

```
In [2]: pip install ipython-sql
```

Requirement already satisfied: ipython-sql in c:\users\helin\anaconda3\lib\site-packages (0.4.1)Note: you may need to restart the kernel to use updated packages.

Requirement already satisfied: prettytable<1 in c:\users\helin\anaconda3\lib\site-packages (from ipython-sql) (0.7.2)

Requirement already satisfied: sqlalchemy>=0.6.7 in c:\users\helin\anaconda3\lib\site-packages (from ipython-sql) (1.4.22)

Requirement already satisfied: six in c:\users\helin\anaconda3\lib\site-packages (from ipython-sql) (1.16.0)

Requirement already satisfied: ipython>=1.0 in c:\users\helin\anaconda3\lib\site-packages (from ipython-sql) (7.29.0)

Requirement already satisfied: sqlparse in c:\users\helin\anaconda3\lib\site-packages (from ipython-sql) (0.4.3)

Requirement already satisfied: ipython-genutils>=0.1.0 in c:\users\helin\anaconda3\lib\site-packages (from ipython-sql) (0.2.0)

Requirement already satisfied: traitlets>=4.2 in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (5.1.0)

Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (3.0.20)

Requirement already satisfied: colorama in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (0.4.4)

Requirement already satisfied: pygments in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (2.10.0)

Requirement already satisfied: setuptools>=18.5 in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (58.0.4)

Requirement already satisfied: matplotlib-inline in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (0.1.2)

Requirement already satisfied: pickleshare in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (0.7.5)

Requirement already satisfied: jedi>=0.16 in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (0.18.0)

Requirement already satisfied: decorator in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (5.1.0)

Requirement already satisfied: backcall in c:\users\helin\anaconda3\lib\site-packages (from ipython>=1.0->ipython-sql) (0.2.0)

Requirement already satisfied: parso<0.9.0,>=0.8.0 in c:\users\helin\anaconda3\lib\site-packages (from jedi>=0.16->ipython>=1.0->ipython-sql) (0.8.2)

Requirement already satisfied: wcwidth in c:\users\helin\anaconda3\lib\site-packages (from prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0->ipython>=1.0->ipython-sql) (0.2.5)

Requirement already satisfied: greenlet!=0.4.17 in c:\users\helin\anaconda3\lib\site-packages (from sqlalchemy>=0.6.7->ipython-sql) (1.1.1)

```
In [3]: %load_ext sql
```

```
In [4]: %sql mysql://root:Helin2134*${@localhost/luck
```

```
In [5]: %%sql
CREATE TABLE employees(
    employee_id INT AUTO_INCREMENT,
    first_name VARCHAR(45),
    last_name VARCHAR(45),
    email VARCHAR(45),
    phone_number INT,
    hire_date DATE,
    job_id INT,
    salary INT,
    commission_pct FLOAT,
    manager_id INT,
```

```
    department_id INT,  
    PRIMARY KEY(employee_id)  
);
```

```
* mysql://root:***@localhost/luck  
(MySQLdb.OperationalError) (1050, "Table 'employees' already exists")  
[SQL: CREATE TABLE employees(  
    employee_id INT AUTO_INCREMENT,  
    first_name VARCHAR(45),  
    last_name VARCHAR(45),  
    email VARCHAR(45),  
    phone_number INT,  
    hire_date DATE,  
    job_id INT,  
    salary INT,  
    commission_pct FLOAT,  
    manager_id INT,  
    department_id INT,  
    PRIMARY KEY(employee_id)  
);]  
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

In [6]:

```
%%sql  
CREATE TABLE departmens(  
    department_id INT PRIMARY KEY AUTO_INCREMENT,  
    department_name VARCHAR(45),  
    manager_id INT,  
    location_id INT  
);
```

```
* mysql://root:***@localhost/luck  
(MySQLdb.OperationalError) (1050, "Table 'departmens' already exists")  
[SQL: CREATE TABLE departmens(  
    department_id INT PRIMARY KEY AUTO_INCREMENT,  
    department_name VARCHAR(45),  
    manager_id INT,  
    location_id INT  
);]  
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

In [7]:

```
%%sql  
CREATE TABLE jobhistory(  
    start_date DATE PRIMARY KEY,  
    employee_id INT,  
    job_id INT,  
    department_id INT  
);
```

```
* mysql://root:***@localhost/luck  
(MySQLdb.OperationalError) (1050, "Table 'jobhistory' already exists")  
[SQL: CREATE TABLE jobhistory(  
    start_date DATE PRIMARY KEY,  
    employee_id INT,  
    job_id INT,  
    department_id INT  
);]  
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

In [6]:

```
%%sql  
CREATE TABLE jobs(  
    job_id INT PRIMARY KEY AUTO_INCREMENT,  
    job_title VARCHAR(45),  
    min_salary INT,
```

```
max_salary INT
);

* mysql://root:***@localhost/luck
(MySQLdb.OperationalError) (1050, "Table 'jobs' already exists")
[SQL: CREATE TABLE jobs(
    job_id INT PRIMARY KEY AUTO_INCREMENT,
    job_title VARCHAR(45),
    min_salary INT,
    max_salary INT
);]
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

In [9]:

```
%%sql
CREATE TABLE countries(
    country_id INT PRIMARY KEY AUTO_INCREMENT,
    country_name VARCHAR(45),
    region_id INT
);

* mysql://root:***@localhost/luck
(MySQLdb.OperationalError) (1050, "Table 'countries' already exists")
[SQL: CREATE TABLE countries(
    country_id INT PRIMARY KEY AUTO_INCREMENT,
    country_name VARCHAR(45),
    region_id INT
);]
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

In [10]:

```
%%sql
CREATE TABLE regions(
    region_id INT PRIMARY KEY AUTO_INCREMENT,
    region_name VARCHAR(45)
);

* mysql://root:***@localhost/luck
(MySQLdb.OperationalError) (1050, "Table 'regions' already exists")
[SQL: CREATE TABLE regions(
    region_id INT PRIMARY KEY AUTO_INCREMENT,
    region_name VARCHAR(45)
);]
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

In [11]:

```
%%sql
CREATE TABLE locations(
    location_id INT PRIMARY KEY AUTO_INCREMENT,
    street_address VARCHAR(45),
    postal_code INT,
    city VARCHAR(45),
    country_id INT
);

* mysql://root:***@localhost/luck
(MySQLdb.OperationalError) (1050, "Table 'locations' already exists")
[SQL: CREATE TABLE locations(
    location_id INT PRIMARY KEY AUTO_INCREMENT,
    street_address VARCHAR(45),
    postal_code INT,
    city VARCHAR(45),
    country_id INT
);]
(Background on this error at: https://sqlalche.me/e/14/e3q8)
```

```
In [14]: %%sql
SELECT * FROM locations;
```

\* mysql://root:\*\*\*@localhost/luck  
3 rows affected.

Out[14]:

location_id	street_address	postal_code	city	country_id
400	ARKA	3696	ISTANBUL	90
401	STREET	4589	NEW YORK	112
402	STRADA	1569	MILANO	115

Let's insert values into tables

```
In [15]: %%sql
INSERT INTO employees VALUES (100,'jack','wolf','w@gmail.com',530262,'2000-01-1',200,100000,16.6,NULL,300);
INSERT INTO employees VALUES (101,'james','demon','d@gmail.com',534513,'2000-05-1',201,100000,16.6,NULL,300);
INSERT INTO employees VALUES (102,'kylia','jack','m@gmail.com',530268,'2000-05-2',202,100000,16.6,NULL,300);
INSERT INTO employees VALUES (103,'stephen','baby','c@gmail.com',530278,'2003-05-2',203,75000,8.3,NULL,300);
INSERT INTO employees VALUES (104,'anthony','long','l@gmail.com',530957,'2004-04-2',204,70000,8.3,NULL,300);
INSERT INTO employees VALUES (105,'selena','jayn','j@gmail.com',534786,'2005-03-5',205,80000,8.3,NULL,300);
INSERT INTO employees VALUES (106,'gabrielle','carlos','e@gmail.com',556897,'2003-01-6',206,50000,8.3,NULL,300);
INSERT INTO employees VALUES (107,'helene','okay','o@gmail.com',530789,'2004-04-5',207,60000,8.3,NULL,300);
INSERT INTO employees VALUES (108,'blue','good','g@gmail.com',534569,'2002-04-5',208,80000,8.3,NULL,300);
INSERT INTO employees VALUES (109,'bob','look','l@gmail.com',538976,'2004-04-4',209,90000,8.3,NULL,300);
```

\* mysql://root:\*\*\*@localhost/luck  
(MySQLdb.IntegrityError) (1062, "Duplicate entry '100' for key 'employees.PRIMARY'")  
[SQL: INSERT INTO employees VALUES (100,'jack','wolf','w@gmail.com',530262,'2000-01-1',200,100000,16.6,NULL,300);]  
(Background on this error at: <https://sqlalche.me/e/14/gkpj>)

```
In [16]: %%sql
SELECT * FROM employees;
```

\* mysql://root:\*\*\*@localhost/luck  
10 rows affected.

Out[16]:

employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	commission_pct	mana
100	jack	wolf	w@gmail.com	530262	2000-01-01	200	100000	16.6	
101	james	demon	d@gmail.com	534513	2000-05-01	201	100000	16.6	
102	kylia	jack	m@gmail.com	530268	2000-05-02	202	100000	16.6	
103	stephen	baby	c@gmail.com	530278	2003-05-02	203	75000	8.3	
104	anthony	long	l@gmail.com	530957	2004-04-02	204	70000	8.3	
105	selena	jayn	j@gmail.com	534786	2005-03-05	205	80000	8.3	
106	gabrielle	carlos	e@gmail.com	556897	2003-01-06	206	50000	8.3	
107	helene	okay	o@gmail.com	530789	2004-04-05	207	60000	8.3	
108	blue	good	g@gmail.com	534569	2002-04-05	208	80000	8.3	

In [17]:

```
%%sql
INSERT INTO departmens VALUES (300, 'manager', NULL, 400);
INSERT INTO departmens VALUES (301, 'manager', NULL, 401);
INSERT INTO departmens VALUES (302, 'manager', NULL, 402);
INSERT INTO departmens VALUES (303, 'accountant', 100, 403);
INSERT INTO departmens VALUES (304, 'marketing', 100, 404);
INSERT INTO departmens VALUES (305, 'accountant', 101, 405);
INSERT INTO departmens VALUES (306, 'marketing', 101, 406);
INSERT INTO departmens VALUES (307, 'IT', 100, 407);
INSERT INTO departmens VALUES (308, 'IT', 101, 408);
INSERT INTO departmens VALUES (309, 'IT', 102, 409);
```

```
* mysql://root:***@localhost/luck
(MySQLdb.IntegrityError) (1062, "Duplicate entry '300' for key 'departmens.PRIMARY'")
[SQL: INSERT INTO departmens VALUES (300, 'manager', NULL, 400);]
(Background on this error at: https://sqlalche.me/e/14/gkpi)
```

I added some values wrong so let's replace them with correct ones

In [18]:

```
%%sql
UPDATE departmens
SET location_id=400
WHERE location_id=403
UPDATE departmens
SET location_id=400
WHERE location_id=404
UPDATE departmens
SET location_id=401
WHERE location_id=405
UPDATE departmens
SET location_id=401
WHERE location_id=406
UPDATE departmens
SET location_id=400
WHERE location_id=407
UPDATE departmens
SET location_id=401
WHERE location_id=408
UPDATE departmens
SET location_id=402
WHERE location_id=409
```

```
* mysql://root:***@localhost/luck
(MySQLdb.ProgrammingError) (1064, "You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'UPDATE departmens\nSET location_id=400\nWHERE location_id=404\nUPDATE departmens\nSE' at line 4")
[SQL: UPDATE departmens
SET location_id=400
WHERE location_id=403
UPDATE departmens
SET location_id=400
WHERE location_id=404
UPDATE departmens
SET location_id=401
WHERE location_id=405
UPDATE departmens
SET location_id=401
WHERE location_id=406
UPDATE departmens
SET location_id=400
WHERE location_id=407
UPDATE departmens
SET location_id=401
WHERE location_id=408
UPDATE departmens
SET location_id=402
WHERE location_id=409]
```

```
SET location_id=400
WHERE location_id=403
UPDATE departmens
SET location_id=400
WHERE location_id=404
UPDATE departmens
SET location_id=401
WHERE location_id=405
UPDATE departmens
SET location_id=401
WHERE location_id=406
UPDATE departmens
SET location_id=400
WHERE location_id=407
UPDATE departmens
SET location_id=401
WHERE location_id=408
UPDATE departmens
SET location_id=402
WHERE location_id=409
```

```

WHERE location_id=407
UPDATE departmens
SET location_id=401
WHERE location_id=408
UPDATE departmens
SET location_id=402
WHERE location_id=409]
(Background on this error at: https://sqlalche.me/e/14/f405)

```

In [19]:

```

%%sql
SELECT * FROM departmens;

```

```

* mysql://root:***@localhost/luck
10 rows affected.

```

Out[19]:

department_id	department_name	manager_id	location_id
300	manager	None	400
301	manager	None	401
302	manager	None	402
303	accountant	100	400
304	marketing	100	400
305	accountant	101	401
306	marketing	101	401
307	IT	100	400
308	IT	101	401
309	IT	102	402

In [20]:

```

%%sql
INSERT INTO jobhistory VALUES ('2000-01-1',100,200,300);
INSERT INTO jobhistory VALUES ('2000-05-1',101,201,301);
INSERT INTO jobhistory VALUES ('2000-05-2',102,202,302);
INSERT INTO jobhistory VALUES ('2003-05-2',103,203,303);
INSERT INTO jobhistory VALUES ('2004-04-2',104,204,304);
INSERT INTO jobhistory VALUES ('2005-03-5',105,205,305);
INSERT INTO jobhistory VALUES ('2003-01-6',106,206,306);
INSERT INTO jobhistory VALUES ('2004-04-5',107,207,307);
INSERT INTO jobhistory VALUES ('2002-04-5',108,208,308);
INSERT INTO jobhistory VALUES ('2004-04-4',109,209,309);

```

```

* mysql://root:***@localhost/luck
(MySQLdb.IntegrityError) (1062, "Duplicate entry '2000-01-01' for key 'jobhistory.PRIMARY'")
[SQL: INSERT INTO jobhistory VALUES ('2000-01-1',100,200,300);]
(Background on this error at: https://sqlalche.me/e/14/gkpj)

```

In [21]:

```

%%sql
SELECT * FROM jobhistory;

```

```

* mysql://root:***@localhost/luck
10 rows affected.

```

Out[21]:

start_date	employee_id	job_id	department_id
2000-01-01	100	200	300
2000-05-01	101	201	301

2000-05-02	102	202	302
2002-04-05	108	208	308
2003-01-06	106	206	306
2003-05-02	103	203	303
2004-04-02	104	204	304
2004-04-04	109	209	309
2004-04-05	107	207	307
2005-03-05	105	205	305

In [22]:

```
%%sql
INSERT INTO jobs VALUES (200, 'manager', 100000, 100200);
INSERT INTO jobs VALUES (201, 'manager', 100000, 100200);
INSERT INTO jobs VALUES (202, 'manager', 100000, 100200);
INSERT INTO jobs VALUES (203, 'accountant', 75000, 75000);
INSERT INTO jobs VALUES (204, 'marketing', 70000, 75000);
INSERT INTO jobs VALUES (205, 'accountant', 75000, 75000);
INSERT INTO jobs VALUES (206, 'marketing', 70000, 75000);
INSERT INTO jobs VALUES (207, 'IT', 60000, 70000);
INSERT INTO jobs VALUES (208, 'IT', 80000, 80000);
INSERT INTO jobs VALUES (209, 'IT', 90000, 90000);

* mysql://root:***@localhost/luck
(MySQLdb.IntegrityError) (1062, "Duplicate entry '200' for key 'jobs.PRIMARY'")
[SQL: INSERT INTO jobs VALUES(200,'manager',100000,100200);]
(Background on this error at: https://sqlalche.me/e/14/gkpj)
```

In [23]:

```
%%sql
SELECT * FROM jobs;

* mysql://root:***@localhost/luck
10 rows affected.
```

Out[23]:

job_id	job_title	min_salary	max_salary
200	manager	100000	100200
201	manager	100000	100200
202	manager	100000	100200
203	accountant	75000	75000
204	marketing	70000	75000
205	accountant	75000	75000
206	marketing	70000	75000
207	IT	60000	70000
208	IT	80000	80000
209	IT	90000	90000

In [24]:

```
%%sql
INSERT INTO countries VALUES (90, 'TURKEY', 800);
INSERT INTO countries VALUES (112, 'USA', 900);
INSERT INTO countries VALUES (115, 'ITALY', 600);

* mysql://root:***@localhost/luck
```

```
(MySQLdb.IntegrityError) (1062, "Duplicate entry '90' for key 'countries.PRIMARY'")
[SQL: INSERT INTO countries VALUES (90,'TURKEY',800);]
(Background on this error at: https://sqlalche.me/e/14/gkpj)
```

In [25]:

```
%%sql
SELECT * FROM countries;
```

```
* mysql://root:***@localhost/luck
3 rows affected.
```

Out[25]:

country_id	country_name	region_id
90	TURKEY	800
112	USA	900
115	ITALY	600

In [26]:

```
%%sql
INSERT INTO regions VALUES (800,'MARMARA');
INSERT INTO regions VALUES (900,'NORTHEAST');
INSERT INTO regions VALUES (600,'NORTH');
```

```
* mysql://root:***@localhost/luck
(MySQLdb.IntegrityError) (1062, "Duplicate entry '800' for key 'regions.PRIMARY'")
[SQL: INSERT INTO regions VALUES (800,'MARMARA');]
(Background on this error at: https://sqlalche.me/e/14/gkpj)
```

In [27]:

```
%%sql
SELECT * FROM regions;
```

```
* mysql://root:***@localhost/luck
3 rows affected.
```

Out[27]:

region_id	region_name
600	NORTH
800	MARMARA
900	NORTHEAST

In [28]:

```
%%sql
INSERT INTO locations VALUES (400,'ARKA',3696,'ISTANBUL',90);
INSERT INTO locations VALUES (401,'STREET',4589,'NEW YORK',112);
INSERT INTO locations VALUES (402,'STRADA',1569,'MILANO',115);
```

```
* mysql://root:***@localhost/luck
(MySQLdb.IntegrityError) (1062, "Duplicate entry '400' for key 'locations.PRIMARY'")
[SQL: INSERT INTO locations VALUES (400,'ARKA',3696,'ISTANBUL',90);]
(Background on this error at: https://sqlalche.me/e/14/gkpj)
```

In [29]:

```
%%sql
SELECT * FROM locations;
```

```
* mysql://root:***@localhost/luck
3 rows affected.
```

Out[29]:

location_id	street_address	postal_code	city	country_id
400	ARKA	3696	ISTANBUL	90
401	STREET	4589	NEW YORK	112
402	STRADA	1569	MILANO	115



query street\_address and location\_id in location\_id descending order and just 2 row

```
In [30]: %%sql
SELECT location_id,street_address FROM locations ORDER BY location_id DESC LIMIT 2;

* mysql://root:***@localhost/luck
2 rows affected.
```

```
Out[30]: location_id  street_address

         402         STRADA

         401         STREET
```

query employees who hired after 2003

```
In [31]: %%sql
SELECT * FROM employees WHERE hire_date LIKE '2003%' ;

* mysql://root:***@localhost/luck
2 rows affected.
```

```
Out[31]: employee_id  first_name  last_name      email  phone_number  hire_date  job_id  salary  commission_pct  manager_id

         103      stephen      baby  c@gmail.com      530278  2003-05-02    203   75000           8.3          100

         106    gabrielle      carlos  e@gmail.com      556897  2003-01-06    206   50000           8.3          100
```

Let's do more conditional queries

```
In [32]: %%sql
SELECT * FROM employees WHERE manager_id IS null ;

* mysql://root:***@localhost/luck
3 rows affected.
```

```
Out[32]: employee_id  first_name  last_name      email  phone_number  hire_date  job_id  salary  commission_pct  manager_id

         100        jack      wolf  w@gmail.com      530262  2000-01-01    200  100000          16.6          100

         101        james      demon  d@gmail.com      534513  2000-05-01    201  100000          16.6          100

         102        kylan      jack  m@gmail.com      530268  2000-05-02    202  100000          16.6          100
```

```
In [33]: %%sql
SELECT * FROM employees WHERE commission_pct LIKE 8.3;

* mysql://root:***@localhost/luck
7 rows affected.
```

```
Out[33]: employee_id  first_name  last_name      email  phone_number  hire_date  job_id  salary  commission_pct  manager_id

         103      stephen      baby  c@gmail.com      530278  2003-05-02    203   75000           8.3          100

         104      anthony      long  l@gmail.com      530957  2004-04-02    204   70000           8.3          100

         105      selen      jayn  j@gmail.com      534786  2005-03-05    205   80000           8.3          100
```

106	gabrielle	carlos	e@gmail.com	556897	2003-01-06	206	50000	8.3
107	helene	okay	o@gmail.com	530789	2004-04-05	207	60000	8.3
108	blue	good	g@gmail.com	534569	2002-04-05	208	80000	8.3
109	bob	look	l@gmail.com	538976	2004-04-04	209	90000	8.3

In [34]:

```
%%sql
SELECT * FROM jobhistory ORDER BY start_date DESC;
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[34]:

start_date	employee_id	job_id	department_id
2005-03-05	105	205	305
2004-04-05	107	207	307
2004-04-04	109	209	309
2004-04-02	104	204	304
2003-05-02	103	203	303
2003-01-06	106	206	306
2002-04-05	108	208	308
2000-05-02	102	202	302
2000-05-01	101	201	301
2000-01-01	100	200	300

In [35]:

```
%%sql
SELECT first_name AS forename, last_name AS surname FROM employees;
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[35]:

forename	surname
jack	wolf
james	demon
kylian	jack
stephen	baby
anthony	long
selena	jayn
gabrielle	carlos
helene	okay
blue	good
bob	look

In [36]: `%%sql  
SELECT first_name,salary  
from employees  
order by salary desc LIMIT 5;`

```
* mysql://root:***@localhost/luck  
5 rows affected.
```

Out[36]:

first_name	salary
jack	100000
james	100000
kylia	100000
bob	90000
selen	80000

query for department names without duplicates and then count how many employees are in each department

In [37]: `%%sql  
SELECT DISTINCT department_name, COUNT(department_name) AS depooro  
FROM departments  
group by department_name;`

```
* mysql://root:***@localhost/luck  
4 rows affected.
```

Out[37]:

department_name	depooro
manager	3
accountant	2
marketing	2
IT	3

In [38]: `%%sql  
SELECT DISTINCT department_name, COUNT(department_name) AS depooro  
FROM departments  
group by department_name  
HAVING COUNT(department_name)<3;`

```
* mysql://root:***@localhost/luck  
2 rows affected.
```

Out[38]:

department_name	depooro
accountant	2
marketing	2

we use "having" cause we cannot use "where" with aggregate functions

query average max salaries under 100000 and all average min salaries

In [39]: `%%sql  
SELECT AVG(CASE WHEN max_salary < 100000 THEN max_salary END ) as avg_max_salary,  
AVG(min_salary) as avg_min_salary  
FROM jobs;`

```
* mysql://root:***@localhost/luck  
1 rows affected.
```

Out[39]: **avg\_max\_salary** **avg\_min\_salary**

77142.8571 82000.0000

!!subqueries!!

In [40]:

```
%%sql
SELECT employees.first_name,employees.last_name
from employees
where employees.hire_date IN (
    select jobhistory.start_date
    from jobhistory
    where jobhistory.start_date>'2003-01-1'
);
```

\* mysql://root:\*\*\*@localhost/luck  
6 rows affected.

Out[40]:

first_name	last_name
stephen	baby
anthony	long
selena	jayn
gabrielle	carlos
helene	okay
bob	look

In [41]:

```
%%sql
SELECT department_name
FROM deptmens
WHERE deptmens.department_id IN(
    SELECT jobhistory.department_id
    FROM jobhistory
    WHERE start_date>'2003-01-1'
);
```

\* mysql://root:\*\*\*@localhost/luck  
6 rows affected.

Out[41]:

department_name
accountant
marketing
accountant
marketing
IT
IT

In [42]:

```
%%sql
SELECT max_salary
FROM jobs
where max_salary>(
    SELECT AVG(max_salary)
    FROM jobs
);
```

```
* mysql://root:***@localhost/luck
4 rows affected.
```

Out[42]: **max\_salary**

```
100200
100200
100200
90000
```

In [43]:

```
%%sql
SELECT COUNT(*) AS employee_count
FROM employees
WHERE LEFT(first_name, 1) < 'H';
```

```
* mysql://root:***@localhost/luck
1 rows affected.
```

Out[43]: **employee\_count**

```
4
```

!!joins!!

In [44]:

```
%%sql
SELECT department_name
FROM departments
JOIN jobhistory
ON departments.department_id=jobhistory.department_id
WHERE jobhistory.start_date>'2003-01-1';
```

```
* mysql://root:***@localhost/luck
6 rows affected.
```

Out[44]: **department\_name**

```
marketing
accountant
marketing
IT
IT
accountant
```

In [45]:

```
%%sql
SELECT *
FROM departments
JOIN locations
ON departments.location_id=locations.location_id
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[45]: **department\_id** **department\_name** **manager\_id** **location\_id** **location\_id\_1** **street\_address** **postal\_code** **city** **cou**

```
300      manager      None      400      400      ARKA      3696  ISTANBUL
301      manager      None      401      401      STREET    4589   NEW YORK
```

302	manager	None	402	402	STRADA	1569	MILANO
303	accountant	100	400	400	ARKA	3696	ISTANBUL
304	marketing	100	400	400	ARKA	3696	ISTANBUL
305	accountant	101	401	401	STREET	4589	NEW YORK
306	marketing	101	401	401	STREET	4589	NEW YORK
307	IT	100	400	400	ARKA	3696	ISTANBUL
308	IT	101	401	401	STREET	4589	NEW YORK
309	IT	102	402	402	STRADA	1569	MILANO

In [46]:

```
%%sql
SELECT department_id, country_id, department_name
FROM deptmens AS d
INNER JOIN locations AS l
ON d.location_id=l.location_id
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[46]:

department_id	country_id	department_name
300	90	manager
301	112	manager
302	115	manager
303	90	accountant
304	90	marketing
305	112	accountant
306	112	marketing
307	90	IT
308	112	IT
309	115	IT

instead of using RIGHT OR LEFT JOIN u can use these

In [47]:

```
%%sql
SELECT locations.location_id, deptmens.*
FROM locations
INNER JOIN deptmens ON locations.location_id = deptmens.location_id;
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[47]:

location_id	department_id	department_name	manager_id	location_id_1
400	300	manager	None	400
401	301	manager	None	401
402	302	manager	None	402
400	303	accountant	100	400

400	304	marketing	100	400
401	305	accountant	101	401
401	306	marketing	101	401
400	307	IT	100	400
401	308	IT	101	401
402	309	IT	102	402

In [48]:

```
%%sql
SELECT locations.*,departments.department_name
FROM locations
INNER JOIN departments ON locations.location_id=departments.location_id;
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[48]:

location_id	street_address	postal_code	city	country_id	department_name
400	ARKA	3696	ISTANBUL	90	manager
401	STREET	4589	NEW YORK	112	manager
402	STRADA	1569	MILANO	115	manager
400	ARKA	3696	ISTANBUL	90	accountant
400	ARKA	3696	ISTANBUL	90	marketing
401	STREET	4589	NEW YORK	112	accountant
401	STREET	4589	NEW YORK	112	marketing
400	ARKA	3696	ISTANBUL	90	IT
401	STREET	4589	NEW YORK	112	IT
402	STRADA	1569	MILANO	115	IT

In [51]:

```
%%sql
SELECT commission_pct, max_salary
FROM employees
CROSS JOIN jobs;
```

```
* mysql://root:***@localhost/luck
100 rows affected.
```

Out[51]:

commission_pct	max_salary
8.3	100200
8.3	100200
8.3	100200
8.3	100200
8.3	100200
8.3	100200
8.3	100200
16.6	100200
16.6	100200

[illegible]



16.6	75000
16.6	75000
16.6	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
16.6	75000
16.6	75000
16.6	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
8.3	75000
16.6	75000
16.6	75000
16.6	75000
8.3	70000
8.3	70000
8.3	70000
8.3	70000
8.3	70000
8.3	70000
8.3	70000
8.3	70000
16.6	70000
16.6	70000
16.6	70000
8.3	80000
8.3	80000
8.3	80000
8.3	80000

8.3	80000
8.3	80000
8.3	80000
16.6	80000
16.6	80000
16.6	80000
8.3	90000
8.3	90000
8.3	90000
8.3	90000
8.3	90000
8.3	90000
16.6	90000
16.6	90000
16.6	90000

In [52]:

```
%%sql
CREATE VIEW employee_public AS
SELECT employee_id,first_name,last_name,email,hire_date,job_id,commission_pct,manager_id,department_id
FROM employees;
```

\* mysql://root:\*\*\*@localhost/luck  
(MySQLdb.OperationalError) (1050, "Table 'employee\_public' already exists")  
[SQL: CREATE VIEW employee\_public AS  
SELECT employee\_id,first\_name,last\_name,email,hire\_date,job\_id,commission\_pct,manager\_id,department\_id  
FROM employees;]  
(Background on this error at: <https://sqlalche.me/e/14/e3q8>)

In [53]:

```
%%sql
SELECT*
FROM employee_public;
```

\* mysql://root:\*\*\*@localhost/luck  
10 rows affected.

Out[53]:

employee_id	first_name	last_name	email	hire_date	job_id	commission_pct	manager_id	department_id
100	jack	wolf	w@gmail.com	2000-01-01	200	16.6	None	300
101	james	demon	d@gmail.com	2000-05-01	201	16.6	None	301
102	kylian	jack	m@gmail.com	2000-05-02	202	16.6	None	302
103	stephen	baby	c@gmail.com	2003-05-02	203	8.3	100	303
104	anthony	long	l@gmail.com	2004-04-02	204	8.3	100	304

105	selena	jayn	j@gmail.com	2005-03-05	205	8.3	101	305
106	gabrielle	carlos	e@gmail.com	2003-01-06	206	8.3	101	306
107	helene	okay	o@gmail.com	2004-04-05	207	8.3	100	307
108	blue	good	g@gmail.com	2002-04-05	208	8.3	101	308
109	bob	look	l@gmail.com	2004-04-04	209	8.3	102	309

In [54]:

```
%%sql
SELECT CONCAT(employee_id, 'E'), job_id, manager_id, department_id FROM employees;
```

```
* mysql://root:***@localhost/luck
10 rows affected.
```

Out[54]:

```
CONCAT(employee_id, 'E')  job_id  manager_id  department_id

100E      200         None          300
101E      201         None          301
102E      202         None          302
103E      203          100          303
104E      204          100          304
105E      205          101          305
106E      206          101          306
107E      207          100          307
108E      208          101          308
109E      209          102          309
```