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Homework 6 - Cassandra

Step 1 - Launch CQLSH on Docker:

```
(base) cu-biot-3-10:~ admin$ docker pull cassandra:latest
latest: Pulling from library/cassandra
8e5c1b329fe3: Already exists
0b11e2aa9202: Pull complete
eb0fb76d98a9: Pull complete
7291fb2c270a: Pull complete
8600efd26780: Pull complete
8c7d4d2727c7: Pull complete
665bf4da88b9: Pull complete
bbbe0d1053d2: Pull complete
eadeabbbba930: Pull complete
Digest: sha256:ff37b35989097c222f1c95c7fce3a6f4d7ab8fdf7feb5b39158b74c11342a4d5
Status: Downloaded newer image for cassandra:latest
docker.io/library/cassandra:latest
```

```
(base) cu-biot-3-10:~ admin$ docker network create -d bridge database-network
53e926be6ad8847555e6663d5c8a10a67706a616fa1ca121171e930b70e059c3
(base) cu-biot-3-10:~ admin$ docker run --name mynewsrver --network database-network -d cassandra:latest
683047fb8eae325c877858bdf1c983e0502e08e50d9783e70dc16b826ef9
(base) cu-biot-3-10:~ admin$ docker ps -a
CONTAINER ID   IMAGE          NAMES                COMMAND                  CREATED        STATUS        PORTS
683047fb8eae   cassandra:late mynewsrver           "docker-entrypoint.s..." 14 seconds ago Up 9 seconds   7000-7001/tcp, 7199/tcp, 9042/tcp, 9160/tcp
```

```
(base) cu-biot-3-10:~ admin$ docker logs 683047fb8eae
```

...

```
INFO [OptionalTasks:1] 2022-05-01 23:02:11,519 CassandraRoleManager.java:339 - Created default superuser role 'cassandra'
```

```
(base) cu-biot-3-10:~ admin$ docker exec -it 683047fb8eae /bin/sh
# cqlsh
Connected to Test Cluster at 127.0.0.1:9042
[cqlsh 6.0.0 | Cassandra 4.0.3 | CQL spec 3.4.5 | Native protocol v5]
Use HELP for help.
```

Step 2 - Create Keyspace and Tables:

```
cqlsh> CREATE KEYSPACE shopping_cart_data WITH replication = {'class':'SimpleStrategy','replication_factor': 1};
cqlsh> Desc keyspaces ;

shopping_cart_data  system_auth          system_schema         system_views
system              system_distributed    system_traces         system_virtual_schema

cqlsh> USE shopping_cart_data ;
cqlsh:shopping_cart_data> CREATE TABLE carts_by_user (user_id TEXT, cart_name TEXT, cart_id INT, cart_is_active BOOLEAN, user_email TEXT STATIC, PRIMARY KEY (user_id, cart_name, cart_id));
cqlsh:shopping_cart_data> CREATE TABLE items (id TEXT, name TEXT, description TEXT, price DECIMAL, PRIMARY KEY ((id)));
cqlsh:shopping_cart_data> CREATE TABLE items_by_cart (cart_id INT, timestamp TIMESTAMP, item_id TEXT, item_name TEXT, item_description TEXT, item_price DECIMAL, quantity INT, cart_subtotal DECIMAL STATIC, PRIMARY KEY ((cart_id), timestamp, item_id) ) WITH CLUSTERING ORDER BY (timestamp ASC, item_id ASC);
```

Step 3 - Insert Data Into the Tables:

```

cqlsh:shopping_cart_data> INSERT INTO carts_by_user (user_id, cart_name, cart_id,
... cart_is_active, user_email) VALUES ('Rick', 'Gifts for Dad', 1234567,
... TRUE, 'rick@gmail.com');
cqlsh:shopping_cart_data> INSERT INTO carts_by_user (user_id, cart_name, cart_id,
... cart_is_active, user_email) VALUES ('Chris', 'Shopping list', 564534,
... FALSE, 'chris@gmail.com');
cqlsh:shopping_cart_data> INSERT INTO carts_by_user (user_id, cart_name, cart_id,
... cart_is_active, user_email) VALUES ('Harry', 'Things I like', 801039,
... FALSE, 'harry@gmail.com');
cqlsh:shopping_cart_data> INSERT INTO carts_by_user (user_id, cart_name, cart_id,
... cart_is_active, user_email) VALUES ('Ben', 'Birthday', 412548, TRUE,
... 'ben@gmail.com');
cqlsh:shopping_cart_data>
cqlsh:shopping_cart_data> INSERT INTO items (id, name, description, price) VALUES ('Books',
... 'Harry Potter', 'Goblin of Fire', 55.00);
'Chocolate bars', 20.00);

```

```

INSERT INTO items (id, name, description, price) VALUES ('Box1',
'Food', 'Fries and Burger', 20.00); INSERT INTO items (id, name,
description, price) VALUES ('Basket', 'Fruit Basket', 'Apples Berries
Strawberry', 100.00);
INSERT INTO items (id, name, description, price) VALUES ('Basket1',
'Gift Basket', 'Card Chocolates', 80.00);
INSERT INTO items (id, name, description, price) VALUES ('Basket2',
'Bouquet', 'Flowers basket', 24.00);

```

```

INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
item_description, item_price, quantity, cart_subtotal) VALUES (
412548, TOTIMESTAMP(NOW()), 'Books', 'Harry Potter', 'Goblin of Fire',
55.00, 5, 150.00);
INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
item_description, item_price, quantity, cart_subtotal) VALUES ( 199251
, TOTIMESTAMP(NOW()), 'Cake', 'Cakes', 'Chocolate cake and pastries',
10.00, 1, 10.00);
INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
item_description, icqlsh:shopping_cart_data> INSERT INTO items (id, name, description, price) VALUES ('Gift',
... 'Earring', 'Jewelry', 79.00); INSERT INTO items (id, name, description,
... price) VALUES ('Cake', 'Cakes', 'Chocolate cake and pastries', 10.00);
cqlsh:shopping_cart_data> INSERT INTO items (id, name, description, price) VALUES ('Chocolate',
tem_price, quantity, cart_subtotal) VALUES ( 199251
, TOTIMESTAMP(NOW()), 'Chocolate', 'Dark Choc', 'Chocolate bars',
20.00, 2, 100.00);

```

```

INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
item_description, item_price, quantity, cart_subtotal) VALUES (
146901, TOTIMESTAMP(NOW()), 'Box1', 'Food', 'Fries and Burger', 20.00,
8, 47.00);
INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
item_description, item_price, quantity, cart_subtotal) VALUES (
801039, TOTIMESTAMP(NOW()), 'Basket', 'Fruit Basket', 'Apples Berries
Strawberry', 100.00, 2, 51.00);
INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
item_description, item_price, quantity, cart_subtotal) VALUES (
564534, TOTIMESTAMP(NOW()), 'Basket2', 'Bouquet', 'Flowers basket',
24.00, 4, 117.00);
... 'Dark Choc', 'Chocolate bars', 20.00);

```

```

cqlsh:shopping_cart_data> INSERT INTO items (id, name, description, price) VALUES ('Box1',
... 'Food', 'Fries and Burger', 20.00); INSERT INTO items (id, name,
... description, price) VALUES ('Basket', 'Fruit Basket', 'Apples Berries
... Strawberry', 100.00);
cqlsh:shopping_cart_data> INSERT INTO items (id, name, description, price) VALUES ('Basket1',
... 'Gift Basket', 'Card Chocolates', 80.00);
cqlsh:shopping_cart_data> INSERT INTO items (id, name, description, price) VALUES ('Basket2',
... 'Bouquet', 'Flowers basket', 24.00);
cqlsh:shopping_cart_data>
cqlsh:shopping_cart_data> INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
... item_description, item_price, quantity, cart_subtotal) VALUES (
... 412548, TOTIMESTAMP(NOW()), 'Books', 'Harry Potter', 'Goblin of Fire',
... 55.00, 5, 150.00);
cqlsh:shopping_cart_data> INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
... item_description, item_price, quantity, cart_subtotal) VALUES ( 199251
... , TOTIMESTAMP(NOW()), 'Cake', 'Cakes', 'Chocolate cake and pastries',
... 10.00, 1, 10.00);
cqlsh:shopping_cart_data> INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
... item_description, item_price, quantity, cart_subtotal) VALUES ( 199251
... , TOTIMESTAMP(NOW()), 'Chocolate', 'Dark Choc', 'Chocolate bars',
... 20.00, 2, 100.00);
cqlsh:shopping_cart_data> INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
... item_description, item_price, quantity, cart_subtotal) VALUES (
... 146901, TOTIMESTAMP(NOW()), 'Box1', 'Food', 'Fries and Burger', 20.00,
... 8, 47.00);
cqlsh:shopping_cart_data> INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
... item_description, item_price, quantity, cart_subtotal) VALUES (
... 801039, TOTIMESTAMP(NOW()), 'Basket', 'Fruit Basket', 'Apples Berries
... Strawberry', 100.00, 2, 51.00);
cqlsh:shopping_cart_data> INSERT INTO items_by_cart (cart_id, timestamp, item_id, item_name,
... item_description, item_price, quantity, cart_subtotal) VALUES (
... 564534, TOTIMESTAMP(NOW()), 'Basket2', 'Bouquet', 'Flowers basket',
... 24.00, 4, 117.00);

```

Step 4 - Query the Tables:

1.

```
cqlsh:shopping_cart_data> select * from carts_by_user;
```

user_id	cart_name	cart_id	user_email	cart_is_active
Rick	Gifts for Dad	1234567	rick@gmail.com	True
Chris	Shopping list	564534	chris@gmail.com	False
Harry	Things I like	801039	harry@gmail.com	False
Ben	Birthday	412548	ben@gmail.com	True

(4 rows)

```
cqlsh:shopping_cart_data> select * from items;
```

id	description	name	price
Cake	Chocolate cake and pastries	Cakes	10.00
Box1	Fries and Burger	Food	20.00
Books	Goblin of Fire	Harry Potter	55.00
Basket1	Card Chocolates	Gift Basket	80.00
Basket	Apples Berries \nStrawberry	Fruit Basket	100.00
Gift	Jewelry	Earing	79.00
Basket2	Flowers basket	Bouquet	24.00
Chocolate	Chocolate bars	Dark Choc	20.00

(8 rows)

```
cqlsh:shopping_cart_data> select * from items_by_cart;
```

cart_id	timestamp	item_id	cart_subtotal	item_description	item_name	item_price	quantity
146901	2022-05-01 23:13:54.275000+0000	Box1	47.00	Fries and Burger	Food	20.00	8
801039	2022-05-01 23:13:54.286000+0000	Basket	51.00	Apples Berries \nStrawberry	Fruit Basket	100.00	2
412548	2022-05-01 23:13:54.215000+0000	Books	150.00	Goblin of Fire	Harry Potter	55.00	5
199251	2022-05-01 23:13:54.241000+0000	Cake	100.00	Chocolate cake and pastries	Cakes	10.00	1
199251	2022-05-01 23:13:54.260000+0000	Chocolate	100.00	Chocolate bars	Dark Choc	20.00	2
564534	2022-05-01 23:13:55.446000+0000	Basket2	117.00	Flowers basket	Bouquet	24.00	4

(6 rows)

2.

```
cqlsh:shopping_cart_data> select count(*) from carts_by_user;
```

```
count
-----
4
```

(1 rows)

Warnings :
Aggregation query used without partition key

```
cqlsh:shopping_cart_data> select count(*) from items;
```

```
count
-----
8
```

(1 rows)

Warnings :
Aggregation query used without partition key

```
cqlsh:shopping_cart_data> select count(*) from items_by_cart;
```

```
count
-----
6
```

3.

```
cqlsh:shopping_cart_data> SELECT user_id, cart_name, cart_id, cart_is_active
... FROM carts_by_user
... WHERE user_id = 'Ben' AND cart_is_active = true
... ALLOW FILTERING;
```

user_id	cart_name	cart_id	cart_is_active
Ben	Birthday	412548	True

(1 rows)

```
cqlsh:shopping_cart_data> SELECT user_id, cart_name, cart_id, cart_is_active
... FROM carts_by_user
... WHERE user_id = 'Ben' AND cart_is_active = true;
InvalidRequest; Error from server: code=2200 [Invalid query] message="Cannot execute this query as it might involve data filtering and thus may have unpredictable performance. If you want to execute this query despite the performance unpredictability, use ALLOW FILTERING"
cqlsh:shopping_cart_data> SELECT id, name, price
... FROM items WHERE price < 80
... ALLOW FILTERING;
```

When you remove “ALLOW FILTERING” the query doesn’t run and it returns an error message telling you to allow filtering.

4.

```
cqlsh:shopping_cart_data> SELECT id, name, price
... FROM items WHERE price < 80
... ALLOW FILTERING;
```

id	name	price
Cake	Cakes	10.00
Box1	Food	20.00
Books	Harry Potter	55.00
Gift	Earing	79.00
Basket2	Bouquet	24.00
Chocolate	Dark Choc	20.00

(6 rows)

5.

```
cqlsh:shopping_cart_data> SELECT timestamp, item_id, item_price, quantity, cart_subtotal
... FROM items_by_cart
... WHERE cart_id = 199251
... ORDER BY TIMESTAMP DESC;
```

timestamp	item_id	item_price	quantity	cart_subtotal
2022-05-01 23:13:54.260000+0000	Chocolate	20.00	2	100.00
2022-05-01 23:13:54.241000+0000	Cake	10.00	1	100.00

(2 rows)