CSE412-Phase 1

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Dataset Link:
https://www.kaggle.com/datasets/rovnez/fc-26-fifa-26-player-data/data

Detailed Application Requirements:

The FIFA-26 Player Management is designed to help users to search football players' FIFA cards, view detailed information, and compare players. It's a useful tool for FIFA players who are looking to build a better squad. This application enhances the gaming experience through a clean user interface, search functionality, and comparison tools. Since the application is only used for player search and comparison, user login and authentication are not required.

Objects/Entities Involved

1. Player

- Each player can be uniquely identified by a unique Player ID.
- Each player record includes the shortname, position, nationality, club, overall rating.
- Users can view players' detailed information and compare them through the application.

2. Club

- Each club belongs to a specific league.
- Players play for clubs.

3. Country

- Country represents a player's nationality.

4. Position

- Position represents player positions on the field, such as Goalkeeper (GK), Center-Back (CB).
- Players can play multiple positions.

5. League

- League is an organization of clubs that arrange matches to encourage competition between clubs.
- Each league belongs to a country, and each club belongs to one league.

6. Additional Information

- Additional Information stores player details including age, date of birth, height, weight, salary, weak foot, release clause, and preferred position.

- Each player can have at most one detailed record.

7. Ratings
- Ratings include FIFA's six core ability values: Passing, Defending, Dribbling, Pace, Shooting, Physic.
- Each player has their own values.

User Interactions and System Behavior

1. Player Search
- Users can search players by shortname, rating, club, league, or nationality.
- Users can find specific players by using the filter and sort functions.

2. Player Comparison
- Users can select two to five players and compare them side-by-side.
- The system will highlight key strengths for users.

3. Detailed Player Information
- Users can click on a player card to get information like date of birth, club, position, nationality and detailed ratings.
- Users can also view the additional information such as weak foot, salary when they click on showing more.

4. Error Handling and Correct Display
- Ensure missing data prompts appear when the database searches for no results. Limit the number of players displayed per page.

Potential Enhancements

1. Create Team: Allow users to create the national team and club team.

ER Diagram:

Entities: Player | Club | Country| Position| League | Additional Information | Ratings

1. Player Attributes:

Player_id	PK
Short_name	
Player_position	
Nationality_id	FK
Club_team_id	FK
Overall	

2. League Attribute:

League_id	PK
League_name	
League_level	

3. Country Attributes:

Nationality_id	PK
Nationality_name	

4. Player_position Attributes:

Position _Code	PK
Position_Name	

5. Club Attributes:

Club_team_id	PK
League_id	FK
Club_name	

6. Additional Information (Weak Entity Set) Attributes:

Player_id	PK, FK
Age	
DOB	
Release_clause	
Preferred_Position	
Height	
Weight	
wages	
Weak_foot	

7. Rating Attributes:

Player_id	PK, FK
Passing	
Defending	
Dribbling	
Pace	
Shooting	

Relations:

Player_Club: many-to-one

Each player belongs to **one club**, but a club can have **many players**.

Player_Club Attributes:

Player_id	PK, FK
Club_team_id	FK
Club_position	
Club_jersey_number	
Club_contract_valid_until_year	
Club_joined_date	

Player_Country: many-to-one

Each player represents **one country** (nationality), but a country can have **many players**.

Player_Country Attributes:

Player_id	PK
Nationality_id	FK
Nation_jersey_number	
Nation_position	

League - Country: many-to-one

Each league is **based in one country**, but a country can host **multiple leagues.**

Club - League: many-to-one

Each club competes in **one league**, while a league contains **many clubs**.

Player-Position: many-to-many

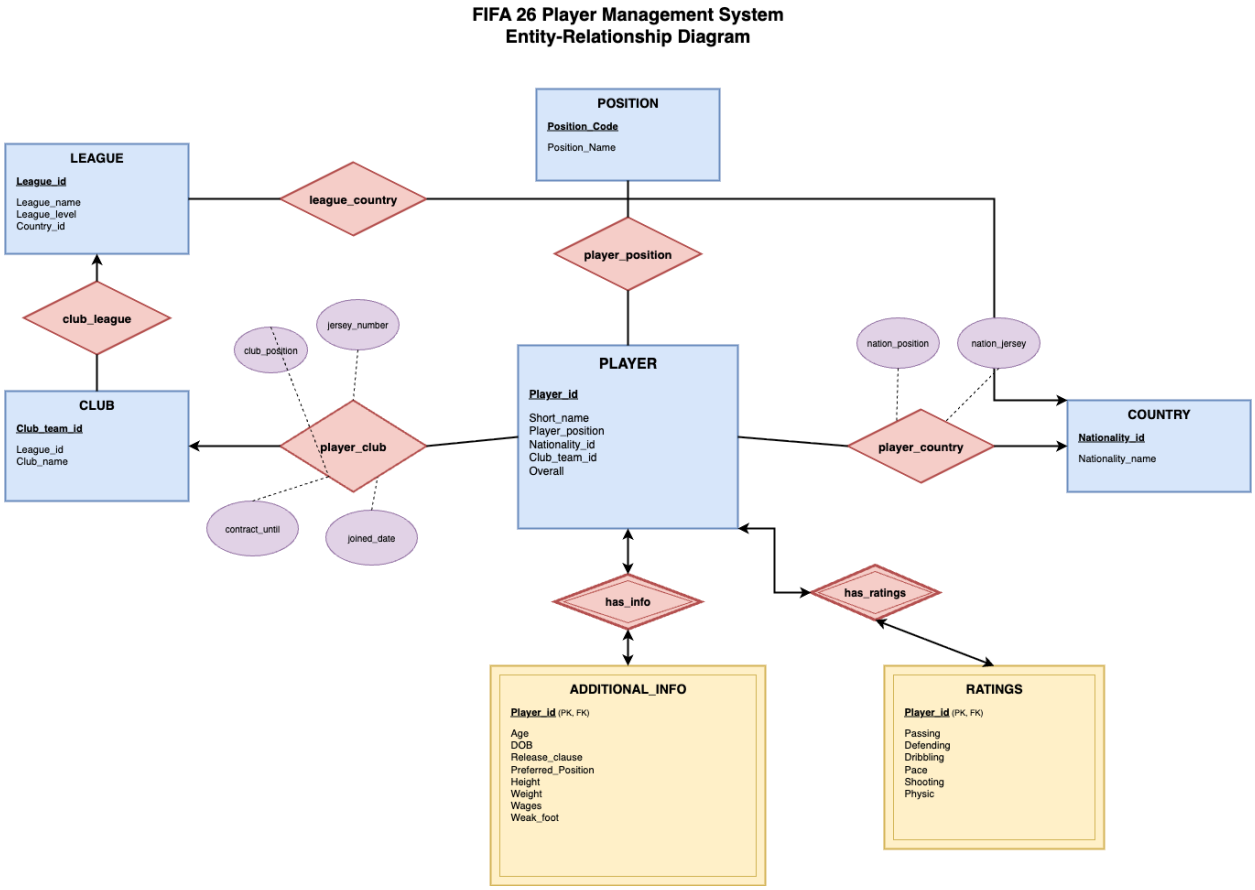
A player can play in **multiple positions**, and a position can be played by **multiple players**

Player-Additional Information: one-to-one

Each player has **one unique record** of detailed information.

Player-ratings: one-to-one

Each player has **one unique set of ratings** describing their skills and performance.



Implementation Plan:

The FIFA-26 Player Management system will be delivered as a responsive web application built with React to provide a dynamic and user-friendly interface. The client will allow users to search, view, and compare players seamlessly, with smooth in-page updates for an interactive browsing experience. React's component-based architecture will support reusable UI elements and efficient state management, ensuring a consistent and maintainable front-end structure. Server-side logic will be implemented using Node.js and Express, which will handle all client requests, route search and comparison operations, and return JSON responses for fast, asynchronous updates. Express middleware will manage input validation and error handling to maintain secure and reliable interactions between the client and the server.

For data management, the system will use Supabase, which provides a hosted PostgreSQL database along with built-in authentication and API capabilities. The schema will follow the ER diagram defined in Phase 1 so that all data operations align directly with the modeled entities and relationships. Supabase will serve as the main data layer, enabling efficient read and write operations while maintaining consistency with the Phase 1 database structure. This architecture ensures a clean separation of concerns between the front end, server logic, and database management, resulting in a responsive, maintainable, and scalable web application.

Presentation:

https://youtu.be/Lja7oHC7ZSY