E-Shop Application

Created by Alina-Elena Brînză

Group 258/1

The e-shop application is a web application that allows users to purchase a wide variety of products online. New users can create an account, browse the catalogue of products, buy them using a secure payment system, and read detailed information about each item. Additionally, the platform features a forum for discussions about various products and support between buyers. The store is secured, meaning that only logged-in users can make purchases. Shoppers can also view the number of people who previously bought a product and access their purchase history through their accounts.

Technologies:

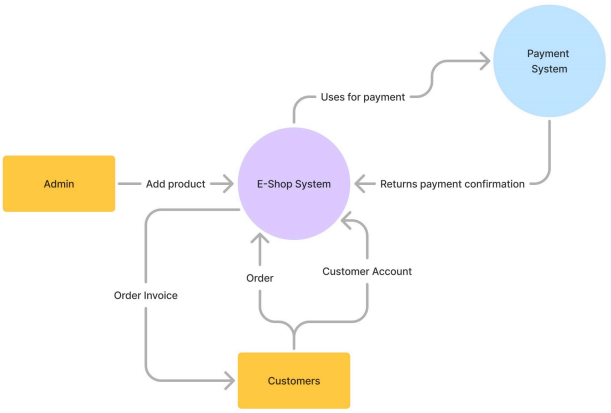
- The communication between microservices is done with Eureka (Spring Cloud Netflix Eureka), which maintains detailed information about each microservice and supports load balancing and failover mechanisms.
- To manage API requests, Zuul (Zuul API Gateway) is used, which acts as a gateway server for routing in a Spring Boot microservices architecture; it processes incoming requests and dynamically routes them to the appropriate microservice.
- For real-time customer support chat, I used Kafka and Web Sockets, enabling efficient message publishing and subscription.
- For FaaS, I used AWS Lambda to compute the total spent by a user on purchases.
- The application is containerized using Docker, with each microservice packaged as a Docker container to ensure a consistent and scalable deployment environment.

The application is using multiple patterns:

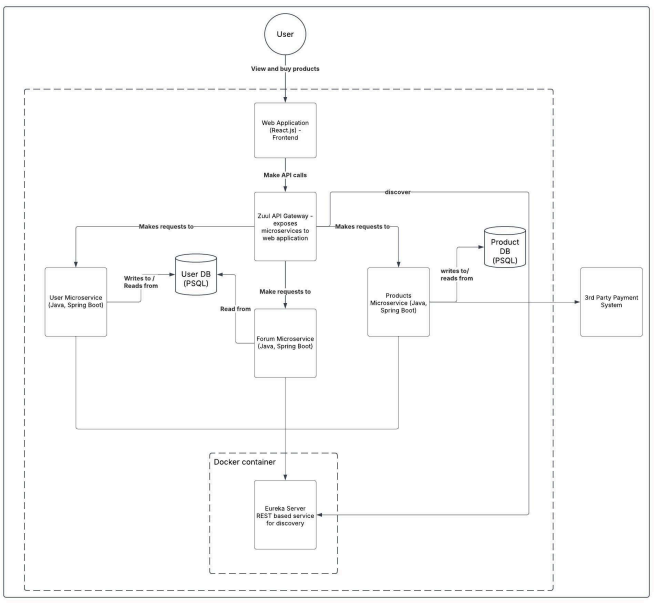
- Microservices Pattern (the application is divided into multiple services, with each service taking care of a certain part of the application's functionalities)
- Integration Pattern (by integrating the payment service into the application)
- Facade Pattern (used to wrap third-party integrations to improve software design for the payment service)

Diagrams:

1. **System Context Diagram**

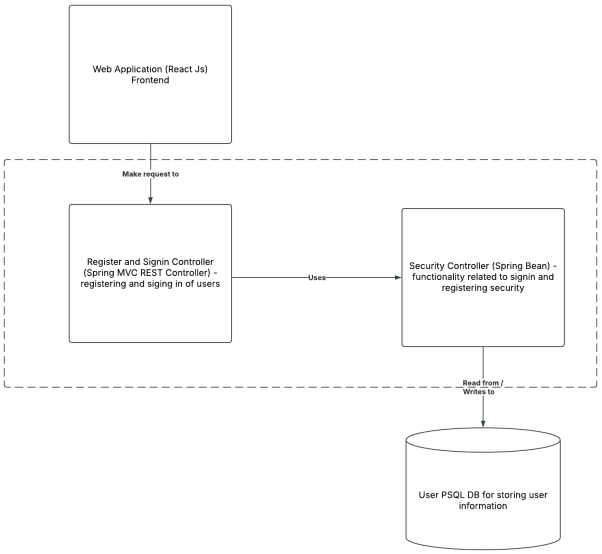


2. **Container Diagram**

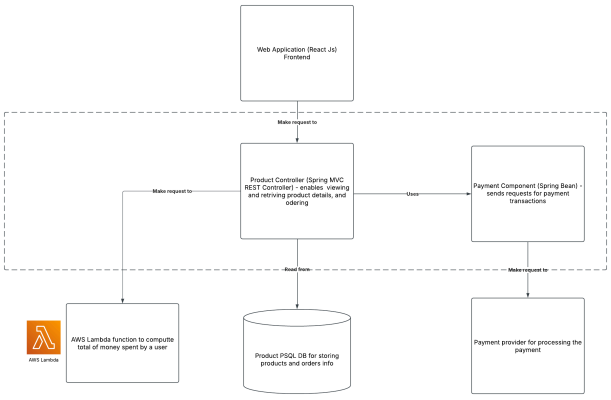


3. **Component Diagram**

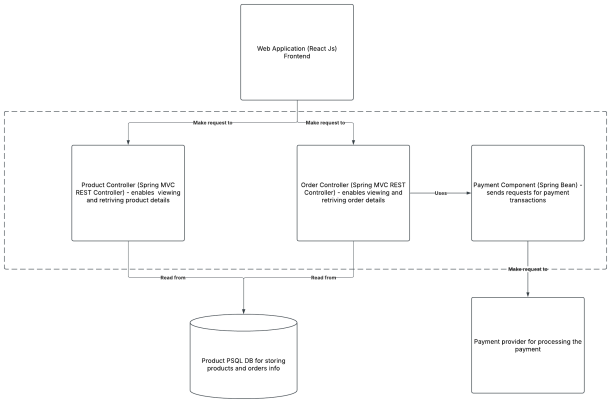
   a. **User Microservice Component Diagram**



   b. **Product Microservice Component Diagram**

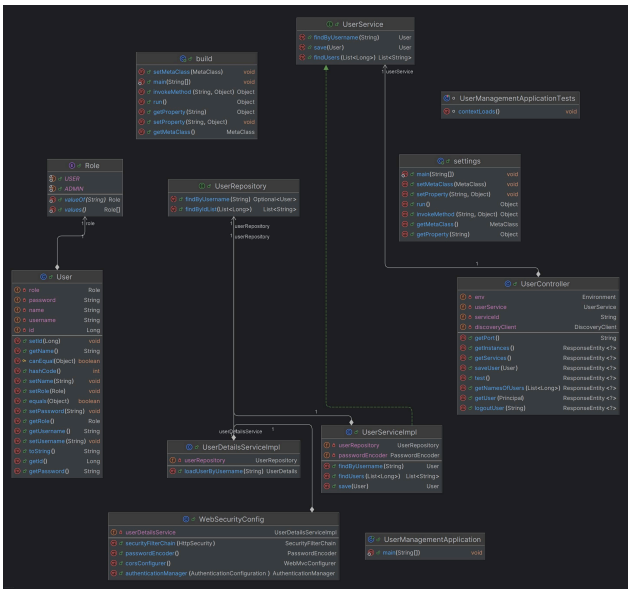


   c. **Forum Microservice Component Diagram**

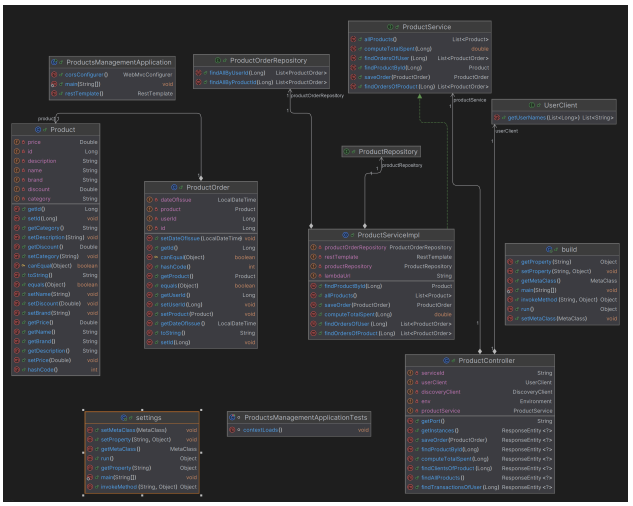


4. **UML Diagram**

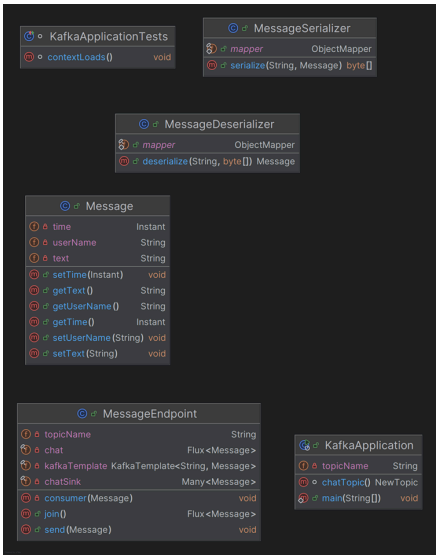
   a. **User Microservice UML Diagram**



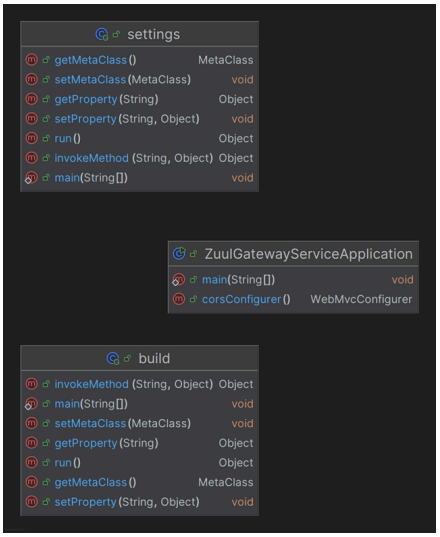
   b. **Product Microservice UML Diagram**



   c. **Forum Microservice UML Diagram**



d. **Zuul UML Diagram**



e. **Eureka UML Diagram**