EASTERN INTERNATIONAL UNIVERSITY
SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

Practice Assignment – Quarter 2, 2024-2025
Course Name: Coding Practice
Course Code: CSE 422
Student's Full Name:
Student ID:

Practice Assignment 7

Architecture

Apply the knowledge learned and researched about the Microservice architecture model to design a system and create a detailed system diagram based on the following description:

The system is divided into the following main components:

1. Frontend:

- **Web App (ReactJS/Angular/VueJS):** For library staff and administrators.
- **Mobile App (React Native/Flutter):** For library users (book reservations/borrowing, checking history).

2. API Gateway: Orchestrates requests from clients to microservices.

3. Backend Services (Microservices):

- **Authentication & Authorization Service:** Manages users, login, and role-based access control.
- **Book Management Service:** Manages books (add, edit, delete, search).
- **Borrow & Return Service:** Manages book borrowing and returns.
- **User Management Service:** Manages user information.
- **Notification Service:** Sends notifications when books are due.

4. Load Balancer (HAProxy/Nginx/Kubernetes Ingress): Ensures load balancing.

5. Firewall (DMZ): Protects the system from external threats.

6. Service Registry & Discovery (Consul/Eureka): Helps services automatically discover each other.

7. Database (SQL Server/PostgreSQL/MongoDB): Each service has its own database.

8. Monitoring Server (Prometheus + Grafana): Monitors system performance.

Requirements:

1. Draw a system architecture diagram
2. Explain the role of each component in the system.
3. Propose technologies to use for each component