

## Group 51

yl4111 Yang Li

cz2578 Chuyang Zhou

### Domain Description

Our database intends to focus on National Basketball Association (NBA) statistics for players and teams during 2018-2019 series.

We plan on creating approximately 7 entities and 7 relationships in our database. The entities are PLAYER, PLAYER STAT, TEAM, TEAM STAT, GAME, SERIE and COACH. Each entity has multiple attributes. For example, PLAYER has attributes: playerID (primary key), Name (not null), Date of Birth, Position, Shooting Hand, etc.

The general relationships are, for each season, there are plenty of games. Players of a team participate in games. Each player has personal stats and each team has team stats. Coaches are instructors of teams.

Right now we have approximately 10 tables in our database, advanced statistics can be made by calculation.

### Data plan

We will use the data of 30 NBA teams, players information of each team, games stats during 2018-2019 series and data of coaches. We can use the data from <https://www.basketball-reference.com/> or <https://sportsdata.io/developers/data-dictionary/nba>.

### User interaction plans

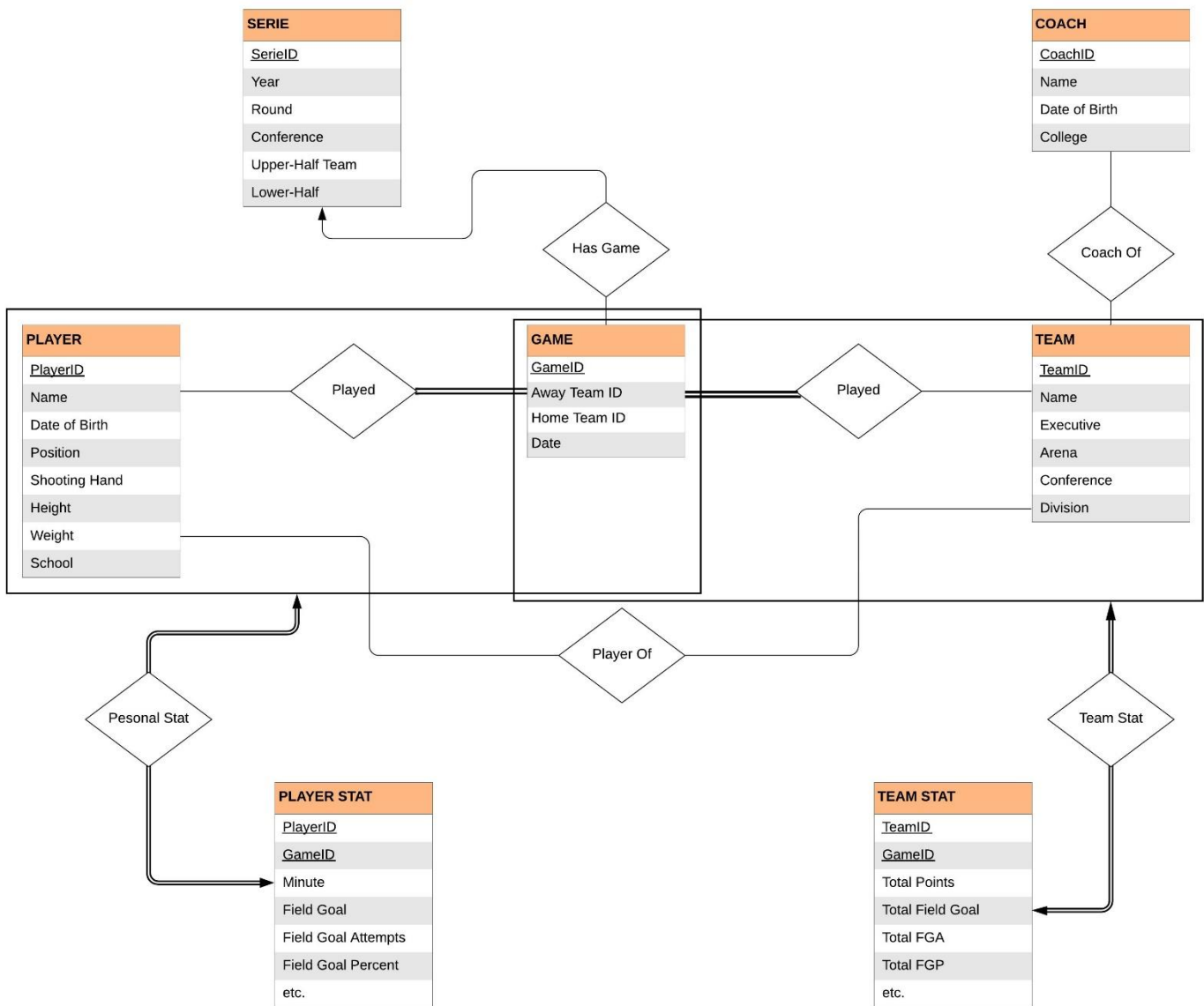
In part 3, we are going to choose **Web Front-End Option**.

The application should have multiple functions. Since our database gathers the detailed information about players, teams, games and coach, users can easily know the stats about them by simple queries. For example, the application can ask users for the name of a player and return as a result the players date of birth, position, shooting hand, height, weight, etc. Also, users can get statistical data about the team, such as which player has the most free throws (FT) in each team during 2019 serie.

### Contingency plan

If one of us drop the class, our project will follow **Expended-Design Option**. We may maintain the number of entities, which is 7 right now and focus on stats only in 2019 serie. Or, we will cut the number of entities, such as delete the COACH entity and let COACH become an attribute of TEAM.

## Entity-Relationship Diagram



## Relation Schema

```
CREATE TABLE Player (  
    PlayerID    int,  
    Name        varchar(50) NOT NULL,  
    Dateofbirth date,  
    Position    varchar (20),  
    Shoots      varchar (5),  
    Height      decimal (10,2),  
    Weight      decimal (10,2),  
    School      varchar (20),  
    primary key (PlayerID)  
);
```

```
CREATE TABLE Coach (  
    PlayerID    int,  
    Name        varchar (50) NOT NULL,  
    Dateofbirth date,  
    College     varchar (30),  
)
```

```
CREATE TABLE Team (  
    TeamID      int,  
    Name        varchar(30) NOT NULL,  
    Executive   varchar(10) NOT NULL,  
    Arena       varchar(20) NOT NULL,  
    Conference  varchar(10) NOT NULL,  
    Division    varchar(20) NOT NULL,  
    primary key (TeamID)  
);
```

```
CREATE TABLE Game (  
    GameID      int,  
    HomeID      int FOREIGN KEY REFERENCES Team (TeamID),  
    AwayID      int FOREIGN KEY REFERENCES Team (TeamID),  
    Date        date NOT NULL,  
    Primary key (GameID)  
);
```

```
CREATE TABLE Playerstat (  
    PlayerID    int FOREIGN KEY REFERENCES Player (PlayerID),  
    GameID      int FOREIGN KEY REFERENCES Game (GameID),  
    Minute      int,  
    FG          int,  
    FGA         int,  
    FGP         decimal (5,2),  
    3PT         int,  
    3PTA        int,  
    3PTP        decimal (5,2),  
    FT          int,
```

```

    FTA          int,
    FT           decimal (5,2),
    ORB          int,
    DRB          int,
    TRB          int,
    AST          int,
    STL          int,
    BLK          int,
    TOV          int,
    PSF          int,
    PTS          int,
    PLUSMINUS    int,
    Primary key (PlayerID, GameID)
);

```

```

CREATE TABLE Teamstat (
    TeamID        int FOREIGN KEY REFERENCES Team (TeamID),
    GameID        int FOREIGN KEY REFERENCES Game (GameID),
    FG            int,
    FGA           int,
    FGP           decimal (5,2),
    3PT           int,
    3PTA          int,
    3PTP          decimal (5,2),
    FT            int,
    FTA           int,
    FT            decimal (5,2),
    ORB           int,
    DRB           int,
    TRB           int,
    AST           int,
    STL           int,
    BLK           int,
    TOV           int,
    FOUL          int,
    PTS           int,
    Primary key (TeamID, GameID)
);

```

```

CREATE TABLE Series(
    SerieID       int,
    Year          year NOT NULL,
    Round         int NOT NULL,
    UpperHalfTID  int FOREIGN KEY REFERENCES Team (TeamID),
    LowerHalfTID  int FOREIGN KEY REFERENCES Team (TeamID),
    Conference     varchar (10) NOT NULL,
);

```

```
CREATE TABLE Playerof (  
    PlayerID      int FOREIGN KEY REFERENCES Player (PlayerID),  
    TeamID        int FOREIGN KEY REFERENCES Team (TeamID),  
    Starttime     date,  
    Endtime       date,  
    Primary Key (PlayerID, TeamID, Starttime)  
);  
//a player can be traded several times that ends up on the same team twice
```

```
CREATE TABLE HasGame (  
    SerieID       int FOREIGN KEY REFERENCES Team (Serie ID) NOT NULL,  
    GameID        int NOT NULL,  
    Unique        GameID,  
);
```

```
CREATE TABLE Coachof (  
    CoachID       int FOREIGN KEY REFERENCES Player (CoachID),  
    TeamID        int FOREIGN KEY REFERENCES Team (TeamID),  
    Primary Key (Coachof, TeamId)  
);
```