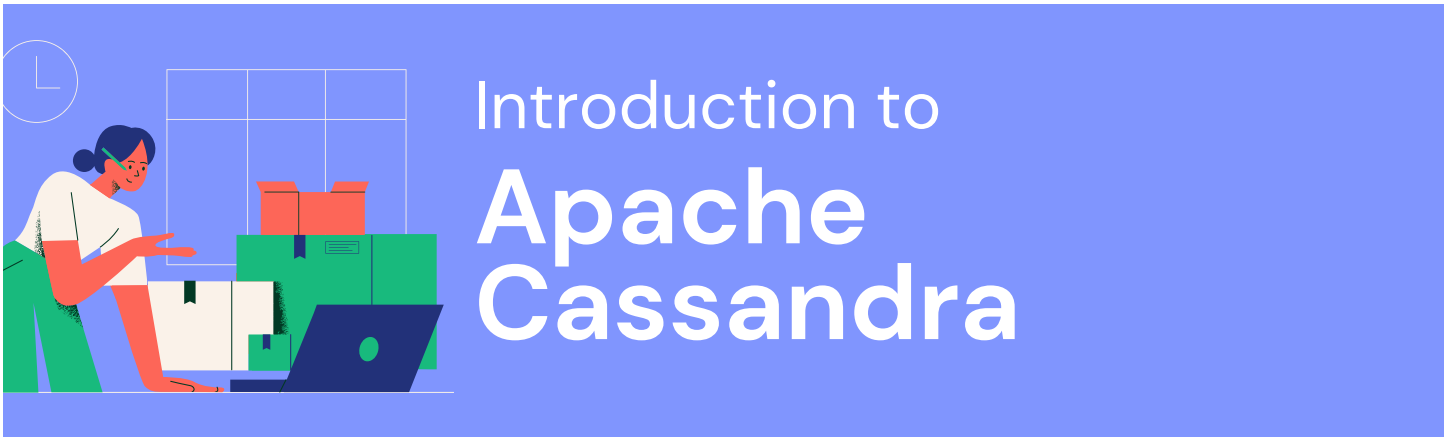

Dataplatform Architectures - SS24 - AIDA: **Group 4**

What is Apache Cassandra?

Apache Cassandra is a highly scalable, high-performance distributed NoSQL database system that handles large amounts of data across many commodity servers, providing high availability with no single point of failure.

- **Decentralized Architecture**: Several nodes, high fault tolerance
- **Scalability:** Linear Scalability possible including high availability
- **Performance:** High-speed read and write activities, low latency
- **Data Model:** Schema-free, supporting various data types
- **Own Query Language:** Cassandra Query Language (CQL)
- **Consistency and Replication:** Tunable Consistency, supporting different replication strategies
- **Use Cases:** Big Data Applications, Real-Time-Data Applications, Distributed systems

Manual Setup

❗**Requirements**: Have Docker installed 🐳 & Python 3.11

- Open Terminal or command prompt
- Pull (latest) Cassandra image

```
docker pull cassandra:latest
```

- Start cassandra instance

“--name cassandra-demo”	assigns name “cassandra-demo” to your container
“p 9042:9042”	maps port *9042* of container to port *9042* on host

```
docker run --name cassandra-demo -d -p 9042:9042 cassandra:latest
```

- Ensure Cassandra is running via terminal or Docker Desktop

```
docker ps
```

Acess Cassandra using CQLSH

- Access Cassandra Shell

```
docker exec -it cassandra-demo cqlsh
```

Create Keyspace (‘Database’)

```
CREATE KEYSPACE demo WITH replication = {'class': 'SimpleStrategy', 'replication_fa
```

Create Table

```
USE demo;
CREATE TABLE users (
    id INT PRIMARY KEY,
    name TEXT,
    email TEXT
);
```

Insert Data

```
INSERT INTO users (id, name, email) VALUES (1, 'John Doe', 'john.doe@example.com');
INSERT INTO users (id, name, email) VALUES (2, 'Jane Doe', 'jane.doe@example.com');
```

Query Data

```
SELECT * FROM users;
```

Update Data

```
UPDATE users SET name = 'Johnny Doe' WHERE id = 1;
```

Delete Data

```
DELETE FROM users WHERE id = 1;
```

Using python file (demo project)

Dowload project.zip

Start docker containers:

```
PS C:\Users\User\cassandra-user-management> docker-compose up -d
```

Connect to cqlsh

```
PS C:\Users\User\cassandra-user-management> docker exec -it cassandra cqlsh 127.0.0.1 9042
```

Install Python dependencies (if not available yet)

```
PS C:\Users\User\cassandra-user-management> py -3.11 -m pip install -r requirements.txt
```

Run script

```
PS C:\Users\User\cassandra-user-management> py -3.11 src/main.py
```