**CockroachDB**

**Introduction:**

CockroachDB is an open-source, distributed SQL database developed by a team of former Google engineers at Cockroach Labs. Built on a transactional and strongly-consistent key-value store. Supports strongly-consistent ACID transactions and provides a familiar SQL API for structuring, manipulating, and querying data. CockroachDB is scalable and consistent.

**Goals of CockroachDB:**

1. Offer consistency at industrial level regardless of deployment's size. This means hassle free configuration along with distributed transactions.
2. Provide a database which is always available, and permit reads/writes on every node without any conflicts.
3. Remove dependency with deployment server. Should be able to deploy on any server.
4. Support familiar tools for working with relational data (i.e., SQL).

**Mostly Used Terminologies:**

**Cluster ---> Y**our CockroachDB deployment, which acts as a single logical application.

**Node --->** An individual machine running CockroachDB. Many nodes join together to create your cluster.

**Range --->** CockroachDB stores all user data (tables, indexes, etc.) and almost all system data in a giant sorted map of key-value pairs. This key space is divided into "ranges", contiguous chunks of the key space, so that every key can always be found in a single range.

**PostgreSQL Wire Protocol:**

SQL queries reach your cluster through the PostgreSQL wire protocol. This makes connecting your application to the cluster simple by supporting most PostgreSQL-compatible drivers, as well as many PostgreSQL ORMs, such as GORM (Go) and Hibernate (Java).

**CockroachDB Commands:**

cockroach start 🡪 Start a node as part of a multi-node cluster.

cockroach init 🡪 Initialize a multi-node cluster.

cockroach start-single-node 🡪 Start a single-node cluster.

Cockroach sql 🡪 Use the built-in SQL client.

**Examples:**

cockroach start-single-node --insecure --listen-addr=localhost:26257 --http-addr=localhost:8085

(Used to start a single node).

cockroach sql --insecure; (Build a SQL client in insecure mode).

**Changes made in Spring boot application for CockroachDb setup:**

**Changes in Pom.xml:**

Add postgresql dependency in Pom.xml

<dependency>

<groupId>org.postgresql</groupId>

<artifactId>postgresql</artifactId>

<scope>runtime</scope>

</dependency>

**Changes in application.properties:**

spring.datasource.url=jdbc:postgresql://localhost:26257/customers?sslmode=disable

spring.datasource.driver-class-name=org.postgresql.Driver

spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.PostgreSQL94Dialect

spring.jpa.show-sql=true

spring.datasource.username=root

spring.datasource.password=""