# Databases Final Project Report

## EN.600.415

*This project uses a statistic on players, teams, and coaches in NBA, from 1937 to 2012. The resource is provided by KAGGLE. We query some questions we are interested in and use a simple but straightforward machine learning method to make predictions.*

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# Getting Started

## 1. About data

The dataset we use can be found on the following website:

- https://www.kaggle.com/kinguistics/mens-professional-basketball

This dataset includes 11 Comma-Separated Values (CSV) files. we used a tool, called CSV-SQL converter, to translate all the CSV files to SQL files.

## 2. Software/hardware platform

In our project, we will use the following platform:

- Mysql 5.7/ Mysql workbench 6.3
- PC: 2.9 GHz Intel Core i7 with 16G memory
- OS: Ubuntu 16.04 LTS

- Backend: Flask, Python, Mysql
- Frontend: Bootstrap, jquery, jquery-AJAX

## 3. A brief user's guide

*Setup database:*

- Run the sql files we provide on MySQL to build the database.
- Change the database information in *db_connector.py* (database name and password)

*Backend operation:*

- Install packages:
  - ✓ sudo apt-get install python-levenshtein
  - ✓ sudo pip install -r requirements.txt
- Run server.py (under the folder server):
  - ✓ python ./server.py

*Frontend operation:*

- In the drop down menu, choose one of the most 10 popular questions and click "Get the answer!". And the answer will be shown below.
- Type in the player's first name and last name and click "Get the answer!" to get the predicted data/ career data of that player.
- Click one of the 4 pictures to flip, and the career data of that player will be shown.

# Database specification

## 1. Major/minor areas of specialization

We aim to use the database knowledge learnt from class, combining with some simple but straightforward machine learning methods (e.g. linear regression), to answer the questions that we are interested in. So we choose a fairly large dataset, which contains 11 tables, more than 20 thousand player information. And the statistic is from 1937 to 2012. So, it enables us to use machine learning method to train our model and then make predictions. The detailed description of our specialization is listed below:

*1) Data mining:*

In our project, we implemented a linear regression model to predict the season average points a player may get. To be more specific, firstly, we use SQL to find all the statistic records of the player we have interest. And then we extract useful information (e.g. points, years) to construct training examples.

We aim to approximate y (predicted points) as a linear function of x (year):

$$h_\theta(x) = \theta_0 + \theta_1 x_1 + \theta_2 x_2$$

Here, the $\theta_i$'s parameters parameterizing the space of linear functions mapping from $\mathrm{X}$ to $\mathrm{Y}$. In addition, we define the cost function:

$$J(\theta) = \frac{1}{2}\sum_{i=1}^{m}(h_\theta(x^{(i)}) - y^{(i)})^2$$

We want to choose $\theta$ so as to minimize $J(\theta)$. So we consider the gradient descent algorithm, use the update rule given below to train the model:

$$\theta_j := \theta_j + \alpha(y^{(i)} - h_\theta(x^{(i)}))x_j^{(i)}$$

*2) Friendly user interface:*

In addition, we want to provide a friendly user interface, instead of a dull command line environment, we developed a web UI to support all the data exchange.

*3) Security consideration (usage of view):*

We assume that the detailed statistic records are confidential, so users need only access/modify selected attributes in the data without being able to access the other attributes. In order to support the prediction mentioned above, we built two views to support our queries.

## 2. System's limitation and suggested possibility for improvement

*Limitations:*

- The question type of our queries are limited, since we mainly focus on the basketball players' career data or the history records completed by one specific player. We did not focus on the data of a basketball team or the data of a coach, which is also the parts of a NBA database system.
- Due to limit time and our concentration, this system do not support data management (e.g. update, insert, delete, etc.)

*Improvement:*

- Make more pages for different query types, like queries about coaches or teams.
- Make a cooler UI to give the user a better experience of using our web application.
- Currently, our linear regression model only considers features like years and points. But many other factors like injuries can also influence our prediction. So, to improve our project, one essential aspect is consider more reasonable features to revise our model.

## 3. Reasonably formatted output

One of the concentrations of our project is UI design. We use bootstrap framework for most of the HTML, CSS part. And choose jQuery framework for the JavaScript part. We aim to provide users an enjoyable experience when using our system to query the player information they have interest in.

*Homepage:*

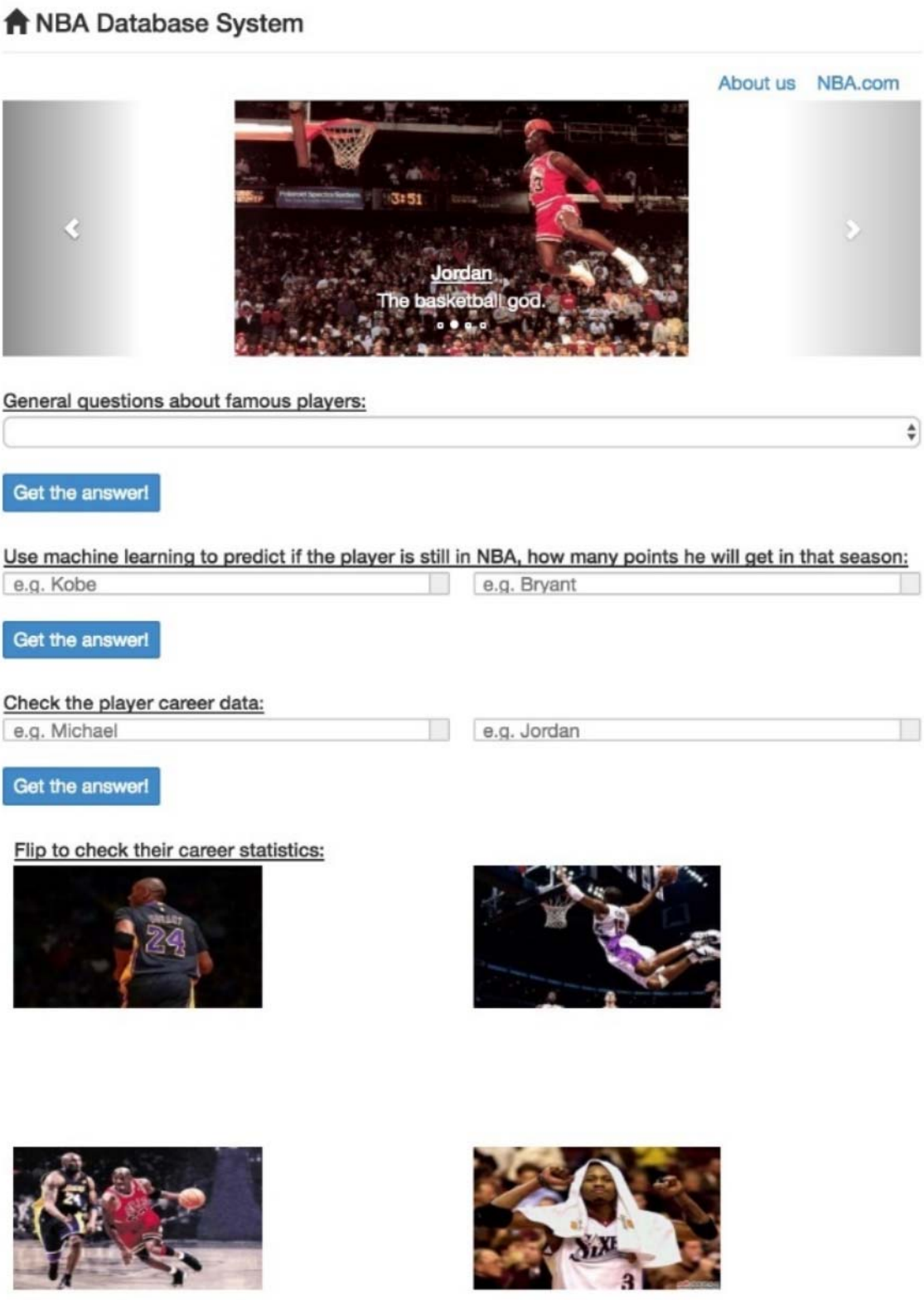



**Figure 1 Index page overview**

*Query type1:*

We stored 10 general questions concerned about how success a player's career is, which most people may be interested in. And if a user chooses a problem, the front end will send a request to server by AJAX to trigger the query of that answer.

**Figure 2.1 Question list for query type1**

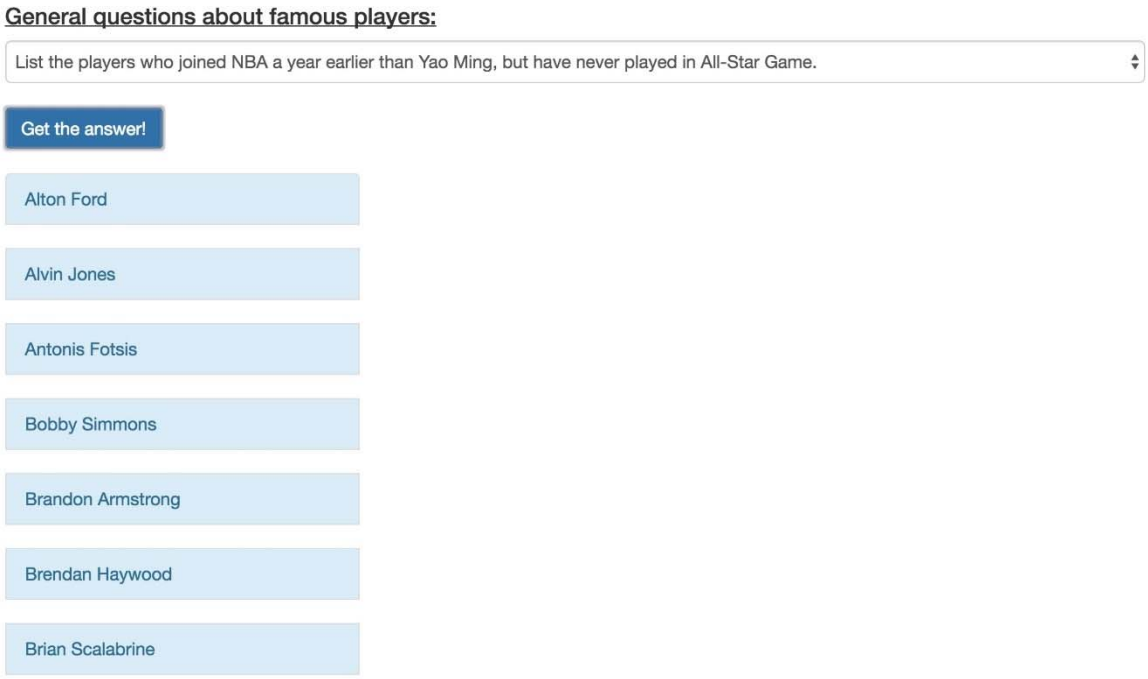



**Figure 2.2 General questions most people may be interested in**

*Query type2:*

Machine learning is one of the focus in our project. As this database contains NBA statistic from 1937 to 2011, we can use machine learning to predict a player's performance (average score in a season). In our project, we aim to predict a player's performance after the first year of his record missing in our database (retired or statistic end)

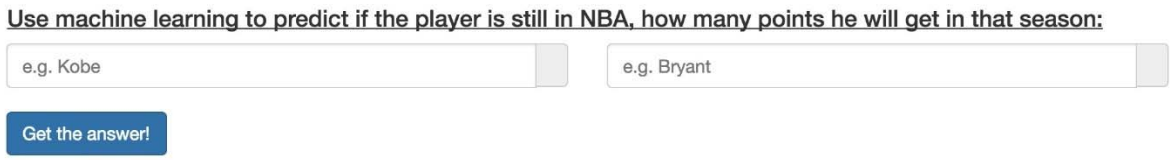



**Figure 3.1 Machine learning prediction queries**

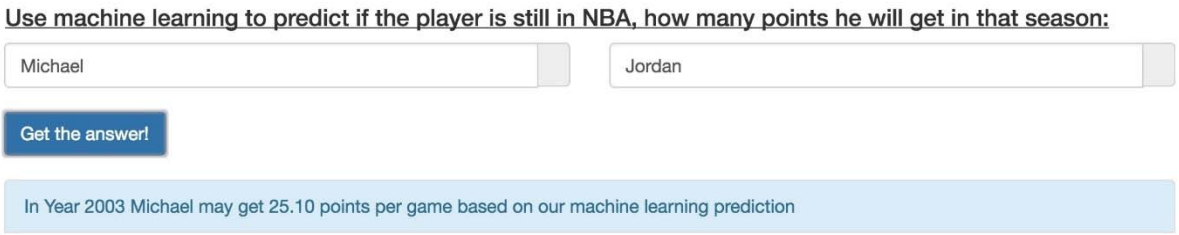



**Figure 3.2 Prediction results**

*Queries type3:*

We get the user input of the player's first name and last name, and send a request to server by AJAX to trigger the query of getting that player's career data and show the career data as below. (PPG: Points per game, RPG: Rebounds per game, APG: Assists per game)

**Figure 4.1 Players' career statistic query**

**Figure 4.2 Player's career statistic query results**

*Queries type4:*

This is to show one of our focus on this project, which is a great UI for the users. We list four most famous basketball players' pictures here. And once the user click on the picture, it will be flipped to show the career data of that player. (PPG: Points per game, RPG: Rebounds per game, APG: Assists per game)

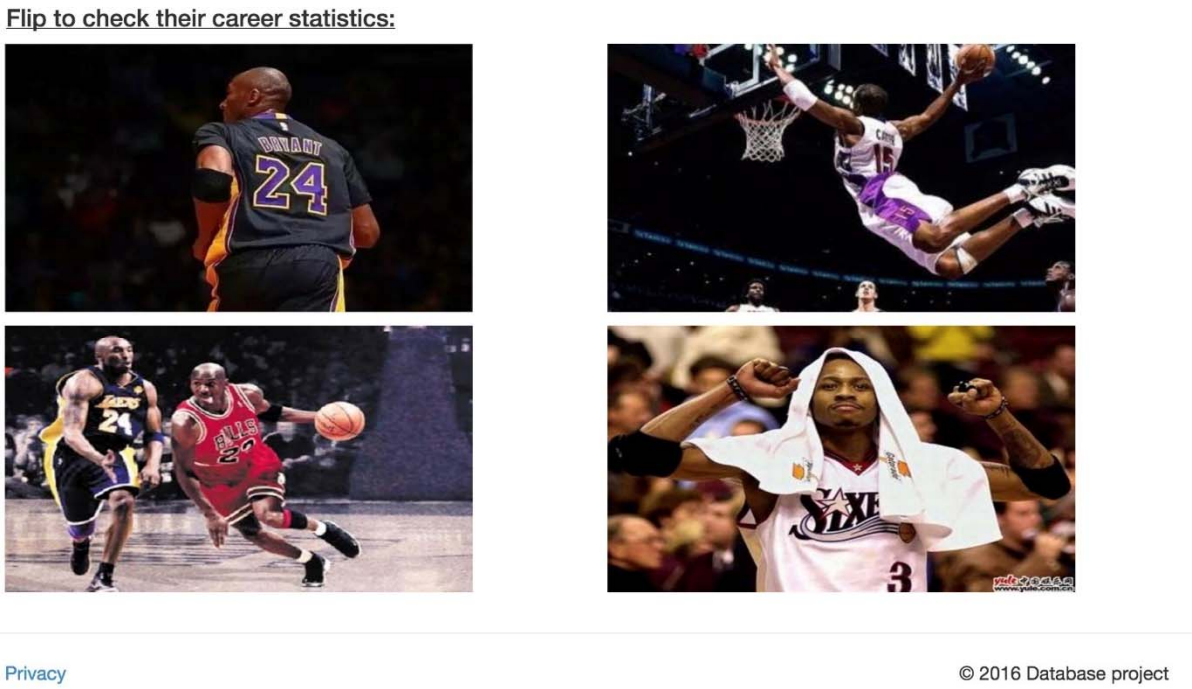



**Figure 5.1 A novel query interface**

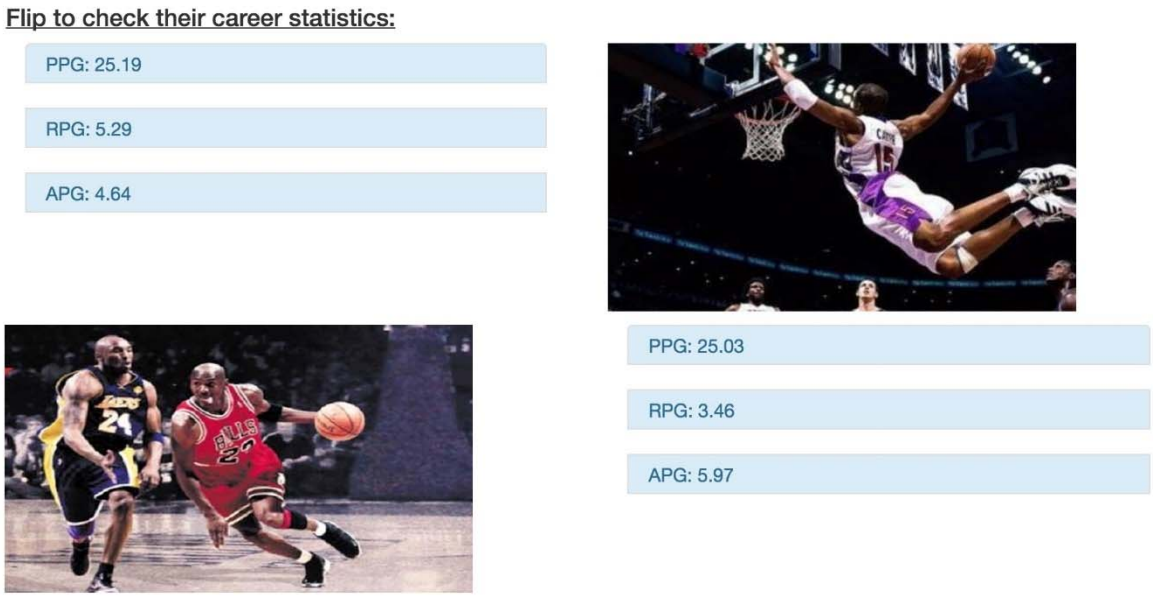



**Figure 5.2 The query results of the most famous players**

*Developers' contact information:*

If the user want to get the contact information of the two developers, he/she could click on "About us" to get the contact information of the developers.

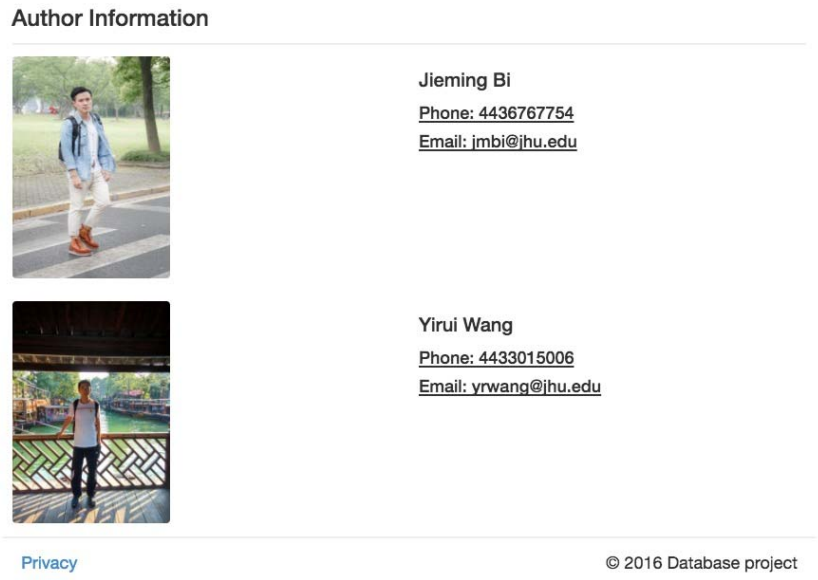



**Figure 6 About us**

## 4. The specification of our database (Using DDL)

```
CREATE TABLE abbrev(
abbrev_type VARCHAR(10) NOT NULL
,code       VARCHAR(3) NOT NULL
,full_name   VARCHAR(27) NOT NULL PRIMARY KEY
);


CREATE TABLE awards_coaches(year INT(11),
coachID VARCHAR(100),
award VARCHAR(100),
lgID VARCHAR(100),
note VARCHAR(100)
,PRIMARY KEY(coachID, year));

CREATE TABLE awards_players(playerID VARCHAR(100),
award VARCHAR(100),
year DECIMAL(10,2),
lgID VARCHAR(100),
note VARCHAR(100),
pos VARCHAR(100)
,PRIMARY KEY(playerID, award, year)
);

CREATE TABLE coaches(
coachID     VARCHAR(10) NOT NULL
,year       INTEGER  NOT NULL
,tmID       VARCHAR(3) NOT NULL
,lgID       VARCHAR(4) NOT NULL
,stint      INTEGER  NOT NULL
,won        INTEGER
,lost       INTEGER
,post_wins   INTEGER
,post_losses INTEGER
,PRIMARY KEY(coachID, year, tmID)
);


CREATE TABLE draft(
draftYear      INTEGER  NOT NULL
,draftRound     INTEGER  NOT NULL
,draftSelection INTEGER  NOT NULL
,draftOverall   INTEGER  NOT NULL
,tmID          VARCHAR(3) NOT NULL
```

```
,firstName      VARCHAR(13) NOT NULL
,lastName       VARCHAR(15) NOT NULL
,suffixName     VARCHAR(3)
,playerID       VARCHAR(9)
,draftFrom      VARCHAR(43) NOT NULL
,lgID           VARCHAR(3) NOT NULL
,PRIMARY KEY(firstName,lastName, tmID, draftFrom, draftYear)
);

CREATE TABLE hof(
year     INTEGER  NOT NULL
,hofID    VARCHAR(9)
,name     VARCHAR(27) NOT NULL
,category VARCHAR(11) NOT NULL
,PRIMARY KEY(name, year)
);


CREATE TABLE master(
bioID         VARCHAR(9) NOT NULL PRIMARY KEY
,useFirst      VARCHAR(11)
,firstName     VARCHAR(11)
,middleName    VARCHAR(20)
,lastName      VARCHAR(18) NOT NULL
,nameGiven     VARCHAR(6)
,fullGivenName VARCHAR(30)
,nameSuffix    VARCHAR(3)
,nameNick      VARCHAR(50)
,pos           VARCHAR(5)
,firstseason   INTEGER
,lastseason    INTEGER
,height        NUMERIC(5,2)
,weight        INTEGER
,college       VARCHAR(36)
,collegeOther  VARCHAR(55)
,birthDate     VARCHAR(10)
,birthCity     VARCHAR(25)
,birthState    VARCHAR(11)
,birthCountry  VARCHAR(3)
,highSchool    VARCHAR(63)
,hsCity        VARCHAR(49)
,hsState       VARCHAR(17)
,hsCountry     VARCHAR(9)
,deathDate     VARCHAR(10) NOT NULL
,race          VARCHAR(1)
);
```

```
CREATE TABLE player_allstar(
player_id       VARCHAR(9) NOT NULL
,last_name       VARCHAR(12) NOT NULL
,first_name      VARCHAR(11) NOT NULL
,season_id       INTEGER  NOT NULL
,conference      VARCHAR(8) NOT NULL
,league_id       VARCHAR(3) NOT NULL
,games_played    BIT  NOT NULL
,minutes         INTEGER  NOT NULL
,points          INTEGER
,o_rebounds      INTEGER
,d_rebounds      INTEGER
,rebounds        INTEGER
,assists         INTEGER
,steals          INTEGER
,blocks          INTEGER
,turnovers       INTEGER
,personal_fouls  INTEGER
,fg_attempted    INTEGER
,fg_made         INTEGER
,ft_attempted    INTEGER
,ft_made         INTEGER
,three_attempted INTEGER
,three_made      INTEGER
,PRIMARY KEY(player_id , season_id)
);


CREATE TABLE players(
playerID          VARCHAR(9) NOT NULL
,year             INTEGER  NOT NULL
,stint            INTEGER  NOT NULL
,tmID             VARCHAR(3) NOT NULL
,lgID             VARCHAR(4) NOT NULL
,GP               INTEGER  NOT NULL
,GS               INTEGER  NOT NULL
,minutes          INTEGER  NOT NULL
,points           INTEGER  NOT NULL
,oRebounds        INTEGER  NOT NULL
,dRebounds        INTEGER  NOT NULL
,rebounds         INTEGER  NOT NULL
,assists          INTEGER  NOT NULL
,steals           INTEGER  NOT NULL
,blocks           INTEGER  NOT NULL
```

```
,turnovers          INTEGER  NOT NULL
,PF                 INTEGER  NOT NULL
,fgAttempted        INTEGER  NOT NULL
,fgMade             INTEGER  NOT NULL
,ftAttempted        INTEGER  NOT NULL
,ftMade             INTEGER  NOT NULL
,threeAttempted     INTEGER  NOT NULL
,threeMade          INTEGER  NOT NULL
,PostGP             INTEGER  NOT NULL
,PostGS             INTEGER  NOT NULL
,PostMinutes        INTEGER  NOT NULL
,PostPoints         INTEGER  NOT NULL
,PostoRebounds      INTEGER  NOT NULL
,PostdRebounds      INTEGER  NOT NULL
,PostRebounds       INTEGER  NOT NULL
,PostAssists        INTEGER  NOT NULL
,PostSteals         INTEGER  NOT NULL
,PostBlocks         INTEGER  NOT NULL
,PostTurnovers      INTEGER  NOT NULL
,PostPF             INTEGER  NOT NULL
,PostfgAttempted    INTEGER  NOT NULL
,PostfgMade         INTEGER  NOT NULL
,PostftAttempted    INTEGER  NOT NULL
,PostftMade         INTEGER  NOT NULL
,PostthreeAttempted INTEGER  NOT NULL
,PostthreeMade      INTEGER  NOT NULL
,note               VARCHAR(1)
,PRIMARY KEY(playerID, year, tmID)
);


CREATE TABLE series_post(
year       INTEGER  NOT NULL
,round      VARCHAR(3) NOT NULL
,series     VARCHAR(1) NOT NULL
,tmIDWinner VARCHAR(3) NOT NULL
,lgIDWinner VARCHAR(3) NOT NULL
,tmIDLoser  VARCHAR(3) NOT NULL
,lgIDLoser  VARCHAR(3) NOT NULL
,W          INTEGER  NOT NULL
,L          INTEGER  NOT NULL
,PRIMARY KEY(year,round, tmIDWinner, tmIDLoser )
);


CREATE TABLE teams(
```

```
year        INTEGER  NOT NULL
,lgID       VARCHAR(4) NOT NULL
,tmID       VARCHAR(3) NOT NULL
,franchID   VARCHAR(3) NOT NULL
,confID     VARCHAR(2)
,divID      VARCHAR(2)
,rank       INTEGER  NOT NULL
,confRank   INTEGER  NOT NULL
,playoff    VARCHAR(2)
,name       VARCHAR(43) NOT NULL
,o_fgm      INTEGER  NOT NULL
,o_fga      INTEGER  NOT NULL
,o_ftm      INTEGER  NOT NULL
,o_fta      INTEGER  NOT NULL
,o_3pm      INTEGER  NOT NULL
,o_3pa      INTEGER  NOT NULL
,o_oreb     INTEGER  NOT NULL
,o_dreb     INTEGER  NOT NULL
,o_reb      INTEGER  NOT NULL
,o_asts     INTEGER  NOT NULL
,o_pf       INTEGER  NOT NULL
,o_stl      INTEGER  NOT NULL
,o_to       INTEGER  NOT NULL
,o_blk      INTEGER  NOT NULL
,o_pts      INTEGER  NOT NULL
,d_fgm      INTEGER  NOT NULL
,d_fga      INTEGER  NOT NULL
,d_ftm      INTEGER  NOT NULL
,d_fta      INTEGER  NOT NULL
,d_3pm      INTEGER  NOT NULL
,d_3pa      INTEGER  NOT NULL
,d_oreb     INTEGER  NOT NULL
,d_dreb     INTEGER  NOT NULL
,d_reb      INTEGER  NOT NULL
,d_asts     INTEGER  NOT NULL
,d_pf       INTEGER  NOT NULL
,d_stl      INTEGER  NOT NULL
,d_to       INTEGER  NOT NULL
,d_blk      INTEGER  NOT NULL
,d_pts      INTEGER  NOT NULL
,o_tmRebound INTEGER  NOT NULL
,d_tmRebound INTEGER  NOT NULL
,homeWon    INTEGER  NOT NULL
,homeLost   INTEGER  NOT NULL
,awayWon    INTEGER  NOT NULL
,awayLost   INTEGER  NOT NULL
```

```
,neutWon     INTEGER  NOT NULL
,neutLoss    INTEGER  NOT NULL
,confWon     INTEGER  NOT NULL
,confLoss    INTEGER  NOT NULL
,divWon      INTEGER  NOT NULL
,divLoss     INTEGER  NOT NULL
,pace        INTEGER  NOT NULL
,won         INTEGER  NOT NULL
,lost        INTEGER  NOT NULL
,games       INTEGER  NOT NULL
,min         INTEGER
,arena       VARCHAR(41)
,attendance  INTEGER  NOT NULL
,bbtmID      VARCHAR(3)
,PRIMARY KEY(year,tmID)
);
```

## 5. Hard copy of SQL code

1) Sample input of the 11 tables:

Table1: abbrev

```
INSERT INTO abbrev(abbrev_type,code,full_name) VALUES ('Round','DF','Division Finals');
INSERT INTO abbrev(abbrev_type,code,full_name) VALUES ('Conference','EC','Eastern Conference');
```

Table2: awards_coaches

```
INSERT INTO awards_coaches(year,coachID,award,lgID,note) VALUES( 1963,'hannual01','NBA Coach of the Year','NBA','');
INSERT INTO awards_coaches(year,coachID,award,lgID,note) VALUES( 1964,'auerbre01','NBA Coach of the Year','NBA','');
```

Table3: awards_players

```
INSERT INTO awards_players(playerID,award,year,lgID,note,pos) VALUES( 'fulksjo01','All-NBA First Team',1946,'NBA','','');
INSERT INTO awards_players(playerID,award,year,lgID,note,pos) VALUES( 'mckinho01','All-NBA First Team',1946,'NBA','','');
```

Table4: coaches

```
INSERT INTO coaches(coachID,year,tmID,lgID,stint,won,lost,post_wins,post_losses) VALUES ('johnsne01',1961,'PGR','ABL1',1,41,40,0,1);
```

```
INSERT INTO
coaches(coachID,year,tmID,lgID,stint,won,lost,post_wins,post_losses) VALUES
('auerbre01',1946,'WSC','NBA',1,49,11,2,4);
```

Table5: draft

```
INSERT INTO
draft(draftYear,draftRound,draftSelection,draftOverall,tmID,firstName,lastName,suffi
xName,playerID,draftFrom,lgID) VALUES
(1967,0,0,0,'ANA','Darrell','Hardy',NULL,'hardyda01','Baylor','ABA');
INSERT INTO
draft(draftYear,draftRound,draftSelection,draftOverall,tmID,firstName,lastName,suffi
xName,playerID,draftFrom,lgID) VALUES
(1967,0,0,0,'ANA','Bob','Krulish',NULL,NULL,'Pacific','ABA');
```

Table6: hof

```
INSERT INTO hof(year,hofID,name,category) VALUES (1959,NULL,'Amos Alonzo
Stagg','Contributor');
INSERT INTO hof(year,hofID,name,category) VALUES (1959,NULL,'Charles
Hyatt','Player');
```

Table7: master

```
INSERT INTO
master(bioID,useFirst,firstName,middleName,lastName,nameGiven,fullGivenName,
nameSuffix,nameNick,pos,firstseason,lastseason,height,weight,college,collegeOther
,birthDate,birthCity,birthState,birthCountry,highSchool,hsCity,hsState,hsCountry,dea
thDate,race) VALUES
('abdelal01','Alaa','Alaa',NULL,'Abdelnaby',NULL,NULL,NULL,NULL,'F-
C',0,0,82.00,240,'Duke',NULL,'1968-06-24','Cairo',NULL,'EGY','Bloomfield
Senior','Bloomfield','NJ','USA','0000-00-00','B');
INSERT INTO
master(bioID,useFirst,firstName,middleName,lastName,nameGiven,fullGivenName,
nameSuffix,nameNick,pos,firstseason,lastseason,height,weight,college,collegeOther
,birthDate,birthCity,birthState,birthCountry,highSchool,hsCity,hsState,hsCountry,dea
thDate,race) VALUES ('abdulka01','Kareem','Kareem',NULL,'Abdul-
Jabbar',NULL,'Ferdinand Lewis Alcindor, Jr.',NULL,'Lew,
Cap','C',0,0,85.00,225,'UCLA',NULL,'1947-04-16','New York','NY','USA','Power
Memorial','New York','NY','USA','0000-00-00','B');
```

Table8: player_allstar

```
INSERT INTO
player_allstar(player_id,last_name,first_name,season_id,conference,league_id,gam
es_played,minutes,points,o_rebounds,d_rebounds,rebounds,assists,steals,blocks,tu
rnovers,personal_fouls,fg_attempted,fg_made,ft_attempted,ft_made,three_attempte
d,three_made) VALUES ('abdulka01','Abdul-
Jabbar','Kareem',1978,'West','NBA',1,28,11,NULL,NULL,8,3,NULL,NULL,NULL,NUL
L,12,5,2,1,NULL,NULL);
```

INSERT INTO
player_allstar(player_id,last_name,first_name,season_id,conference,league_id,games_played,minutes,points,o_rebounds,d_rebounds,rebounds,assists,steals,blocks,turnovers,personal_fouls,fg_attempted,fg_made,ft_attempted,ft_made,three_attempted,three_made) VALUES ('abdulka01','Abdul-Jabbar','Kareem',1969,'East','NBA',1,18,10,NULL,NULL,11,4,NULL,NULL,NULL,NULL,8,4,2,2,NULL,NULL);

Table9: players
INSERT INTO
players(playerID,year,stint,tmID,lgID,GP,GS,minutes,points,oRebounds,dRebounds,rebounds,assists,steals,blocks,turnovers,PF,fgAttempted,fgMade,ftAttempted,ftMade,threeAttempted,threeMade,PostGP,PostGS,PostMinutes,PostPoints,PostoRebounds,PostdRebounds,PostRebounds,PostAssists,PostSteals,PostBlocks,PostTurnovers,PostPF,PostfgAttempted,PostfgMade,PostftAttempted,PostftMade,PostthreeAttempted,PostthreeMade,note) VALUES
('abramjo01',1946,1,'PIT','NBA',47,0,0,527,0,0,0,35,0,0,0,161,834,202,178,123,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,NULL);
INSERT INTO
players(playerID,year,stint,tmID,lgID,GP,GS,minutes,points,oRebounds,dRebounds,rebounds,assists,steals,blocks,turnovers,PF,fgAttempted,fgMade,ftAttempted,ftMade,threeAttempted,threeMade,PostGP,PostGS,PostMinutes,PostPoints,PostoRebounds,PostdRebounds,PostRebounds,PostAssists,PostSteals,PostBlocks,PostTurnovers,PostPF,PostfgAttempted,PostfgMade,PostftAttempted,PostftMade,PostthreeAttempted,PostthreeMade,note) VALUES
('aubucch01',1946,1,'DTF','NBA',30,0,0,65,0,0,0,20,0,0,0,46,91,23,35,19,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,NULL);

Table10: series_post
INSERT INTO
series_post(year,round,series,tmIDWinner,lgIDWinner,tmIDLoser,lgIDLoser,W,L) VALUES (1946,'F','O','PHW','NBA','CHS','NBA',4,1);
INSERT INTO
series_post(year,round,series,tmIDWinner,lgIDWinner,tmIDLoser,lgIDLoser,W,L) VALUES (1946,'QF','M','NYK','NBA','CLR','NBA',2,1);

Table11: teams
INSERT INTO
teams(year,lgID,tmID,franchID,confID,divID,rank,confRank,playoff,name,o_fgm,o_fga,o_ftm,o_fta,o_3pm,o_3pa,o_oreb,o_dreb,o_reb,o_asts,o_pf,o_stl,o_to,o_blk,o_pts,d_fgm,d_fga,d_ftm,d_fta,d_3pm,d_3pa,d_oreb,d_dreb,d_reb,d_asts,d_pf,d_stl,d_to,d_blk,d_pts,o_tmRebound,d_tmRebound,homeWon,homeLost,awayWon,awayLost,neutWon,neutLoss,confWon,confLoss,divWon,divLoss,pace,won,lost,games,min,arena,attendance,bbtmID) VALUES
(1946,'NBA','BOS','BOS',NULL,'ED',5,0,NULL,'Boston Celtics',1397,5133,811,1375,0,0,0,0,0,470,1202,0,0,0,3605,0,0,0,0,0,0,0,0,0,0,0,0,0,

```
0,3898,0,0,14,16,8,22,0,0,0,0,11,19,0,22,38,60,14500,'Boston
Garden',32767,'BOS');
INSERT INTO
teams(year,lgID,tmID,franchID,confID,divID,rank,confRank,playoff,name,o_fgm,o_fg
a,o_ftm,o_fta,o_3pm,o_3pa,o_oreb,o_dreb,o_reb,o_asts,o_pf,o_stl,o_to,o_blk,o_pts
,d_fgm,d_fga,d_ftm,d_fta,d_3pm,d_3pa,d_oreb,d_dreb,d_reb,d_asts,d_pf,d_stl,d_to,
d_blk,d_pts,o_tmRebound,d_tmRebound,homeWon,homeLost,awayWon,awayLost,
neutWon,neutLoss,confWon,confLoss,divWon,divLoss,pace,won,lost,games,min,are
na,attendance,bbtmID) VALUES
(1946,'NBA','CHS','CHS',NULL,'WD',1,0,'F','Chicago
Stags',1879,6309,939,1550,0,0,0,0,0,436,1473,0,0,0,4697,0,0,0,0,0,0,0,0,0,0,0,
0,4473,0,0,22,9,17,13,0,0,0,0,17,8,0,39,22,61,14840,'Chicago Stadium',0,'CHS');
```

2) Create views:

```
CREATE VIEW career AS
  SELECT
     d.firstName,
     d.lastName,
     p.points / p.GP AS points,
     p.assists / p.GP AS assists,
     p.rebounds / p.GP AS rebounds,
     p.steals / p.GP AS steals,
     p.blocks / p.GP AS blocks
  FROM
     draft AS d,
     players AS p
  WHERE
     d.playerID = p.playerID
;

CREATE VIEW player_info AS
SELECT
  d.firstName, d.lastName, p.points / p.GP AS points, p.year
FROM
  draft AS d,
  players AS p
WHERE
  d.playerID = p.playerID
ORDER BY p.year
;
```

*3) SQL Query code:*

A. List the all-star players, who have played more than 60 minutes, and in WEST, and played in the season after 2000.

```
SELECT pa.first_name, pa.last_name FROM player_allstar pa
WHERE pa.minutes>60 AND
    pa.conference = "West" AND
    pa.season_id > 2000;
```

B. List the all-star players, who got more than 30 points in a game, and in East, and played in the season after 1998.

```
SELECT pa.first_name, pa.last_name FROM player_allstar pa
WHERE pa.points>30 AND
    pa.conference = "East" AND
    pa.season_id > 1998;
```

C. List the all-star players, who got more than 7 assists in a game, and in East, and played in the season after 1998 and his personal fouls should be less than or equals to 2. Select each player only once.

```
SELECT DISTINCT pa.first_name, pa.last_name FROM player_allstar pa
WHERE pa.assists>7 AND
    pa.conference = "East" AND
    pa.season_id > 1998 AND
    pa.personal_fouls<3;
```

D. What's the average points per season of Kobe Bryant?

```
SELECT
   AVG(res.points) AS pps
FROM
   (SELECT DISTINCT
      p.year, p.points
   FROM
      players p, player_allstar pa
   WHERE
      p.playerID = pa.player_id
         AND pa.first_name = 'Kobe'
         AND pa.last_name = 'Bryant') AS res
```

E. What's the average assists per season of Kobe Bryant per season between 1998 and 2000?

```
SELECT
   AVG(res.assists) AS aPs
FROM
   (SELECT DISTINCT
      p.year, p.assists
   FROM
      players p, player_allstar pa
   WHERE
      p.playerID = pa.player_id
         AND pa.first_name = 'Kobe'
         AND pa.last_name = 'Bryant'
         AND p.year >= 1998
         AND p.year <= 2000) AS res
```

F. Who got the highest score in 1996? Note that the person should be a rookie of 1996, meaning that he joined in the draft in 1996.

```
SELECT
   d1.firstName, d1.lastName
FROM
   draft d1,
   (SELECT
      p.playerID, MAX(p.points)
   FROM
      draft d, players p
   WHERE
      d.draftYear = 1996
         AND p.playerID = d.playerID
         AND p.year = 1996) AS res
WHERE
   d1.playerID = res.playerID
```

G. Which player, in history, wins the award “All-NBA first team” the most time and he must got more than 28000 points in the whole career.

```
SELECT DISTINCT
   pa.first_name, pa.last_name
FROM
   player_allstar pa,
   (SELECT
      RES.playerID, MAX(RES.count)
   FROM
      (SELECT
```

```
    ap.playerID, COUNT(ap.playerID) AS count
  FROM
    awards_players ap, (SELECT
    RES.playerID
  FROM
    (SELECT
    p.playerID, SUM(p.points) AS total_points
  FROM
    players p
  GROUP BY p.playerID) AS RES
  WHERE
    RES.total_points > 28000) AS res
  WHERE
    ap.playerID = res.playerID
      AND ap.award = 'All-NBA First Team'
  GROUP BY ap.playerID) AS RES) AS RES11
WHERE
  RES11.playerID = pa.player_id
```

H. Among all the players, who have won “Rookie of the Year”, who got the most points in his first year?

```
SELECT
  d.firstName, d.lastName
FROM
  draft d,
  (SELECT
    p.playerID, MAX(p.points)
  FROM
    awards_players ap, players p
  WHERE
    ap.award = 'Rookie of the Year'
      AND ap.playerID = p.playerID
      AND ap.year = p.year) AS RES
WHERE
  d.playerID = RES.playerID
```

I. What is the three-point shooting percentage Kobe Bryant got in the 2011 season?

```
SELECT
  CONCAT(d.firstName, ' ', d.lastName) AS Name,
  p.threeMade / p.threeAttempted AS Percentage
FROM
  draft AS d,
  players AS p
```

```
WHERE
   d.playerID = p.playerID
      AND d.firstName = 'Kobe'
      AND d.lastName = 'Bryant'
      AND p.year = 2011;
```

J. What is the average assists, steal, and point that Tracy McGrady got in 2005 season?

```
SELECT
   CONCAT(d.firstName, ' ', d.lastName) AS Name,
   p.assists / p.GP AS Assists,
   p.steals / p.GP AS Steal,
   p.points / p.GP AS Points
FROM
   players AS p,
   draft AS d
WHERE
   p.playerID = d.playerID
      AND d.firstName = 'Tracy'
      AND d.lastName = 'McGrady'
      AND p.year = 2005
;
```

K. List the players who have been Yao Ming's teammate.

```
SELECT DISTINCT
   CONCAT(d.firstName, ' ', d.lastName) AS Name
FROM
   players p,
   draft d
WHERE
   p.playerID = d.playerID
      AND p.tmID IN (SELECT
         p2.tmID
      FROM
         players p2,
         draft d2
      WHERE
         p2.playerID = d2.playerID
            AND p.year = p2.year
            AND d2.firstName = 'Yao'
            AND d2.lastName = 'Ming')
;
```

L. List the players who joined NBA a year earlier than Yao Ming, but have never played in All-Star Game.

```
SELECT DISTINCT
    CONCAT(d1.firstName, ' ', d1.lastName) AS Name
FROM
    players p1,
    players p2,
    draft d1,
    draft d2
WHERE
    p1.playerID = d1.playerID
        AND p2.playerID = d2.playerID
        AND d2.firstName = 'Yao'
        AND d2.lastName = 'Ming'
        AND d1.draftYear = d2.draftYear - 1
        AND d1.playerID NOT IN (SELECT
            pa.player_id
        FROM
            player_allstar pa)
;
```

M. List the players who join NBA after 2000, and have played at least 1 All-Star Game, and instructed by a coach who have won 'NBA Coach of the year'

```
SELECT DISTINCT
    CONCAT(d.firstName, ' ', d.lastName) AS Name
FROM
    players p,
    draft d
WHERE
    p.playerID = d.playerID
        AND d.draftYear > 2000
        AND p.playerID IN (SELECT
            pa.player_id
        FROM
            player_allstar pa)
        AND EXISTS( SELECT
            *
        FROM
            coaches co,
            awards_coaches ac
        WHERE
            co.coachID = ac.coachID
                AND p.tmID = co.tmID
                AND p.year = co.year)
;
```

N. List the players who played every All-Star games from 2003 to 2008 and got more than 10 points in the All-Star Game.

```
SELECT DISTINCT
   CONCAT(p_a.first_name, ' ', p_a.last_name) AS Name
FROM
   player_allstar p_a
WHERE
   NOT EXISTS( SELECT
         allstar1.season_id
      FROM
         player_allstar allstar1
      WHERE
         allstar1.season_id >= 2003
            AND allstar1.season_id <= 2008
            AND allstar1.season_id NOT IN (SELECT
               allstar2.season_id
            FROM
               player_allstar allstar2
            WHERE
               p_a.player_id = allstar2.player_id))
;
```

O. List the players who have played every All-Star Game that Yao Ming played in.

```
SELECT DISTINCT
   CONCAT(pa.first_name, pa.last_name) AS Name
FROM
   player_allstar pa
WHERE
   NOT EXISTS( SELECT
         allstar1.season_id
      FROM
         player_allstar allstar1
      WHERE
         allstar1.first_name = 'Yao'
            AND allstar1.last_name = 'Ming'
            AND allstar1.season_id NOT IN (SELECT
               allstar2.season_id
            FROM
               player_allstar allstar2
            WHERE
               allstar2.player_id = pa.player_id
                  AND allstar2.player_id != allstar1.player_id))
;
```

## Appendix (Phase I report)

# Databases Final project phase1

Instructor: David Yarowsky

Student: Yirui Wang, Jieming Bi

# Database final project phase I

Yirui Wang, Jieming Bi

## 1. Team member

- Yirui Wang (ywang335)
- Jieming Bi (jbi8)

## 2. Target domain

A NBA statistic database (from 1946 to 2011)

## 3. English questions

1) List the all-star players, who have played more than 60 minutes, and in WEST, and played in the season after 2000.
2) List the all-star players, who got more than 30 points in a game, and in East, and played in the season after 1998.
3) List the all-star players, who got more than 7 assists in a game, and in East, and played in the season after 1998 and his personal fouls should be less than or equals to 2. Select each player only once.
4) What' s the average points per season of Kobe Bryant?
5) What' s the average assists per season of Kobe Bryant per season between 1998 and 2000?
6) Who got the highest score in 1996? Note that the person should be a rookie of 1996, meaning that he joined in the draft in 1996.
7) Which player, in history, wins the award "All-NBA first team" the most time and he must get more than 28000 points in the whole career.
8) Among all the players, who have won "Rookie of the Year", who got the most points in his first year?
9) What is the three-point shooting percentage Kobe Bryant got in the 2011 season?
10) What is the average assists, steal, and point that Tracy McGrady got in 2005 season?

11) List the players who have been Yao Ming's teammate.
12) List the players who joined NBA a year earlier than Yao Ming, but have never played in All-Star Game.
13) List the players who join NBA after 2000, and have played at least 1 All-Star Game, and instructed by a coach who have won 'NBA Coach of the year'.
14) List the players who played every All-Star game from 2003 to 2008 but got more than 10 points in the All-Star Game.
15) List the players who have played every All-Star Game that Yao Ming played in.

## 4. Relational Data Model for our system (Table representation):

*Table1 abbrev:*

- abbrev_type: what header the abbreviation is used under
- code: the abbreviation
- full_name: the full name

| abbrev_type | code | full_name |
|---|---|---|
| Round | DF | Division Finals |
| Conference | EC | Eastern Conference |
| Conference | WC | Western Conference |
| Division | AT | Atlantic Division |
| Division | ED | Eastern Division |
| Division | CD | Central Division |
| Division | WD | Western Division |
| Division | SE | Southeast Division |
| Division | MW | Midwest Division |
| Division | NW | Northwest Division |
| Division | SW | Southwest Division |
| Division | PC | Pacific Division |
| Playoffs | R1 | Lost round 1 |
| Playoffs | SF | Lost semi-finals |
| Playoffs | F | Lost finals |
| Playoffs | NC | Won NBA championship |
| Playoffs | AC | Won ABA championship |
| Playoffs | DT | Lost division tie |
| Playoffs | DF | Lost division finals |
| Playoffs | DS | Lost division semi-finals |
| Playoffs | DR | Lost division round-robin |
| Playoffs | CF | Lost conference finals |
| Playoffs | CS | Lost conference semi-finals |
| Playoffs | C1 | Lost conference 1st round |

*Table 2 awards_coaches:*

- year: year
- coachID: unique id for coach
- award: the award won
- lgID: unique id for league
- note: any notes (sometimes indicates whether the award was won in a tie by two coaches)

| year | coachID | award | lgID | note |
|---|---|---|---|---|
| 1962 | gallaha01 | NBA Coach of the Year | NBA | null |
| 1963 | hannual01 | NBA Coach of the Year | NBA | null |
| 1964 | auerbre01 | NBA Coach of the Year | NBA | null |
| 1965 | schaydo01 | NBA Coach of the Year | NBA | null |
| 1966 | kerrjo01 | NBA Coach of the Year | NBA | null |
| 1967 | cazzevi01 | ABA Coach of the Year | ABA | null |
| 1967 | gueriri01 | NBA Coach of the Year | NBA | null |
| 1968 | hannual01 | ABA Coach of the Year | ABA | null |
| 1968 | shuege01 | NBA Coach of the Year | NBA | null |
| 1969 | sharmbi01 | ABA Coach of the Year | ABA | tie |
| 1969 | belmojo01 | ABA Coach of the Year | ABA | tie |
| 1969 | holzmre01 | NBA Coach of the Year | NBA | null |
| 1970 | biancal01 | ABA Coach of the Year | ABA | null |
| 1970 | mottadi01 | NBA Coach of the Year | NBA | null |
| 1971 | nissato01 | ABA Coach of the Year | ABA | null |
| 1971 | sharmbi01 | NBA Coach of the Year | NBA | null |
| 1972 | brownla01 | ABA Coach of the Year | ABA | null |
| 1972 | heinsto01 | NBA Coach of the Year | NBA | null |
| 1973 | mccarba01 | ABA Coach of the Year | ABA | tie |
| 1973 | mullajo01 | ABA Coach of the Year | ABA | tie |
| 1973 | scottra01 | NBA Coach of the Year | NBA | null |
| 1974 | brownla01 | ABA Coach of the Year | ABA | null |
| 1974 | johnsph01 | NBA Coach of the Year | NBA | null |
| 1975 | brownla01 | ABA Coach of the Year | ABA | null |

*Table 3 awards_players*

- playerID: unique id for player
- award: the award won
- year: year
- lgID: unique id for league
- note: any notes
- pos: position

| playerID | award | year | lgID | note | pos |
|---|---|---|---|---|---|
| feeribo01 | All-NBA First | 1946 | NBA | null | null |
| fulksjo01 | All-NBA First | 1946 | NBA | null | null |
| mckinho01 | All-NBA First | 1946 | NBA | null | null |
| miasest01 | All-NBA First | 1946 | NBA | null | null |
| zasloma01 | All-NBA First | 1946 | NBA | null | null |
| baumhfr01 | All-NBA Seco | 1946 | NBA | null | null |
| calveer01 | All-NBA Seco | 1946 | NBA | null | null |
| halbech01 | All-NBA Seco | 1946 | NBA | null | null |
| loganjo01 | All-NBA Seco | 1946 | NBA | null | null |
| scolafr01 | All-NBA Seco | 1946 | NBA | null | null |
| dallmho01 | All-NBA First | 1947 | NBA | null | null |
| feeribo01 | All-NBA First | 1947 | NBA | null | null |
| fulksjo01 | All-NBA First | 1947 | NBA | null | null |
| sadowed01 | All-NBA First | 1947 | NBA | null | null |
| zasloma01 | All-NBA First | 1947 | NBA | null | null |
| braunca01 | All-NBA Seco | 1947 | NBA | null | null |
| jeannbu01 | All-NBA Seco | 1947 | NBA | null | null |
| loganjo01 | All-NBA Seco | 1947 | NBA | null | null |
| miasest01 | All-NBA Seco | 1947 | NBA | null | null |
| scolafr01 | All-NBA Seco | 1947 | NBA | null | null |
| daviebo01 | All-NBA First | 1948 | NBA | null | null |
| fulksjo01 | All-NBA First | 1948 | NBA | null | null |
| mikange01 | All-NBA First | 1948 | NBA | null | null |
| pollaji01 | All-NBA First | 1948 | NBA | null | null |

*Table 4 coaches*

- coachID: unique id for coach
- year: year
- tmID: unique id for team
- lgID: unique id for league
- stint:
- won: number of games won
- lost: number of games lost
- post_wins: postseason wins
- post_losses: postseason losses

| coachID | year | tmID | lgID | stint | won | lost | post_wins | post_losses |
|---|---|---|---|---|---|---|---|---|
| johnsne01 | 1961 | PGR | ABL1 | 1 | 41 | 40 | 0 | 1 |
| auerbre01 | 1946 | WSC | NBA | 1 | 49 | 11 | 2 | 4 |
| birchpa01 | 1946 | PIT | NBA | 1 | 15 | 45 | 0 | 0 |
| cliffro01 | 1946 | CLR | NBA | 2 | 13 | 10 | 1 | 2 |
| cohalne01 | 1946 | NYK | NBA | 1 | 33 | 27 | 2 | 3 |
| curtigl01 | 1946 | DTF | NBA | 1 | 12 | 22 | 0 | 0 |
| dehnere01 | 1946 | CLR | NBA | 1 | 17 | 20 | 0 | 0 |
| fitzgdi01 | 1946 | TRH | NBA | 1 | 2 | 1 | 0 | 0 |
| gottled01 | 1946 | PHW | NBA | 1 | 35 | 25 | 8 | 2 |
| haymale01 | 1946 | TRH | NBA | 3 | 0 | 1 | 0 | 0 |
| loeffke01 | 1946 | STB | NBA | 1 | 38 | 23 | 1 | 2 |
| morriro01 | 1946 | PRO | NBA | 1 | 28 | 32 | 0 | 0 |
| olsenha01 | 1946 | CHS | NBA | 1 | 39 | 22 | 5 | 6 |
| rolfero01 | 1946 | TRH | NBA | 4 | 17 | 27 | 0 | 0 |
| russejo01 | 1946 | BOS | NBA | 1 | 22 | 38 | 0 | 0 |
| sachsph01 | 1946 | DTF | NBA | 2 | 8 | 18 | 0 | 0 |
| sadowed01 | 1946 | TRH | NBA | 2 | 3 | 9 | 0 | 0 |
| auerbre01 | 1947 | WSC | NBA | 1 | 28 | 20 | 0 | 0 |
| gottled01 | 1947 | PHW | NBA | 1 | 27 | 21 | 6 | 7 |
| hickena01 | 1947 | PRO | NBA | 1 | 4 | 25 | 0 | 0 |
| jeannbu01 | 1947 | BLB | NBA | 1 | 28 | 20 | 8 | 3 |
| lapchjo01 | 1947 | NYK | NBA | 1 | 26 | 22 | 1 | 2 |
| loeffke01 | 1947 | STB | NBA | 1 | 29 | 19 | 3 | 4 |
| olsenha01 | 1947 | CHS | NBA | 1 | 28 | 20 | 2 | 3 |

*Table 5 draft*

- draftYear: year
- draftRound: round of this draft
- draftSelection: within this draft round, what number pick was this?
- draftOverall: over the entire draft, what number pick was this?
- tmID: unique id for team
- firstName: player first name
- lastName: player last name
- suffixName: player suffix name (occasionally "Jr.", but typically blank)
- playerID: unique id for player
- draftFrom: college the player was drafted from
- lgID: unique id for league

| draftYear | draftRound | draftSelection | draftOverall | tmID | firstName | lastName | suffixName | playerID | draftFrom | lgID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1967 | 0 | 0 | 0 | ANA | Darrell | Hardy | | hardyda01 | Baylor | ABA |
| 1967 | 0 | 0 | 0 | ANA | Bob | Krulish | | | Pacific | ABA |
| 1967 | 0 | 0 | 0 | ANA | Bob | Lewis | | lewisbo01 | North Carolina | ABA |
| 1967 | 0 | 0 | 0 | ANA | Mike | Lynn | | lynnmi01 | UCLA | ABA |
| 1967 | 0 | 0 | 0 | ANA | Tom | Workman | | workmto01 | Seattle | ABA |
| 1967 | 0 | 0 | 0 | ANA | Jim | Connolly | | | Virginia | ABA |
| 1967 | 0 | 0 | 0 | ANA | Denny | Holman | | holmade01 | Southern Met | ABA |
| 1967 | 0 | 0 | 0 | ANA | Edgar | Lacy | | lacyed01 | UCLA | ABA |
| 1967 | 0 | 0 | 0 | ANA | Les | Powell | | | Utah State | ABA |
| 1967 | 0 | 0 | 0 | ANA | Malcolm | Strong | | | Seattle | ABA |
| 1967 | 0 | 0 | 0 | ANA | Gary | Williams | | | Oklahoma Stat | ABA |
| 1967 | 0 | 0 | 0 | ANA | Mike | Wittman | | | Miami (FL) | ABA |
| 1967 | 0 | 0 | 0 | DNR | Walt | Frazier | | fraziwa01 | Southern Illinc | ABA |
| 1967 | 0 | 0 | 0 | DNR | Neville | Shedd | | | Texas Western | ABA |
| 1967 | 0 | 0 | 0 | DNR | Bob | Rule | | rulebo01 | Colorado State | ABA |
| 1967 | 0 | 0 | 0 | DNR | Gary | Keller | | kellega01 | Florida | ABA |
| 1967 | 0 | 0 | 0 | DNR | Byron | Beck | | beckby01 | Denver | ABA |
| 1967 | 0 | 0 | 0 | DNR | Vaughn | Harper | | | Syracuse | ABA |
| 1967 | 0 | 0 | 0 | DNR | Rick | Dean | | | Syracuse | ABA |
| 1967 | 0 | 0 | 0 | DNR | Neil | Heskin | | | Georgetown | ABA |
| 1967 | 0 | 0 | 0 | DNR | Dave | Lattin | | lattida01 | Texas Western | ABA |
| 1967 | 0 | 0 | 0 | DNR | John | Morrison | | morrijo01 | Canisius | ABA |
| 1967 | 0 | 0 | 0 | DNR | Neil | Roberts | | | Brigham Young | ABA |
| 1967 | 0 | 0 | 0 | DNR | Bill | Turner | | turnebi01 | Akron | ABA |

*Table 6 hof*

- year: year of the Hall of Fame induction
- hofID: unique id for the person inducted (occasionally blank, if they were not a player or coach in a U.S. professional league, e.g. for FIBA players)
- name: name of the person inducted
- category: one of Team, Player, Coach, Referee, Contributor

| year | hofID | name | category |
|---|---|---|---|
| 1959 | null | Amos Alonzo | Contributor |
| 1959 | null | Charles Hyat | Player |
| 1959 | null | Edward Hick | Contributor |
| 1959 | mikange01 | George Mika | Player |
| 1959 | null | Hank Luisetti | Player |
| 1959 | olsenha01 | Harold Olsen | Contributor |
| 1959 | null | Henry Cliffor | Coach |
| 1959 | null | James Naism | Contributor |
| 1959 | null | John Schomn | Player |
| 1959 | null | Luther Gulick | Contributor |
| 1959 | null | Matthew Ker | Referee |
| 1959 | null | Original Celti | Team |
| 1959 | null | Oswald Towe | Contributor |
| 1959 | null | Phog Allen | Coach |
| 1959 | null | Ralph Morga | Contributor |
| 1959 | null | The First Tea | Team |
| 1959 | null | Walter Mean | Coach |
| 1960 | null | Branch McCr | Player |
| 1960 | null | Charles Murp | Player |
| 1960 | macaued01 | Ed Macauley | Player |
| 1960 | null | Ernest Blood | Coach |
| 1960 | null | Frank Keane | Coach |
| 1960 | null | George Hepb | Referee |
| 1960 | null | Henry Porter | Contributor |

*Table 7 master*

- bioID: master unique id for this person (player or coach)
- useFirst: First name this person goes/went by (occasionally a nickname)
- firstName: Legal first name
- middleName: middle name
- lastName: last name
- nameGiven:
- fullGivenName:
- nameSuffix:
- nameNick:
- pos: position played (multiple may be separated by hyphens)
- firstseason: year of first season played
- lastseason: year of last season played
- height: height in inches
- weight: weight in pounds

- college: college
- collegeOther:
- birthDate: birth date; "0000-00-00" if unknown or not available
- birthCity: city of birth
- birthState: state of birth
- birthCountry: country of birth
- highSchool: high school
- hsCity: city of high school
- hsState: state of high school
- hsCountry: country of high school
- deathDate: date of death; "0000-00-00" if unknown, NA, or the person is currently living
- race: one of B (Black), W (White), O (Other), blank, or 1 (these seem to be coding errors)

| bioID | useFirst | firstName | middleName | lastName | nameGiven | fullGivenNam | nameSuffix | nameNick | pos | firstseason | lastseason |
|---|---|---|---|---|---|---|---|---|---|---|---|
| abdelal01 | Column1 | Column2 | Column3 | Column4 | Column5 | Column6 | Column7 | Column8 | Column9 | Column10 | Column11 |
| abdulka01 | Alaa | Alaa | null | Abdelnaby | null | null | null | null | F-C | 0 | 0 |
| abdulma01 | Kareem | Kareem | null | Abdul-Jabbar | null | Ferdinand Lewis Alcindor, | | Lew, Cap | C | 0 | 0 |
| abdulma02 | Mahdi | Mahdi | null | Abdul-Rahma | null | Walter Raphael Hazzard, Jr | | Walt | G | 0 | 0 |
| abdulta01 | Mahmoud | Mahmoud | null | Abdul-Rauf | null | Chris Wayne Jackson | | null | G | 0 | 0 |
| abdulza01 | Tariq | Tariq | null | Abdul-Wahac | null | Olivier Michael Saint-Jean | | null | G-F | 0 | 0 |
| ablefo01 | Zaid | Zaid | null | Abdul-Aziz | null | Donald A. Smith | | Don, The Kar | C-F | 0 | 0 |
| abramjo01 | Forest | Forest | Edward | Able | null | null | null | Frosty | G | 0 | 0 |
| ackeral01 | John | John | null | Abramovic | null | null | Jr. | Brooms | F | 0 | 0 |
| acresma01 | Alex | Alex | null | Acker | null | null | null | null | G | 0 | 0 |
| adamsal01 | Mark | Mark | Richard | Acres | null | null | null | null | F-C | 0 | 0 |
| adamsge01 | Alvan | Alvan | Leigh | Adams | null | null | null | Double A, Th | C-F | 0 | 0 |
| adamsha01 | George | George | null | Adams | null | null | null | null | F-G | 0 | 0 |
| adamsmi01 | Hassan | Hassan | Olawale | Adams | null | null | null | null | G | 0 | 0 |
| addisra01 | Michael | Michael | null | Adams | null | null | null | null | G | 0 | 0 |
| adrieje01 | Rafael | Rafael | null | Addison | null | null | null | null | F-G | 0 | 0 |
| agerma01 | Jeff | Jeff | null | Adrien | null | null | null | null | F | 0 | 0 |
| aguirma01 | Maurice | Maurice | Darnell | Ager | null | null | null | null | G | 0 | 0 |
| akinhe01 | Mark | Mark | Anthony | Aguirre | null | null | null | null | F-G | 0 | 0 |
| alarima01 | Henry | Henry | T. | Akin | null | null | null | null | C-F | 0 | 0 |
| alcorga01 | Mark | Mark | Steven | Alarie | null | null | null | null | F | 0 | 0 |
| aldrico01 | Gary | Gary | R. | Alcorn | null | null | null | null | C | 0 | 0 |
| aldrila01 | Cole | Cole | David | Aldrich | null | null | null | null | C | 0 | 0 |
| alexaco01 | LaMarcus | LaMarcus | Nurae | Aldridge | null | null | null | null | F | 0 | 0 |
| alexaco02 | Cory | Cory | Lynn | Alexander | null | null | null | null | G | 0 | 0 |

| height | weight | college | collegeOther | birthDate | birthCity | birthState | birthCountry | highSchool | hsCity | hsState | hsCountry | deathDate | race |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Column12 | Column13 | Column14 | Column15 | Column16 | Column17 | Column18 | Column19 | Column20 | Column21 | Column22 | Column23 | Column24 | Column25 |
| 82 | 240 | Duke | | 6/24/68 | Cairo | | EGY | Bloomfield Se | Bloomfield | NJ | USA | 0000-00-00 | B |
| 85 | 225 | UCLA | | 4/16/47 | New York | NY | USA | Power Memo | New York | NY | USA | 0000-00-00 | B |
| 74 | 185 | UCLA | Santa Monica | 4/15/42 | Wilmington | DE | USA | Overbrook / M | Philadelphia / | PA / MD | USA | 11/18/11 | B |
| 73 | 162 | Louisiana State | | 3/9/69 | Gulfport | MS | USA | Gulfport | Gulfport | MS | USA | 0000-00-00 | B |
| 78 | 223 | San Jose State | Michigan | 11/3/74 | Maisons Alfort | | FRA | Lycee Aristide | Evreux | | FRA | 0000-00-00 | B |
| 81 | 230 | Iowa State | | 4/7/46 | Brooklyn | NY | USA | John Jay | Brooklyn | NY | USA | 0000-00-00 | B |
| 75 | 180 | Western Kent | Louisville | 7/27/32 | | | | Fairdale | Louisville | KY | USA | 0000-00-00 | W |
| 75 | 195 | Salem | | 2/9/19 | Etna | PA | USA | Etna | Etna | PA | USA | 6/9/00 | W |
| 77 | 185 | Pepperdine | | 1/21/83 | Compton | CA | USA | Eisenhower / | Rialto / San Be | CA | USA | 0000-00-00 | B |
| 83 | 220 | Oral Roberts | | 11/15/62 | Inglewood | CA | USA | Palos Verdes | Palos Verdes I | CA | USA | 0000-00-00 | W |
| 81 | 210 | Oklahoma | | 7/19/54 | Lawrence | KS | USA | Putnam City | Putnam City | OK | USA | 0000-00-00 | W |
| 77 | 210 | Gardner-Webb | | 5/15/49 | Kings Mounta | NC | USA | Kings Mounta | Kings Mounta | NC | USA | 0000-00-00 | B |
| 76 | 220 | Arizona | | 6/20/84 | Inglewood | CA | USA | Westchester | Los Angeles | CA | USA | 0000-00-00 | B |
| 70 | 162 | Boston College | | 1/19/63 | Hartford | CT | USA | Hartford Publi | Hartford | CT | USA | 0000-00-00 | B |
| 79 | 215 | Syracuse | | 7/22/64 | Jersey City | NJ | USA | Snyder | Jersey City | NJ | USA | 0000-00-00 | B |
| 79 | 243 | Connecticut | | 2/10/86 | Brookline | MA | USA | Brookline/Bre | Brookline/ W | MA/NH | USA | 0000-00-00 | B |
| 77 | 202 | Michigan State | | 2/9/84 | Detroit | MI | USA | Crocket | Detroit | MI | USA | 0000-00-00 | B |
| 78 | 232 | DePaul | | 12/10/59 | Chicago | IL | USA | Austin / Westi | Chicago | IL | USA | 0000-00-00 | B |
| 82 | 225 | Morehead Sta | William Carey | 7/31/44 | Detroit | MI | USA | Troy | Troy | MI | USA | 0000-00-00 | W |
| 80 | 217 | Duke | | 12/11/63 | Phoenix | AZ | USA | Brophy Prep | Phoenix | AZ | USA | 0000-00-00 | W |
| 81 | 225 | Fresno State | Fresno City | 10/8/36 | | | | Roosevelt | Fresno | CA | USA | 11/29/06 | W |
| 83 | 245 | Kansas | | 10/31/88 | Burnsville | MN | USA | Jefferson | Bloomington | MN | USA | 0000-00-00 | W |
| 83 | 240 | Texas | | 7/19/85 | Dallas | TX | USA | Seagoville | Dallas | TX | USA | 0000-00-00 | B |
| 73 | 185 | Virginia | | 6/22/73 | Waynesboro | VA | USA | Oak Hill Acad | Mouth of Wils | VA | USA | 0000-00-00 | B |

*Table 8 player_allstar*

- player_id: unique id for player
- last_name: player last name
- first_name: player first name
- season_id: year of the season this All-Star game was played for
- conference: which conference the player played for
- league_id: unique id for league
- games_played: always 1, since this is data for one game
- minutes: minutes played
- points: points scored
- and numbers of:
-
- o_rebounds: offensive rebounds
- d_rebounds: defensive rebounds
- rebounds: total rebounds
- assists: assists
- steals: steals
- blocks: blocks
- turnovers: turnovers
- personal_fouls: personal fouls

- fg_attempted: field goals attempted
- fg_made: field goals made
- ft_attempted: free throws attempted
- ft_made: free throws made
- three_attempted: 3-point shots attempted
- three_made: 3-point shots made

| player_id | last_name | first_name | season_id | conference | league_id | games_played | minutes | points | o_rebounds | d_rebounds | rebounds | assists | steals | blocks | turnovers | personal_fouls | fg_attempted | fg_made | ft_attempted | ft_made | three_attempted | three_made |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| abdulka01 | Abdul-Jabbar | Kareem | 1978 | West | NBA | 1 | 28 | 11 | null | null | 8 | 3 | null | null | null | null | 12 | 5 | 2 | 1 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1969 | East | NBA | 1 | 18 | 10 | null | null | 11 | 4 | null | null | null | null | 8 | 4 | 2 | 2 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1988 | West | NBA | 1 | 13 | 4 | null | null | 3 | 0 | null | null | null | null | 6 | 1 | 2 | 2 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1987 | West | NBA | 1 | 14 | 10 | null | null | 4 | 0 | null | null | null | null | 9 | 4 | 2 | 2 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1986 | West | NBA | 1 | 27 | 10 | null | null | 8 | 3 | null | null | null | null | 9 | 4 | 2 | 2 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1985 | West | NBA | 1 | 32 | 21 | null | null | 7 | 2 | null | null | null | null | 15 | 9 | 4 | 3 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1984 | West | NBA | 1 | 23 | 11 | null | null | 6 | 1 | null | null | null | null | 10 | 5 | 2 | 1 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1983 | West | NBA | 1 | 37 | 25 | null | null | 13 | 2 | null | null | null | null | 19 | 11 | 4 | 3 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1982 | West | NBA | 1 | 32 | 20 | null | null | 6 | 5 | null | null | null | null | 12 | 9 | 3 | 2 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1980 | West | NBA | 1 | 23 | 15 | null | null | 6 | 4 | null | null | null | null | 9 | 6 | 3 | 3 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1979 | West | NBA | 1 | 30 | 17 | null | null | 16 | 9 | null | null | null | null | 17 | 6 | 6 | 5 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1976 | West | NBA | 1 | 23 | 21 | null | null | 4 | 2 | null | null | null | null | 14 | 8 | 6 | 5 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1975 | West | NBA | 1 | 36 | 22 | null | null | 5 | 3 | null | null | null | null | 16 | 9 | 4 | 4 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1974 | West | NBA | 1 | 19 | 7 | null | null | 10 | 3 | null | null | null | null | 10 | 3 | 2 | 1 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1973 | West | NBA | 1 | 23 | 14 | null | null | 8 | 6 | null | null | null | null | 11 | 7 | 0 | 0 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1972 | West | NBA | 1 | 98 | | null | null | | | null | null | null | null | | | | | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1971 | West | NBA | 1 | 19 | 12 | null | null | 7 | 2 | null | null | null | null | 10 | 5 | 2 | 2 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1970 | West | NBA | 1 | 30 | 19 | null | null | 14 | 1 | null | null | null | null | 16 | 8 | 4 | 3 | null | null |
| abdulka01 | Abdul-Jabbar | Kareem | 1981 | West | NBA | 1 | 22 | 2 | 1 | 2 | 3 | 1 | 3 | 2 | 1 | 3 | 10 | 1 | 0 | 0 | 0 | 0 |
| abdursh01 | A-Rahim | Shareef | 2001 | East | NBA | 1 | 21 | 9 | 1 | 5 | 6 | 0 | 0 | 0 | 0 | 2 | 4 | 4 | 0 | 0 | 1 | 1 |
| adamsal01 | Adams | Alvan | 1975 | West | NBA | 1 | 11 | 4 | null | null | 3 | 0 | null | null | null | null | 4 | 2 | 0 | 0 | null | null |
| adamsmi01 | Adams | Michael | 1991 | East | NBA | 1 | 14 | 9 | null | null | 1 | 1 | null | null | null | null | 8 | 4 | 0 | 0 | null | null |
| aguirma01 | Aguirre | Mark | 1987 | West | NBA | 1 | 12 | 14 | null | null | 1 | 1 | null | null | null | null | 10 | 5 | 3 | 3 | null | null |
| aguirma01 | Aguirre | Mark | 1986 | West | NBA | 1 | 17 | 9 | null | null | 2 | 1 | null | null | null | null | 6 | 3 | 3 | 2 | null | null |

*Table 9 players*

- playerID: unique id for player
- year: season year
- stint:
- tmID: unique id for team

- lgID: unique id for league

numbers of:

- GP: games played in
- GS: games started
- minutes: minutes played
- points
- oRebounds
- dRebounds
- rebounds
- assists
- steals
- blocks
- turnovers
- PF: personal fouls
- fgAttempted: attempted field goald
- fgMade: field goals made
- ftAttempted: free throws attempted
- ftMade: free throws made
- threeAttempted
- threeMade

Same as above, but for postseason:

- PostGP
- PostGS
- PostMinutes
- PostPoints
- PostoRebounds
- PostdRebounds
- PostRebounds
- PostAssists
- PostSteals
- PostBlocks

- PostTurnovers
- PostPF
- PostfgAttempted
- PostfgMade
- PostftAttempted
- PostftMade
- PostthreeAttempted
- PostthreeMade

| playerID | year | stint | tmID | lgID | GP | GS | minutes | points | oRebounds | dRebounds |
|---|---|---|---|---|---|---|---|---|---|---|
| abramjo01 | 1946 | 1 | PIT | NBA | 47 | 0 | 0 | 527 | 0 | 0 |
| aubucch01 | 1946 | 1 | DTF | NBA | 30 | 0 | 0 | 65 | 0 | 0 |
| bakerno01 | 1946 | 1 | CHS | NBA | 4 | 0 | 0 | 0 | 0 | 0 |
| baltihe01 | 1946 | 1 | STB | NBA | 58 | 0 | 0 | 138 | 0 | 0 |
| barrjo01 | 1946 | 1 | STB | NBA | 58 | 0 | 0 | 295 | 0 | 0 |
| baumhfr01 | 1946 | 1 | CLR | NBA | 45 | 0 | 0 | 631 | 0 | 0 |
| beckemo01 | 1946 | 1 | PIT | NBA | 17 | 0 | 0 | 108 | 0 | 0 |
| beckemo01 | 1946 | 2 | BOS | NBA | 6 | 0 | 0 | 13 | 0 | 0 |
| beckemo01 | 1946 | 3 | DTF | NBA | 20 | 0 | 0 | 41 | 0 | 0 |
| beendha01 | 1946 | 1 | PRO | NBA | 58 | 0 | 0 | 713 | 0 | 0 |
| biasaha01 | 1946 | 1 | TRH | NBA | 6 | 0 | 0 | 6 | 0 | 0 |
| brighal01 | 1946 | 1 | BOS | NBA | 58 | 0 | 0 | 567 | 0 | 0 |
| brindau01 | 1946 | 1 | NYK | NBA | 12 | 0 | 0 | 34 | 0 | 0 |
| brownha01 | 1946 | 1 | DTF | NBA | 54 | 0 | 0 | 264 | 0 | 0 |
| brownle01 | 1946 | 1 | CLR | NBA | 5 | 0 | 0 | 0 | 0 | 0 |
| byrneto01 | 1946 | 1 | NYK | NBA | 60 | 0 | 0 | 453 | 0 | 0 |
| bytzumi01 | 1946 | 1 | PIT | NBA | 60 | 0 | 0 | 210 | 0 | 0 |
| callato01 | 1946 | 1 | PRO | NBA | 13 | 0 | 0 | 17 | 0 | 0 |
| calveer01 | 1946 | 1 | PRO | NBA | 59 | 0 | 0 | 845 | 0 | 0 |
| carlich01 | 1946 | 1 | CHS | NBA | 51 | 0 | 0 | 256 | 0 | 0 |
| carlsdo01 | 1946 | 1 | CHS | NBA | 59 | 0 | 0 | 630 | 0 | 0 |
| cluggbo01 | 1946 | 1 | NYK | NBA | 54 | 0 | 0 | 238 | 0 | 0 |
| connoch01 | 1946 | 1 | BOS | NBA | 49 | 0 | 0 | 227 | 0 | 0 |
| corleke01 | 1946 | 1 | CLR | NBA | 3 | 0 | 0 | 0 | 0 | 0 |

| rebounds | assists | steals | blocks | turnovers | PF | fgAttempted | fgMade | ftAttempted | ftMade | threeAttempted |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 35 | 0 | 0 | 0 | 161 | 834 | 202 | 178 | 123 | 0 |
| 0 | 20 | 0 | 0 | 0 | 46 | 91 | 23 | 35 | 19 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0 | 16 | 0 | 0 | 0 | 98 | 263 | 53 | 69 | 32 | 0 |
| 0 | 54 | 0 | 0 | 0 | 164 | 438 | 124 | 79 | 47 | 0 |
| 0 | 54 | 0 | 0 | 0 | 93 | 856 | 255 | 156 | 121 | 0 |
| 0 | 14 | 0 | 0 | 0 | 50 | 229 | 46 | 30 | 16 | 0 |
| 0 | 1 | 0 | 0 | 0 | 15 | 22 | 5 | 4 | 3 | 0 |
| 0 | 15 | 0 | 0 | 0 | 33 | 107 | 19 | 10 | 3 | 0 |
| 0 | 37 | 0 | 0 | 0 | 196 | 1016 | 266 | 257 | 181 | 0 |
| 0 | 0 | 0 | 0 | 0 | 3 | 5 | 2 | 4 | 2 | 0 |
| 0 | 60 | 0 | 0 | 0 | 115 | 870 | 223 | 193 | 121 | 0 |
| 0 | 1 | 0 | 0 | 0 | 16 | 49 | 14 | 7 | 6 | 0 |
| 0 | 39 | 0 | 0 | 0 | 122 | 383 | 95 | 117 | 74 | 0 |
| 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 |
| 0 | 35 | 0 | 0 | 0 | 90 | 583 | 175 | 160 | 103 | 0 |
| 0 | 31 | 0 | 0 | 0 | 108 | 356 | 87 | 72 | 36 | 0 |
| 0 | 4 | 0 | 0 | 0 | 9 | 29 | 6 | 12 | 5 | 0 |
| 0 | 202 | 0 | 0 | 0 | 191 | 1102 | 323 | 283 | 199 | 0 |
| 0 | 17 | 0 | 0 | 0 | 136 | 373 | 100 | 92 | 56 | 0 |
| 0 | 59 | 0 | 0 | 0 | 182 | 845 | 272 | 159 | 86 | 0 |
| 0 | 22 | 0 | 0 | 0 | 113 | 356 | 93 | 91 | 52 | 0 |
| 0 | 40 | 0 | 0 | 0 | 129 | 380 | 94 | 84 | 39 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| threeMade | PostGP | PostGS | PostMinutes | PostPoints | PostoRebounds | PostdRebounds | PostRebounds | PostAssists |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 3 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 5 | 0 | 0 | 24 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 10 | 0 | 0 | 56 | 0 | 0 | 0 | 2 |
| 0 | 11 | 0 | 0 | 135 | 0 | 0 | 0 | 6 |
| 0 | 5 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| PostSteals | PostBlocks | PostTurnovers | PostPF | PostfgAttempted | PostfgMade | PostftAttempted | PostftMade | PostthreeAttempted | PostthreeMade |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 3 | 10 | 2 | 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 4 | 6 | 3 | 6 | 4 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 2 | 46 | 11 | 11 | 2 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 33 | 88 | 20 | 28 | 16 | 0 | 0 |
| 0 | 0 | 0 | 31 | 200 | 54 | 44 | 27 | 0 | 0 |
| 0 | 0 | 0 | 12 | 27 | 4 | 2 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

*Table 10 series_post*

- year: season year
- round: round of the playoffs (see abbrev)
- series
- tmIDWinner: winner of the series
- lgIDWinner: league of the winner
- tmIDLoser: loser of the series
- lgIDLoser: league of the loser
- W: games won by the winner
- L: games lost by the loser

| year | round | series | tmIDWinner | lgIDWinner | tmIDLoser | lgIDLoser | W | L |
|---|---|---|---|---|---|---|---|---|
| 1946 | F | O | PHW | NBA | CHS | NBA | 4 | 1 |
| 1946 | QF | M | NYK | NBA | CLR | NBA | 2 | 1 |
| 1946 | QF | M | PHW | NBA | STB | NBA | 2 | 1 |
| 1946 | SF | N | PHW | NBA | NYK | NBA | 2 | 0 |
| 1946 | SF | N | CHS | NBA | WSC | NBA | 4 | 2 |
| 1947 | F | O | BLB | NBA | PHW | NBA | 4 | 2 |
| 1947 | QF | M | BLB | NBA | NYK | NBA | 2 | 1 |
| 1947 | QF | M | CHS | NBA | BOS | NBA | 2 | 1 |
| 1947 | SF | N | BLB | NBA | CHS | NBA | 2 | 0 |
| 1947 | SF | N | PHW | NBA | STB | NBA | 4 | 3 |
| 1947 | DT | A | BLB | NBA | CHS | NBA | 1 | 0 |
| 1947 | DT | A | CHS | NBA | WSC | NBA | 1 | 0 |
| 1948 | DF | K | WSC | NBA | NYK | NBA | 2 | 1 |
| 1948 | DSF | J | WSC | NBA | PHW | NBA | 2 | 0 |
| 1948 | DSF | J | NYK | NBA | BLB | NBA | 2 | 1 |
| 1948 | F | O | MNL | NBA | WSC | NBA | 4 | 2 |
| 1948 | DF | K | MNL | NBA | ROC | NBA | 2 | 0 |
| 1948 | DSF | J | MNL | NBA | CHS | NBA | 2 | 0 |
| 1948 | DSF | J | ROC | NBA | STB | NBA | 2 | 0 |
| 1949 | DF | K | MNL | NBA | FTW | NBA | 2 | 0 |
| 1949 | DT | A | MNL | NBA | ROC | NBA | 1 | 0 |
| 1949 | DSF | J | FTW | NBA | ROC | NBA | 2 | 0 |
| 1949 | DSF | J | MNL | NBA | CHS | NBA | 2 | 0 |
| 1949 | DT | A | FTW | NBA | CHS | NBA | 1 | 0 |

*Table 11 teams*

| year | lgID | tmID | franchID | confID | divID | rank | confRank | playoff | name | o_fgm | o_fga | o_ftm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1946 | NBA | BOS | BOS | | ED | 5 | 0 | | Boston Celtic | 1397 | 5133 | 811 |
| 1946 | NBA | CHS | CHS | | WD | 1 | 0 | F | Chicago Stag | 1879 | 6309 | 939 |
| 1946 | NBA | CLR | CLR | | WD | 3 | 0 | R1 | Cleveland Re | 1674 | 5699 | 903 |
| 1946 | NBA | DTF | DTF | | WD | 4 | 0 | | Detroit Falco | 1437 | 5843 | 923 |
| 1946 | NBA | NYK | NYK | | ED | 3 | 0 | SF | New York Kn | 1465 | 5255 | 951 |
| 1946 | NBA | PHW | GSW | | ED | 2 | 0 | NC | Philadelphia | 1510 | 5384 | 1098 |
| 1946 | NBA | PIT | PIT | | WD | 5 | 0 | | Pittsburgh Ir | 1345 | 4961 | 984 |
| 1946 | NBA | PRO | PRO | | ED | 4 | 0 | | Providence S | 1629 | 5582 | 1092 |
| 1946 | NBA | STB | STB | | WD | 2 | 0 | R1 | St. Louis Bor | 1601 | 5877 | 862 |
| 1946 | NBA | TRH | TRH | | ED | 5 | 0 | | Toronto Hus | 1515 | 5672 | 966 |
| 1946 | NBA | WSC | WSC | | ED | 1 | 0 | SF | Washington | 1723 | 5794 | 982 |
| 1947 | NBA | BLB | BLB | | WD | 2 | 0 | NC | Baltimore Bu | 1288 | 4283 | 994 |
| 1947 | NBA | BOS | BOS | | ED | 3 | 0 | R1 | Boston Celtic | 1241 | 4323 | 821 |
| 1947 | NBA | CHS | CHS | | WD | 2 | 0 | SF | Chicago Stag | 1390 | 4683 | 860 |
| 1947 | NBA | NYK | NYK | | ED | 2 | 0 | R1 | New York Kn | 1355 | 4724 | 868 |
| 1947 | NBA | PHW | GSW | | ED | 1 | 0 | F | Philadelphia | 1279 | 4875 | 963 |
| 1947 | NBA | PRO | PRO | | ED | 4 | 0 | | Providence S | 1268 | 4630 | 782 |
| 1947 | NBA | STB | STB | | WD | 1 | 0 | SF | St. Louis Bor | 1297 | 4551 | 838 |
| 1947 | NBA | WSC | WSC | | WD | 2 | 0 | DT | Washington | 1336 | 4785 | 865 |
| 1948 | NBA | BLB | BLB | | ED | 3 | 0 | DS | Baltimore Bu | 1736 | 5162 | 1545 |
| 1948 | NBA | BOS | BOS | | ED | 5 | 0 | | Boston Celtic | 1706 | 5483 | 1181 |
| 1948 | NBA | CHS | CHS | | WD | 3 | 0 | DS | Chicago Stag | 1905 | 5750 | 1228 |
| 1948 | NBA | FTW | DET | | WD | 5 | 0 | | Fort Wayne F | 1536 | 5370 | 1385 |
| 1948 | NBA | INJ | INJ | | WD | 6 | 0 | | Indianapolis | 1621 | 5367 | 1240 |

| o_fta | o_3pm | o_3pa | o_oreb | o_dreb | o_reb | o_asts | o_pf | o_stl | o_to | o_blk | o_pts | d_fgm | d_fga |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1375 | 0 | 0 | 0 | 0 | 0 | 470 | 1202 | 0 | 0 | 0 | 3605 | 0 | 0 |
| 1550 | 0 | 0 | 0 | 0 | 0 | 436 | 1473 | 0 | 0 | 0 | 4697 | 0 | 0 |
| 1428 | 0 | 0 | 0 | 0 | 0 | 494 | 1246 | 0 | 0 | 0 | 4251 | 0 | 0 |
| 1494 | 0 | 0 | 0 | 0 | 0 | 482 | 1351 | 0 | 0 | 0 | 3797 | 0 | 0 |
| 1438 | 0 | 0 | 0 | 0 | 0 | 457 | 1218 | 0 | 0 | 0 | 3881 | 0 | 0 |
| 1596 | 0 | 0 | 0 | 0 | 0 | 343 | 1082 | 0 | 0 | 0 | 4118 | 0 | 0 |
| 1507 | 0 | 0 | 0 | 0 | 0 | 272 | 1360 | 0 | 0 | 0 | 3674 | 0 | 0 |
| 1666 | 0 | 0 | 0 | 0 | 0 | 481 | 1215 | 0 | 0 | 0 | 4350 | 0 | 0 |
| 1400 | 0 | 0 | 0 | 0 | 0 | 292 | 1234 | 0 | 0 | 0 | 4064 | 0 | 0 |
| 1552 | 0 | 0 | 0 | 0 | 0 | 463 | 1271 | 0 | 0 | 0 | 3996 | 0 | 0 |
| 1391 | 0 | 0 | 0 | 0 | 0 | 378 | 1144 | 0 | 0 | 0 | 4428 | 0 | 0 |
| 1443 | 0 | 0 | 0 | 0 | 0 | 320 | 1080 | 0 | 0 | 0 | 3570 | 0 | 0 |
| 1246 | 0 | 0 | 0 | 0 | 0 | 364 | 1065 | 0 | 0 | 0 | 3303 | 0 | 0 |
| 1305 | 0 | 0 | 0 | 0 | 0 | 432 | 1138 | 0 | 0 | 0 | 3640 | 0 | 0 |
| 1291 | 0 | 0 | 0 | 0 | 0 | 376 | 1076 | 0 | 0 | 0 | 3578 | 0 | 0 |
| 1349 | 0 | 0 | 0 | 0 | 0 | 335 | 934 | 0 | 0 | 0 | 3521 | 0 | 0 |
| 1275 | 0 | 0 | 0 | 0 | 0 | 347 | 1105 | 0 | 0 | 0 | 3318 | 0 | 0 |
| 1244 | 0 | 0 | 0 | 0 | 0 | 218 | 1050 | 0 | 0 | 0 | 3432 | 0 | 0 |
| 1203 | 0 | 0 | 0 | 0 | 0 | 305 | 1084 | 0 | 0 | 0 | 3537 | 0 | 0 |
| 2053 | 0 | 0 | 0 | 0 | 0 | 1000 | 1730 | 0 | 0 | 0 | 5017 | 0 | 0 |
| 1856 | 0 | 0 | 0 | 0 | 0 | 1135 | 1382 | 0 | 0 | 0 | 4593 | 0 | 0 |
| 1775 | 0 | 0 | 0 | 0 | 0 | 1220 | 1731 | 0 | 0 | 0 | 5038 | 0 | 0 |
| 1979 | 0 | 0 | 0 | 0 | 0 | 1082 | 1722 | 0 | 0 | 0 | 4457 | 0 | 0 |
| 1798 | 0 | 0 | 0 | 0 | 0 | 1225 | 1393 | 0 | 0 | 0 | 4482 | 0 | 0 |

| d_ftm | d_fta | d_3pm | d_3pa | d_oreb | d_dreb | d_reb | d_asts | d_pf | d_stl | d_to | d_blk | d_pts | o_tmRebound | d_tmRebound | homeWon | h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3898 | 0 | 0 | 14 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4473 | 0 | 0 | 22 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4308 | 0 | 0 | 17 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3917 | 0 | 0 | 12 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3842 | 0 | 0 | 18 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3909 | 0 | 0 | 23 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4057 | 0 | 0 | 11 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4450 | 0 | 0 | 19 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3911 | 0 | 0 | 22 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4262 | 0 | 0 | 15 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3836 | 0 | 0 | 29 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3385 | 0 | 0 | 17 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3491 | 0 | 0 | 11 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3513 | 0 | 0 | 14 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3427 | 0 | 0 | 12 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3460 | 0 | 0 | 14 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3873 | 0 | 0 | 3 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3335 | 0 | 0 | 17 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3415 | 0 | 0 | 19 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4934 | 0 | 0 | 17 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4768 | 0 | 0 | 17 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4798 | 0 | 0 | 16 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4651 | 0 | 0 | 15 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4765 | 0 | 0 | 14 | |

| homeLost | awayWon | awayLost | neutWon | neutLoss | confWon | confLoss | divWon | divLoss | pace | won | lost | games | min | arena | attendance | bbtmID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 8 | 22 | 0 | 0 | 0 | 0 | 11 | 19 | 0 | 22 | 38 | 60 | 14500 | Boston Garde | 32767 | BOS |
| 9 | 17 | 13 | 0 | 0 | 0 | 0 | 17 | 8 | 0 | 39 | 22 | 61 | 14840 | Chicago Stad | 0 | CHS |
| 13 | 13 | 17 | 0 | 0 | 0 | 0 | 10 | 14 | 0 | 30 | 30 | 60 | 14600 | Cleveland An | 0 | CLR |
| 18 | 8 | 22 | 0 | 0 | 0 | 0 | 8 | 16 | 0 | 20 | 40 | 60 | 14600 | Detroit Olym | 0 | DTF |
| 12 | 15 | 15 | 0 | 0 | 0 | 0 | 13 | 17 | 0 | 33 | 27 | 60 | 14575 | Madison Squ | 32767 | NYK |
| 7 | 12 | 18 | 0 | 0 | 0 | 0 | 19 | 11 | 0 | 35 | 25 | 60 | 14575 | Philadelphia | 32767 | PHW |
| 19 | 4 | 26 | 0 | 0 | 0 | 0 | 6 | 18 | 0 | 15 | 45 | 60 | 14600 | Duquesne Ga | 0 | PTI |
| 11 | 9 | 21 | 0 | 0 | 0 | 0 | 12 | 18 | 0 | 28 | 32 | 60 | 14600 | Rhode Island | 0 | PRO |
| 8 | 16 | 15 | 0 | 0 | 0 | 0 | 20 | 5 | 0 | 38 | 23 | 61 | 14840 | St. Louis Arer | 0 | STB |
| 15 | 7 | 23 | 0 | 0 | 0 | 0 | 10 | 20 | 0 | 22 | 38 | 60 | 14600 | Maple Leaf G | 0 | TRH |
| 1 | 20 | 10 | 0 | 0 | 0 | 0 | 25 | 5 | 0 | 49 | 11 | 60 | 14600 | Uline Arena | 0 | WSC |
| 7 | 11 | 13 | 0 | 0 | 0 | 0 | 10 | 14 | 0 | 28 | 20 | 48 | 11695 | Baltimore Co | 0 | BLT |
| 13 | 9 | 15 | 0 | 0 | 0 | 0 | 11 | 13 | 0 | 20 | 28 | 48 | 11645 | Boston Garde | 32767 | BOS |
| 10 | 14 | 10 | 0 | 0 | 0 | 0 | 11 | 13 | 0 | 28 | 20 | 48 | 11695 | Chicago Stad | 0 | CHS |
| 12 | 14 | 10 | 0 | 0 | 0 | 0 | 18 | 6 | 0 | 26 | 22 | 48 | 11545 | Madison Squ | 32767 | NYK |
| 10 | 13 | 11 | 0 | 0 | 0 | 0 | 16 | 8 | 0 | 27 | 21 | 48 | 11695 | Philadelphia | 32767 | PHW |
| 21 | 3 | 21 | 0 | 0 | 0 | 0 | 3 | 21 | 0 | 6 | 42 | 48 | 11695 | Rhode Island | 0 | PRO |
| 7 | 12 | 12 | 0 | 0 | 0 | 0 | 14 | 10 | 0 | 29 | 19 | 48 | 11695 | St. Louis Arei | 0 | STB |
| 5 | 9 | 15 | 0 | 0 | 0 | 0 | 13 | 11 | 0 | 28 | 20 | 48 | 11695 | Uline Arena | 0 | WSC |
| 12 | 11 | 17 | 1 | 2 | 0 | 0 | 15 | 15 | 0 | 29 | 31 | 60 | 14600 | Baltimore Co | 0 | BLT |
| 12 | 7 | 20 | 1 | 3 | 0 | 0 | 12 | 18 | 0 | 25 | 35 | 60 | 14600 | Boston Garde | 32767 | BOS |
| 8 | 18 | 14 | 4 | 0 | 0 | 0 | 16 | 14 | 0 | 38 | 22 | 60 | 14600 | Chicago Stad | 0 | CHS |
| 14 | 5 | 23 | 2 | 1 | 0 | 0 | 8 | 22 | 0 | 22 | 38 | 60 | 14600 | North Side H | 0 | FWP |
| 15 | 4 | 22 | 0 | 5 | 0 | 0 | 8 | 22 | 0 | 18 | 42 | 60 | 14575 | Hinkle Fieldh | 0 | INJ |

**5. SQL statement**

**P.** List the all-star players, who have played more than 60 minutes, and in WEST, and played in the season after 2000.

```
SELECT pa.first_name, pa.last_name FROM player_allstar pa
WHERE pa.minutes>60 AND
    pa.conference = "West" AND
    pa.season_id > 2000;
```

| first_name | last_name |
|---|---|
| Shaquille | O'Neal |
| Chris | Webber |

Q. List the all-star players, who got more than 30 points in a game, and in East, and played in the season after 1998.

```
SELECT pa.first_name, pa.last_name FROM player_allstar pa
WHERE pa.points>30 AND
    pa.conference = "East" AND
    pa.season_id > 1998;
```

| first_name | last_name |
|---|---|
| Allen | Iverson |

R. List the all-star players, who got more than 7 assists in a game, and in East, and played in the season after 1998 and his personal fouls should be less than or equals to 2. Select each player only once.

```
SELECT DISTINCT pa.first_name, pa.last_name FROM player_allstar pa
WHERE pa.assists>7 AND
    pa.conference = "East" AND
```

```
    pa.season_id > 1998 AND
    pa.personal_fouls<3;
```

| first_name | last_name |
|---|---|
| Allen | Iverson |
| Jason | Kidd |

S. What' s the average points per season of Kobe Bryant?

```
SELECT
   AVG(res.points) AS pps
FROM
   (SELECT DISTINCT
      p.year, p.points
   FROM
      players p, player_allstar pa
   WHERE
      p.playerID = pa.player_id
         AND pa.first_name = 'Kobe'
         AND pa.last_name = 'Bryant') AS res
```

| | pps |
|---|---|
| ▶ | 1842.7500 |

T. What' s the average assists per season of Kobe Bryant per season between 1998 and 2000?

```
SELECT
   AVG(res.assists) AS aPs
FROM
   (SELECT DISTINCT
```

```
    p.year, p.assists
  FROM
    players p, player_allstar pa
  WHERE
    p.playerID = pa.player_id
      AND pa.first_name = 'Kobe'
      AND pa.last_name = 'Bryant'
      AND p.year >= 1998
      AND p.year <= 2000) AS res
```

| aPs |
| --- |
| 283.6667 |

U. Who got the highest score in 1996? Note that the person should be a rookie of 1996, meaning that he joined in the draft in 1996.

```
SELECT
  d1.firstName, d1.lastName
FROM
  draft d1,
  (SELECT
    p.playerID, MAX(p.points)
  FROM
    draft d, players p
  WHERE
    d.draftYear = 1996
      AND p.playerID = d.playerID
      AND p.year = 1996) AS res
WHERE
  d1.playerID = res.playerID
```

| firstName | lastName |
|---|---|
| Allen | Iverson |

V. Which player, in history, wins the award “All-NBA first team” the most time and he must got more than 28000 points in the whole career.

```
SELECT DISTINCT
    pa.first_name, pa.last_name
FROM
    player_allstar pa,
    (SELECT
        RES.playerID, MAX(RES.count)
    FROM
        (SELECT
        ap.playerID, COUNT(ap.playerID) AS count
    FROM
        awards_players ap, (SELECT
        RES.playerID
    FROM
        (SELECT
        p.playerID, SUM(p.points) AS total_points
    FROM
        players p
    GROUP BY p.playerID) AS RES
    WHERE
        RES.total_points > 28000) AS res
    WHERE
        ap.playerID = res.playerID
            AND ap.award = 'All-NBA First Team'
    GROUP BY ap.playerID) AS RES) AS RES11
WHERE
    RES11.playerID = pa.player_id
```

| first_name | last_name |
|---|---|
| Kareem | Abdul-Jabbar |

W. Among all the players, who have won “Rookie of the Year”, who got the most points in his first year?

```
SELECT
    d.firstName, d.lastName
FROM
    draft d,
    (SELECT
        p.playerID, MAX(p.points)
    FROM
        awards_players ap, players p
    WHERE
        ap.award = 'Rookie of the Year'
            AND ap.playerID = p.playerID
            AND ap.year = p.year) AS RES
WHERE
    d.playerID = RES.playerID
```

| | firstName | lastName |
|---|---|---|
| ▶ | Don | Meineke |

X. What is the three-point shooting percentage Kobe Bryant got in the 2011 season?

```
SELECT
    CONCAT(d.firstName, ' ', d.lastName) AS Name,
    p.threeMade / p.threeAttempted AS Percentage
FROM
    draft AS d,
```

```
    players AS p
WHERE
    d.playerID = p.playerID
        AND d.firstName = 'Kobe'
        AND d.lastName = 'Bryant'
        AND p.year = 2011;
```

| Name | Percentage |
|---|---|
| Kobe Bryant | 0.3031 |

Y. What is the average assists, steal, and point that Tracy McGrady got in 2005 season?

```
SELECT
    CONCAT(d.firstName, ' ', d.lastName) AS Name,
    p.assists / p.GP AS Assists,
    p.steals / p.GP AS Steal,
    p.points / p.GP AS Points
FROM
    players AS p,
    draft AS d
WHERE
    p.playerID = d.playerID
        AND d.firstName = 'Tracy'
        AND d.lastName = 'McGrady'
        AND p.year = 2005
;
```

| Name | Assists | Steal | Points |
|---|---|---|---|
| Tracy McGrady | 4.7872 | 1.2553 | 24.4043 |

Z. List the players who have been Yao Ming's teammate.

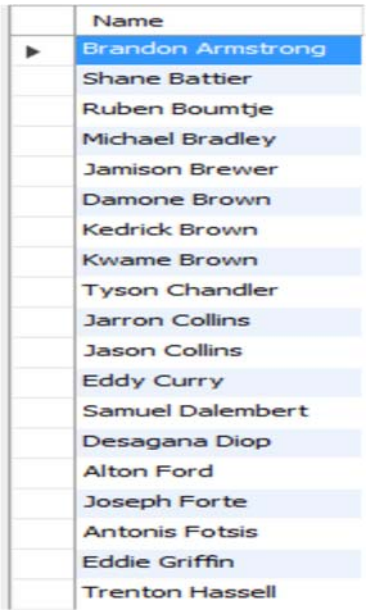
```
SELECT DISTINCT
```

```
    CONCAT(d.firstName, ' ', d.lastName) AS Name
FROM
    players p,
    draft d
WHERE
    p.playerID = d.playerID
        AND p.tmID IN (SELECT
            p2.tmID
        FROM
            players p2,
            draft d2
        WHERE
            p2.playerID = d2.playerID
                AND p.year = p2.year
                AND d2.firstName = 'Yao'
                AND d2.lastName = 'Ming')
;
```

| Name |
|---|
| Charles Oakley |
| Mark Jackson |
| Rod Strickland |
| Glen Rice |
| Dikembe Mutombo |
| Jimmy Jackson |
| Clarence Weatherspoon |
| Jon Barry |
| Vin Baker |
| Juwan Howard |
| Eric Piatkowski |
| Charlie Ward |
| Brent Barry |
| Bob Sura |
| Moochie Norris |
| Tracy McGrady |
| Derek Anderson |
| Maurice Taylor |
| Kelvin Cato |

AA. List the players who joined NBA a year earlier than Yao Ming, but have never played in All-Star Game.

```
SELECT DISTINCT
    CONCAT(d1.firstName, ' ', d1.lastName) AS Name
FROM
    players p1,
    players p2,
    draft d1,
    draft d2
WHERE
    p1.playerID = d1.playerID
        AND p2.playerID = d2.playerID
        AND d2.firstName = 'Yao'
        AND d2.lastName = 'Ming'
        AND d1.draftYear = d2.draftYear - 1
        AND d1.playerID NOT IN (SELECT
            pa.player_id
        FROM
            player_allstar pa)
;
```



| Name |
|---|
| Brandon Armstrong |
| Shane Battier |
| Ruben Boumtje |
| Michael Bradley |
| Jamison Brewer |
| Damone Brown |
| Kedrick Brown |
| Kwame Brown |
| Tyson Chandler |
| Jarron Collins |
| Jason Collins |
| Eddy Curry |
| Samuel Dalembert |
| Desagana Diop |
| Alton Ford |
| Joseph Forte |
| Antonis Fotsis |
| Eddie Griffin |
| Trenton Hassell |

BB.List the players who join NBA after 2000, and have played at least 1 All-Star Game, and instructed by a coach who have won 'NBA Coach of the year'

```
SELECT DISTINCT
   CONCAT(d.firstName, ' ', d.lastName) AS Name
FROM
   players p,
   draft d
WHERE
   p.playerID = d.playerID
      AND d.draftYear > 2000
      AND p.playerID IN (SELECT
         pa.player_id
      FROM
         player_allstar pa)
      AND EXISTS( SELECT
         *
      FROM
         coaches co,
         awards_coaches ac
      WHERE
```

```
            co.coachID = ac.coachID
               AND p.tmID = co.tmID
               AND p.year = co.year)
;
```

| Name |
|---|
| Pau Gasol |
| Joe Johnson |
| Zachary Randolph |
| Gerald Wallace |
| Tony Parker |
| Amare Stoudemire |
| Caron Butler |
| Carlos Boozer |
| LeBron James |
| Carmelo Anthony |
| Chris Bosh |
| Dwyane Wade |
| Chris Kaman |
| David West |
| Josh Howard |
| Maurice Williams |
| Devin Harris |
| Deron Williams |
| Chris Paul |

CC. List the players who played every All-Star games from 2003 to 2008 and got more than 10 points in the All-Star Game.

```
SELECT DISTINCT
   CONCAT(p_a.first_name, ' ', p_a.last_name) AS Name
FROM
   player_allstar p_a
WHERE
   NOT EXISTS( SELECT
         allstar1.season_id
      FROM
```

```
        player_allstar allstar1
    WHERE
        allstar1.season_id >= 2003
            AND allstar1.season_id <= 2008
            AND allstar1.season_id NOT IN (SELECT
                allstar2.season_id
            FROM
                player_allstar allstar2
            WHERE
                p_a.player_id = allstar2.player_id))
;
```

| Name |
| --- |
| Dirk Nowitzki |
| Kobe Bryant |
| Ray Allen |
| Tim Duncan |

DD. List the players who have played every All-Star Game that Yao Ming played in.

```
SELECT DISTINCT
    CONCAT(pa.first_name, pa.last_name) AS Name
FROM
    player_allstar pa
WHERE
    NOT EXISTS( SELECT
            allstar1.season_id
        FROM
            player_allstar allstar1
        WHERE
            allstar1.first_name = 'Yao'
                AND allstar1.last_name = 'Ming'
```

```
        AND allstar1.season_id NOT IN (SELECT
            allstar2.season_id
        FROM
            player_allstar allstar2
        WHERE
            allstar2.player_id = pa.player_id
                AND allstar2.player_id != allstar1.player_id))
;
```

| Name |
|---|
| AllenIverson |
| DirkNowitzki |
| KobeBryant |
| PaulPierce |
| TimDuncan |

6. **How to load the database:**
   We found our database on the following website:
   https://www.kaggle.com/kinguistics/mens-professional-basketball
   It includes 11 .cvs file, we have used a tool (cvs-sql converter) to translate all the cvs files to sql files

7. **Very briefly describe a type of reports you plan to generate or any special user interface issues (e.g. views) that you plan to implement.**
   We plan to use a webpage to show our results. In addition, we will use view to store some query results.

8. **What are the specialized/advanced topics you plan to focus on in your database design?**

- Firstly, we have a fairly large database, so we will do some **data mining**. For instance, we will predict players 'performance in the next few years. To be more specific, we would use some player' s record in our database like points, steal, assist, and block to train our model. And then we would

predict the player’ s performance. For example, we can use Kobe Bryant’ s record from 2000 to 2005 to train our model. And then use the data from 2006 to 2011 to verify our model. And finally predict his performance after 2011.

- Secondly, we will implement some advanced SQL topics like **triggers** to improve our database design.
- In addition, we will build a **website** to manage this data. And the administrator can alter, add and delete data. But the user can only query them. Also, some queries will be stored in **view**.

**9. Database platform**

In our project, we will use the following platform:

- Mysql 5.7/ Mysql workbench 6.3
- PC: 2.9 GHz Intel Core i7 with 16G memory