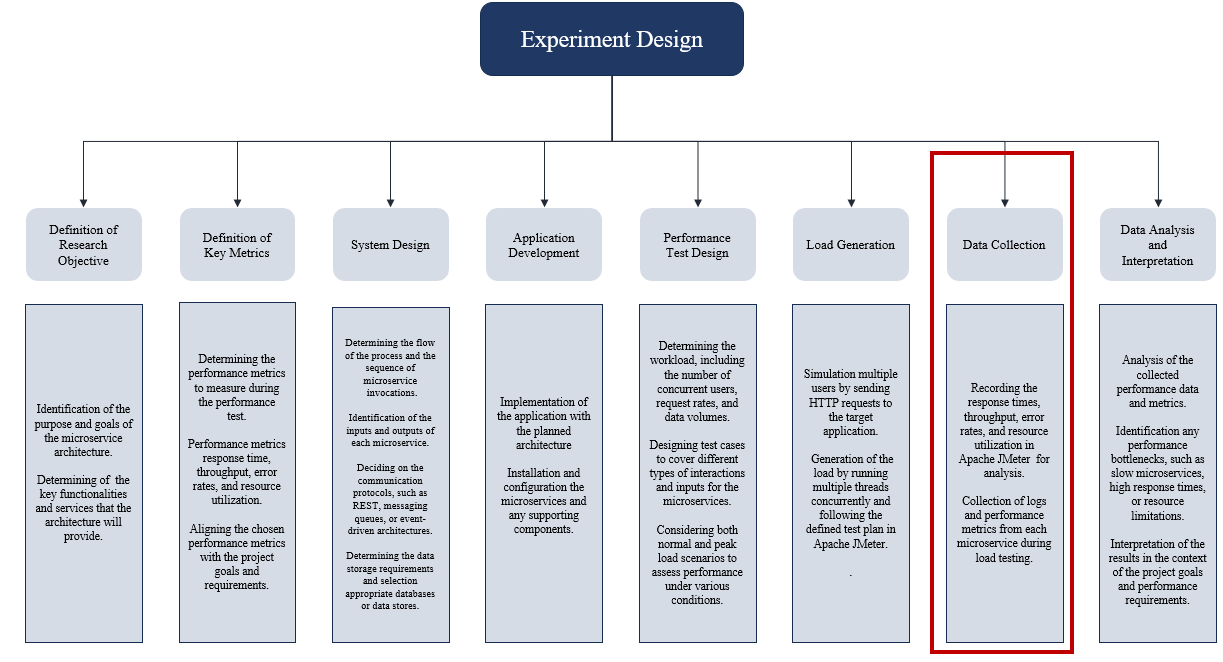
**Name:** Tural Mehtiyev

**Project Title**: Scalability experiment of microservice architecture on an online bookstore application

**Date:** 26.06.2023

**Research Strategy:**

The research strategy will be based on a quantitative approach. Via experimental research, I am planning to collect data of application performance to conduct analysis on metrics such as response time, throughput, error rates, and resource utilization.

****

Since data collection and analysis are among the final stages of my experiment, I am currently focused on system design and application development. At this stage, data collection and analysis are not the primary focus. However, I have made progress in designing architecture and databases for microservices.

**Microservices for online bookstore application.**

Product Catalog Microservice:

* Responsible for managing the product inventory, details, and availability.
* Provides APIs for retrieving product information, searching for products, and updating inventory.

Shopping Cart Microservice:

* Handles the management of customer shopping carts.
* Provides APIs for adding items to the cart, removing items, and updating quantities.

Order Management Microservice:

* Manages the processing of customer orders.
* Handles order placement, order fulfillment, and order status updates.
* Provides APIs for creating new orders, retrieving order details, and updating order status.

**Draft Architecture**

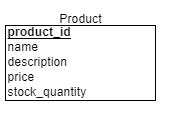
A picture containing text, screenshot, diagram, plan

Description automatically generated

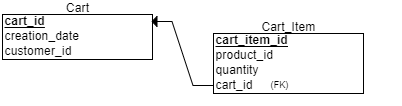
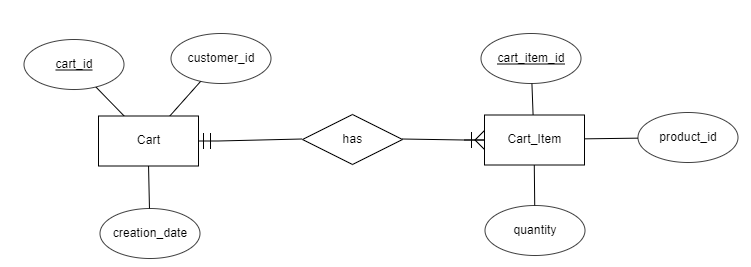
**Entity Relationship Diagram and Schema for Microservice Databases**

Book Catalog Service:

A diagram of a product

Description automatically generated with medium confidence

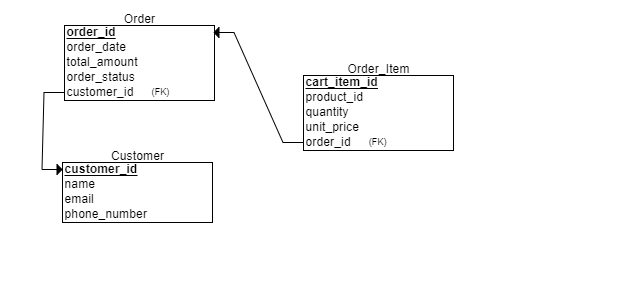
Shopping Cart Service:



Book Order Management:

A picture containing diagram, sketch, drawing, white

Description automatically generated



Regarding **Data Cleansing**, I am planning to implement the following strategies for the collected data from my experiment to ensure that unexpected errors in the load tests do not affect my results:

* Utilization of data cleansing techniques like data validation, filtering, and transformation of data types to ensure data accuracy and consistency.
* Review of the collected logs and metrics for data quality issues such as missing or inconsistent values, outliers, or duplicated entries due to.
* Application of data cleaning strategies specific to my experiment's objectives, such as removing incomplete or irrelevant data, handling outliers, and normalizing data formats.