Lab 4 COE848 - Manipulating Data

Hamza Iqbal

500973673

The following is the basketball players database schema:

```
sqlite> .schema
CREATE TABLE player(
name VARCHAR (255) PRIMARY KEY NOT NULL,
age INTEGER NOT NULL,
position VARCHAR (255) NOT NULL,
Country VARCHAR(255) NOT NULL,
Team VARCHAR(255) NOT NULL);
CREATE TABLE stats(
name VARCHAR (255) PRIMARY KEY NOT NULL,
pointsPG REAL NOT NULL,
assistsPG REAL NOT NULL,
reboundsPG REAL NOT NULL,
blocksPG REAL NOT NULL,
stealsPG REAL NOT NULL);
CREATE TABLE awards(
name VARCHAR (255) PRIMARY KEY NOT NULL,
MVPS INTEGER NOT NULL,
NumofAllStars INTEGER NOT NULL,
NumofChampionships INTEGER NOT NULL);
CREATE TABLE physicalprofile(
name VARCHAR (255) PRIMARY KEY NOT NULL,
height VARCHAR NOT NULL,
weight REAL NOT NULL,
Wingspan VARCHAR NOT NULL);
CREATE TABLE team(
teamName VARCHAR (255) PRIMARY KEY NOT NULL,
conference VARCHAR (255) NOT NULL,
wins INTEGER NOT NULL,
losses INTEGER  NOT NULL,
ranking INTEGER UNIQUE NOT NULL);
```

Figure 1: 'Basketball player Database' Schema

The next following screenshots will include data inside the tables, indicating they have been filled. Using the SELECT *, we will show the state of the tables:

```
sqlite> INSERT INTO player VALUES ('LeBron James',38,'SF','USA','Los Angeles Lakers');

sqlite> SELECT * from player;
LeBron James|38|SF|USA|Los Angeles Lakers
sqlite> INSERT INTO player VALUES ('Kevin Durant',34,'SF','USA','Phoenix Suns');
sqlite> INSERT INTO player VALUES ('Stephen Curry',34,'PG','USA','Golden State Warrior
s');
sqlite> INSERT INTO player VALUES ('Ja Morant',33,'PG','USA','Memphis Grizzlies');
sqlite> INSERT INTO player VALUES ('Joel Embiid',28,'C','Cameroon','Philadelphia 76ers
');
sqlite> INSERT INTO player VALUES ('Luka Doncic',24,'SF','USA','Dallas Mavericks');
sqlite> INSERT INTO player VALUES ('Jayson Tatum',33,'SF','USA','Boston Celtics');
sqlite> INSERT INTO player VALUES ('Andrew Wiggins',28,'SF','Canada','Golden State War
riors');
sqlite> INSERT INTO player VALUES ('Nikola Jokic',28,'C','Serbia','Denver Nuggets');
sqlite> INSERT INTO player VALUES ('Giannis Antetokounmpo',28,'PF','Greece','Milwaukee
 Bucks');
```

Figure 2: Inserting Values into ‘player’ table

```
sqlite> SELECT * from player;
LeBron James|38|SF|USA|Los Angeles Lakers
Kevin Durant|34|SF|USA|Phoenix Suns
Stephen Curry|34|PG|USA|Golden State Warriors
Ja Morant|33|PG|USA|Memphis Grizzlies
Joel Embiid|28|C|Cameroon|Philadelphia 76ers
Luka Doncic|24|SF|USA|Dallas Mavericks
Jayson Tatum|33|SF|USA|Boston Celtics
Andrew Wiggins|28|SF|Canada|Golden State Warriors
Nikola Jokic|28|C|Serbia|Denver Nuggets
Giannis Antetokounmpo|28|PF|Greece|Milwaukee Bucks
```

Figure 3: Tuples/Values of ‘player’ table

```
sqlite> INSERT INTO team VALUES ('Los Angeles Lakers','West',54,28,5);
sqlite> INSERT INTO team VALUES ('Phoenix Suns','West','West',56,26,3);
Parse error: table team has 5 columns but 6 values were supplied
sqlite> INSERT INTO team VALUES ('Golden State Warriors','West',64,18,2);
sqlite> INSERT INTO team VALUES ('Memphis Grizzlies','West',50,32,6);
sqlite> INSERT INTO team VALUES ('Philadelphia 76ers','East',55, 27,4);
sqlite> INSERT INTO team VALUES ('Dallas Mavericks','West',19, 64,10);
sqlite> INSERT INTO team VALUES ('Boston Celtics','East',49, 33,7);
sqlite> INSERT INTO team VALUES ('Toronto Raptors','East',30, 52,9);
sqlite> INSERT INTO team VALUES ('Denver Nuggets','West',40, 42,8);
sqlite> INSERT INTO team VALUES ('Milwaukee Bucks','East',66,16,1);
sqlite> INSERT INTO team VALUES ('Phoenix Suns','West',56,26,3);
```

Figure 4: Inserting Values into 'team' table

```
sqlite> SELECT * from team;
Los Angeles Lakers|West|54|28|5
Golden State Warriors|West|64|18|2
Memphis Grizzlies|West|50|32|6
Philadelphia 76ers|East|55|27|4
Dallas Mavericks|West|19|64|10
Boston Celtics|East|49|33|7
Toronto Raptors|East|30|52|9
Denver Nuggets|West|40|42|8
Milwaukee Bucks|East|66|16|1
Phoenix Suns|West|56|26|3
```

Figure 5: Tuples/Values of 'team' table

```
sqlite> INSERT INTO physicalprofile VALUES ('LeBron James',"6'8",260,"7'0");
sqlite> INSERT INTO physicalprofile VALUES ('Kevin Durant',"6'11",250,"7'4");
sqlite> INSERT INTO physicalprofile VALUES ('Stephen Curry',"6'3",190, "6'3.5");
sqlite> INSERT INTO physicalprofile VALUES ('Ja Morant',"6'3",180,"6'6");
sqlite> INSERT INTO physicalprofile VALUES ('Joel Embiid',"7'0",280,"7'5");
sqlite> INSERT INTO physicalprofile VALUES ('Luka Doncic',"6'7",230,"6'11");
sqlite> INSERT INTO physicalprofile VALUES ('Jayson Tatum',"6'8",230,"6'11");
sqlite> INSERT INTO physicalprofile VALUES ('Andrew Wiggins',"6'7",210,"6'10");
sqlite> INSERT INTO physicalprofile VALUES ('Nikola Jokic',"6'10",270,"7'3");
sqlite> INSERT INTO physicalprofile VALUES ('Giannis Antetokounmpo',"7'0",250,"7'3"
```

Figure 6: Inserting Values into 'physical profile' table

```
sqlite> SELECT * from physicalprofile;
LeBron James|6'8|260.0|7'0
Kevin Durant|6'11|250.0|7'4
Stephen Curry|6'3|190.0|6'3.5
Ja Morant|6'3|180.0|6'6
Joel Embiid|7'0|280.0|7'5
Luka Doncic|6'7|230.0|6'11
Jayson Tatum|6'8|230.0|6'11
Andrew Wiggins|6'7|210.0|6'10
Nikola Jokic|6'10|270.0|7'3
Giannis Antetokounmpo|7'0|250.0|7'3
```

Figure 7: Tuples/Values of 'physical profile' table

```
sqlite> INSERT INTO awards VALUES ('LeBron James',4,19,4);
sqlite> INSERT INTO awards VALUES ('Kevin Durant',1,13,2);
sqlite> INSERT INTO awards VALUES ('Stephen Curry',2,9,4);
sqlite> INSERT INTO awards VALUES ('Ja Morant',1,2,0);
sqlite> INSERT INTO awards VALUES ('Joel Embiid',0,6,0);
sqlite> INSERT INTO awards VALUES ('Luka Doncic',0,4,0);
sqlite> INSERT INTO awards VALUES ('Jayson Tatum',0,4,0);
sqlite> INSERT INTO awards VALUES ('Andrew Wiggins',0,1,1);
sqlite> INSERT INTO awards VALUES ('Nikola Jokic',2,5,0);
sqlite> INSERT INTO awards VALUES ('Giannis Antetokounmpo',2,7,1);
```

Figure 8: Inserting Values into 'awards' table

```
sqlite> SELECT * from awards;
LeBron James|4|19|4
Kevin Durant|1|13|2
Stephen Curry|2|9|4
Ja Morant|1|2|0
Joel Embiid|0|6|0
Luka Doncic|0|4|0
Jayson Tatum|0|4|0
Andrew Wiggins|0|1|1
Nikola Jokic|2|5|0
Giannis Antetokounmpo|2|7|1
sqlite>
```

Figure 9: Tuples/Values of 'awards' table

```
sqlite> INSERT INTO stats VALUES ('LeBron James',28.3,7.3,6.4,1.2,2.3);
sqlite> INSERT INTO stats VALUES ('Kevin Durant',30.1,4.1,7.5,2.6,1.9);
sqlite> INSERT INTO stats VALUES ('Stephen Curry',27.7,7.7,4.2,0.6,1.7);
sqlite> INSERT INTO stats VALUES ('Ja Morant',25.4,8.4,6.7,1.2,4.1);
sqlite> INSERT INTO stats VALUES ('Joel Embiid',28.2,1.6,12.2,3.4,0.8);
sqlite> INSERT INTO stats VALUES ('Luka Doncic',24.3,8.8,7.2,0.6,0.9);
sqlite> INSERT INTO stats VALUES ('Jayson Tatum',30.1,5.5,8.3,1.5,1.7);
sqlite> INSERT INTO stats VALUES ('Andrew Wiggins',21.5,2.2,7.4,1.6,2.2);
sqlite> INSERT INTO stats VALUES ('Nikola Jokic',28.5,8.9,11.1,2.8,0.4);
sqlite> INSERT INTO stats VALUES ('Giannis Antetokounmpo',32.2,7.8,11.1,4.2,2.1);
```

Figure 10: Inserting Values into ‘stats’ table

```
sqlite> SELECT * from stats
   ...> ;
LeBron James|28.3|7.3|6.4|1.2|2.3
Kevin Durant|30.1|4.1|7.5|2.6|1.9
Stephen Curry|27.7|7.7|4.2|0.6|1.7
Ja Morant|25.4|8.4|6.7|1.2|4.1
Joel Embiid|28.2|1.6|12.2|3.4|0.8
Luka Doncic|24.3|8.8|7.2|0.6|0.9
Jayson Tatum|30.1|5.5|8.3|1.5|1.7
Andrew Wiggins|21.5|2.2|7.4|1.6|2.2
Nikola Jokic|28.5|8.9|11.1|2.8|0.4
Giannis Antetokounmpo|32.2|7.8|11.1|4.2|2.1
```

Figure 11: Tuples/Values of ‘stats’ table

The tasks/queries from lab 1 have been adjusted and modified to meet the specifications of the new design/implementation of the data. The following are the SQL statements designed and output results on SQLite:

Queries

1) Who averaged the most points per game NBAseason and how much did they average?

```
sqlite>         SELECT Max(pointsPG), name FROM stats;
32.2|Giannis Antetokounmpo
sqlite>
```

2) Who averaged the least rebounds per game in the NBA season.

```
sqlite> Select Min (reboundsPG), name from stats;
4.2|Stephen Curry
sqlite>
```

3) Which team in the Eastern conference has the most wins and how many?

```
sqlite> Select max (wins), teamname from team;
66|Milwaukee Bucks
```

4)List all players that have at least 1 MVP and 4+ Allstar appearances.

```
sqlite> Select name from awards where MVPS >=1 AND NumofAllStars >3;
LeBron James
Kevin Durant
Stephen Curry
Nikola Jokic
Giannis Antetokounmpo
```

5) List all players that play for the Golden State Warriors

```
sqlite> SELECT name from player where Team = 'Golden State Warriors';
Stephen Curry
Andrew Wiggins
```

6) List all Eastern conference Players

```
sqlite> Select x.name from player x, team y Where y.conference = 'East' AND y.teamName
= x.Team;
Joel Embiid
Jayson Tatum
Giannis Antetokounmpo
```

7) List all players who averaged more than 20 point per game in the NBA season.

```
sqlite> Select name From stats Where pointsPG>20;
LeBron James
Kevin Durant
Stephen Curry
Ja Morant
Joel Embiid
Luka Doncic
Jayson Tatum
Andrew Wiggins
Nikola Jokic
Giannis Antetokounmpo
sqlite>
```

8) List all players stats for those who averaged 15+ points and 5+ assists per game in the NBA season.

```
sqlite>  Select * From stats Where pointsPG>15 AND assistsPG>=5;
LeBron James|28.3|7.3|6.4|1.2|2.3
Stephen Curry|27.7|7.7|4.2|0.6|1.7
Ja Morant|25.4|8.4|6.7|1.2|4.1
Luka Doncic|24.3|8.8|7.2|0.6|0.9
Jayson Tatum|30.1|5.5|8.3|1.5|1.7
Nikola Jokic|28.5|8.9|11.1|2.8|0.4
Giannis Antetokounmpo|32.2|7.8|11.1|4.2|2.1
sqlite>
```

9) Who is the heaviest player in the NBA?

```
sqlite> select name, MAX(weight) from physicalprofile;
Joel Embiid|280.0
```

10) Which team in the Western conference has the lowest wins?

```
sqlite>  Select teamName, wins, Max(losses)  From team where conference = 'West';
Dallas Mavericks|19|64
sqlite>
```