Business Requirement:

We need to track NBA basketball players for a basketball season. Some of the attributes needed will be a player's name, team they are on, position they play, their jersey numbers, height, and weight. The basketball teams will have one head coach and we'll need to show their years of experience. The teams can compete in a basketball game against each other and will have a winner/loser on a specified date. Teams cannot play more than 41 games away and 41 games at home. Each team will represent a city that currently has an NBA team. A team's roster can vary from all sizes, but to play in a game, the player roster should be at least 5 and at most 15. Lastly, teams will need to be able to trade coaches and players from different teams to different teams.

(In memory database feature update for project 3)
There will be real time stat tracking based on players and teams. The stats tracked will be points, rebounds, assists, steals, blocks, and turnovers. You can track the stats real time for each game, while the game is being played. The game stats can be sorted to show which team is leading in each category at any time. When the game is finished the stats can then be saved into a hard database for persistence and historical use.

***Please note that since the stats for players and teams are tracked individually, therefore stat totals may not reconcile.

- Need to track players in the NBA for the 2021-2022 season
- The players will have name, team, position(s), jersey numbers
- Players play on basketball teams
- A team has 15 players maximum roster and 5 minimum to play in a game
- Each player has attributes such as height, weight, date of birth.
- Each team has one head coach and each coach has years of experience
- Teams can compete against other teams in a game.
- A game will only have one winner and one loser
- Teams need to have home or away team in a game
- Each team has a city, state and abbreviation (i.e. Golden State is GSW).
- Games will be scheduled on a date
- The home/away team cannot have two games scheduled on the same day
- Teams execute in trades on different dates for players or coaches
- Teams will be associated with a location
- Teams will play 41 games away and 41 games at home

Nouns:

~~NBA~~
~~Season~~
~~Day~~

Players
- Name
- Team
- Date of Birth
- Position
- Jersey Numbers

- Height
- Weight

Game
- Winner
- Loser
- Home Team
- Away Team
- Date

Team
- Roster
- City
- State
- Abbreviation

Coach
- Name
- Date of Birth
- Years of Experience
- Team

Trade
- Original Team
- New Tem
- Trade Date
- Player/Coach

Verbs

Tracks
Has
Have
Play
Competes
Scheduled
Execute
Associated

SCHEMA is BCNF

employeeID -> (firstName, lastName, birthDate, teamID, employeeTypeID)
coachID -> (yearsOfExp, employeeID)
playerID ->(height, weight, jerseyNum, employeeID)
employeeTypeID -> employeeType
tradeID -> (employeeID, teamFrom, teamTo, tradeDate)
teamID -> (name, abbreviation, locationID)
gameID -> (homeTeam, awayTeam, winTeam, loseTeam, date)
locationID -> (city, state)
positionID, playerID -> positionID, playerID #positionID, playerID is a composite primary key.
positionID -> positionDesc

Conceptual Model

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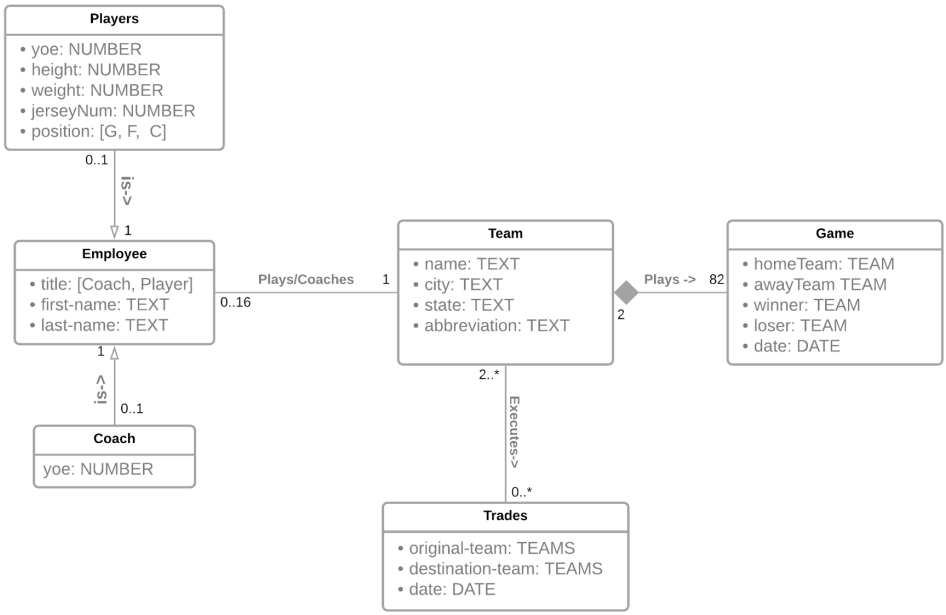

- Employee plays/coaches team is One to Many Relationship
- Teams to Trades is Many to Many Relationship

Logical Model

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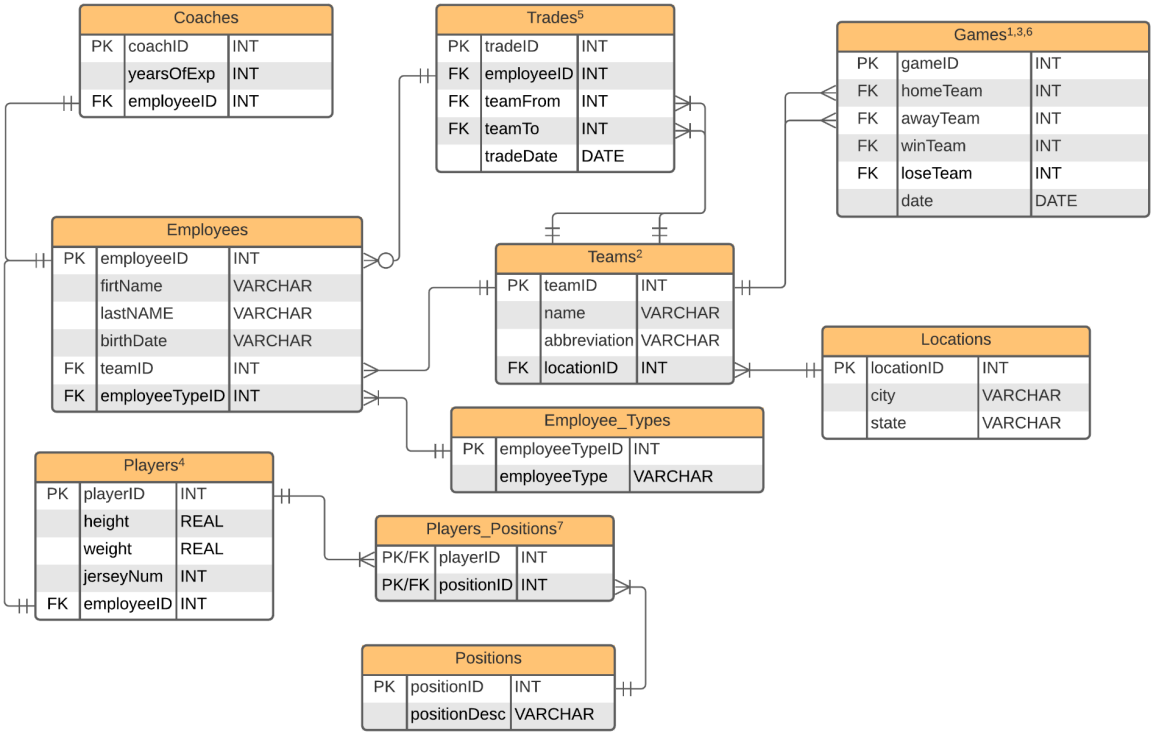

Relations Schema

Employees (employeeID, firstName, lastName, bithDate, teamID, employeeTypeID)
Players (playerID, height, weight, jerseyNum, employeeID)
Coaches (coachID, yearsOfExp, employeeID)
Employee_Types (employeeTypeID, employeeType)
Teams (teamID, name, abbreviation, locationID)
Players_Positions (playerID, positionID)
Positions (positionID, positionDesc)
Locations (locationID, city, state)
Games (gameID, homeTeam, awayTeam, winTeam, loseTeam, date)
Trades (tradeID, employeeID, teamFrom, teamTo, tradeDate)

Notes

1. home_team != away_team
2. teamID/employeeID relationship is 5 to 15 players and 1 coach per team before recording a winning/losing result
3. No team can play twice on same day
4. Players can play multiple positions
5. Team can not trade with them selves
6. Home team can not be the away team
7. PK/FK represent composite keys

Hierarchical Model

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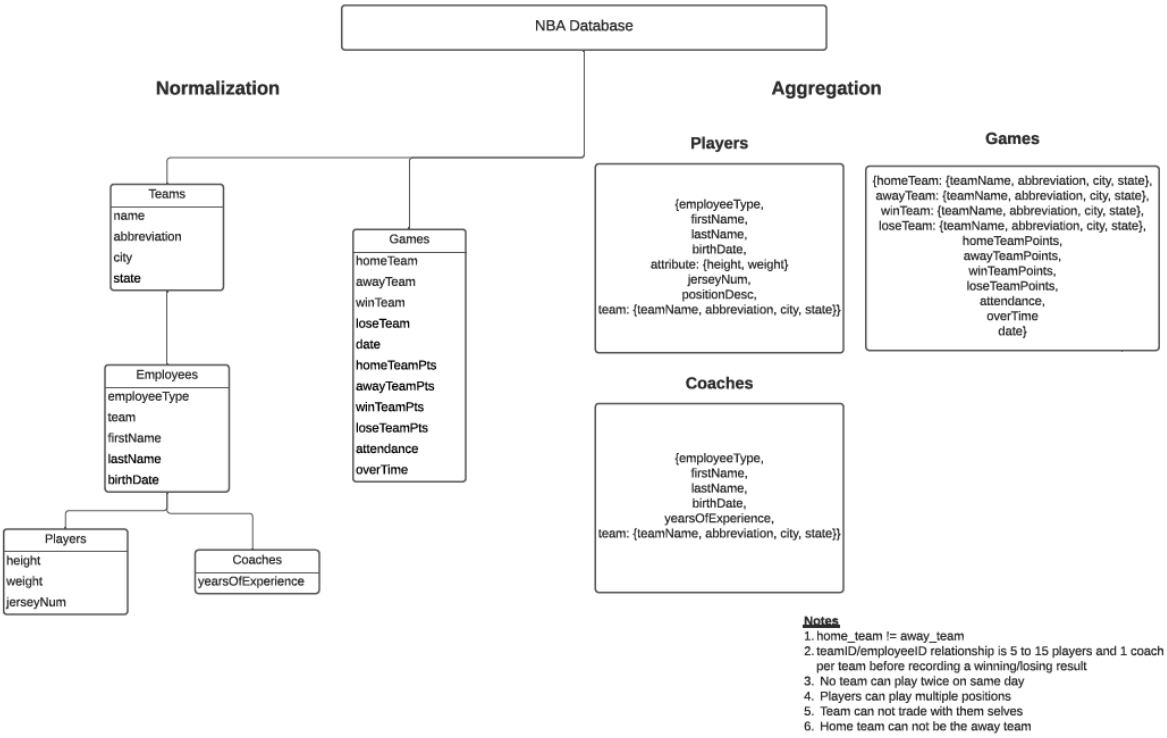
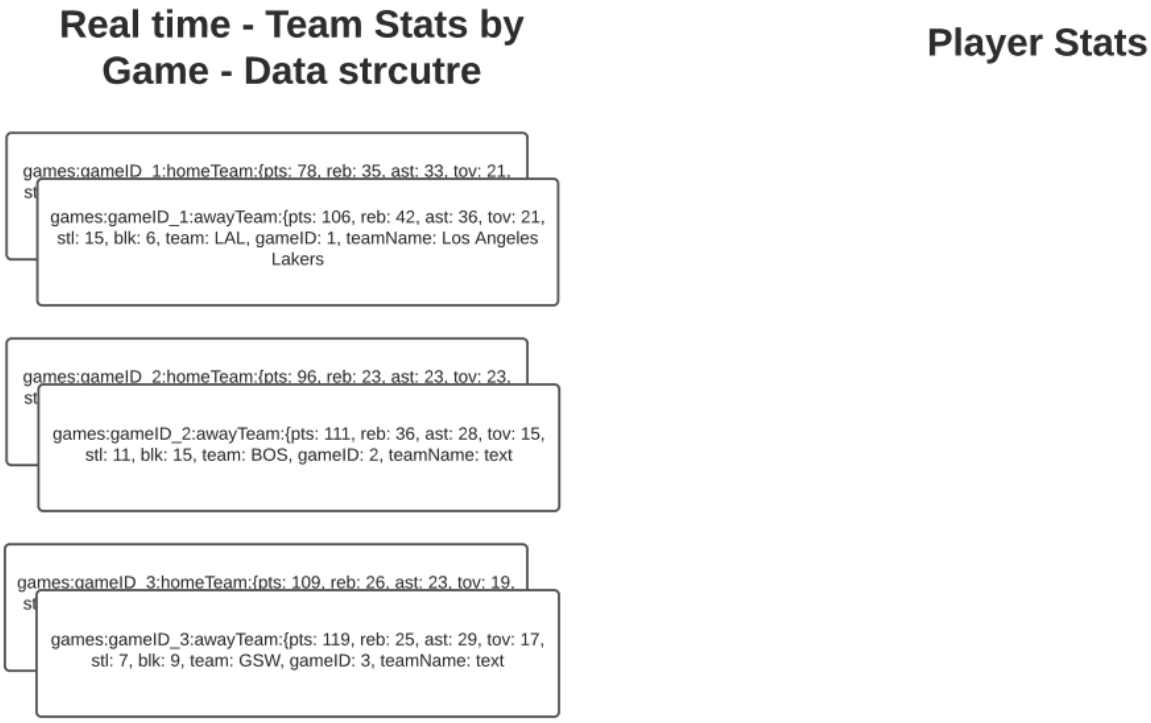


In Memory Real Time Stats Data Structure

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