

## **6007 : Sixth Semester Internship**

### **SYNNEFO SOLUTIONS Pvt Ltd Industrial Training Report**

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**Reg No:2201130742**  
**S6CT(2022-2025)**



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## CERTIFICATE

This is to certify that the report titled SYNNEFO SOLUTIONS Pvt Ltd Industrial Training Report is a bona-fide record of the work related to 6007 : Sixth Semester Internship done by **NANDANA CS** (Reg. No.2201130742) of S6 CT (2022-2025) of MAHARAJAS TECHNOLOGICAL INSTITUTE ,Thrissur- 680020 in partial fulfillment of the requirement for the award of the Diploma in Engineering of State Board of Technical Education.

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# Acknowledgement

I am grateful to have the opportunity to complete my internship at **Synnefo Solutions, Ernakulam**, an experience that has significantly contributed to both my professional and personal growth. This report would not have been possible without the support and guidance of several individuals and organizations.

First and foremost, I would like to express my sincere gratitude to **Sri. Sreejith M.S.**, my supervisor at Synnefo Solutions. His constant support, insightful guidance, and constructive feedback were instrumental throughout the course of my internship.

I extend my heartfelt thanks to the Team lead **Mr.JinuKrishnan P** and the entire team at the **Software Department** for their warm welcome and for fostering a collaborative and inspiring work environment. Their willingness to share their expertise and knowledge greatly enhanced my learning experience.

I am also thankful to our respected Principal, for providing all the necessary facilities and support. My sincere appreciation goes to Head of the Department of Computer Engineering, for encouragement and support throughout my academic journey.

A special word of thanks to **Mr. Haresh M.V.**, my Internship Coordinator from the Department of Computer Engineering, for his valuable suggestions, guidance, and critical inputs in the preparation of this report. My special thanks for **Mr.Pradeep Chandran** sir for his valuable suggestions and guidance.

This internship provided me with an opportunity to apply theoretical knowledge to real-world projects, improve my technical skills as a MERN Stack Developer, and develop essential soft skills such as communication, problem-solving, and teamwork.

Finally, I express my deepest gratitude to my **parents** for their unconditional love, encouragement, and constant support throughout this journey.

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# Executive Summary

This report summarizes my internship experience at **Synnefo Solutions, Ernakulam**, where I served as a **MERN Stack Developer Intern**. The internship was an essential part of my academic curriculum and provided a platform to apply the theoretical knowledge I had gained in the classroom to practical, real-world scenarios. Over the course of the internship, I was exposed to a professional work environment and collaborated with experienced professionals in the field of software development.

During my time at Synnefo Solutions, I gained hands-on experience in the **MERN stack — MongoDB, Express.js, React.js, and Node.js**. I started by strengthening my foundational skills in **HTML, CSS, and JavaScript**, and then progressed to building full-stack applications. I worked on multiple projects including a **To-Do List App**, a **Movie Booking System (BookMyTicket)**, and an **Instagram Clone**, each designed to improve my skills in backend development, API creation, database handling, frontend integration, and user authentication using JWT.

Apart from technical development, I learned how to work within a team, manage time effectively, and adapt to industry workflows including **Git version control, branching**, and collaborative coding practices. Under the mentorship of **Sri. Sreejith M.S.**, and with the support of the entire Software Department team, I was able to resolve challenges, implement solutions, and contribute meaningfully to the projects.

This internship helped bridge the gap between academic learning and industry practices. It sharpened my problem-solving abilities, boosted my confidence in software development, and gave me a clear perspective on pursuing a career in full-stack web development. The experience also enhanced my communication and presentation skills, taught me the importance of professional ethics, and instilled a deeper appreciation for collaborative work environments.

Overall, my internship at Synnefo Solutions was an enriching and transformative journey that laid a strong foundation for my future in the tech industry.

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# Chapter 1: Company Profile

## 1.1 INTRODUCTION

Synnefo Solutions, Best Networking | python | Flutter | DevOps | Cyber security | Digital Marketing Training center in Kochi is a company that ensure the highest quality training, we have established affiliations with reputable organizations in systems administration and development. The companies training infrastructure is designed in accordance with the latest corporate sector requirements. empowers aspiring professionals to excel in high-demand fields. Our accelerated programs merge hands-on projects, real-world simulations, and expert mentorship to turn foundational skills into job-ready expertise. Designed for career starters and advancing professionals, we prioritize practical mastery of cutting-edge tools and adaptability to industry evolution. Join a driven community where ambition meets opportunity.

## 1.2 OVERVIEW OF THE ORGANIZATION

Synnefo Solutions is a top training center in Kochi, specializing in network training, Python, cybersecurity, cloud computing, digital marketing, and DevOps. We offer 100% job-oriented courses designed to equip students with practical, industry-ready skills. Our certified expert trainers deliver high-quality professional training, ensuring students gain real-world experience. At Synnefo Solutions, we focus on providing personalized attention to each student, ensuring their success. Our passion and commitment have made us the leading technical institute in Kochi. For the best training in cloud computing, Python, network, cybersecurity, and digital marketing, Synnefo Solutions is your ideal choice.



fig.1.1

## 1.3 Manufacturing Capabilities

Synnefo Solutions, headquartered in Ernakulam, Kerala, is a dynamic IT services and training organization specializing in software development, cloud engineering, DevOps, cybersecurity, and digital marketing. While the company does not engage in traditional manufacturing, it excels in delivering comprehensive IT solutions and professional training programs.

### Key Capabilities of Synnefo Solutions:

- **Software Development:** Expertise in building scalable web applications using technologies like the MERN stack (MongoDB, Express.js, React.js, Node.js), Python, and PostgreSQL. [synnefo.in](https://synnefo.in)

- **Cloud Engineering:** Proficiency in designing, deploying, and maintaining secure cloud-based systems using platforms such as AWS, Azure, and Google Cloud Platform (GCP). [synnefo.in](https://synnefo.in)
- **DevOps Engineering:** Skilled in implementing CI/CD pipelines, containerization with Docker and Kubernetes, and infrastructure automation using tools like Jenkins and Terraform. [synnefo.in](https://synnefo.in)
- **Cybersecurity and Networks:** Focused on securing systems and networks through ethical hacking, threat analysis, incident response, and risk management strategies. [synnefo.in](https://synnefo.in)
- **Digital Marketing:** Offers training in SEO, social media strategies, analytics, and content creation to enhance online visibility and business growth. [synnefo.in](https://synnefo.in)

In addition to these services, Synnefo Solutions provides IT consulting, staffing, and support services, helping clients manage their technology initiatives effectively. [synnefosol.com](https://synnefosol.com)

If you require further details or assistance in incorporating this information into your internship report, feel free to ask

#### 1.4 KEY CUSTOMERS

**Notable Collaborations and Client Engagements** Partnership with Aprecomm: Synnefo Solutions partnered with Aprecomm to launch a customer experience management "super-stack" aimed at enhancing operational efficiency for ISPs and MSOs. This collaboration suggests that Synnefo's services are tailored to meet the needs of network service providers seeking advanced OSS/BSS solutions.

# Chapter 2: Intern's Role and Responsibilities

## Role:

### MERN Stack Developer Intern at Synnefo Solutions, Ernakulam

During my internship at Synnefo Solutions, I worked as a MERN Stack Developer Intern, where I had the opportunity to work on real-world, client-based projects. This experience enabled me to understand and implement end-to-end development workflows, improve my problem-solving abilities, and follow best practices in full-stack web development. I was actively involved in both frontend and backend development tasks and collaborated with team members through version control platforms and agile practices.

## Technologies Learned & Used:

- **Git & GitHub:**

- Used Git for efficient version control, working with branches, commits, and merges.
- Collaborated on repositories via GitHub, submitting and reviewing pull requests, resolving merge conflicts, and managing project histories

- **Frontend Development (HTML, CSS, JavaScript):**

- Strengthened core web technologies by building responsive and accessible UI components.
- Implemented dynamic frontend logic using vanilla JavaScript and React.js for state management and user interaction.

- **Backend Development (Node.js & Express.js):**

- Built and maintained RESTful APIs to handle business logic and data operations.
- Gained hands-on experience with Express.js routing, middleware functions, and the request-response lifecycle.

- **Database Management (MongoDB):**

- Performed CRUD operations using MongoDB native drivers, without Mongoose schemas, to get a foundational understanding of NoSQL data structures and database queries.
- Designed efficient database schemas to match application needs.

- **Image Upload Functionality Without Multer:**

- Implemented image/file upload features using basic file handling techniques and FormData API.
- Managed uploads and storage on the server without relying on third-party libraries like Multer, enhancing knowledge of low-level file management.



- **API Development & Integration:**

- Created and consumed REST APIs to facilitate seamless data flow between frontend and backend components.
- Ensured secure, efficient communication using JSON and HTTP protocol standards.

- **Frontend-Backend Integration:**

- Integrated frontend interfaces with backend APIs to create fully functional applications.
- Ensured proper data binding, error handling, and user feedback mechanisms.

- **JWT-based Authentication:**

- Implemented secure user authentication and authorization using JSON Web Tokens (JWT).
- Managed session control and protected private routes to ensure application security.

## **Projects Worked On:**

1. **Apple Website Clone:**

Built a responsive and visually accurate clone of Apple's official website using HTML, CSS, and JavaScript, closely replicating the original site's modern layout and aesthetic. The project focused on achieving pixel-perfect design, smooth user experience, and responsiveness across different devices and screen sizes. Special attention was given to clean, semantic HTML structure and organized CSS for maintainable and scalable styling. JavaScript was used to add interactivity and dynamic elements that enhanced the overall functionality and user engagement. Through this project, I gained practical experience in frontend development, refined my skills in UI/UX design, and developed a deeper understanding of professional website architecture and industry-standard design practices.

2. **To-Do List Project:**

Developed a full-stack To-Do List web application using MongoDB as the backend database to store and manage tasks persistently. The application allows users to add, delete, and update tasks through a responsive and user-friendly interface built with HTML, CSS, and JavaScript. A clean and modular RESTful API was implemented to handle all CRUD operations, ensuring efficient communication between the client and server. Emphasis was placed on proper project structure, scalable code organization, and seamless client-server integration, resulting in a reliable and maintainable task management system. This project strengthened my skills in backend development, API design, and database connectivity within a full-stack environment.

### 3. **BookMyTicket:**

Developed a full-stack movie ticket booking application that enables users to browse available movies, select showtimes, and book tickets. Implemented using modern web development practices and technologies. Implemented complete CRUD operations for managing movies, theatres, showtimes, and bookings. This included APIs for creating, reading, updating, and deleting records, ensuring robust data handling. Integrated JWT-based authentication and authorization, allowing secure login and role-based access. Ensured only authenticated users could make bookings and only admins could manage content. Designed and developed key user features such as movie listings with filters, showtime selection, and booking confirmation workflows. Built a dedicated admin dashboard for managing movies, scheduling showtimes, monitoring bookings, and overseeing user activity. Applied modular and scalable code architecture, promoting code reusability and separation of concerns. Utilized controllers, middleware, and services for clean API structuring. Implemented protected routes for sensitive actions, using middleware to validate tokens and enforce role-specific permissions. Gained hands-on experience in RESTful API development, secure session handling, and deployment best practices. Tech Stack: Node.js, Express.js, MongoDB, JWT, and optionally React (if applicable)..

### 4. **Instagram Clone:**

Developed essential user features including secure login and signup authentication using JWT/Session-based methods, a responsive home feed displaying posts in reverse chronological order, user profile pages with dynamic content, and seamless post creation with real-time uploads. Designed an intuitive and mobile-responsive UI using modern front-end frameworks (e.g., React or Flutter), emphasizing usability and clean aesthetics across pages such as the feed, profile, and upload sections. Implemented efficient session handling to manage user authentication states, preserve login sessions across page reloads, and restrict access to authorized routes only. Created a smooth client-server data flow by integrating front-end components with a RESTful API backend (e.g., Node.js with Express, Django REST Framework, or Firebase), handling CRUD operations for posts, profiles, and user data. Added interactive UI components including dropdown menus for settings or profile options, live image preview before upload using FileReader API or Blob URLs, and basic post interactions such as likes or comments to simulate real engagement. Applied responsive design principles and dynamic routing to enhance user navigation with a consistent and intuitive navbar that adapts across different device sizes.

## Value Added to the Organization:

- Enhanced **frontend responsiveness** across all projects to improve user experience on various screen sizes.
- Wrote **clean, modular, and reusable code** to promote maintainability and scalability.
- Gained a strong understanding of **client-server communication** and REST architecture.
- Actively **participated in daily team discussions, code reviews**, and collaborative development sessions.
- Demonstrated a proactive attitude towards learning and took initiative in solving bugs and suggesting UI/UX improvements

# Chapter 3: Demonstration of Work

During my internship at **Synnefo Solutions**, I worked on several full-stack web development projects that enhanced both my technical knowledge and practical skills. Each project helped me understand the real-time application of the MERN stack and the importance of efficient, clean coding practices. Below are detailed demonstrations of the key projects I developed and contributed to:

## 1. To-Do List

### App Overview:

This project focused on mastering CRUD (Create, Read, Update, Delete) operations using **Node.js**, **Express.js**, and **MongoDB** without Mongoose schemas. The goal was to build a simple yet functional task management application.

- **Frontend:**

Implemented using **vanilla JavaScript**, **HTML**, and **CSS**. The user interface was designed to be clean and user-friendly, allowing users to interact with tasks seamlessly.

- **Backend:**

Built with **Express.js**, providing RESTful endpoints to handle task operations. The database interactions were done using MongoDB's native driver.

- **Key Features:**

- Add, view, edit, and delete tasks.
- Persistent data storage in MongoDB.
- Responsive design for usability across devices.

- **Learning Outcome:**

Understood how to set up backend routes, connect to MongoDB without Mongoose, and link frontend interactions with backend logic effectively.

## 2. BookMyTicket

- **Overview:**

BookMyTicket is a full-stack movie ticket booking application designed to implement browse and book movie tickets, while administrators can manage movie listings. This project showcases the integration of user roles, route protection, and real-time interaction between client and server layers, focusing on performance, security, and usability.

- **Backend:**

Focused on managing movie data (add, update, delete) and user login/logout features using **Node.js** and **Express.js**.

- Node.js & Express.js:

Developed a robust backend using Node.js and Express.js to manage server-side logic and RESTful APIs.

- CRUD Functionality:

- ❖ Create, Read, Update, Delete (CRUD) operations for movie records.
- ❖ Admins can add new movies, update existing details, or delete movies from the database.
- ❖ Data integrity ensured through server-side validation.

- JWT-Based Authentication:

- ❖ Integrated JSON Web Tokens (JWT) to implement secure authentication for both users and admins.
- ❖ Protected sensitive API routes to prevent unauthorized access.
- ❖ Tokens used to manage sessions and verify user identity on each request.

- User Role Management:

- ❖ Implemented role-based access control (RBAC) to differentiate between admin and regular user privileges.
- ❖ Admins can manage movie listings, while regular users can view movies and book tickets.

- **Key Features:**

- Movie Listing:

- ❖ Users can view a list of currently available movies.
- ❖ Display includes key details like title, genre, duration, and release date.

- Movie Management for Admins:

- ❖ Admin dashboard for managing movie data (add, update, delete).
- ❖ Accessible only via authenticated and authorized routes.

- Authentication System:

- ❖ Secure login and logout functionality.
  - ❖ Password handling implemented securely (can be extended to use hashing libraries like bcrypt).
- Route Protection:

- ❖ Only authenticated users can access certain features (e.g., booking, dashboard access).
- ❖ Unauthorized users are redirected or blocked based on token validation.

- Technologies Used:

- Backend: Node.js, Express.js
- Database: MongoDB (can mention use of native drivers or Mongoose, depending on your implementation)
- Authentication: JSON Web Tokens (JWT)
- Tools & Platforms: Postman for API testing, GitHub for version control

- **Learning Outcome:**
  - Learned user access control, how to structure a backend for role-based operations, and integrated multiple features into a single cohesive system.

### 3. Instagram Clone

- **Overview:**  
A full-stack clone of Instagram, aimed at replicating the core features and layout of the original platform.
- **Frontend:**  
Styled to closely match Instagram's look and feel using **HTML**, **CSS**, and **JavaScript**. Implemented pages like Login, Signup, Home, Profile, and Post Upload.
- **Backend:**  
Handled registration, login, and media posting functionality with proper validations and JWT-based authentication.
- **Hosting & Feedback:**
  - Successfully **hosted the application** online to make it publicly accessible.
  - **Gathered feedback** from friends and peers to evaluate the app's UI/UX, performance, and functionality.
- **Key Features:**
  - User authentication and session management.
  - File/image upload functionality (without using Multer).
  - Dynamic post rendering on home and profile pages.
- **Learning Outcome:**  
Strengthened full-stack integration skills and gained confidence in building real-world social media applications from scratch.

### 4. Portfolio Website

- **Overview:**  
A personal portfolio website developed to present my professional profile, showcase completed projects, and provide contact information. The website reflects my web development capabilities, UI/UX design sense, and commitment to clean, responsive design. It serves as an interactive resume and a gateway for potential employers or collaborators to learn more about my skills and work.
- **Frontend:**
  - **Responsive Design:**  
Developed the website using responsive web design principles to ensure

optimal viewing and user experience across all screen sizes—mobile, tablet, and desktop.

- Technology Stack:

Utilized HTML, CSS, and JavaScript to build and style the website, optionally enhanced with frameworks like React.js or libraries like Bootstrap or Tailwind CSS (mention if used).

- **Key Features:**

- Navigation Bar:

A fixed and responsive navbar that enables smooth scrolling and navigation between different sections of the website.

- Project Cards:

- ❖ Interactive cards showcasing individual projects.
- ❖ Each card includes a project title, short description, tech stack used, and optionally a link to live demo or source code (GitHub).

- Contact Section:

- ❖ Includes LinkedIn profile link, email address, and optionally a contact form for easy communication.
- ❖ Designed with accessibility and clarity in mind.

- Performance Optimization:

- ❖ Optimized images and assets for faster load times.
- ❖ Implemented clean code and semantic HTML for SEO and accessibility.

- **Learning Outcome:**

- Gained experience in UI/UX design, responsive layouts, and component structuring.
- Improved frontend development skills and familiarity with real-world deployment considerations.
- Learned how to effectively present technical work online and maintain a professional developer portfolio



## Conclusion

The internship at **Synnefo Solutions, Ernakulam** has been a transformative and enriching experience, allowing me to apply theoretical knowledge in a practical, real-world environment. Through this opportunity, I significantly strengthened my understanding of **MERN stack development**, enhanced my coding practices, and gained valuable experience in team collaboration and project execution.

Working on various projects—ranging from task managers to real-time applications like e-commerce platforms and social media clones—allowed me to explore and implement modern web development practices. I also had the chance to improve my problem-solving abilities, understand client-server architecture deeply, and handle real-time feedback from mentors and users.

This internship not only helped me sharpen my technical skills but also instilled in me a sense of professionalism, time management, and adaptability—qualities essential for a successful career in the software industry. I am confident that the knowledge and experience I gained during this internship will serve as a strong foundation for my future endeavors as a full stack developer.