# NBA 2023/24 Season Database

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MIS 380
San Diego State University
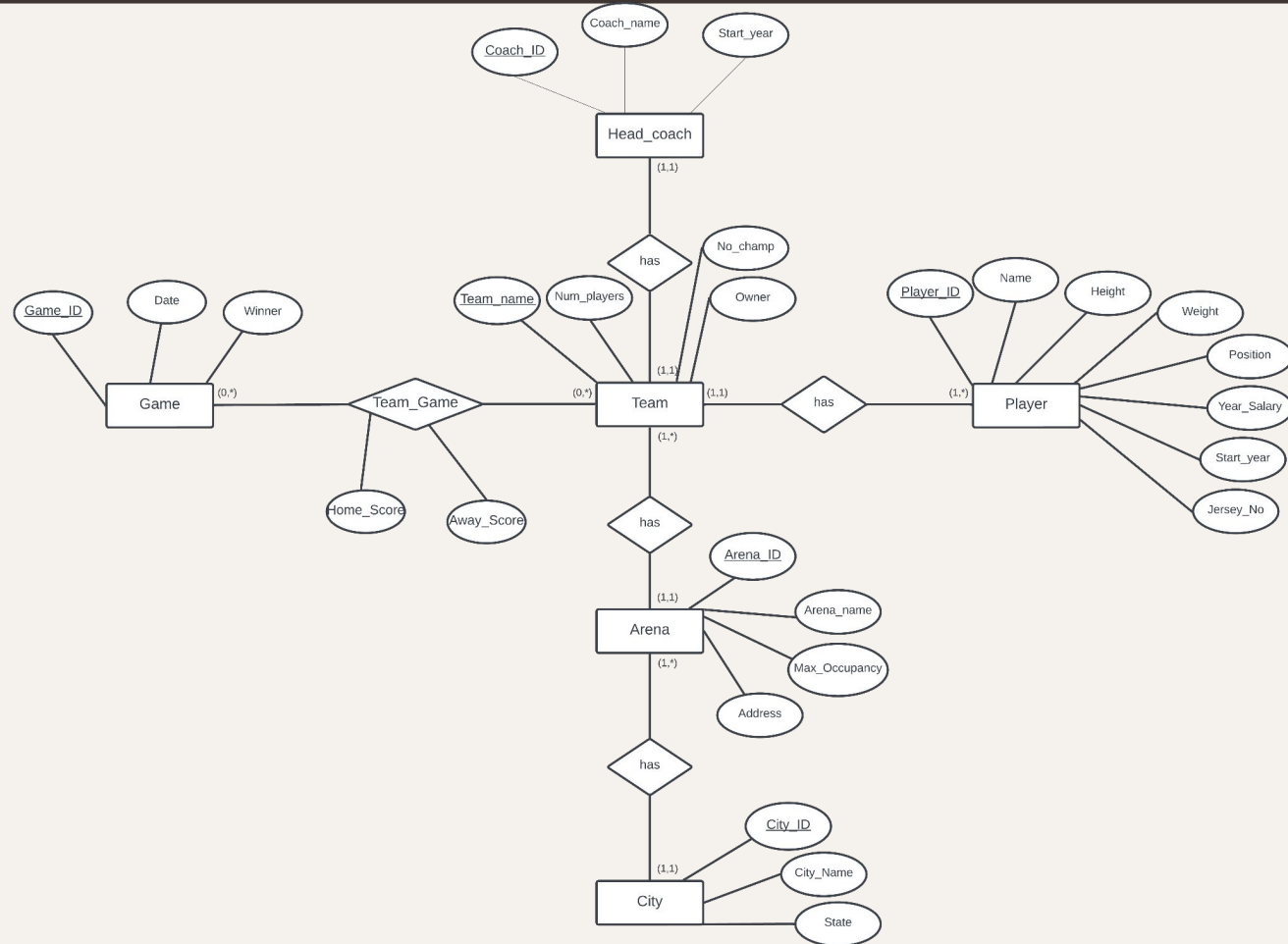
# Purpose of Our NBA Database

**Purpose**:

Our database will be used to store and manage general information about the NBA, such as players, teams, and games. It can be used by players, coaches, and fans to track this information. By containing tables such as Player, Team, Game, Team_Game, Arena, City and Head_Coach, the NBA will also be able to track the statistics of the NBA themselves.
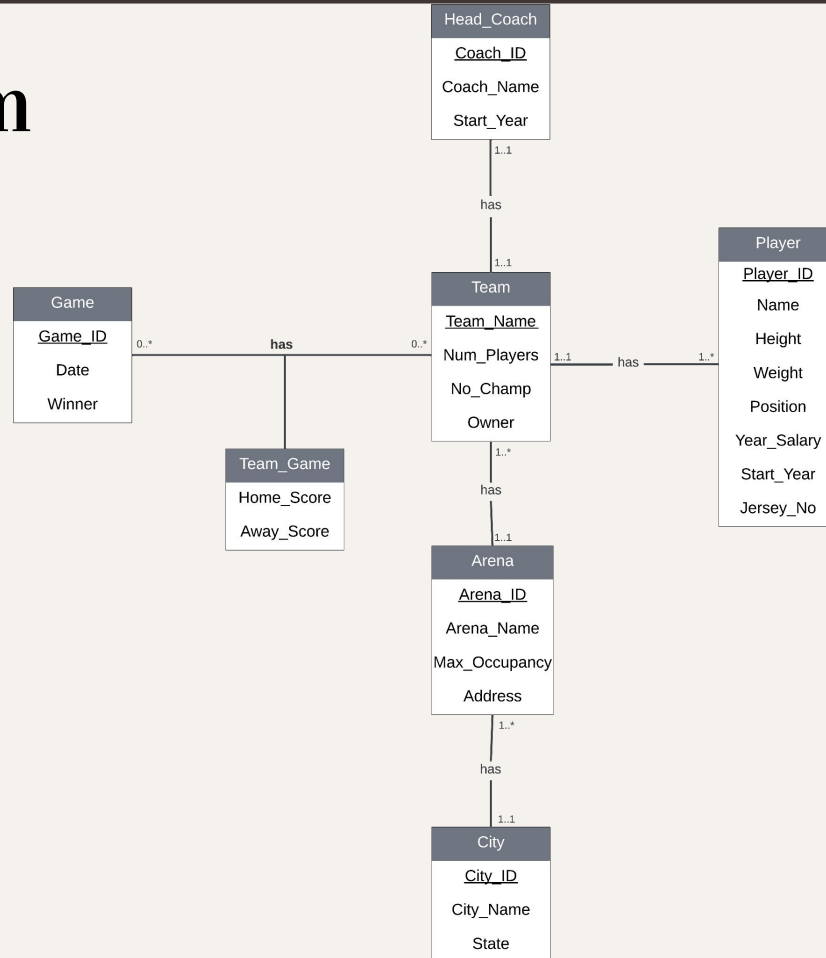
**Difficulty:**

- Constructing our SQL code so it executes correctly with taking into account foreign keys.

# ERD

# UML Diagram

**Head_Coach**
- Coach_ID
- Coach_Name
- Start_Year

1..1

has

1..1

**Team**
- Team_Name
- Num_Players
- No_Champ
- Owner

**Game**
- Game_ID
- Date
- Winner

0..*        **has**        0..*

**Team_Game**
- Home_Score
- Away_Score

**Player**
- Player_ID
- Name
- Height
- Weight
- Position
- Year_Salary
- Start_Year
- Jersey_No

1..1        has        1..*

1..*

has

1..1

**Arena**
- Arena_ID
- Arena_Name
- Max_Occupancy
- Address

1..*

has

1..1

**City**
- City_ID
- City_Name
- State

# Schema

Head_Coach(<u>Coach_ID</u>, Coach_Name, Start_Year)

City(<u>City_ID</u>, City_Name, State)

Team(<u>Team_name</u>, Num_Players, No_Champ, Owner, Arena_ID, Coach_ID)
Foreign Key: Coach_ID references Head_Coach
Foreign Key: Arena_ID references Arena

Player(<u>Player_ID</u>, Name, Height, Weight, Position, Year_Salary, Start_year, Jersery_No, Team_Name)
Foreign Key: Team_Name references Team

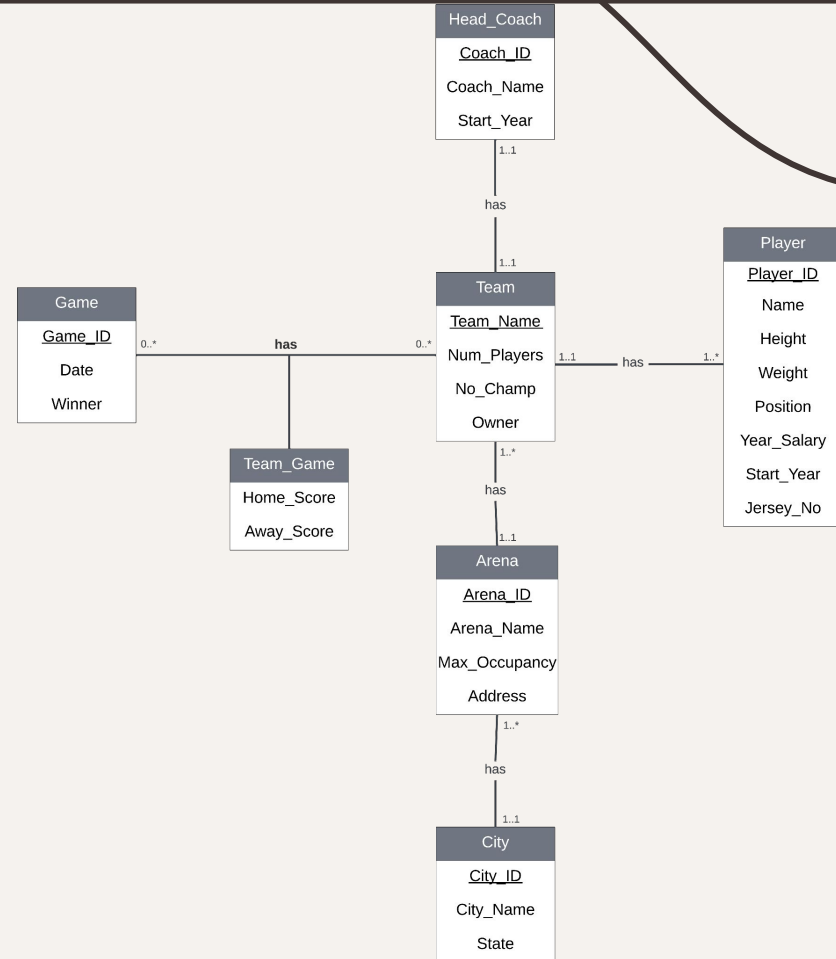Arena(<u>Arena_ID</u>, Arena_Name, Max_Occupancy, Address, City_ID)
Foreign Key: City_ID references City

Game(<u>Game_ID</u>, Date, Winner)

Team_Game(<u>Game_ID</u>, <u>Team_Name</u>, Home_Score, Away_Score)
Foreign Key: Game_ID references Game
Foreign Key: Team_Name references Team

## Head_Coach
- <u>Coach_ID</u>
- Coach_Name
- Start_Year

1..1
has
1..1

## Team
- <u>Team_Name</u>
- Num_Players
- No_Champ
- Owner

## Game
- <u>Game_ID</u>
- Date
- Winner

0..* — **has** — 0..*

1..1 — has — 1..*

## Player
- <u>Player_ID</u>
- Name
- Height
- Weight
- Position
- Year_Salary
- Start_Year
- Jersey_No

## Team_Game
- Home_Score
- Away_Score

1..*
has
1..1

## Arena
- <u>Arena_ID</u>
- Arena_Name
- Max_Occupancy
- Address

1..*
has
1..1

## City
- <u>City_ID</u>
- City_Name
- State

# Queries

**Select all coaches who have won an NBA championship**:

    SELECT Coach_Name
    FROM Head_Coach HC
    JOIN Team T ON HC.Coach_ID =
    T.Coach_ID
    WHERE T.No_Champ > 0;

**List all players who earn a salary over $50,000,000 and include their team name:**

    SELECT DISTINCT P.Name,
    P.Team_Name
    FROM Player P
    JOIN Team T ON P.Team_Name =
    T.Team_Name
    WHERE P.Year_Salary > 50000000;

**Find the average height of players on each team:**

    SELECT Team_Name, ROUND(AVG(Height), 2)
    AS Average_Height
    FROM Player
    GROUP BY Team_Name;

**Find the Teams that has an Average Weight of more than 215 lbs:**
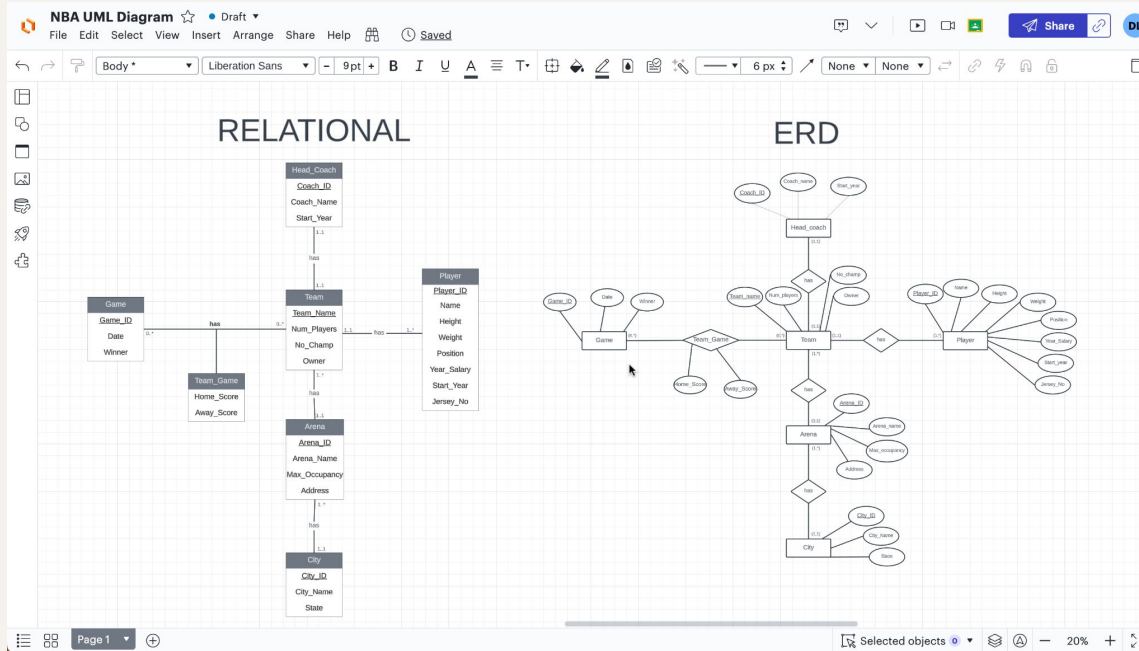
    SELECT T.Team_Name,
    ROUND(AVG(P.Weight),2) as Total_Weight
    FROM Player P
    JOIN Team T ON P.Team_Name =
    T.Team_Name
    GROUP BY T.Team_Name
    HAVING AVG(P.Weight) > 215;

# Technologies/Tools Used

# Lucid Charts

- Designing the diagrams

# Google Docs & Google Slides

- Documenting/saving our code

- Collaborating on creating our queries

- Constructing our schema

# MyEducator

- Testing and executing our code

- Building our database

- Executing Queries

# Pros and Cons

**Pros**:

- Able to identify our strengths and weaknesses in effectively applying the concepts we have learned.
- Gain useful knowledge of how a business or organization might prepare a database and scale it for their needs.
- Remedy any flaws in our skills that we have gained from the class.

**Cons**:

- Troubleshooting code took time.
- Making effective use of relationships and ensuring that they are structured correctly.
- Multiple fields referencing one table.

# Conclusion

Throughout this project we were able to create a database and learn about the complexities and roadblocks that can come from constructing a database from scratch. We could see how much more complicated a database can get as it is scaled overtime.

It is useful to gain the knowledge of how databases work for many careers as many will need data for certain tasks. It will also help to understand how a business functions as the data reflects business processes.

# References

https://www.nba.com/teams