

CS4347 Database Systems Final Project Deliverable 2

Sports League Database

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Description:

Title: Sports League Database

GitHub Repository:

<https://github.com/zbito5/Database-Project--Sports-League>

Team members and tasks:

Zachary Rose: Created Schema Design.

Sofia Ashraf: Worked on the report, presentation and helped with the design and implementation.

Zainab Olaleye: Set up Github, helped with model design and implementation and SQL.

Carlos Ortiz III: Helped with SQL setup & execution and front-end user interface, along with the EER diagram and relational model design.

Ranjeevan Jesudas: Helped with implementation in SQL, creating insertion data, and assisted in designs.

Annika Paruchuri: Worked on the user interface and design.

Motivation: Our motivation to create a database on this topic was the community around sports. Not only were the individual members of our team knowledgeable and interested in sports leagues, we cared about the community that surrounded it. The creation of this database would allow more people to be able to keep track of a wide range of sports news. It will encourage people to keep up with the sports teams that they care about and maybe even discover new interests.

Timeline: During our first team meeting, we decided that we wanted to create a sports league database. We wrote down our motivations and ideas of what our database should be capable of. Our team decided that it was best to begin with the creation of our data models. After our initial team meetings we turned our rough ideas about the database into an EER diagram and the relational data model diagram. It was important to begin this step early so as to not bottleneck the rest of the process and to give us time to make changes if needed. Next we made our GitHub repository and began working on the creation of our database. After our database was populated using information from Pro Football Reference we were able to run queries. At this point we could troubleshoot any errors in the SQL code. We made some adjustments to the models and changed our code to reflect that. Once we felt confident in our work we updated our GitHub and were able to finish the project report with details of our databases capabilities. For the second deliverable of the project, we did not need to change the original code or models because they were already in 3NF and normalized. We justified the reason for using the same models, then worked on creating the user interface using Java and Java Database Connectivity. Once we felt confident in our user interface, we were able to make update to the deliverable and create our presentation.

Introduction:

In determining our topic for this project, we had two things in mind: something that would be thoroughly enriching while also being simple to implement. We quickly settled on creating a database for the four major sports leagues (NFL, MLB, NBA, NHL), as sports tend to lend themselves very well to a database approach and we felt it would be incredibly useful to be able to view and compare various athletes, teams, and games. We felt that including multiple sports leagues would be useful from a sports analysis or sports media standpoint, as it would give an all inclusive look at American sports and could be expanded to include further leagues than

those we considered. If an organization wanted to reduce the scope of the project to a single league, the database could also be used in a sports management environment, where different teams and players could be viewed easily and compared. The all-encompassing scope of this database helps fill a role that we really haven't seen filled before.

Background and Related Work:

Newspapers and Broadcasts

Before there was widespread access to personal devices like mobile phones, sports fans got their news from newspapers and broadcasts on the radio or television [1]. Scores for the latest games would be listed and the next upcoming games would be announced, along with the location of the games [2]. Our database implementation would take a similar approach of having scores and game locations available in list form. Where our database differs is the access to even more information and the customization of how the data is presented. We include a wide range of sports, the teams within the sport, the coaches and players within the teams, information relating to the games, and more. Our approach offers more information and gives more freedom to the users.

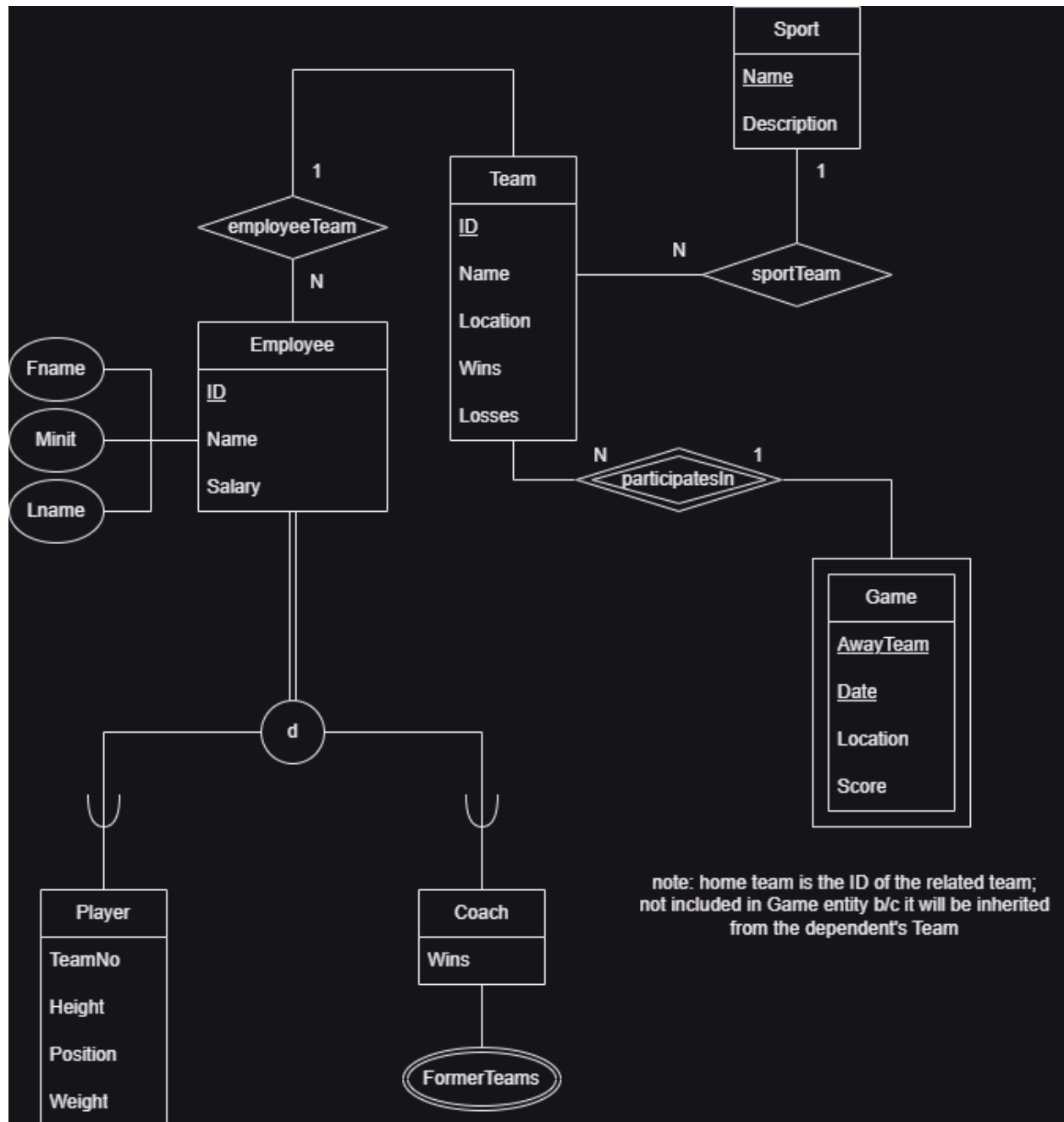
Websites and Apps

Different from early forms of sports media, modern websites and apps were able to give more information to the consumer [3]. ESPN is a popular network that has a website and apps that allow sports fans to keep up with the latest news [4]. There are also league specific websites and apps, like NFL.com or the NBA mobile app, and sport specific websites [5], [6], [7], [8]. The sports league database that we created is similar to these websites and apps because we show league information relating to teams, games, players, and more. Where our database differs is that the information is more straightforward. There are no articles or advertisements in the way of the data that the user cares about. We also make it more user friendly for people who do not

have a lot of knowledge about a sport. We offer descriptions of a sport so people can learn more about it at a very basic level. It is a less intimidating way to learn about new teams and keep up with your favorites.

Design and Implementation:

EER Conceptual Data Model Design:



Functional Dependencies (in EER):

Sport:

FD1: {Name} -> {Description}

Team:

FD2: {ID} -> {Name, Location, Wins, Losses}

Game:

FD3: {Team.ID, AwayTeam, Date} -> {Location, Score}

Employee:

FD4: {ID} -> {Name, Salary}

Player:

FD5: {ID} -> {Name, Salary, TeamNo, Height, Position, Weight}

Coach:

FD7: {ID} -> {Name, Salary, Wins, FormerTeams}

Rationale:

For the most part, most of the table is trivially in 3NF. This is because nearly every attribute is solely dependent on the ID of a given Employee, Team, or Game (or, for Sport, the name).

There are a couple of things which could be considered:

1) For Player, {Team.ID, TeamNo} -> {ID}

While this would make sense if a team can only issue a team number once, this essentially prevents archival services, as only one player can have one number at a time in the database. For the sake of simplicity, we can leave the job of no duplicate numbers to the organization.

2) A case could be made for FormerTeams having a FD within itself, but this is simply unnecessary to note here.

3) For Team {Sport, Location} -> {Name}; this would mean that for a sport, a location can only have one name. This also prevents archival services, as a team could not keep track of old names and complicates teams which have moved.

Other than these, there's no real need to modify the EER diagram, as singular primary keys are 3NF by default and the only key which is nonsingular is Game, but both attributes depend on not only the home team but also the away team and the location, making it a valid FD for 3NF.

Relational Data Model Design:



Functional Dependencies (in Relational):

Sport:

FD1: {Name} -> {Description}

Team:

FD2: {ID} -> {Name, Location, Sport, Wins, Losses}

Game:

FD3: {HomeTeam, AwayTeam, Date} -> {Location, Score}

Employee:

FD4: {ID} -> {Fname, Minit, Lname, Salary, Team, Type, TeamNo, Height, Weight, Position, Wins}

FormerTeams:

FD5: {CoachID} -> {Team}

Rationale:

Note that most of the arguments from the EER diagram for functional dependency still hold. The main hiccup which forms is how to handle Type. ID determines Type; this is self-explanatory. The problem comes with such: if we modify FD3 to be {ID} -> {Fname, Minit, Lname, Salary, Team} and add {ID, Type} -> {TeamNo, Height, Weight, Position, Wins}, this means a given ID

could have multiple types. While it could be possible for a former player to be a coach, for example, our EER diagram notes these as disjoint, which means this isn't the case. If this is necessary to model (i.e. a player is a coach at the same time, for whatever reason), one could add two IDs for the player: one as coach, one as player, but this would introduce some redundancy in names. With this, we come back to the question: does this FD make sense? There could be an argument, but this is such a fringe case and also not accounted for in our original EER model that I don't think it's worth modeling here. Otherwise, all other functional dependencies should be fine.

Reasoning:

FD1: The name for a sport determines what the description of the sport is.

FD2: The ID of a team determines its name, location, what sport it belongs to, and the team's wins and losses.

FD3: A game's location and what the score was is determined by the two teams that played and when the game was.

FD4: The ID of an employee determines the attributes of what they are; that is, it determines their name, salary, team, type of employee, and if applicable, team number, height, weight, position, and their wins (if a coach).

FD5: A coach's ID determines which teams they used to coach.

Database and Population:

Sports Table

```
CREATE DATABASE SportsLeagues;
USE SportsLeagues;

CREATE TABLE Sport (
    Name VARCHAR(50) PRIMARY KEY,
    Description VARCHAR(255)
);
```

```
mysql> select * from sport;
```

Name	Description
MLB	Major League Baseball
NBA	National Basketball Association
NFL	National Football League
NHL	National Hockey League

```
INSERT INTO Sport (Name, Description) VALUES
('NFL', 'National Football League'),
('NBA', 'National Basketball Association'),
('MLB', 'Major League Baseball'),
('NHL', 'National Hockey League');
```

Team Table

```
CREATE TABLE Team (
    Name VARCHAR(50) PRIMARY KEY,
    Location VARCHAR(100),
    Sport VARCHAR(50),
    Wins INT,
    Losses INT,
    FOREIGN KEY (Sport) REFERENCES Sport(Name)
);
```

```
INSERT INTO Team (Name, Location, Sport, Wins, Losses) VALUES
('Dallas Cowboys', 'Dallas, TX', 'NFL', 12, 5),
('Philadelphia Eagles', 'Philadelphia, PA', 'NFL', 11, 6),
('New York Giants', 'East Rutherford, NJ', 'NFL', 6, 11),
('Washington Commanders', 'Washington, D.C.', 'NFL', 4, 13),
('Detroit Lions', 'Detroit, MI', 'NFL', 12, 5),
('Green Bay Packers', 'Green Bay, WI', 'NFL', 9, 8),
('Minnesota Vikings', 'Minneapolis, MN', 'NFL', 7, 10),
('Chicago Bears', 'Chicago, IL', 'NFL', 7, 10),
('Tampa Bay Buccaneers', 'Tampa, FL', 'NFL', 9, 8),
('New Orleans Saints', 'New Orleans, LA', 'NFL', 9, 8);

INSERT INTO Team (Name, Location, Sport, Wins, Losses) VALUES
('Milwaukee Bucks', 'Milwaukee, WI', 'NBA', 58, 24),
('Boston Celtics', 'Boston, MA', 'NBA', 57, 25),
('Philadelphia 76ers', 'Philadelphia, PA', 'NBA', 54, 28),
('Cleveland Cavaliers', 'Cleveland, OH', 'NBA', 51, 31),
('New York Knicks', 'New York, NY', 'NBA', 47, 35),
('Brooklyn Nets', 'Brooklyn, NY', 'NBA', 45, 37),
('Miami Heat', 'Miami, FL', 'NBA', 44, 38),
('Atlanta Hawks', 'Atlanta, GA', 'NBA', 41, 41),
('Chicago Bulls', 'Chicago, IL', 'NBA', 40, 42),
('Toronto Raptors', 'Toronto, ON', 'NBA', 39, 43),
```

```
INSERT INTO Team (Name, Location, Sport, Wins, Losses) VALUES
('Baltimore Orioles', 'Baltimore, MD', 'MLB', 101, 61),
('Tampa Bay Rays', 'St. Petersburg, FL', 'MLB', 99, 63),
('Toronto Blue Jays', 'Toronto, ON', 'MLB', 89, 73),
('New York Yankees', 'New York, NY', 'MLB', 82, 80),
('Boston Red Sox', 'Boston, MA', 'MLB', 78, 84),
('Minnesota Twins', 'Minneapolis, MN', 'MLB', 87, 75),
('Detroit Tigers', 'Detroit, MI', 'MLB', 78, 84),
('Cleveland Guardians', 'Cleveland, OH', 'MLB', 76, 86),
('Chicago White Sox', 'Chicago, IL', 'MLB', 61, 101),
('Kansas City Royals', 'Kansas City, MO', 'MLB', 56, 106),

INSERT INTO Team (Name, Location, Sport, Wins, Losses) VALUES
('Florida Panthers', 'Sunrise, FL', 'NHL', 52, 24),
('Boston Bruins', 'Boston, MA', 'NHL', 47, 20),
('Toronto Maple Leafs', 'Toronto, ON', 'NHL', 46, 26),
('Tampa Bay Lightning', 'Tampa, FL', 'NHL', 45, 29),
('Detroit Red Wings', 'Detroit, MI', 'NHL', 41, 32),
('Buffalo Sabres', 'Buffalo, NY', 'NHL', 39, 37),
('Ottawa Senators', 'Ottawa, ON', 'NHL', 37, 41),
('Montreal Canadiens', 'Montreal, QC', 'NHL', 30, 36),
('New York Rangers', 'New York, NY', 'NHL', 55, 23),
('Carolina Hurricanes', 'Raleigh, NC', 'NHL', 52, 23),
```

mysql> select * from team;						
Name	Location	Sport	Wins	Losses	TD	
Arizona Cardinals	Glendale, AZ	NFL	4	13	1	
Arizona Diamondbacks	Phoenix, AZ	MLB	84	76	2	
Atlanta Braves	Atlanta, GA	MLB	104	58	3	
Atlanta Falcons	Atlanta, GA	NFL	7	10	1	
Atlanta Hawks	Atlanta, GA	NBA	41	41	3	
Baltimore Orioles	Baltimore, MD	MLB	101	61	6	
Baltimore Ravens	Baltimore, MD	NFL	13	4	1	
Boston Celtics	Boston, MA	NBA	57	25	8	
Boston Red Sox	Boston, MA	MLB	75	86	9	
Brooklyn Nets	Brooklyn, NY	NBA	45	37	10	
Buffalo Bills	Buffalo, NY	NFL	11	12	1	
Carolina Panthers	Charlotte, NC	NFL	2	15	12	
Charlotte Hornets	Charlotte, NC	NBA	29	6	13	
Chicago Bears	Chicago, IL	NFL	7	10	14	
Chicago Bulls	Chicago, IL	NBA	40	42	15	
Chicago Cubs	Chicago, IL	MLB	83	70	10	
Chicago White Sox	Chicago, IL	MLB	61	101	17	
Cincinnati Bengals	Cincinnati, OH	NFL	9	8	12	
Cincinnati Reds	Cincinnati, OH	MLB	82	80	19	
Cleveland Browns	Cleveland, OH	NFL	11	6	20	
Cleveland Cavaliers	Cleveland, OH	NBA	33	11	23	
Cleveland Guardians	Cleveland, OH	MLB	76	86	22	
Colorado Rockies	Denver, CO	MLB	80	103	23	
Dallas Cowboys	Dallas, TX	NFL	12	5	24	
Dallas Mavericks	Dallas, TX	NBA	35	40	25	
Denver Broncos	Denver, CO	NFL	8	9	26	
Denver Nuggets	Denver, CO	NBA	53	20	27	
Detroit Lions	Detroit, MI	NFL	12	5	28	
Detroit Pistons	Detroit, MI	NBA	17	6	29	
Detroit Tigers	Detroit, MI	MLB	78	80	17	
Golden State Warriors	San Francisco, CA	NBA	44	18	31	
Green Bay Packers	Green Bay, WI	NFL	9	8	32	
Houston Astros	Houston, TX	MLB	90	72	33	
Houston Rockets	Houston, TX	NBA	21	61	34	
Houston Texans	Houston, TX	NFL	10	7	35	
Indiana Pacers	Indianapolis, IN	NBA	34	48	36	
Indianapolis Colts	Indianapolis, IN	NFL	8	9	37	
Jacksonville Jaguars	Jacksonville, FL	NFL	9	8	38	
Kansas City Chiefs	Kansas City, MO	NFL	15	7	39	
Kansas City Royals	Kansas City, MO	MLB	54	100	40	
Las Vegas Raiders	Las Vegas, NV	NFL	8	9	41	
Los Angeles Angels	Anaheim, CA	NFL	73	1	42	
Los Angeles Chargers	Los Angeles, CA	NFL	5	12	43	
Los Angeles Clippers	Los Angeles, CA	NBA	43	41	44	
Los Angeles Dodgers	Los Angeles, CA	MLB	100	62	45	
Los Angeles Lakers	Los Angeles, CA	NBA	48	41	46	
Los Angeles Rams	Los Angeles, CA	NFL	10	7	47	
Memphis Grizzlies	Memphis, TN	NBA	31	31	48	
Miami Dolphins	Miami, FL	NFL	11	6	49	
Miami Heat	Miami, FL	NBA	44	28	50	
Miami Marlins	Miami, FL	MLB	84	76	51	
Milwaukee Brewers	Milwaukee, WI	MLB	92	70	52	
Milwaukee Bucks	Milwaukee, WI	NBA	43	24	53	
Minnesota Timberwolves	Minneapolis, MN	NBA	43	19	54	
Minnesota Twins	Minneapolis, MN	MLB	87	75	55	
Minnesota Vikings	Minneapolis, MN	NFL	7	1	56	
New England Patriots	Foxborough, MA	NFL	4	13	57	
New Orleans Pelicans	New Orleans, LA	NBA	40	3	58	
New Orleans Saints	New Orleans, LA	NFL	9	8	59	
New York Giants	East Rutherford, NJ	NFL	6	11	60	
New York Jets	East Rutherford, NJ	NFL	7	1	61	
New York Knicks	New York, NY	NBA	47	25	62	
New York Mets	New York, NY	MLB	87	75	63	
New York Yankees	New York, NY	MLB	82	80	64	
Oakland Athletics	Oakland, CA	NFL	50	12	65	
Oklahoma City Thunder	Oklahoma City, OK	NBA	39	41	66	
Orlando Magic	Orlando, FL	NBA	32	50	67	
Philadelphia 76ers	Philadelphia, PA	NBA	54	28	68	
Philadelphia Eagles	Philadelphia, PA	NFL	11	6	69	
Philadelphia Phillies	Philadelphia, PA	MLB	90	70	70	
Phoenix Suns	Phoenix, AZ	NBA	45	37	71	
Pittsburgh Pirates	Pittsburgh, PA	NFL	10	7	72	
Pittsburgh Steelers	Pittsburgh, PA	NFL	10	7	73	
Portland Trail Blazers	Portland, OR	NBA	33	40	74	
Sacramento Kings	Sacramento, CA	NBA	40	34	75	
San Antonio Spurs	San Antonio, TX	NBA	22	60	76	
San Diego Padres	San Diego, CA	MLB	82	60	77	
San Francisco 49ers	San Francisco, CA	NFL	12	5	78	
San Francisco Giants	San Francisco, CA	NFL	79	1	79	
Seattle Mariners	Seattle, WA	MLB	88	74	80	
Seattle Seahawks	Seattle, WA	NFL	9	8	81	
St. Louis Cardinals	St. Louis, MO	MLB	71	93	82	
Tampa Bay Buccaneers	Tampa, FL	NFL	9	8	83	
Tampa Bay Rays	St. Petersburg, FL	MLB	90	63	84	
Tennessee Titans	Nashville, TN	NFL	6	11	85	
Texas Rangers	Arlington, TX	NFL	40	72	86	
Toronto Blue Jays	Toronto, ON	MLB	89	71	87	
Toronto Raptors	Toronto, ON	NBA	29	43	88	
Utah Jazz	Salt Lake City, UT	NBA	37	45	89	
Washington Commanders	Washington, D.C.	NFL	4	13	90	
Washington Nationals	Washington, D.C.	MLB	71	91	91	
Washington Wizards	Washington, D.C.	NBA	15	47	92	
Florida Panthers	Sunrise, FL	NHL	52	24	93	
Boston Bruins	Boston, MA	NHL	97	20	94	
Toronto Maple Leafs	Toronto, ON	NHL	46	26	95	
Tampa Bay Lightning	Tampa, FL	NHL	45	29	96	
Detroit Red Wings	Detroit, MI	NHL	41	32	97	
Buffalo Sabres	Buffalo, NY	NHL	39	37	98	
Ottawa Senators	Ottawa, ON	NHL	37	41	99	
Montreal Canadiens	Montreal, QC	NHL	50	36	100	
New York Rangers	New York, NY	NHL	53	23	101	
Carolina Hurricanes	Raleigh, NC	NHL	52	23	102	
New York Islanders	Uniondale, NY	NHL	39	27	103	
Washington Capitals	Washington, D.C.	NHL	40	31	104	
Pittsburgh Penguins	Pittsburgh, PA	NHL	38	32	105	
Philadelphia Flyers	Philadelphia, PA	NHL	38	33	106	
New Jersey Devils	Newark, NJ	NHL	38	39	107	
Columbus Blue Jackets	Columbus, OH	NHL	27	43	108	
Dallas Stars	Dallas, TX	NHL	52	21	109	
Minnesota Jets	Minneapolis, MN	NHL	82	21	110	
Colorado Avalanche	Denver, CO	NHL	50	25	111	
Nashville Predators	Nashville, TN	NHL	47	31	112	
St. Louis Blues	St. Louis, MO	NHL	41	33	113	
Minnesota Wild	St. Paul, MN	NHL	39	34	114	
Arizona Coyotes	Glendale, AZ	NHL	36	43	115	
Chicago Blackhawks	Chicago, IL	NHL	23	53	116	
Vancouver Canucks	Vancouver, BC	NHL	50	23	117	
Edmonton Oilers	Edmonton, AB	NHL	49	27	118	
Los Angeles Kings	Los Angeles, CA	NHL	44	31	119	
Vegas Golden Knights	Las Vegas, NV	NHL	45	29	120	
Calgary Flames	Calgary, AB	NHL	38	39	121	
Seattle Kraken	Seattle, WA	NHL	34	35	122	
Anaheim Ducks	Anaheim, CA	NHL	27	50	123	
San Jose Sharks	San Jose, CA	NHL	19	54	124	

124 rows in set (0.00 sec)

Game Table

```
CREATE TABLE Game (
    HomeTeam VARCHAR(50),
    AwayTeam VARCHAR(50),
    Date DATE,
    Location VARCHAR(100),
    Score VARCHAR(20),
    PRIMARY KEY (HomeTeam, AwayTeam, Date),
    FOREIGN KEY (HomeTeam) REFERENCES Team(Name),
    FOREIGN KEY (AwayTeam) REFERENCES Team(Name)
);
```

```
INSERT INTO Game (HomeTeam, AwayTeam, Date, Location, Score, Sport) VALUES
('Denver Nuggets', 'Los Angeles Lakers', '2023-10-24', 'Ball Arena', '119-107', 'NBA'),
('Golden State Warriors', 'Phoenix Suns', '2023-10-24', 'Chase Center', '104-108', 'NBA'),
('Orlando Magic', 'Houston Rockets', '2023-10-25', 'Kia Center', '116-86', 'NBA'),
('New York Knicks', 'Boston Celtics', '2023-10-25', 'Madison Square Garden (IV)', '104-108', 'NBA'),
('Indiana Pacers', 'Washington Wizards', '2023-10-25', 'Gainbridge Fieldhouse', '143-120', 'NBA'),
('Charlotte Hornets', 'Atlanta Hawks', '2023-10-25', 'Spectrum Center', '116-110', 'NBA'),
('Miami Heat', 'Detroit Pistons', '2023-10-25', 'Kaseya Center', '103-102', 'NBA'),
('Toronto Raptors', 'Minnesota Timberwolves', '2023-10-25', 'Scotiabank Arena', '97-94', 'NBA'),
('Brooklyn Nets', 'Cleveland Cavaliers', '2023-10-25', 'Barclays Center', '113-114', 'NBA'),
('Memphis Grizzlies', 'New Orleans Pelicans', '2023-10-25', 'FedEx Forum', '104-111', 'NBA'),
('Chicago Bulls', 'Oklahoma City Thunder', '2023-10-25', 'United Center', '104-124', 'NBA');
```

INSERT INTO Game (HomeTeam, AwayTeam, Date, Location, Score, Sport) VALUES

('Kansas City Chiefs', 'Detroit Lions', '2023-09-07', 'Kansas City Arena', '20-21', 'NFL'),
('Atlanta Falcons', 'Carolina Panthers', '2023-09-10', 'Atlanta Arena', '24-10', 'NFL'),
('Cleveland Browns', 'Cincinnati Bengals', '2023-09-10', 'Cleveland Arena', '24-3', 'NFL'),
('Indianapolis Colts', 'Jacksonville Jaguars', '2023-09-10', 'Indianapolis Arena', '21-31', 'NFL'),
('Washington Commanders', 'Arizona Cardinals', '2023-09-10', 'Washington Arena', '20-16', 'NFL'),
('Baltimore Ravens', 'Houston Texans', '2023-09-10', 'Baltimore Arena', '25-9', 'NFL'),
('Minnesota Vikings', 'Tampa Bay Buccaneers', '2023-09-10', 'Minnesota Arena', '17-20', 'NFL'),
('New Orleans Saints', 'Tennessee Titans', '2023-09-10', 'New Orleans Arena', '16-15', 'NFL'),
('Pittsburgh Steelers', 'San Francisco 49ers', '2023-09-10', 'Pittsburgh Arena', '7-30', 'NFL'),
('Chicago Bears', 'Green Bay Packers', '2023-09-10', 'Chicago Arena', '20-38', 'NFL');

INSERT INTO Game (HomeTeam, AwayTeam, Date, Location, Score, Sport) VALUES

Boston Red Sox', 'Baltimore Orioles', '2023-03-30', 'Boston Red Sox Arena', '9-10', 'MLB'),
Chicago Cubs', 'Milwaukee Brewers', '2023-03-30', 'Chicago Cubs Arena', '4-0', 'MLB'),
Cincinnati Reds', 'Pittsburgh Pirates', '2023-03-30', 'Cincinnati Reds Arena', '4-5', 'MLB'),
Houston Astros', 'Chicago White Sox', '2023-03-30', 'Houston Astros Arena', '2-3', 'MLB'),
Kansas City Royals', 'Minnesota Twins', '2023-03-30', 'Kansas City Royals Arena', '0-2', 'MLB'),
Los Angeles Dodgers', 'Arizona D'Backs', '2023-03-30', 'Los Angeles Dodgers Arena', '8-2', 'MLB'),
Miami Marlins', 'New York Mets', '2023-03-30', 'Miami Marlins Arena', '3-5', 'MLB'),
New York Yankees', 'San Francisco Giants', '2023-03-30', 'New York Yankees Arena', '5-0', 'MLB'),
Oakland Athletics', 'Los Angeles Angels', '2023-03-30', 'Oakland Athletics Arena', '2-1', 'MLB'),
San Diego Padres', 'Colorado Rockies', '2023-03-30', 'San Diego Padres Arena', '2-7', 'MLB');

Over 1500 tuples total

mysql> select * from game;

HomeTeam	AwayTeam	Date	Location	Score	Sport
Anaheim Ducks	Arizona Coyotes	2023-11-01	Anaheim Ducks Arena	3-1	NHL
Anaheim Ducks	Arizona Coyotes	2023-11-07	Anaheim Ducks Arena	3-5	NHL
Anaheim Ducks	Arizona Coyotes	2023-12-26	Anaheim Ducks Arena	6-6	NHL
Anaheim Ducks	Boston Bruins	2023-10-22	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	Boston Bruins	2023-11-13	Anaheim Ducks Arena	6-6	NHL
Anaheim Ducks	Buffalo Sabres	2023-12-24	Anaheim Ducks Arena	3-5	NHL
Anaheim Ducks	Calgary Flames	2024-04-12	Anaheim Ducks Arena	6-6	NHL
Anaheim Ducks	Carolina Hurricanes	2023-10-15	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	Carolina Hurricanes	2023-12-31	Anaheim Ducks Arena	7-7	NHL
Anaheim Ducks	Chicago Blackhawks	2024-03-21	Anaheim Ducks Arena	6-6	NHL
Anaheim Ducks	Colorado Avalanche	2023-11-05	Anaheim Ducks Arena	2-2	NHL
Anaheim Ducks	Colorado Avalanche	2023-12-18	Anaheim Ducks Arena	4-4	NHL
Anaheim Ducks	Columbus Blue Jackets	2024-02-11	Anaheim Ducks Arena	1-7	NHL
Anaheim Ducks	Dallas Stars	2023-10-19	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	Dallas Stars	2024-01-26	Anaheim Ducks Arena	4-6	NHL
Anaheim Ducks	Edmonton Oilers	2024-02-09	Anaheim Ducks Arena	5-5	NHL
Anaheim Ducks	Los Angeles Kings	2024-04-06	Anaheim Ducks Arena	1-1	NHL
Anaheim Ducks	Minnesota Wild	2024-03-19	Anaheim Ducks Arena	4-4	NHL
Anaheim Ducks	Montreal Canadiens	2023-12-30	Anaheim Ducks Arena	7-7	NHL
Anaheim Ducks	Nashville Predators	2024-02-25	Anaheim Ducks Arena	4-4	NHL
Anaheim Ducks	New Jersey Devils	2024-03-01	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	New York Islanders	2023-12-15	Anaheim Ducks Arena	3-5	NHL
Anaheim Ducks	New York Islanders	2024-03-10	Anaheim Ducks Arena	6-6	NHL
Anaheim Ducks	Ottawa Senators	2024-02-06	Anaheim Ducks Arena	2-2	NHL
Anaheim Ducks	Pittsburgh Penguins	2023-11-07	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	San Jose Sharks	2023-11-11	Anaheim Ducks Arena	6-6	NHL
Anaheim Ducks	San Jose Sharks	2023-12-10	Anaheim Ducks Arena	7-7	NHL
Anaheim Ducks	San Jose Sharks	2024-01-31	Anaheim Ducks Arena	2-2	NHL
Anaheim Ducks	Seattle Kraken	2023-11-28	Anaheim Ducks Arena	4-4	NHL
Anaheim Ducks	Seattle Kraken	2024-04-05	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	St. Louis Blues	2024-04-07	Anaheim Ducks Arena	4-6	NHL
Anaheim Ducks	Tampa Bay Lightning	2024-03-24	Anaheim Ducks Arena	3-3	NHL
Anaheim Ducks	Vancouver Canucks	2024-02-01	Anaheim Ducks Arena	2-2	NHL
Anaheim Ducks	Vegas Golden Knights	2023-11-05	Anaheim Ducks Arena	2-2	NHL
Arizona Cardinals	Atlanta Falcons	2023-11-12	Arizona Cardinals	20-13	NFL
Arizona Cardinals	Baltimore Ravens	2023-10-20	Arizona Cardinals	24-31	NFL
Arizona Cardinals	Cincinnati Bengals	2023-10-08	Arizona Cardinals	20-24	NFL
Arizona Cardinals	Dallas Cowboys	2023-09-24	Arizona Cardinals	18-16	NFL
Arizona Cardinals	Los Angeles Rams	2023-11-26	Arizona Cardinals	14-17	NFL
Arizona Cardinals	New York Giants	2023-09-17	Arizona Cardinals	18-17	NFL
Arizona Cardinals	San Francisco 49ers	2023-12-17	Arizona Cardinals	20-45	NFL
Arizona Cardinals	Seattle Seahawks	2024-01-07	Arizona Cardinals	10-21	NFL
Arizona Coyotes	Anaheim Ducks	2023-10-21	Arizona Coyotes Arena	1-1	NHL
Arizona Coyotes	Buffalo Sabres	2023-12-14	Arizona Coyotes Arena	7-7	NHL
Arizona Coyotes	Calgary Flames	2023-11-12	Arizona Coyotes Arena	6-6	NHL
Arizona Coyotes	Calgary Flames	2023-12-11	Arizona Coyotes Arena	5-5	NHL
Arizona Coyotes	Carolina Hurricanes	2023-12-28	Arizona Coyotes Arena	7-7	NHL
Arizona Coyotes	Carolina Hurricanes	2024-02-16	Arizona Coyotes Arena	5-5	NHL
Arizona Coyotes	Chicago Blackhawks	2023-10-30	Arizona Coyotes Arena	1-1	NHL
Arizona Coyotes	Chicago Blackhawks	2024-01-05	Arizona Coyotes Arena	5-5	NHL
Arizona Coyotes	Columbus Blue Jackets	2024-02-26	Arizona Coyotes Arena	1-2	NHL
Arizona Coyotes	Dallas Stars	2023-11-11	Arizona Coyotes Arena	3-3	NHL
Arizona Coyotes	Dallas Stars	2024-03-24	Arizona Coyotes Arena	4-4	NHL
Arizona Coyotes	Detroit Red Wings	2023-11-18	Arizona Coyotes Arena	5-5	NHL
Arizona Coyotes	Detroit Red Wings	2023-12-18	Arizona Coyotes Arena	5-5	NHL
Arizona Coyotes	Detroit Red Wings	2024-03-08	Arizona Coyotes Arena	6-6	NHL
Arizona Coyotes	Edmonton Oilers	2024-02-19	Arizona Coyotes Arena	6-6	NHL
Arizona Coyotes	Edmonton Oilers	2024-04-17	Arizona Coyotes Arena	1-2	NHL
Arizona Coyotes	Los Angeles Kings	2023-10-27	Arizona Coyotes Arena	5-5	NHL
Arizona Coyotes	Los Angeles Kings	2023-12-15	Arizona Coyotes Arena	1-7	NHL
Arizona Coyotes	Minnesota Wild	2024-02-14	Arizona Coyotes Arena	3-3	NHL
Arizona Coyotes	Minnesota Wild	2024-03-27	Arizona Coyotes Arena	1-1	NHL
Arizona Coyotes	Montreal Canadiens	2023-11-02	Arizona Coyotes Arena	3-3	NHL
Arizona Coyotes	Nashville Predators	2024-03-28	Arizona Coyotes Arena	4-4	NHL
Arizona Coyotes	New Jersey Devils	2024-01-16	Arizona Coyotes Arena	1-1	NHL
Arizona Coyotes	New York Islanders	2023-11-29	Arizona Coyotes Arena	4-4	NHL
Arizona Coyotes	New York Rangers	2023-12-16	Arizona Coyotes Arena	1-5	NHL
Arizona Coyotes	New York Rangers	2024-03-10	Arizona Coyotes Arena	8-8	NHL
Arizona Coyotes	Ottawa Senators	2023-12-10	Arizona Coyotes Arena	6-6	NHL
Arizona Coyotes	Seattle Kraken	2023-11-07	Arizona Coyotes Arena	3-3	NHL
Arizona Coyotes	Seattle Kraken	2024-01-22	Arizona Coyotes Arena	1-1	NHL
Arizona Coyotes	St. Louis Blues	2023-12-06	Arizona Coyotes Arena	2-2	NHL
Arizona Coyotes	Toronto Maple Leafs	2023-11-26	Arizona Coyotes Arena	6-6	NHL
Arizona Coyotes	Toronto Maple Leafs	2024-02-21	Arizona Coyotes Arena	2-2	NHL
Arizona Coyotes	Vancouver Canucks	2024-04-03	Arizona Coyotes Arena	2-2	NHL
Arizona Coyotes	Vegas Golden Knights	2024-02-08	Arizona Coyotes Arena	1-3	NHL
Arizona Coyotes	Vegas Golden Knights	2024-04-05	Arizona Coyotes Arena	4-4	NHL
Arizona Coyotes	Washington Capitals	2023-11-04	Arizona Coyotes Arena	5-5	NHL
Atlanta Falcons	Carolina Panthers	2023-09-10	Atlanta Falcons	24-10	NFL
Atlanta Falcons	Green Bay Packers	2023-09-17	Atlanta Falcons	25-24	NFL
Atlanta Falcons	Houston Texans	2023-10-06	Atlanta Falcons	31-19	NFL
Atlanta Falcons	Indianapolis Colts	2023-12-24	Atlanta Falcons	20-10	NFL
Atlanta Falcons	Minnesota Vikings	2023-11-05	Atlanta Falcons	30-31	NFL
Atlanta Falcons	New Orleans Saints	2023-11-26	Atlanta Falcons	24-15	NFL
Atlanta Falcons	Tampa Bay Buccaneers	2023-12-10	Atlanta Falcons	35-29	NFL
Atlanta Falcons	Washington Commanders	2023-10-15	Atlanta Falcons	16-24	NFL
Atlanta Hawks	Minnesota Timberwolves	2023-10-30	State Farm Arena	127-113	NBA
Atlanta Hawks	New York Knicks	2023-10-27	State Farm Arena	120-126	NBA
Baltimore Ravens	Cincinnati Bengals	2023-01-06	Baltimore Ravens	34-20	NFL
Baltimore Ravens	Cleveland Browns	2023-11-12	Baltimore Ravens	31-33	NFL
Baltimore Ravens	Detroit Lions	2023-10-22	Baltimore Ravens	38-6	NFL
Baltimore Ravens	Houston Texans	2023-09-10	Baltimore Ravens	25-9	NFL
Baltimore Ravens	Houston Texans	2024-01-20	Baltimore Ravens	34-10	NFL
Baltimore Ravens	Indianapolis Colts	2023-09-24	Baltimore Ravens	19-22	NFL
Baltimore Ravens	Hannan City Chiefs	2024-01-28	Baltimore Ravens	10-17	NFL
Baltimore Ravens	Los Angeles Rams	2023-12-10	Baltimore Ravens	37-31	NFL
Baltimore Ravens	Miami Dolphins	2023-12-31	Baltimore Ravens	56-19	NFL
Baltimore Ravens	Pittsburgh Steelers	2024-01-06	Baltimore Ravens	18-19	NFL
Baltimore Ravens	Seattle Seahawks	2023-11-05	Baltimore Ravens	37-3	NFL
Boston Bruins	Anaheim Ducks	2023-10-26	Boston Bruins Arena	4-4	NHL
Boston Bruins	Calgary Flames	2024-02-06	Boston Bruins Arena	4-4	NHL
Boston Bruins	Carolina Hurricanes	2023-12-29	Boston Bruins Arena	6-6	NHL
Boston Bruins	Carolina Hurricanes	2024-04-09	Boston Bruins Arena	4-4	NHL
Boston Bruins	Chicago Blackhawks	2023-10-11	Boston Bruins Arena	1-1	NHL
Boston Bruins	Chicago Blackhawks	2023-12-23	Boston Bruins Arena	4-4	NHL
Boston Bruins	Dallas Stars	2024-02-19	Boston Bruins Arena	3-3	NHL
Boston Bruins	Detroit Red Wings	2023-10-26	Boston Bruins Arena	1-1	NHL
Boston Bruins	Detroit Red Wings	2023-12-14	Boston Bruins Arena	7-7	NHL
Boston Bruins	Edmonton Oilers	2023-11-23	Boston Bruins Arena	4-4	NHL
Boston Bruins	Edmonton Oilers	2024-01-05	Boston Bruins Arena	1-2	NHL
Boston Bruins	Florida Panthers	2023-10-30	Boston Bruins Arena	2-2	NHL
Boston Bruins	Florida Panthers	2023-11-26	Boston Bruins Arena	1-2	NHL
Boston Bruins	Florida Panthers	2023-11-30	Boston Bruins Arena	6-6	NHL
Boston Bruins	Florida Panthers	2023-12-06	Boston Bruins Arena	6-6	NHL
Boston Bruins	Florida Panthers	2024-04-06	Boston Bruins Arena	2-2	NHL
Boston Bruins	Florida Panthers	2024-05-12	Boston Bruins Arena	3-3	NHL
Boston Bruins	Florida Panthers	2024-05-17	Boston Bruins Arena	2-2	NHL
Boston Bruins	Los Angeles Kings	2024-02-17	Boston Bruins Arena	1-5	NHL
Boston Bruins	Montreal Canadiens	2023-12-27	Boston Bruins Arena	7-7	NHL
Boston Bruins	Nashville Predators	2023-10-14	Boston Bruins Arena	1-2	NHL
Boston Bruins	Nashville Predators	2023-11-15	Boston Bruins Arena	3-3	NHL
Boston Bruins	Nashville Predators	2023-12-20	Boston Bruins Arena	3-5	NHL
Boston Bruins	New York Islanders	2023-12-11	Boston Bruins Arena	6-6	NHL
Boston Bruins	New York Rangers	2023-11-12	Boston Bruins Arena	3-3	NHL
Boston Bruins	New York Rangers	2024-03-21	Boston Bruins Arena	5-5	NHL
Boston Bruins	Ottawa Senators	2023-11-11	Boston Bruins Arena	7-7	NHL
Boston Bruins	Ottawa Senators	2024-03-10	Boston Bruins Arena	2-2	NHL
Boston Bruins	Ottawa Senators	2024-03-19	Boston Bruins Arena	2-3	NHL

Employee Table

```
CREATE TABLE Employee (
  ID INT PRIMARY KEY AUTO_INCREMENT,
  Fname VARCHAR(50),
  Minit VARCHAR(10),
  Lname VARCHAR(50),
  Salary DECIMAL(10, 2),
  Team VARCHAR(50),
  Type ENUM('Player', 'Coach'),
  TeamNo INT, -- For players
  Height DECIMAL(5, 2), -- For players
  Weight DECIMAL(5, 2), -- For players
  Position VARCHAR(50), -- For players
  Wins INT, -- For coaches
  FOREIGN KEY (Team) REFERENCES Team(Name)
);

CREATE TABLE FormerTeams (
  CoachID INT,
  Team VARCHAR(50),
  PRIMARY KEY (CoachID, Team),
  FOREIGN KEY (CoachID) REFERENCES Employee(ID),
  FOREIGN KEY (Team) REFERENCES Team(Name)
);

INSERT INTO Employee (Fname, Minit, Lname, Salary, Team, Type, TeamNo, Height, Weight, Position, Wins)
VALUES
('Aaron', 'J', 'Judge', 36000000.00, 'New York Yankees', 'Player', 99, 6.7, 282.00, 'Outfielder', 40),
('Gleyber', 'A', 'Torres', 8000000.00, 'New York Yankees', 'Player', 25, 6.1, 205.00, 'Second Base', 20),
('Giancarlo', 'S', 'Stanton', 29000000.00, 'New York Yankees', 'Player', 27, 6.6, 245.00, 'Outfielder', 30),
('DJ', 'L', 'LeMahieu', 15000000.00, 'New York Yankees', 'Player', 26, 6.4, 210.00, 'First Base', 25),
('Nestor', 'C', 'Cortes Jr.', 12000000.00, 'New York Yankees', 'Player', 65, 5.10, 210.00, 'Pitcher', 15),
('Luis', 'C', 'Severino', 11000000.00, 'New York Yankees', 'Player', 86, 6.2, 230.00, 'Pitcher', 10),
('Clarke', 'S', 'Schmidt', 10000000.00, 'New York Yankees', 'Player', 86, 6.1, 200.00, 'Pitcher', 5),
('Josh', 'D', 'Donaldson', 25000000.00, 'New York Yankees', 'Player', 28, 6.1, 230.00, 'Third Base', 20),
('Aaron', 'H', 'Hicks', 10000000.00, 'New York Yankees', 'Player', 31, 6.1, 200.00, 'Outfielder', 18),
('Isiah', 'K', 'Kiner-Falefa', 6000000.00, 'New York Yankees', 'Player', 12, 5.9, 175.00, 'Shortstop', 22),

('Nookie', 'A', 'Betts', 30000000.00, 'Los Angeles Dodgers', 'Player', 50, 5.9, 180.00, 'Outfielder', 35),
('Freddie', 'F', 'Freeman', 27000000.00, 'Los Angeles Dodgers', 'Player', 5, 6.5, 220.00, 'First Base', 40),
('Clayton', 'K', 'Kershaw', 20000000.00, 'Los Angeles Dodgers', 'Player', 22, 6.4, 225.00, 'Pitcher', 25),
('Trea', 'T', 'Turner', 30000000.00, 'Los Angeles Dodgers', 'Player', 6, 6.2, 185.00, 'Shortstop', 30),
('Max', 'M', 'Muncy', 8000000.00, 'Los Angeles Dodgers', 'Player', 13, 6.1, 225.00, 'First Base', 20),
('Will', 'S', 'Smith', 30000000.00, 'Los Angeles Dodgers', 'Player', 16, 6.0, 210.00, 'Catcher', 15),
('Chris', 'T', 'Taylor', 7000000.00, 'Los Angeles Dodgers', 'Player', 3, 6.0, 210.00, 'Utility', 10),
('Justin', 'T', 'Turner', 16000000.00, 'Los Angeles Dodgers', 'Player', 10, 6.0, 220.00, 'Third Base', 20),
('Tony', 'G', 'Gonsolin', 10000000.00, 'Los Angeles Dodgers', 'Player', 26, 6.1, 160.00, 'Pitcher', 12),

('Luka', 'D', 'Doncic', 38000000.00, 'Dallas Mavericks', 'Player', 77, 6.7, 230.00, 'Guard', 38),
('Kyrie', 'A', 'Irving', 37000000.00, 'Dallas Mavericks', 'Player', 2, 6.2, 195.00, 'Guard', 40),
('Tim', 'M', 'Hardaway Jr.', 19000000.00, 'Dallas Mavericks', 'Player', 11, 6.5, 205.00, 'Guard-Forward', 30),
('Grant', 'D', 'Williams', 12000000.00, 'Dallas Mavericks', 'Player', 3, 6.6, 236.00, 'Forward', 28),
('Dwight', 'D', 'Powell', 8000000.00, 'Dallas Mavericks', 'Player', 7, 6.10, 240.00, 'Forward-Center', 25),
('Josh', 'T', 'Green', 32000000.00, 'Dallas Mavericks', 'Player', 8, 6.5, 200.00, 'Guard', 18),
('Maxi', 'A', 'Kleber', 9000000.00, 'Dallas Mavericks', 'Player', 42, 6.10, 240.00, 'Forward', 15),
('Seth', 'A', 'Curry', 8500000.00, 'Dallas Mavericks', 'Player', 30, 6.2, 185.00, 'Guard', 22),
('Derrick', 'S', 'Jones Jr.', 2700000.00, 'Dallas Mavericks', 'Player', 55, 6.6, 210.00, 'Forward', 12),
('J'Valle', 'L', 'McGee', 5000000.00, 'Dallas Mavericks', 'Player', 00, 7.0, 270.00, 'Center', 10);

INSERT INTO Employee (Fname, Minit, Lname, Salary, Team, Type, TeamNo, Height, Weight, Position, Wins)
VALUES
('Darvin', 'H', 'Ham', 8000000.00, 'Los Angeles Lakers', 'Coach', NULL, NULL, NULL, 'Head Coach', 43);

INSERT INTO Employee (Fname, Minit, Lname, Salary, Team, Type, TeamNo, Height, Weight, Position, Wins)
VALUES
('Steve', 'M', 'Kerr', 9500000.00, 'Golden State Warriors', 'Coach', NULL, NULL, NULL, 'Head Coach', 450);

INSERT INTO Employee (Fname, Minit, Lname, Salary, Team, Type, TeamNo, Height, Weight, Position, Wins)
VALUES
('Joe', 'A', 'Mazulla', 4000000.00, 'Boston Celtics', 'Coach', NULL, NULL, NULL, 'Head Coach', 65);
```

mysql> select * from employee;											
ID	Fname	Minit	Lname	Salary	Team	Type	TeamNo	Height	Weight	Position	Wins
1	LeBron	R	James	40000000.00	Los Angeles Lakers	Player	23	6.90	250.00	Forward	50
2	Anthony	D	Davis	38000000.00	Los Angeles Lakers	Player	3	6.10	253.00	Forward-Center	45
3	Russell	W	Westbrook	44211200.00	Los Angeles Lakers	Player	0	6.30	209.00	Guard	42
4	Austin	A	Reaves	2200000.00	Los Angeles Lakers	Player	15	6.50	197.00	Guard	30
5	Troy	B	Brown	4100000.00	Los Angeles Lakers	Player	7	6.60	215.00	Forward	25
6	Thomas	J	Bryant	2000000.00	Los Angeles Lakers	Player	31	6.10	248.00	Center	20
7	Lonnie	M	Walker	6400000.00	Los Angeles Lakers	Player	4	6.40	204.00	Guard	28
8	Kendrick	N	Runtz	5000000.00	Los Angeles Lakers	Player	12	6.20	190.00	Guard	22
9	Patrick	B	Beverley	13000000.00	Los Angeles Lakers	Player	21	6.10	180.00	Guard	35
10	Wenyen	G	Gabriel	1900000.00	Los Angeles Lakers	Player	35	6.90	205.00	Forward	15
11	Stephen	D	Curry	45000000.00	Golden State Warriors	Player	30	6.30	185.00	Guard	48
12	Klay	A	Thompson	30000000.00	Golden State Warriors	Player	11	6.60	215.00	Guard	46
13	Draymond	J	Green	25000000.00	Golden State Warriors	Player	23	6.60	230.00	Forward	40
14	Andrew	C	Wiggins	29000000.00	Golden State Warriors	Player	22	6.70	197.00	Forward	44
15	Jordan	A	Poole	14000000.00	Golden State Warriors	Player	3	6.40	194.00	Guard	35
16	Kevin	D	Looney	9000000.00	Golden State Warriors	Player	5	6.90	222.00	Forward-Center	28
17	James	D	Wiseman	12000000.00	Golden State Warriors	Player	33	7.00	240.00	Center	22
18	Jonathan	A	Kuminga	6100000.00	Golden State Warriors	Player	0	6.80	210.00	Forward	20
19	Moses	J	Moody	3500000.00	Golden State Warriors	Player	4	6.50	211.00	Guard	19
20	Donte	G	Divincenzo	12000000.00	Golden State Warriors	Player	10	6.40	203.00	Guard	25
21	Kevin	M	Durant	42000000.00	Brooklyn Nets	Player	7	6.10	240.00	Forward	44
22	Kyrie	A	Irving	37000000.00	Brooklyn Nets	Player	11	6.20	195.00	Guard	40
23	Ben	D	Simmons	33000000.00	Brooklyn Nets	Player	10	6.10	240.00	Guard-Forward	35
24	Joe	M	Harris	18000000.00	Brooklyn Nets	Player	12	6.60	220.00	Guard-Forward	25
25	Seth	A	Curry	8500000.00	Brooklyn Nets	Player	30	6.20	185.00	Guard	22
26	Nic	T	Claxton	6000000.00	Brooklyn Nets	Player	33	6.11	220.00	Center	15
27	Cam	A	Thomas	29000000.00	Brooklyn Nets	Player	24	6.30	210.00	Guard	12
28	Patty	S	Mills	6000000.00	Brooklyn Nets	Player	8	6.10	180.00	Guard	22
29	Yuta	S	Matsuyama	2500000.00	Brooklyn Nets	Player	18	6.90	215.00	Forward	10
30	Edmond	R	Sumner	2000000.00	Brooklyn Nets	Player	4	6.40	196.00	Guard	8
31	LeBron	R	James	40000000.00	Los Angeles Lakers	Player	23	6.90	250.00	Forward	50
32	Anthony	D	Davis	38000000.00	Los Angeles Lakers	Player	3	6.10	253.00	Forward-Center	45
33	Austin	A	Reaves	2200000.00	Los Angeles Lakers	Player	15	6.50	197.00	Guard	30
34	Rui	H	Hachimura	5000000.00	Los Angeles Lakers	Player	28	6.80	230.00	Forward	28
35	D'Angelo	R	Russell	31000000.00	Los Angeles Lakers	Player	1	6.40	193.00	Guard	40
36	Jared	A	Vanderbilt	9000000.00	Los Angeles Lakers	Player	2	6.90	214.00	Forward	15
37	Max	A	Christie	1700000.00	Los Angeles Lakers	Player	10	6.60	190.00	Guard	12
38	Jaxson	W	Hayes	6000000.00	Los Angeles Lakers	Player	11	7.00	220.00	Center	22
39	Taurean	P	Prince	4300000.00	Los Angeles Lakers	Player	12	6.70	218.00	Forward	18
40	Cam	T	Reddick	2700000.00	Los Angeles Lakers	Player	7	6.80	218.00	Forward	15
41	Stephen	D	Curry	45000000.00	Golden State Warriors	Player	30	6.30	185.00	Guard	48
42	Klay	A	Thompson	30000000.00	Golden State Warriors	Player	11	6.60	215.00	Guard	46
43	Draymond	J	Green	25000000.00	Golden State Warriors	Player	23	6.60	230.00	Forward	40
44	Andrew	C	Wiggins	29000000.00	Golden State Warriors	Player	22	6.70	197.00	Forward	44
45	Jordan	A	Poole	14000000.00	Golden State Warriors	Player	3	6.40	194.00	Guard	35
46	Kevin	D	Looney	9000000.00	Golden State Warriors	Player	5	6.90	222.00	Forward-Center	28
47	Jonathan	A	Kuminga	6100000.00	Golden State Warriors	Player	0	6.80	210.00	Forward	20
48	Moses	J	Moody	3500000.00	Golden State Warriors	Player	4	6.50	211.00	Guard	19
49	Gary	B	Payton II	7800000.00	Golden State Warriors	Player	8	6.30	190.00	Guard	16
50	Chris	B	Paul	38000000.00	Golden State Warriors	Player	3	6.10	175.00	Guard	35
51	Jayson	C	Tatum	33000000.00	Boston Celtics	Player	0	6.80	210.00	Forward	40
52	Jaylen	A	Brown	28000000.00	Boston Celtics	Player	7	6.60	223.00	Guard-Forward	38
53	Al	H	Horford	18000000.00	Boston Celtics	Player	42	6.90	240.00	Forward-Center	30
54	Derrick	B	White	17000000.00	Boston Celtics	Player	9	6.40	190.00	Guard	25
55	Kristaps	J	Porzingis	26000000.00	Boston Celtics	Player	6	7.30	240.00	Center-Forward	32
56	Robert	L	Williams III	12000000.00	Boston Celtics	Player	44	6.90	237.00	Center	18
57	Malcolm	M	Brodgton	2200000.00	Boston Celtics	Player	13	6.50	220.00	Guard	22
58	Sam	D	Hauser	1600000.00	Boston Celtics	Player	30	6.70	217.00	Forward	10
59	Payton	M	Pritchard	3200000.00	Boston Celtics	Player	11	6.10	195.00	Guard	15
60	Oshae	J	Brissett	3000000.00	Boston Celtics	Player	12	6.70	210.00	Forward	10
61	Giannis	A	Antetokounmpo	39000000.00	Milwaukee Bucks	Player	34	6.11	242.00	Forward	45

116	Eric	T	Clarkson	6000000.00	Brooklyn Nets	Player	33	6.11	220.00	Center	15
117	Joe	M	Harris	18000000.00	Brooklyn Nets	Player	12	6.60	220.00	Guard-Forward	25
118	Dorian	F	Finney-Smith	12000000.00	Brooklyn Nets	Player	20	6.70	220.00	Forward	22
119	Patty	S	Mills	6000000.00	Brooklyn Nets	Player	8	6.10	180.00	Guard	22
120	Day'Ron	K	Sharpe	2100000.00	Brooklyn Nets	Player	20	6.90	265.00	Center	8
121	Luka	D	Doncic	30000000.00	Dallas Mavericks	Player	77	6.70	230.00	Guard	38
122	Nyrie	A	Ivling	3200000.00	Dallas Mavericks	Player	2	6.20	195.00	Guard	40
123	Tim	M	Hardaway Jr.	19000000.00	Dallas Mavericks	Player	11	6.50	205.00	Guard-Forward	30
124	Grant	D	Williams	12000000.00	Dallas Mavericks	Player	3	6.60	236.00	Forward	28
125	Dwight	D	Powell	8000000.00	Dallas Mavericks	Player	7	6.10	240.00	Forward-Center	25
126	Josh	T	Green	3200000.00	Dallas Mavericks	Player	8	6.50	200.00	Guard	18
127	Maxi	A	Kleber	9000000.00	Dallas Mavericks	Player	42	6.10	240.00	Forward	15
128	Seth	A	Curry	8500000.00	Dallas Mavericks	Player	30	6.20	185.00	Guard	22
129	Derrick	S	Jones Jr.	2700000.00	Dallas Mavericks	Player	55	6.60	210.00	Forward	12
130	DeVale	L	McGee	5000000.00	Dallas Mavericks	Player	0	7.00	270.00	Center	10
131	Darvin	H	Ham	8000000.00	Los Angeles Lakers	Coach	NULL	NULL	NULL	Head Coach	43
132	Steve	M	Kerr	9500000.00	Golden State Warriors	Coach	NULL	NULL	NULL	Head Coach	450
133	Joe	A	Mazzulla	4000000.00	Boston Celtics	Coach	NULL	NULL	NULL	Head Coach	65
134	Adrian	D	Griffin	5500000.00	Milwaukee Bucks	Coach	NULL	NULL	NULL	Head Coach	0
135	Erik	J	Spolstra	10000000.00	Miami Heat	Coach	NULL	NULL	NULL	Head Coach	650
136	Nick	P	Nurse	8500000.00	Philadelphia 76ers	Coach	NULL	NULL	NULL	Head Coach	227
137	Frank	P	Vogel	8000000.00	Phoenix Suns	Coach	NULL	NULL	NULL	Head Coach	431
138	Michael	M	Malone	6500000.00	Denver Nuggets	Coach	NULL	NULL	NULL	Head Coach	366
139	Jacque	T	Vaughn	5000000.00	Brooklyn Nets	Coach	NULL	NULL	NULL	Head Coach	191
140	Jason	F	Kidd	8000000.00	Dallas Mavericks	Coach	NULL	NULL	NULL	Head Coach	354
141	Auston	T	Matthews	11804000.00	Toronto Maple Leafs	Player	34	6.30	220.00	Center	40
142	Ritch	M	Harnes	10893000.00	Toronto Maple Leafs	Player	16	6.00	181.00	Right Wing	35
143	John	T	Tavares	11000000.00	Toronto Maple Leafs	Player	91	6.10	215.00	Center	30
144	William	A	Nylander	6900000.00	Toronto Maple Leafs	Player	88	6.00	204.00	Right Wing	28
145	Morgan	J	Rielly	7500000.00	Toronto Maple Leafs	Player	44	6.10	222.00	Defenseman	25
146	Jake	J	Muzzin	5000000.00	Toronto Maple Leafs	Player	8	6.30	227.00	Defenseman	20
147	TJ	B	Brodie	5000000.00	Toronto Maple Leafs	Player	78	6.10	185.00	Defenseman	18
148	Ilya	A	Sansonov	1900000.00	Toronto Maple Leafs	Player	35	6.30	201.00	Goalie	30
149	Michael	C	Bunting	950000.00	Toronto Maple Leafs	Player	68	6.00	187.00	Left Wing	70

Former Teams Table

```
CREATE TABLE FormerTeams (
  CoachID INT,
  Team VARCHAR(50),
  PRIMARY KEY (CoachID, Team),
  FOREIGN KEY (CoachID) REFERENCES Employee(ID),
  FOREIGN KEY (Team) REFERENCES Team(Name)
);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(191, 95);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(192, 29),
(192, 124);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(193, 84);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(194, 100),
(194, 43);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(195, 93);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(246, 108);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(247, 94),
(247, 104);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(248, 100),
(248, 99);
```

```
INSERT INTO formerteams (CoachID, Team)
VALUES
(249, 94),
(249, 108),
(249, 104);
```

mysql> select * from formerteams;	
CoachID	Team
474	3
131	5
133	8
140	10
112	15
351	24
358	24
369	25
360	25
354	26
354	28
192	29
138	31
473	31
137	36
351	40
471	40
469	41
194	43
359	44
470	45
137	46
140	46
135	50
131	53
140	53
360	54
352	57
353	59
358	60
472	63
475	63
353	64
476	64
134	67
139	67
477	68
132	71
138	75
139	76
352	81
193	84
134	88
195	93
247	94
249	94
191	95
250	95
248	99
248	100
280	102
247	104
249	104
195	108
246	108
249	108
194	109
250	110
195	120
192	124

Below is a few of the alteration statements used to change our tables to fit some changes in our final models

```
ALTER TABLE Team
  ADD COLUMN ID INT PRIMARY KEY AUTO_INCREMENT;

ALTER TABLE Team
  DROP PRIMARY KEY;

ALTER TABLE Team
  ADD COLUMN ID INT PRIMARY KEY AUTO_INCREMENT;

ALTER TABLE Team
  ADD COLUMN ID INT AUTO_INCREMENT UNIQUE;

ALTER TABLE Team
  DROP PRIMARY KEY;

ALTER TABLE Team
  ADD COLUMN ID INT PRIMARY KEY AUTO_INCREMENT;

ALTER TABLE Game
  DROP COLUMN HomeTeam;

ALTER TABLE Game
  ADD COLUMN HomeTeam INT,
  ADD CONSTRAINT FK_HomeTeam FOREIGN KEY (HomeTeam) REFERENCES Team(ID);
```

Sports table queries

1. SELECT * FROM Sport;

```
mysql> INSERT INTO Sport (Name, Description)
-> VALUES ('MLS', 'Major League Soccer');
Query OK, 1 row affected (0.03 sec)
```

2. Insert: If it's not already there, add MLS to the table

INSERT INTO Sport (Name, Description)

VALUES ('MLS', 'Major League Soccer');

```
mysql> INSERT INTO Sport (Name, Description)
-> VALUES ('MLS', 'Major League Soccer');
Query OK, 1 row affected (0.03 sec)
```

3. Query: Verify the newly inserted MLS sport entry

SELECT * FROM Sport

WHERE Name = 'MLS';

```
mysql> SELECT * FROM Sport
-> WHERE Name = 'MLS';
```

Name	Description
MLS	Major League Soccer

```
1 row in set (0.01 sec)
```

4. Delete: Remove MLS from the table

DELETE FROM Sport

WHERE Name = 'MLS';

5. Update: Modify an existing sport (for example, updating the NFL description)

UPDATE Sport

SET Description = 'American National Football League'

WHERE Name = 'NFL';

```
mysql> DELETE FROM Sport
-> WHERE Name = 'MLS';
Query OK, 1 row affected (0.04 sec)

mysql> UPDATE Sport
-> SET Description = 'American National Football League'
-> WHERE Name = 'NFL';
Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> SELECT * FROM Sport;
```

Name	Description
MLB	Major League Baseball
NBA	National Basketball Association
NFL	American National Football League
NHL	National Hockey League

```
4 rows in set (0.01 sec)
```

Team table queries:

1. INSERT INTO Team (Name, Location, Sport, Wins, Losses)

VALUES ('Riverdale Falcons', 'Riverdale, TX', 'NFL', 8, 3);

2. SELECT * FROM Team

WHERE Name = 'Riverdale Falcons';

3. DELETE FROM Team

WHERE Name = 'Riverdale Falcons';

4. UPDATE Team

SET Wins = 13, Losses = 4

WHERE Name = 'Dallas Cowboys';

```
mysql> INSERT INTO Team (Name, Location, Sport, Wins, Losses)
-> VALUES ('Riverdale Falcons', 'Riverdale, TX', 'NFL', 8, 3);
Query OK, 1 row affected (0.03 sec)

mysql> SELECT * FROM Team
-> WHERE Name = 'Riverdale Falcons';
+-----+-----+-----+-----+-----+-----+
| Name          | Location    | Sport | Wins | Losses | ID   |
+-----+-----+-----+-----+-----+-----+
| Riverdale Falcons | Riverdale, TX | NFL   | 8    | 3      | 126  |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> DELETE FROM Team
-> WHERE Name = 'Riverdale Falcons';
Query OK, 1 row affected (0.03 sec)
```

```
mysql> UPDATE Team
-> SET Wins = 13, Losses = 4
-> WHERE Name = 'Dallas Cowboys';
Query OK, 1 row affected (0.03 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select SELECT * FROM Team
-> WHERE Name = 'Dallas Cowboys';
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'SELECT * FROM Team
WHERE Name = 'Dallas Cowboys'' at line 1
mysql> SELECT * FROM Team
-> WHERE Name = 'Dallas Cowboys';
+-----+-----+-----+-----+-----+-----+
| Name          | Location    | Sport | Wins | Losses | ID   |
+-----+-----+-----+-----+-----+-----+
| Dallas Cowboys | Dallas, TX  | NFL   | 13   | 4      | 24   |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.01 sec)
```

Game table queries

```
mysql> SELECT * FROM Game
-> WHERE HomeTeam = 'Pittsburgh Penguins' AND AwayTeam = 'Chicago Blackhawks' AND Date = '2023-10-10';
```

HomeTeam	AwayTeam	Date	Location	Score	Sport
Pittsburgh Penguins	Chicago Blackhawks	2023-10-10	Pittsburgh Penguins Arena	4-4	NHL

1 row in set (0.03 sec)

```
mysql> INSERT INTO Game (HomeTeam, AwayTeam, Date, Location, Score, Sport)
-> VALUES ('San Francisco Bulls', 'Los Angeles Sharks', '2024-10-10', 'San Francisco Bulls Arena', '3-3', 'NHL');
Query OK, 1 row affected (0.04 sec)
```

```
mysql> SELECT * FROM Game
-> WHERE HomeTeam = 'San Francisco Bulls' AND AwayTeam = 'Los Angeles Sharks' AND Date = '2024-10-10';
```

HomeTeam	AwayTeam	Date	Location	Score	Sport
San Francisco Bulls	Los Angeles Sharks	2024-10-10	San Francisco Bulls Arena	3-3	NHL

1 row in set (0.00 sec)

```
mysql> DELETE FROM Game
-> WHERE HomeTeam = 'San Francisco Bulls' AND AwayTeam = 'Los Angeles Sharks' AND Date = '2024-10-10';
Query OK, 1 row affected (0.03 sec)
```

```
mysql> SELECT * FROM Game
-> WHERE HomeTeam = 'San Francisco Bulls' AND AwayTeam = 'Los Angeles Sharks' AND Date = '2024-10-10';
Empty set (0.01 sec)
```

```
mysql> UPDATE Game
-> SET Score = '5-4'
-> WHERE HomeTeam = 'Tampa Bay Lightning' AND AwayTeam = 'Nashville Predators' AND Date = '2023-10-10';
Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> SELECT * FROM Game
-> WHERE HomeTeam = 'Tampa Bay Lightning' AND AwayTeam = 'Nashville Predators' AND Date = '2023-10-10';
```

HomeTeam	AwayTeam	Date	Location	Score	Sport
Tampa Bay Lightning	Nashville Predators	2023-10-10	Tampa Bay Lightning Arena	5-4	NHL

1 row in set (0.00 sec)

Employee table queries

```
mysql> INSERT INTO Employee (Fname, Minit, Lname, Salary, Team, Type, TeamNo, Height, Weight, Position, Wins)
-> VALUES ('John', 'A', 'Doe', 500000.00, 'New York Yankees', 'Player', 45, 6.0, 180.00, 'Utility', 10);
Query OK, 1 row affected (0.03 sec)
```

```
mysql> SELECT * FROM Employee
-> WHERE Fname = 'John' AND Lname = 'Doe';
```

ID	Fname	Minit	Lname	Salary	Team	Type	TeamNo	Height	Weight	Position	Wins
490	John	A	Doe	500000.00	New York Yankees	Player	45	6.00	180.00	Utility	10

1 row in set (0.00 sec)

```
mysql> DELETE FROM Employee
-> WHERE Fname = 'John' AND Lname = 'Doe';
Query OK, 1 row affected (0.03 sec)
```

```
mysql> SELECT * FROM Employee
-> WHERE Fname = 'John' AND Lname = 'Doe';
Empty set (0.00 sec)
```

```
mysql> UPDATE Employee
-> SET Salary = 37000000.00
-> WHERE Fname = 'Aaron' AND Lname = 'Judge';
Query OK, 1 row affected (0.02 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> SELECT * FROM Employee
-> WHERE Fname = 'Aaron' AND Lname = 'Judge';
```

ID	Fname	Minit	Lname	Salary	Team	Type	TeamNo	Height	Weight	Position	Wins
369	Aaron	J	Judge	37000000.00	New York Yankees	Player	99	6.70	282.00	Outfielder	40

1 row in set (0.00 sec)

Former Team table queries

```
mysql> INSERT INTO formerteams (CoachID, Team)
  -> VALUES (136, 92); -- Fake team and coach
Query OK, 1 row affected (0.02 sec)

mysql> SELECT * FROM formerteams
  -> WHERE CoachID = 136 AND Team = 92;
+-----+-----+
| CoachID | Team |
+-----+-----+
|      136 |    92 |
+-----+-----+
1 row in set (0.01 sec)

mysql> DELETE FROM formerteams
  -> WHERE CoachID = 136 AND Team = 92;
Query OK, 1 row affected (0.02 sec)

mysql> SELECT * FROM formerteams
  -> WHERE CoachID = 136 AND Team = 92;
Empty set (0.00 sec)

mysql> UPDATE formerteams
  -> SET Team = 25
  -> WHERE CoachID = 131 AND Team = 53;
Query OK, 1 row affected (0.03 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM formerteams
  -> WHERE CoachID = 131 AND Team = 25;
+-----+-----+
| CoachID | Team |
+-----+-----+
|      131 |    25 |
+-----+-----+
1 row in set (0.00 sec)
```

Execution of a view:

This view lists all players that make a high salary across all sports, teams, and positions. The player makes a high salary if they earn more than \$30,000,000

```
mysql> CREATE VIEW HighSalaryPlayers AS
  -> SELECT
  ->   ID,
  ->   FName AS FirstName,
  ->   LName AS LastName,
  ->   Salary,
  ->   Position
  -> FROM
  ->   Employee
  -> WHERE
  ->   Type = 'Player' AND Salary > 30000000;
Query OK, 0 rows affected (0.01 sec)
```

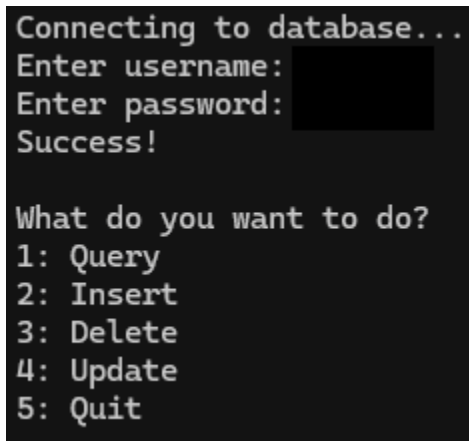
```
mysql> SELECT * FROM HighSalaryPlayers;
+----+-----+-----+-----+-----+
| ID | FirstName | LastName | Salary | Position |
+----+-----+-----+-----+-----+
| 1 | LeBron | James | 40000000.00 | Forward |
| 2 | Anthony | Davis | 38000000.00 | Forward-Center |
| 3 | Russell | Westbrook | 44211200.00 | Guard |
| 11 | Stephen | Curry | 45000000.00 | Guard |
| 12 | Klay | Thompson | 38000000.00 | Guard |
| 21 | Kevin | Durant | 42000000.00 | Forward |
| 22 | Kyrie | Irving | 37000000.00 | Guard |
| 23 | Ben | Simmons | 33000000.00 | Guard-Forward |
| 31 | LeBron | James | 40000000.00 | Forward |
| 32 | Anthony | Davis | 38000000.00 | Forward-Center |
| 35 | D'Angelo | Russell | 31000000.00 | Guard |
| 41 | Stephen | Curry | 45000000.00 | Guard |
| 42 | Klay | Thompson | 38000000.00 | Guard |
| 50 | Chris | Paul | 30000000.00 | Guard |
| 51 | Jayson | Tatum | 33000000.00 | Forward |
| 61 | Giannis | Antetokounmpo | 39000000.00 | Forward |
| 62 | Khrist | Middleton | 32000000.00 | Forward |
| 64 | Jrue | Holiday | 34000000.00 | Guard |
| 71 | Jimmy | Butler | 36000000.00 | Forward |
| 81 | Joel | Embiid | 35000000.00 | Center |
| 83 | James | Harden | 44000000.00 | Guard |
| 84 | Tobias | Harris | 36000000.00 | Forward |
| 91 | Kevin | Durant | 42000000.00 | Forward |
| 92 | Devin | Booker | 36000000.00 | Guard |
| 93 | Bradley | Beal | 45000000.00 | Guard |
| 101 | Nikola | Jokic | 42000000.00 | Center |
| 103 | Michael | Porter Jr. | 33000000.00 | Forward |
| 111 | Ben | Simmons | 33000000.00 | Guard-Forward |
| 121 | Luka | Doncic | 38000000.00 | Guard |
| 122 | Kyrie | Irving | 37000000.00 | Guard |
| 251 | Patrick | Mahomes | 45000000.00 | QB |
| 261 | Josh | Allen | 43000000.00 | QB |
| 271 | Jalen | Hurts | 51000000.00 | QB |
| 281 | Nick | Bosa | 34000000.00 | DE |
| 292 | Matthew | Stafford | 40000000.00 | QB |
| 331 | Dak | Prescott | 40000000.00 | QB |
| 369 | Aaron | Judge | 37000000.00 | Outfielder |
| 449 | Francisco | Lindor | 34000000.00 | Shortstop |
| 451 | Max | Scherzer | 43000000.00 | Pitcher |
| 452 | Justin | Verlander | 43000000.00 | Pitcher |
+----+-----+-----+-----+-----+
40 rows in set (0.00 sec)
```

Front End User Interface

NOTE: To run the program, in the terminal, run the java file with:

```
java -cp mysql-connector-j-9.1.0.jar;. SQLFrontend
```

The frontend user interface works by prompting the user and guiding them through various options. The program works on a local MySQL database by default using JDBC. The start of the program looks like so:

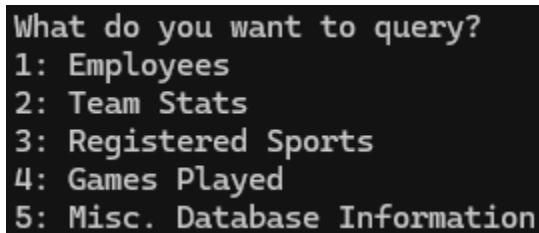
A terminal window with a dark background and light green text. It shows the program connecting to a database, prompting for a username and password (which are masked with black boxes), and then displaying a menu of options: 1: Query, 2: Insert, 3: Delete, 4: Update, and 5: Quit.

```
Connecting to database...
Enter username: 
Enter password: 
Success!

What do you want to do?
1: Query
2: Insert
3: Delete
4: Update
5: Quit
```

(note that the username and password are *not* blanked on input; this is a limitation of using Java through the terminal)

When prompted to query (1)...

A terminal window with a dark background and light green text. It shows the program prompting the user to select a query type from a list: 1: Employees, 2: Team Stats, 3: Registered Sports, 4: Games Played, and 5: Misc. Database Information.

```
What do you want to query?
1: Employees
2: Team Stats
3: Registered Sports
4: Games Played
5: Misc. Database Information
```

...the program asks for what to query. If we do (1), we query based on information on the player.

For example, here, we search for a player with the last name "Jokic":

```

1
Player or coach? (blank for either)
ID? (blank if unknown)
Employee's first name? (blank for any)
Employee's last name? (blank for any) Jokic
Salary minimum? (blank for no min.)
Salary maximum? (blank for no max.)
Min. number of wins? (blank for any)
Order by... (blank for no set order)
//////////Guide://////////
ID, F. Name , M, L. Name, Salary, Team, Type, Team #, Height, Weight, Position, Wins
//////////
301; Nikola; J; Jokic; 42000000.00; Denver Nuggets; Player; 15; 6.11; 284.00; Center; 46

```

If left blank, for example, if we want to see the list of every teams, we can simply leave the questions blank:

```

2
Team Name? (blank for any)
Sport? (blank for any)
Min. number of wins? (blank for no min.)
Order by... (blank for no set order)
//////////Guide://////////
Name, Location, Sport, Wins, Losses
//////////
Atlanta Hawks; Atlanta, GA; NBA; 41; 41
Baltimore Orioles; Baltimore, MD; MLB; 101; 61
Boston Bruins; Boston, MA; NHL; 47; 20
Boston Celtics; Boston, MA; NBA; 57; 25
Boston Red Sox; Boston, MA; MLB; 78; 84
Brooklyn Nets; Brooklyn, NY; NBA; 45; 37
Buffalo Sabres; Buffalo, NY; NHL; 39; 37
Carolina Hurricanes; Raleigh, NC; NHL; 52; 23

```

(the list continues...)

If we choose (5) on Query,

```

//////////
Facts about Database:
//////////

Salaries:
Minimum salary: $30.00
Maximum salary: $51000000.00
Average salary: $11645664.00

Team facts:
Team: Atlanta Braves, Number of Employees: 10, Total salary: $103000000.00, Average salary: $10300000.00
Team: Boston Bruins, Number of Employees: 11, Total salary: $60370000.00, Average salary: $5488182.00
Team: Boston Celtics, Number of Employees: 11, Total salary: $159800000.00, Average salary: $14527273.00
Team: Boston Red Sox, Number of Employees: 10, Total salary: $119900000.00, Average salary: $11990000.00
Team: Brooklyn Nets, Number of Employees: 21, Total salary: $296700000.00, Average salary: $14128571.00
Team: Buffalo Bills, Number of Employees: 10, Total salary: $160020000.00, Average salary: $16002000.00
Team: Chicago Blackhawks, Number of Employees: 11, Total salary: $59250000.00, Average salary: $5386363.50

```

...some stats about the database are printed which use aggregate functions.

If we choose (2) on the main menu, we can insert new employees, teams, games, or even sports into the database:

```

What do you want to insert?
1: New Employee
2: New Team
3: New Sport
4: New Game

```

For example, we can insert a new player:

```

1
First Name: Awesome
Middle Initial: M
Last Name: Faceguy
Salary (ignoring cents): 12345678
Team Name: San Francisco Giants
Player or Coach? (def. Player) Player
Team Number (jersey no.): 3
Height (in format #.##): 5.3
Weight (in format ###.##): 300.0
Position: Quarterback
No. of Wins: 3
Successfully added!

```

...and if we query:

```

What do you want to query?
1: Employees
2: Team Stats
3: Registered Sports
4: Games Played
5: Misc. Database Information
1
Player or coach? (blank for either)
ID? (blank if unknown)
Employee's first name? (blank for any) Awesome
Employee's last name? (blank for any)
Salary minimum? (blank for no min.)
Salary maximum? (blank for no max.)
Min. number of wins? (blank for any)
Order by... (blank for no set order)
//////////Guide://////////
ID, F. Name , M, L. Name, Salary, Team, Type, Team #, Height, Weight, Position, Wins
//////////
452; Awesome; M; Awesomeface; 30.00; Houston Rockets; Player; 3; 3.50; 495.30; Center; 3
455; Awesome; M; Faceguy; 12345678.00; San Francisco Giants; Player; 3; 5.30; 300.00; Quarterback; 3

```

(ID=452 is from a previous test!)

Say we need to delete our new employee. We can do this:

```

What do you want to do?
1: Query
2: Insert
3: Delete
4: Update
5: Quit
3
What do you want to delete?
1: Employees
2: Team Stats
3: Registered Sports
4: Games Played
1
Player or coach? (blank for either)
ID? (blank if unknown) 455
Employee's first name? (blank for any)
Employee's last name? (blank for any)
Salary minimum? (blank for no min.)
Salary maximum? (blank for no max.)
Min. number of wins? (blank for any)
Order by... (blank for no set order)
Deletion successful!

```

Note that the query and deletion process use the same query process. If we query now...

```

What do you want to query?
1: Employees
2: Team Stats
3: Registered Sports
4: Games Played
5: Misc. Database Information
1
Player or coach? (blank for either)
ID? (blank if unknown)
Employee's first name? (blank for any) Awesome
Employee's last name? (blank for any)
Salary minimum? (blank for no min.)
Salary maximum? (blank for no max.)
Min. number of wins? (blank for any)
Order by... (blank for no set order)
//////////Guide://////////
ID, F. Name , M, L. Name, Salary, Team, Type, Team #, Height, Weight, Position, Wins
//////////
452; Awesome; M; Awesomeface; 30.00; Houston Rockets; Player; 3; 3.50; 495.30; Center; 3

```

We notice Awesome M. Faceguy with the ID=455 is no longer in the table.

Finally, if we want to update the table...

```

4
What do you want to modify?
1: Change Employee
2: Change Team
3: Change Sport
4: Change Game

```

We can! The main difference between delete and update is that update only asks for IDs/names (or, in the case of Game, the two team names and date).

For example, we can change Awesome M. Awesomeface...


```

1
Employee ID? (Query if unsure) 452

...replacing with...

New employee first name? (blank for no change) Cool
New employee middle initial? (blank for no change) D
New employee first name? (blank for no change) Awesomcool
New salary? (integer value only) [blank for no change] 3
New team? (blank for no change) Boston Celtics
Player or Coach? (blank for no change) Player
If a player, team number? (blank for no change) 3
If a player, height? (in format #.##) [blank for no change] 4.2
If a player, weight? (in format ###.##) [blank for no change] 300.3
New position? (blank for no change) Small Forward
New number of wins? (blank for no change) 0

```

See:

```

//////////Guide://////////
ID, F. Name , M, L. Name, Salary, Team, Type, Team #, Height, Weight, Position, Wins
//////////
452; Cool; D; Awesomcool; 3.00; Boston Celtics; Player; 3; 4.20; 300.30; Small Forward; 0

```

This is a sample run of the code. In essence, this program allows for control of the table in a more user-friendly way.

Conclusion and Future Work:

To conclude, the creation of a sports league database provided a structured and user-friendly for the audience interested in the four major American sports leagues: the NFL, the NBA, the MLB, and the NHL. Through the use of SQL and Jupyter Notebook, we were able to retrieve data containing the clubs, games, players, coaches, locations, and more. With this data, we were able to create the tables for each category and learned how to organize an accurate data model. This database paved a new path with clear information which makes it easier to access

and use compared to a standard sports website. This easy-to-access database makes it easier for users and the community to learn and follow their favorite players and teams or for even the newcomers to get into the world of sports.

For the future, we believe in adding more sports leagues that people might be interested in such as soccer and adding every single game that occurs so every single part of the data will be in the database. We also thought of adding different levels of the sport such as college level since that is also very popular around the country.

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