-rounder', '2002-08-12', 2),
154 (19, 'Thisara Perera', 'Sri Lanka', 'All-rounder', '1989-04-03', 2),
155 (20, 'Arshad Iqbal', 'Pakistan', 'Bowler', '2002-11-01', 2),
156 (21, 'Mohammad Amir', 'Pakistan', 'Bowler', '1992-04-13', 2),
157 (22, 'Waqas Maqsood', 'Pakistan', 'Bowler', '1987-05-30', 2),



Output

stadium_id	stadium_name	city	capacity
1	National Stadium	Karachi	34000
2	Gaddafi Stadium	Lahore	27000
3	Rawalpindi Cricket Stadium	Rawalpindi	28000
4	Multan Cricket Stadium	Multan	35000
5	Pindi Cricket Stadium	Rawalpindi	18000
6	Rawalpindi Stadium	Rawalpindi	15000
NULL	NULL	NULL	NULL

stadium_id	stadium_name	city	capacity
1	National Stadium	Karachi	34000
2	Gaddafi Stadium	Lahore	27000
3	Rawalpindi Cricket Stadium	Rawalpindi	28000
4	Multan Cricket Stadium	Multan	35000
5	Pindi Cricket Stadium	Rawalpindi	18000
6	Rawalpindi Stadium	Rawalpindi	15000
NULL	NULL	NULL	NULL

player_stats_id	player_id	season_id	runs	wickets	catches	runouts
1	1	8	320	6	3	2
2	2	8	260	4	2	1
3	3	8	180	5	3	1
4	4	8	140	8	1	0
5	5	8	180	3	4	1
6	6	8	90	11	8	0
7	7	8	120	22	1	1
8	8	8	100	23	0	0
9	9	8	80	1	22	0
10	10	8	50	14	1	0
11	11	8	40	22	1	0
12	12	8	280	2	1	1
13	13	8	310	3	2	0
14	14	8	200	5	1	0
15	15	8	150	6	2	1
16	16	8	120	4	3	0
17	17	8	90	2	0	1

matches 2 | teams 3 | officials 4 | players 5 | players_stats 6 | seasons 7

This is all about report of my Project creating a database for Pakistan super league.