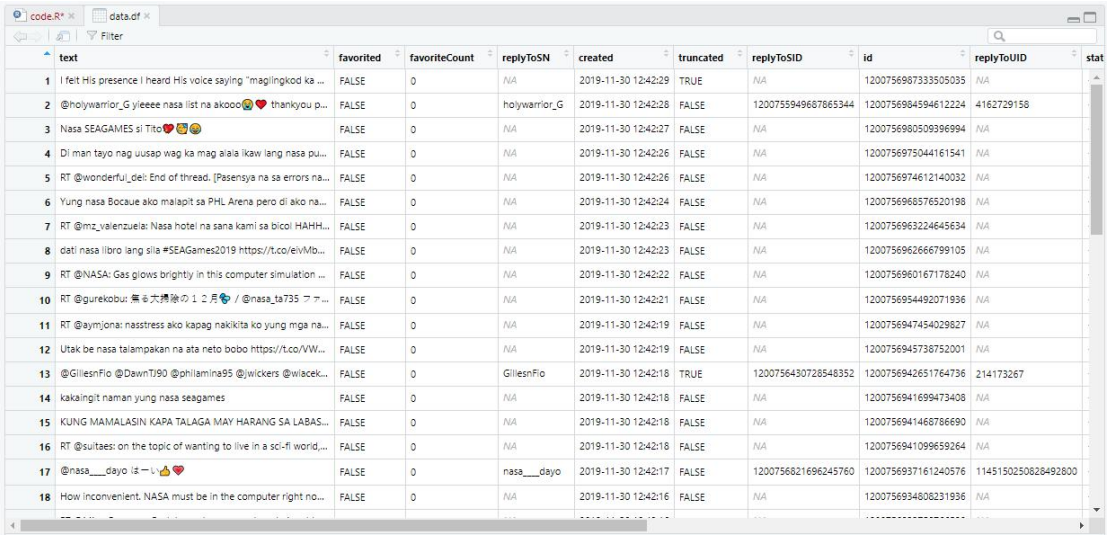
Exercise 1

This is my code:

```
library(DBI)
library(RPostgreSQL)
library(twitteR)


setup_twitter_oauth("hMXVGuj8ejzvYnaV5VoKzRfNY",
                    "3ywTblsfg8DkixsSiv29aaVYqWJ2hH6a3R8TZTCQ68hVAEfGYT",
                    "1199940215470743552-QtSvHy4VbCOTrhf8ai2ZnBVwUWTMnC",
                    "376jGsjosUqfMgYMZCe6QerSTLNoS1Q2Tzw8QGEo87JfP")


data <- searchTwitter("NASA", n = 50)


data.df <- twListToDF(data)
for (i in 1:5) {
  cat(paste0("[", i, "] "))
  writeLines(strwrap(data.df$text[i], 60))
}
```

And this is the results:

Data	
data	List of 50
data.df	50 obs. of 16 variables



	text	favorited	favoriteCount	replyToSN	created	truncated	replyToSID	id	replyToUID	stat
1	I felt His presence I heard His voice saying "maglingkod ka ...	FALSE	0	NA	2019-11-30 12:42:29	TRUE	NA	1200756987333505035	NA	
2	@holywarrior_G yieeee nasa list na akooo😭❤ thankyou p...	FALSE	0	holywarrior_G	2019-11-30 12:42:28	FALSE	1200755949687865344	1200756984594612224	4162729158	
3	Nasa SEAGAMES si Tito❤🥰😂	FALSE	0	NA	2019-11-30 12:42:27	FALSE	NA	1200756980509396994	NA	
4	Di man tayo nag uusap wag ka mag alala ikaw lang nasa pu...	FALSE	0	NA	2019-11-30 12:42:26	FALSE	NA	1200756975044161541	NA	
5	RT @wonderful_dei: End of thread. [Pasensya na sa errors na...	FALSE	0	NA	2019-11-30 12:42:26	FALSE	NA	1200756974612140032	NA	
6	Yung nasa Bocaue ako malapit sa PHL Arena pero di ako na...	FALSE	0	NA	2019-11-30 12:42:24	FALSE	NA	1200756968576520198	NA	
7	RT @mz_valenzuela: Nasa hotel na sana kami sa bicol HAHH...	FALSE	0	NA	2019-11-30 12:42:23	FALSE	NA	1200756963224645634	NA	
8	dati nasa libro lang sila #SEAGames2019 https://t.co/eiVMb...	FALSE	0	NA	2019-11-30 12:42:23	FALSE	NA	1200756962666799105	NA	
9	RT @NASA: Gas glows brightly in this computer simulation ...	FALSE	0	NA	2019-11-30 12:42:22	FALSE	NA	1200756960167178240	NA	
10	RT @gurekobu: 焦る大捕除の１２月🐦 / @nasa_ta735 ファ...	FALSE	0	NA	2019-11-30 12:42:21	FALSE	NA	1200756954492071936	NA	
11	RT @aymjona: nasstress ako kapag nakikita ko yung mga na...	FALSE	0	NA	2019-11-30 12:42:19	FALSE	NA	1200756947454029827	NA	
12	Utak be nasa talampakan na ata neto bobo https://t.co/VW...	FALSE	0	NA	2019-11-30 12:42:19	FALSE	NA	1200756945738752001	NA	
13	@GillesnFlo @DawnTJ90 @philamina95 @jwickers @wlacek...	FALSE	0	GillesnFlo	2019-11-30 12:42:18	TRUE	1200756430728548352	1200756942651764736	214173267	
14	kakaingit naman yung nasa seagames	FALSE	0	NA	2019-11-30 12:42:18	FALSE	NA	1200756941699473408	NA	
15	KUNG MAMALASIN KAPA TALAGA MAY HARANG SA LABAS...	FALSE	0	NA	2019-11-30 12:42:18	FALSE	NA	1200756941468786690	NA	
16	RT @suitaes: on the topic of wanting to live in a sci-fi world,...	FALSE	0	NA	2019-11-30 12:42:18	FALSE	NA	1200756941099659264	NA	
17	@nasa___dayo はーい👍❤	FALSE	0	nasa___dayo	2019-11-30 12:42:17	FALSE	1200756821696245760	1200756937161240576	1145150250828492800	
18	How inconvenient. NASA must be in the computer right no...	FALSE	0	NA	2019-11-30 12:42:16	FALSE	NA	1200756934808231936	NA	

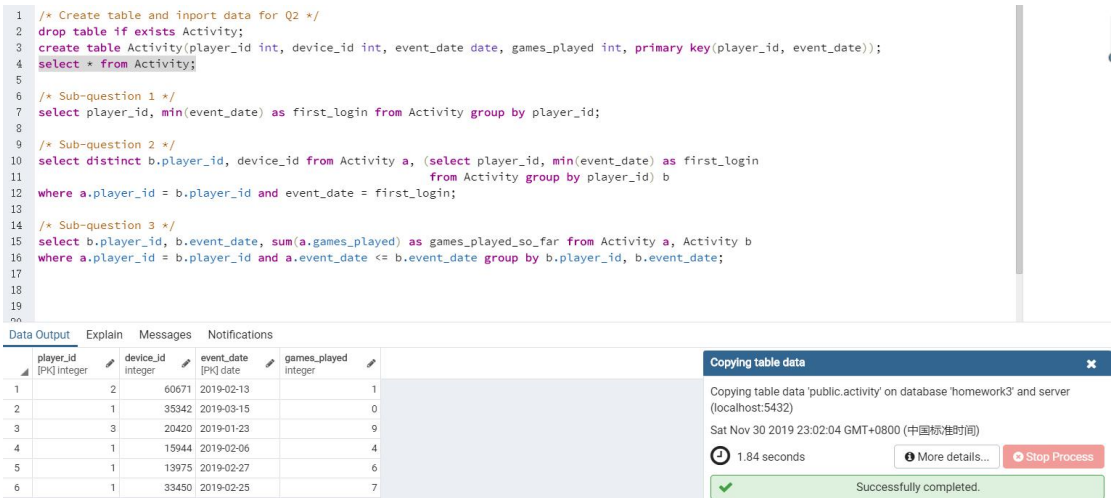
```
[1] I felt His presence I heard His voice saying "maglingkod ka
na anak"

For almost 2 years na nasa church ako, I'm r…
https://t.co/cTbOn6cHYq
[2] @holywarrior_G yieeee nasa list na akooo<U+0001F62D><U+2764><U+FE0F> thankyou poo
[3] Nasa SEAGAMES si Tito<U+0001F496><U+0001F973><U+0001F602>
[4] Di man tayo nag uusap wag ka mag alala ikaw lang nasa puso
ko. <U+0001F60A>
[5] RT @wonderful_dei: End of thread.

[Pasensya na sa errors nasa mall kasi ako, kanina <U+0001F605><U+0001F605><U+0001F605>]

#DADDYSGURLUnderRenovation #MaineMendoza | @mai…
```

Exercise 2

First I created a random sample with R. After sorting, it appears like this:

```
> random.sample[order(random.sample$player_id, random.sample$event_date),]
   player_id device_id event_date games_played
4          1     15944 2019-02-06            4
10         1     79364 2019-02-15            2
6          1     33450 2019-02-25            7
5          1     13975 2019-02-27            6
2          1     35342 2019-03-15            0
9          2     39175 2019-01-09            3
7          2     87766 2019-01-11            8
1          2     60671 2019-02-13            1
3          3     20420 2019-01-23            9
8          3     96586 2019-03-12            5
```

Then insert the original table into SQL:



```
/* Create table and inport data for Q2 */
drop table if exists Activity;
create table Activity(player_id int, device_id int, event_date date, games_played int, primary key(player_id, event_date));
select * from Activity;

/* Sub-question 1 */
select player_id, min(event_date) as first_login from Activity group by player_id;

/* Sub-question 2 */
select distinct b.player_id, device_id from Activity a, (select player_id, min(event_date) as first_login
                                                         from Activity group by player_id) b
where a.player_id = b.player_id and event_date = first_login;

/* Sub-question 3 */
select b.player_id, b.event_date, sum(a.games_played) as games_played_so_far from Activity a, Activity b
where a.player_id = b.player_id and a.event_date <= b.event_date group by b.player_id, b.event_date;
```

Data Output | Explain | Messages | Notifications

	player_id [PK] integer	device_id integer	event_date [PK] date	games_played integer
1	2	60671	2019-02-13	1
2	1	35342	2019-03-15	0
3	3	20420	2019-01-23	9
4	1	15944	2019-02-06	4
5	1	13975	2019-02-27	6
6	1	33450	2019-02-25	7

Copying table data

Copying table data 'public.activity' on database 'homework3' and server (localhost:5432)

Sat Nov 30 2019 23:02:04 GMT+0800 (中国标准时间)

1.84 seconds | More details... | Stop Process

Successfully completed.

For sub-question 1:

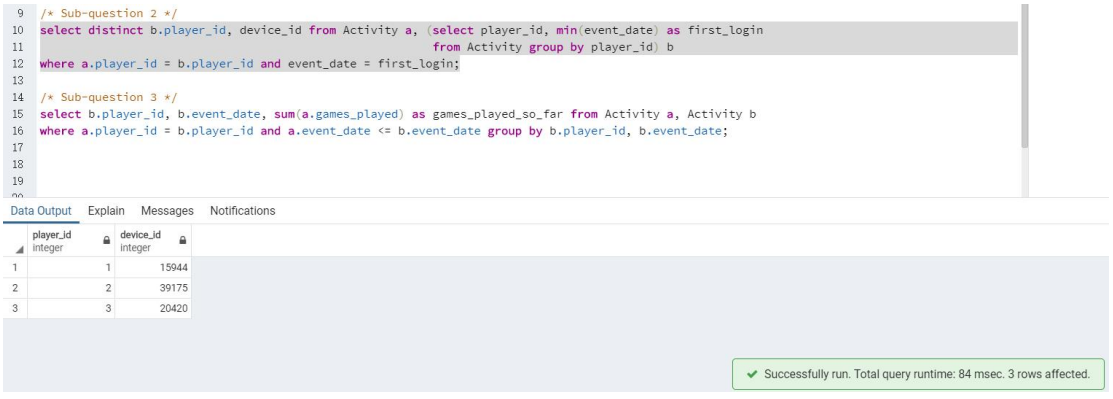
```
/* Sub-question 1 */
select player_id, min(event_date) as first_login from Activity group by player_id;

/* Sub-question 2 */
select distinct b.player_id, device_id from Activity a, (select player_id, min(event_date) as first_login
                                                         from Activity group by player_id) b
where a.player_id = b.player_id and event_date = first_login;

/* Sub-question 3 */
select b.player_id, b.event_date, sum(a.games_played) as games_played_so_far from Activity a, Activity b
where a.player_id = b.player_id and a.event_date <= b.event_date group by b.player_id, b.event_date;
```

Data Output | Explain | Messages | Notifications

	player_id integer	first_login date
1	3	2019-01-23
2	2	2019-01-09
3	1	2019-02-06

Successfully run. Total query runtime: 85 msec. 3 rows affected.

For sub-question 2:



```
/* Sub-question 2 */
select distinct b.player_id, device_id from Activity a, (select player_id, min(event_date) as first_login
                                                         from Activity group by player_id) b
where a.player_id = b.player_id and event_date = first_login;

/* Sub-question 3 */
select b.player_id, b.event_date, sum(a.games_played) as games_played_so_far from Activity a, Activity b
where a.player_id = b.player_id and a.event_date <= b.event_date group by b.player_id, b.event_date;
```

Data Output | Explain | Messages | Notifications

	player_id integer	device_id integer
1	1	15944
2	2	39175
3	3	20420

Successfully run. Total query runtime: 84 msec. 3 rows affected.

For sub-question 3:

```
/* Sub-question 3 */
select b.player_id, b.event_date, sum(a.games_played) as games_played_so_far from Activity a, Activity b
where a.player_id = b.player_id and a.event_date <= b.event_date group by b.player_id, b.event_date order by b.player_id, b.event_date;
```

Data Output | Explain | Messages | Notifications

	player_id [PK] integer	event_date [PK] date	games_played_so_far bigint
1	1	2019-02-06	4
2	1	2019-02-15	6
3	1	2019-02-25	13
4	1	2019-02-27	19
5	1	2019-03-15	19
6	2	2019-01-09	3
7	2	2019-01-11	11

Successfully run. Total query runtime: 94 msec. 10 rows affected.

Here is all combinations of “player_id” and “event_date”, and the corresponding “game_played_so_far”s.

Exercise 3

For the requested database, I created 5 tables for different kinds of information, among which there is an intermediate one:

For the development information:

```
drop table if exists Apartment;
create table Apartment(Apt_name text primary key,
                       location text,
                       open_year int,
                       height int,
                       last_renovation int);
```

And for units information:

```
drop table if exists Units;
create table Units(Apt_name text,
                   FOREIGN KEY (Apt_name) REFERENCES Apartment (Apt_name),
                   unit_num int,
                   bedroom int,
                   bathroom int,
                   Separate_kitchen text,
                   Separate_livingroom text,
                   square_footage numeric(15,2),
                   primary key (Apt_name, unit_num));
```

Intermediate table:

```
drop table if exists Household_overallinfo;
create table Household_overallinfo(household_serial int primary key,
                                   member_number int,
                                   header_name text);
```

For households’ movement information:

```
drop table if exists Household_move;
create table Household_move(household_serial int,
                            foreign key(household_serial) references Household_overallinfo(household_serial),
                            movein_time date,
                            moveout_time date,
                            Apt_name text,
                            unit_num int,
                            foreign key(Apt_name, unit_num) references units(Apt_name, unit_num),
                            primary key(household_serial, movein_time));
```

For household members information:

```
drop table if exists Household_info;
create table Household_info(household_serial int,
                            foreign key (household_serial) references Household_overallinfo(household_serial),
                            member_number int,
                            member_name text,
                            member_sex text,
                            member_birthday date,
                            head_or_not text,
                            primary key(member_name, member_birthday));
```

And here is the data I faked:

```
/* create data as required */
INSERT INTO Apartment VALUES
('Apt 1', '1 Street', 2000, 15, 2013),
('Apt 2', '2 Street', 1980, 11, 2000),
('Apt 3', '3 Street', 2005, 10, 2013);
select * from Apartment;
```

Data Output | Explain | Messages | Notifications

	apt_name text	location text	open_year integer	height integer	renovation integer
1	Apt 1	1 Street	2000	1000	2007
2	Apt 1	1 Street	2000	1500	2013
3	Apt 2	2 Street	1980	1100	2000

```
INSERT INTO Units VALUES
('Apt 1', 1, 4, 2, 'Yes', 'Yes', 2000),
('Apt 1', 2, 4, 2, 'Yes', 'Yes', 2000),
('Apt 2', 1, 2, 2, 'No', 'No', 1000),
('Apt 2', 2, 2, 2, 'Yes', 'No', 900),
('Apt 3', 1, 3, 2, 'Yes', 'Yes', 1500),
('Apt 3', 2, 3, 2, 'No', 'Yes', 1400);
select * from Units;
```

Data Output | Explain | Messages | Notifications

	apt_name text	unit_num integer	bedroom integer	bathroom integer	separate_kitchen text	separate_livingroom text	square_footage numeric (15,2)
1	Apt 1	1	4	2	Yes	Yes	2000.00
2	Apt 1	2	4	2	Yes	Yes	2000.00
3	Apt 2	1	2	2	No	No	1000.00

```
insert into Household_overallinfo values
(1, 2, 'AA'),
(2, 3, 'AAA'),
(3, 4, 'AAAA');
select * from Household_overallinfo;
```

Data Output | Explain | Messages | Notifications

	household_serial [PK] integer	member_number integer	header_name text
1	1	2	AA
2	2	3	AAA
3	3	4	AAAA

```
INSERT INTO Household_move VALUES
(1, '2014-01-02', '2016-01-01', 'Apt 1', 1),
(2, '2014-01-02', '2016-01-01', 'Apt 1', 1),
(3, '2015-01-02', '2016-01-01', 'Apt 2', 1),
(1, '2016-01-02', NULL, 'Apt 3', 2),
(2, '2016-01-02', '2018-01-01', 'Apt 2', 1),
(2, '2018-01-02', '2020-01-01', 'Apt 3', 1),
(3, '2016-01-02', '2018-01-01', 'Apt 1', 2);
select * from Household_move;
```

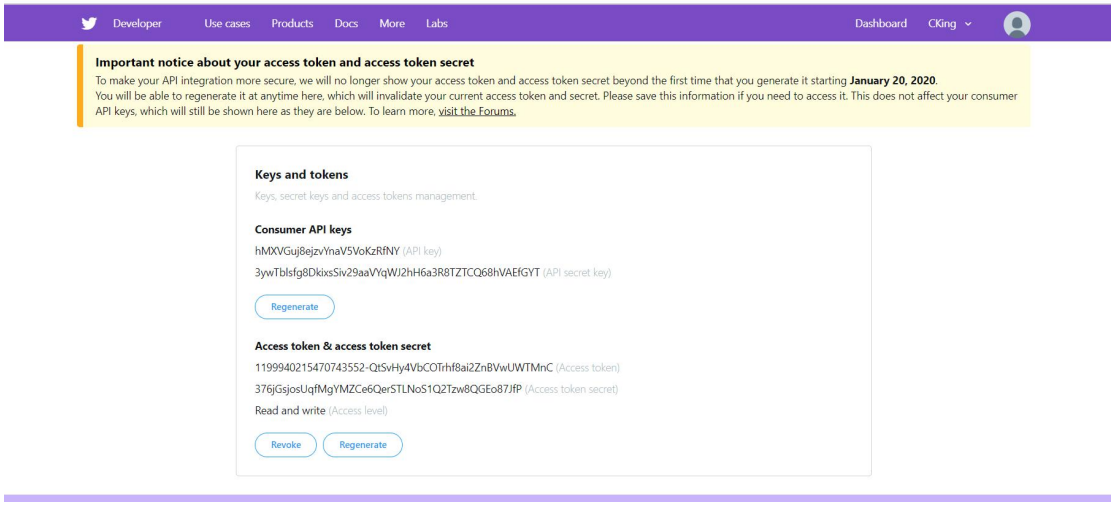
Data Output | Explain | Messages | Notifications

	household_serial [PK] integer	movein_time [PK] date	moveout_time date	apt_name text	unit_num integer
1	1	2014-01-02	2016-01-01	Apt 1	1
2	2	2014-01-02	2016-01-01	Apt 1	1
3	3	2015-01-02	2016-01-01	Apt 2	1

```
INSERT INTO Household_info VALUES
(1, 2, 'AA', 'Female', '1970-01-01', 'Yes'),
(1, 2, 'BB', 'Male', '1964-01-01', 'No'),
(2, 3, 'AAA', 'Female', '1996-01-01', 'Yes'),
(2, 3, 'BBB', 'Male', '1995-01-01', 'No'),
(2, 3, 'CCC', 'Male', '1994-01-01', 'No'),
(3, 4, 'AAAA', 'Female', '2001-01-01', 'Yes'),
(3, 4, 'BBBB', 'Male', '2002-01-01', 'No'),
(3, 4, 'CCCC', 'Male', '2003-01-01', 'No'),
(3, 4, 'DDDD', 'Male', '2000-01-01', 'No');
select * from Household_info;
```

Data Output | Explain | Messages | Notifications

	household_serial integer	member_number integer	member_name [PK] text	member_sex text	member_birthday [PK] date	head_or_not text
1	1	2	AA	Female	1970-01-01	Yes
2	1	2	BB	Male	1964-01-01	No
3	2	3	AAA	Female	1996-01-01	Yes


Developer
Use cases
Products
Docs
More
Labs
Dashboard
CKing
Important notice about your access token and access token secret
To make your API integration more secure, we will no longer show your access token and access token secret beyond the first time that you generate it starting January 20, 2020.
You will be able to regenerate it at anytime here, which will invalidate your current access token and secret. Please save this information if you need to access it. This does not affect your consumer API keys, which will still be shown here as they are below. To learn more, visit the Forums.
Keys and tokens
Keys, secret keys and access tokens management.
Consumer API keys
hMXVGuj8ejzvYnaV5VoKzRfNY (API key)
3ywTblsfg8DkixsSiv29aaVYqWJ2hH6a3R8TZTCQ68hVAEfGYT (API secret key)
Regenerate
Access token & access token secret
1199940215470743552-QtSvHy4VbCOTrhf8ai2ZnBVwUWTMnC (Access token)
376jGsjosUqfMgYMZCe6QerSTLNoS1Q2Tzw8QGEo87JfP (Access token secret)
Read and write (Access level)
Revoke
Regenerate