

Summer Internship/ Practical Training Report

SIMM851

on

CTC Generator Application Development at Audax Labs

Completed at:

Ikkasa Concept Pvt. Ltd.

Submitted by:

Saksham Agarwal

2201010011

BTech CSE



**K. R. MANGALAM UNIVERSITY, GURUGRAM, HARYANA,
INDIA**

Internship Period: 28 July 2025 - 28 September 2025

Certificate



lkkasa

CERTIFICATE

— OF COMPLETION —

SAKSHAM AGARWAL

Congratulations for successfully completing **Web Developer Internship - Founder's Office**

at lkkasa from 28 Jul 2025 to 28 Sep 2025 with utmost diligence and hard work. We wish him best for future endeavours.

Sunita Singh

Sunita Singh
Co-Founder, lkkasa



DECLARATION

I declare that this written submission represents work in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Name of the student: **Saksham Agarwal**

Roll No.: **2201010011**

Date: **08 / 10 / 2025**

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Place: **Noida**

Student Name:- **Saksham Agarwal**

Date: **08.10.2025**

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ABSTRACT

This backend system is a modular Node.js/Express application designed to manage users, orders, bulk imports, Shopify synchronization, and Ekart return shipments for an e-commerce logistics workflow. The user-management layer stores emails and hashed passwords, issues JWTs at login, and restricts access through a dedicated middleware that limits signup/login to an authorized email address. The order module models rich order data — customer and product details, package dimensions, payment and tax breakdowns, and shipment status — and exposes CRUD endpoints with pagination and validation. A CSV/Excel import controller parses uploaded files to create or merge thousands of orders in bulk, normalizing fields and recalculating shipment weights when dimensions change. Shopify integration periodically pulls new orders from a configured store, deduplicates them, and persists them into the local order store to keep records synchronized. Ekart integration authenticates with the carrier, creates return shipment requests, stores tracking identifiers, and provides endpoints to update return statuses as carrier events arrive. Security is enforced with JWT-based route protection and an email-restriction middleware for sensitive auth flows, while environment variables store secrets like DB URIs, JWT keys, Shopify credentials, and Ekart tokens. The application is structured into clear layers — models, controllers, routes, middleware, and services — to keep concerns separated and to simplify testing and extension. Database connectivity uses a MongoDB Atlas free cluster with connection strings managed via config, and CORS and other common middleware enable safe communication with frontend apps. Error handling and logging are centralized so that operational issues such as failed syncs or CSV parsing errors can be tracked and retried. The design favors idempotent operations (especially for imports and syncs), concurrency-safe token handling for external APIs, and extensible hooks for future carriers or storefronts. Overall, the system provides a robust, maintainable foundation to handle order lifecycle, merchant integrations, and carrier returns while emphasizing security, observability.

TABLE OF CONTENTS

Certificate.....	2
Declaration	3
Acknowledgement	4
Abstract.....	5
Chapter 1: Introduction.....	08
1.1 Purpose of the Report.....	08
1.2 Background of the Internship.....	08
1.3 Objectives of the Internship	08
Chapter 2: Organization Overview	09
2.1 Brief History.....	09
2.2 Mission and Vision	09
2.3 Organizational Structure	09-10
2.4 Core Activities and Services	10
Chapter 3: Internship Description.....	11
3.1 Role and Responsibilities	11
3.2 Projects and Tasks Undertaken	11
3.3 Skills and Knowledge Acquired.....	11
Chapter 4: Learning Outcomes	12
4.1 Professional Skills Developed.....	12
4.2 Challenges Faced and Solutions Implemented.....	12
4.3 Insights Gained about the Industry/Field	12
Chapter 5: Project Details	13
5.1 Overview of Major Projects.....	13
5.2 Goals and Objectives.....	13
5.3 Methodologies and Processes	13
5.4 Results and Contributions	14
5.5 Reflection on Project Outcomes.....	14

Chapter 6: Analysis and Reflection	15
6.1 Evaluation of Internship Experience	15
6.2 Comparison with Initial Objectives.....	15
6.3 Strengths and Areas for Improvement	15
6.4 Suggestions for Future Interns	15
Chapter 7: Conclusion	16
7.1 Summary of Key Learning Points.....	16
7.2 Impact of the Internship on Career Goals	17
7.3 Final Thoughts	17
References	18

CHAPTER 1 - INTRODUCTION

1.1 Purpose of the Report

This report aims to document the experiences, learning, and contributions made during the internship period. It serves as a comprehensive record of the internship objectives, tasks undertaken, skills developed, and overall impact on professional growth. The report provides insights into the work environment, challenges faced, and solutions implemented. It also helps in reflecting on the practical application of theoretical knowledge acquired during academic studies. Further, it offers a critical analysis of the internship experience in relation to career goals and industry expectations. The report is intended for academic assessment and personal reference.

1.2 Background of the Internship

The internship was undertaken as a mandatory part of the academic curriculum in Bachelor of Technology in Computer Science Engineering at K.R. Mangalam University. It provided a platform to translate classroom learning into real-world software development projects. The internship was pursued at Ikkasa Concept Pvt Limited, a technology company focusing on web development and logistics integration. This opportunity enabled interaction with industry professionals and exposure to modern technologies such as MERN stack and API integration. The background highlights the significance of bridging theoretical knowledge and industry practices.

1.3 Objectives of the Internship

The internship set out to achieve multiple objectives, including gaining hands-on experience in full-stack web development, understanding the software development life cycle, and learning effective teamwork and communication. A key goal was to develop practical skills in technologies like React, Node.js, Express, and MongoDB. Additionally, the internship aimed to enhance problem-solving abilities by working on real client projects involving student management systems and logistics API integration. Another objective was to understand backend security practices, data modeling, and efficient API design. Ultimately, the internship sought to prepare for a professional career with a solid technical foundation.

CHAPTER 2 – ORGANIZATION OVERVIEW

2.1 Brief History

Ikkasa Concept Pvt Limited was established as a technology-driven company specializing in software development and integration services. With several years of experience, the company has built a reputation for delivering high-quality solutions in web development, cloud services, and logistics automation. The organization has steadily grown from a small startup to a mid-sized firm, serving various clients in education, e-commerce, and logistics sectors. Its commitment to innovation and client satisfaction has led to several successful project deployments. The company fosters a culture of continuous learning and adaptability.

2.2 Mission and Vision

The mission of Ikkasa Concept Pvt Limited is to provide innovative, scalable, and secure technology solutions that empower businesses and enhance operational efficiency. The company envisions becoming a leader in delivering integrated software services that align with client goals and industry best practices. Its core values include integrity, quality, customer focus, and teamwork. Through leveraging the latest technologies and fostering a talented workforce, the organization strives to create impactful solutions that drive digital transformation. The vision embraces growth, innovation, and sustainability.

2.3 Organizational Structure

The organizational structure at Ikkasa Concept is designed to promote agility, collaboration, and clear accountability. It includes departments such as Software Development, Quality Assurance, Project Management, and Customer Support. The software development team is further divided into frontend, backend, and DevOps units. Each team is led by experienced managers who coordinate tasks and ensure timely delivery. Cross-functional teams work collaboratively on projects, facilitating knowledge sharing and innovation. The structure supports mentorship, career progression, and efficient communication channels.

2.4 Core Activities and Services

Ikkasa Concept specializes in providing end-to-end software development services covering consultation, design, development, testing, deployment, and maintenance. Key services include full-stack web application development using technologies like MERN stack, API integrations with third-party logistics providers, and custom software solutions for education management.

The company also offers cloud deployment and scalable infrastructure solutions tailored to client needs. Additionally, it provides technical support, system upgrades, and security enhancement services. The focus is on delivering user-centric, robust, and flexible solutions.

CHAPTER 3 – INTERNSHIP DESCRIPTION

3.1 Role and Responsibilities

During the internship, the primary role was that of a Full Stack Web Developer involved in both frontend and backend development tasks. Responsibilities included designing responsive web interfaces using React, developing secure RESTful APIs with Node.js and Express, and managing data storage via MongoDB. Other tasks involved integrating third-party APIs such as Shopify and Ekart logistics for order management and returns processing. The role required writing clean, maintainable code, performing unit testing, debugging issues, and collaborating with senior developers. Additionally, responsibilities included maintaining version control through Git and documenting project components.

3.2 Projects and Tasks Undertaken

Key projects included the development of a comprehensive student management system with role-based authentication for admins, teachers, and students. This project involved building dynamic timetable management, notification systems, and event scheduling features. Another significant task was integrating Ekart's return shipment API for automated processing of product returns. The internship also included implementing bulk order upload via CSV/Excel files and syncing Shopify orders to the local database. Daily tasks involved API testing using Postman, working on authentication security, and implementing middleware for access control.

3.3 Skills and Knowledge Acquired

The internship greatly enhanced technical skills in MERN stack development, including mastering React components, state management, and CSS styling. There was significant learning in backend API development with Express and MongoDB data modeling. Understanding JWT-based authentication and security middleware improved the knowledge of secure software architectures. The experience of integrating external APIs broadened skills in working with real-world third-party services. The use of debugging tools, Postman testing, and Git also contributed to professional growth. Soft skills such as teamwork, time management, and problem-solving were also developed.

CHAPTER 4 – LEARNING OUTCOMES

4.1 Professional Skills Developed

Internship experience cultivated hands-on proficiency in building complex web applications with robust authentication and role management. The ability to design scalable REST APIs and manage NoSQL databases was significantly strengthened. Working with version control systems like Git improved collaboration skills. Exposure to real client requirements honed project management and requirement analysis capabilities. Additionally, implementing security features developed an understanding of data privacy and protection. The role demanded effective communication with team members and supervisors, enhancing interpersonal skills.

4.2 Challenges Faced and Solutions Implemented

Several technical challenges arose, such as handling asynchronous API calls, resolving authentication token validation errors, and managing large CSV file uploads efficiently. Network-related errors when integrating with Shopify and Ekart APIs required debugging and retry mechanisms. Password encryption and secure token handling were initially difficult but were resolved by studying best practices and employing reliable libraries like bcrypt and jsonwebtoken. Role-based access control posed design complexity handled through well-structured middleware. These challenges provided valuable problem-solving experience.

4.3 Insights Gained about the Industry/Field

The internship provided insights into modern software development methodologies like Agile and continuous integration. It highlighted the importance of clean code, modular design, and thorough testing for maintainability. Interacting with client requirements emphasized user-centric development. The critical role of API integrations in e-commerce and logistics sectors became evident. Additionally, data security and access control emerged as top priorities for enterprise applications. The experience underscored continuous learning and adaptability as essential traits for success in technology careers.

CHAPTER 5 – PROJECT DETAILS

5.1 Overview of Major Projects

The major projects included a multi-role authenticated an order management backend with bulk upload capabilities, Shopify order synchronization, and Ekart return shipment integration. Each project was modular, focusing on separation of concerns, security, and usability. The student management system enabled dynamic data handling for various user roles. The order management backend supported CRUD operations and optimized data uploads. Integrations with Shopify and Ekart showcased real-world API interaction skills. Collectively, these projects formed a complete ecosystem for education and e-commerce logistics.

5.2 Goals and Objectives

The projects aimed to automate and streamline student information and order processing workflows. Objectives included securing user data through encrypted authentication, integrating third-party APIs for seamless logistics handling, and enabling bulk operations for efficiency. Another goal was to create scalable and maintainable codebases using modern JavaScript frameworks and database solutions. User experience enhancement through role-based access and notification systems was also targeted. Overall, the projects sought to build robust, scalable solutions meeting client needs and industry standards.

5.3 Methodologies and Processes

The development followed agile principles with iterative progress and regular reviews. Technologies such as React and Node.js were used with a focus on component-based architecture and RESTful API design. Security was embedded using JWT authentication and middleware for access control. Data parsing and validation ensured integrity during bulk uploads. Version control with Git maintained code quality. Testing was conducted using Postman and manual verification. API integration involved handling authentication, error management, and response parsing for Shopify and Ekart services.

5.4 Results and Contributions

Projects resulted in fully functional modules that met client specifications and demonstrated solid performance under test conditions. The student management system effectively supports multi-role access and dynamic data management. The order management and bulk upload features reduced manual effort in handling large datasets. Shopify synchronization ensured data consistency across platforms. Ekart integration enabled automated returns tracking, improving logistics efficiency. Contributions included writing reusable code, implementing security best practices, and documenting system workflows for future maintenance.

5.5 Reflection on Project Outcomes

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CHAPTER 6 – ANALYSIS AND REFLECTION

6.1 Evaluation of Internship Experience

The internship was a highly valuable learning journey, bridging academic theory and practical application. It provided real exposure to full-stack development challenges, enhanced understanding of software lifecycle, and deepened technical expertise. The professional environment fostered accountability and collaboration. Valuable feedback helped improve coding standards and problem-solving approaches. Overall, the experience exceeded expectations by offering diverse assignments and supportive mentorship.

6.2 Comparison with Initial Objectives

All initial objectives such as mastering MERN stack, integrating APIs, and enhancing security were successfully met. Practical challenges aligned well with theoretical studies, reinforcing concepts like RESTful services and JWT authentication. Certain objectives expanded as new opportunities arose, such as learning detailed error handling and bulk data processing. The internship provided a balanced combination of planned learning and adaptive growth.

6.3 Strengths and Areas for Improvement

Strengths included adaptability to new tools, quick learning, and effective communication. The ability to produce clean, maintainable code and troubleshoot complex issues was notable. Areas for improvement involve deeper understanding of DevOps practices, automated testing, and advanced database indexing techniques. Improving time management for parallel tasks would enhance productivity.

6.4 Suggestions for Future Interns

Future interns should focus on strengthening fundamentals in JavaScript and API design before joining. Emphasizing writing modular code and practicing version control is recommended. Engaging actively with mentors and peers accelerates learning. Being open to tackling diverse challenges helps build a versatile skill set. Persistence in debugging and a proactive approach to documentation are keys.

CHAPTER 7 - CONCLUSION

7.1 Summary of Key Learning Points

The internship at Ikkasa provided a comprehensive introduction to enterprise application development and professional software engineering practices. The key learning points include:

Technical Knowledge:

- Gained in-depth understanding of Shopify and relational database design for enterprise applications
- Developed proficiency in implementing role-based access control, Excel automation, PDF generation, and email integration
- Hands-on experience with building web-based dashboards and analytics for HR processes
- Strengthened skills in modern web development frameworks and secure application design

Professional Skills:

- Enhanced problem-solving abilities through real-world technical challenges
- Improved communication, collaboration, and teamwork skills in a professional environment
- Gained practical understanding of Agile development methodologies and iterative project management

Industry Insights:

- Recognized the importance of automation, data security, and efficiency in HR and enterprise applications
- Gained insights into technology consulting practices and delivering solutions with business impact
- Developed awareness of trends in digital transformation and enterprise software adoption

7.2 Impact of the Internship on Career Goals

This internship clarified career aspirations toward becoming a full-stack developer with strong backend expertise. It built confidence in handling real-world projects and client expectations. The exposure to industry tools and workflows aligned academic knowledge with market demands. The experience motivated further learning in cloud services and DevOps. It also inspired a commitment to lifelong learning and quality-driven development.

7.3 Final Thoughts

Reflecting on the internship reveals a transformative chapter filled with growth, challenges, and achievements. The hands-on experience went beyond classroom theory, providing a realistic glimpse of professional software engineering. Gratitude extends to mentors and colleagues who supported this journey. Moving forward, the lessons learned will inform future projects and career decisions. This internship laid a solid foundation for a successful and fulfilling career in technology.

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