

The National University of Lesotho

Department of Mathematics and Computer Science

Faculty of Science and technology



CS4430: DISTRIBUTED DATABASE SYSTEMS

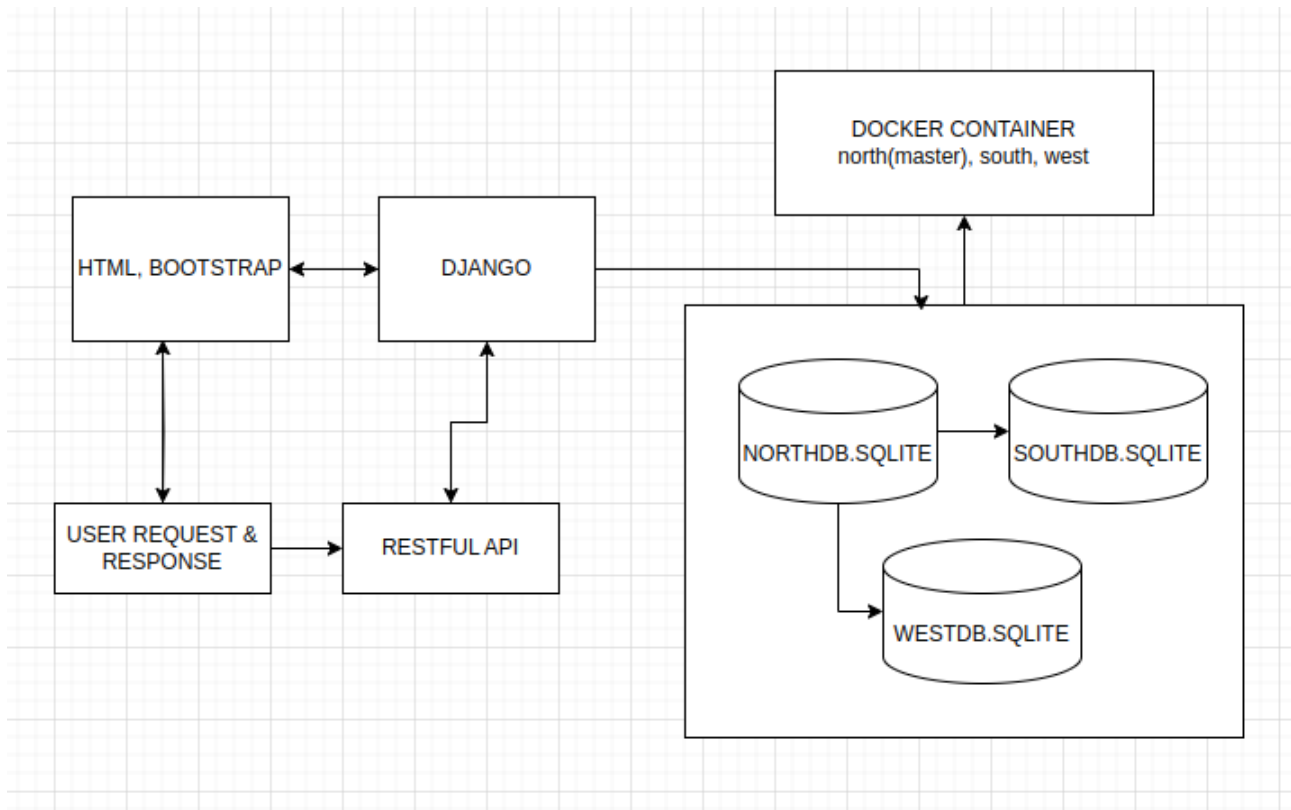
Task: System Design of Ntsoekhe DDBMS

Due: 15/04/2024

Participants:

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NTSHOEKHE SYSTEM ARCHITECTURE



1. Tiers:

- **Client Tier:**
- This tier consists of user interface (web apps) used to interact with the database. They will send requests through a RESTful API.
- **Application Tier:** This tier utilizes Django as a web framework and runs on each distributed node within a Docker container. It's responsible for:
 - Handling user requests from the client tier via the API.
 - Performing business logic related to health data.
 - Interacting with the database tier on the same node.

2. Database Tier:

- **Database Storage:** Each node will have a local SQLite database instance to store health data. SQLite offers simplicity and ease of use for a prototype.

3. Communication:

- **RESTful API:** The application tier exposes a RESTful API for CRUD (Create, Read, Update, Delete) operations on health data models. Clients will interact with the system through these APIs.

Entity-Relationship Diagram (ERD)

A **Hospital** can have **one or more Patients**, and a **Patient/ Patients** can be treated at **one Hospitals** in our system(throughout their lifetime). This is represented by a one-to-many relationship between Hospital and Patient.

A **Hospital** can employ **many Doctors**, and a **Doctor** can work at **one Hospitals**. This is another one-to-many relationship.

