

# 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
jane	austen
jack	daniels

```
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
UPDATE customers SET
```

```
age=age-1
WHERE lastname='daniels' AND age=99;
```

1 rows affected.

Out[11]: []

```
In [12]: %%sql
DELETE FROM customers
WHERE firstName='jack' AND age=98;
```

1 rows affected.

Out[12]: []

## PROCEDURE

```
In [13]: %%sql
CREATE PROCEDURE insert_delete(first_name VARCHAR, last_name VARCHAR, age INT)
BEGIN ATOMIC
INSERT INTO customers (firstName, lastName, age) VALUES
(first_name, last_name, age);
DELETE FROM customers
WHERE firstName=first_name and lastName=last_name;
END;
```

Done.

Out[13]: []

```
In [14]: %%sql
CALL insert_delete('joe', 'shmoe', 2);
DROP PROCEDURE insert_delete;
```

Done.

Done.

Out[14]: []

## SELECT

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

```
In [15]: %%sql
SELECT * from customers ORDER BY age DESC;
```

4 rows affected.

Out[15]:

	id	firstname	lastname	age	email	state
	5	jane	austen	22	None	None
	4	jack	daniels	20	None	WA
	2	john	doe	19	john@doe.com	OR
	1	jane	doe	18	jane@doe.com	OR

```
In [16]: %%sql
SELECT CONCAT(firstName, ' ', lastName) AS name, age + 1 AS age_plus_1 from cus
```

4 rows affected.

Out[16]:

name	age_plus_1
jane doe	19
john doe	20
jane austen	23
jack daniels	21

In [17]:

```
%%sql
SELECT MIN(age) from customers; -- also: MAX()
```

1 rows affected.

Out[17]:

min
18

In [18]:

```
%%sql
SELECT AVG(age) from customers; -- also: SUM()
```

1 rows affected.

Out[18]:

avg
19.750000000000000

In [19]:

```
%%sql
SELECT COUNT(*) from customers where age>20;
```

1 rows affected.

Out[19]:

count
1

## GROUP BY & HAVING

In [20]:

```
%%sql SELECT lastName, COUNT(lastName) FROM customers GROUP BY lastName;
```

3 rows affected.

Out[20]:

lastname	count
daniels	1
austen	1
doe	2

In [21]:

```
%%sql SELECT lastName, COUNT(lastName) FROM customers GROUP BY lastName HAVING C
```

1 rows affected.

Out[21]:

lastname	count
doe	2

## WHERE

In [22]: `%sql SELECT * from customers WHERE firstname='john' AND lastname='doe';`

1 rows affected.

Out[22]:

id	firstname	lastname	age	email	state
2	john	doe	19	john@doe.com	OR

In [23]: `%sql SELECT * from customers WHERE age>=20;`

2 rows affected.

Out[23]:

id	firstname	lastname	age	email	state
5	jane	austen	22	None	None
4	jack	daniels	20	None	WA

In [24]: `%sql SELECT * from customers WHERE age BETWEEN 17 AND 19`

2 rows affected.

Out[24]:

id	firstname	lastname	age	email	state
1	jane	doe	18	jane@doe.com	OR
2	john	doe	19	john@doe.com	OR

In [25]: `%sql SELECT * from customers WHERE firstName LIKE 'jan%';`

2 rows affected.

Out[25]:

id	firstname	lastname	age	email	state
1	jane	doe	18	jane@doe.com	OR
5	jane	austen	22	None	None

In [26]: `%sql SELECT * from customers WHERE firstName NOT LIKE 'ja__';`

1 rows affected.

Out[26]:

id	firstname	lastname	age	email	state
2	john	doe	19	john@doe.com	OR

In [27]: `%sql SELECT * from customers WHERE lastName IN ('austen', 'daniels');`

2 rows affected.

Out[27]:

id	firstname	lastname	age	email	state
5	jane	austen	22	None	None
4	jack	daniels	20	None	WA

In [28]: `%sql SELECT * from customers WHERE email IS NULL;`

`# "= NULL" wouldn't work!`

2 rows affected.

Out[28]:

id	firstname	lastname	age	email	state
5	jane	austen	22	None	None
4	jack	daniels	20	None	WA

## JOIN

In [29]: `%sql SELECT * FROM customers`

4 rows affected.

Out[29]:

id	firstname	lastname	age	email	state
1	jane	doe	18	jane@doe.com	OR
2	john	doe	19	john@doe.com	OR
5	jane	austen	22	None	None
4	jack	daniels	20	None	WA

In [30]: `%sql SELECT * FROM products`

3 rows affected.

Out[30]:

id	name	price
1	xbox	299.95
2	ps5	399.00
3	ps6	None

In [31]: `%sql SELECT * FROM orders`

3 rows affected.

Out[31]:

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 [32]: `%%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[32]:

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

In [33]: `%%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[33]:

firstname	lastname	id
-----------	----------	----

jane	doe	1
------	-----	---

john	doe	2
------	-----	---

jack	daniels	3
------	---------	---

In [34]:

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

2 rows affected.

Out[34]:

id	state	name
----	-------	------

2	OR	Oregon
---	----	--------

1	OR	Oregon
---	----	--------

In [35]:

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

4 rows affected.

Out[35]:

id	state	name
----	-------	------

2	OR	Oregon
---	----	--------

1	OR	Oregon
---	----	--------

5	None	None
---	------	------

4	WA	None
---	----	------

In [36]:

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

3 rows affected.

Out[36]:

id	state	name
----	-------	------

2	OR	Oregon
---	----	--------

1	OR	Oregon
---	----	--------

None	None	California
------	------	------------

In [ ]: