

SQL Cheat Sheet

```
In [1]: # !pip install ipython-sql
# !pip install psycopg2 # PostgreSQL
# !pip install mysql # MySQL
```

```
In [2]: SQL_CONN = 'postgresql://wing@localhost/wing'

%config SqlMagic.displaycon=False
%load_ext sql
%sql {SQL_CONN}
```

Tables & Types

```
In [3]: %sql CREATE TYPE t_grade AS ENUM('A', 'B', 'C', 'D');
```

(psycopg2.errors.DuplicateObject) type "t_grade" already exists

```
[SQL: CREATE TYPE t_grade AS ENUM('A', 'B', 'C', 'D');]
(Background on this error at: https://sqlalche.me/e/14/f405)
```

```
In [4]: %%sql
CREATE TABLE advisors (
    id SERIAL PRIMARY KEY,
    name VARCHAR(255) NOT NULL
);

CREATE TABLE students (
    id SERIAL PRIMARY KEY,
    name VARCHAR(255) NOT NULL,
    age INT NOT NULL,
    height DECIMAL(8,2),
    grade t_grade,
    advisorId INT NOT NULL,
    created TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY(advisorId) REFERENCES advisors(id)
);
```

Done.

Done.

```
Out[4]: []
```

```
In [5]: %%sql
ALTER TABLE advisors
ADD telephone VARCHAR(255);

ALTER TABLE advisors
DROP COLUMN telephone;
```

Done.

Done.

```
Out[5]: []
```

```
In [6]: %%sql
DROP TABLE students;
DROP TABLE advisors;
```

Done.
Done.

```
Out[6]: []
```

Views

```
In [7]: %%sql
CREATE VIEW cust_names AS
SELECT firstName, lastName FROM customers;

SELECT * from cust_names
```

Done.
4 rows affected.

```
Out[7]: firstname lastname
```

jane	doe
john	doe
jack	daniels
jane	austen

```
In [8]: %%sql
DROP VIEW cust_names
```

Done.

```
Out[8]: []
```

Records

```
In [9]: %%sql
INSERT INTO customers (firstName, lastName, age) VALUES
('jack', 'daniels', 99);
```

1 rows affected.

```
Out[9]: []
```

```
In [10]: %%sql
UPDATE customers SET
email='jack@daniels.net',
state='CA'
WHERE lastname='daniels' AND age=99;
```

1 rows affected.

```
Out[10]: []
```

```
In [11]: %%sql
DELETE FROM customers
WHERE firstName='jack' AND age=99;
```

1 rows affected.

Out[11]: []

SELECT

SELECT ... (AS ...) FROM ... (AS ...) WHERE ... GROUP BY ... HAVING ... ORDER BY ...

```
In [12]: %%sql
SELECT * from customers ORDER BY age DESC;
```

4 rows affected.

Out[12]:

id	firstname	lastname	age	email	state
4	jack	daniels	22	None	WA
5	jane	austen	22	None	None
2	john	doe	19	john@doe.com	OR
1	jane	doe	18	jane@doe.com	OR

```
In [13]: %%sql
SELECT CONCAT(firstName, ' ', lastName) AS name, age + 1 AS age_plus_1 from cus
```

4 rows affected.

Out[13]:

name	age_plus_1
jane doe	19
john doe	20
jack daniels	23
jane austen	23

```
In [14]: %%sql
SELECT MIN(age) from customers; -- also: MAX()
```

1 rows affected.

Out[14]:

min
18

```
In [15]: %%sql
SELECT AVG(age) from customers; -- also: SUM()
```

1 rows affected.

Out[15]:

avg
20.2500000000000000

```
In [16]: %%sql
SELECT COUNT(*) from customers where age>20;
```

1 rows affected.

Out[16]: **count**

2

GROUP BY & HAVING

In [17]: **%sql** SELECT lastName, COUNT(lastName) FROM customers GROUP BY lastName;

3 rows affected.

Out[17]: **lastname count**

doe 2

daniels 1

austen 1

In [18]: **%sql** SELECT lastName, COUNT(lastName) FROM customers GROUP BY lastName HAVING C

1 rows affected.

Out[18]: **lastname count**

doe 2

WHERE

In [19]: **%sql** SELECT * from customers WHERE firstname='john' AND lastname='doe';

1 rows affected.

Out[19]: **id firstname lastname age email state**

2 john doe 19 john@doe.com OR

In [20]: **%sql** SELECT * from customers WHERE age>=20;

2 rows affected.

Out[20]: **id firstname lastname age email state**

4 jack daniels 22 None WA

5 jane austen 22 None None

In [21]: **%sql** SELECT * from customers WHERE age BETWEEN 17 AND 19

2 rows affected.

Out[21]: **id firstname lastname age email state**

1 jane doe 18 jane@doe.com OR

2 john doe 19 john@doe.com OR

In [22]: **%sql** SELECT * from customers WHERE firstName LIKE 'jan%';

2 rows affected.

Out[22]:

id	firstname	lastname	age	email	state
----	-----------	----------	-----	-------	-------

1	jane	doe	18	jane@doe.com	OR
5	jane	austen	22	None	None

In [23]: `%sql SELECT * from customers WHERE firstName NOT LIKE 'ja__';`

1 rows affected.

Out[23]:

id	firstname	lastname	age	email	state
----	-----------	----------	-----	-------	-------

2	john	doe	19	john@doe.com	OR
---	------	-----	----	--------------	----

In [24]: `%sql SELECT * from customers WHERE lastName IN ('austen', 'daniels');`

2 rows affected.

Out[24]:

id	firstname	lastname	age	email	state
----	-----------	----------	-----	-------	-------

4	jack	daniels	22	None	WA
5	jane	austen	22	None	None

In [25]: `%sql SELECT * from customers WHERE email IS NULL;`
`# "= NULL" wouldn't work!`

2 rows affected.

Out[25]:

id	firstname	lastname	age	email	state
----	-----------	----------	-----	-------	-------

4	jack	daniels	22	None	WA
5	jane	austen	22	None	None

JOIN

In [26]: `%sql SELECT * FROM customers`

4 rows affected.

Out[26]:

id	firstname	lastname	age	email	state
----	-----------	----------	-----	-------	-------

1	jane	doe	18	jane@doe.com	OR
2	john	doe	19	john@doe.com	OR
4	jack	daniels	22	None	WA
5	jane	austen	22	None	None

In [27]: `%sql SELECT * FROM products`

3 rows affected.

Out[27]:

id	name	price
----	------	-------

1	xbox	299.95
2	ps5	399.00
3	ps6	None

In [28]: `%%sql SELECT * FROM orders`

3 rows affected.

Out[28]:

	id	custid	prodid	qty	date
1	1	2	1	2020-01-01 00:00:00	
2	2	1	1	2020-01-02 00:00:00	
3	4	1	2	2020-02-03 00:00:00	

In [29]: `%%sql
SELECT customers.firstName, customers.lastName, products.name AS "Product Name"
FROM customers
JOIN orders ON customers.id=orders.custId
JOIN products ON orders.prodId=products.id;`

3 rows affected.

Out[29]:

	firstname	lastname	Product Name	qty
1	jane	doe	ps5	1
2	john	doe	xbox	1
3	jack	daniels	xbox	2

In [30]: `%%sql
SELECT c.firstName, c.lastName, o.id
FROM customers AS c
JOIN orders AS o ON c.id=o.custId;`

3 rows affected.

Out[30]:

	firstname	lastname	id
1	jane	doe	1
2	john	doe	2
3	jack	daniels	3

In [31]: `%%sql
SELECT customers.id, customers.state, states.name
FROM customers
JOIN states ON customers.state=states.state;`

2 rows affected.

Out[31]:

	id	state	name
1	2	OR	Oregon
2	1	OR	Oregon

In [32]: `%%sql
SELECT customers.id, customers.state, states.name
FROM customers
LEFT JOIN states ON customers.state=states.state;`

4 rows affected.

Out[32]:

id	state	name
2	OR	Oregon
1	OR	Oregon
5	None	None
4	WA	None

In [33]:

```
%%sql
SELECT customers.id, customers.state, states.name
FROM customers
RIGHT JOIN states ON customers.state=states.state;
```

3 rows affected.

Out[33]:

id	state	name
2	OR	Oregon
1	OR	Oregon
None	None	California

In []: