Dissertation Title:

BiblioSync: Intelligent Book Management System with Author Collaboration

Course No.: SEZG628T

Course Title: Dissertation

Dissertation Work Done by:

Student Name: Priya Lekha Guda

BITS ID: 2023MT93265

Degree Program: M.Tech in Software Engineering

Research Area: New Product Development

Dissertation / Project Work carried out at:

Deloitte, Hyderabad

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
VIDYA VIHAR, PILANI, RAJASTHAN - 333031.

January, 2025

Contents

1. Broad Area of Work

The purpose of the project is to provide a practical solution for boilerplate tasks that authors face while writing and managing books by creating a digital book management and author coalition platform. Within this scope, the proposed solution can be divided into four categories: information systems, cloud computing, microservices architecture, and digital collaboration tools. The project is focused on Domain-Driven Design (DDD) and scalable software engineering methodologies. The application areas include:

- **Information Collaboration:** To make book collection, exchange, lending, and borrowing more productive.
- **Digital Collaboration:** For connecting would-be authors and networking for collaborations.
- **Microservices Architecture:** For a modular, scalable, and maintainable implementation of services such as book management, user management, authoring, and's recommendation to clients.
- **Domain-Driven Design:** For business processes alignment with the system to be designed.
- **Recommendation Systems:** To foster preferred-selected books and authors' relationship based on users interests and preferences.

2. Background

Books have served as a great source of information, creative ideas, and even entertainment. Although, there is no single platform where readers and authors can come together to manage their books, exchange, or even talk to each other. There are already many systems in place for book management, but most of them are very basic and undeveloped. However, those who love books and write nowadays have the following difficulties:

1. Keeping track of personal libraries, including loaning out their books and borrowing others on a convenient digital solution.
2. Looking for authors to work with but lacking an effective author-to-author matching service.
3. Utilizing one-size-fits-all solutions that do not offer room for growth or modification to new needs.

There are also many blooming writers looking for people to collaborate with, and they can never find them.

For this reason, we have come up with a solution that will focus more on building a coherent platform. It will include collaborating with other authors and looking for ways to integrate

the management of books. The implementation of cloud technologies will enhance the stability, data protection, and accessibility of the system. Lastly, there will be an advanced recommendation system to improve UX by suggesting books and collaborations tailored to nature of the user.

3. Objectives

Core Objectives for Granted Functionality

- Make an elaborate account of book services that can keep track of one's collections, deal with the lending and borrowing books, and keep a record of the borrowing history.
- Establish some microservices for authors to team up, share connection, and accept or decline requests for collaboration.
- Create a system for personalized recommendations, closely associating authors' works with those of compatible authors.

Architectural and Design Objectives

- Establish microservices with updated software evaluation in mind that satisfies the constraints of modularity, scalability, and maintainability.
- Implement DDD to dissect a business setup into Book Management, Collaboration, and Recommendations.
- Promote event-oriented communication within microservices to separate (empower) such interactions as collaboration requests and notifications.
    - Potentially follow REST-based API development guidelines to formalize interactions between the frontend and backend.

4. Scope of Work

The dissertation objective is to build a comprehensive book management and author collaboration platform. The platform will have features such as:

- Managing collections of books coming from adding books, lending books, and borrowing books.
- Facilitating a vibrant relationship among authors, allowing them to request collaborations based on similar interests from one end.
- Integration of Azure services like Blob Storage, Cosmos DB, and Azure Functions for a scalable platform enjoying data security.
- It will ensure user-desired suggestions can be made for books and collaboration.

- The system must be warm as well in its duties, secure, and capable enough to be accessibly directed toward a large target population.

5. Plan of Work

Phases	Start Date – End Date	Work to be Done
1. Dissertation Outline	15/1/2025 – 22/1/2025	Idea review, research, and preparing the outline.
2. Design & Development	26/1/2025 – 22/2/2025	System design, development of backend and frontend features.
3. Integration & Features	23/2/2025 – 20/03/2025	Integration of collaboration, author features, and AI assistant (if feasible).
4. Testing	21/3/2025 – 1/4/2025	Conduct testing, fix bugs, and refine features.
5. Dissertation Completion	2/4/2025 – 10/4/2025	Write the dissertation document, including system details and findings.
6. Review & Feedback	11/4/2025 – 16/4/2025	Submit draft to supervisor for feedback and revisions.
7. Final Submission	17/4/2025 – 24/4/2025	Finalize the dissertation, submit to supervisor, and complete any additional requirements.

6. Literature References

This article takes an in-depth look at various platforms for facilitating book integration. They offer features and services that help authors collaborate, share resources, and effectively manage collaborative projects.

[1] https://pwskills.com/blog/generative-ai-books/

[2] https://www.bookrunch.com/overview/book_collaboration_services/

This article examines the role of AI systems in business engineering, focusing on opportunities in areas such as workplace problem solving, customer management, and knowledge management. It delves into the mathematics of generative AI and discusses various applications across different data sets. This article examines “agent” systems, which are digital machines that can interact autonomously in a virtual environment. It shows how advances in word processing are enabling these machines to plan actions, use online tools, collaborate with other agents and people, and learn to improve their

performance and ability to work well as virtual colleagues.

[3] https://link.springer.com/article/10.1007/s12599-023-00834-7

This resource outlines how Azure services can be utilized to add real-time collaborative functionality to custom applications. It discusses the use of libraries and Azure services to meet custom collaboration requirements, including user presence status and real-time data updates.

[4] https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/collaboration-microsoft-365

7. Particulars of the Supervisor and Examiner

	Supervisor	**Additional Examiner**
Name	Suman Chatterjee	Pushp Kumar Sachwani
Qualification	BTech in Computer Science	BE in Electronics
Designation	Deputy Manager	Executive Manager
Employing Organization and Location	Deloitte, Bengaluru	Deloitte, Pune
Phone No.	+91-9434656380	+91-9550264064
Email Address	suman.chatterjee341@gmail.com	psachwani@deloitte.com

8. Remarks of the Supervisor

This use case demonstrates a strong understanding of a modern tech stack and includes the implementation of microservice patterns. Additionally, Priya Lekha showcased creativity by proposing a novel enhancement to the book management system use case, reflecting an impactful and thoughtful approach.

After initial discussions, the basics of Domain-Driven Design (DDD) were suggested for implementing the microservice pattern. Priya Lekha diligently read, understood, designed, and discussed the concepts with me, highlighting their eagerness to learn and apply new knowledge.

I hereby approve this project as the supervisor, recognizing the innovative thinking and commitment to mastering advanced technical concepts.

Information about the Supervisor:

My supervisor, Suman Chatterjee possesses extensive knowledge and expertise in .NET applications and software development, with a deep understanding of software architecture. His ability to translate requirements into well-implemented solutions has been demonstrated through numerous projects. Over the past few years, he has been an invaluable mentor to me, providing guidance and insights that have significantly contributed to my professional growth. His guidance has not only enhanced my technical skills but also shaped my approach to problem-solving and project execution.

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK INTEGRATED LEARNING PROGRAMMES (WILP) DIVISION
SECOND SEMESTER OF ACADEMIC YEAR 2021-2022

SEZG628T: DISSERTATION OUTLINE

STUDENT ID No.	2023MT93265
NAME OF THE STUDENT	Priya Lekha Guda
STUDENT'S EMAIL ADDRESS	2023mt93265@wilp.bits-pilani.ac.in
STUDENT'S EMPLOYING ORGANIZATION & LOCATION	Deloitte, Hyderabad
SUPERVISOR'S NAME	Suman Chatterjee
SUPERVISOR'S EMPLOYING ORGANIZATION & LOCATION	Deloitte, Bengaluru
SUPERVISOR'S EMAIL ADDRESS	suman.chatterjee341@gmail.com
ADDITIONAL EXAMINAER'S NAME	Pushp Kumar Sachwani
ADDITIONAL EXAMINER'S EMPLOYING ORGANIZATION & LOCATION	Deloitte, Pune
ADDITIONAL EXAMINER'S EMAIL ADDRESS	psachwani@deloitte.com
DISSERTATION / PROJECT / PROJECT WORK TITLE	BiblioSync: Intelligent Book Management System with Author Collaboration

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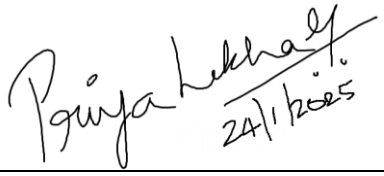		
Signature of Student	**Signature of Supervisor**	**Signature of Additional Examiner**
Name: Priya Lekha Guda	**Name: Suman Chatterjee**	**Name: Pushp Kumar Sachwani**