**TO-DO:**

In this project, you will create a conceptual schema using the ER model (30 points) and then convert it to a relational schema using the ER to relational mapping rules (30 points), run queries on the database (20 points) and submit a report containing your ER model, relational schema and screenshots of your queries (20 points). You will use MySQL Workbench for this project.

**ER-MODEL:**

**A close-up of a diagram

Description automatically generated**

**A computer screen shot of a computer

Description automatically generated**

**EXPLANTION ON ER AND ITS RELATIONSHIP:**

I have created 6 entities for the FIFA 2014 World Cup database: **PLAYERS**, **COUNTRY**, **MATCHES**, **PAST\_WINNERS**, and two weak entities called **PLAYER\_STATISTICS** and **DISCIPLINARY\_RECORD**. Each of these entities has been mapped with its respective attributes and relationships.

**Players Table:**

The **PLAYERS** table includes the following attributes:

* **Player\_id** (Primary Key)
* **Name**
* **Fname** (First Name)
* **Lname** (Last Name)
* **DOB** (Date of Birth)
* **Country\_Name** (Foreign Key to COUNTRY)
* **Height**
* **Club**
* **Position**
* **Caps\_for\_country**
* **Is\_captain**

I set **Player\_id** as the primary key.

**Player\_Statistics (Weak Entity):**

**PLAYER\_STATISTICS** depends on **Player\_id** from the **PLAYERS** table. It is a weak entity because it might not have any records (e.g., forwards usually score goals, while defenders may or may not). As this entity depends on the strong entity **PLAYER**, I mapped the relationship between **PLAYERS** and **PLAYER\_STATISTICS** as **1-to-N**.

**Disciplinary\_Record (Weak Entity):**

The **DISCIPLINARY\_RECORD** entity contains attributes such as:

* **No\_of\_red\_cards**
* **No\_of\_yellow\_cards**

It depends on **Player\_id** from the **PLAYERS** table, as a player may or may not receive red or yellow cards. Hence, I also mapped this relationship as **1-to-N**.

**Country Table:**

The **COUNTRY** table has the following attributes:

* **Country\_Name** (Primary Key)
* **Population**
* **Number\_of\_Worldcup\_won**
* **Manager**
* **Capital**

A single country can have many players, so the relationship between **COUNTRY** and **PLAYERS** is **1-to-N** (one country can have many players).

**Matches Table:**

The **MATCHES** table contains:

* **Match\_id** (Primary Key)
* **Date**
* **Start\_time**
* **Team1**
* **Team2**
* **Team1\_score**
* **Team2\_score**
* **Stadium**
* **Host\_city**

This entity has a **M-to-N** relationship with the **COUNTRY** table. Considering an example from the Olympics, where two countries can co-host a single edition of the event and many matches can take place in both countries, I applied a **M-to-N** relationship between **MATCHES** and **COUNTRY**.

**Past\_Winner Table:**

The **PAST\_WINNER** table includes:

* **Year**
* **Host**
* **Winner**

A country can win the World Cup multiple times, so I mapped the relationship between **COUNTRY** and **PAST\_WINNER** as **1-to-N** (one country can win multiple times).

**QUERIES**:

1. **Retrieve the list of country names that have won a World Cup**

SELECT DISTINCT Winner AS Country\_Name FROM PAST\_WINNERS;

**OUTPUT:**

**# Country\_Name**

Argentina

Brazil

England

France

Germany

Italy

Spain

Uruguay

**2. Retrieve the list of country names that have won a World Cup and the number of World Cups each has won in descending order**

SELECT Country\_Name, Number\_of\_Worldcup\_won

FROM COUNTRY

WHERE Number\_of\_Worldcup\_won > 0

ORDER BY Number\_of\_Worldcup\_won DESC;

**OUTPUT:**

**A screenshot of a computer

Description automatically generated**

**3. List the Capital of the countries in increasing order of country population for countries that have a population of more than 100 million**

SELECT Capital

FROM COUNTRY

WHERE Population > 100

ORDER BY Population ASC;

**OUTPUT:**

**A screenshot of a phone

Description automatically generated**

**4. List the Name of the stadiums which have hosted a match where the number of goals scored by a single team was greater than 4**

SELECT DISTINCT Stadium

FROM MATCHES

WHERE Team1\_score > 4 OR Team2\_score > 4;

**OUTPUT:**

**A screenshot of a phone

Description automatically generated**

**5. List the names of all the cities which have the name of the Stadium starting with "Estadio":**

SELECT DISTINCT Host\_city

FROM MATCHES

WHERE Stadium LIKE 'Estadio%';

**OUTPUT:**

**A screenshot of a computer

Description automatically generated**

**6. List all stadiums and the number of matches hosted by each stadium:**

SELECT Stadium, COUNT(\*) AS Number\_of\_Matches

FROM MATCHES

GROUP BY Stadium;

**OUTPUT:**

**A screenshot of a football match

Description automatically generated**

**7. List the First Name, Last Name, and Date of Birth of Players whose heights are greater than 198 cms:**

SELECT Fname, Lname, DOB

FROM PLAYERS

WHERE Height > 198;

**OUTPUT:**

**A screenshot of a phone

Description automatically generated**

**BONUS-QUESTION:**

**1. List the Stadium Names and the Teams (Team1 and Team2) that played Matches between 20-Jun-2014 and 24-Jun-2014:**

SELECT Stadium, Team1, Team2

FROM MATCHES

WHERE Date BETWEEN '2014-06-20' AND '2014-06-24';

**OUTPUT:**

**A table with a group of names

Description automatically generated with medium confidence**

**2. List the Fname, Lname, Position, and Number of Goals scored by the Captain of a team who has more than 2 Yellow cards or 1 Red card:**

SELECT p.Fname, p.Lname, p.Position, ps.Goals

FROM PLAYERS p

JOIN PLAYER\_STATISTICS ps ON p.Player\_id = ps.Player\_id

JOIN DISCIPLINARY\_RECORD dr ON p.Player\_id = dr.Player\_id

WHERE p.Is\_captain = TRUE

AND (dr.No\_of\_Yellow\_cards > 2 OR dr.No\_of\_Red\_cards > 1);

**OUTPUT:**

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