

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>) (<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) (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) (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) (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) (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) (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) (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',200,100
INSERT INTO employees VALUES (101,'james','demon','d@gmail.com',534513,'2000-05-1',201,1
INSERT INTO employees VALUES (102,'kylian','jack','m@gmail.com',530268,'2000-05-2',202,1
INSERT INTO employees VALUES (103,'stephen','baby','c@gmail.com',530278,'2003-05-2',203,
INSERT INTO employees VALUES (104,'anthony','long','l@gmail.com',530957,'2004-04-2',204,
INSERT INTO employees VALUES (105,'selena','jayn','j@gmail.com',534786,'2005-03-5',205,8
INSERT INTO employees VALUES (106,'gabrielle','carlos','e@gmail.com',556897,'2003-01-6',
INSERT INTO employees VALUES (107,'helene','okay','o@gmail.com',530789,'2004-04-5',207,6
INSERT INTO employees VALUES (108,'blue','good','g@gmail.com',534569,'2002-04-5',208,800
INSERT INTO employees VALUES (109,'bob','look','l@gmail.com',538976,'2004-04-4',209,9000
```

```
* 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',53026
2,'2000-01-1',200,100000,16.6,NULL,300);]
(Background on this error at: https://sqlalche.me/e/14/gkpj) (https://sqla
lche.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
100	jack	wolf	w@gmail.com	530262	2000-01-01	200	100000
101	james	demon	d@gmail.com	534513	2000-05-01	201	100000
102	kylian	jack	m@gmail.com	530268	2000-05-02	202	100000
103	stephen	baby	c@gmail.com	530278	2003-05-02	203	75000
104	anthony	long	l@gmail.com	530957	2004-04-02	204	70000
105	selena	jayn	j@gmail.com	534786	2005-03-05	205	80000
106	gabrielle	carlos	e@gmail.com	556897	2003-01-06	206	50000
107	helene	okay	o@gmail.com	530789	2004-04-05	207	60000
108	blue	good	g@gmail.com	534569	2002-04-05	208	80000
109	bob	look	l@gmail.com	538976	2004-04-04	209	90000

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 'departmen
s.PRIMARY'")
[SQL: INSERT INTO departmens VALUES(300, 'manager', NULL, 400);]
(Background on this error at: https://sqlalche.me/e/14/gkpj) (https://sqlalche.me/e/14/gkpj)
```

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; c
heck the manual that corresponds to your MySQL server version for the righ
t syntax to use near 'UPDATE departmens\nSET location_id=400\nWHERE locati
on_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]
(Background on this error at: https://sqlalche.me/e/14/f405) (https://sqlalche.me/e/14/f405)
```


In [19]:

```
%%sql
SELECT * FROM deptmens;
```

```
* 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 'job
history.PRIMARY'")
[SQL: INSERT INTO jobhistory VALUES('2000-01-1',100,200,300);]
(Background on this error at: https://sqlalche.me/e/14/gkpj) (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) (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) (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) (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) (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
103	stephen	baby	c@gmail.com	530278	2003-05-02	203	75000
106	gabriele	carlos	e@gmail.com	556897	2003-01-06	206	50000



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
100	jack	wolf	w@gmail.com	530262	2000-01-01	200	100000
101	james	demon	d@gmail.com	534513	2000-05-01	201	100000
102	kylian	jack	m@gmail.com	530268	2000-05-02	202	100000

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
103	stephen	baby	c@gmail.com	530278	2003-05-02	203	75000
104	anthony	long	l@gmail.com	530957	2004-04-02	204	70000
105	selena	jayn	j@gmail.com	534786	2005-03-05	205	80000
106	gabrielle	carlos	e@gmail.com	556897	2003-01-06	206	50000
107	helene	okay	o@gmail.com	530789	2004-04-05	207	60000
108	blue	good	g@gmail.com	534569	2002-04-05	208	80000
109	bob	look	l@gmail.com	538976	2004-04-04	209	90000

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
kylian	100000
bob	90000
selena	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 deptmens
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 deptmens
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 deptnames
WHERE deptnames.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 deptmens
JOIN jobhistory
ON deptmens.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 deptmens
JOIN locations
ON deptmens.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	pos
300	manager	None	400	400	ARKA	
301	manager	None	401	401	STREET	
302	manager	None	402	402	STRADA	
303	accountant	100	400	400	ARKA	
304	marketing	100	400	400	ARKA	
305	accountant	101	401	401	STREET	
306	marketing	101	401	401	STREET	
307	IT	100	400	400	ARKA	
308	IT	101	401	401	STREET	
309	IT	102	402	402	STRADA	

In [46]:

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

In [52]:

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

```
* mysql://root:***@localhost/luck
(MySQLdb.OperationalError) (1050, "Table 'employee_public' already exist
s")
[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) (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	mana
100	jack	wolf	w@gmail.com	2000-01-01	200	16.6	
101	james	demon	d@gmail.com	2000-05-01	201	16.6	
102	kylian	jack	m@gmail.com	2000-05-02	202	16.6	
103	stephen	baby	c@gmail.com	2003-05-02	203	8.3	
104	anthony	long	l@gmail.com	2004-04-02	204	8.3	
105	selena	jayn	j@gmail.com	2005-03-05	205	8.3	
106	gabrielle	carlos	e@gmail.com	2003-01-06	206	8.3	
107	helene	okay	o@gmail.com	2004-04-05	207	8.3	
108	blue	good	g@gmail.com	2002-04-05	208	8.3	
109	bob	look	l@gmail.com	2004-04-04	209	8.3	



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