



Practical - 9

2CS702 – Big Data Analytics

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Aim:

Setup Cassandra environment in your system and apply Create, Update, Read and Delete operations.

Setting up Environment:

Try It Out: Cassandra Query Language (CQL):

< STEP 1 OF 7 >

Create a keyspace

Let's first start learning CQL by creating a keyspace, using the `CREATE KEYSPACE` command.

```
CREATE KEYSPACE demo WITH replication =
{'class': 'SimpleStrategy',
'replication_factor': 1};
```

A keyspace is a way to logically group a collection of database objects together, such as:

- tables
- user-defined types
- user-defined functions
- and more!

Terminal

```
$ sleep 3; wait.sh
Starting up Cassandra... [\\]
```

Setting Up Key Spaces:

```
Connected as 19bce059@nirmauni.ac.in.
Connected to cndb at cassandra.ingress:9042.
[cqlsh 6.8.0 | Cassandra 4.0.0.6816 | CQL spec 3.4.5 | Native protocol v4]
Use HELP for help.
token@cqlsh> help

Shell command help topics:
=====
CAPTURE CLS COPY EXIT HELP PAGING SHOW TIMING UNICODE
CLEAR CONSISTENCY EXECUTE EXPAND LOGIN SERIAL SOURCE TRACING

Full documentation for shell commands:
https://docs.datastax.com/en/dse/6.8/cql/cql/cql\_reference/cqlsh\_commands/cqlshCommandsTOC.html

Full documentation for CQL commands:
https://docs.datastax.com/en/dse/6.8/cql/cql/cql\_reference/cql\_commands/cqlCommandsTOC.html

token@cqlsh> CREATE KEYSPACE prac9 WITH replication = {'class': 'SimpleStrategy', 'replication_factor': 1};
Unauthorized: Error from server: code=2100 [Unauthorized] message="Missing correct permission on prac9.: Keyspace
astax.com/org/9071fe7e-c40c-478a-82a4-e9167b0c4566/database/abea4e3b-3a68-4f5c-93f4-58a4d5d406f7"
token@cqlsh> describe keyspaces

system_auth      system_schema    bda      system_traces    system_views
data_endpoint_auth datastax_sla     system   system_virtual_schema

token@cqlsh> 
```

The command is used to describe all the keyspaces in the Cassandra cluster. Cassandra automatically creates keyspaces that have names starting with system and uses these as the data dictionary for the cluster.

Creating Tables and Inserting Data:

```
token@cqlsh> use bda
... ;
token@cqlsh:bda> create table bda.users (lastname text primary key, firstname text, email text);
token@cqlsh:bda> insert into users (lastname, firstname, email) values ('gajipara', 'harshit',
... '19bce059@nirmauni.ac.in');
... ;
... select * from users;
...
token@cqlsh:bda> insert into users (lastname, firstname, email) values ('gajipara', 'harshit', '19bce059@nirmauni.ac.in');
token@cqlsh:bda> select * from users;
```

lastname	email	firstname
gajipara	19bce059@nirmauni.ac.in	harshit

(1 rows)
token@cqlsh:bda> █

```
Use HELP for help.
token@cqlsh> use bda
... ;
token@cqlsh:bda> CREATE TABLE emp(
...     emp_id int PRIMARY KEY,
...     emp_name text,
...     emp_city text,
...     emp_sal varint,
...     emp_phone varint
... );
token@cqlsh:bda> select * from emp;
```

emp_id	emp_city	emp_name	emp_phone	emp_sal
--------	----------	----------	-----------	---------

(0 rows)
token@cqlsh:bda> ALTER TABLE emp
... ... ADD emp_email text;
SyntaxException: line 2:3 no viable alternative at input '...' (ALTER TABLE)
token@cqlsh:bda> ALTER TABLE emp ADD emp_email text;
token@cqlsh:bda> select * from emp;

emp_id	emp_city	emp_email	emp_name	emp_phone	emp_sal
--------	----------	-----------	----------	-----------	---------

(0 rows)
token@cqlsh:bda> █

```
token@cqlsh:bda> describe users
```

```
CREATE TABLE bda.users (
  lastname text PRIMARY KEY,
  email text,
  firstname text
) WITH additional_write_policy = '99PERCENTILE'
  AND bloom_filter_fp_chance = 0.01
  AND caching = {'keys': 'ALL', 'rows_per_partition': 'NONE'}
  AND comment = ''
  AND compaction = {'class': 'org.apache.cassandra.db.compaction.UnifiedCompactionStrategy'}
  AND compression = {'chunk_length_in_kb': '64', 'class': 'org.apache.cassandra.io.compress.LZ4Compressor'}
  AND crc_check_chance = 1.0
  AND default_time_to_live = 0
  AND gc_grace_seconds = 864000
  AND max_index_interval = 2048
  AND memtable_flush_period_in_ms = 0
  AND min_index_interval = 128
  AND read_repair = 'BLOCKING'
  AND speculative_retry = '99PERCENTILE';
```

```
token@cqlsh:bda> describe emp
```

```
CREATE TABLE bda.emp (
  emp_id int PRIMARY KEY,
  emp_city text,
  emp_email text,
  emp_name text,
  emp_phone varint,
  emp_sal varint
) WITH additional_write_policy = '99PERCENTILE'
  AND bloom_filter_fp_chance = 0.01
  AND caching = {'keys': 'ALL', 'rows_per_partition': 'NONE'}
  AND comment = ''
  AND compaction = {'class': 'org.apache.cassandra.db.compaction.UnifiedCompactionStrategy'}
  AND compression = {'chunk_length_in_kb': '64', 'class': 'org.apache.cassandra.io.compress.LZ4Compressor'}
  AND crc_check_chance = 1.0
  AND default_time_to_live = 0
  AND gc_grace_seconds = 864000
  AND max_index_interval = 2048
  AND memtable_flush_period_in_ms = 0
  AND min_index_interval = 128
  AND read_repair = 'BLOCKING'
  AND speculative_retry = '99PERCENTILE';
```

Insert Data in emp table

```
token@cqlsh:bda> INSERT INTO emp (emp_id, emp_name, emp_city,
... emp_phone, emp_sal) VALUES(1,'ram', 'Hyderabad', 9848022338, 50000);
token@cqlsh:bda> INSERT INTO emp (emp_id, emp_name, emp_city,
... emp_phone, emp_sal) VALUES(2,'robin', 'Hyderabad', 9848022339, 40000);
token@cqlsh:bda> INSERT INTO emp (emp_id, emp_name, emp_city,
... emp_phone, emp_sal) VALUES(3,'rahman', 'Chennai', 9848022330, 45000);
token@cqlsh:bda> SELECT * FROM emp;
```

emp_id	emp_city	emp_email	emp_name	emp_phone	emp_sal
1	Hyderabad	null	ram	9848022338	50000
2	Hyderabad	null	robin	9848022339	40000
3	Chennai	null	rahman	9848022330	45000

```
(3 rows)
```

```
token@cqlsh:bda>
```

Update city and salary of robin

```
token@cqlsh:bda> SELECT * FROM emp;
```

emp_id	emp_city	emp_email	emp_name	emp_phone	emp_sal
1	Hyderabad	null	ram	9848022338	50000
2	Hyderabad	null	robin	9848022339	40000
3	Chennai	null	rahman	9848022330	45000

(3 rows)

```
token@cqlsh:bda> UPDATE emp SET emp_city='Delhi',emp_sal=50000
... WHERE emp_id=2;
token@cqlsh:bda> SELECT * FROM emp;
```

emp_id	emp_city	emp_email	emp_name	emp_phone	emp_sal
1	Hyderabad	null	ram	9848022338	50000
2	Delhi	null	robin	9848022339	50000
3	Chennai	null	rahman	9848022330	45000

(3 rows)

Reading columns from table

```
token@cqlsh:bda> SELECT emp_name, emp_sal from emp;
```

emp_name	emp_sal
ram	50000
robin	50000
rahman	45000

(3 rows)

Deleting data from table

```
(3 rows)
token@cqlsh:bda> DELETE emp_sal FROM emp WHERE emp_id=3;
token@cqlsh:bda> SELECT * FROM emp;
```

emp_id	emp_city	emp_email	emp_name	emp_phone	emp_sal
1	Hyderabad	null	ram	9848022338	50000
2	Delhi	null	robin	9848022339	50000
3	Chennai	null	rahman	9848022330	null

(3 rows)

```
token@cqlsh:bda> DELETE FROM emp WHERE emp_id=3;
token@cqlsh:bda> SELECT * FROM emp;
```

emp_id	emp_city	emp_email	emp_name	emp_phone	emp_sal
1	Hyderabad	null	ram	9848022338	50000
2	Delhi	null	robin	9848022339	50000

(2 rows)