# Software Engineering Internship

An Internship Report for

Course code and Course Title: CSA-652 & Industry Internship

Credits: 16

Submitted in partial fulfillment of Masters Degree MCA in Subject/Specialization

by DIAS CHARLTON JULIUS Seat Number: 2235 ABC ID: 663627375816 PRN: 201804603

Under the Mentorship of **MR. JANAKIRAM REDDY** 

Computer Science & Technology Goa Business School



### **GOA UNIVERSITY**

Date:

Examined by:

Seal of the School/Dept

#### **DECLARATION BY STUDENT**

I hereby declare that the data presented in this Internship report entitled, "Software Development Internship" is based on the results of investigations carried out by me at ZapCom Pvt. Ltd., under the mentorship of Mr. Janakiram 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/College will not be responsible for the correctness of observations /experimental or other findings given the internship report/work.

I hereby authorize the University/college authorities to upload this dissertation on the dissertation repository or anywhere else as the UGC regulations demand and make it available to any one as needed.

Signature and Name of Student Seat no: 22P0320013

Date: Place: Goa University

## **COMPLETION CERTIFICATE**

This is to certify that the internship report "Software Development" is a bonafide work carried out by Mr. Charlton Julius Dias under my mentorship in partial fulfillment of the requirements for the award of the degree of Masters of Computer Applications in the Discipline Computer Science & Technology at the Goa Business School, Goa University.

Date:

Signature and Name of Mentor

Signature of Dean of School/HoD Date: Place: Goa University School/Department Stamp

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### **Offer Letter**



2<sup>nd</sup> January 2024

Mr. Charlton Julius Dias Mobile # 9763145456

#### LETTER OF INTERNSHIP

Dear Charlton,

#### **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 8<sup>th</sup> January 2024 at 11 am.

Yours faithfully,

For ZapCom Solutions Pvt Ltd,

SRINIVAS KOTHAKOTA **COO** 

Accepted

Adias

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



31st May 2024

#### TO WHOMSOEVER IT MAY CONCERN

This is to inform you that **Mr. Charlton Julius Dias, ZC00614** is currently undergoing internship at our company, **Zapcom Solutions Pvt. Ltd** from 8<sup>th</sup> 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

www.zapcg.com

#### <u>ACKNOWLEDGEMENT</u>

I would like to extend my heartfelt thanks to those who played a significant role in making my internship a success.

First and foremost, my sincere gratitude to Mr. Kishore Pallamreddy, Founder and CEO of Zapcom pvt ltd. I want to thank him for giving me the opportunity to work at the company.

I am deeply grateful to my mentor Janakiram Reddy, who consistently challenged me to learn and implement new frameworks. The support in maintaining high standards and meeting tight deadlines significantly contributed to my professional growth. This experience has instilled in me a strong work ethic and a sense of accomplishment.

I would also like to express my sincere appreciation to my project guide Sandeep Vyas, who provided invaluable advice and tips on navigating the complexities of the client project. The guidance offered clarity and direction, helping me stay focused and motivated. The insights were crucial to the project's success, and I am deeply appreciative of the time and effort invested in helping me.

The mentorship and guidance I received have been pivotal to my learning experience and overall success during this internship.

I am also thankful to the rest of the Zapcom staff for their support and guidance, which helped me overcome the challenges I faced during the work period. I would like to thank my university mentor, Prof Hanumant Harichandra Redkar, for providing valuable advice and ensuring a smooth transition between my academic and the professional world.

Lastly, I am grateful to Goa University for providing me with the opportunity to obtain professional work experience, enabling me to acquire invaluable practical knowledge.

My professional development has really benefited from this internship, and I am thankful for everyone who helped me make it possible.

#### EXECUTIVE SUMMARY

Organization ZapCom Solutions Pvt Ltd, founded in 2010, is a global technology company specializing in software development, digital transformation, and IT consulting. Headquartered in Dallas, Texas, with additional offices worldwide, ZapCom serves industries like Travel & Logistics, Ecommerce & Retail, and Banking & Fintech. The company emphasizes a client-centric approach and continuous innovation.

Tasks Handled During my internship, I worked on various projects and initiatives:

- EZ Property Control: Developed a property management solution with tenant management and payment tracking using React Native, TypeScript, Express, MongoDB, and Razorpay.
- Mediconnect Central: Created a scalable Hospital Management System with multi-tenancy and role-based access control using Next.js, TRPC, NextAuth, and Prisma.
- Fortress (Client Project): Focused on frontend development, implementing a multilingual interface with i18next and Material-UI, and ensuring code quality with Jest and React Testing Library.
- Proposed AI-driven solutions for fintech, travel, and hospitality sectors in an internal Ideathon.
- Developed a POC for route optimization using Here Maps API.
- Assisted in migrating data from an old system to a new system for a client.

Work Schedule My work schedule adapted to project needs, starting from 9:00 am to 6:00 pm, with occasional extensions for international team collaborations and client demos.

Skills and Technologies Throughout the internship, I developed the following skills:

- Frontend Development: React, React Native, TypeScript, Next.js, and responsive design.
- Backend Development: Express, MongoDB, Prisma, JWT, and TRPC.
- Development Tools: Git, GitHub, Render, Vercel, ESLint, and SonarQube.
- Payment Integration & Authentication: Implemented Razorpay and NextAuth.
- Project Management: Managed tasks using Azure DevOps and Trello.
- Collaboration: Engaged in cross-functional collaboration, code reviews, and knowledge sharing.

Challenges and Learning Outcomes The internship presented several challenges and learning opportunities:

- Server-Side Rendering (SSR): Implementing SSR in Next.js enhanced my understanding of server-client interactions.
- Unit Testing: Writing unit tests with Jest and React Testing Library improved code quality.
- Deadline Management: Balancing multiple projects with tight deadlines required effective time management and collaboration.

Personal Growth The internship enhanced my adaptability and problem-solving skills. My mentor's guidance helped me exceed expectations and contribute significantly to live projects. I learned the importance of unit testing for maintaining robust code and enjoyed building and learning about new technologies.

#### CHAPTER 1: ORGANIZATION/COMPANY

#### ZapCom Solution Pvt Ltd.

ZapCom, founded in 2010, is a global technology company specializing in software development, digital transformation, and IT consulting. Serving industries such as Travel & Logistics, Ecommerce & Retail, and Banking & Fintech, ZapCom offers services including custom software development, cloud services, and data analytics. Headquartered in Dallas, Texas, ZapCom also has offices in Heredia, Costa Rica; Bangalore, India; Dublin, California; and Hyderabad, India, ensuring a strong global presence.

#### 1.1 Birds-eye-view

ZapCom is a leading global technology company that specializes in software development, digital transformation, and IT consulting. The company offers a broad range of services, including custom software development, cloud services, data analytics, and enterprise solutions. With expertise in advanced technologies such as AI, ML. ZapCom serves key industries including Travel & Logistics, Ecommerce & Retail, and Banking & Fintech. The company employs agile methodologies and DevOps practices to deliver efficient and scalable solutions, emphasizing a client-centric approach that focuses on understanding client needs and fostering long-term partnerships. ZapCom has a global presence with offices in Dallas (Texas), Heredia (Costa Rica), Bangalore (India), Dublin (California) and Hyderabad (India), enabling it to serve a diverse client base effectively.

ZapCom's strategic vision aims to empower businesses through innovative technology solutions, driving digital transformation and operational excellence. With a strong global presence and a

commitment to continuous innovation and R&D, ZapCom has earned recognition for its successful implementation of complex projects and high levels of client satisfaction.

#### **1.2 Products / Services:**

Zapcom provides a comprehensive suite of services designed to help businesses excel in the digital age.

**1.2.1 Web and Mobile Development**: Develops customized websites and mobile applications tailored to meet specific business needs.

**1.2.2 UI/UX Design**: Focuses on creating user-centric designs that enhance user experiences, making digital interactions more intuitive and engaging.

**1.2.3 Data Solutions:** Data Solutions encompass the strategic management, engineering, analysis, and visualization of data to extract valuable insights and drive informed decision-making. At Zapcom, we are at the forefront of delivering comprehensive Data Solutions tailored to your unique needs, enabling you to unlock the full potential of your data assets.

**1.2.4 Engineering Solutions:** At Zapcom, we're your partner in the world of Engineering Solutions. Think of us as the spark that ignites your engineering journey, guiding you through the entire process of creating, refining, blending, and fine-tuning cutting-edge products and technologies.

Our mission is to be your trusted ally, offering the knowledge and skills required to turn your imaginative concepts into real-world, tangible solutions.

**1.2.5 Cloud Solutions:** Cloud Solutions are the foundation of modern business operations. At Zapcom, we specialize in guiding organizations through the complexities of cloud technology, offering tailored solutions to harness its full potential.

**1.2.6 Security:** In an era of constant digital transformation where businesses are increasingly reliant on digital assets and data, the need for robust security solutions has reached critical mass. Zapcom strengthens your digital security, ensuring that your most valuable assets (your data, privacy, and reputation) are protected.

**1.2.7 Enterprise Solutions:** Enterprise solutions encompass a suite of integrated technologies and strategies tailored to meet the complex needs of modern businesses. At Zapcom, we excel in providing comprehensive solutions to streamline and enhance your enterprise operations.

#### **1.3 Sections within the Company**

Zapcom's organizational structure comprises several key sections, each dedicated to different aspects of their service offerings.

**1.3.1 UI/UX Design:**The UI/UX Design section is dedicated to creating user-centric designs and improving the user experience and interface design of digital products. It includes UI/UX designers who specialize in these areas.

**1.3.2 Engineering/Development:** This department is responsible for designing, developing, and testing software products.

**1.3.3 Quality Assurance/Testing**: QA engineers ensure that the software meets quality standards by testing it for bugs, usability, and performance.

**1.3.4 Product Management:** Product managers work on defining the features and functionality of the software products, often acting as a bridge between the development team and the customers.

**1.3.5 Customer Support:** Customer support teams provide assistance to customers who have questions or issues with the software.

**1.3.6 Operations/IT:** This department manages the company's internal IT infrastructure and operations.

**1.3.7 Human Resources:** HR is responsible for hiring, training, and managing employees, as well as handling administrative tasks.

**1.3.8 Finance:** The finance department manages the company's finances, including budgeting, accounting, and financial planning.

**1.3.9 Research and Development (R&D):** focused on researching and developing new technologies and products.

#### **CHAPTER 2: TASKS HANDLED**

#### 2.1 Sections I've Worked In

#### **2.1.1 Project Development:**

- Utilize Figma for wireframing, prototyping the personal project.
- Developed full-stack applications for personal projects.
- Worked on frontend for client projects.
- Utilized various frontend and backend technologies for project implementation. (e.g., React Native, Next.js, Express, MongoDB)
- Implemented functionalities such as data management, user authentication, and UI development based on project requirements.

### 2.1.2 Internal Initiatives:

- Participated in an internal competition (Ideathon) by proposing a concept leveraging Artificial Intelligence (AI).
- Contributed to the concept by conducting market research, analyzing competitors, and defining user benefits.

#### 2.2 Working Schedule

Initially my work schedule was 9:00 am - 6:00 pm (Monday - Friday), but after being added to client projects, the schedule was altered a bit. I start working at 10:00 am - 6:00 pm, followed by 9:30 pm - 10:30 pm (for daily standups as some of the team members are working abroad) with occasional client demos being scheduled after 10:30 pm.

### 2.3 Type Of Tasks I Was Exposed To

#### 2.3.1 Technical Skills

#### • Front-end development:

- Building reusable UI components
- Implementing responsive design for various devices
- Integrating with APIs (Application Programming Interfaces)
- Performance optimization techniques (code splitting, lazy loading, etc)
- Unit testing and debugging front-end code

#### • Backend Development:

- Building and managing APIs using frameworks like Express.js
- Working with databases to store and retrieve data using tools like Mongoose (for MongoDB)
- Handling user authentication and authorization with JWT (JSON Web Token)

### • Full-Stack Development with:

- Utilizing Next.js for server-side rendering, static site generation, and routing.
- tRPC: Defining and consuming remote procedure calls (RPCs) for communication between frontend and backend with type safety.
- Implementing a data access layer for interacting with your database using a type-safe ORM (Object-Relational Mapper) such as Prisma.

### 2.3.2 Non-Technical Skills:

#### • Project management:

- Managing tasks and deadlines using tools like Azure DevOps (ADO).
- Prioritization and estimation of development efforts

### • Version control:

- Utilizing Git for version control and collaboration
- Managing code branches and merging changes

## • Cross-functional collaboration:

 Working with back-end developers, designers, testers and product managers to deliver a stable and desirable product.

### • Code reviews:

 Providing and receiving constructive feedback on code to improve quality and maintainability.

# • Knowledge sharing:

• Sharing technical expertise with team members.

#### 2.4 Hands-On Experience

I've worked on numerous projects including personal projects, POC's and live client projects. Some of the details are as follows:

#### **2.4.1 EZ Property Control (Personal Project)**

Developed an all-in-one solution for property owners to manage properties, tenants, and financial transactions.

- Features:
  - Owner property listing.
  - Tenant management.
  - Tracking tenant history
  - Payment tracking.
  - Issue tracking and resolution.
  - Tenant UI for issue reporting.
  - Tenant UI for rent payment and viewing previous transactions.
- Tech stack:
  - Frontend: React Native, Typescript, Redux Toolkit, React Native Paper
  - Backend: Express, JWT
  - Database: MongoDB (using mongoose), Firebase Storage
  - Deployment: Backend deployed on render.com
  - Payment processing: Implemented Razorpay

### 2.4.2 Mediconnect Central (Personal Project)

Worked on creating a scalable Hospital Management System tailored for multi-tenancy.

- Features:
  - Site Admin can manage hospital onboarding and address site issues.
  - Patient data sharing between hospitals.
  - Scheduling, rescheduling, and patient note management.
  - Comprehensive role-based access control for Admin, Doctor, Nurse, Receptionist, and Patient.
  - Hospital Admin can manage hospital staff and handle administrative tasks.
  - Doctors and Nurses can create patient notes, add medical details, and upload reports.
  - Patients can view appointments, reports, doctor's notes, and manage their profiles.
  - Dynamic dashboards based on the type of user.
  - Medical detail and report management.
  - In-app messaging for communication between patients and healthcare providers.
  - Real-time analytics on hospital performance, patient demographics, and treatment outcomes.
  - Customizable reports for hospital admins and healthcare providers.
- Tech Stack
  - Framework: Next.js 14
  - Languages: Typescript
  - API Handling: TRPC
  - Authentication: NextAuth

- Styling: TailwindCSS
- Database: Prisma, MongoDB
- Deployment:

#### **2.4.3 Ideathon (Internal Competition)**

Participated in Ideathon hosted by Zapcom revolving around AI that would benefit in fintech, travel and hospitality.

- Activities:
  - Worked with a team to brainstorm and develop AI-driven ideas.
  - Conducted extensive market research and competitor analysis.
  - Presented the potential benefits of AI integration for both the company and its users.
  - Proposed implementation strategies and outlined projected impacts.

## 2.4.4 Data migration project (Client Project)

This was a client based project in which we had to move data from their old system to the new system manually. Since it's a client project, I cannot provide further details as I've signed the NDA. I worked on this for 1 month and was later moved to another project.

### 2.4.5 Route Optimization (POC)

Worked on developing a proof of concept for route optimization using Here Maps based on their existing system.

## Activities:

- Researched on how to implement Here Maps.
- Integrated Here Maps API to display the routes based on the data
- Tested the POC with real-world data to validate effectiveness.

### 2.4.6 Fortress (Client Project)

I've worked on the frontend side of this project.

- Activities:
  - Implemented a multilingual interface using i18next.
  - Developed UI components with Material-UI (MUI) for consistency and responsiveness.
  - Wrote unit tests with Jest and React Testing Library to ensure code quality and reliability.
  - Conducted code reviews and collaborated with the client to align with their requirements.
- Tech Stack:
  - Frontend: React, Material-UI (MUI)
  - Internationalization: i18next
  - Testing: Jest, React Testing Library

Since it's a client project, I cannot provide further details as I've signed the NDA. This project is about 85% completed.

## **Gantt Chart**

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1	LinkedIn Learning																											
2	EZ Property Control																											
3	Ideathon																											
4	MediConnect Central																											
5	Data Migration																											
6	Fortress																											
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#	Name	Start Date	End Date	Туре
1	LinkedIn Learning	09 JAN 2024	12 JAN 2024	Personal Learning
2	EZ Property Control	16 JAN 2024	23 FEB 2024	Personal Project
3	Ideathon	19 FEB 2024	23 FEB 2024	Internal Competition
4	MediConnect Central	26 FEB2024	30 APR 2024	Personal Project
5	Data Migration	04 APR 2024	02 MAY 2024	Client Project
6	Route Optimization	23 MAY 2024	26 MAY 2024	Proof of Concept
7	Fortress	03 MAY 2024	28 JUN 2024	Client Project

## 2.5 Relationship of The Task With The Course You Studied In The Classroom

The tasks handled during my internship at ZapCom Solutions Pvt Ltd provided a stark contrast to the theoretical knowledge acquired in the classroom. While academic learning built the necessary foundation, the practical exposure during the internship honed my skills, enhanced my problem-solving abilities, and prepared me for real-world challenges in the tech industry. This experience underscored the importance of bridging the gap between classroom education and professional practice, highlighting the need for continuous learning and adaptation in a rapidly evolving field.

## **CHAPTER 3: LEARNING**

### 3.1 What did you learn from the practical exposure

## 3.1.1 Courses

### • Linkedin learning

The following are some of the courses I've completed on linked in learning:

Build a Faster, More Structured Express API with Node.js and TypeScript

Node: Authentication

React: Server-Side Rendering

Node.js: Securing RESTful APIs

React: Using TypeScript (2019)

React: Working with APIs (2018)

Building RESTful APIs with Node.js and Express

## • YouTube

Apart from Linkedin Learning I've refined my skills by referring to youtube videos.

Some of the subjects learned from youtube were NextAuth, TRPC, Jest, React Testing Library.

## 3.1.2 Technical skills

### • Frontend Stack

React: A JavaScript library for building user interfaces.

TypeScript: A superset of JavaScript that adds static types to the language.

React Native: A framework for building native mobile applications using React.

**React Native Paper**: A UI library for React Native that provides customizable and production-ready components following Material Design guidelines.

**Next.js**: A React framework for building server-side rendered and static web applications.

Material UI: A React UI framework following Google's Material Design principles.

Redux Toolkit: A state management library for React applications.

**Zustand**: A lightweight, fast and scalable state-management solution.

Tailwind CSS: A utility-first CSS framework for building custom designs quickly.

Jest: A JavaScript testing framework maintained by Facebook.

React Testing Library: A testing library for React applications.

#### Backend Stack

Node: A JavaScript runtime built on Chrome's V8 JavaScript engine.

**Express**: A minimal and flexible Node.js web application framework.

MongoDB: A NoSQL document-oriented database.

**Prisma**: A modern database toolkit for TypeScript and Node.js.

**Firebase Storage**: A cloud storage service provided by Google as part of the Firebase platform.

#### • Development Tools

Git: A distributed version control system.

GitHub: A web-based hosting service for version control using Git.

Render: A cloud platform for building, deploying, and scaling web apps and static sites.

**Vercel**: A platform for deploying serverless functions and static websites with seamless integration.

ESLint: A tool for identifying and reporting on patterns found in

ECMAScript/JavaScript code to ensure code quality and consistency.

**SonarQube**: A platform for continuous inspection of code quality to perform automatic reviews with static analysis of code to detect bugs, code smells, and security vulnerabilities.

**Visual Studio Code (VS Code)**: A source-code editor developed by Microsoft for Windows, Linux, and macOS, featuring support for debugging, syntax highlighting, intelligent code completion, snippets, and code refactoring.

#### • Payment Integration & Authentication

**Razorpay**: A payment gateway solution for businesses to accept, process, and disburse payments.

**JWT (JSON Web Tokens)**: A compact, URL-safe means of representing claims to be transferred between two parties. Commonly used for authentication and authorization in web applications.

**Next Auth**: An authentication library for Next.js applications.

#### 3.1.3 Project Management

**Jira**: A tool developed by Atlassian used for bug tracking, issue tracking, and project management.

**ADO (Azure DevOps)**: A suite of development tools provided by Microsoft for managing projects and code repositories.

**Trello**: A collaboration tool that organizes projects into boards, helping teams see the status of tasks at a glance.

#### **3.1.4 Collaboration**

**Microsoft Teams**: A collaboration app that helps teams stay organized and have conversations all in one place.

**Slack**: A messaging app for teams that brings all communication together in one place, integrating with other tools and services.

**Confluence**: A collaboration tool used to help teams collaborate and share knowledge efficiently.

#### 3.2 Have you had an opportunity to be innovative in handling task(s)?

I've been given multiple opportunities to be innovative, for example in the client project: Fortress, I've been given the freedom to update the code to improve the performance or reduce the complexity of the code. Also instead of creating custom components and styling it, there's an option to override the theme by specifying all the required stylings and themes, so while using the components, it gets the overridden styles and reduces the work of the devs for creating custom components.

### 3.3 Have you learned something about yourself

Abilities vs. Expectations: I feel that I have a good ability to adapt to face different situations and come up with a solution for the given problem. My mentor has been pushing me past my limits by increasing the complexity of the projects. I feel like I've met his expectations as he had been constantly suggesting the upper management to put me on live projects after the first few months.

**Likes:** I find building/implementing and learning about new technologies interesting. There's always something new that can change your perspective on how you would plan/work.

**Dislikes:** I dislike writing unit test cases. But I also feel that unit testing is a necessary evil that can prevent issues from occurring in the future.

#### **CHAPTER 4: CHALLENGES**

#### 4.1 The activity that you were unaware about

In the journey of developing various projects, several activities presented themselves as significant learning opportunities. I was particularly unaware of the intricacies involved in Server-Side Rendering (SSR), the critical importance of unit tests, and how to navigate their complexities effectively.

Server-Side Rendering (SSR): Utilizing Next.js for the Mediconnect Central project highlighted the complexities of SSR. Initially, I underestimated how SSR could optimize performance and improve SEO by pre-rendering pages on the server. However, implementing SSR required a deeper understanding of server-client interactions. The challenge was ensuring that the application maintained high performance while correctly rendering dynamic content server-side.

Unit Testing: My initial approach to unit testing was limited, not fully grasping its importance. However, working on projects like Fortress made it clear that unit tests are indispensable for maintaining code quality and reliability. Utilizing Jest and React Testing Library, I learned to write tests that cover various edge cases, ensuring components and functions perform as expected in isolation. This practice was crucial for catching bugs early, facilitating refactoring, and ensuring the stability of complex systems.

#### 4.2 Meeting the deadlines

Meeting deadlines across multiple projects involved overcoming numerous technical and organizational challenges. Each project brought its own set of complexities that needed to be managed effectively to ensure timely delivery.

**EZ Property Control:** Developing an all-in-one solution for property management required coordinating various functionalities, from tenant management to payment tracking. Integrating Razorpay for payment processing and JWT for secure authentication was time-consuming. Balancing feature development with performance optimization and security considerations was a significant challenge.

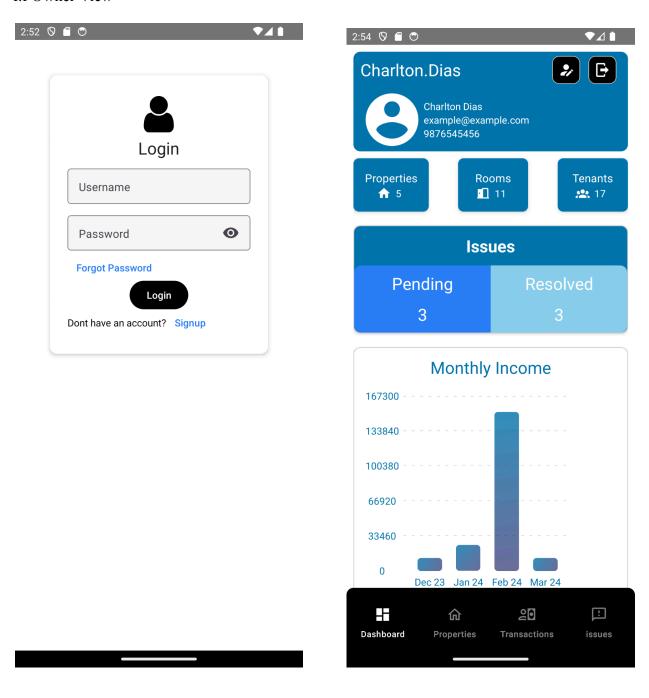
**Mediconnect Central:** SSR, especially in frameworks like Next.js, adds complexity to web applications by requiring content to be generated on the server rather than the client side. This ensures faster load times and improved SEO but demands a deeper understanding of server-client interactions. This hospital management system needed to support multi-tenancy and provide comprehensive role-based access control. Also understanding and implementing TRPC for API handling and NextAuth for authentication required patience.

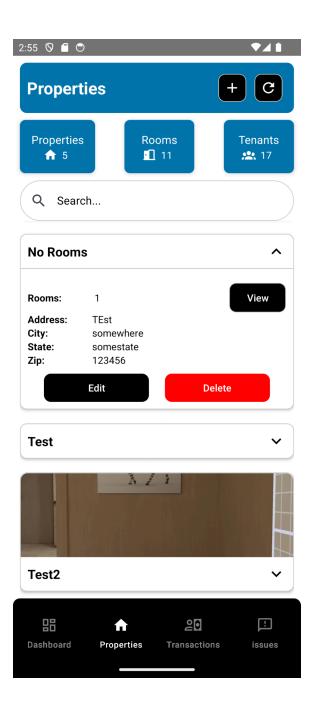
**Fortress:** Working on the frontend of this project involved implementing a multilingual interface and developing UI components using Material-UI (MUI). Writing unit tests and conducting code reviews were essential to maintain high code quality. Balancing these tasks while collaborating with the client to align with their requirements and achieving project completion under tight deadlines showcased the necessity of effective time management and teamwork.

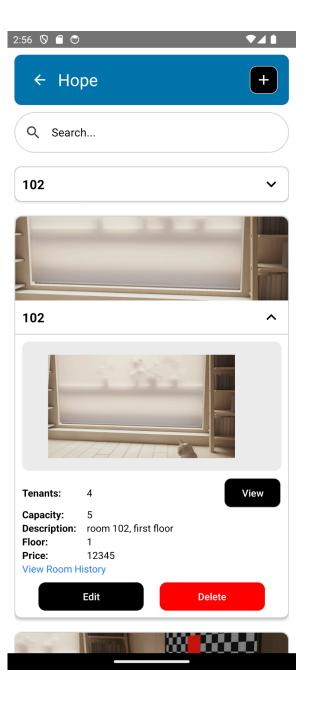
# Appendix I

## Samples of the work done

## I EZ Property Control I.I Owner View

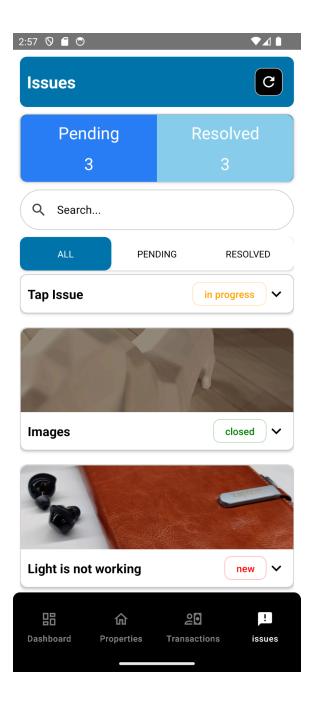






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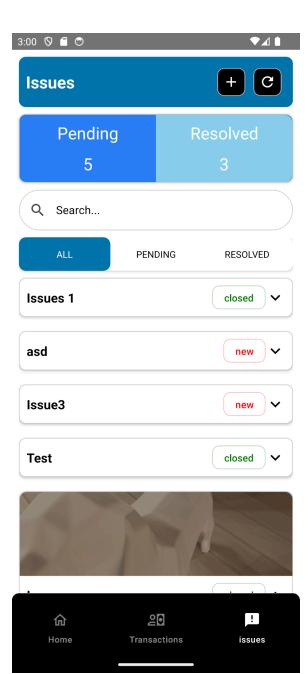
# I.II Tenant View

II Tenant View	
2:58 🛇 🗂 😁	♥⊿▮
Charlton	20
Charlton Dias test@1test.com 1231231233	
Issi	les
Pending	Resolved
5	
5	3
Renting 1 8	Paid Rs.0
Pay Rent	C
<b>1102</b> ↑ Hope	₹ 12345
■10211 ↑ Hope	₹ 12345
■111 Another one	₹ 12340
ft of	

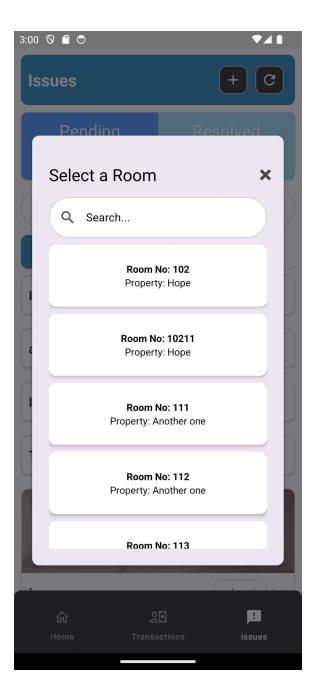
2:58 🛇	<b>•</b>	▼∡∎
<b>i</b>	CHARLTON DIAS	₽~ ×
Preferr	ed Payment Methods	
<b>(i)</b>	Netbanking - IDBI	
\$	Netbanking - Indian Overseas Bank	
Cards,	Netbanking & More	
Ē	Card	VIS 🗨 🖛 🌑
	Netbanking	<b>~~</b>
Ċ	Wallet	₩ ◀ ₽ № …
ন্দ্র	Pay Later	<b>.</b> • <b>.</b>

C This page will	timeout in	4:58 minutes
<b>₹ 12,345</b> View Details	Pay	Now

59 🛛 🖬 🔿 Transaction His	story C
Q Search room, dat	e or tenant
<b>1</b> 102	₹ 12345
🕇 Норе	<b>1</b> 21-03-2024
Txn Ref: pay_NoxJThUzVK	LUb5
<b>1</b> 102	₹ 12345
🔒 Норе	🖬 27-02-2024
Txn Ref: pay_Nfp5Syyu7sr	IMY9
<b>1</b> 10211	₹ 12345
<b>†</b> Норе	<b>1</b> 21-02-2024
Txn Ref: pay_NdW5tElpYR	HiNY
<b>1</b> 102	₹ 12345
<b>†</b> Норе	<b>12-02-2024</b>
Txn Ref: pay_NZwwcanRM	IXBk9S
<b>1</b> 102	₹ 12345
<b>†</b> Норе	12-02-2024
Txn Ref: pay_NZwUzEBVH	AvkEY
∎999	₹ 999
<b>↑</b> Test	🖬 08-02-2024
Tyn Ref: nav. NYSk7o46hu	a1Tr
ሰ	-0
Home Tra	ansactions issues



2:59 🛇 🖀 🔿 💎 🖊 🕯	
Issues + C	
Pending Resolved 5 3	
Create Issue	
Title	
Description	
Room: -Select- Property: -Select-	
Images: + Add Image	
No Images Added.	
ය දුව 🗜 Home Transactions issues	



#### **Mediconnect Central**

**Mediconnect Central** 

# Transforming Healthcare Delivery: Streamlined Care for Everyone

Welcome to a future of connected healthcare, where hospitals, staff, and patients work together seamlessly. Our platform offers a comprehensive suite of tools designed to optimize workflows, improve communication, and ultimately, deliver exceptional patient care.



#### **Hospitals**

**Centralized Management:** Gain a holistic view of your hospital operations with insightful dashboards and user management tools.

Simplified Onboarding: Streamline the process of adding new hospitals to your network.

Enhanced Efficiency: Manage billing, subscriptions, reporting, and support all from one central location.

#### **Hospital Staff**

**Improved Organization:** Stay on top of your day with a patientcentric dashboard that displays appointments, tasks, and assigned individuals.

**Streamlined Patient Care:** Access comprehensive medical records, manage appointments, document, clinical notes, and seamlessly integrate lab results - all in one place.

Enhanced Communication: Facilitate seamless communication between staff members and departments.



About

Contac

Enhanced Communication: Facilitate seamless communication between staff members and departments.





### **Patients**

**Empowering Care:** Take control of your health journey. View upcoming appointments and access medical records with ease.

**Convenient Scheduling:** Schedule, reschedule, and cancel appointments online at your convenience.

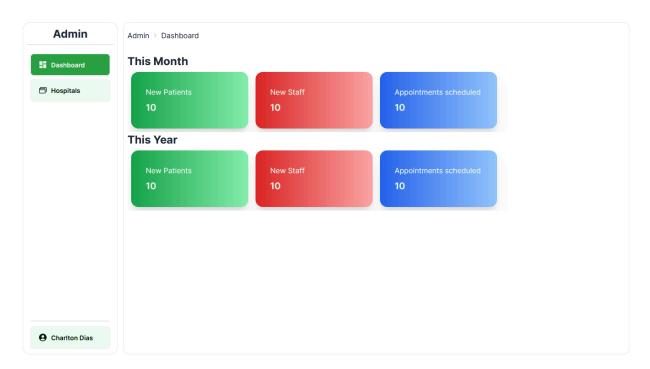
**Informed Decisions:** View clear explanations alongside limited lab results, and access a library of educational resources.

## Admin screens:

	Admin Login
	Username
MediConnect Central	Password Password Login
	Patient Login Staff Login
	OR
	G Sign in with Google

Choose an account to continue to MediConnect Central	Charlton Dias edu.cdias29@gmail.com     Use another account     To continue, Google will share your name, email address, language preference and profile picture with MediConnect Central.
nglish (United Kingdom) 🛛 👻	Help Privacy Terms

G Sign in with Google	
MediConnect Central wants additional access	<ul> <li>MediConnect Central complies with Google's third- party app best practices.</li> </ul>
to your Google Account edu.cdias29@gmail.com	MediConnect Central already has some access See the <u>3 services</u> to which MediConnect Central has some access.
	Make sure that you trust MediConnect Central You may be sharing sensitive info with this site or app. Find out how MediConnect Central will handle your data by reviewing its terms of service and privacy policies. You can always see or remove access in your Google Account. Find out about the risks
Cancel	Continue
nglish (United Kingdom) 🛛 👻	Help Privacy Terms



Admin	Admin > Hospitals	
Dashboard	Hospitals	Search
🗇 Hospitals	Hospital Name	Address
	Hospital X	Hospital Address here
	Manipal Hospital	Survey No. 10P &, 12P, Whitefield Main Rd, Varthur Kodi, Palm Meadows, Ramagondanahalli, Whitefield, Bengaluru, Karnataka 560066
	asdf	asdfsg
	qwerty	qwertyu
	dsfg	dsfgdfh
		< 1 > Add Hospital
Charlton Dias		

Admin	Admin > Hospitals							
Dashboard	Hospitals				Search			
🗇 Hospitals			Address	Address				
			Hospital Address here					
	Manipal Hospital			Survey No. 10P &, 12P, Whitefield Main Rd, Varthur Kodi, Palm Meadows, Ramagondanahalli, Whitefield, Bengaluru, Karnataka 560066				
	asdf	rlton Dias						
	qwerty		Edit Profile					
	dsfg	[→	Logout					
					Add Hospital			
Charlton Dias								

Admin	Admin > Hospitals > Onboarding								
Dashboard	dd Hospital								
🗇 Hospitals	Hospital Hospital Name								
	Hospital Address Logo Preview								
	Hospital support@hospital.com Browse No file selected.								
	Hospital 08012345678 Add Hospital								
	Admin Name								
	Admin Email: admin@hospital.com								
	Admin 976543210								
Charlton Dias	Admin DOB: mm / dd / yyyy 🖆 Admin DOJ: mm / dd / yyyy 🛱								

## **Staff View**

	Staff Login
	Username
	Username
MediConnect	Password
Central	Password
Central	Login
	Admin Login Patient Login
	OR
	G Sign in with Google

Staff	Staff > Patients			
Dashboard	Our Patients		Searc	h
ිදු Patients	Patient Name	Email	Phone	DOB
Charlton Dias		< 1 >		Add Patient

Staff	Staff > Patients				
Dashboard	Our Patients			Search	
ිස් Patients	Patient Name	Email	Phone		DOB
Q. Manage Staff	Joel	joel.work@gmail.com	7270980738		12 Nov 2001
Chariton Dias		< 1 >			Add Patient
Staff	Staff > Patients > 662f5f3a3196fc951e	267c39b			
Dashboard	662f5f3a3196fc951e67c3	39b			Edit Staff
<sup>ନ</sup> ୁସ୍ <sup>ର</sup> Patients	Details				
Q Manage Staff	Name: Joel				
	<b>DOB:</b> 12-Nov-2001	<b>Age:</b> 22		Gender: Male	
	Height: 172 cms	Weight: 80 kgs		Blood O+ Type:	
	Address & Contact				
	Address: padri bhat Quepem Goa				
	City: Quepem	State: Goa		<b>Zip:</b> 403707	
	Phone: 7270980738	Email: joel.work@gmail.com	1		
	Records				
	Medical Conditions: View All	Medications: View All		Allergies: View Al	I
Charlton Dias	Emergency Contact				

Staff	Staff > Patients > Add			
Dashboard	Add Patient		s	Search
ිදූ Patients	Name	Email	Phone	DOB
Q∗ Manage Staff	asd	asd@asd.com	9999999999	02 Apr 1995
	Hello	hello@example.com	9283756282	03 Apr 2024
		< 1 >		
Charlton Dias	Can't find the patient record? C	Create a new record		

Staff	Staff > Patients > Add					
Dashboard	Add Patient				Search	
প্থি Patients	Name		Email	Phone		DOB
Q. Manage Staff	asd		asd@asd.com	99999999999		02 Apr 1995
	Hello		hello@example.com	9283756282		03 Apr 2024
Charlton Dias						
Charlton Dias	Can't find the patient record? Creat	te a new rec	ord			

Staff	Staff > Patients	> Add > Ci	reate				
Dashboard	New Patier	nt					
ිදි Patients	Patient Detail	s:					
Q. Manage Staff	Name:	Name					
	Phone:	Phone num	ber	Email: sup	port@hospital.com		
	Weight (kgs):			Height (cms):		Blood Group:	-Select-
	DOB:	mm / dd / y	ууу	Ö	Gender: Male	Fema	le
	Address:	Address					lis
	City:	City		State:	State		Zip: Zip
Charlton Dias	Emergency Co Relationship:			Name:	Contact Name		Phone: Phone number
Hospital Name	Staff > Appoin	tments					
🗐 Dashbard	Date	Time	Doctor		Patient		Purpose
තිරී Patients	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
Appointments	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
ල Support	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
Q∙ Manage Staff	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
	26-02-24	12:15 pm	Doctor name		Patient name		Purpose of visit
O Username				« Pa	je 2 »		Create Appointment

## **Patient View:**

	Patient Login
	Username
	Username
MediConnect Central	Password Password
	Login
	Admin Login Staff Login
	OR
	G Sign in with Google

Dashbard	Date	Time	Doctor	Purpose	Actions
Appointments	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼
Medical Records	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼
Lab Reports	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼
	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼
	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼
	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼
	26-02-24	12:15 pm	Doctor name	Purpose of visit	C 💼

Î Dashbard	wiedica	l Records			
Appointments	id	Туре	Details	Attachments	Date
- Medical Records	a1b2c3	Common cold	Common cold caused due to	3	29-02-24
Lab Reports	a1b2c3	Common cold	Common cold caused due to	3	29-02-24
	a1b2c3	Common cold	Common cold caused due to	3	29-02-24
	a1b2c3	Common cold	Common cold caused due to	3	29-02-24
	a1b2c3	Common cold	Common cold caused due to	3	29-02-24
	a1b2c3	Common cold	Common cold caused due to	3	29-02-24
	a1b2c3	Common cold	Common cold caused due to	3	29-02-24

Hospital Name	Patient > Medical F	Records $\supset$ View	
Dashbard	a1b2c3		
Appointments	Record Type:	Common Cold	
Ar Medical Records	Details:	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus auctor nulla e ex nisl, volutpat id magna ut, pharetra feugiat felis. Aenean ut cursus massa. Cr non, euismod neque. Aenean ultricies tincidunt justo et ornare. Curabitur comm aliquam in. Fusce ac pulvinar leo, elementum ornare turpis. Maecenas maximu: Donec eleifend, ante eget tristique hendrerit, lorem augue vehicula magna, et co Nunc sollicitudin arcu vitae iaculis facilisis. Ut interdum sapien sapien, portitio Nunc ut blandit velit, a molestie urna. Integer volutpat facilisis quam, id varius lo	as vel eros viverra, facilisis tellus odo elit nibh, vel rhoncus nibh s vitae sapien vitae posuere. nvallis odio est sit amet diam. ullamcorper augue lobortis id.
	Attachment 1:	View	
	Attachment 2:	View	
	Attachment 3:	View	
	Date:	29 Feb 2024	
@ Username ^			

I Dashbard	Lab Re	ports			
Appointments	id	Туре	Details	Attachments	Date
r Medical Records	a1b2c3	Swab Test	Swab test for Covid	i i	29-02-24
Lab Reports	a1b2c3	Swab Test	Swab test for Covid	1	29-02-24
	a1b2c3	Swab Test	Swab test for Covid	1	29-02-24
	a1b2c3	Swab Test	Swab test for Covid	1	29-02-24
	a1b2c3	Swab Test	Swab test for Covid	1	29-02-24
	a1b2c3	Swab Test	Swab test for Covid	1	29-02-24
	a1b2c3	Swab Test	Swab test for Covid	1	29-02-24

Hospital Name	Lab Reports 💚 View	
Dashbard a1b2		
Appointments	Fype: Swab Test	
Ar Medical Records ☐ Lab Reports	ex nisl, volutpat id magna ut, pharetra feugiat felis non, euismod neque. Aenean ultricies tincidunt jus aliquam in. Fusce ac pulvinar leo, elementum orna Donec eleifend, ante eget tristique hendrerit, lorem Nunc sollicitudin arcu vitae iaculis facilisis. Ut inte	g elit. Vivamus auctor nulla eu pulvinar ullamcorper. Praesent . Aenean ut cursus massa. Cras vel eros viverra, facilisis tellus to et ornare. Curabitur commodo elit nibh, vel rhoncus nibh ire turpis. Maecenas maximus vitae sapien vitae posuere. a augue vehicula magna, et convallis odio est sit amet diam. erdum sapien sapien, porttitor ullamcorper augue lobortis id. tpat facilisis quam, id varius lorem scelerisque vel.
Repo	rt 1: View	
Repo	rt 2: View	
Repo	rt 3: View	
Date:	29 Feb 2024	
⊗ Username ∧		

# Appendix II



