

BELOW ARE SOME OF THE SHOTS CAPTURED WHEN CREATING , POPULATING AND TESTING

```
troy@troy-ThinkPad-L570-W10DG:~$ docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
6f40e9917777   cassandra:3.7  "/docker-entrypoint..." 4 minutes ago  Up 4 minutes  7000-7001/tcp, 7199/tcp, 9042/tcp, 9160/tcp, 0.0.0.0:9044->9044/tcp, :::9044->9044/tcp lowlands
troy@troy-ThinkPad-L570-W10DG:~$ INSTANCE1=$(docker inspect --format="{{.NetworkSettings.IPAddress }}" lowlands)
troy@troy-ThinkPad-L570-W10DG:~$ docker run --name highlands -p 9043:9044 -d -e CASSANDRA_SEEDS=$INSTANCE1 cassandra:3.7
ecd3133c4a1e3fbd182c5e904293211b6c8cf3f6b74562a599a5ab9b1b3ff597
troy@troy-ThinkPad-L570-W10DG:~$
```

```
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ecd3133c4a1e3fbd182c5e904293211b6c8cf3f6b74562a599a5ab9b1b3ff597
troy@troy-ThinkPad-L570-W10DG:~$ docker exec lowlands nodetool status
```

```
Datacenter: datacenter1
=====
Status=Up/Down
// State=Normal/Leaving/Joining/Moving
-- Address      Load      Tokens     Owns (effective)  Host ID                               Rack
UN  172.17.0.3    88.25 KiB  256        100.0%            21064d40-a0ee-4db0-af99-e95679500e9c  rack1
UN  172.17.0.2    107.93 KiB  256        100.0%            d672a8f5-22a6-4fd9-b152-8f356abe8ccf  rack1
```

```
troy@troy-ThinkPad-L570-W10DG:~$ docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS
6f40e9917777   cassandra:3.7                      "/docker-entrypoint..." 4 minutes ago  Up 4 minutes  7000-7001/tcp, 7199/tcp, 9042/tcp, 9160/tcp, 0.0.0.0:9044->9044/tcp, :::9044->9044/tcp   lowlands
troy@troy-ThinkPad-L570-W10DG:~$ INSTANCE1=$(docker inspect --format="{{.NetworkSettings.IPAddress }}" lowlands)
troy@troy-ThinkPad-L570-W10DG:~$ docker run --name highlands -p 9043:9044 -d -e CASSANDRA_SEEDS=$INSTANCE1 cassandra:3.7
ecd3133c4a1e3fbd182c5e904293211b6c8cf3f6b74562a599a5ab9b1b3ff597
troy@troy-ThinkPad-L570-W10DG:~$ docker exec lowlands nodetool status

Datacenter: datacenter1
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Status=Up/Down
|/ State=Normal/Leaving/Joining/Moving
-- Address      Load       Tokens     Owns (effective)  Host ID                               Rack
UN  172.17.0.3    88.25 Kib  256        100.0%            21064d40-a0ee-4db0-af99-e95679500e9c  rack1
UN  172.17.0.2    107.93 Kib 256        100.0%            d672a8f5-22a6-4fd9-b152-8f356abe8ccf  rack1

troy@troy-ThinkPad-L570-W10DG:~$
troy@troy-ThinkPad-L570-W10DG:~$
troy@troy-ThinkPad-L570-W10DG:~$ docker exec -it lowlands cqlsh
Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.7 | CQL spec 3.4.2 | Native protocol v4]
Use HELP for help.
cqlsh> describe keyspaces;

system_traces system_schema system_auth system system_distributed

cqlsh> CREATE KEYSPACE bukana WITH replication = {'class': 'NetworkTopologyStrategy', 'datacenter1' : 2};
cqlsh> describe keyspaces;

bukana system_schema system_auth system system_distributed system_traces

cqlsh>
```

```
cqlsh> CREATE TABLE bukana.DISTRICT (district_id text , name text, region text, PRIMARY KEY (district_id));
Warning: schema version mismatch detected, which might be caused by DOWN nodes; if this is not the case, check the schema versions of your nodes in sy
sten.local and system.peers.
OperationTimedOut: errors={}, last_host=127.0.0.1
cqlsh> CREATE TABLE bukana.HOSPITAL (hospital_id int, name text, whatsapp_no bigint, district_id text, PRIMARY KEY (hospital_id));
cqlsh> CREATE TABLE bukana.HOSPITAL (hospital_id int, name text, whatsapp_no bigint, district_id text, PRIMARY KEY (hospital_id));
AlreadyExists: Table 'bukana.hospital' already exists
cqlsh> CREATE TABLE bukana.DISTRICT (district_id text , name text, region text, PRIMARY KEY (district_id));
AlreadyExists: Table 'bukana.district' already exists
cqlsh> CREATE TABLE bukana.DOCTOR (doctor_id int, name text, whatsapp_no bigint, hospital_id int, PRIMARY KEY (doctor_id));
cqlsh> CREATE TABLE bukana.NURSE (nurse_id int, name text, whatsapp_no bigint, hospital_id int, PRIMARY KEY (nurse_id));
cqlsh> CREATE TABLE bukana.PATIENT (patient_id int, name text, whatsapp_no bigint, district_id text, PRIMARY KEY (patient_id));
cqlsh> CREATE TABLE bukana.HEALTH_RECORDS (record_id int, patient_id int, symptoms text, meditation text, date timestamp, PRIMARY KEY (record_id));
cqlsh> CREATE TABLE bukana.APPOINTMENT (appointment_id int, patient_id int, doctor_id int, date timestamp, PRIMARY KEY (appointment_id));
cqlsh> CREATE TABLE bukana.USER (user_id int, username text, password text, district_id text, PRIMARY KEY (user_id));
cqlsh> describe tables;

Keyspace bukana
-----
patient district health_records hospital doctor user appointment nurse

Keyspace system_schema
-----
tables triggers views keyspaces dropped_columns
functions aggregates indexes types columns

Keyspace system_auth
-----
resource_role_permissions_index role_permissions role_members roles

Keyspace system
-----
```

```
Activities Terminal Apr 22 15:19 troy@troy-ThinkPad-L570-W10DG: ~

troy@troy-ThinkPad-L570-W10DG:~$ docker exec -it highlands cqlsh
Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.7 | CQL spec 3.4.2 | Native protocol v4]
Use HELP for help.
cqlsh> describe bukana.tables;

'tables' not found in keyspace 'bukana'
cqlsh> describe tables;

Keyspace bukana
-----
appointment district health_records hospital doctor user patient nurse

Keyspace system_schema
-----
tables triggers views keyspaces dropped_columns
functions aggregates indexes types columns

Keyspace system_auth
-----
resource_role_permissions_index role_permissions role_members roles

Keyspace system
-----
available_ranges peers paxos range_xfers
batches compaction_history batchlog local
"IndexInfo" sstable_activity size_estimates hints
views_builds_in_progress peer_events built_views

cqlsh> INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('LRB','Leribe','Lowlands');
cqlsh> INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('BB','Botha-Bothe','Lowlands');
cqlsh> INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('MKG','Mokhotlong','Highlands');
cqlsh> INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('QSK','INTOs nek','Highlands');Qacha
... INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('QUT','Quthing','Highlands');
SyntaxException: <ErrorMessage code=2000 [Syntax error in CQL query] message="line 1:0 no viable alternative at input 'Qacha' ([Qacha]...)">
cqlsh> INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('QSK','Qacha s nek','Highlands');
cqlsh> INSERT INTO bukana.DISTRICT (district_id, name, region) VALUES('QUT','Quthing','Highlands');
cqlsh> seclect * from bukana.district;
SyntaxException: <ErrorMessage code=2000 [Syntax error in CQL query] message="line 1:0 no viable alternative at input 'seclect' ([seclect]...)">
cqlsh> select * from bukana.district;

district_id | name | region
-----
QSK | Qacha s nek | Highlands
MKG | Mokhotlong | Highlands
LRB | Leribe | Lowlands
QUT | Quthing | Highlands
BB | Botha-Bothe | Lowlands
MSU | Maseru | Lowlands
```

```

cqlsh> INSERT INTO bukana.HOSPITAL (hospital_id, name, whatsapp_no, district_id) VALUES(888, 'Motebang', 51272227, 'LRB');
cqlsh> INSERT INTO bukana.HOSPITAL (hospital_id, name, whatsapp_no, district_id) VALUES(102, 'Seboche', 57766437, 'BB');
cqlsh> INSERT INTO bukana.HOSPITAL (hospital_id, name, whatsapp_no, district_id) VALUES(101, 'Botha-Bothe', 51444748, 'BB');
cqlsh> INSERT INTO bukana.HOSPITAL (hospital_id, name, whatsapp_no, district_id) VALUES(133, 'Quthing Hospital', 51666669, 'QUT');
cqlsh> INSERT INTO bukana.HOSPITAL (hospital_id, name, whatsapp_no, district_id) VALUES(171, 'Mokhotlong', 51444440, 'MKG');
cqlsh> INSERT INTO bukana.HOSPITAL (hospital_id, name, whatsapp_no, district_id) VALUES(191, 'Machabeng', 51666661, 'QSK');
cqlsh> select * from bukana.Hospital;

```

hospital_id	district_id	name	whatsapp_no
888	LRB	Motebang	51272227
171	MKG	Mokhotlong	51444440
102	BB	Seboche	57766437
191	QSK	Machabeng	51666661
101	BB	Botha-Bothe	51444748
133	QUT	Quthing Hospital	51666669
777	MSU	Scott	51711116

(7 rows)

```

cqlsh> INSERT INTO bukana.DOCTOR (doctor_id, name, whatsapp_no, hospital_id)VALUES(999, 'Fane', 51337334, 777);
cqlsh> INSERT INTO bukana.DOCTOR (doctor_id, name, whatsapp_no, hospital_id)VALUES(101, 'Retshepile', 51444748, 888);
cqlsh> INSERT INTO bukana.DOCTOR (doctor_id, name, whatsapp_no, hospital_id)VALUES(121, 'Liabiloe', 51555859, 102);
cqlsh> INSERT INTO bukana.DOCTOR (doctor_id, name, whatsapp_no, hospital_id)VALUES(105, 'Katleho', 51666669, 131);
cqlsh> INSERT INTO bukana.DOCTOR (doctor_id, name, whatsapp_no, hospital_id)VALUES(109, 'Mothobi', 51444440, 171);
cqlsh> INSERT INTO bukana.DOCTOR (doctor_id, name, whatsapp_no, hospital_id)VALUES(110, 'Masilo', 51555559, 191);
cqlsh> select * from bukana.doctor;

```

doctor_id	hospital_id	name	whatsapp_no
110	191	Masilo	51555559
105	131	Katleho	51666669
121	102	Liabiloe	51555859
109	171	Mothobi	51444440
101	888	Retshepile	51444748
999	777	Fane	51337334

(6 rows)

cqlsh>

```

cqlsh> INSERT INTO bukana.HEALTH_RECORDS (record_id, patient_id, symptoms, meditation, date)VALUES(23, 23, 'headache', 'aspirin', '2023-12-02 12:03:00');
cqlsh> INSERT INTO bukana.HEALTH_RECORDS(record_id, patient_id, symptoms, meditation, date)VALUES(24, 24, 'Nausea and vomit', 'zofran', '2023-02-12 09:45:00');
cqlsh> INSERT INTO bukana.HEALTH_RECORDS(record_id, patient_id, symptoms, meditation, date)VALUES(25, 25, 'Sore throat', 'Strepsils', '2023-02-12 10:23:00');
cqlsh> INSERT INTO bukana.HEALTH_RECORDS(record_id, patient_id, symptoms, meditation, date)VALUES(281, 28, 'sore throat', 'Strepsils', '2023-02-12 15:57:00');
cqlsh> INSERT INTO bukana.HEALTH_RECORDS(record_id, patient_id, symptoms, meditation, date)VALUES(291, 29, 'nausea', 'zofran', '2023-02-12 08:30:00');
cqlsh> INSERT INTO bukana.HEALTH_RECORDS(record_id, patient_id, symptoms, meditation, date)VALUES(301, 30, 'headache', 'aspirin', '2023-02-12 17:23:00');
cqlsh> select * from bukana.HEALTH_RECORDS;

```

record_id	date	meditation	patient_id	symptoms
23	2023-12-02 12:03:00.000000+0000	aspirin	23	headache
281	2023-02-12 15:57:00.000000+0000	Strepsils	28	sore throat
291	2023-02-12 08:30:00.000000+0000	zofran	29	nausea
24	2023-02-12 09:45:00.000000+0000	zofran	24	Nausea and vomit
301	2023-02-12 17:23:00.000000+0000	aspirin	30	headache
25	2023-02-12 10:23:00.000000+0000	Strepsils	25	Sore throat

```

cqlsh> INSERT INTO bukana.APPOINTMENT (appointment_id, patient_id, doctor_id, date)VALUES(23, 23, 999, '2023-02-12 13:00:00');
cqlsh> INSERT INTO bukana.APPOINTMENT(appointment_id, patient_id, doctor_id, date)VALUES(24, 24, 101, '2023-02-12 14:00:00');
cqlsh> INSERT INTO bukana.APPOINTMENT(appointment_id, patient_id, doctor_id, date)VALUES(25, 25, 121, '2023-02-12 15:00:00');
cqlsh> INSERT INTO bukana.APPOINTMENT(appointment_id, patient_id, doctor_id, date)VALUES(281, 28, 105, '2023-04-26 09:00:00');
cqlsh> INSERT INTO bukana.APPOINTMENT(appointment_id, patient_id, doctor_id, date)VALUES(291, 29, 109, '2023-02-12 10:00:00');
cqlsh> INSERT INTO bukana.APPOINTMENT(appointment_id, patient_id, doctor_id, date)VALUES(301, 30, 110, '2023-02-12 11:00:00');
cqlsh> select * from bukana.appointment ;

```

appointment_id	date	doctor_id	patient_id
23	2023-02-12 13:00:00.000000+0000	999	23
281	2023-04-26 09:00:00.000000+0000	105	28
291	2023-02-12 10:00:00.000000+0000	109	29
24	2023-02-12 14:00:00.000000+0000	101	24
301	2023-02-12 11:00:00.000000+0000	110	30
25	2023-02-12 15:00:00.000000+0000	121	25

```

cqlsh> INSERT INTO bukana.USER (user_id, userName, password, district_id)VALUES(1, 'Tselane', '122333', 'MSU');
cqlsh> INSERT INTO bukana.USER(user_id, userName, password, district_id)VALUES(2, 'Katleho', '34324423', 'LRB');
cqlsh> INSERT INTO bukana.USER(user_id, userName, password, district_id)VALUES(3, 'Mpho', '3445253', 'BB');
cqlsh> INSERT INTO bukana.USER(user_id, userName, password, district_id)VALUES(7, 'Bopaki', '3424243', 'QUT');
cqlsh> INSERT INTO bukana.USER(user_id, userName, password, district_id)VALUES(8, 'Mothobi', '44343', 'MKG');
cqlsh> INSERT INTO bukana.USER(user_id, userName, password, district_id)VALUES(10, 'Tau', '555559', 'QSK');
cqlsh> select * from bukana.user;

```

user_id	district_id	password	username
10	QSK	555559	Tau
1	MSU	122333	Tselane
8	MKG	44343	Mothobi
2	LRB	34324423	Katleho
7	QUT	3424243	Bopaki
3	BB	3445253	Mpho

```

cqlsh> SELECT * FROM bukana.HEALTH_RECORDS;

```

record_id	date	meditation	patient_id	symptoms
23	2023-12-02 12:03:00.000000+0000	aspirin	23	headache
281	2023-02-12 15:57:00.000000+0000	Strepsils	28	sore throat
291	2023-02-12 08:30:00.000000+0000	zofran	29	nausea
24	2023-02-12 09:45:00.000000+0000	zofran	24	Nausea and vomit
301	2023-02-12 17:23:00.000000+0000	aspirin	30	headache
25	2023-02-12 10:23:00.000000+0000	Strepsils	25	Sore throat

(6 rows)

```

cqlsh> SELECT * FROM bukana.HEALTH_RECORDS WHERE symptoms = 'sore throat' ALLOW FILTERING;

```

record_id	date	meditation	patient_id	symptoms
281	2023-02-12 15:57:00.000000+0000	Strepsils	28	sore throat

```

cqlsh> select * from bukana.health_records ;

```

record_id	date	medication	patient_id	symptoms
23	2023-12-02 12:03:00.000000+0000	aspirin	23	headache
281	2023-02-12 15:57:00.000000+0000	Strepsils	28	sore throat
291	2023-02-12 08:30:00.000000+0000	zofran	29	nausea
24	2023-02-12 09:45:00.000000+0000	zofran	24	Nausea and vomit
301	2023-02-12 17:23:00.000000+0000	aspirin	30	headache
25	2023-02-12 10:23:00.000000+0000	Strepsils	25	Sore throat

(6 rows)

```

cqlsh> UPDATE bukana.HEALTH_RECORDS SET medication = 'panado' WHERE record_id=23;

```

```

cqlsh> select * from bukana.health_records ;

```

record_id	date	medication	patient_id	symptoms
23	2023-12-02 12:03:00.000000+0000	panado	23	headache
281	2023-02-12 15:57:00.000000+0000	Strepsils	28	sore throat
291	2023-02-12 08:30:00.000000+0000	zofran	29	nausea
24	2023-02-12 09:45:00.000000+0000	zofran	24	Nausea and vomit
301	2023-02-12 17:23:00.000000+0000	aspirin	30	headache
25	2023-02-12 10:23:00.000000+0000	Strepsils	25	Sore throat

(6 rows)

```

cqlsh>

```

appointment_id	date	doctor_id	patient_id
23	2023-02-12 13:00:00.000000+0000	999	23
281	2023-04-26 09:00:00.000000+0000	105	28
291	2023-02-12 10:00:00.000000+0000	109	29
24	2023-02-12 14:00:00.000000+0000	101	24
301	2023-02-12 11:00:00.000000+0000	110	30
25	2023-02-12 15:00:00.000000+0000	121	25

(6 rows)

```
cqlsh> DELETE FROM bukana.appointment WHERE date >= '2023-03-31 00:00:00' AND appointment_id=23;
InvalidRequest: code=2200 [Invalid query] message="Non PRIMARY KEY columns found in where clause: date "
cqlsh> DELETE FROM bukana.appointment WHERE appointment_id=23;
cqlsh> select * from bukana.appointment ;
```

appointment_id	date	doctor_id	patient_id
281	2023-04-26 09:00:00.000000+0000	105	28
291	2023-02-12 10:00:00.000000+0000	109	29
24	2023-02-12 14:00:00.000000+0000	101	24
301	2023-02-12 11:00:00.000000+0000	110	30
25	2023-02-12 15:00:00.000000+0000	121	25

(5 rows)

```
cqlsh>
```

```

appointment_id | date | doctor_id | patient_id
-----+-----+-----+-----
23 | 2023-02-12 13:00:00.000000+0000 | 999 | 23
281 | 2023-04-26 09:00:00.000000+0000 | 105 | 28
291 | 2023-02-12 10:00:00.000000+0000 | 109 | 29
24 | 2023-02-12 14:00:00.000000+0000 | 101 | 24
301 | 2023-02-12 11:00:00.000000+0000 | 110 | 30
25 | 2023-02-12 15:00:00.000000+0000 | 121 | 25

(6 rows)
cqlsh> DELETE FROM bukana.appointment WHERE date >= '2023-03-31 00:00:00' AND appointment_id=23;
InvalidRequest: code=2200 [Invalid query] message="Non PRIMARY KEY columns found in where clause: date "
cqlsh> DELETE FROM bukana.appointment WHERE appointment_id=23;
cqlsh> select * from bukana.appointment ;

appointment_id | date | doctor_id | patient_id
-----+-----+-----+-----
281 | 2023-04-26 09:00:00.000000+0000 | 105 | 28
291 | 2023-02-12 10:00:00.000000+0000 | 109 | 29
24 | 2023-02-12 14:00:00.000000+0000 | 101 | 24
301 | 2023-02-12 11:00:00.000000+0000 | 110 | 30
25 | 2023-02-12 15:00:00.000000+0000 | 121 | 25

(5 rows)
cqlsh> select appointment_id from bukana.appointment where doctor_id=105;
InvalidRequest: code=2200 [Invalid query] message="Cannot execute this query as it might involve data filtering and thus may have unpredictable
mance. If you want to execute this query despite the performance unpredictability, use ALLOW FILTERING"
cqlsh> select appointment_id from bukana.appointment where doctor_id=105 allow filtering;

appointment_id
-----
281

(1 rows)
cqlsh>

```

Activities Terminal Apr 22 16:17 troy@troy-ThinkPad-L570-W10DG: ~

```

cqlsh> SELECT * FROM bukana.appointment WHERE doctor_id = 105 AND timestamp >= '2023-04-24 00:00:00' AND timestamp <= '2023-04-28 00:00:00';
InvalidRequest: code=2200 [Invalid query] message="Undefined name timestamp in where clause ('timestamp >= '2023-04-24 00:00:00')"
cqlsh> SELECT * FROM bukana.appointment WHERE doctor_id = 105 AND date >= '2023-04-24 00:00:00' AND date <= '2023-04-28 00:00:00' allow filteri

appointment_id | date | doctor_id | patient_id
-----+-----+-----+-----
281 | 2023-04-26 09:00:00.000000+0000 | 105 | 28

(1 rows)
cqlsh>

```