NBA Database

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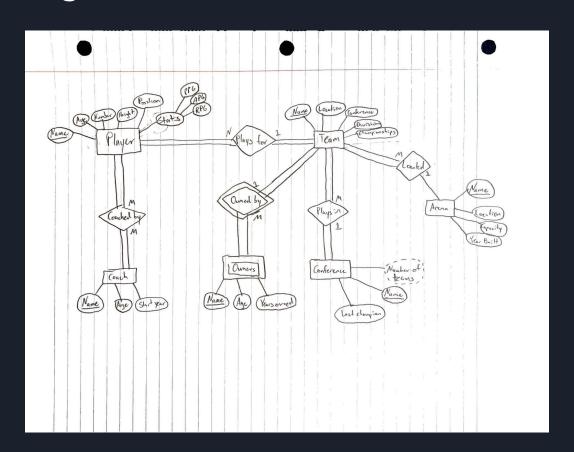
Application description

For our project, we decided to implement a database that can represent the NBA. More specifically, we decided to include players, the teams, coaches, arenas, owners, and conferences. Obviously, it would take a lot of time to add all of the players and coaches so we just used the list of players who made the All Stars teams last as well as only head coaches.

Entities and Attributes

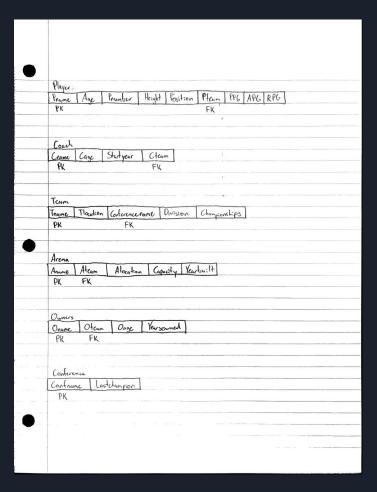
- Player name, age, number, height (inches), position, stats (composite attribute - points, assists, rebounds)
- Coach name, age, start year with current team
- Team name, location, division, conference, number of championships
- Arena name, location, capacity, year built
- Owners (weak entity) name, age, years owned
- Conference name, most recent champion, number of teams (derived)

ER Diagram



Relational Schema

Similarly, here's how our relational database schema turned out (actual oracle tables in following slide)



Column Name	Data Type	Nullable	Default	Primary Key
PNAME	VARCHAR2(25)	No	-	1
AGE	NUMBER	Yes	-	-
PNUMBER	NUMBER	Yes	(4)	-
HEIGHT	NUMBER	Yes		-
POSITION	VARCHAR2(2)	Yes		
PTEAM	VARCHAR2(15)	Yes	-	*
PPG	NUMBER	Yes	-	*
APG	NUMBER	Yes	-	-
RPG	NUMBER	Yes	-	-
				1 - 9

Column Name	Data Type	Nullable	Default	Primary Key		
TNAME	VARCHAR2(15)	No	1125	1		
TLOCATION	VARCHAR2(15)	Yes	(1 5)	-		
CONFERENCENAME	VARCHAR2(7)	Yes	-2	-		
DIVISION	VARCHAR2(10)	Yes	(1 5)	-		
CHAMPIONSHIPS	NUMBER	Yes	-2			
				1 - 5		

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Column Name	Data Type	Nullable	Default	Primary Key
ONAME	VARCHAR2(25)	No	1127	1
OTEAM	VARCHAR2(15)	Yes		-
OAGE	NUMBER	Yes	-	-
YEARSOWNED	NUMBER	Yes		-
				1

Column Name	Data Type	Nullable	Default	Primary Key
CNAME	VARCHAR2(25)	No	2	1
CAGE	NUMBER	Yes	-	-
STARTYEAR	NUMBER	Yes	_	14
CTEAM	VARCHAR2(15)	Yes	-	-
				1 - 4

Column Name	Data Type	Nullable	Default	Primary Key
ANAME	VARCHAR2(30)	No	-	1
ATEAM	VARCHAR2(15)	Yes	-	-
ALOCATION	VARCHAR2(15)	Yes	-	-
CAPACITY	NUMBER	Yes	-	-
YEARBUILT	NUMBER	Yes	-	-
				1 - 5

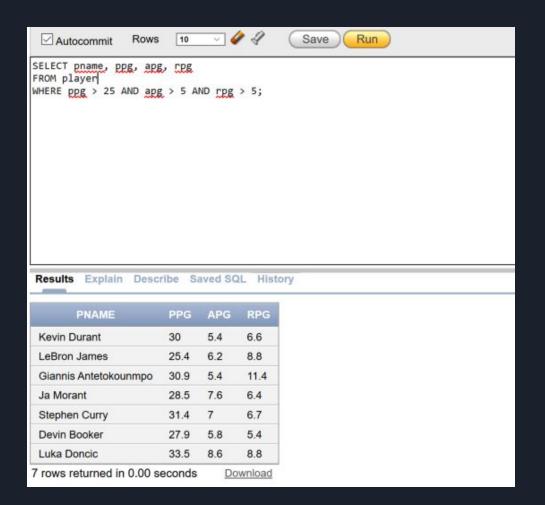
Column Name	Data Type	Nullable	Default	Primary Key
CONFNAME	VARCHAR2(7)	No		1
LASTCHAMPION	VARCHAR2(15)	Yes	-	-
				1 - 2

Database Instance

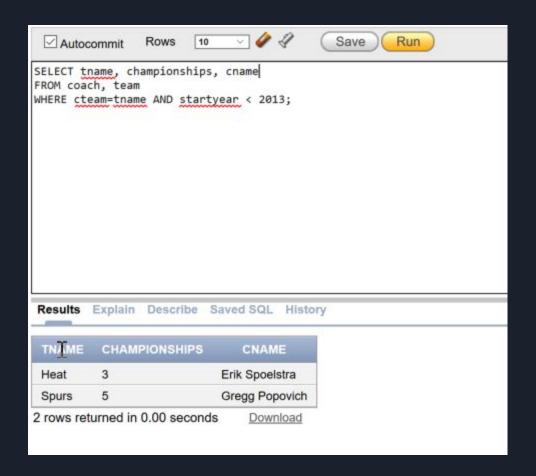
EDIT	PNAME	AGE	PNUMBER	HEIGHT	POSITION	PTEAM	PPG	APG	RPG
Ø	Kevin Durant	34	7	82	SF	Nets	30	5.4	6.6
Z	LeBron James	37	6	81	SF	Lakers	25.4	6.2	8.8
Z	Giannis Antetokounmpo	27	34	84	PF	Bucks	30.9	5.4	11.4
Z.	Trae Young	24	11	73	PG	Hawks	27.7	9.4	3
Ø	LaMelo Ball	21	1	79	PG	Hornets	19.3	7	3.7
Ø	Jarrett Allen	24	31	81	С	Cavaliers	13.5	1.3	10.8
Ø	Jimmy Butler	33	22	79	SF	Heat	20.9	6.1	6.6
Ø	Rudy Gobert	30	27	85	С	Timberwolves	13.8	.9	12.4
Z	Zach LaVine	27	8	77	SG	Bulls	20.9	4.3	4.3
Z.	Khris Middleton	31	22	79	SF	Bucks	0	0	0
Z	Dejounte Murray	26	5	77	PG	Hawks	20.6	6.6	5.9
Z.	Donovan Mitchell	26	45	73	SG	Cavaliers	28.9	5	4
Ø	Chris Paul	37	3	72	PG	Suns	9.5	9.4	4.5
Z.	Joel Embiid	28	21	84	С	76ers	32.1	4.8	9.9
Z	Ja Morant	23	12	74	PG	Grizzlies	28.5	7.6	6.4
							row(s)	1 - 15 0	f 27 🕑

Queries

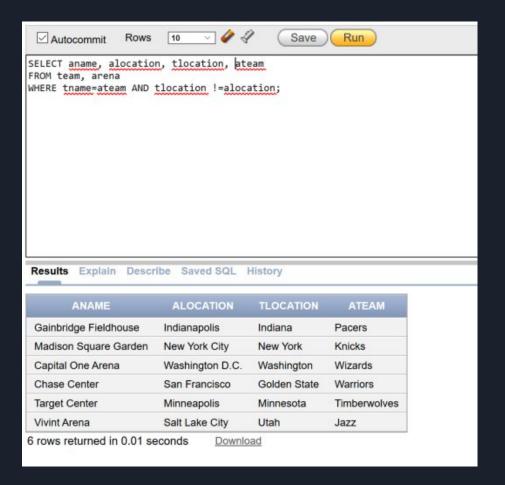
In this example, we are getting all of the players who score more than 25 points per game, get more than 5 assists per game, and get more than 5 rebounds per game



In this example, we retrieve all of the teams who have had the same coach for at least the last 10 years. Additionally, we get the number of championships and the coaches name.



In this example, we retrieve all of the teams and arenas whose locations do not exactly match (this could be helpful for locating the teams whose location is a state rather than a specific city)



Observations

Some observations we had were that it was pretty interesting to be able to take something fun and entertaining for a lot of people (such as sports) and turn it into a database that could have legitimate uses. We found that the toughest part of the project was just coming up with an idea that fit all of the requirements and then turning this idea into an actual database schema that can be implemented. In terms of actually getting the tables into Oracle, the only issue was that we eventually realized the order of the tables had to be switched around for it to work so that foreign keys could be properly defined. Other than this, creating and importing the schema file was easier than expected. One thing that we found to be particularly annoying was the process of just finding all of the data for each table. Additionally, we ran into issues importing the data file in Oracle but running individual insert commands worked so we had to take extra time to do all of the insertions individually.