

**/\* 1. BASIC DATA EXPLORATION \*/**

```
SELECT * FROM customers LIMIT 10;
SELECT * FROM orders LIMIT 10;
```

	customer_id text	customer_unique_id text	customer_zip_code_prefix bigint	customer_city text	customer_state text
1	06b8999e2fba1a1fbc88172c00ba8bc7	861eff4711a542e4b93843c6dd7feb...	14409	franca	SP
2	18955e83d337fd6b2def6b18a428ac77	290c77bc529b7ac935b93aa66c333...	9790	sao bernardo do campo	SP
3	4e7b3e00288586ebd08712fdd0374a...	060e732b5b29e8181a18229c7b0b2...	1151	sao paulo	SP
4	b2b6027bc5c5109e529d4dc6358b12...	259dac757896d24d7702b9acbbff3f...	8775	mogi das cruzeiras	SP
5	4f2d8ab171c80ec8364f7c12e35b23ad	345ecd01c38d18a9036ed96c73b8d...	13056	campinas	SP
6	879864dab9bc3047522c92c82e1212...	4c93744516667ad3b8f1fb645a311...	89254	jaragua do sul	SC
7	fd826e7cf63160e536e0908c76c3f441	addec96d2e059c80c30fe6871d30d...	4534	sao paulo	SP
8	5e274e7a0c3809e14aba7ad5aae0d4...	57b2a98a409812fe9618067b6b8eb...	35182	timoteo	MG
9	5adf08e34b2e993982a47070956c5c...	1175e95fb47ddff9de6b2b06188f7e...	81560	curitiba	PR
10	4b7139f34592b3a31687243a302fa75b	9afe194fb833f79e300e37e580171f22	30575	belo horizonte	MG

**/\* 2. USING WHERE CLAUSE \*/**

```
-- Get only delivered orders
SELECT order_id, order_status
FROM orders
WHERE order_status = 'delivered';
```

	order_id text	order_status text
1	e481f51cbdc54678b7cc49136f2d6af7	delivered
2	53cdb2fc8bc7dce0b6741e2150273451	delivered
3	47770eb9100c2d0c44946d9cf07ec65d	delivered
4	949d5b44dbf5de918fe9c16f97b45f8a	delivered
5	ad21c59c0840e6cb83a9ceb5573f8159	delivered
6	a4591c265e18cb1dcee52889e2d8ac...	delivered
7	6514b8ad8028c9f2cc2374ded245783f	delivered
8	76c6e866289321a7c93b82b54852dc...	delivered
9	e69bfb5eb88e0ed6a785585b27e16dbf	delivered
10	e6ce16cb79ec1d90b1da9085a6118a...	delivered
11	34513ce0c4fab462a55830c0989c7edb	delivered

**/\* 3. ORDER BY \*/**

```
-- Latest orders first
SELECT order_id, order_purchase_timestamp
FROM orders
ORDER BY order_purchase_timestamp DESC;
```

	order_id text	order_purchase_timestamp text
1	10a045cdf6a5650c21e9cfef60384c...	2018-10-17 17:30:18
2	b059ee4de278302d550a3035c4cdb...	2018-10-16 20:16:02
3	a2ac6dad85cf8af5b0afb510a240fe8c	2018-10-03 18:55:29
4	616fa7d4871b87832197b2a137a115...	2018-10-01 15:30:09
5	392ed9afd714e3c74767d0c4d3e3f4...	2018-09-29 09:13:03
6	869997fbe01f39d184956b5c6bccfdbe	2018-09-26 08:40:15
7	5aac76cf7b07dd06fa4d50bf461d2f40	2018-09-25 11:59:18
8	ed3efbd3a87bea76c2812c66a0b322...	2018-09-20 13:54:16
9	bd35b677fd239386e9861d11ae98ab...	2018-09-17 17:21:16
10	ea844c92cf978ea23321fa7fe5871761	2018-09-13 09:56:12
11	1ad22e16129698e1a3cc11e4350d2c...	2018-09-12 15:32:16

#### /\* 4. AGGREGATE FUNCTIONS + GROUP BY \*/

-- Total number of orders per customer

SELECT customer\_id, COUNT(order\_id) AS total\_orders

FROM orders

GROUP BY customer\_id;

SELECT AVG(payment\_value) AS average\_payment

FROM order\_payments;

	customer_id text	total_orders bigint
1	00012a2ce6f8dcda20d059ce98491703	1
2	000161a058600d5901f007fab4c27140	1
3	0001fd6190edaaf884bc3d49edf079	1
4	0002414f95344307404f0ace7a26f1d5	1
5	000379cdec625522490c315e70c7a9fb	1
6	0004164d20a9e969af783496f3408652	1
7	000419c5494106c306a97b56357480...	1
8	00046a560d407e99b969756e0b10f2...	1
9	00050bf6e01e69d5c0fd612f1bcfb69c	1
10	000598caf2ef4117407665ac33275130	1
11	0005aefbb696d34b3424dccc0a0e9fd0	1

**/\* 5. JOINS (INNER JOIN) \*/**

```
-- Orders with customer city and state
SELECT o.order_id, c.customer_city, c.customer_state
FROM orders o INNER JOIN customers c
ON o.customer_id = c.customer_id;
```

	customer_id text	order_id text
1	9ef432eb6251297304e76186b10a92...	e481f51cbdc54678b7cc49136f2d6a...
2	b0830fb4747a6c6d20dea0b8c802d7ef	53cdb2fc8bc7dce0b6741e2150273...
3	41ce2a54c0b03bf3443c3d931a3670...	47770eb9100c2d0c44946d9cf07ec...
4	f88197465ea7920adcdbec7375364d...	949d5b44dbf5de918fe9c16f97b45f...
5	8ab97904e6daea8866dbdbc4fb7aad...	ad21c59c0840e6cb83a9ceb5573f8...
6	503740e9ca751ccdda7ba28e9ab8f6...	a4591c265e18cb1dcee52889e2d8a...
7	ed0271e0b7da060a393796590e7b73...	136cce7faa42fdb2cefd53fdc79a6098
8	9bdf08b4b3b52b5526ff42d37d47f222	6514b8ad8028c9f2cc2374ded2457...
9	f54a9f0e6b351c431402b8461ea51999	76c6e866289321a7c93b82b54852d...
10	31ad1d1b63eb9962463f764d4e6e0c...	e69bfb5eb88e0ed6a785585b27e16...
11	494dded5b201313c64ed7f100595b9...	e6ce16cb79ec1d90b1da9085a6118...

**LEFT JOIN \*/**

```
-- All customers and their orders (even if no orders)
SELECT c.customer_id, o.order_id
FROM customers c
LEFT JOIN orders o ON c.customer_id = o.customer_id;
```

	customer_id text	order_id text
1	9ef432eb6251297304e76186b10a92...	e481f51cbdc54678b7cc49136f2d6a...
2	b0830fb4747a6c6d20dea0b8c802d7ef	53cdb2fc8bc7dce0b6741e2150273...
3	41ce2a54c0b03bf3443c3d931a3670...	47770eb9100c2d0c44946d9cf07ec...
4	f88197465ea7920adcdbec7375364d...	949d5b44dbf5de918fe9c16f97b45f...
5	8ab97904e6daea8866dbdbc4fb7aad...	ad21c59c0840e6cb83a9ceb5573f8...
6	503740e9ca751ccdda7ba28e9ab8f6...	a4591c265e18cb1dcee52889e2d8a...
7	ed0271e0b7da060a393796590e7b73...	136cce7faa42fdb2cefd53fdc79a6098
8	9bdf08b4b3b52b5526ff42d37d47f222	6514b8ad8028c9f2cc2374ded2457...
9	f54a9f0e6b351c431402b8461ea51999	76c6e866289321a7c93b82b54852d...
10	31ad1d1b63eb9962463f764d4e6e0c...	e69bfb5eb88e0ed6a785585b27e16...
11	494dded5b201313c64ed7f100595b9...	e6ce16cb79ec1d90b1da9085a6118...

**/\* 6. SUBQUERY \*/**

-- Orders with payment higher than average payment

SELECT order\_id, payment\_value FROM order\_payments

WHERE payment\_value >

(

SELECT AVG(payment\_value)

FROM order\_payments

);

	order_id text	payment_value double precision
1	1f78449c87a54faf9e96e88ba1491fa9	341.09
2	d88e0d5fa41661ce03cf6cf336527646	188.73
3	12e5cfe0e4716b59afb0e0f4a3bd6570	157.45
4	8ac09207f415d55acff302df7d6a895c	244.15
5	4214cda550ece8ee66441f459dc33a8c	170.57
6	4d680edbaa7d3d9bed69532957368a...	353.09
7	8cd68144cdb62dc0d60848cf8616d2...	330.66
8	d0a945f85ba1074b60aac97ade7e24...	541
9	5d9c5817e278892b7498d90bfa28ad...	290.16
10	b69b9260e79a0da00e15f48de1bd25...	283.34
11	b2bb080b6bc860118a246fd9b6fad6da	173.84

**/\* 7. MULTI-TABLE JOIN \*/**

-- Order value with customer location

SELECT o.order\_id, c.customer\_city,

SUM(p.payment\_value) AS total\_payment

FROM orders o

JOIN customers c ON o.customer\_id = c.customer\_id

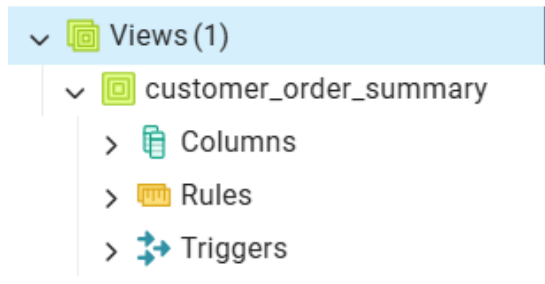
JOIN order\_payments p ON o.order\_id = p.order\_id

GROUP BY o.order\_id, c.customer\_city;

	order_id text	customer_city text	total_payment double precision
1	00010242fe8c5a6d1ba2dd792cb162...	campos dos goytacazes	72.19
2	00018f77f2f0320c557190d7a144bdd3	santa fe do sul	259.83
3	000229ec398224ef6ca0657da4fc703e	para de minas	216.87
4	00024acbcd0a6daa1e931b038114c...	atibaia	25.78
5	00042b26cf59d7ce69dfabb4e55b4fd9	varzea paulista	218.04
6	00048cc3ae777c65dbb7d2a0634bc1...	uberaba	34.59
7	00054e8431b9d7675808bcb819fb4a...	guararapes	31.75
8	000576fe39319847cbb9d288c5617f...	praia grande	880.75
9	0005a1a1728c9d785b8e2b08b90457...	santos	157.6
10	0005f50442cb953dcd1d21e1fb9234...	jandira	65.39
11	00061f2a7bc09da83e415a52dc8a4af1	piracicaba	68.87

**/\* 8. CREATE VIEW \*/**

```
-- View for customer order summary
CREATE VIEW customer_order_summary AS
SELECT c.customer_id,
       COUNT(o.order_id) AS total_orders
FROM customers c
JOIN orders o
ON c.customer_id = o.customer_id
GROUP BY c.customer_id;
```



**-- Use the view**

```
SELECT * FROM customer_order_summary;
```

	customer_id	total_orders
	a2ce6f8dcda20d059ce98491703	1
2	000161a058600d5901f007fab4c27140	1
3	0001fd6190edaaf884bc3d49edf079	1
4	0002414f95344307404f0ace7a26f1d5	1
5	000379cdec625522490c315e70c7a9fb	1
6	0004164d20a9e969af783496f3408652	1
7	000419c5494106c306a97b56357480...	1
8	00046a560d407e99b969756e0b10f2...	1
9	00050bf6e01e69d5c0fd612f1bcfb69c	1
10	000598caf2ef4117407665ac33275130	1
11	0005aefbb696d34b3424dccc0a0e9fd0	1

**/\* 9. QUERY OPTIMIZATION USING INDEX \*/**


```
-- Index on customer_id to improve join performance
CREATE INDEX idx_orders_customer_id
ON orders(customer_id);
```

**/\* 10. NULL HANDLING \*/**

-- Replace NULL review scores with 0

SELECT

COALESCE(review\_score, 0) AS review\_score  
FROM order\_reviews;

	review_score  bigint
1	4
2	5
3	5
4	5
5	5
6	1
7	5
8	5
9	5
10	4
11	5