AN INTERNSHIP REPORT

on

LARAVEL DEVELOPER AT EKBANA

Submitted To:

Department of Information Technology

Central Campus of Technology

Dhran-14, Sunsari Nepal

In partial fulfilment of the requirements for the degree of Bachelor's in Information Technology (BIT)

Submitted By:

Rijan Rai [BIT 355/077]

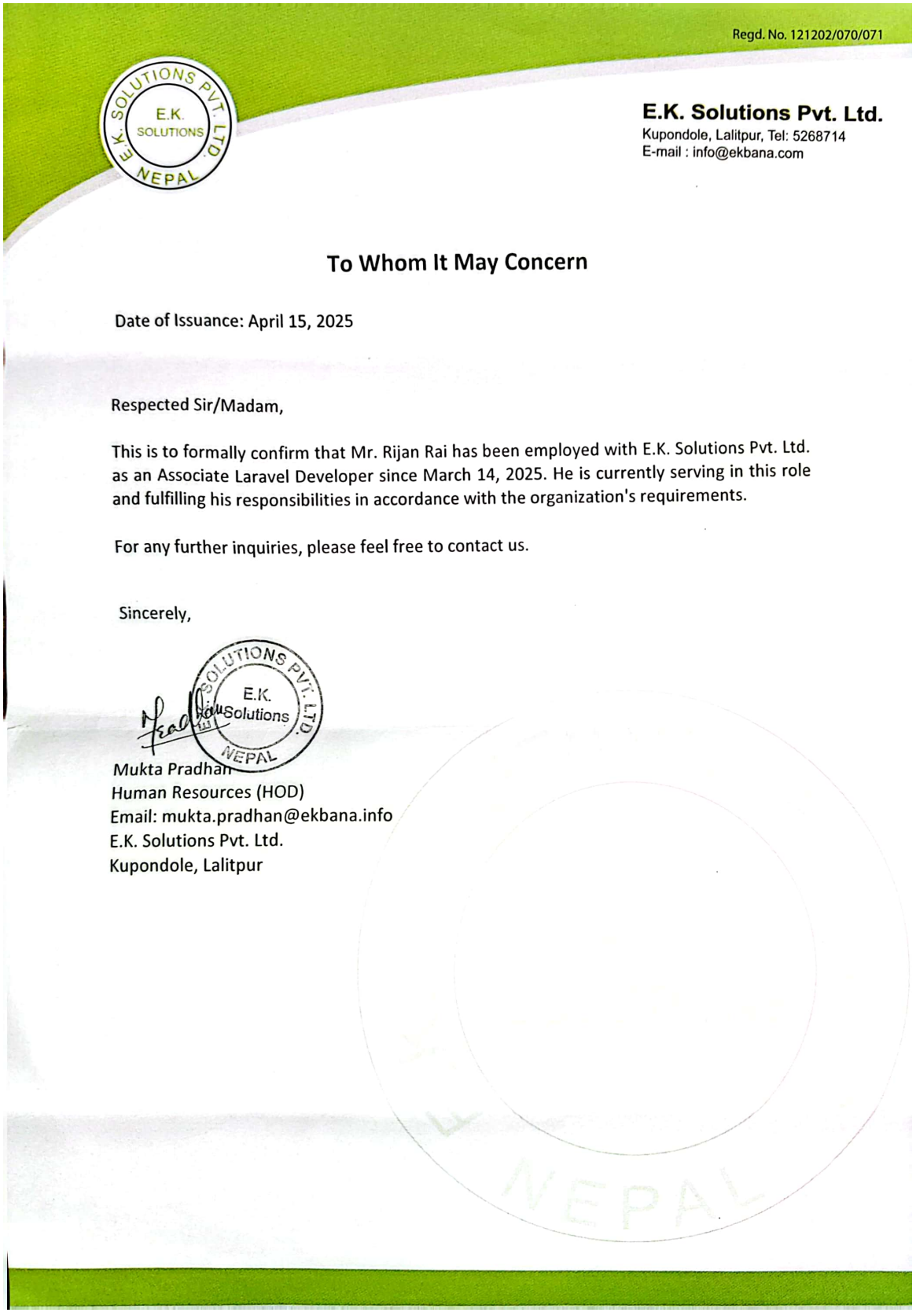
TU Registration No: 5-2-8-20-2020

Under the supervision of

Sanjay Niroula

[July, 2025]

MENTOR RECOMMENDATION



Regd. No. 121202/070/071

E.K. Solutions Pvt. Ltd.
Kupondole, Lalitpur, Tel: 5268714
E-mail : info@ekbana.com

To Whom It May Concern

Date of Issuance: April 15, 2025

Respected Sir/Madam,

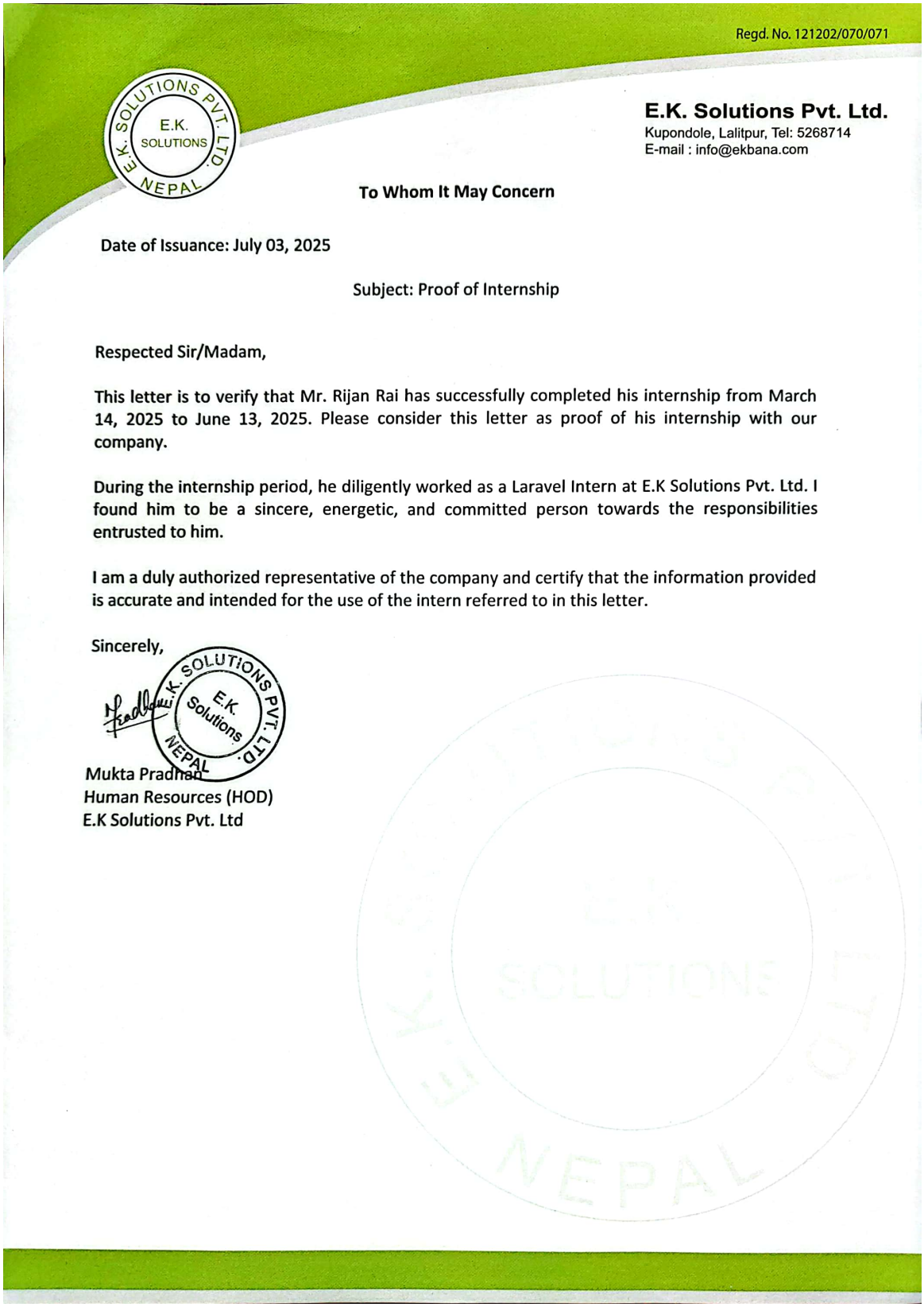
This is to formally confirm that Mr. Rijan Rai has been employed with E.K. Solutions Pvt. Ltd. as an Associate Laravel Developer since March 14, 2025. He is currently serving in this role and fulfilling his responsibilities in accordance with the organization's requirements.

For any further inquiries, please feel free to contact us.

Sincerely,

Mukta Pradhan
Human Resources (HOD)
Email: mukta.pradhan@ekbana.info
E.K. Solutions Pvt. Ltd.
Kupondole, Lalitpur

INTERNSHIP CERTIFICATION



Regd. No. 121202/070/071

E.K. Solutions Pvt. Ltd.
Kupondole, Lalitpur, Tel: 5268714
E-mail : info@ekbana.com

To Whom It May Concern

Date of Issuance: July 03, 2025

Subject: Proof of Internship

Respected Sir/Madam,

This letter is to verify that Mr. Rijan Rai has successfully completed his internship from March 14, 2025 to June 13, 2025. Please consider this letter as proof of his internship with our company.

During the internship period, he diligently worked as a Laravel Intern at E.K Solutions Pvt. Ltd. I found him to be a sincere, energetic, and committed person towards the responsibilities entrusted to him.

I am a duly authorized representative of the company and certify that the information provided is accurate and intended for the use of the intern referred to in this letter.

Sincerely,

Mukta Pradhan
Human Resources (HOD)
E.K Solutions Pvt. Ltd

SUPERVISOR RECOMMENDATION

This is to recommend that **Mr. Rijan Rai**, Symbol No. BIT 355/077, has carried out Internship (BIT 453) on the position of "**Laravel Developer at Ekbana.**" in partial fulfilment of the requirements for the degree of Bachelor's of Information Technology (BIT) under my supervision in the Department of Information Technology, Central Campus of Technology, Institute of Science and Technology (IoST), Tribhuvan University (T.U.), Nepal.

To the best of my knowledge, this work has not been submitted for any other degree. They have fulfilled all the requirements introduced by Institute of Science and Technology (IoST), Tribhuvan University (T.U.), Nepal for the submission of the project work for the partial fulfillment of Bachelor of Information Technology.

Mr. Sanjay Niroula
Supervisor
Department of IT
Central Campus of Technology, Dharan
IoST, Tribhuvan University

EXAMINER'S APPROVAL LETTER

This is to certify that the internship report entitled "**Laravel Developer at Ekbana**" submitted by **Mr. Rijan Rai**, Symbol No. **BIT 355/077**, a student enrolled in the Bachelor in Information Technology at Central Campus of Technology, Dharan has been examined and approved by the undersigned.

The report has been evaluated based on its relevance to the internship experience, presentation of facts, adherence to guidelines, and overall quality. It is found to meet the standards set by Tribhuvan University for partial fulfillment of the bachelor's degree.

Mr. Sanjay Niroula
Supervisor
Department of IT
Central Campus of Technology, Dharan
IoST, Tribhuvan University

Mr. Balabhadra Bhandari
Program Director
Department of Information Technology
Central Campus of Technology, TU
Dharan-14, Sunsari

Asst. Prof. Pukar Karki
External Examiner
Purwanchal Engineering Campus,TU
Dharan, Nepal

DECLARATION

This internship work entitled " **Laravel Developer at Ekbana.** " is being submitted to the Department of Information Technology, Central Campus of Technology, Institute of Science and Technology (loST), Tribhuvan University (T.U.), Nepal for the partial fulfillment of the requirement to the internship in Bachelor of Information Technology (BIT) degree. This internship report is carried out by us under the supervision of Mr. Sanjay Niroula T.U., Department of IT, Central Campus of Technology, Institute of Science and Technology (loST), Tribhuvan University (T.U.), Nepal.

This work is original and has not been submitted earlier in part or full in this or any other form to any university or institute, here or elsewhere, for the award of any degree.

Rijan Rai [BIT 355/077]
Department of Information Technology
Central Campus of Technology
Dharan-14, Sunsari

ACKNOWLEDGEMENT

First and foremost, I would like to express my heartfelt gratitude to **E.K. Solutions Pvt. Ltd. (Ekbana)** for providing me with the incredible opportunity to work as an intern. This experience has been a major milestone in the early stages of my career. I am deeply thankful for the platform it provided to sharpen my skills, gain practical exposure, and grow both personally and professionally. I also extend my sincere appreciation to all my seniors and colleagues at Ekbana for their guidance, support, and the knowledge they shared with me throughout the internship period.

I am immensely thankful to my mentor, **Mrs. Malina Shrestha**, for her invaluable guidance, continuous encouragement, and patience throughout the project. Her insights and mentorship have been crucial in shaping my learning and progress. I truly value the time and effort she devoted to my development.

I would also like to extend my deepest gratitude to my academic supervisor, **Mr. Sanjay Niroula**, for his consistent support, insightful feedback, and encouragement throughout the course of this project. His dedication and commitment to mentoring have significantly contributed to the successful completion of this work.

Furthermore, I would like to thank all the faculty members of the **Department of Information Technology, Central Campus of Technology (CCT), Dharan** for their valuable suggestions, constructive feedback, and continuous support during this journey.

My sincere appreciation goes to my friends and fellow students who have offered constructive insights and intellectual support throughout the course of this project. The collaborative learning environment and the encouragement I received from peers have been truly enriching.

I am also grateful for the peaceful working environment at Ekbana, located in the beautiful city of Lalitpur. The surroundings and the work culture provided an ideal atmosphere for growth and innovation.

Special thanks go to my family and dear friends for their unwavering love, support, and belief in me during every step of this journey. Their constant encouragement has been my source of strength.

Finally, I am humbled and honored by all the support I have received from every individual involved in this journey. I could not have achieved this without your help.

Rijan Rai [BIT 355/077]

ABSTRACT

This report presents the outcomes of a three-month internship as a Laravel Developer at Ekbana Solutions Pvt. Ltd., conducted in the Backend Department under the supervision of Mrs. Malina Shrestha. The internship focused on backend web development using Laravel framework and related technologies. During the internship, I contributed to multiple projects including Thames College Website and Application Processing Software, Ashtec Quote and Order Management Software, and Koklass E-Commerce Platform. The work involved developing backend functionalities, implementing business logic, creating RESTful APIs, optimizing database queries, and integrating third-party services including payment gateways and communication services. Technical activities encompassed module development using Laravel's MVC architecture, Service Repository patterns, database optimization, form validation, event handling, and queue management. I collaborated with cross-functional teams including DevOps, Quality Assurance, and UI/UX designers following Agile methodology and sprint planning processes. Key achievements include successful database query optimization for the Koklass multi-vendor e-commerce platform serving KFC Software, MeroKinMel, and Foodmandu, resulting in improved loading speeds and system performance. The Thames College projects enhanced student engagement and streamlined admission processes through digitized application management with analytics for pre-admissions, scholarships, and website traffic tracking. The Ashtec Quote and Order Management Software's Laravel-based admin panel received positive User Acceptance Testing feedback, managing complex customer, vendor, and product data relationships. The internship significantly improved my technical proficiency in PHP, JavaScript, MySQL, PostgreSQL, and Laravel while providing valuable industry exposure and professional development.

Keywords: Laravel, PHP, Backend Development, Web Development, Database Optimization, API Development, Software Engineering Internship, Agile Methodology

CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

API Application Programming Interface

CMS Content Management System

CSS Cascading Style Sheets

DevOps Development and Operations

Git Git Version Control System

GitLab Git Repository Manager and CI/CD Platform

HTML HyperText Markup Language

HTTP HyperText Transfer Protocol

IT Information Technology

JS JavaScript

Laravel PHP Framework for Web Applications

MVC Model-View-Controller

MySQL Structured Query Language Database Management System

NPM Node Package Manager

ORM Object-Relational Mapping

PHP Hypertext Preprocessor

QA Quality Assurance

REST Representational State Transfer

SDLC Software Development Life Cycle

SMS Short Message Service

SQL Structured Query Language

UAT User Acceptance Testing

UI User Interface

UX User Experience

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Laravel is a free and open-source PHP-based web framework designed for building modern web applications using the Model–View–Controller (MVC) architectural pattern. It offers a comprehensive set of tools and features, including routing, authentication, and database management, which simplify and accelerate the web development process Otwell, 2011.
I completed my internship at Ekbana Solutions Pvt. Ltd., a well-established IT company, where I worked as a Laravel Developer in the Backend Department. My mentor, Mrs. Malina Shrestha—a mid-level Laravel developer with over four years of experience—guided me throughout the internship. Her mentorship helped me gain exposure to various real-world projects and enhanced my understanding of Laravel's architecture and backend development practices.
The internship lasted for over three months, during which I worked five days a week, for seven hours each day. I am currently in a probation period, with the potential to be hired full-time based on my performance.
Although Laravel is a full-stack framework, my primary focus was backend development. I also worked with Blade, Laravel's templating engine, for basic front-end tasks. The major projects I contributed to during my internship included:

- Ashtec Order and Quote Management Software
- Thames College Website
- Thames College Application Processing Software

In these projects, I was mainly responsible for backend functionalities such as API development, database design, and business logic implementation. I also worked on:

- Koklass – an eCommerce app development platform
- Ekbana Japan Website Development

Throughout the internship, I received valuable support and guidance from my mentor and senior developers, which significantly enhanced my learning experience. In addition to backend development, I gained exposure to DevOps practices, software security, frontend basics, UI/UX considerations, quality assurance, AI-assisted coding, and effective team collaboration. These experiences helped me understand the professional work culture and expectations in the IT industry.
Our department consisted of 13 developers, including those working with Laravel and Node.js, under the leadership of our team lead, Mr. Jitendra Maharjan. The collaborative and

well-structured environment at Ekbana contributed greatly to my personal and professional growth.

1.2 Problem Statement

During the internship, several key challenges were identified in the development and deployment process. These problems are outlined below:

1. **Legacy System Modernization:** The existing Ekbana CMS required rapid modernization. Transitioning from outdated versions to a more robust and scalable modern version posed technical and architectural challenges.

2. **Changing Client Requirements and Frequent Feature Requests:** Clients frequently requested new features or changes, often during or after development phases. This led to scope creep and increased complexity in maintaining stable codebases.

3. **Lack of Staging Environments:** The absence of proper staging environments made it difficult to test features in an environment similar to production, increasing the risk of bugs during deployment.

4. **Shortage of Entry-Level Developers:** There was a noticeable gap in the availability of junior developers to handle basic tasks, which added pressure on mid-level and senior developers and slowed overall progress.

1.3 Objectives

The main objectives of this internship are as follows:

1. To learn about software development practices and the Laravel framework, laying a strong foundation for a career in the IT industry as a software engineer.

2. To gain real-world, hands-on experience by working on live projects and solving practical problems.

3. To develop collaboration and communication skills essential for team-based software development, and to enhance employment opportunities after the completion of the Bachelor's degree.

4. To understand and implement backend functionalities, including business logic and API development.

5. To integrate backend systems with frontend interfaces to deliver complete and functional web applications.

1.4 Scope and Limitation

Scope

1. Development of CMS (Content Management System) modules using Laravel.
2. Integration of backend functionalities with the frontend interface.
3. Research and exploration of various Laravel-related topics and best practices.
4. Execution of tasks assigned during sprint planning or delegated by mentors.

Limitations

1. All merge requests had to undergo senior-level code reviews before being merged, which occasionally caused delays.
2. Time constraints limited the scope of project completion and exploration of additional features.

1.5 Report Organization

This internship report is organized into four main chapters:

- **Chapter 1: Introduction**
  This chapter provides an overview of the Laravel framework and the internship context. It outlines the problem statement, objectives, scope and limitations, and concludes with the structure of the report.
- **Chapter 2: Organization Details and Literature Review**
  This section presents information about Ekbana Solutions Pvt. Ltd., including the organizational hierarchy, working domains, and backend department. It also includes a literature review on key technologies such as Content Management Systems (CMS), Service Repository Architecture, and the Laravel MVC framework.
- **Chapter 3: Internship Activities**
  This chapter documents the practical experiences during the internship, detailing the roles and responsibilities undertaken, weekly logs, and descriptions of major projects such as the Thames College Website, Application Processing Software, Ashtec Quote Management System, and Koklass E-Commerce Platform. It also describes the tools used and the activities performed.

- **Chapter 4: Conclusion and Learning Outcomes**
  This final chapter summarizes the overall internship experience and presents categorized learning outcomes, focusing on technical skills, professional development, industry exposure, and career readiness.

The report also includes references and appendices containing supporting materials such as screenshots, code snippets, and records of meetings with the internship supervisor.

CHAPTER 2: ORGANIZATION DETAILS AND LITERATURE REVIEW

2.1 Introduction to Organization

EKbana Solutions Pvt. Ltd. is a Kathmandu-based custom software development firm with additional offices in Singapore, Japan, and the USA. Established on March 30, 2014, by Gaurav Pandey and Suman Shrestha, the company has grown significantly and now employs over 100 professionals across multiple disciplines EKbana Solutions, 2024. It is located in Jwagal, near Kupondole, Lalitpur, Nepal.

EKbana offers a comprehensive suite of digital services, including web and mobile application development, API design, business analysis, and project management. Their industry expertise spans e□commerce, insurtech, geospatial mapping, on□demand food delivery, nonprofit, and retail sectors EKbana Solutions, 2024.

Operating on an agile framework, EKbana follows a structured process: beginning with stakeholder workshops, moving through planning and prototyping, executing bi□weekly sprints, and concluding with testing, deployment, and continuous iteration EKbana Solutions, 2024.

Over the years, EKbana has cultivated long-term relationships with clients such as Foodmandu and Bigmart, who commend the firm's professionalism, commitment, and ability to deliver business-value–driven solutions EKbana Solutions, 2024.

2.2 Organizational Hierarchy

Organizational Hierarchy at Ekbana.

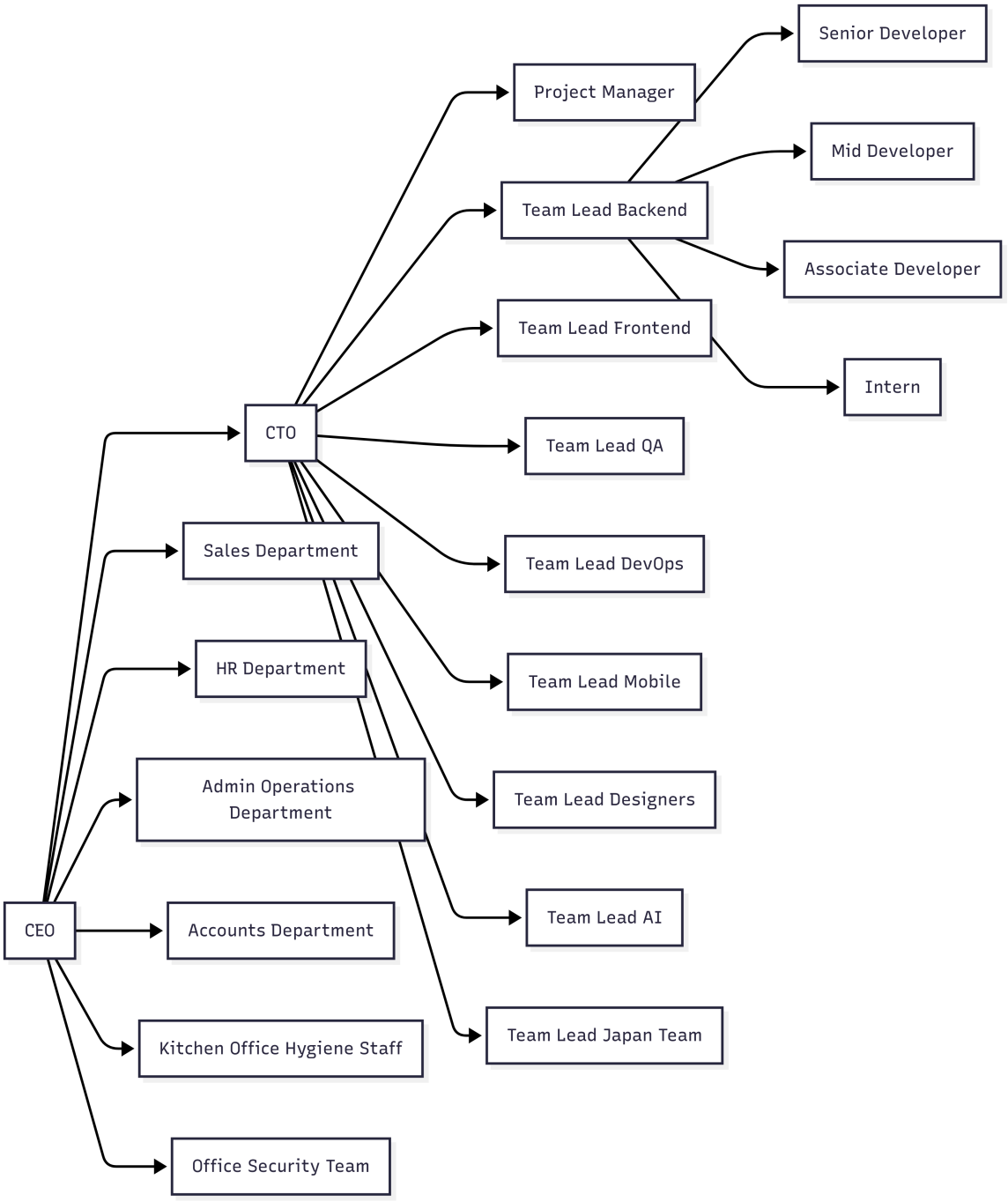


Figure 2.1: Organizational Hierarchy at Ekbana

2.3 Working Domains of Organization

Core Services

EKbana offers a comprehensive suite of services across multiple technology domains, including:

- **Web Technology:** Crafting secure, scalable, and efficient web applications tailored to client needs.

- **Mobile App Development:** Designing and developing custom mobile applications for both iOS and Android platforms.
- **Front-End Development:** Creating user-friendly, responsive interfaces using modern frameworks and technologies.
- **Quality Assurance:** Ensuring products meet rigorous safety, privacy, and functionality standards through systematic testing.
- **User-Centered Design:** Developing intuitive and attractive user experiences focused on end-user needs.
- **DevOps and Security:** Managing cloud infrastructure, automating deployments, and implementing robust security measures.
- **Cloud Computing:** Building cloud-native applications and migrating legacy systems to cloud platforms for scalability and resilience.
- **API Development:** Designing and building robust APIs to enhance software functionality and integration.
- **Project Management:** Planning, executing, and monitoring projects to ensure timely delivery and alignment with objectives.
- **Business Analysis:** Facilitating effective communication between business stakeholders and technical teams to align software solutions with business goals.

Industries Served

EKbana caters to a diverse range of industries, providing specialized digital solutions, including:

- **E-commerce:** Developing platforms that enhance online shopping experiences through seamless interfaces and backend processes.
- **Food & Beverages:** Creating solutions for online food delivery, restaurant management, and customer engagement.
- **Geospatial:** Offering digital mapping, geolocation, and location-based services.
- **Insurance:** Delivering software solutions to optimize the insurance value chain, from underwriting to claims processing.
- **Non-Profit:** Supporting non-profit organizations with tailored digital tools to improve outreach and operations.

- **Retail:** Enhancing retail business operations through digital transformation and automation.

(Source: EKbana Solutions, 2024)

2.4 Description of Intern Department

Approach to Projects: EKbana follows a well-defined and structured software development lifecycle to ensure project success. The process includes the following phases:

- **Discovery Workshop:** Engaging with clients to understand their business goals, mission, and expectations in depth.
- **Planning:** Defining detailed project requirements, functionalities, features, and timelines collaboratively with stakeholders.
- **Design:** Creating detailed wireframes and prototypes to visualize and validate the product design and user experience.
- **Development:** Executing two-week agile sprints to incrementally develop, test, and demonstrate working features.
- **Testing:** Conducting rigorous quality assurance to verify functionality, performance, security, and usability.
- **Go Live:** Deploying the finalized product to production and supporting post-launch monitoring and maintenance.

Backend Department Overview: I was assigned to the Backend Department, which is responsible for all backend-related tasks in the organization, including API development, authentication mechanisms, and core business logic implementation. The department's primary technology stacks include Node.js and Laravel. For rapid backend development, frameworks like Express.js and Next.js are frequently employed.

During my internship, my focus was primarily on Laravel. Laravel is used for building full-stack applications incorporating Blade templating engine, Livewire, or modern frontend frameworks such as Vue.js and React.js. This provides flexibility in developing both backend logic and frontend interfaces when required.

Additionally, our department includes a group of .NET developers who handle backend development using Microsoft technologies. Together, the backend department manages a wide range of tasks including database design, server-side logic, API integrations, and ensuring security standards.

In summary, the Backend Department at EKbana plays a critical role in delivering robust and scalable backend solutions. It supports diverse technology stacks and methodologies,

enabling the company to meet varied client requirements efficiently. My internship experience here provided me with deep exposure to real-world backend development workflows and teamwork in a professional IT setting.

2.5 Literature Review

Content Management System (CMS) - WordPress

Content Management Systems (CMS) have revolutionized the way digital content is created, managed, and published. They provide user-friendly interfaces that enable even non-technical users to manage website content efficiently without needing extensive programming knowledge. WordPress, launched in 2003, is one of the most widely adopted CMS platforms worldwide, powering approximately 40% of all websites on the internet WordPress Foundation, 2024. Its open-source nature allows for extensive customization through thousands of themes and plugins, enabling users to tailor their websites for blogging, e-commerce, portfolios, and enterprise use cases. WordPress follows a modular design, which promotes flexibility and scalability, making it suitable for both small personal blogs and large corporate websites WordPress Foundation, 2024. Furthermore, its active developer community ensures continuous improvements, security updates, and feature expansions.

Service Repository Architecture

In Laravel development, the Service Repository Architecture is a design pattern that helps organize the application into distinct layers with clear responsibilities. The Controller layer manages HTTP requests and responses, acting as the entry point for user interactions. The Service layer contains the business logic, handling data processing and decision-making separate from the controller, which promotes cleaner and more maintainable code. The Repository layer abstracts the data access layer, managing all interactions with the database, which allows for easier changes in data storage and simplifies testing Haseeb, 2020.

By combining the Repository Pattern and Service Layer, developers achieve a modular and scalable architecture. Each layer has a well-defined role, which enhances code readability, maintainability, and testability. This separation also facilitates unit testing by isolating business logic from database operations and request handling, improving overall software quality Haseeb, 2020.

Laravel and MVC Architecture

Laravel is a popular PHP framework that leverages the Model-View-Controller (MVC) architectural pattern to build clean, maintainable, and scalable web applications. The MVC pattern divides an application into three interconnected components: the Model, which manages data and business logic; the View, responsible for presenting data to users through the user interface; and the Controller, which handles user input and coordinates interactions between the Model and View Rouse, 2019. Laravel's implementation of MVC enhances

separation of concerns, making code easier to manage and extend. Beyond MVC, Laravel provides a rich set of tools such as Eloquent ORM for database interactions, Blade templating engine for dynamic views, and middleware for request filtering and security Otwell, 2011. These features allow developers to rapidly develop feature-rich applications with minimal boilerplate code. Additionally, Laravel supports RESTful routing, authentication, caching, and task scheduling, making it a comprehensive framework suited for modern web development needs Otwell, 2011. Its elegant syntax and active community further contribute to its popularity among PHP developers worldwide.

CHAPTER 3: INTERNSHIP ACTIVITIES

3.1 Roles and Responsibilities

- **Sprint Planning and Task Assignment:** The project manager plans the weekly sprints and assigns tasks to me. Based on these tasks, I organize my daily schedule to complete the coding and development work on time.
- **Requirement Gathering:** Sometimes, the designer collects requirements directly from clients and assigns specific tasks to me. I review these requirements carefully before starting the work.
- **Task Delegation by Team Lead:** The team lead also assigns certain tasks that I need to complete as part of the project.
- **Research and Learning:** During free time, I spend time researching new topics related to Laravel and other technologies to improve my skills and stay updated with the latest developments.
- **Module Development:** My main responsibility is to develop various modules. This includes creating database tables, configuring environment files, and building functionalities and features based on project requirements.
- **Code Review and Testing:** After completing the development of a module, I carefully check my work and submit it to my mentor for review and feedback on errors or possible improvements. Once approved, the code is forwarded to the Quality Assurance (QA) team for further testing.
- **Bug Fixing and Deployment:** If the QA team finds any bugs, I work on fixing them. After all tests pass, the final product is deployed to production.
- **Daily Stand-up Meetings:** Every day, I attend a stand-up meeting with the project manager to discuss the tasks planned for the day and update the team on my progress.
- **Work Logging:** I maintain a daily log of the tasks I complete, typically working around 7 hours each day.
- **Maintenance and Client Requests:** Much of my work involves maintaining existing projects by optimizing performance or making changes according to new client requests.
- **New Project Development:** When new projects arise, such as Ashtec, I am responsible for backend development, including coding, fixing issues, and ongoing maintenance.

- **Monthly Progress Review:** My mentor reviews my work and progress monthly to provide guidance and evaluate how much I have learned and contributed.

3.2 Weekly Internship Log

Week	Activities Performed
1	Orientation and environment setup. Studied the internal CMS codebase and explored core Laravel concepts including routing, blade templating, middleware, and Eloquent ORM.
2	Continued with Laravel learning. Started minor development tasks on the Thames College website, gaining practical exposure to real-world project structure.
3	Progressed into more substantial development on the Thames College website. Introduced to Ashtec Quote and Order Management System and began module development.
4	Actively worked on both Thames College and Ashtec projects. Participated in agile sprints—developed modules rapidly and collaborated in testing and feedback cycles.
5	Ongoing improvements and bug fixes on Ashtec and Thames College. Implemented new features and resolved client-raised issues.
6	Continued development on Thames College, with emphasis on UI/UX refinements and production bug resolution. Attended sprint review and planning meetings.
7	Assigned to Koklass E-Commerce platform. Contributed to product module, including filtering, listing, and admin interface improvements.
8	Onboarded to Application Processing Software project. Developed authentication, form submission, and dashboard modules. Continued updates on Thames and Ashtec.
9	Worked in parallel across Application Processing Software and Thames College. Conducted code reviews, API integrations, and fixed form-related bugs.

Table 3.1: Internship Activities: Weeks 1–9

Week	Activities Performed
10	Enhanced logic and features on Application Processing and Ashtec platforms. Actively participated in daily standups and progress reporting.
11	Delivered final sets of features on Ashtec and Application Processing systems. Assisted QA team in final rounds of user acceptance testing.
12	Wrapped up ongoing tasks. Finalized documentation, resolved remaining bugs, and helped prepare projects for production delivery and report submission.

Table 3.2: Internship Activities: Weeks 9 –-12

3.3 Description of the Project

During my internship, I was involved in the development and maintenance of several key software projects, each with its own unique requirements and challenges.

1. Thames Website Development and Maintenance This project required regular weekly updates based on client requests. A senior team member collected and communicated the requirements to me, and I was responsible for implementing most of the functionality. It was a standalone project, and I handled the majority of the development work. I received support from the design team for HTML, CSS, and UI elements. After completing each task, it went through a review process before being pushed to the live environment.

2. Thames College Application Processing Software This project focused on digitizing and managing the student admission process, including both online and offline applications. The system supported scholarship applications and provided visual analytics related to pre-admissions, post-admissions, scholarship eligibility, student status, and website traffic. Weekly requirements were provided by the client, which guided the development and enhancements of the system.

3. Ashtec Quote and Order Management Software This was a large-scale application divided into three parts: a customer-facing interface, a vendor portal (developed using React and Node.js), and an admin panel (built using Laravel). All three components shared a common database. I was responsible for the development and maintenance of the admin panel, which managed data related to customers, vendors, suppliers, and product parts. I worked under the guidance of my mentor throughout the project lifecycle. Our responsibilities also included debugging, optimizing code, and ensuring overall software quality. We used SonarQube to monitor code quality and enforce coding standards.

4. Koklass E-Commerce Platform Koklass is a multi-vendor e-commerce platform that powers several online services including KFC Software, MeroKinMel, Foodmandu, Akabare, and others. My primary role was to optimize complex database queries and improve

system performance. I also explored various internal modules in-depth, integrated APIs, implemented online payment gateways such as eSewa, and resolved application-level bugs. My work contributed to the overall efficiency and scalability of the platform.

3.4 Description of the Tools

At Ekbana, we are provided with a professional and comfortable working environment. Each developer is equipped with dual monitors, a Mac Mini setup, macOS-compatible mouse and keyboard, ergonomic chairs, and a high-speed Ethernet connection. We work in an open workspace setup, where all team members share a large room to encourage collaboration.

Our infrastructure includes a dedicated server setup that runs 24/7, along with a fast and reliable internet connection. We also use advanced tools like Cursor (an AI-powered coding assistant) and have access to various premium accounts to enhance productivity.

For testing email functionalities, we use Mailpit. We follow a multi-level deployment process which includes local, development (dev), quality assurance (QA), user acceptance testing (UAT), and production (live) environments.

We use technologies such as Laravel, Composer, NPM, MySQL, and PostgreSQL for development. For communication, we rely on Mattermost and Microsoft Teams, while Zimbra is used for official emails. Ekbana's internal website and mobile application are used for daily operations like attendance, leave management, and accessing personal/team information.

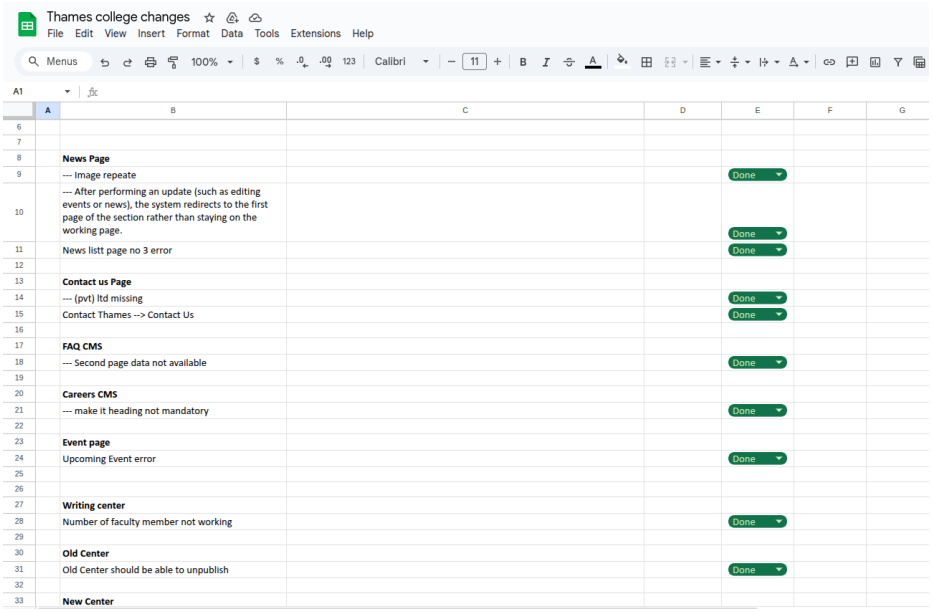
Our code repositories are managed on GitLab. Attendance is tracked through a facial recognition system for check-in and check-out.

Ekbana CMS is an in-house developed base content management system that emphasizes modularity and reusability. As backend developers, we mainly focus on developing APIs, CMS modules, and integrating them with frontend technologies such as Blade, Livewire, React, or Next.js—handled by the frontend team. While our department is primarily responsible for backend development and DevOps, other departments handle their respective responsibilities.

3.5 Description of the Activities Performed

Throughout my internship, I engaged in various backend development tasks using Laravel and supported the team in multiple phases of the software development lifecycle. The following points summarize the major activities I was involved in:

- **Understanding client requirements:** Carefully studied and analyzed client needs shared through senior developers or project managers to deliver the right features and solutions.



Thames college changes

File Edit View Insert Format Data Tools Extensions Help

	News Page	
	--- Image repeate	Done
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	News listt page no 3 error	Done
	Contact us Page	
	--- (pvt) ltd missing	Done
	Contact Thames --> Contact Us	Done
	FAQ CMS	
	--- Second page data not available	Done
	Careers CMS	
	--- make it heading not mandatory	Done
	Event page	
	Upcoming Event error	Done
	Writing center	
	Number of faculty member not working	Done
	Old Center	
	Old Center should be able to unpublish	Done
	New Center	

Figure 3.1: Understanding client requirements

- **Development of modules and submodules:** Built and contributed to both major modules and smaller subcomponents in existing and new Laravel-based applications, following the given specifications.

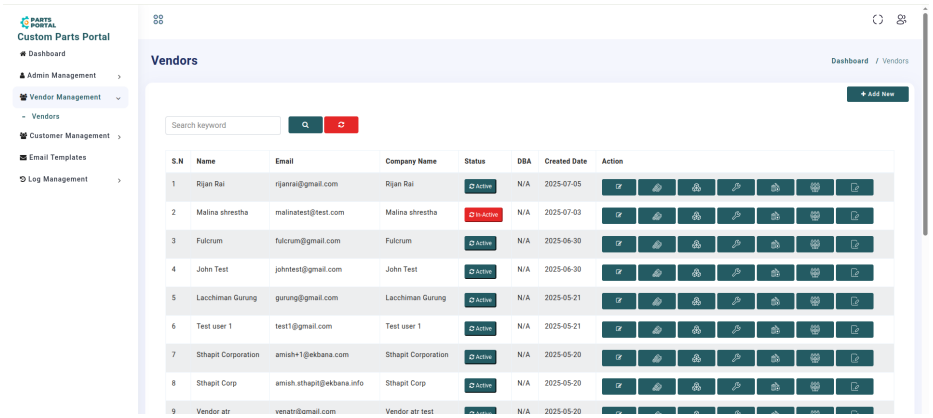


Figure 3.2: Development of modules and submodules

- **Working with Models and Eloquent ORM:** Created and managed Laravel models to interact with the database in an object-oriented manner. Used Eloquent relationships like `hasMany`, `belongsTo`, and `hasOneThrough` to structure data efficiently and simplify complex queries.

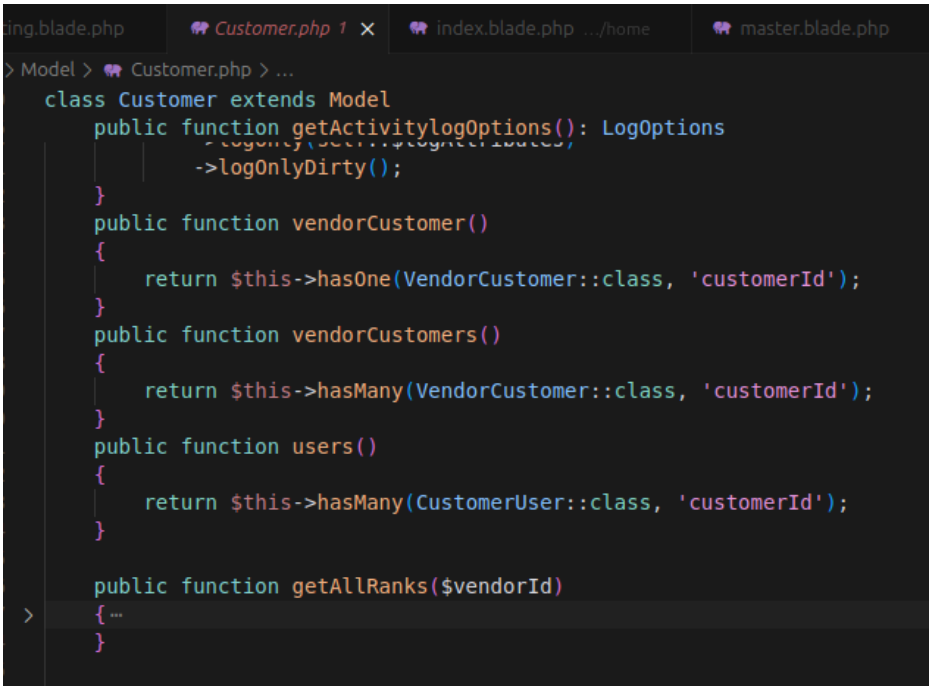


Figure 3.3: Working with Models and Eloquent ORM

- **Form handling and data validation:** Implemented secure and efficient form processing by applying validation rules and sanitizing user inputs to prevent invalid or malicious data.

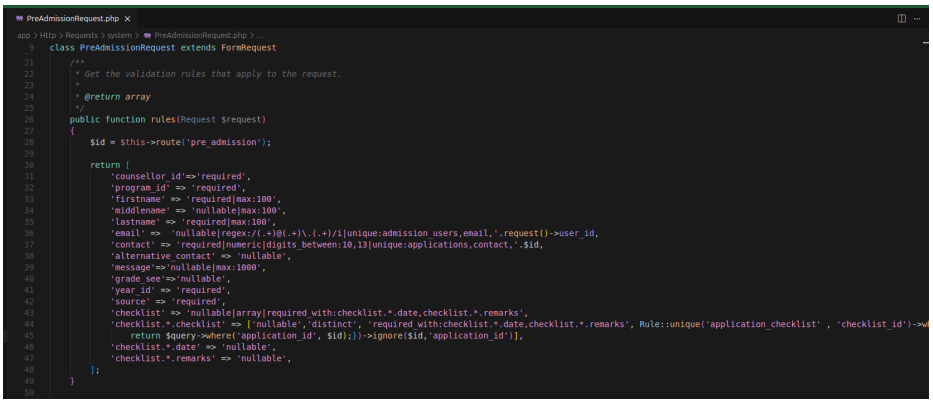
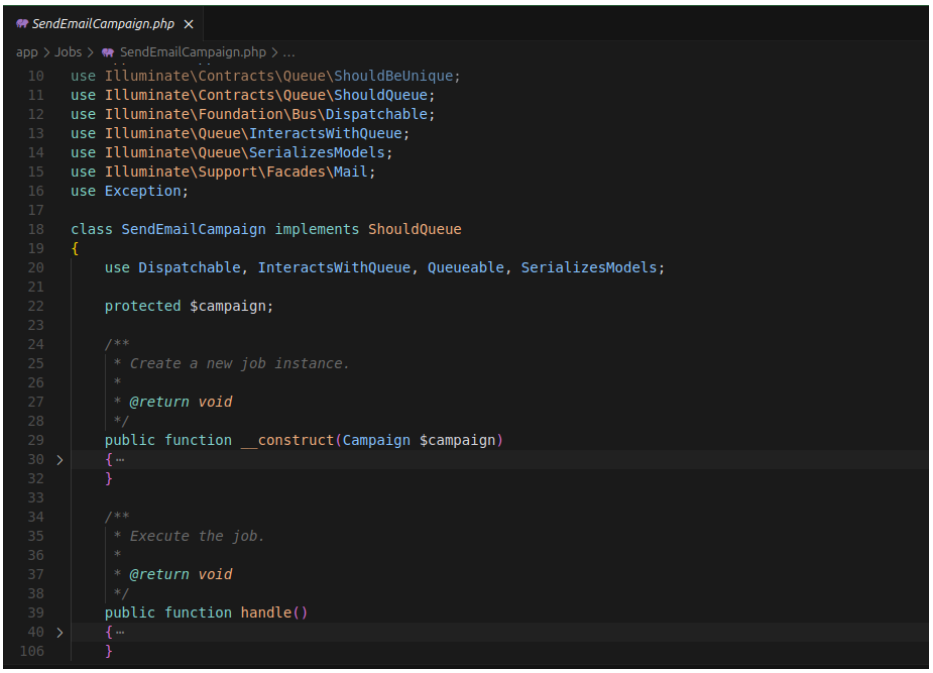


Figure 3.4: Form handling and data validation

- **Events, commands, jobs, and queues:** Created and worked with Laravel features like events and jobs to handle background processes such as sending emails or SMS asynchronously.

```
/**
 * Define the application's command schedule.
 *
 * @param  \Illuminate\Console\Scheduling\Schedule  $schedule
 * @return void
 */
protected function schedule(Schedule $schedule)
{
    $schedule->command('send:email-campaign')->everyMinute();
    $schedule->command('send:sms-campaign')->everyMinute();
}
```

Figure 3.5: Events, commands



SendEmailCampaign.php

app > Jobs > SendEmailCampaign.php > ...

```
use Illuminate\Contracts\Queue\ShouldBeUnique;
use Illuminate\Contracts\Queue\ShouldQueue;
use Illuminate\Foundation\Bus\Dispatchable;
use Illuminate\Queue\InteractsWithQueue;
use Illuminate\Queue\SerializesModels;
use Illuminate\Support\Facades\Mail;
use Exception;

class SendEmailCampaign implements ShouldQueue
{
    use Dispatchable, InteractsWithQueue, Queueable, SerializesModels;

    protected $campaign;

    /**
     * Create a new job instance.
     *
     * @return void
     */
    public function __construct(Campaign $campaign)
    {…
    }

    /**
     * Execute the job.
     *
     * @return void
     */
    public function handle()
    {…
    }
```

Figure 3.6: Jobs, and queues

- **Code optimization and refactoring:** Continuously improved the readability and performance of the existing code by restructuring functions, reducing redundancy, and following Laravel best practices.
- **Query optimization:** Analyzed and optimized SQL queries to reduce execution time and improve database performance, especially for data-heavy operations.
- **Filtering and sorting data:** Implemented logic to filter, search, and sort data dynamically as per user needs, improving the usability and functionality of the application.

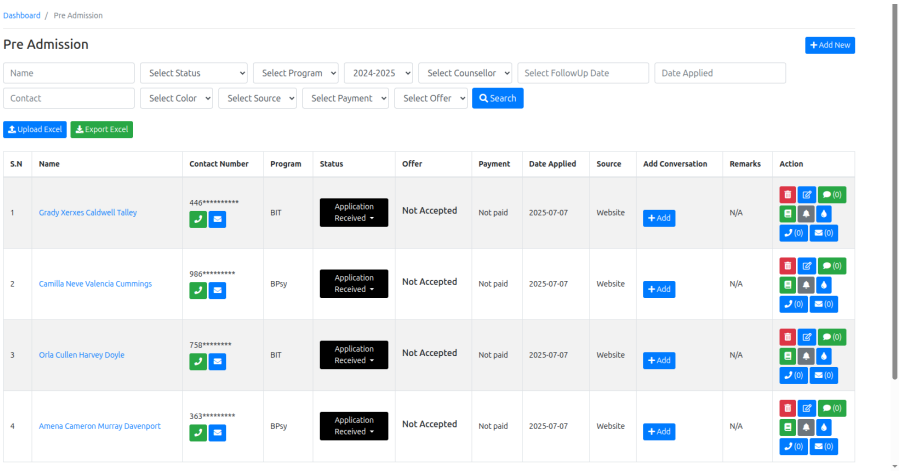


Figure 3.7: Filtering and sorting data

- **Bug fixing and debugging:** Regularly identified, debugged, and resolved issues found during development, testing, or reported by QA, improving overall application stability.

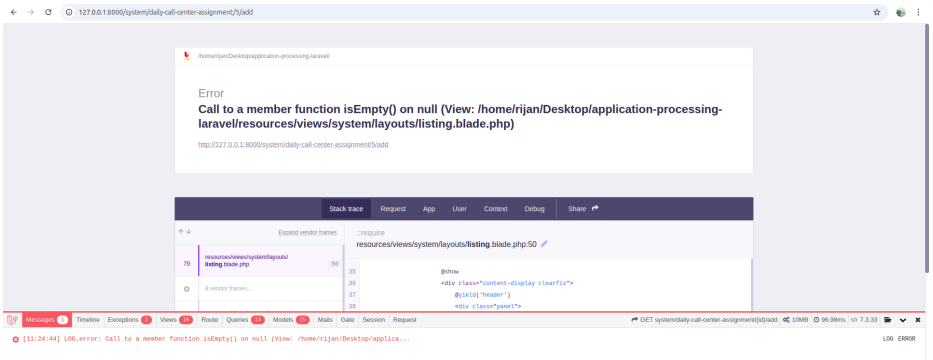
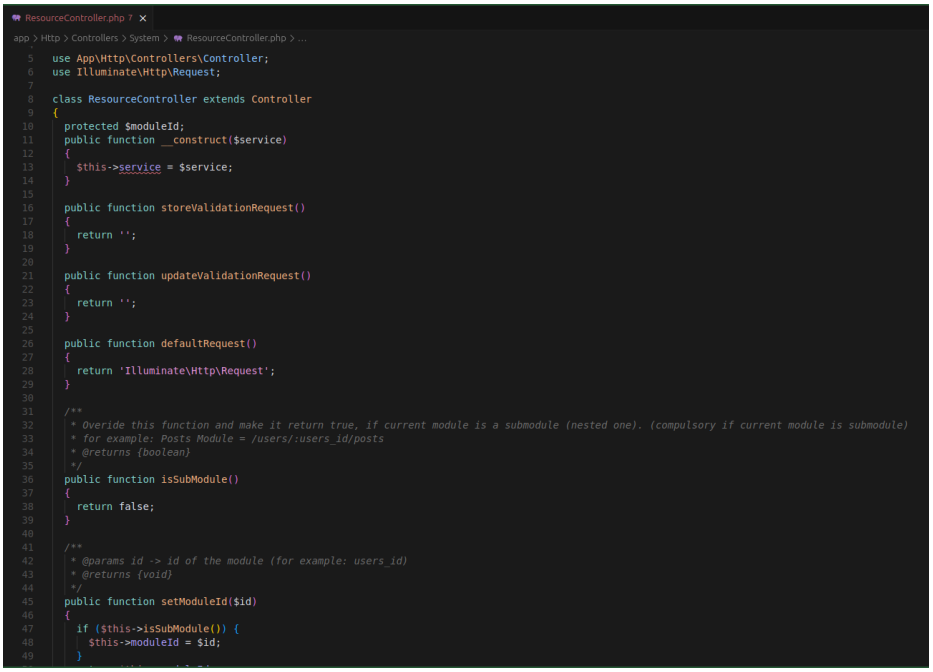


Figure 3.8: Bug fixing and debugging

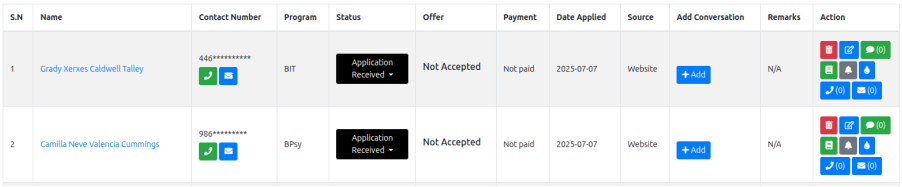
- **Exploring Ekbana CMS:** Spent time exploring Ekbana's custom-built CMS to understand its structure, how the backend logic connects with the frontend, and how content management is handled.



```php
use App\Http\Controllers\Controller;
use Illuminate\Http\Request;

class ResourceController extends Controller
{
  protected $moduleId;
  public function __construct($service)
  {
    $this->service = $service;
  }

  public function storeValidationRequest()
  {
    return '';
  }

  public function updateValidationRequest()
  {
    return '';
  }

  public function defaultRequest()
  {
    return 'Illuminate\Http\Request';
  }

  /**
   * Overide this function and make it return true, if current module is a submodule (nested one). (compulsory if current module is submodule)
   * for example: Posts Module = /users/:users_id/posts
   * @returns {boolean}
   */
  public function isSubModule()
  {
    return false;
  }

  /**
   * @params id -> id of the module (for example: users_id)
   * @returns {void}
   */
  public function setModuleId($id)
  {
    if ($this->isSubModule()) {
      $this->moduleId = $id;
    }
```

Figure 3.9: Exploring Ekbana CMS

- **Sending SMS and email services:** Integrated and tested services for sending transactional or notification-based SMS and emails using available APIs and Laravel notification system.



S.N	Name	Contact Number	Program	Status	Offer	Payment	Date Applied	Source	Add Conversation	Remarks	Action
1	Grady Xerxes Caldwell Talley	446**********	BIT	Application Received	Not Accepted	Not paid	2025-07-07	Website	+ Add	N/A	(0) (0) (0)
2	Camilla Neve Valencia Cummings	986*********	BPsy	Application Received	Not Accepted	Not paid	2025-07-07	Website	+ Add	N/A	(0) (0) (0)

Figure 3.10: Sending SMS and email services

- **Assisting seniors on minor tasks:** Provided support to senior developers in resolving smaller issues or handling parts of their workload, helping me gain insights from real-world problem-solving.
- **Research and learning Laravel concepts:** Continuously engaged in self-learning and R&D to explore new Laravel packages, tools, and concepts for better development practices.

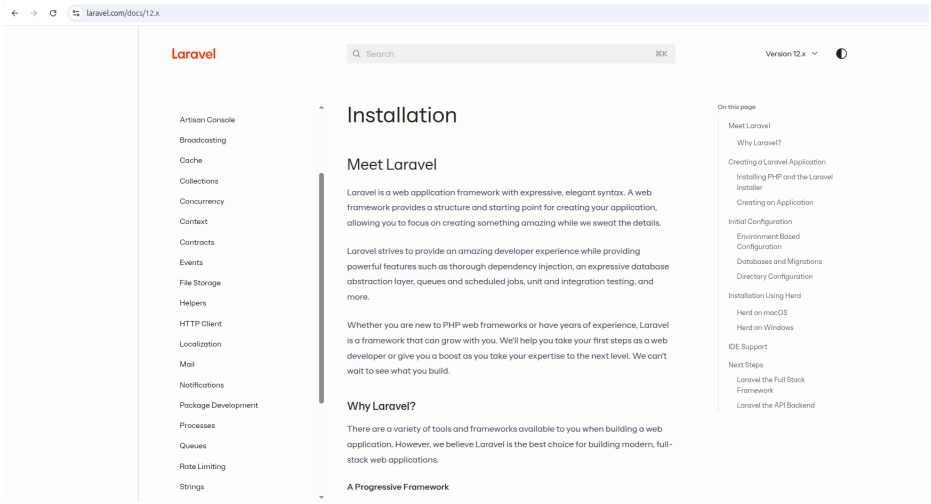


Figure 3.11: Research and learning Laravel concepts

- **Participating in sprint meetings:** Attended daily sprint meetings to discuss task updates, blockers, and future plans, ensuring team coordination and timely progress tracking.
- **Collaboration with other departments:** Regularly interacted with DevOps, designers, and team leads for deployment, UI integration, and task clarification, promoting smooth teamwork.
- **Delivering outcomes consistently:** Made sure to complete and deliver assigned tasks on a daily and weekly basis, following the agile sprint cycle adopted by the company.

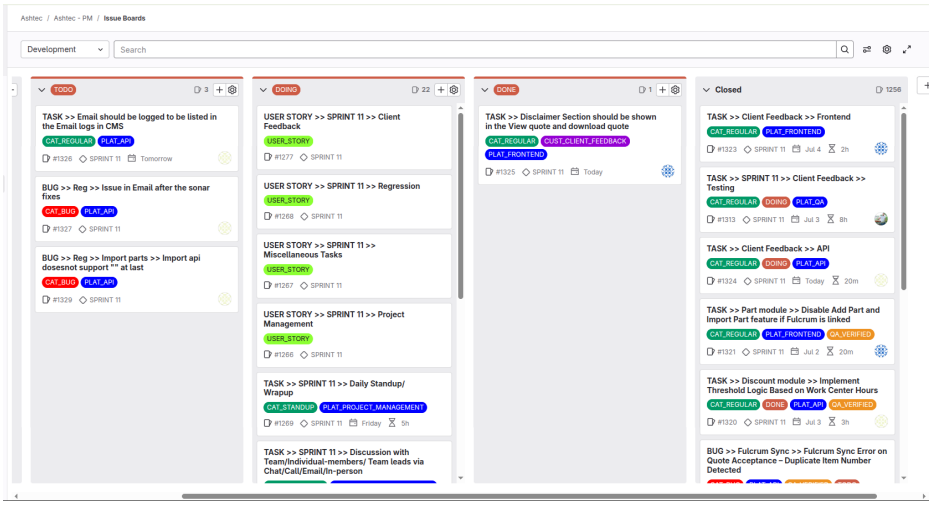


Figure 3.12: Delivering outcomes consistently

- **Maintaining a time log:** Recorded my daily activities and working hours to comply with the company's rule of logging at least 6 hours per day, and to personally track productivity and focus.

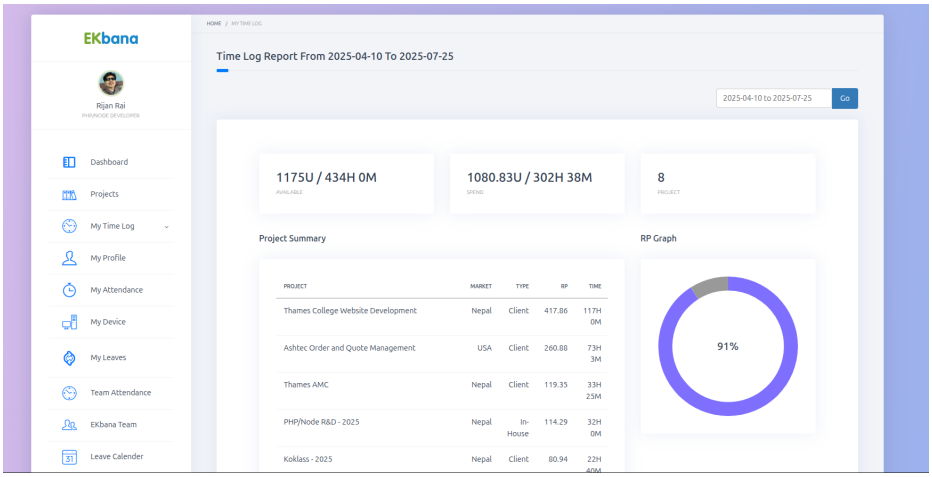


Figure 3.13: Maintaining a time log

CHAPTER 4: CONCLUSTION AND LEARNING OUTCOMES

4.1 Conclusion

During my internship, I actively contributed to completing weekly sprints, integrating modules piece by piece to create a fully functional application. I played a key role in meeting client requirements and managing change requests, always prioritizing client experience. As a result, both weekly and monthly goals were successfully achieved.

On a personal level, this experience helped me grow into a more responsible, confident, and diligent developer. I gained the ability to manage my work through various stages from development to production—and effectively troubleshoot issues as they arose. This hands-on involvement enhanced my professionalism and teamwork skills, as tasks were divided among team members and collaboratively delivered to meet our shared objectives. Feedback from team leads and members was positive, and this opportunity has significantly contributed to my career development.

The impact of our work was evident in the increased student engagement and admissions at the college, facilitated by the improved website. Web traffic was carefully tracked and enhanced, resulting in smoother daily operations due to a more user-friendly college software platform that consistently met user requests.

Additionally, the Ashtec admin side, developed using Laravel, is near completion, with ongoing final adjustments to the API and frontend. Positive feedback has been received during User Acceptance Testing (UAT), which we believe will enhance their sales, customer support, daily operations, and overall customer experience.

Regarding Koklass, significant improvements were made in the loading speed of web and mobile content through optimized APIs and database queries.

Overall, I have added considerable value to Ekbana Solutions by being a productive and energetic developer, eager to learn and implement effective solutions.

Finally, I would like to express my sincere gratitude to everyone who supported and guided me throughout this journey.

4.2 Learning Outcomes

Technical Skills:

- Gained proficiency in programming languages such as PHP and JavaScript.
- Acquired hands-on experience with the Laravel framework.
- Developed skills in database management, including MySQL and PostgreSQL, focusing on query optimization and database design.

- Learned version control systems, especially GitLab, and followed Git workflows for effective collaboration.
- Integrated third-party APIs, including payment gateways and social media platforms.
- Understood and applied software development life cycle (SDLC) concepts in real projects.
- Practiced debugging, testing, and deploying applications efficiently.
- Improved code quality through optimization, refactoring, and writing clean, maintainable code.

Professional Skills:

- Gained an understanding of Agile methodology, including sprint planning and execution, to ensure timely project delivery and smooth workflow.
- Learned the roles and importance of different departments in project management.
- Developed client communication skills by gathering requirements and incorporating feedback effectively.
- Enhanced teamwork abilities by collaborating closely with development teams.
- Strengthened problem-solving skills, particularly in debugging and troubleshooting.
- Improved time management skills to meet project deadlines consistently.

Industry Insights:

- Developed an understanding of the challenges and opportunities within Nepal's IT sector.
- Became familiar with the requirements and preferences of both local and international clients.
- Experienced international software development standards and practices.

Career Preparation:

- Built a professional portfolio with real-world projects, ranging from college websites and national applications to international software projects.
- Gained insight into salary expectations and career paths in the IT industry, including understanding my current market position and future earning potential.
- Learned how to plan and adjust my career goals and personal life based on these insights.
- Prepared for software engineering roles both in Nepal and abroad.

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APPENDIX

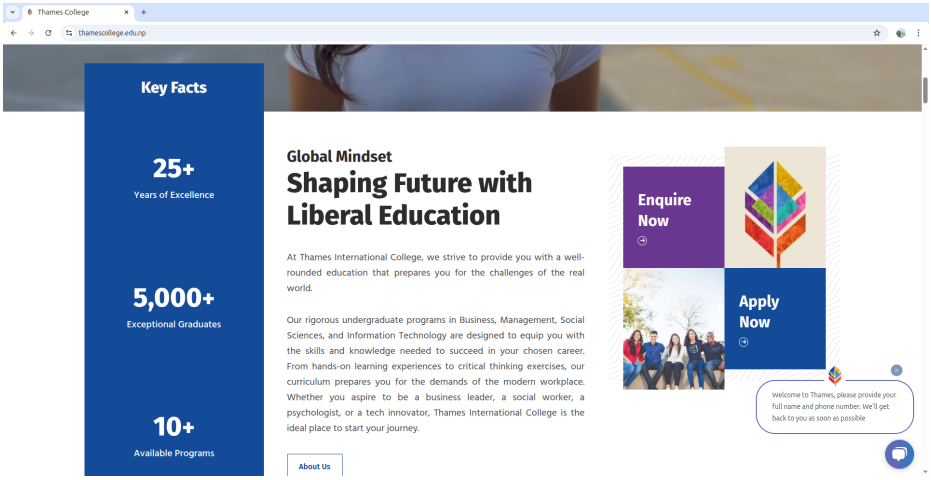

Figure 5.1: Thames college website

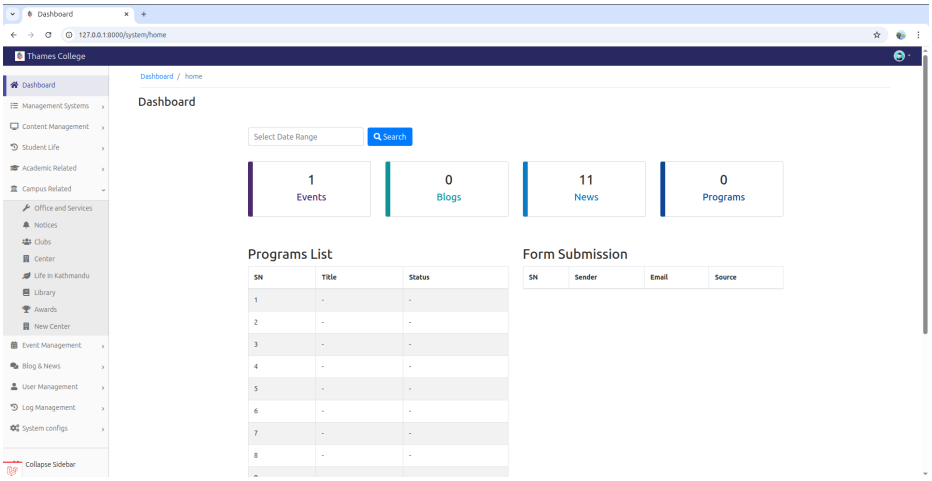

Figure 5.2: Admin panel of application processing

Figure 5.3: Ekbana Japan website

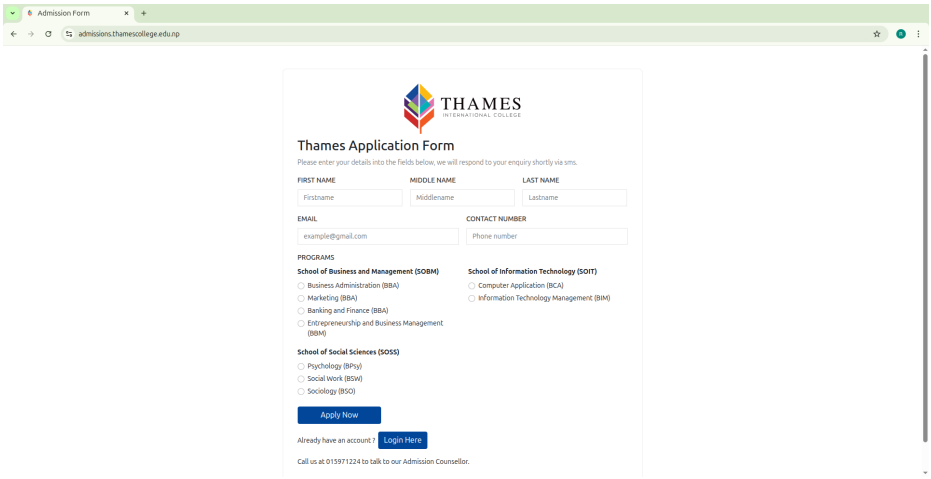

Figure 5.4: Application Processing Form

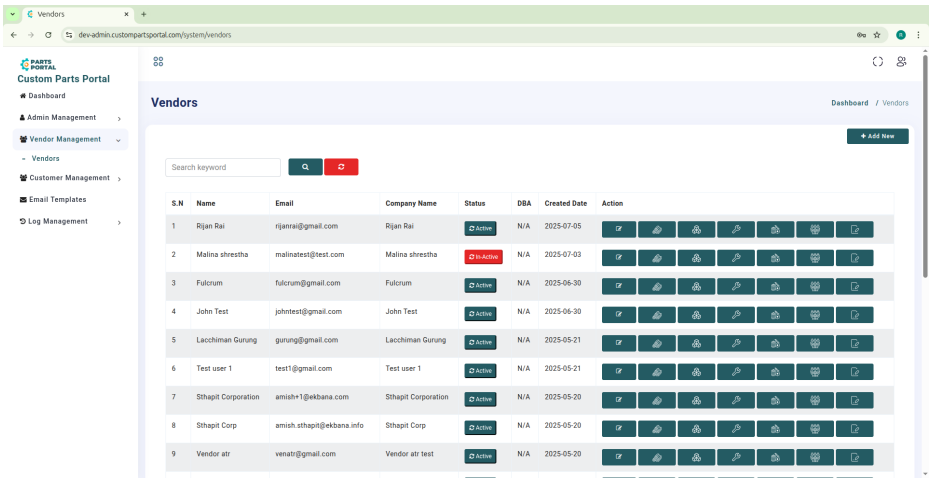

Figure 5.5: Ashtec Order and Quote Management

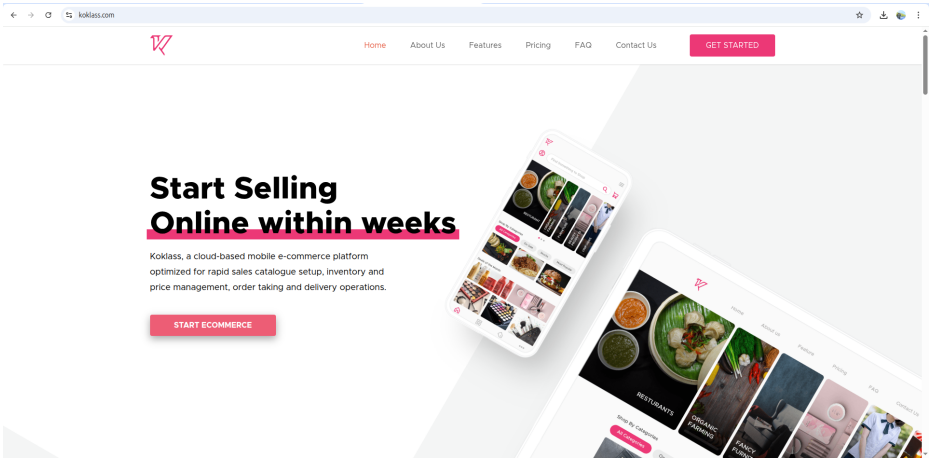

Figure 5.6: Koklass