

Status Report for COMP 3095 Assignment 2

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Adam Simcoe (101442161), Nhan Tran (100898539), Nhu Ly (101429112), Trang Nguyen (100749684)

Secure API Gateway

- Setup Spring Cloud Gateway as the entry point to route requests to microservices.
- Integrate Keycloak to manage authentication:
 - Ensure only authenticated users can access specific services (Booking/Approval)
 - Role-based access enforced through Keycloak (only staff can access ApprovalService)

Enhanced Inter-Service Communication with Kafka and Schema Registry

- Implement Kafka for asynchronous event handling:
 - BookingService publishes booking events to Kafka when booking request is confirmed.
 - EventService consumes events to register events for confirmed bookings.
- Use Schema Registry to enforce message schemas:
 - Register and manage schemas in Schema Registry to validate Kafka messages.
 - Ensure schema compatibility between services to prevent breaking changes.

Circuit Breaker Pattern with Resilience4J

- Apply Circuit Breaker to critical inter-service calls:
 - Configure Circuit Breaker in BookingService to handle potential failures in RoomService when checking room availability.
 - Configure Circuit Breaker in ApprovalService when fetching user roles from UserService to ensure fallback responses during downtimes.
- Fallback Mechanisms:
 - Implement fallback for each Circuit Breaker configuration to handle degraded services and prevent cascading failures.

API Documentation with Swagger

- Integrate Swagger into each microservice to document available endpoints and methods.
- Aggregate Swagger Documentation:
 - Configure API Gateway to aggregate Swagger documentation from each microservice.
 - Ensure complete API documentation is accessible through single endpoint on Gateway.