DISTRIBUTED SYSTEMS

Assignment 3

Remote Procedure Call (RPC)
Chat System for Client Support

Project documentation

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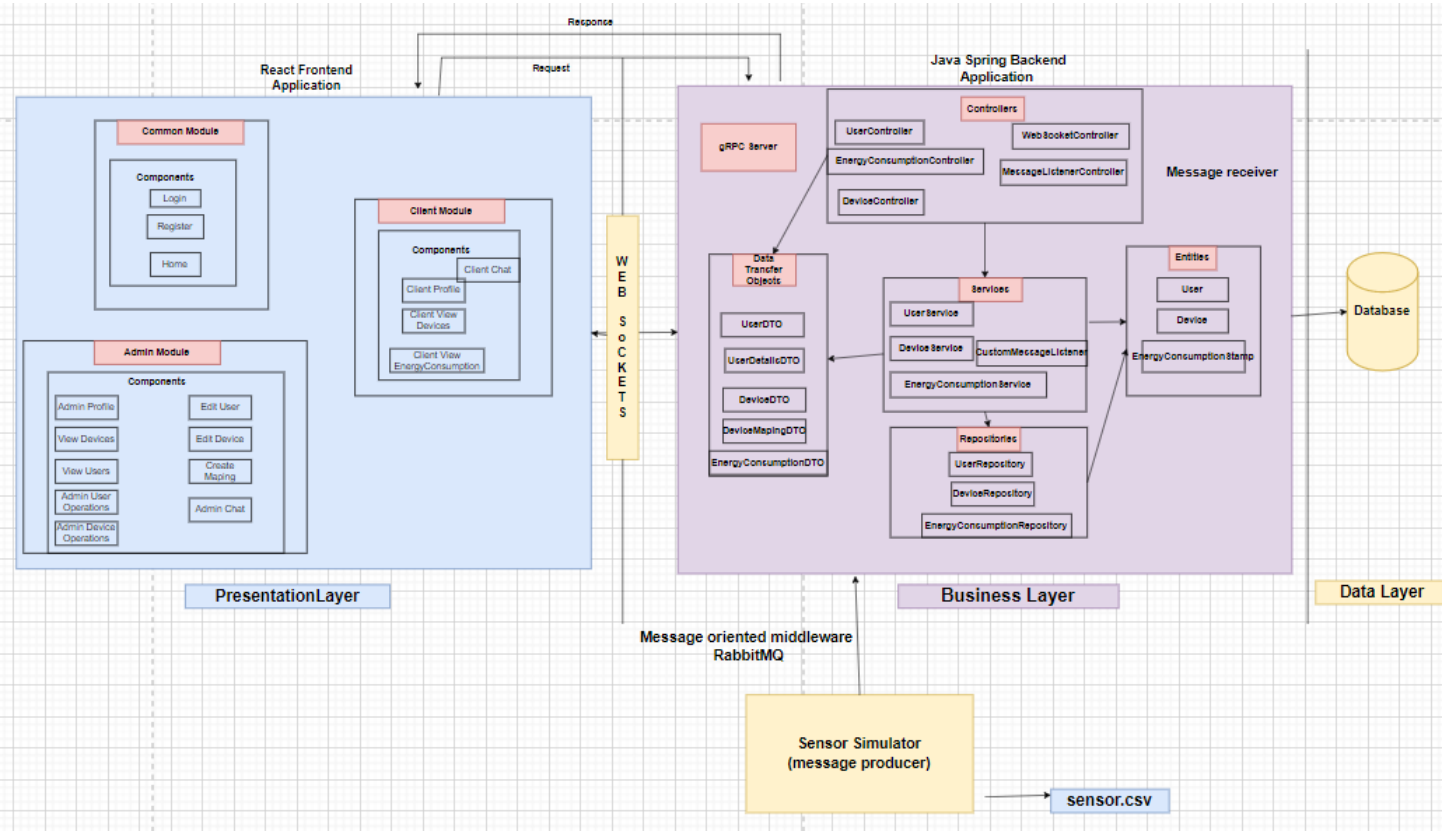
I. Conceptual architecture of the distributed system



The layered architecture of the system is made up of three levels: Data Layer, Business Layer and Presentation Layer.

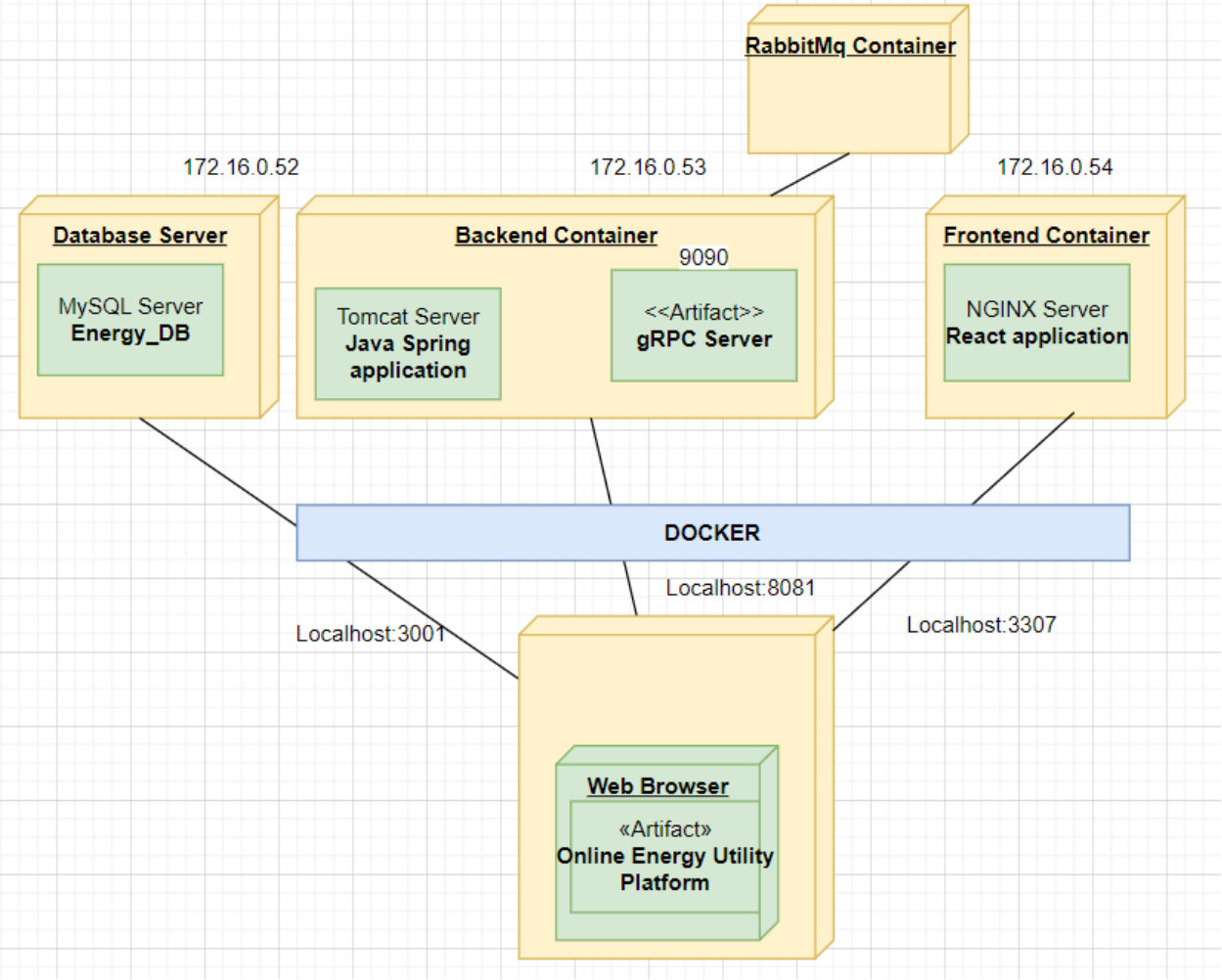
The backend application, developed with Java Spring, represents the Business Layer of the architecture. It is itself organized in several components: Repositories, Services and Controllers, each with their specific purpose. The Repository component has three classes: UserRepository, DeviceRepository and EnergyConsumptionRepository. They are responsible for providing the mechanism for storage, retrieval, update, delete and search operations on objects. The Service component also has three classes: UserService, DeviceService and EnergyConsumptionService and it mediates communication between the controller and repository layers. The Controller Component has the classes: UserController DeviceController, EnergyConsumptionController, WebSocketController and MessageListenerController. It is responsible for processing incoming REST API requests and returning the response which will be sent to the Presentation layer of the system. The backend application also consists of the resources used to communicate with the other layers: the entities (User, Device an EnergyConsumptionStamp) and the data transfer objects (UserDTO, UserDetailsDTO, EnergyConsumptionDTO, DeviceDTO and DeviceMappingDTO).

The Presentation Layer of the system is represented by the frontend application, developed using React. The frontend component is also organized in three modules: Admin, Client and Common. The Admin Module encapsulates the components related to the Admin Operations, after login: Admin Profile, View Users, View Devices, User Operations, Device Operations, Edit User, Edit Device and Create Mapping.

The Client Modules encapsules the components related to Client Operations after login: Client Profile, View Devices and View Energy Consumption. The Common Modules has the components used for both Admin and Client users: Home Page, Login and Register.

The Data Layer is represented of a relational Mysql database.

III Deployment Diagram



The deployment diagram models the physical architecture of a system. It shows the relationships between the software and hardware components in the system and the distribution of the processing. There are four nodes in the system: The Database Server, the Backend Container, the RabbitMq Container the Frontend Container and the Client, represented by the Energy Utility Platform