An Industry Internship Report at Zapcom Solutions Pvt Ltd

An Internship Report for

Course code and Course Title: CSA-652 Industry Internship

Credits: 16

Submitted in partial fulfillment of Master's Degree

Master of Computer Application

by

JOEL OLIVEIRA

Seat Number: 2261

ABC ID: 525384532961

PRN: 201900250

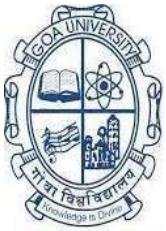
Under the Mentorship of

M HARINATHA REDDY

ABHINANDAN KHAJURIA

Goa Business School

Master of Computer Application



GOA UNIVERSITY

Date: June 2024

Examined by: Seal of the Department

DECLARATION BY STUDENT

I hereby declare that the data presented in this Internship report entitled, “An Industry Internship Report at Zapcom Solutions Pvt Ltd” is based on the results of investigations carried out by me at Zapcom Solutions Pvt Ltd, under the mentorship of Mr. M Harinatha Reddy and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will not be responsible for the correctness of observations / experimental or other findings given in the internship report/work.

I hereby authorize the University authorities to upload this internship report on the University repository or anywhere else as the UGC regulations demand and make it available to anyone as needed.

Date: 12 June 2024 Joel Oliveira

Place: Goa University Seat no: 2261

OFFER LETTER

zapcom.

2nd January 2024

Mr. Joel Oliveira
Mobile # 7038558500

LETTER OF INTERNSHIP

Dear Joel,

Congratulations!

Consequent to your conversation held with us, we are pleased to offer you an internship as "**Intern**" at Zapcom Solutions Pvt Ltd on the terms and conditions mentioned below:

Current Place of Posting: Bangalore
Stipend: Rs.25,000/- per month
Internship Start Date: 8th January 2024

This internship is for a period of **6 months** and based on your performance the company will evaluate full time opportunity for you with the organization. You are obliged to observe the work regulations in force at Zapcom, as far as the punctual beginning and ending of work within the working hours binding for the employees of Zapcom, the discipline at work and the reliable work performances are concerned.

During that term, company may terminate this agreement for any reason or no reason with fifteen (15) days' notice. The terms of this Agreement shall be governed by and interpreted in accordance with the laws of India.

You will be given a laptop and its accessories during the training in Zapcom. The same will have to be returned by you to Zapcom on completion of the training.

Please sign and return the duplicate copy of this letter in token of your acceptance. We look forward to welcoming you in the organization on **8th January 2024** at 11 am.

Yours faithfully,

For **ZapCom Solutions Pvt Ltd,**

SRINIVAS KOTHAKOTA
COO

Accepted

INDIA
Zapcom Solutions Pvt. Ltd
9th Floor, Gamma Tower, Sigma Soft Tech Park,
Whitefield, Bangalore - 560066
Ph: +91-80-67232300

www.zapcg.com

USA
Zapcom Group Inc.
105 Decker Court, Ste. 810 Irving,
TX 75062.
Ph: (972)441-2081

INTERNSHIP CERTIFICATE

zapcom.

31st May 2024

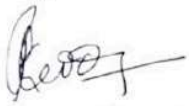
TO WHOMSOEVER IT MAY CONCERN

This is to inform you that **Mr. Joel Oliveira, ZC00608** is currently undergoing internship at our company, **Zapcom Solutions Pvt. Ltd** from 8th January 2024.

During his tenure he has met the expectations of his team lead/mentor/guide and found to be regular and sincere.

This letter is being issued on his request to be submitted with the project report at Goa University.

For Zapcom Solutions Pvt. Ltd.



Srinivas Reddy Kothakota
Chief Operating Officer

INDIA
Zapcom Solutions Pvt. Ltd
9th Floor, Gamma Tower, Sigma Soft Tech Park,
Whitefield, Bangalore - 560066
Ph: +91-80-67232300

www.zapcg.com

USA
Zapcom Group Inc.
105 Decker Court, Ste. 810 Irving,
TX 75062.
Ph: (972)441-2081

COMPLETION CERTIFICATE

This is to certify that the internship report “An Industry Internship Report at Zapcom Solutions Pvt Ltd” is a bonafide work carried out by Mr. Joel Oliveira under my mentorship in partial fulfillment of the requirements for the award of the degree of Master of Computer Application in the Discipline of Computer Science and Technology at Goa Business School, Goa University.

Date: 12 June 2024

Place: Bangalore, Karnataka M Harinatha Reddy

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to all those who have supported and guided me throughout my internship at Zapcom Solutions Pvt Ltd.

First and foremost, I would like to thank Mr. Kishore Pallamreddy, CEO of Zapcom Solutions Pvt Ltd, for providing me with the opportunity to intern at such a reputable company. His vision and leadership have created an environment conducive to learning and growth.

I am deeply thankful to my current mentor, Mr. M Harinatha Reddy, whose guidance, patience, and expertise have been invaluable to my professional development during this internship. I also extend my heartfelt thanks to my previous mentor, Mr. Abhinandan Khajuria, for his support and encouragement in the early stages of my internship.

At Goa University, I am grateful to our placement coordinator, Prof. Hanumant Redkar, for his efforts in securing this internship opportunity for us through campus placement. I would also like to thank Prof. Ramrao Wagh, our MCA Program Director, for his continuous support and for fostering an educational environment that encourages practical learning experiences.

A special thanks to my senior and friend, Mr. Faiyaz Jambotkar, who is also a part of Zapcom Solutions. His assistance and insights were crucial in helping me navigate through various challenges and in making the most out of this internship experience.

Finally, I extend my appreciation to my family, friends, and peers for their unwavering support and encouragement throughout this journey.

Thank you all for making this internship a truly enriching and memorable experience.

EXECUTIVE SUMMARY

During my internship at Zapcom Solutions Pvt Ltd, a global leader in product engineering and technology services, I had the opportunity to work with a company dedicated to delivering custom software solutions across the Travel, Hospitality, Fin-Tech, and Retail industries. With headquarters in California and offices in Dublin, Dallas, Bangalore, Hyderabad, and San Jose, Zapcom's global presence allows it to engage closely with clients worldwide. The company's success is driven by a high-performing team and visionary leadership committed to leveraging the latest technological advancements to provide exceptional value to its clients.

In my role, I worked on several POCs (Proof of Concept). One of the primary projects was the development of Taskmaster, an Employee and Task Management System. I was responsible for the backend development using Java Spring Boot, which involved API development, implementing Swagger documentation, custom error handling, and transaction management. Another significant project was a Blogging Application, where I implemented features such as user management, blog post creation, and commenting, ensuring secure access using JWT. Additionally, I also participated in the ZapMinds Ideathon, where my team and I came up with an AI-driven solution to evaluate areas and amenities for individuals migrating to new locations.

Throughout my internship, I gained comprehensive knowledge and skills in various areas. I enhanced my understanding of Java fundamentals, focusing on OOP principles, the collection framework, and Stream APIs. My experience with Spring framework was extensive, covering JDBC, Spring Data JPA, REST APIs, Spring Web MVC, AOP, transaction handling, and Swagger documentation. I am also exploring microservices architecture, including ConfigServer, Eureka, Feign Client, Circuit Breaker, and Spring Cloud Gateway. My

hands-on experience with databases such as MySQL, PostgreSQL, and MongoDB improved my ability to design and manage data storage solutions. Furthermore, I developed frontend skills in HTML, CSS, JavaScript, React, and Bootstrap, and became proficient in tools and technologies like Git, GitHub, Azure DevOps, Hibernate, Maven, etc. To support my learning, I completed certifications on Udemy, LinkedIn Learning, and followed various YouTube tutorials.

The internship presented several challenges that I successfully overcame. Learning and adapting to new technologies like Spring Boot, JWT and backend deployment was initially challenging, but I dedicated time to self-study and utilized online resources to build my knowledge. Adapting to the corporate environment required observing and learning from colleagues, while relocating to Bangalore posed personal and logistical challenges. By researching extensively and building a support network, I managed to adapt to the new city and maintain a healthy work-life balance.

Overall, my internship at Zapcom Group was a transformative experience, providing me with advanced technical skills, practical project experience, and the ability to adapt to a professional work environment. The detailed tasks handled, learnings, and challenges faced during this period have significantly contributed to my growth as a software developer.

CONTENTS

CHAPTER 1: ORGANIZATION / COMPANY

1.1 BIRDS-EYE VIEW OF ZAPCOM GROUP

Zapcom Group stands as a global frontrunner in product engineering and technology services, dedicated to crafting custom software solutions that empower partners to meet their business objectives with precision and efficiency. With a strategic focus on the Travel, Hospitality, Fin-Tech, and Retail industries, Zapcom has established itself as a hub of innovation and technological excellence. The company's headquarters in California are complemented by a global presence, with offices in Dublin (California), Dallas (Texas), Bangalore (India), Hyderabad (India), and San Jose (Costa Rica). This geographical distribution allows Zapcom to engage closely with clients worldwide, ensuring that their unique needs and challenges are addressed with tailored solutions.

The hallmark of Zapcom's success lies in its high-performing team, which brings together expertise in innovative ideas and emerging technologies. The leadership team, comprising industry veterans with extensive experience in technology consulting, product engineering, and custom solution development, drives the company's strategic vision and operational excellence. Zapcom's commitment to leveraging the latest technological advancements ensures that their clients stay ahead of the curve, adapting swiftly to market changes and evolving customer expectations. By fostering a culture of continuous improvement and agility, Zapcom consistently delivers exceptional value and supports its clients in achieving sustained growth and success.

1.2 PRODUCTS AND SERVICES OF ZAPCOM GROUP

Zapcom Group offers an expansive range of products and services meticulously designed to cater to the dynamic needs of modern businesses. At the core of their offerings is custom software development, where they create bespoke solutions that align perfectly with the specific requirements of their clients. Specializing in scalable platform development, Zapcom has built numerous advanced systems, such as travel connectivity platforms that integrate various services like Expedia and Agoda, and personalized cruise shopping experiences that leverage AI to offer tailored recommendations.

In the realm of data solutions, Zapcom excels in transforming raw data into valuable insights. Their services include data migration, engineering, visualization, and machine learning (ML) engineering, helping businesses harness the power of data to drive decision-making and innovation. Their cloud platform services focus on optimizing performance, reliability, and cost-efficiency, with expertise in cloud-native development, app modernization, and cloud transformation. Additionally, Zapcom's enterprise asset management services enable businesses to integrate multiple facets of their operations, fostering reusable technical assets that deliver consistent innovation.

One of their standout projects, AI Model Life Cycle Management, showcases their ability to develop sophisticated machine learning platforms that enhance product and service quality in the hospitality industry. By employing Agile and Scrum methodologies, ZapCom ensures that their project delivery is not only efficient but also adaptive to the changing needs of their clients, ultimately driving measurable business value and competitive advantage.

1.3 ORGANIZATIONAL STRUCTURE AND ORGANOGRAM OF ZAPCOM GROUP

Zapcom Group's organizational structure is crafted to promote innovation, agility, and operational efficiency, with a clear focus on client success and technological excellence. At the helm is Kishore Pallamreddy, the Founder and CEO, whose visionary leadership steers the company's strategic direction. The executive team includes Sai Konda as the Chief Information Officer, overseeing the company's information technology strategies; Srinivas Kothakota, the Chief Operating Officer, managing daily operations and ensuring seamless execution of projects; Deepak Puranam, the Chief Product Officer, driving product development and innovation; Paul Lehman, the Chief Commercial Officer, leading business development and client relationships; and Pooja Parthi, the Head of HR, focusing on talent acquisition and organizational culture.

The company also benefits from the strategic insights of its Board of Advisors and Directors, featuring seasoned professionals like Jim Fitzpatrick and Joan Khuel, who provide valuable guidance on industry trends and corporate governance. Kumar Saurabh Johny, as the Head of Innovation and AI Strategy, spearheads initiatives in emerging technologies and artificial intelligence, ensuring that Zapcom remains at the forefront of tech advancements.

Zapcom's internal structure is divided into several key departments, each specializing in critical areas of the business. These include Product Development, where innovative software solutions are conceptualized and built; Data Solutions, which focuses on data engineering and analytics; Cloud Platforms, dedicated to optimizing cloud infrastructure and services; and Enterprise Asset Management, which handles the integration and management of business operations. Each department is staffed with skilled professionals who are committed to delivering high-quality solutions and achieving client satisfaction.

This well-organized yet flexible structure allows Zapcom to respond swiftly to market demands and client needs, ensuring that they can provide tailored, effective solutions in a rapidly changing technological landscape. By maintaining a collaborative and client-centric culture, Zapcom continues to enhance its service offerings and deliver exceptional value to its global clientele.

CHAPTER 2: TASKS HANDLED

2.1 TASKMASTER - EMPLOYEE AND TASK MANAGEMENT SYSTEM

2.1.1 Project Overview

The Employee and Task Management System is a team project, which is a comprehensive application designed to streamline the management of employees and their respective tasks. This system offers a strong foundation for organizational task assignment and tracking by enabling complete CRUD (Create, Read, Update, Delete) operations on both employees and tasks. Managers may efficiently assign tasks to staff members with this program, making sure that the right people are working on the appropriate projects. This is a personal project made in collaboration with my fellow peers.

2.1.2 Objectives

- To facilitate efficient management of employee records.
- To streamline the assignment and tracking of tasks within an organization.
- To provide a user-friendly interface for performing CRUD operations on employees and tasks.
- To enhance organizational productivity through effective task management.

2.1.3 Features

a. Employee and Task Management

- **Create**: Add new employees and tasks to the system.
- **Read**: View detailed information about employees and tasks.
- **Update**: Modify existing employee and tasks details.
- **Delete**: Remove employees and tasks from the system.

c. Task Assignment

- Assign tasks to existing employees.
- View tasks assigned to specific employees.
- Track the status of tasks and manage deadlines.

d. Search and Filter

- Search for employees by name or id.
- Filter tasks by status, priority, or assigned employee.

2.1.4 Technologies Used

- Backend: Java SpringBoot
- Frontend: React.js
- Database: PostgreSQL - Hosted by Render
- Others tech: Material UI

2.1.5 My Responsibilities and Contributions

I was responsible for developing the backend of the Taskmaster project. The backend was implemented using Java Spring Boot, with a PostgreSQL database hosted on render. My contributions included API development, implementing Swagger documentation, handling exceptions with custom error responses, transaction handling and integrating pagination.

2.1.6 Backend Development with Java Spring Boot

a. Setup and Configuration:

- Initialized the Spring Boot application with necessary dependencies.

- Configured the application to connect to a PostgreSQL database hosted on render.
- Implemented necessary configurations for entity management and transaction handling.

b. Entity Creation:

- Created entities for Employee and Task with appropriate JPA annotations.
- Defined relationships between entities, such as one-to-many between Employee and Task.

2.1.7 CRUD Operations (APIs)

a. Employee and Task APIs:

- Implemented endpoints to create, read, update, and delete employee and tasks records.
- Ensured proper validation and handling of employee and tasks data.
- Included functionality to assign tasks to employees.

b. Task APIs:

- Implemented endpoints to create, read, update, and delete tasks.

2.1.8 Swagger Documentation

a. Integrated Swagger for API documentation.

- Configured Swagger to generate interactive API documentation automatically.
- Annotated APIs with appropriate Swagger annotations for better clarity and usability.

2.1.9 Exception Handling with Custom Error Responses

a. Exception Handling with Custom Error Responses

- Implemented a global exception handler using @ControllerAdvice and @ExceptionHandler.
- Defined custom error responses to provide meaningful error messages to API consumers.

2.2 BLOGGING APPLICATION

2.2.1 Project Overview

This application allows users to post blogs along with images and descriptions, view posts by other users, and comment on them. The main features of the application include user registration, role-based access control, blog post creation, image upload, post descriptions, commenting on posts, and categorization of posts. This is a personal project specially created to learn and implement authentication and authorization using JWT.

2.2.2 Key Features and Components:

a. User Management:

- Users can register and log in to the application.
- Role-based authentication ensures that only users with appropriate roles can access certain functionalities.
- JWT (JSON Web Token) is used for secure user authentication and authorization.

b. Blog Post Management:

- Users can create and publish blog posts, including uploading images and adding descriptions.
- Each post can be assigned to one or more categories to facilitate better organization and filtering.

c. Commenting System:

- Users can comment on blog posts, enabling interaction and discussion.

d. Role-Based Authentication:

- Implemented JWT for secure and efficient authentication and authorization.
- Different roles (e.g., Admin, User) have different levels of access and permissions, ensuring that only authorized users can perform certain actions.

2.2.3 Development Process:

- **Database Design:** Designed the database schema using PostgreSQL. Also, created an ER diagram to follow the database design accordingly while creating entities and implementing proper relationship mapping between them
- **Backend Development:** Developed RESTful APIs using Spring Boot, adhering to best practices for scalability and maintainability.
- **Security Implementation:** Integrated JWT for secure authentication and implemented role-based access control to safeguard sensitive operations.
- **Testing:** Conducted thorough testing of the APIs using tools like Postman to ensure reliability and performance.

2.2.4 Technologies Used:

- Java Spring Boot
- PostgreSQL
- JWT for authentication
- Swagger for API documentation

2.3 CUSTOMER MANAGEMENT SYSTEM

2.3.1 Project Overview

This personal project was designed to perform basic CRUD (Create, Read, Update, Delete) operations on customer data, providing a streamlined way to manage customer information.

2.3.2 Key Features and Components:

a. Entity Fields: Customer

- First Name: The first name of the customer.
- Last Name: The last name of the customer.
- Email: The email address of the customer.
- Mobile: The mobile phone number of the customer.

b. CRUD Operations:

- Create: Allows adding new customer records to the database.
- Read: Enables viewing of existing customer records, with options to view all customers or search for specific customers based on criteria.
- Update: Provides functionality to update existing customer information.
- Delete: Allows removal of customer records from the database

c. Technologies Used:

- Java Spring Boot
- PostgreSQL / MongoDb

2.4 ZAPMINDS IDEATHON

2.4.1 Ideathon Overview

The ZapMinds Ideathon, organized by Zapcom, was an event designed to ignite creativity and foster innovation among participants. This event served as a platform for both seasoned professionals and newcomers to brainstorm, collaborate, and transform their ideas into practical solutions. Focusing on leveraging Generative AI to address real-world problems in the Travel & Hospitality, FinTech, Retail, and Healthcare sectors, the Ideathon encouraged diverse teams to produce innovative solutions, ignite entrepreneurial spirit, and develop intellectual property that could evolve into exciting products.

2.4.2 My Participation in the Ideathon

I participated in the ZapMinds Ideathon with a team, where we developed the idea of 'Personalized Proximity AI: Personalized Area & Amenity Rating Evaluator'. This AI-driven solution assists individuals migrating to new locations in finding suitable places to stay, based on their specific amenity requirements and safety considerations.

a. Problem Space

When users wish to rent or buy property, various factors influence their decision, including the area’s amenities and safety. Currently, evaluating a property’s area requires users to manually search maps and gather information, which is time-consuming and inefficient.

b. My Contribution

My role focused on market research and defining the addressable market. I gathered statistics on the number of people migrating from one place to another and analyzed existing systems that align with our concept. This research provided crucial insights into the potential market size and the competitive landscape, supporting the feasibility and impact of our idea.

2.5 ONVERITY HOUSEMASTER DATA ENTRY

2.5.1 Introduction

In this task, I had the opportunity to work on a significant project for our client company, Neighborly. The project involved migrating data from their legacy system, HomeGauge, to a new system, Onverity HouseMaster. This task was crucial for Neighborly as it aimed to streamline their operations and enhance efficiency by leveraging modern technology.

2.5.2 Initial Approach

Initially, our team adopted a manual approach to transfer the required data from HomeGauge to Onverity HouseMaster. This involved manually extracting data from the old system and inputting it into the new system. While this method served as a temporary solution, it was time-consuming and prone to errors.

2.5.3 Implementation of Automation

Recognizing the inefficiencies of manual data transfer, our team took proactive measures to automate the process using Python scripting. Leveraging the versatility and power of Python, our team developed a custom script specifically designed to transfer and

import data into Onverity HouseMaster. This automation not only accelerated the data migration process but also significantly reduced the risk of human errors, ensuring data integrity and consistency.

CHAPTER 3: LEARNINGS

3.1 JAVA FUNDAMENTALS

During my internship, I deepened my understanding of Java programming fundamentals, which form the backbone of any Java-based development work. Key areas of focus included:

- **Object-Oriented Programming (OOP):** I reinforced my knowledge of OOP principles such as inheritance, polymorphism, encapsulation, and abstraction. These principles are crucial for designing robust and scalable applications.
- **Collection Framework:** I learned to efficiently manage groups of objects using Java's collection framework, including Lists, Sets, Maps, and Queues. Understanding these data structures helped in optimizing performance and memory usage.
- **Stream APIs:** I explored the Stream API introduced in Java 8, which provides a powerful way to process collections of objects. The ability to perform filter, map, and reduce operations on collections improved my code's readability and efficiency.

3.2 SPRING / SPRING BOOT

I gained comprehensive experience with the Spring Framework and Spring Boot, which are pivotal for building modern Java applications. My learnings included:

- **JDBC and Servlets:** I learned to handle database connectivity and web requests using JDBC and servlets, laying the foundation for data-driven applications.
- **Spring Data JPA:** I mastered the use of Spring Data JPA for data persistence, simplifying database interactions and reducing boilerplate code.

- **REST APIs:** I developed RESTful web services, allowing seamless communication between client and server. This included CRUD operations and data manipulation.
- **Spring Web MVC:** I gained proficiency in building web applications using the Model-View-Controller (MVC) architecture, ensuring separation of concerns and maintainability.
- **Spring AOP (Aspect-Oriented Programming):** I understood the implementation of cross-cutting concerns such as logging and security using AOP.
- **Transaction Handling:** I learned to manage transactions, ensuring data consistency and integrity across multiple operations.
- **Global Exception Handling:** I implemented global exception handling mechanisms to provide consistent and user-friendly error responses.
- **Swagger Documentation:** I utilized Swagger for documenting APIs, making it easier for developers to understand and interact with the web services.
- **Pagination:** I implemented pagination to handle large datasets efficiently, improving performance and user experience.
- **JUnit Testing:** I developed unit tests using JUnit to ensure code quality and reliability.

3.3 MICROSERVICES (ONGOING)

I am currently diving into the world of microservices architecture, which breaks down applications into smaller, manageable services. Key components I am learning include:

- **ConfigServer and ConfigClient:** I am setting up centralized configuration management using Spring Cloud Config, ensuring consistent and dynamic configuration across services.

- **Service Discovery with Eureka:** I am implementing service discovery using Eureka, allowing services to find and communicate with each other dynamically.
- **Feign Client:** I am using Feign, a declarative web service client, to simplify HTTP API clients.
- **Circuit Breaker Design Pattern:** I am implementing the Circuit Breaker pattern to handle faults gracefully and improve system resilience.
- **Spring Cloud Gateway:** I am learning to route requests to appropriate microservices using Spring Cloud Gateway, providing a single-entry point for the system.

3.4 DATABASES

I gained hands-on experience with various databases, enhancing my ability to design and manage data storage solutions:

- **MySQL and PostgreSQL:** I worked with relational databases, learning to design schemas, write complex queries, and optimize database performance.
- **MongoDB:** I explored NoSQL databases with MongoDB, understanding its flexible schema design and use cases for handling unstructured data.

3.5 OTHER LEARNINGS

In addition to backend development, I broadened my skills with frontend and web technologies, enabling full-stack development capabilities:

- **HTML, CSS, JavaScript:** I learned the fundamentals of web development, including structuring web pages with HTML, styling with CSS, and adding interactivity with JavaScript.

- **React:** I gained experience with React, a powerful library for building user interfaces. I learned to create reusable components and manage application state effectively.
- **Bootstrap:** I used Bootstrap to design responsive and visually appealing web applications, speeding up the development process with its pre-built components and utilities.
- **Git and GitHub:** I became proficient in using Git for version control, managing code repositories, and collaborating with team members on GitHub. I learned essential Git commands and workflows to maintain code integrity and track changes.
- **Azure DevOps:** I utilized Azure DevOps as a Git repository, leveraging its version control features to manage code changes and collaborate with my team effectively.

Beyond technical skills, I also enhanced my abilities in team collaboration and communication:

- **Team Collaboration and Communication:** Throughout my projects, I actively participated in stand-up calls, meetings, and group discussions. These experiences improved my communication skills, enabling me to clearly articulate ideas, provide updates, and collaborate efficiently with team members. I learned the importance of effective communication in ensuring project alignment and achieving common goals.

3.6 TOOLS AND TECHNOLOGIES USED

Java is a high-level programming language used for building backend applications.

Spring Framework is a comprehensive framework for enterprise Java development, facilitating dependency injection and modular architecture.

Spring Boot is a framework that simplifies the setup and development of new Spring applications with minimal configuration.

REpresentational **S**tate **T**ransfer is an architectural style for designing networked applications using HTTP requests.

Swagger is a tool for documenting and testing RESTful APIs, improving developer understanding and interaction.

JUnit is a testing framework for Java applications to perform unit testing and ensure code quality.

MySQL is a widely used open-source relational database management system.

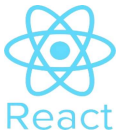
PostgreSQL is an advanced open-source relational database system known for its robustness and feature set.

MongoDB is a NoSQL database that uses a flexible, JSON-like document structure.

HTML is the standard markup language for creating web pages.

CSS is a stylesheet language used for describing the presentation of a document written in HTML.

JavaScript is a high-level programming language used for creating interactive effects within web browsers.



React is a JavaScript library for building user interfaces with reusable components.

Bootstrap is a front-end framework for developing responsive and mobile-first web pages.

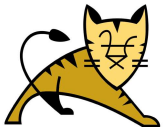
Git is a version control system for tracking changes in source code during software development.

GitHub is a web-based platform that uses Git for version control and provides collaboration features.

Azure DevOps is a set of development tools provided by Microsoft, used here primarily for Git repository hosting and version control.

Hibernate is an Object-Relational Mapping (ORM) framework for mapping Java objects to database tables.

Maven is a build automation tool used primarily for Java projects.



Apache Tomcat is a widely used web server and servlet container.

Mockito is a mocking framework for unit tests in Java.

Lombok is a Java library that helps to reduce boilerplate code.

3.7 COURSE CERTIFICATIONS AND SELF STUDY DURING INTERNSHIP

3.7.1 Udemy Certifications:

- Spring Boot 3, Spring 6 & Hibernate for Beginners
- Java Spring Framework 6 with Spring Boot 3
- Full Stack: React and Java Spring Boot - The Developer Guide (Ongoing)

3.7.2 LinkedIn Learnings Certifications:

- Git Essential Training
- Learning Java 11
- Java Essential Training: Syntax and Structure
- Java Essential Training: Objects and APIs
- Learning Java Collections
- Java Object-Oriented Programming
- Java: Lambdas and Streams

3.7.3 YouTube Tutorials:

- Java Tutorial For Beginners - Telusko
- Java Collections - SDET- QA
- Java Streams (Stream API in Java) - SDET- QA
- Lambda Expressions in Java - SDET- QA
- Spring Boot Tutorials - Telusko
- Spring Boot | Exception Handling - Ashok IT
- java.lang package - TheCoders TV
- Design Patterns Tutorial in Hindi - Learn Code With Durgesh
- Servlet & JSP Tutorials for Beginners - Smart Programming
- Microservices Tutorial - Learn Code With Durgesh (Ongoing)

CHAPTER 4: CHALLENGES

4.1 LEARNING AND PROJECT-RELATED CHALLENGES

4.1.1: Learning and Adapting to New Technologies

- Description: One of the significant challenges was getting up to speed with new technologies like Java Spring Boot, PostgreSQL, and JWT for authentication. These were technologies I had little to no prior experience with.
- Solution: I dedicated time to self-study and utilized online resources such as YouTube tutorials, documentation, Udemy Learning and LinkedIn Learning. Additionally, I sought guidance from my mentors and colleagues, who provided valuable insights and support. I also worked on small practice projects to build my confidence.

4.1.2: Implementing Secure Authentication and Authorization

- Description: Implementing a secure authentication and authorization mechanism using JWT was challenging, especially ensuring that it was robust and protected against common security vulnerabilities.
- Solution: To overcome this, I studied best practices for implementing JWT-based authentication by following the documentation and online tutorial.

4.1.3: Ensuring Comprehensive Testing and Debugging

- Description: Ensuring that the applications were thoroughly tested to catch all potential bugs and issues was a significant challenge. This included writing tests for different scenarios and handling edge cases.

- Solution: I wrote comprehensive unit tests and integration tests using testing frameworks like JUnit. I also used Postman for API testing to simulate different user actions and verify that the APIs behaved as expected.

4.2 ADAPTING TO CORPORATE LIFE

4.2.1: Transitioning from Campus Life to Corporate Environment

- Description: Adapting to the structured and formal environment of corporate life was a challenge, especially coming directly from a campus setting. This included adjusting to corporate protocols, professional communication, team dynamics, etc.
- Solution: I took time to observe and learn from my colleagues, especially from my university seniors, noting how they conducted themselves and tried to communicate in a professional setting. I also participated in company team meetings to better understand corporate culture and expectations. Over time, I adapted my behavior and communication style to align with corporate norms.

4.3 RELOCATION AND PERSONAL ADAPTATION

4.3.1: Relocating from Goa to Bangalore

- Description: Moving from Goa to Bangalore for my internship posed personal and logistical challenges. Adapting to a new city, finding accommodation, and dealing with the initial sense of unfamiliarity were significant hurdles.
- Solution: I researched extensively about Bangalore before moving, seeking advice from friends and seniors who had lived and were living there. I found suitable accommodation close to my workplace to reduce commute time. To familiarize

myself with the city, I explored local neighborhoods with my colleagues. Building a support network with fellow interns and colleagues also helped me adjust to the new environment.

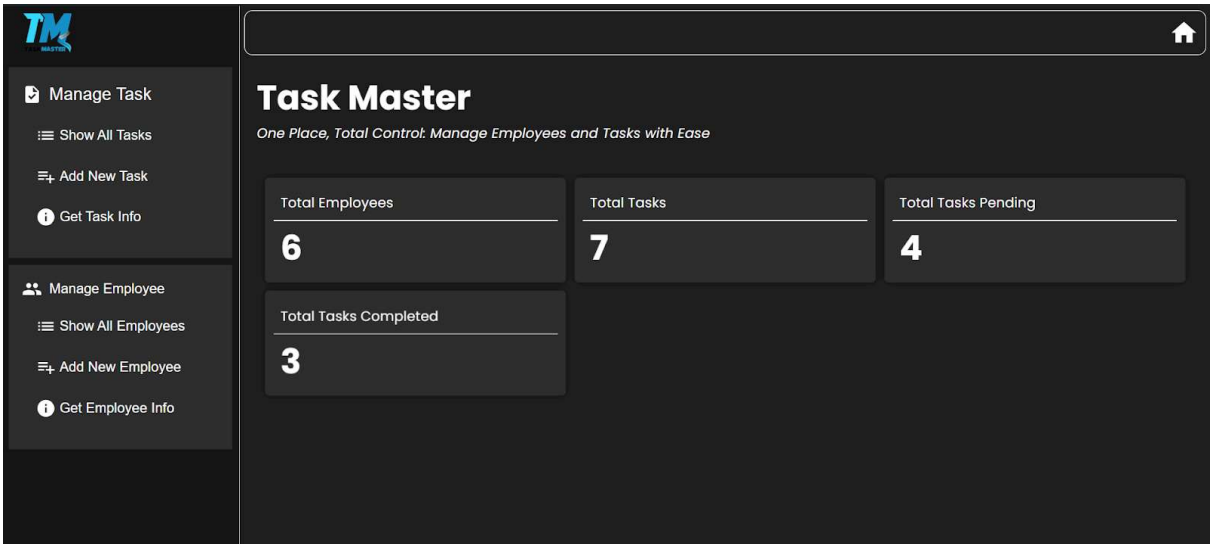
4.3.2: Maintaining Work-Life Balance

- Description: Balancing the demands of the internship with personal time and activities was challenging, especially in a new city where I wanted to explore and socialize.
- Solution: I established a routine that included dedicated work hours and personal time. I ensured that I took breaks and participated in recreational activities to avoid burnout. Planning my weekends and leisure time helped me explore Bangalore and relax, contributing to a healthy work-life balance.

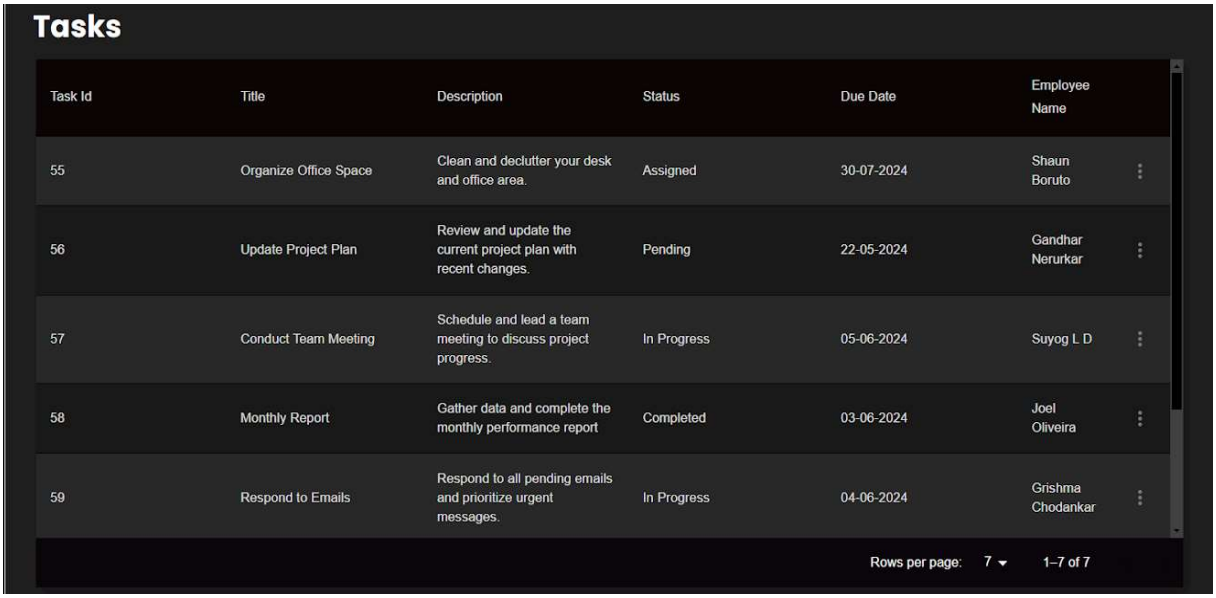
Appendix I

Samples Of the Work Done

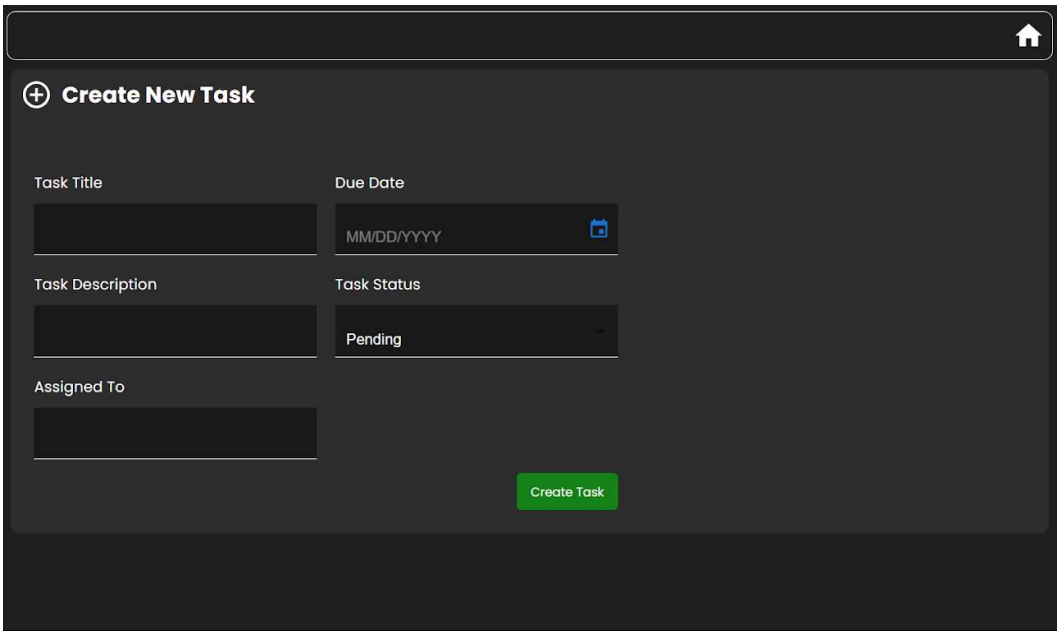
TaskMaster v2 – Dashboard



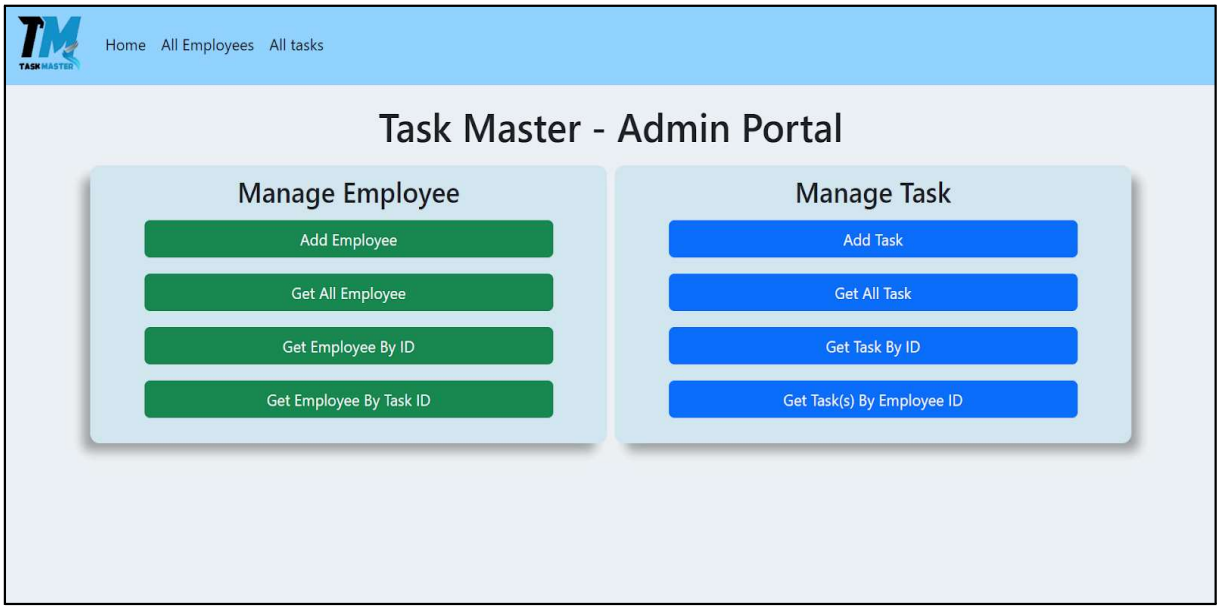
TaskMaster v2 – Tasks Table



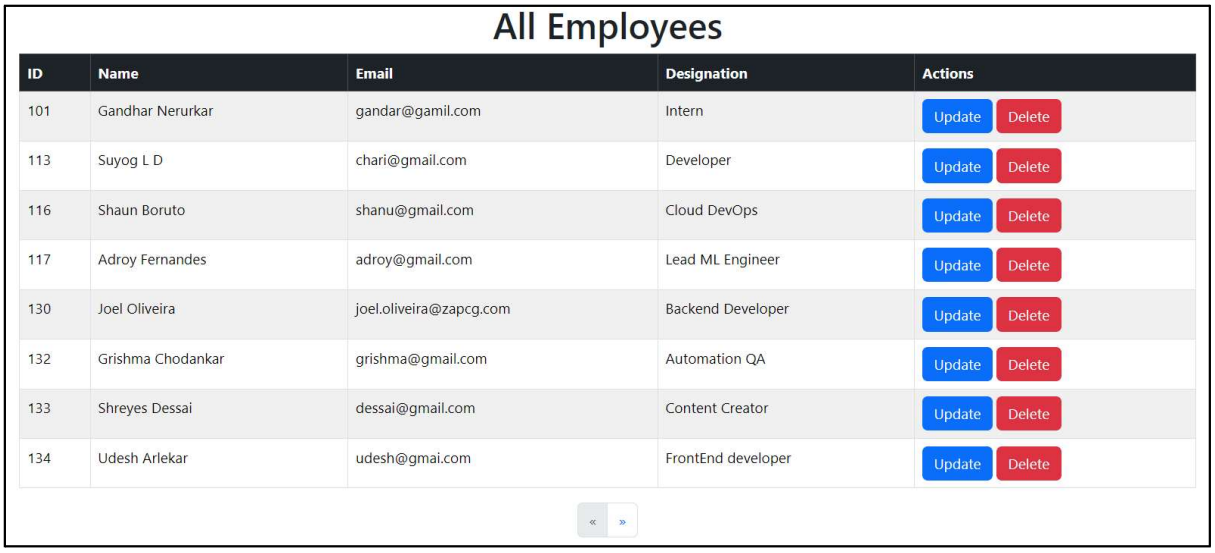
TaskMaster v2 – Create New Task Form



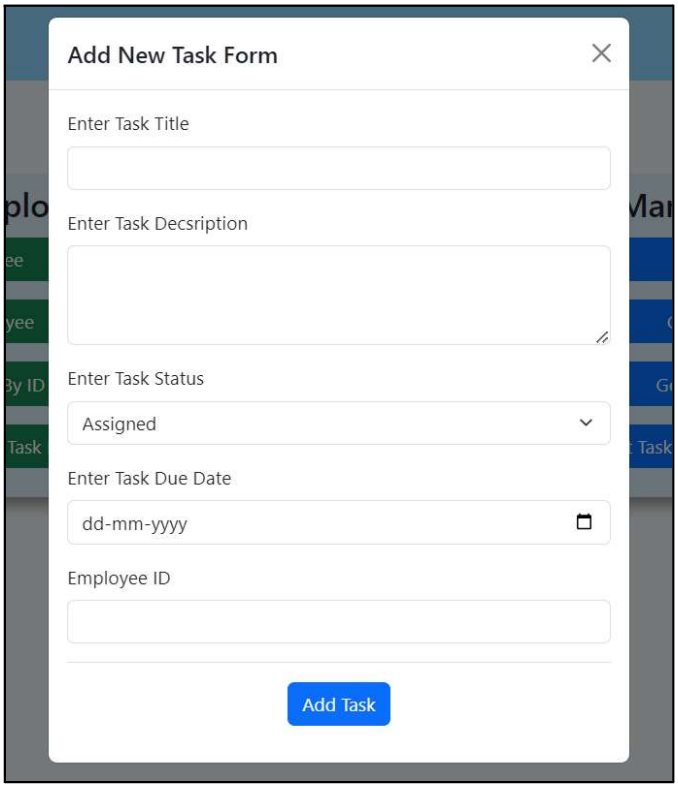
TaskMaster v1 – Landing Page



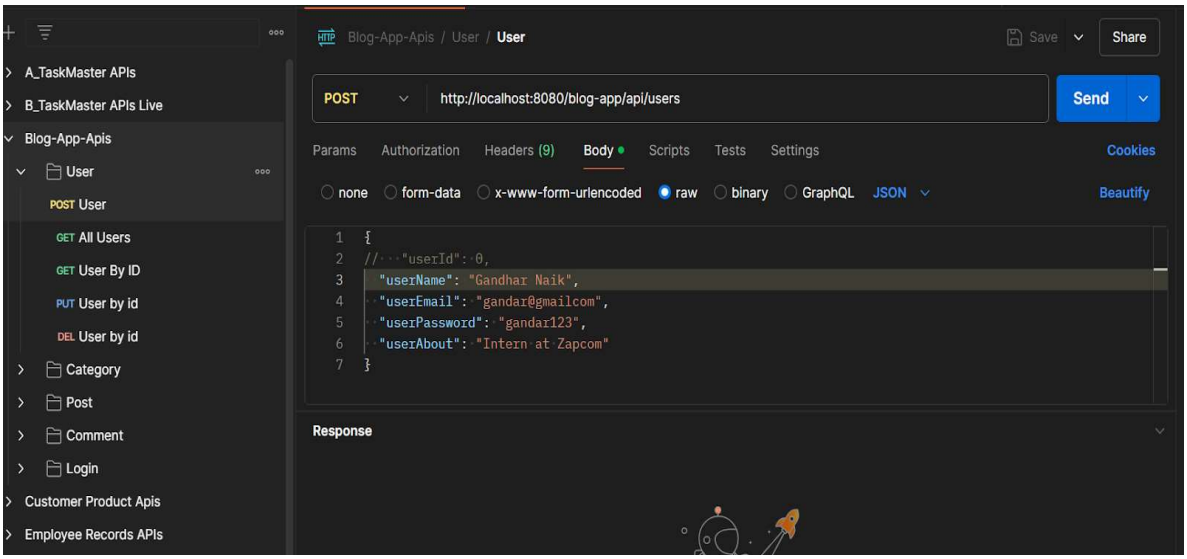
TaskMaster v1 – Employees Table



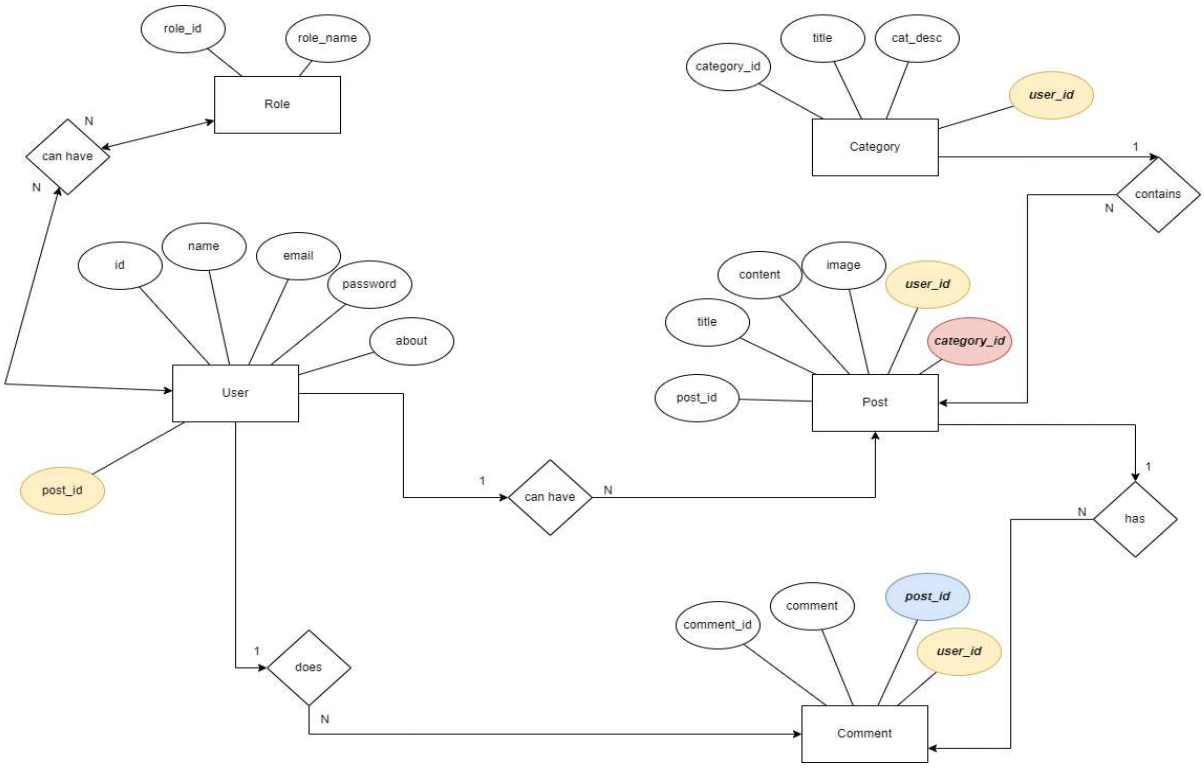
TaskMaster v1 – Add New Task Form



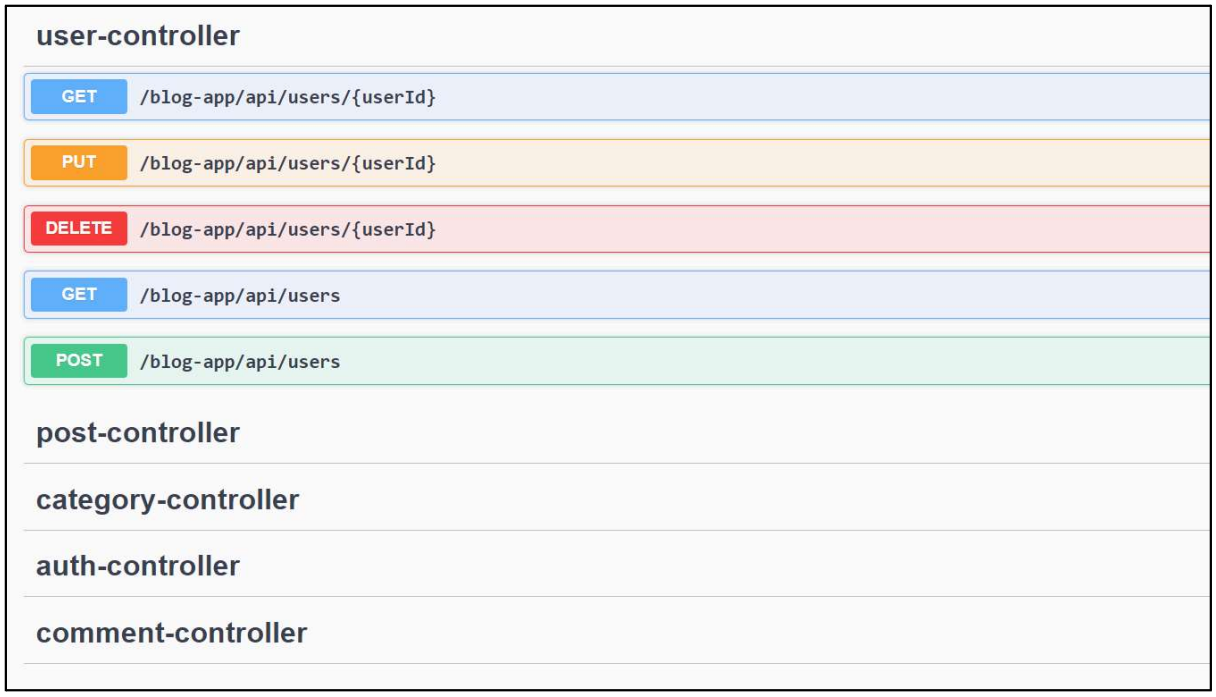
Blogging Application – Api testing on Postman



Blogging Application – ER Diagram of the database mappings



Blogging Application – Swagger Documentation for managing the Api's



Ideathon ZapMinds

Appendix II

Photos While at Work