الكلية متعددة التخصصات - ورزازات
FACULTÉ POLYDISCIPLINAIRE DE OUARZAZATE

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CASSANDRA

NoSQL Database

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Cassandra Setup :

Running Cassandra with Docker:

- **Install Docker :** Download and install Docker Desktop for your operating system (Windows, macOS, or Linux) from the official Docker website.

- **Pull Cassandra Image :** Open a terminal and run the following command to download the Cassandra Docker image:

```
docker pull cassandra:latest
```

- **Network Creation (Optional):** While not strictly required, creating a dedicated Docker network for Cassandra can improve organization and isolation. If you choose to do so, use the following command

```
docker network create cassandra
```

- **Create and Start Cassandra Container :** Start a Cassandra container with the desired settings:

```
docker run --rm -d --name cassandra --hostname cassandra --network
cassandra cassandra
```

Explanation of options:

- **--rm:** Automatically remove the container when it exits (suitable for testing, but not for data persistence).
- **-d:** Run the container in detached mode (in the background).
- **--name cassandra:** Assign the name "cassandra" to the container for easy identification.
- **--hostname cassandra:** Set the hostname within the container to "cassandra".
- **--network cassandra:** Connect the container to the Docker network named "cassandra" (if you created one).
- **cassandra:** Specifies the image to use for creating the container.

- **Verify Container Status:** Check Running Containers: Use the command to list running containers and confirm the "cassandra" container is listed.

```
docker ps
```

- **Connect with CQLSH:** Interact with Cassandra using the CQLSH client:

```
docker run --rm -it --network cassandra nuvo/docker-cqlsh cqlsh cassandra
9042 --cqlversion=3.4.6
```

This command runs a temporary container with the **nuvo/docker-cqlsh** image and connects to the Cassandra instance running in your **"cassandra"** container.

Example :

Scenario : We'll create a simple **"music_library"** keyspace and a **"songs"** table to store information about songs.

Preparation :

1. Ensure you have Docker installed and running.
2. Follow the steps mentioned earlier to pull the Cassandra image and start a Cassandra container.

Demonstration :

1. Open a new terminal window.

2. Start CQLSH:

```
docker run --rm -it --network cassandra nuvo/docker-cqlsh cqlsh cassandra
9042 --cqlversion=3.4.6
```

3. Create Keyspace:

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

Explain : We just created a keyspace named "music_library" to store our music data.

4. Use Keyspace:

```
USE music_library;
```

Explain : Now we are going to work within the "music_library" keyspace.

5. Create Table:

```
CREATE TABLE songs (
  song_id int PRIMARY KEY,
  title text,
  artist text,
  album text,
  release_year int
);
```

Explain : We created a table called "songs" with columns to store song information.

6. Insert Data:

```
INSERT INTO songs (song_id, title, artist, album, release_year) VALUES (1,
'Bohemian Rhapsody', 'Queen', 'A Night at the Opera', 1975);
```

```
INSERT INTO songs (song_id, title, artist, album, release_year) VALUES (2,
'Imagine', 'John Lennon', 'Imagine', 1971);
```

```
INSERT INTO songs (song_id, title, artist, album, release_year) VALUES (3,
'Like a Rolling Stone', 'Bob Dylan', 'Highway 61 Revisited', 1965);
```

```
INSERT INTO songs (song_id, title, artist, album, release_year) VALUES (4,
'Hotel California', 'Eagles', 'Hotel California', 1976);
```

```
INSERT INTO songs (song_id, title, artist, album, release_year) VALUES (5,
'Stairway to Heaven', 'Led Zeppelin', 'Led Zeppelin IV', 1971);
```

Explain : We added three songs to our "songs" table.

7. Retrieve all songs:

```
SELECT * FROM songs;
```

Explain : This command retrieves all the data from the "songs" table, displaying the song information we just inserted.

9. Exit CQLSH:

```
exit
```