Library Management System

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June 3, 2024

Purpose

- Internal use for library resources management
- Track books in the library
- Manage book assignment and returns

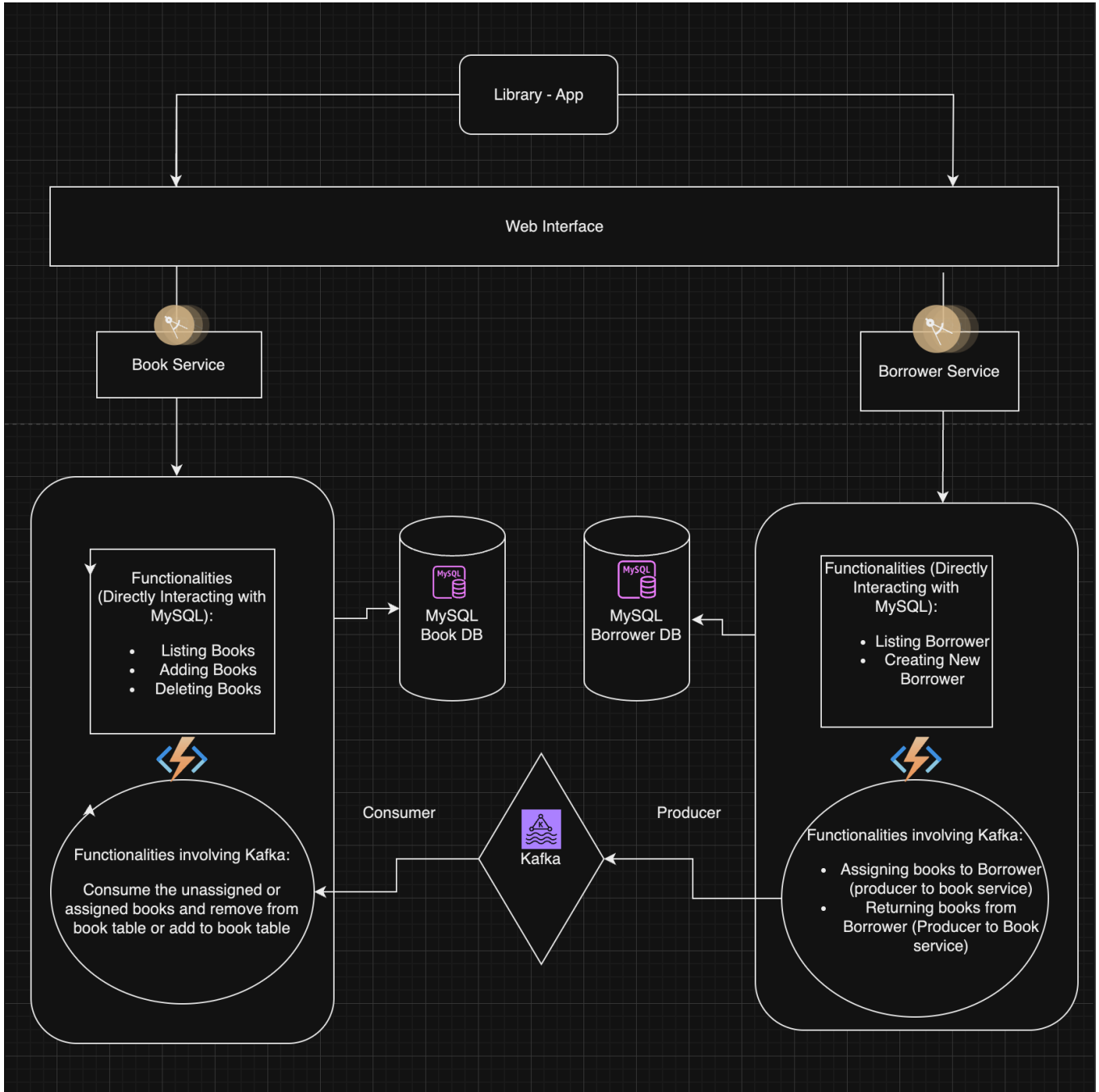
Technological Stack

- Play Framework
- Scala programming
- Kafka
- MySQL Database
- Google Cloud Platform
- Docker
- Akka Framework

System Overview

- Two services:
  - Book Service
  - Borrower Service
- Book Service:
  - Add, list, and remove books
  - Components: Book Controller, Book DAO, Book Model, Book Service, Book View
  - Kafka consumer for book assignment/return
- Borrower Service:
  - List, add, assign/unassign books to borrowers
  - Components: Borrower Controller, Borrower DAO, Borrower Model, Borrower Service, Borrower View
  - Kafka producer for book assignment/return
- Both services use MySQL for data storage

Architecture Diagram



Data Design

- MySQL Database: Stores borrower and book data
- Database Design:
  - Borrower Table:
    - id (Primary Key)
    - name
    - assigned books (Comma-separated list of book IDs)
  - Book Table:
    - id (Primary Key)
    - name
    - assigned status (Boolean)

Deployment Architecture

- GCP VM 1: Dockerized Borrower Service and Book Service
- GCP VM 2: Kafka instance for message brokering
- MySQL instance on VM in GCP

Human Interface Design

- Web interfaces for borrowers and book management
- User Workflows:
  - Borrower:
    - Add a new borrower
    - View and assign books to borrowers
  - Book:
    - Add a new book
    - View and delete books

GitHub Link

- https://github.com/ManishNITD/library_project