A.--------ORDER BY ---------

```
SQL 1*
1    SELECT customer_id, customer_city, customer_state
2    FROM customers
3    WHERE customer_state = 'SP'
4    ORDER BY customer_city ASC
5    LIMIT 5;
6
```

	customer_id	customer_city	customer_state
1	ed35271185aa3ecf2e421970e47e473f	adamantina	SP
2	9c8238260ea546e75c56fc27c0fedfc8	adamantina	SP
3	f5219627819a30474a6ef14e1598e7f4	adamantina	SP
4	5684f8bf0ee27f2003ba2380c4ba8b08	adamantina	SP
5	cc6a744ba14a060493fb64b97087006c	adamantina	SP

--------- GROUP BY ---------

```
SQL 1*
1    SELECT customer_state, COUNT(*) AS num_customers
2    FROM customers
3    GROUP BY customer_state
4    ORDER BY num_customers DESC;
```

	customer_state	num_customers
1	SP	41746
2	RJ	12852
3	MG	11635
4	RS	5466
5	PR	5045
6	SC	3637
7	BA	3380
8	DF	2140
9	ES	2033
10	GO	2020
11	PE	1652
12	CE	1336
13	PA	975
14	MT	907
15	MA	747
16	MS	715
17	PB	536
18	PI	495

B. ------ JOINS -------

```
12      SELECT o.order_id, c.customer_city
13      FROM orders o
14      INNER JOIN customers c ON o.customer_id = c.customer_id
15      LIMIT 5;
```

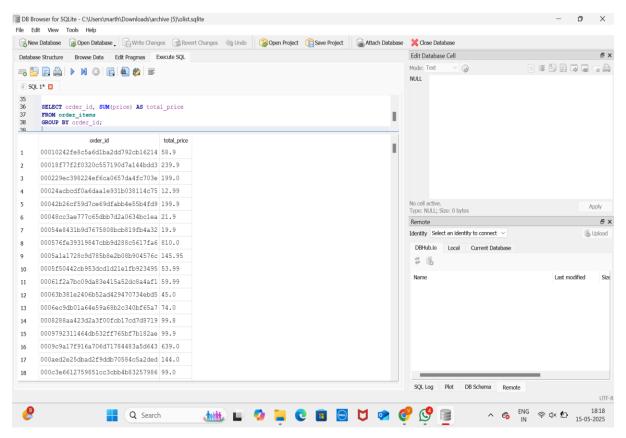|	order_id	customer_city
1	e481f51cbdc54678b7cc49136f2d6af7	sao paulo
2	53cdb2fc8bc7dce0b6741e2150273451	barreiras
3	47770eb9100c2d0c44946d9cf07ec65d	vianopolis
4	949d5b44dbf5de918fe9c16f97b45f8a	sao goncalo do amarante
5	ad21c59c0840e6cb83a9ceb5573f8159	santo andre

```
18      SELECT o.order_id, c.customer_city
19      FROM orders o
20      LEFT JOIN customers c ON o.customer_id = c.customer_id;
21
22
```

	order_id	customer_city
1	e481f51cbdc54678b7cc49136f2d6af7	sao paulo
2	53cdb2fc8bc7dce0b6741e2150273451	barreiras
3	47770eb9100c2d0c44946d9cf07ec65d	vianopolis
4	949d5b44dbf5de918fe9c16f97b45f8a	sao goncalo do amarante
5	ad21c59c0840e6cb83a9ceb5573f8159	santo andre
6	a4591c265e18cb1dcee52889e2d8acc3	congonhinhas
7	136cce7faa42fdb2cefd53fdc79a6098	santa rosa
8	6514b8ad8028c9f2cc2374ded245783f	nilopolis
9	76c6e866289321a7c93b82b54852dc33	faxinalzinho
10	e69bfb5eb88e0ed6a785585b27e16dbf	sorocaba
11	e6ce16cb79ec1d90b1da9085a6118aeb	rio de janeiro
12	34513ce0c4fab462a55830c0989c7edb	sao paulo
13	82566a660a982b15fb86e904c8d32918	ouro preto
14	5ff96c15d0b717ac6ad1f3d77225a350	sao paulo
15	432aaf21d85167c2c86ec9448c4e42cc	sao paulo
16	dcb36b511fcac050b97cd5c05de84dc3	goiania
17	403b97836b0c04a622354cf531062e5f	rio de janeiro
18	116f0b09343b49556bbad5f35bee0cdf	imbituba

C. -------- Write Subqueries -------

```
1    -- Find the top 5 cities by number of orders
2    SELECT c.customer_city, COUNT(o.order_id) AS order_count
3    FROM customers c
4    JOIN orders o ON c.customer_id = o.customer_id
5    GROUP BY c.customer_city
6    ORDER BY order_count DESC
7    LIMIT 5;
8
```

	customer_city	order_count
1	sao paulo	15540
2	rio de janeiro	6882
3	belo horizonte	2773
4	brasilia	2131
5	curitiba	1521

D. ------Aggregate Functions (SUM, AVG) ------

File Edit View Tools Help

New Database | Open Database | Write Changes | Revert Changes | Undo | Open Project | Save Project | Attach Database | Close Database

Database Structure | Browse Data | Edit Pragmas | Execute SQL

Edit Database Cell

Mode: Text

NULL

SQL 1*

```
34   └ );
35
36   SELECT order_id, SUM(price) AS total_price
37   FROM order_items
38   GROUP BY order_id;
39
40   SELECT seller_id, AVG(freight_value) AS avg_freight
41   FROM order_items
42   GROUP BY seller_id
43   LIMIT 5;
```

	seller_id	avg_freight
1	0015a82c2db000af6aaaf3ae2ecb0532	21.02
2	001cca7ae9ae17fb1caed9dfb1094831	37.0466108786611
3	001e6ad469a905060d959994f1b41e4f	17.94
4	002100f778ceb8431b7a1020ff7ab48f	14.4301818181818
5	003554e2dce176b5555353e4f3555ac8	19.38

No cell active.
Type: NULL; Size: 0 bytes

Apply

Remote

Identity Select an identity to connect   Upload

DBHub.io Local Current Database

Name   Last modified   Size

```
Execution finished without errors.
Result: 5 rows returned in 120ms
At line 40:
SELECT seller_id, AVG(freight_value) AS avg_freight
FROM order_items
GROUP BY seller_id
LIMIT 5;
```

WhatsApp   ···   X

Sanjana Vits
Just take a ss of screen and leave the rest

2 unread messages

Type a reply   Send

SQL Log   UTF-8

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E. ------Create Views for Analysis------

File Edit View Tools Help

New Database | Open Database | Write Changes | Revert Changes | Undo | Open Project | Save Pro

Database Structure | Browse Data | Edit Pragmas | Execute SQL

SQL 1*

```
1   DROP VIEW IF EXISTS customer_order_count;
2
3   CREATE VIEW customer_order_count AS
4   SELECT customer_id, COUNT(*) AS total_orders
5   FROM orders
6   GROUP BY customer_id;
7   SELECT * FROM customer_order_count LIMIT 5;
8
```

	customer_id	total_orders
1	00012a2ce6f8dcda20d059ce98491703	1
2	000161a058600d5901f007fab4c27140	1
3	0001fd6190edaaf884bcaf3d49edf079	1
4	0002414f95344307404f0ace7a26f1d5	1
5	000379cdec625522490c315e70c7a9fb	1

```
Execution finished without errors.
Result: 5 rows returned in 9ms
At line 7:
SELECT * FROM customer_order_count LIMIT 5;
```

F. ---- Optimize Queries with Indexes----


```sql
DROP INDEX IF EXISTS idx_order_items_order_id;

CREATE INDEX idx_order_items_order_id ON order_items(order_id);
PRAGMA index_list('order_items');
```

	seq	name	unique	origin	partial
1	0	idx_order_items_order_id	0	c	0
2	1	idx_order_items_order_id_v2	0	c	0