



PROJECT WORK REPORT

(REPORT TEMPLATE FOR THE COURSE
PROJECT)

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1. DESCRIPTION OF DATABASE

This database named NBA is holding some rough information of the NBA league. It intends to be useful answering some basic questions a user can ask regarding the league. There are four tables built on this database containing some tuples.

Here are the tables with their attributes:

1. teams

- team_name <VARCHAR>
- division <VARCHAR>
- championships <INT(3)>
- team_color <VARCHAR>
- arena_name <VARCHAR>

2. arenas

- name <VARCHAR>
- location <VARCHAR>
- capacity <INT(3)>

3. coaches

- coach_id <INT(3)>
- name <VARCHAR>
- birth_year <INT(3)>
- coaching_since <INT(3)>
- team_name <VARCHAR>

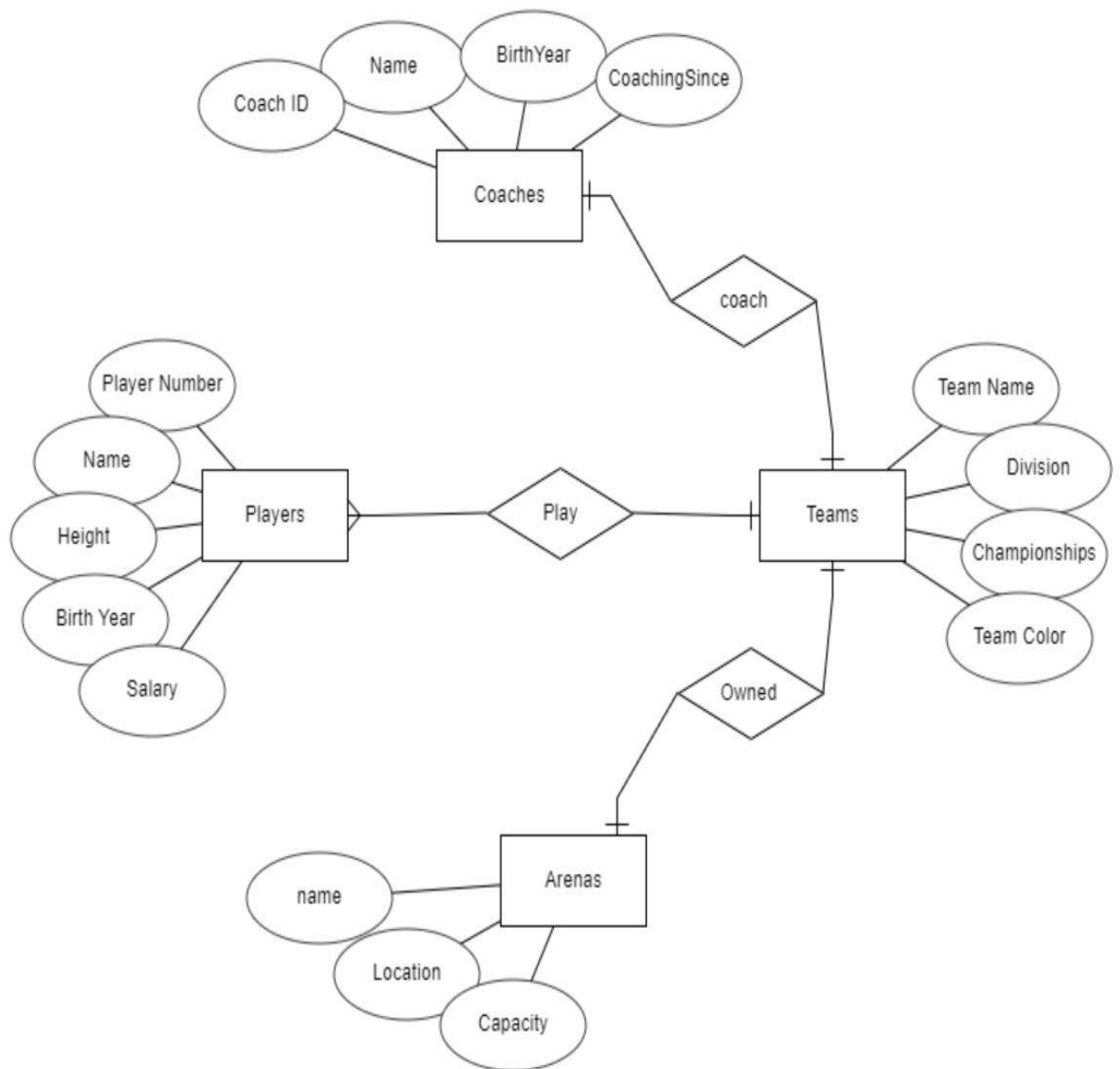
4. players

- player_number <INT(3)>
- name <VARCHAR>
- height <INT(3)>
- birth_year <INT(3)>
- salary <INT(3)>
- team_name <VARCHAR>.

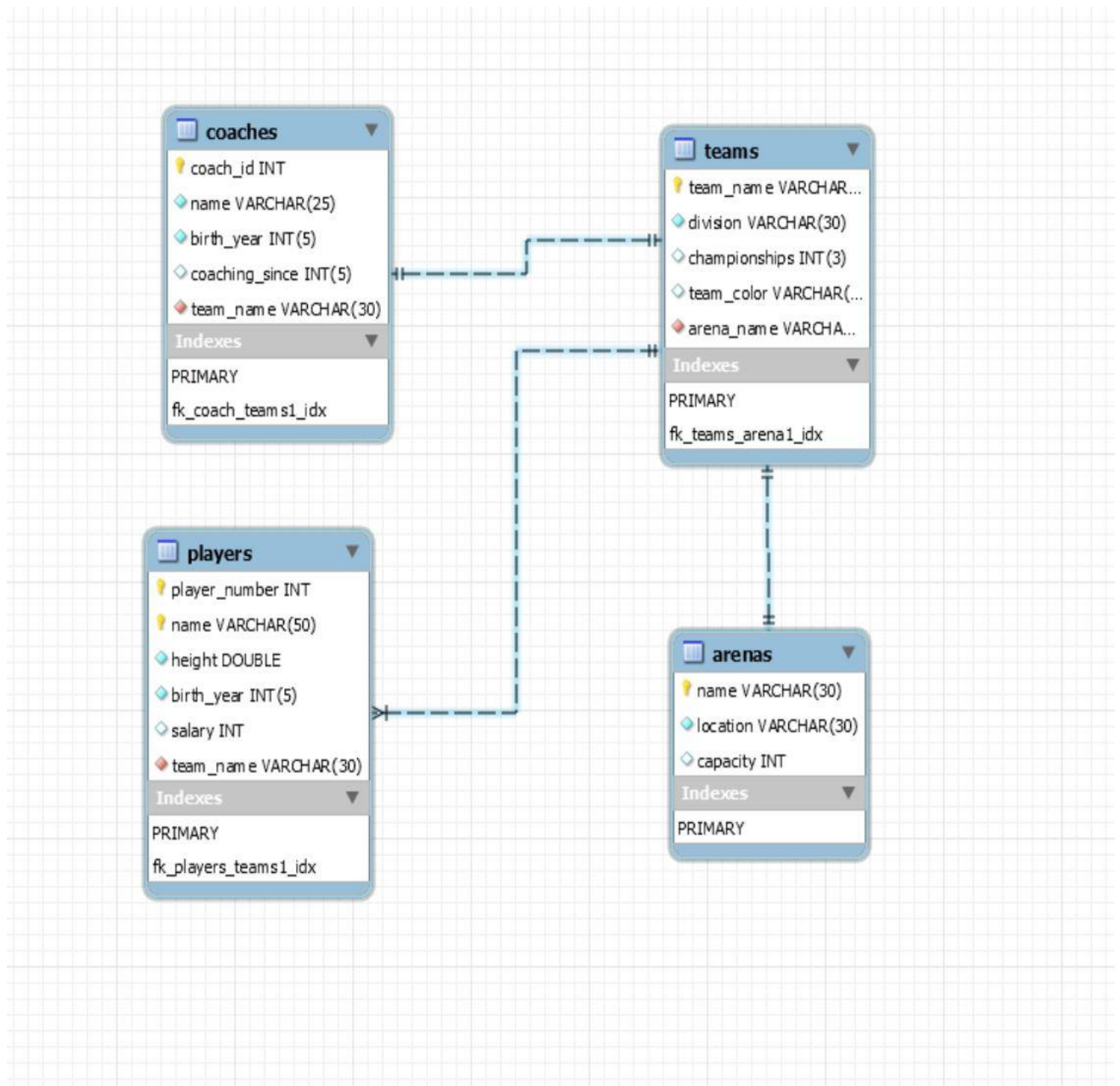
Well, on the upper list, the PK are labeled as a green font and FK as red font.

- We can only have one coach and one arena for a team so the relationship between the teams and arenas AND teams and coaches is one-to-one.
- But we can have many players for the same team so in this case we have a one-to-many relationship

2. ER MODEL



3. IMPLEMENTATION DIAGRAM



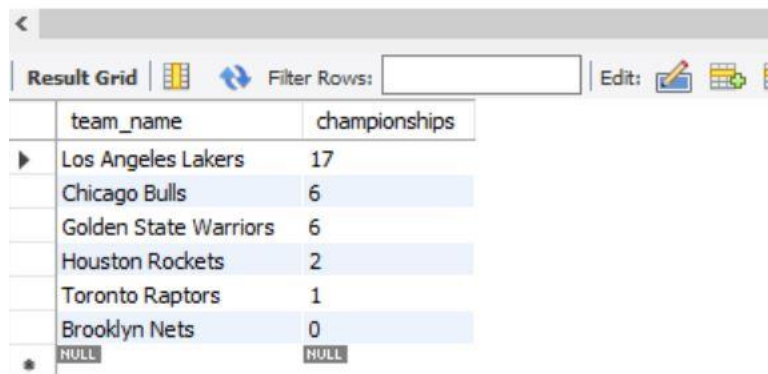
4. EXAMPLE SQL STATEMENTS

Here are 10 use cases of the database:

- Case 1

- Selecting only team names and championships in ordered manner from the team's table

```
1 • SELECT team_name, championships FROM teams
2 ORDER BY championships DESC;
3
```

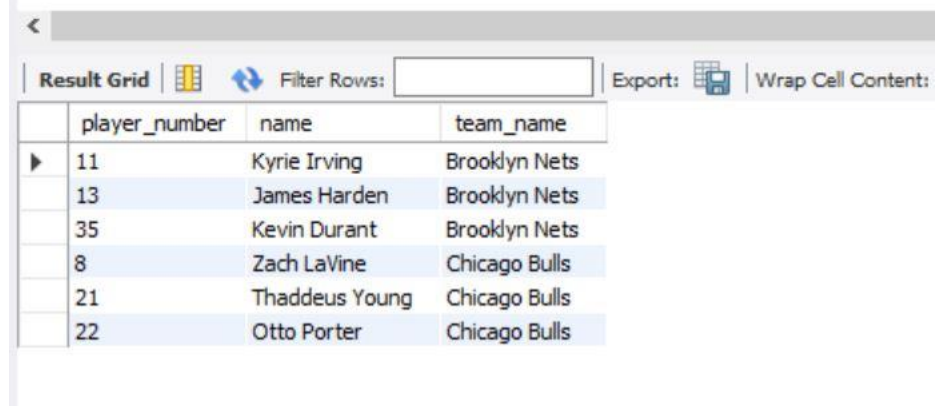


	team_name	championships
▶	Los Angeles Lakers	17
	Chicago Bulls	6
	Golden State Warriors	6
	Houston Rockets	2
	Toronto Raptors	1
	Brooklyn Nets	0
*	NULL	NULL

- Case 2

- Creating a VIEW of players hiding their salary

```
1 • CREATE VIEW public_players AS
2 SELECT player_number, name , team_name FROM players
3 ORDER BY team_name;
4 • SELECT * FROM public_players LIMIT 6;
```



	player_number	name	team_name
▶	11	Kyrie Irving	Brooklyn Nets
	13	James Harden	Brooklyn Nets
	35	Kevin Durant	Brooklyn Nets
	8	Zach LaVine	Chicago Bulls
	21	Thaddeus Young	Chicago Bulls
	22	Otto Porter	Chicago Bulls

- Case 3

- Finding out who are the top 10 highest paid players

```

1 • SELECT player_number, name, team_name, salary
2   FROM players
3   ORDER BY salary DESC
4   LIMIT 10;
5

```

	player_number	name	team_name	salary
▶	30	Stephen Curry	Golden State Warriors	43006362
	1	John Wall	Houston Rockets	41254920
	13	James Harden	Brooklyn Nets	40824000
	23	LeBron James	Los Angeles Lakers	39219565
	35	Kevin Durant	Brooklyn Nets	39058950
	11	Klay Thompson	Golden State Warriors	35361360
	11	Kyrie Irving	Brooklyn Nets	33329100
	23	Anthony Davis	Los Angeles Lakers	32742000
	7	Kyle Lowry	Toronto Raptors	30000000
	22	Andrew Wiggins	Golden State Warriors	29542010
•	NULL	NULL	NULL	NULL

- **Case 4**

- We are trying to add a team to the table of teams

```

1 • INSERT INTO teams VALUES('Utah Jazz', 'North West', 2, 'Green', 'Vivint Arena');
2 • SELECT * FROM teams;

```

	team_name	division	championships	team_color	arena_name
▶	Brooklyn Nets	Atlantic	0	Black	Barclays Center
	Chicago Bulls	Central	6	Red	United Center
	Golden State Warriors	Pacific	6	Royal Blue	Chase Center
	Houston Rockets	South West	2	Red	Toyota Center
	Los Angeles Lakers	Pacific	17	Gold	STAPLES Center
	Toronto Raptors	Atlantic	1	Red	Scotiabank Arena
	Utah Jazz	North West	2	Green	Vivint Arena
•	NULL	NULL	NULL	NULL	NULL

- **Case 5**

- Deleting what we just added in case 4


```

1 • DELETE FROM teams WHERE team_name = 'Utah Jazz';
2 • SELECT * FROM teams;
3

```

team_name	division	championships	team_color	arena_name
Brooklyn Nets	Atlantic	0	Black	Barclays Center
Chicago Bulls	Central	6	Red	United Center
Golden State Warriors	Pacific	6	Royal Blue	Chase Center
Houston Rockets	South West	2	Red	Toyota Center
Los Angeles Lakers	Pacific	17	Gold	STAPLES Center
Toronto Raptors	Atlantic	1	Red	Scotiabank Arena
NULL	NULL	NULL	NULL	NULL

- **Case 6**

- Updating capacity from the arenas table

```

1 • UPDATE arenas
2   SET capacity = 22000
3   WHERE name = 'Chase Center';
4 • SELECT * FROM arenas;

```

name	location	capacity
Barclays Center	Brooklyn, New York	19000
Chase Center	San Francisco, California	22000
Scotiabank Arena	Toronto, Ontario	19800
STAPLES Center	Los Angeles, California	20000
Toyota Center	Houston, Texas	18000
United Center	Chicago, Illinois	23500
NULL	NULL	NULL

- **Case 7**

- Finding out who is the most experienced coach.

```

1 • SELECT name, coaching_since FROM coaches
2 ORDER BY coaching_since;
3

```

Result Grid | Filter Rows: | Export: | Wrap

	name	coaching_since
▶	Nick Nurse	1989
	Billy Donovan	1989
	Stephen Silas	2000
	Frank Vogel	2001
	Steve Kerr	2014
	Steve Nash	2020

- **Case 8**

- Joining teams with their corresponding arenas

```

1 • SELECT teams.team_name, teams.division, arenas.name, arenas.location, arenas.capacity
2 FROM teams
3 INNER JOIN arenas ON teams.arena_name=arenas.name;
4

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |




	team_name	division	name	location	capacity
▶	Brooklyn Nets	Atlantic	Barclays Center	Brooklyn, New York	19000
	Chicago Bulls	Central	United Center	Chicago, Illinois	23500
	Golden State Warriors	Pacific	Chase Center	San Francisco, California	22000
	Houston Rockets	South West	Toyota Center	Houston, Texas	18000
	Los Angeles Lakers	Pacific	STAPLES Center	Los Angeles, California	20000
	Toronto Raptors	Atlantic	Scotiabank Arena	Toronto, Ontario	19800

- **Case 9**

- Joining teams with their corresponding coach

```
1 • SELECT teams.team_name, coaches.name
2 FROM teams
3 INNER JOIN coaches ON teams.team_name=coaches.team_name;
4
```

<

Result Grid |  Filter Rows: | Export:  | Wrap Cell Content: 

	team_name	name
▶	Brooklyn Nets	Steve Nash
	Golden State Warriors	Steve Kerr
	Toronto Raptors	Nick Nurse
	Los Angeles Lakers	Frank Vogel
	Houston Rockets	Stephen Silas
	Chicago Bulls	Billy Donovan

- **Case 10**

- View containing a joining from the player's and team's table.

```

1 • CREATE VIEW m AS
2 SELECT
3     players.player_number, players.name,
4     teams.team_name, teams.division
5 FROM teams
6 INNER JOIN players
7 ON players.team_name = teams.team_name
8 ORDER BY teams.division, teams.team_name, players.name;
9 • SELECT * FROM m;

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	player_number	name	team_name	division
▶	13	James Harden	Brooklyn Nets	Atlantic
	35	Kevin Durant	Brooklyn Nets	Atlantic
	11	Kyrie Irving	Brooklyn Nets	Atlantic
	23	Fred VanVleet	Toronto Raptors	Atlantic
	7	Kyle Lowry	Toronto Raptors	Atlantic
	43	Pascal Siakam	Toronto Raptors	Atlantic
	22	Otto Porter	Chicago Bulls	Central
	21	Thaddeus Young	Chicago Bulls	Central
	8	Zach LaVine	Chicago Bulls	Central
	22	Andrew Wiggins	Golden State Warriors	Pacific
	11	Klay Thompson	Golden State Warriors	Pacific
	30	Stephen Curry	Golden State Warriors	Pacific
	23	Anthony Davis	Los Angeles Lakers	Pacific
	17	Dennis Schröder	Los Angeles Lakers	Pacific
	23	LeBron James	Los Angeles Lakers	Pacific
	10	Eric Gordon	Houston Rockets	South ...
	1	John Wall	Houston Rockets	South ...
	5	Victor Oladipo	Houston Rockets	South ...

5. CONCLUSION

This database could get more complex and can contain advanced data as the real NBA league has so much information one can look request for, but the project is to show a simple design of a database showing powerful design methods and approaches.

6. REFERENCES

The data of the database was taken from this website:

<https://www.basketball-reference.com/players/>