

# NBA Database Design

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## Abstract

This project is aimed to apply statistical analysis about NBA, which is widely considered to be the premier men's professional basketball league in the world. We want to find out the relationships between different entities and use more use cases to speculate more conclusion. NBA the sport game will be set as our domain and relevant data will be downloaded using Twitter and YouTube API. All data is fresh and constrained. The reference will be searched in Kaggle website. For our data, the entities will be NBA player's relevant information including scores, assistances, blocks, rebounds, steals, player's income, team coach, etc.

### Keywords

API, SQL, database, data manipulation

## Introduction

The National Basketball Association is composed of 30 teams and it is widely considered to be the premier men's professional basketball league in the world. Then NBA is always the hot topic on the Twitter and YouTube and people always like to know about information about NBA.

In this project we mainly focused on data from three sources, containing Twitter, YouTube and Kaggle.

## Code with Documentation

[https://github.com/KrisLii/Final-Project\\_NBA-Database\\_INFO6210](https://github.com/KrisLii/Final-Project_NBA-Database_INFO6210)

## Results

The cases we mainly addressed in this project are: which player(s) is commonly or mostly discussed daily, which teams that tweets are talking about rank the top three topics regarding sports, whose post is liked the most and which player has the most clicks on YouTube. Then we will query the data in different entities to find out the relationships between them and use more use cases to speculate more conclusion. Results are showing below:

### Twitter(NBA Players)

In this part domains were defined as ten professional basketball players from different teams. All data was acquired by Twitter API and Python code with auto-set timeline.

Integrity audit and data normalization were processed to reduce and eliminate redundancy, the results of 1NF and 2NF are showing as follow.

Result Grid    Filter Rows: Search    Edit:    Export/Import:    Result Grid

Form Editor    Field Types

count	TwitterID	Date	Year	Text	City
1	1120732661444694016	Tue Apr 23 16:54:23	2019	Cmon OKC @russwest44 @Yg_Trece we can't...	Dallas
2	1120732695015903233	Tue Apr 23 16:54:31	2019	RT @YourOldDroog: Shout my dawg @blakegrin...	Loaded
3	1120732714825654272	Tue Apr 23 16:54:36	2019	@DetroitPistons @blakegriffin23 Trade everyon...	Detroit
4	1120732747474116608	Tue Apr 23 16:54:43	2019	RT @brkicks: .@KingJames played in his first pl...	401; ab
5	1120732802557911043	Tue Apr 23 16:54:56	2019	@DetroitPistons @blakegriffin23 We have a few...	Michigan
6	1120732814662672384	Tue Apr 23 16:54:59	2019	RT @DetroitPistons: "I really do feel a sense of..."	Great s
7	1120732816659091458	Tue Apr 23 16:55:00	2019	@KingJames watching the #NBAPlayoffs at ho...	Altamont
8	1120732838163251206	Tue Apr 23 16:55:05	2019	RT @HoustonRockets: "We'll bounce back. We...	NULL
9	1120732867414364161	Tue Apr 23 16:55:12	2019	RT @DetroitPistons: "I really do feel a sense of..."	Lansing
10	1120732941288710149	Tue Apr 23 16:55:30	2019	RT @brkicks: .@KingJames played in his first pl...	NULL
11	1120732955650007040	Tue Apr 23 16:55:33	2019	@DetroitPistons @blakegriffin23 HatsBack# Th...	Texas

nba1nf 1    Apply    Revert

Fig. 1NF\_Twitter(NBA Players)

Result Grid    Filter Rows: Search    Edit:    Export/Import:    Result Grid

Form Editor    Field Types

count	TwitterID	Date	Year	Text	Favor
1	1120732661444694016	Tue Apr 23 16:54:23	2019	Cmon OKC @russwest44 @Yg_Trece we can't...	14604
2	1120732695015903233	Tue Apr 23 16:54:31	2019	RT @YourOldDroog: Shout my dawg @blakegrin...	2581
3	1120732714825654272	Tue Apr 23 16:54:36	2019	@DetroitPistons @blakegriffin23 Trade everyon...	1154
4	1120732747474116608	Tue Apr 23 16:54:43	2019	RT @brkicks: .@KingJames played in his first pl...	50474
5	1120732802557911043	Tue Apr 23 16:54:56	2019	@DetroitPistons @blakegriffin23 We have a few...	631
6	1120732814662672384	Tue Apr 23 16:54:59	2019	RT @DetroitPistons: "I really do feel a sense of..."	9882
7	1120732816659091458	Tue Apr 23 16:55:00	2019	@KingJames watching the #NBAPlayoffs at ho...	68
8	1120732838163251206	Tue Apr 23 16:55:05	2019	RT @HoustonRockets: "We'll bounce back. We..."	11433
9	1120732867414364161	Tue Apr 23 16:55:12	2019	RT @DetroitPistons: "I really do feel a sense of..."	31269
10	1120732941288710149	Tue Apr 23 16:55:30	2019	RT @brkicks: .@KingJames played in his first pl...	4775
11	1120732955650007040	Tue Apr 23 16:55:33	2019	@DetroitPistons @blakegriffin23 HatsBack# Th...	378

nba\_tweets 1    Apply    Revert

Fig. 2NF1\_Twitter(NBA Players)

Result Grid    Filter Rows: Search    Edit:    Export/Import:    Result Grid

Form Editor    Field Types

count	TwitterID	Text	City	Country
2	1120732661444694016	RT @YourOldDroog: Shout my dawg @blakegrin...	Loaded	Loaded
3	1120732714825654272	@DetroitPistons @blakegriffin23 Trade everyon...	Detroit	MI
4	1120732747474116608	RT @brkicks: .@KingJames played in his first pl...	401; above the clouds	401; ab
5	1120732802557911043	@DetroitPistons @blakegriffin23 We have a few...	Michigan	USA
6	1120732814662672384	RT @DetroitPistons: "I really do feel a sense of..."	Great state of Michigan	Great sta
7	1120732816659091458	@KingJames watching the #NBAPlayoffs at ho...	Altamonte Springs	FL
8	1120732838163251206	RT @HoustonRockets: "We'll bounce back. We..."	NULL	NULL
9	1120732867414364161	RT @DetroitPistons: "I really do feel a sense of..."	Lansing	Baltimore
10	1120732941288710149	RT @brkicks: .@KingJames played in his first pl...	NULL	NULL
11	1120732955650007040	@DetroitPistons @blakegriffin23 HatsBack# Th...	Texas	Texas
12	1120732976806023169	RT @stephenasmith: So now @blakegriffin23 fo...	Ohio	USA

nba\_users 1    Apply    Revert

Fig. 2NF2\_Twitter(NBA Players)

use NBA;

CREATE TABLE `team` (
 `Count` int(11) NOT NULL AUTO\_INCREMENT,
 `TwitterID` varchar(45) NOT NULL,
 `Date` varchar(45) DEFAULT NULL,
 `Text` varchar(255) DEFAULT NULL,
 `Location` varchar(255) DEFAULT NULL,
 `ScreenName` varchar(45) DEFAULT NULL,
 `Favorited` int(11) DEFAULT NULL,
 PRIMARY KEY (`Count`,`TwitterID`)
);

select \* from Team;

##Experiment Table of 1NF

create table 1NF(
 Count int(11) Not Null AUTO\_INCREMENT,
 MDT varchar(45),

);

select \* from Team;

Count	TwitterID	Date	Text	Location	ScreenName
1	1121867384611049474	Fri Apr 26 20:03:22 +0000 2019	Your favourite funny character? #AvengersEndgame	NULL	alive
2	1121867389317070849	Fri Apr 26 20:03:23 +0000 2019	Greek's Anatomy Malcolm Brogdon (foot) won't ...	NULL	NBA1
3	1121867497190375424	Fri Apr 26 20:03:49 +0000 2019	RT @Pete'sWire: Mystery deepens... @TheSports ...	Boston, MA	Nicole
4	1121867503171403776	Fri Apr 26 20:03:50 +0000 2019	He is coming...#Bucks #Celtics #Milwaukee ht...	NULL	trello
5	1121867561765937153	Fri Apr 26 20:04:04 +0000 2019	RT @WarriorsHSBB: Everything put away after ...	NULL	trig
6	1121867609216049153	Fri Apr 26 20:04:15 +0000 2019	#NBA Links to Boston Celtics web sites #Boston...	Rural Hall, NC	Spts
7	1121867705978691585	Fri Apr 26 20:04:39 +0000 2019	RT @GwashburnGlobe: The #Celtics will wear a ...	Kentucky	celtic
8	1121867713230585858	Fri Apr 26 20:04:40 +0000 2019	RT @Stepcurry30P: Klay or curry 🍑 Follow me i...	NULL	Curr

##Searching by keyword

select case

when Text like '%Celtics%' then 'Celtics'  
 when Text like '%Lakers%' then 'Lakers'  
 when Text like '%Warriors%' then 'Warriors'  
 when Text like '%Rocket%' then 'Rocket'  
 when Text like '%Clippers%' then 'Clippers'  
 when Text like '%76ers%' then '76ers'  
 when Text like '%Pacers%' then 'Pacers'  
 when Text like '%Thunder%' then 'Thunder'  
 when Text like '%Pistons%' then 'Pistons'  
 when Text like '%UtahJazz%' then 'UtahJazz'  
 Else 'None'

end as Team,  
 Count(\*) as Frenquency

From Team  
 group by Team;

```
130 From Team  
131 group by Team;
```

Team	Frenquency
None	396
Warriors	344
Thunder	116
Lakers	45
Clippers	122
76ers	21
Pistons	11
Pacers	12
UtahJazz	13

Result 63 ×

```
42 );  
43 • desc FS;  
44 • Select*from FS;
```

Count	TwitterID	Favorited	ScreenName
1	1121867384611049474	41	aliveavenger007
2	1121867389317070849	27911	NBATheJumpFP
3	1121867497190375424	12337	NicoleOliverio
4	1121867503171403776	1297	trellokouneli
5	1121867561765937153	32	tricgakami
6	1121867609216049153	43	SptsBooks
7	1121867705978691585	29543	celtic34fan
8	1121867713230585858	3	Curry14Step
9	1121867721753473024	177	priyatboob

FS 58 ×

```
57 • SELECT COUNT,location  
58 FROM team;  
59 • select*from Location;
```

Count	Location
25	LA
26	United States
27	Humacao, Puer...
28	HULL
29	Wrentham, Ma.
30	Oakland, CA
31	Chicago, IL
32	HULL
33	Los Angeles, CA

cation 59 ×

lput

```

6      FROM team;
7
8  • ##Part of Location
9  0   • create table Location(
1  1     Count int(11),
2  2     Location varchar(255),
3  3     Primary key (Count)
4  4   );
5
6  • INSERT INTO Location(Count,Location)
7    SELECT Count,Location
8    FROM team;
9  • select*from Location;
0
1  • SELECT Date,COUNT(*)
2    FROM Team
3    GROUP BY Date
4    HAVING COUNT(*) > 1;
5

    ##2NF
• create table FS(
  Count int(11) Not Null,
  TwitterID varchar(45),
  Favorited int (11),
  ScreenName varchar(45),
  Constraint FK_FS_team_Count_TwitterID
  Foreign Key (Count,TwitterID)
  References team(Count,TwitterID)
);
• desc FS;
• Select*from FS;
## Filling All columns in Table Favorited using corresponding Columns in Table DataHW3
• INSERT INTO FS(Count,TwitterID,Favorited,ScreenName)
  SELECT Count,TwitterID,Favorited,ScreenName
  FROM team;

```

## Youtube videos

We used the method to get YouTube data of NBA player and NBA teams using API from class. We checked what information we can get from API. Then we grasped those data and converted it to SQL command. We did not use csv or other tables because this method help us to get the latest data easily and we can filter them by hand. What's more, we just need to alter the keyword and run the script again to get other kind of data. These followings are the results of part of Youtube videos.

The screenshot shows the MySQL Workbench interface with the following details:

- Toolbar:** Standard MySQL Workbench icons for file operations, database management, and search.
- Left Panel (Schemas):** Shows the "NBA" schema selected. It contains:
  - Tables:** hashtags, player, posts, teams, teamsvideos.
  - Views:** post\_time, post\_user.
  - Stored Procedures:**
  - Functions:** Addfunction, Authonumber.
- Central Editor:** Displays the SQL code for creating the NBA database schema. The code includes:
 

```

1 • CREATE DATABASE IF NOT EXISTS NBA;
2
3 • USE NBA;
4
5 • DROP TABLE IF EXISTS player, teams, teamsvideos, post, hashtags;
6
7 • CREATE TABLE player
8 (
9     player_ID INTEGER NOT NULL AUTO_INCREMENT,
10    player_handle VARCHAR(255) NOT NULL,
11    player_url VARCHAR(255) NOT NULL,
12    PRIMARY KEY (player_ID)
13 );
14
15 • CREATE TABLE teams
16 (
17     teams_ID INTEGER NOT NULL AUTO_INCREMENT,
18     teams_name VARCHAR(255) NOT NULL,
19     PRIMARY KEY (teams_ID)
20 );
21
22 • CREATE TABLE teamsvideos
23 (
24     teamsvideos_ID INTEGER NOT NULL AUTO_INCREMENT,
25     teamsvideos_handle VARCHAR(255) NOT NULL,
      
```
- Right Panel:** A message stating "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help."
- Bottom Status Bar:** Shows the SQL script was saved to "/Users/a12345/Desktop/db.sql".

Fig. Youtube-NBA Database

The screenshot shows the MySQL Workbench interface with the following details:

- Toolbar:** Standard MySQL Workbench icons for file operations, database management, and search.
- Left Panel (Schemas):** Shows the "NBA" schema selected. It contains:
  - Tables:** hashtags, player, posts, teams, teamsvideos.
  - Views:** post\_time, post\_user.
  - Stored Procedures:**
  - Functions:** Addfunction, Authonumber.
- Central Editor:** Displays the SQL code: "1 • SELECT \* FROM NBA.teams;"
- Result Grid:** Shows the results of the query, listing 30 NBA teams:
 

teams_ID	teams_name
1	Atlanta Hawks
2	Boston Celtics
3	Brooklyn Nets
4	Charlotte Hornets
5	Chicago Bulls
6	Cleveland Cavaliers
7	Dallas Mavericks
8	Denver Nuggets
9	Detroit Pistons
10	Golden State Warriors
11	Houston Rockets
12	Indiana Pacers
13	LA Clippers
14	Los Angeles Lakers
15	Memphis Grizzlies
16	Miami Heat
17	Milwaukee Bucks
18	Minnesota Timberwolves
19	New Orleans Pelicans
20	New York Knicks
21	Oklahoma City Thunder
- Right Panel:** A message stating "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help."
- Bottom Status Bar:** Shows the query completed successfully with a duration of 0.00039 sec / 0.

Fig. Youtube(NBA Teams)

The screenshot shows a database interface for a schema named 'NBA'. The left sidebar lists tables like hashtags, player, posts, teams, and teamvideos, along with views, stored procedures, and functions. The main area displays the results of a query:

```
1 • SELECT * FROM NBA.player;
```

The results are presented in a 'Result Grid' table:

	player_ID	player_handle	player_url
1	Unit Lost - Great British Gaming	UCEuJTuIYP64xtfzpl-AagZGA	
2	Your Overwatch	UCEz0Hhr9smHjUSGufwmOvsw	
3	PlayOverwatch	UCIOf1XXinvZsy4wKPAkro2A	
4	Master Ian Gamer	UCh7qwd3VnN1AGqlqec8K8zW	
5	Mr. Fruit	UCV96ER3MA1fS81H6l9wwbQ	
6	Cliff Terios	UCxISSeUoVsNJLyLm-mtw	
7	Blame The Controller - Overwatch	UCmSwq2aPbuOGiui2TealQ	
8	Overwatch Moments - Gaming Curios	UCaUz-Z03JwmdsVwB5G2tw	
9	ohnickel	UC3objTj2pVNRLb9s4Vae5g	
10	Blizzard Guides	UCkC7Ja8Bh4k24hg0Thdw	
11	Cloud9	UCEkorHXUN5JtpHDVE77_Ia	
12	Rapida	UCYCWdLSCu_0n5-Hm767nUsQ	
13	Daily Overwatch Moments	UCbR7XSPoUku1OKYJZSiQdVQ	
14	Daily Dose of xQc	UCbCbwTq291M3kkhGVAeq5Q	
15	Cubby Cramer	UCCTXT3JVyTo-4tixsXkJ2A	
16	Overwatch Central	UC2mz0Rdf8Lvx_-Rmrhwx0Eg	
17	Arikadou	UCPAoyYlgeQ7Vve5XKRk0Qrg	
18	MoreMuselk	UCVZZ5hB1PjQ25lyTASyUVQ	
19	TheFattenedSausage	UCwWoFQOW4W9jR1ArMifjljQ	
20	NoobHunter	UCEMHifr2E9ekathj8mG0xA	
21	A Seacull	UCaFnEJ5tWk0TO5PWHor8Hw	

Action Output:

Time	Action	Response	Duration / Fetch
820 20:24:40	SELECT * ...	50 row(s) returned	0.00000 sec / 0
826 20:27:44	SELECT * ...	44 row(s) returned	0.00034 sec / 0

Fig. Youtube videos(NBA Players)

The screenshot shows a database interface for a schema named 'NBA'. The left sidebar lists tables like hashtags, player, posts, teams, and teamvideos, along with views, stored procedures, and functions. The main area displays the results of a query:

```
1 • SELECT * FROM NBA.posts;
```

The results are presented in a 'Result Grid' table:

	post_ID	url	title	post_at	author	player_discussed
1	hYrABmh9Dac	Stephen Curry Full Highlights 2019 WCR1 Gam...	2019-04-19	26	HULL	
2	USnh3JbfIgA	Stephen Curry Full Highlights 2019 WCR1 Gam...	2019-04-14	26	HULL	
3	4gv5NctbwY	Stephen Curry Full Highlights 2019 WCR1 Gam...	2019-04-21	26	HULL	
4	yDzqM_zvJNK	Stephen Curry Full Highlights 2019 WCR1 Gam...	2019-04-16	26	HULL	
5	GH181Lptow	Stephen Curry&#39;s Best Plays From The 2018...	2019-04-12	27	HULL	
6	S-S_EDWx0vU	Steph Curry on tough Game 4: 'It might not be y...	2019-04-22	28	HULL	
7	hkiVBYDHQI	Steph Curry Has a MESSAGE! &quot;It Doesn&#39;t...	2019-04-23	29	HULL	
8	VkjblHmgN-nyk	ESPORTS vs THE NBA – Myth & Hamlin...	2019-04-11	30	HULL	
9	NFU41yOpd2E	Stephen Curry Full Highlights 2019.04.07 Warri...	2019-04-08	26	HULL	
10	35TSNyKbdYy	Stephen Curry Full Highlights 2019.04.05 Warri...	2019-04-06	26	HULL	
11	It_7mZhZqo	Stephen Curry Full Highlights 2019.03.29 Warri...	2019-03-30	26	HULL	
12	VG2PEhsozZ	Stephen Curry NASTY Full Highlights Warriors...	2019-04-08	31	HULL	
13	ubQqlhpKll	Stephen Curry Mix - Aquot;Old Town Road&qu...	2019-04-19	32	HULL	
14	_Pune47QOKU	Stephen Curry Full Highlights 2019.03.19 vs T...	2019-03-20	26	HULL	
15	k2SCIzQiuF0	The Game Stephen Curry Moved Past Ray Alle...	2019-04-14	26	HULL	
16	GdDMQZANM...	Stephen Curry Full Highlights 2019.03.31 Warri...	2019-04-01	26	HULL	
17	wqgbJeoU488	Stephen Curry&#39;s Best Career Playoff 3-Pol...	2019-04-15	27	HULL	
18	HC12oDXFypY	Stephen Curry Full Highlights Warriors vs Timbe...	2019-03-30	31	HULL	
19	RmwdkM2Gq...	Stephen Curry Full Highlights 2019.04.04 Warri...	2019-04-05	26	HULL	
20	1oYacWv0k	Stephen Curry ALL 354 Three-Pointers in 2018-...	2019-04-13	31	HULL	
21	hOvt0 -WtZQ	Steph Curry & Rav Allen: Who would win a 3-o...	2019-04-17	28	HULL	

Action Output:

Time	Action	Response	Duration / Fetch
820 20:27:44	SELECT * ...	44 row(s) returned	0.00004 sec / 0
827 20:27:53	SELECT * ...	57 row(s) returned	0.00004 sec / 0

Fig. Youtube posts(NBA player)

The screenshot shows the Oracle SQL Developer interface. The left sidebar displays the schema tree under the 'NBA' schema, including tables like hashtags, player, posts, teams, and teamsvideos. The main area shows the results of the query:

```
1 • SELECT * FROM NBA.teamsvideos;
```

**Result Grid**

teamsvideos_ID	teamsvideos_handle	teamsvideos_url	teams_ID
1	Your Overwatch	UCEzOHrh9snmHUSGu9wmOvw	NULL
2	Unit Lost - Great British Gaming	UceJUiYP64xtzpl-AsgZGA	NULL
3	Overwatch Curios	UCV64wapOpUkv_y2s5aAIWg	NULL
4	Blame The Controller - Overwatch	UCmSwqy2aPuOgiul2TealQ	NULL
5	Cliff Terios	UCtxiSeUov-nULyHLM-mtr	NULL
6	Mr. Fruit	UCV96ER3MA1S81HH169wvbQ	NULL
7	Overwatch Moments - Gaming Curios	UCAu-Z03JwnDsVawB5G2th	NULL
8	ohnickel	UC3xbTJ7zpNR6b94Vai5g	NULL
9	Blizzards Guides	UCKCTaJatBh4ck4hgxDhw	NULL
10	Rapida	UCYCwdi5Cu_QnS-Hm76Tru5Q	NULL
11	A_Seagull	UCAfneJ5WIK0TOSPWWhqrhW	NULL
12	Overwatch Central	UC2zmz0Rdl6Lx_rRmlwx0Eg	NULL
13	Cubby Cramer	UCCXT3JYTo-C4ttxskXjd2A	NULL
14	Arikadou	UCPAoYlgeQ7ve5FRxQr6g	NULL
15	PlayOverwatch	UCIOI1XkmvZsy4wkPAkro2A	NULL
16	Samito	UC5Uxqg5L6K60zXvDnPmUxoYA	NULL
17	Daily Overwatch Moments	UCbR7XSPoUkuOKYJ2SiQdVQ	NULL
18	TheFattenedSausage	UCwWofFOOW49JlR1ArMfJjQ	NULL
19	MoreMuselk	UCVZZ5hkbIPjO25lyTASYUQ	NULL
20	Dafran	UCNY8Qxf18pxPaP3ehUuDg	NULL
21	Master Ian Gamer	UCh7owd3Vn1AGoloec8K8Zw	NULL

Action Output

Time	Action	Response	Duration / Fetch
027	20:27:00	SELECT ... 25 row(s) returned	0.00004 sec / c
828	20:28:01	SELECT * ... 25 row(s) returned	0.00044 sec / c

Fig. Youtube videos(NBA Teams)

### Use cases:

What are people saying about me (somebody)?

```
1 • SELECT * FROM final6210.nba1nf;
2 ##1
3 • Select MAX(Followers) as "How viral are my posts"
4   from nba1nf
5   WHERE TEXT like "%Steve%";
```

**Result Grid**

How viral are my posts
25687

How viral are my posts?

```
1 • SELECT * FROM final6210.nba1nf;
2 ##1
3 • Select MAX(Followers) as "How viral are my posts"
4   from nba1nf
5   WHERE TEXT like "%James%";
```

**Result Grid**

How viral are my posts
5008

What posts are likely to be interesting to me?

```

10      ##3
11  •  select TwitterID as "Interesting" from nba1nf
12      Order BY Favorited DESC
13      limit 1;
14  •  select Text from nba1nf
15      where TwitterID=1120747794854232065 ;
16      ##4

```

100% 24:5

**Result Grid** Filter Rows: Search Export

Interesting
▶ 1120747794854232065

What posts are like mine?

```

17  •  select text from nba1nf where TwitterID=1120747794854232065;
18
19      ##5
20  •  select text from nba1nf where TwitterID=1120747794854232065;
21  •  Select TwitterID from nba1nf
22      where Text like "%/GRIFFIN%";

```

100% 24:5

**Result Grid** Filter Rows: Search Export

Text
▶ RT @DetroitPistons: "I really do feel a sense of...

What users post like me?

```

19      ##5
20  •  select text from nba1nf where TwitterID=1120747794854232065;
21  •  Select TwitterID from nba1nf
22      where Text like "%GRIFFIN%";
23      ##6
24  •  Select Followers from nba1nf where TwitterID=1120747794854232065;

```

100% 24:5

**Result Grid** Filter Rows: Search Export

text
▶ RT @DetroitPistons: "I really do feel a sense of pride (about) this group." @blakegriffin23 and the team addressing t...

Who should I be following?

```

23      ##6
24  •  Select Followers from nba1nf where TwitterID=1120747794854232065;
25      ##7
26
27
28

```

100% 24:5

**Result Grid** Filter Rows: Search Export

text
▶ RT @DetroitPistons: "I really do feel a sense of pride (about) this group." @blakegriffin23 and the team addressing t...

```

##1
select text as "question1" from team where text like "% Stephen Curry%";
##2
select max (Favorited ) as"question 2" from Team where text like "% Stephen Curry%";
SELECT MAX(Favorited) AS "question 2"
FROM Team
where Text like "%Stephen Curry%"
limit 1;
##3
select TwitterID as "Interesting" from team
Order BY Favorited DESC
limit 1;
select Text from team
where TwitterID=11121891602228809728;
.....
213 limit 1;
214 • select Text from team
215 where TwitterID=11121891602228809728;
216 ##4
217 • select text from team where TwitterID=1121891602228809728;
218
219 ##5
220 • select text from team where TwitterID=1121891602228809728;
221 • Select TwitterID from team
222 where Text like "%GRIFFIN%";|
```

Result Grid	
	TwitterID
▶	1121895833937387520
	1121899642998927361
	1121920600388321281
	1121928792971337731
	1121928799103475712
	1121928806019862529
	1121928812420304897
	1121933703259623424
	1121934461388689409

What user posted this?

The screenshot shows the Oracle SQL Developer interface with the following details:

- Toolbar:** Standard icons for file operations, database connections, and search.
- Navigation:** Administration, Schemas, and a list of schemas including db, posts, and post\_user.
- Query Editor:** A query window with the command: `1 • SELECT * FROM NBA.post_user;`
- Result Grid:** Displays the results of the query. One row is shown with the column `player_handle` containing the value `FreeDawkins`.
- Right Panel:** A sidebar titled "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help." It includes links to Result Grid, Form Editor, Field Types, Query Stats, and Execution Plan.
- Action Output:** A log showing the execution of the query. The log table has columns: Time, Action, Response, and Duration / Fetch. The log shows two entries: one at 037 (Time) and one at 837 (Time).
- Status Bar:** Shows "Query Completed".

When did the user post this on Youtube?

The screenshot shows the Oracle SQL Developer interface with the following details:

- Toolbar:** Standard icons for file operations, database connections, and search.
- Navigation:** Administration, Schemas, and a list of schemas including db, posts, post\_user, and post\_time.
- Query Editor:** A query window with the command: `1 • SELECT * FROM NBA.post_time;`
- Result Grid:** Displays the results of the query. One row is shown with the columns `title` and `post_at`, containing the values `Stephen Curry Full Highlights 2019 WCR1 Gam...` and `2019-04-16`.
- Right Panel:** A sidebar titled "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help." It includes links to Result Grid, Form Editor, Field Types, Query Stats, and Execution Plan.
- Action Output:** A log showing the execution of the query. The log table has columns: Time, Action, Response, and Duration / Fetch. The log shows two entries: one at 037 (Time) and one at 838 (Time).
- Status Bar:** Shows "Query Completed".

## Views:

1. User info, favorites and the player talking about regarding a specific tweet.

ScreenName	Favorited	Players
► 1Muggyp	14604	Russell Westbrook
traygambino1k	2581	Blake Griffin
Montie_Sosa	1154	Blake Griffin
K1NGR3D	50474	LeBron James
Brokimbo	631	Blake Griffin
JGrizzly77	9882	Blake Griffin
chdupper	68	LeBron James
AliiCherif	11433	James Harden
lloyd_ben7	31269	Blake Griffin
_QuanteriousJay	4775	LeBron James
ArmbriesterQueen	378	Blake Griffin

2. Locations and the players talking about which got the highest amount of favorites regarding a specific tweet.

max(Favorited)	City	Players
► 17005	Dallas	Russell Westbrook
176425	Loaded 🌎	Blake Griffin
143141	401; above the clouds	LeBron James
39318	Houston	James Harden
105380	Dallas	others
74600	Utah	Rudy Gobert
149060	Nigeria	Kyrie Irving
54248	Proxima Centauri	Joel Embiid

3. The amount of favorites a specific user has got.

TwitterID	Favorited
► 1120747794854232065	176425
1120749783704952832	149060
1120743673908596736	143141
1120749527894560768	126940
1120745266414534659	103085
1120745309087383557	84737
1120733379073232896	74600
1120733905751949314	60059
1120744368489553923	58158
1120746541290074112	54248
1120744127581147138	52951

4. Tweets that most popular.

Result Grid Filter Rows: Search Export:

TwitterID	Text	Favorited
▶ 1120747794854232065	RT @DetroitPistons: "I really do feel a sense of...	176425
1120749783704952832	RT @brkicks: 🍔 @KyrieIrving https://t.co/Bwn...	149060
1120743673908596736	Finally got my faves 🐴🐴🐴 @KingJames...	143141
1120749527894560768	Ask @KingJames	126940
1120733757089169408	RT @Sethrogen: This was fun and I also actuall...	109451
1120733757089169408	RT @Sethrogen: This was fun and I also actuall...	109451
1120733327206625280	RT @W3d3ct: No joke looks like canelo didn't gi...	105380
1120733327206625280	RT @W3d3ct: No joke looks like canelo didn't gi...	105380
1120745266414534659	RT @DetroitPistons: "I really do feel a sense of...	103085
1120750147250601984	RT @DeAndreHopkins: Epic crew!! https://t.co/...	100380
1120745309087383557	RT @DetroitPistons: "I really do feel a sense of..."	84737
player_poply 1	pop_users 2	pop_tweet 3
		Result 4

5. Popularities of different players that were talked about on Twitter in the recording period.

Result Grid Filter Rows: Search

get_popularity(Favorited, Followers)	Players
▶ 74600	Rudy Gobert
50474	LeBron James
14604	Russell Westbrook
11433	James Harden
2581	Blake Griffin
598	Joel Embiid
247	Kyrie Irving

```
# Filling up MDT and Year from Team##
insert into 1NF(Count,MDT,Year)
Select Count, Substring_index(Date,"+",1),Substring_index(Date," ",-1)
From Team;
Select * from 1NF;
## View 1 and Use case##
Create view NF1 as
select Team.Count,Team.TwitterID,Team.Text,Team.Location,Team.ScreenName,Team.Favorited,1NF.MDT,1NF.YEAR
From Team
join 1NF ON (Team.Count=1NF.Count);
Select * from NF1;

##View 2
CREATE VIEW FSTEXT AS
```

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

Count	TwitterID	Text	Location	ScreenName	Favorited	MDT
1	1121867384611049474	Your favourite funny character? #AvengersEn...	NULL	aliveavenger007	41	Fri Apr
2	1121867389317070849	Greek's Anatomy Malcolm Brogdon (foot) won't ...	NULL	NBATheJumpFP	27911	Fri Apr
3	1121867497190375424	RT @PetesWire: Mystery deepens... @TheSpo...	Boston, MA	NicoleOliverio	12337	Fri Apr
4	1121867503171403776	He is coming...#Bucks #Celtics #Milwaukee htt...	NULL	trellokouneli	1297	Fri Apr
5	1121867561765937153	RT @WarriorsHSBB: Everything put away after ...	NULL	tricgakami	32	Fri Apr
6	1121867609216049153	#NBA Links to Boston Celtics web sites #Boston...	Rural Hall, NC	SptsBooks	43	Fri Apr
7	1121867705978691585	RT @GwashburnGlobe: The #Celtics will wear a ...	Kentucky	celtic34fan	29543	Fri Apr
8	1121867713230585858	RT @Stepcurry30P: Klay or curry 🍊 Follow me i...	NULL	Curry14Step	3	Fri Apr

```

##View 2
• CREATE VIEW FSTEXT AS
SELECT FS.TwitterID, Text.text
FROM Text
JOIN FS ON (FS.TwitterID = Text.TwitterID)
WHERE Text.Text="RT @WarriorHSBB: Everything put away after another great season by the boys. Excited"
• Select * from FSTEXT;

```

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

TwitterID	text
1121867561765937153	RT @WarriorHSBB: Everything put away after ...
1121867561765937153	RT @WarriorHSBB: Everything put away after ...

Local instance 3306

Administration Schemas db posts post\_user post\_time Context Help Snippets

Schemas

- NBA
  - Tables
    - hashtags
    - player
    - posts
    - teams
    - teamsvideos
  - Views
    - 24posts\_count
    - popular\_tags
    - post\_time
    - post\_user
  - Stored Procedures
  - Functions
    - Addfunction
    - Authornumber

Object Info Session Schema: NBA

```

64 --- What keywords/ hashtags are popular? ---
65 --- We assume the top 30 hashtag can be considered as popular ---
66 • CREATE VIEW popular_tags AS
67   SELECT hashtag, COUNT(hashtag) AS value_occur
68   FROM hashtags
69   GROUP BY hashtag
70   ORDER BY value_occur DESC
71   LIMIT 30;
72
73 --- What user posted this ? ---
74 --- WE ASSUME we can look up "this" by post_ID , in this case, post_id is 4 ---
75 • CREATE VIEW post_user AS
76   SELECT player_handle
77   FROM player
78   WHERE player_ID = (SELECT author FROM posts WHERE post_ID = '4' LIMIT 1);
79
80 --- When did the user post this on Toutube??
81 --- WE ASSUME we can look up "this" by post_ID, in this case, post_id is 4 ---
82 • CREATE VIEW post_time AS
83   SELECT title, post_at
84   FROM posts WHERE post_ID = '4' LIMIT 1;
85
86 --- What posts are popular? ---
87 --- We assume posts with likes more than 1000 are considered popular ---
88 • CREATE VIEW popular_posts AS

```

100% 20:91 Action Output

Action	Time	Action	Response	Duration / Fetch
837	22:07:03	SELECT * ...	1 row(s) returned	0.00000 sec / 0
838	22:03:12	SELECT * F...	1 row(s) returned	0.00050 sec / 0

Query Completed

## Functions:

```

#VDF 1
DELIMITER $$

CREATE FUNCTION hello(s varchar(20))
RETURNS TEXT
LANGUAGE SQL
DETERMINISTIC
BEGIN
    RETURN concat('Hello, ',s,'!');
END;
$$
DELIMITER ;
select hello('TA') as outcome;

```

146 • select hello('TA') as outcome;

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

	outcome
▶	Hello, TA!

```

#VDF 2
DROP FUNCTION IF EXISTS VDF2;
DELIMITER $$

CREATE FUNCTION VDF2(Favorited int,Count int)
RETURNS int(11)
READS SQL DATA
DETERMINISTIC
BEGIN
    DECLARE result int(11);
    SET result =Favorited-Count;
    RETURN result;
END$$
DELIMITER ;

```

Result Grid | Filter Rows: |

	outcomes
▶	40
	27909
	12334
	1293
	27
	37
	29536
...	...

```
DROP FUNCTION IF EXISTS VDF3;
DELIMITER $$
CREATE FUNCTION VDF3(Favorited int)
RETURNS Varchar(40)
READS SQL DATA
DETERMINISTIC
BEGIN
    DECLARE result Varchar(40);
    IF Favorited >=500
        then SET result ="Yeah";
    ELSEIF  Favorited < 500
        THEN SET result = "Nope";
    END IF;
    RETURN result;
END$$
DELIMITER ;
```

Select VDF3(Favorited) As Outcomes from Team;

< | Result Grid | Filter Rows: | Export

	Outcomes
▶	Nope
	Yeah
	Yeah
	Yeah
	Nope
	Nope
	Yeah
	Nope
	Nope
...	

The screenshot shows the MySQL Workbench interface. The top navigation bar includes tabs for Administration, Schemas, db, posts, post\_user, and post\_time. The left sidebar displays the database structure for the NBA schema, including Tables (hashtags, player, posts, teams, teamsvideos), Views (24posts\_count, popular\_tags, post\_time, post\_user), and Stored Procedures (Addfunction, Authornumber). A context help message on the right states: "Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help." The main area shows a query editor with the following code:

```
99 SET result = author-post_id;
100 RETURN result;
101 END$;
102 DELIMITER ;
103
```

The status bar indicates the query took 59:120 seconds to run. Below the code, the Result Grid shows the output:

authors
23
22
17
16
15
12
11
10
7
1
-2
-3
-8
-9
-13
-17
-20
-23
-25
-27

The bottom section shows the function definition and parameters:

**Function: Addfunction**

**Parameters:**

- author: int
- post\_id: int

**Returns:** int(11)

The Action Output panel shows the execution details:

Action	Time	Response	Duration / Fetc
SELECT ...	080 22:03:12	57 row(s) returned	0.000000 sec / 0
select Add...	839 22:17:28	57 row(s) returned	0.0017 sec / 0

A message at the bottom states "Query Completed".

This is a function which can calculate the different value of the number of author and post id.

This is a function which can select author which the number is over 30

```

2
3 •  DROP FUNCTION IF EXISTS get_popularity;
4   delimiter $$
5 •  CREATE FUNCTION get_popularity(Favorited int(50), Followers int(50))
6   RETURNS int(50)
7   reads sql data
8   deterministic
9   BEGIN
10  DECLARE result INT(50);
11   SET
12   result = Favorited + Followers/5000;
13   RETURN result;
14 END$$
15 delimiter ;
16
17 •  #set sql_mode = '';
18   select get_popularity(Favorited, Followers), Players from nba1nf
19   where not Players = 'others'
20

```

100% ^ 1:1

get_popularity(Favorited, Followers)	Players
74600	Rudy Gobert
50474	LeBron James
14604	Russell Westbrook
11433	James Harden
2581	Blake Griffin
598	Joel Embiid
247	Kyrie Irving

Result Grid



Filter Rows:

Search

Export

## References

- "2018 NBA Awards." *NBA.com*, 18 Apr. 2018, www.nba.com/NBAawards#. Accessed 21 Apr. 2018.
- Hertzog, Aaron. "The NBA MVP Rubric." 13 Apr. 2017, medium.com/holding-court/the-nba-mvp-rubric-c58f050a8e9c. Accessed 21 Apr. 2018.
- "500 Players, 1 Winner: Predicting the 2017-18 MVP." *ESPN.com*, www.espn.com/espn/feature/story/\_/id/20982956/predicting-2017-18-nba-mvp. Accessed 21 Apr. 2018.
- "NBA Players Stats Since 1950." *Kaggle*, www.kaggle.com/drgilermo/nba-players-stats. Accessed 21 Apr. 2018.
- Heinz, Sebastian. "A Simple Deep Learning Model for Stock Price Prediction Using TensorFlow." 9 Nov. 2017, medium.com/mlreview/a-simple-deep-learning-model-for-stock-price-prediction-using-tensorflow-30505541d877. Accessed 21 Apr. 2018.
- “NBA player social power.” Kaggle, <https://www.kaggle.com/noahgift/social-power-nba>