**Brief explanation about Design Choices**

The FIFA 2014 SOCCER database is designed to efficiently manage and analyse data from the tournament. It stores detailed information about the participating countries, the matches played, players information , goals scored, disciplinary actions received by referee, and the stadiums where the matches took place.

**The SOCCER DataBase includes six primary tables, each focusing on a different element of the FIFA 2014 World Cup:**

1. **Stadium Table:** Contains details about the venues where matches were held.
2. **Country Table:** Holds information about countries that participated.
3. **Match Table:** Documents data related to all the matches played.
4. **Player Table:** Stores individual player information.
5. **Goal Table:** Records goals, including their types and timings during matches.
6. **Card Table:** Tracks disciplinary actions, such as cards issued during the games.

**Entities and Their Attributes**

1. **Country**
   * **Attributes**: Cid, CName, Continent, Confederation, Population

The **Country** entity is central to the database, representing each participating team in the World Cup. The Cid serves as a surrogate key, ensuring each country is uniquely identifiable, next CName is the country’s name, which is unique. The attributes Continent and Confederation categorize the countries by their geographical region and FIFA affiliation.

1. **Stadium**
   * **Attributes**: SId, SName, City, Capacity

The **Stadium** entity holds details about the stadiums used during the tournament. Here SId is a unique identifier for each stadium, and SName refers to the name of the stadium.

1. **Match**
   * **Attributes**: GId, GType, GDate, Stadium, Team1, Team2, Score1, Score2

The **Match** entity tracks the games played during the World Cup. GId is a unique identifier for each match. The GType indicates whether the match is part of the group stage or a knockout game. GDate specifies when the match was played. Score1 and Score2 capture the final scores for the teams.

1. **Player**
   * **Attributes**: PName, Pid

The **Player** entity holds information about individual players in the tournament. PName stores the player’s name and Pid is unique identity number of each player.

1. **Goal**:

* **Attributes:** GoalId , Goal\_Number, Goal\_Time, Goal\_Type.

Represents goals scored in each match including their timing and type.

1. **Card**:

* **Attributes:** CardId , CardType, CardTime.

Represents disciplinary cards given to players by Referee as well as time at which card was received and type of card received.

**Relationships Between Entities**

1. **Belongs\_To**
   * Each country have many players but player only belongs to single country.
2. **Plays**
   * Players can appear in many matches, and each match involves multiple players. This many-to-many relationship is captured through a bridge table (PlayerMatch), which links players and matches.
3. **Played\_In**
   * A player can play in multiple stadiums, and each stadium has many Players.
4. **Get\_Displinary\_Card** 
   * Players can receive multiple cards across different matches. This is represented by the **Card** entity, which specifies the card received.
5. **Score\_Goals**
   * Each Player can score multiple goals with various types of goals such as penalty, regular and own goal.

**Additional Design Considerations**

* **Game Type**: The GType attribute in the **Match** entity is used to differentiate between group stage matches and knockout stage matches. Knockout matches are further classified into types such as regular time (R), extra time (E), and penalty kicks (P).
* **Keys**: Surrogate keys (such as Cid, SId, Pid, and GId) are used for efficient referencing and to avoid the complications of using natural keys that might not be unique or reliable.

### **Keys**

#### **Primary Keys**

* Stadium Table: SId
* Country Table: CId
* Match Table: GId
* Player Table: PId
* Goal Table: GoalId
* Card Table: CardId