INDUSTRY INTERNSHIP
SOFTWARE DEVELOPER INTERN
(FRONTEND)
CEINSYS TECH

Internship Report

submitted to

Shri Ramdeobaba College of Engineering & Management, Nagpur in partial fulfillment of requirement for the award of degree of

Bachelor of Technology (B.Tech)

In

COMPUTER SCIENCE AND ENGINEERING

By

Aman Joharapurkar (A-32)

Guide

Prof. Wani Bisen

RCOEM
Shri Ramdeobaba College of Engineering and Management, Nagpur

Department of Computer Science and Engineering

Shri Ramdeobaba College of Engineering & Management, Nagpur 440 013

(An Autonomous Institute affiliated to Rashtrasant Tukdoji Maharaj Nagpur University Nagpur)

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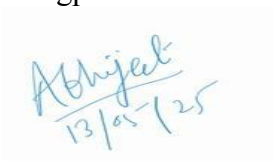
Department of Computer Science Engineering

CERTIFICATE

This is to certify that the Internship Report on "Software Developer Intern (Frontend)" is a bonafide work of Aman Joharapurkar submitted to the Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur in partial fulfillment of the award of a Bachelor of Engineering, in Computer Science and Engineering has been carried out at the Ceinsys Tech during the academic year 2024-2025.

Date: 14 May 2025

Place: Nagpur



Abhijeet Varma
Operations Head
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Department of Computer Science and Engineering

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Dean-CDPC

Dr. M. B. Chandak
Principal

DECLARATION

I hereby declare that the Internship titled **"Software Developer Intern (Frontend) "** submitted herein has been carried out at Ceinsys Tech. The work is original and has not been submitted earlier as a whole or part for the award of any degree/diploma at this or any other institution / University

Date: 14 May 2025

Place: Nagpur

_____

Aman Joharapurkar

Roll No: 32

ACKNOWLEDGEMENT

I would like to place on record my deep sense of gratitude to **Abhijeet Varma,** Operations Head (Enterprise Solution), for his generous guidance, help, useful suggestions, continuous encouragement, and supervision throughout the present work.

I express our sincere gratitude to **Dr. P. Voditel**, Head of Dept. Computer Science and Engineering, for his stimulating guidance. The success of any work depends on the efforts of many individuals. I would like to take this opportunity to express our deep gratitude to all those who extended their support and guided us to complete this internship.

I am extremely thankful to **Dr. M.B. Chandak**, Principal, for providing with infrastructural facilities to work in, without which this work would not have been possible.

ABSTRACT

This report presents a comprehensive overview of the work carried out during my internship as a Software Developer (Frontend) at Ceinsys Tech Ltd., contributing to the software development project for MHADA (Maharashtra Housing and Area Development Authority). The primary focus was on building and integrating modules such as the Integrated Digital Transformation System (IDTS), User Management System (UMS), and Vendor Management System. The project involved the development of dashboards, Single Sign-On (SSO) functionality, and role-based access systems aimed at enhancing MHADA's internal digital operations. Throughout the internship, I gained hands-on experience with modern technologies, including .NET Core, React, MUI, GitLab, PostgreSQL, and Postman, while following agile methodologies and collaborating with cross-functional teams. This report outlines the project architecture, tools used, individual contributions, and the real-world impact of the software applications developed.

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Technology/Tools Used

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1 React JS

React JS, a JavaScript library for building user interfaces, facilitated the development of interactive and responsive web applications for our project. Its component-based architecture and virtual DOM abstraction simplified the creation and management of complex UI components, enabling us to design intuitive and visually appealing interfaces for our sign language recognition system. React's efficient rendering and state management mechanisms enhanced the performance and scalability of our web application.

2 Tailwind CSS

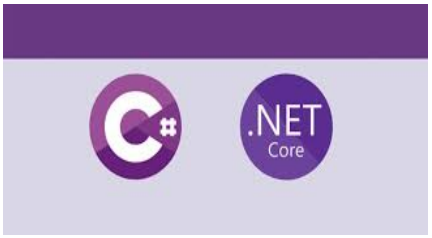
TailwindCSS, a utility-first CSS framework, streamlined the styling and design of our web application interface. By providing a set of pre-defined utility classes for common CSS properties, TailwindCSS enabled rapid prototyping and customization of UI components without the need for writing custom CSS. Its modular and configurable approach to styling facilitated code reusability and maintenance, enhancing the development workflow and productivity of our project.

3 Node JS

Node.js is a runtime environment that executes JavaScript code outside of a web browser, enabling server-side and networking applications. Built on Chrome's V8 JavaScript engine, it's event-driven and non-blocking, making it efficient for handling I/O operations. Node.js is widely used for building scalable web servers, APIs, real-time applications, and microservices. Its package manager, npm, hosts a vast ecosystem of open-source libraries, facilitating rapid development. Node.js revolutionizes server-side JavaScript development by enabling developers to use JavaScript for both client and

server-side programming, fostering code reusability and accelerating development cycles in modern web applications.

4 .NET Core (C#)



.NET Core is a cross-platform, open-source framework developed by Microsoft for building high-performance web and API applications. Combined with C#, it provides a robust environment for backend development. During the internship, .NET Core and C# were used to build secure, scalable APIs and business logic for the application. Features like dependency injection and Entity Framework Core improved productivity and maintainability.

5 PostgreSQL

PostgreSQL is a powerful open-source relational database known for its reliability, scalability, and compliance with SQL standards. It was used to store and manage application data, including users, roles, and application records. Features like relational integrity, indexing, and support for JSON made it suitable for complex queries and performance.

6 CSS

CSS is a styling language used to define the look and layout of web pages. I used CSS to design responsive and visually appealing user interfaces, customizing elements beyond the capabilities of pre-built components. Mastery of CSS helped enhance the

user experience by controlling layout, animations, and theming.

7 GitLab

GitLab is a web-based DevOps platform that provides source code management (Git), CI/CD pipelines, and issue tracking. In the project, GitLab was used for version control, code collaboration, and deploying builds. It ensured code quality through merge requests and automated testing pipelines, supporting smooth and structured team collaboration.

8 Jira

Jira is a project management and issue-tracking tool used for Agile development. It helps teams plan sprints, track progress, assign tasks, and monitor workflow using boards and backlogs. In my internship, Jira was used for managing daily tasks, reporting bugs, and collaborating efficiently within the team. It enhanced visibility into development cycles and streamlined communication across members.

9 MUI (Material UI)

MUI is a React component library based on Google's Material Design. It provides pre-designed, customizable UI components like buttons, modals, and forms. I used MUI to build clean, responsive, and accessible interfaces that followed modern design standards. Its integration with React streamlined frontend development and ensured a consistent user experience.

10 Postman

Postman is a popular API development and testing tool used by developers to send requests to backend services and inspect responses. During my internship, I used Postman to test REST APIs, validate request/response formats, and debug issues in API integration. It helped ensure smooth communication between the front-end and backend systems.

Project Domain

Government Housing and Real Estate Management

The software developed during this internship falls under the **domain of Government Housing and Real Estate Management**, with a focus on digital transformation and e-Governance.

This domain encompasses the development of digital solutions to assist public sector housing bodies like MHADA in:

- Managing property records
- Handling public applications
- Overseeing housing schemes
- Conducting online lotteries
- Tracking real estate development projects
- Facilitating communication between departments and citizens

The goal is to streamline operations, improve transparency, reduce paperwork, and provide better accessibility for users, especially common citizens who rely on public housing initiatives.

About MHADA

The Maharashtra Housing and Area Development Authority (MHADA) is a statutory housing authority established in 1977 under the Maharashtra Housing and Area Development Act. Its primary mission is to provide affordable housing solutions to the economically weaker sections (EWS), low-income groups (LIG), and middle-income groups (MIG) of Maharashtra. MHADA plays a crucial role in urban development and public welfare by planning, constructing, and managing residential complexes and housing schemes across the state.

MHADA operates through regional boards in various parts of Maharashtra, including Mumbai, Pune, Nashik, Konkan, and Nagpur. These regional boards manage housing lotteries, land development, maintenance of housing units, and other infrastructure services.

MHADA is widely known for conducting online housing lotteries, where eligible citizens apply for affordable homes, and winners are selected through a transparent digital draw. This system aims to ensure fairness and eliminate biases in housing allocation.

Working Methodology

During my internship, the team I was a part of followed Agile methodologies, which allowed for a dynamic, iterative, and highly collaborative approach to software development. Agile promotes continuous delivery, flexibility to changing requirements, and close collaboration among team members and stakeholders. This methodology was instrumental in helping me adapt quickly to a professional development environment and understand how real-world software projects are structured and executed.

Daily Standups

One of the key components of Agile that I experienced firsthand was the daily standup meeting. These short, time-boxed meetings—typically held at the start of each workday at 10:15 am- provided every team member with the opportunity to share updates on what they had completed the previous day, what they planned to work on that day, and any blockers or challenges they were facing.

For me, daily standups helped cultivate a habit of clear and concise communication. They also served as a mechanism for quickly identifying issues or dependencies within the team. Even as an intern, I was encouraged to participate actively, which not only boosted my confidence but also made me feel like a valued contributor to the project.

Sprint Planning and Execution

The work was organized into **sprints**, each typically lasting one week. At the start of every sprint, we had a **sprint planning** session where the team collectively reviewed the backlog and selected a set of tasks to commit to for that sprint. I was exposed to how tasks are broken down into manageable units, estimated for complexity and effort, and prioritized based on stakeholder needs.

Throughout each sprint, I worked on assigned tasks and collaborated with teammates to successfully complete sprint goals. These tasks included bug fixes, feature implementations, and writing documentation.

At the end of each sprint, we conducted a **sprint review**. During reviews, we showcased completed work to our mentor, receiving valuable feedback.

Jira

For project management, we used **Jira**. Jira is a powerful project management and issue tracking tool developed by Atlassian. It is widely used in Agile software development environments for planning, tracking, and managing software projects. Jira allows teams to break down complex tasks into manageable units, assign work, track progress, and collaborate effectively.

Key features of Jira include:

- **Sprint Boards**: Visual boards (Scrum) that display tasks across different stages, such as “To Do,” “In Progress,” and “Done.” These boards help teams monitor workflow and ensure transparency.

- **Backlog Management**: Teams can prioritize and manage a list of tasks or features (user stories, bugs, improvements) that need to be completed.

- **Task Assignment & Tracking**: Developers, designers, and other team members can be assigned specific issues, and their progress can be tracked through different stages of development.

- **Integration with Development Tools**: Jira integrates seamlessly with tools like Git, Bitbucket, and Confluence, enabling end-to-end traceability and automation.

In my internship, Jira served as the central tool for organizing daily work, planning sprints, and collaborating with team members. Its intuitive interface and robust functionality made it easy to stay aligned with project goals, update task statuses, and ensure on-time delivery of assigned work. It also fostered accountability and transparency within the team, making it easier to identify blockers and resolve them efficiently.

Benefits and Learning

Working in an Agile environment taught me the importance of adaptability, teamwork, and time management. I learned how to:

- Break down large problems into smaller, actionable tasks.

- Track progress and update task statuses using project management tools.

- Communicate effectively in a team setting, especially when facing blockers.

- Participate in collaborative decision-making processes during planning.

In summary, Agile methodology provided me with a strong foundation in professional development practices and prepared me to contribute effectively to collaborative software projects. The iterative structure, combined with regular feedback and team interaction, created a learning-rich environment that significantly enhanced my technical and soft skills.

About Project (Project Flow Diagram)

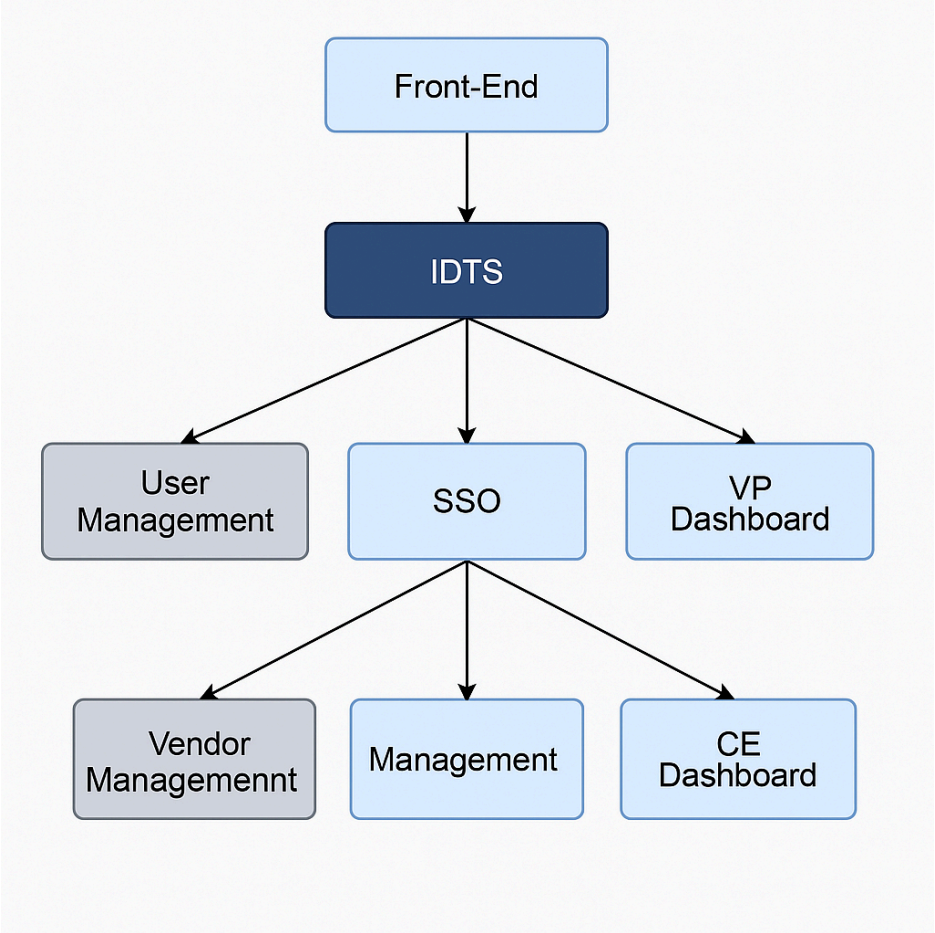


Fig 1 High Level System

Integrated Digital Transformation System (IDTS)

- Serves as the **centralized dashboard** for MHADA staff and leadership.
- Displays **real-time data**, graphs, and key performance indicators (KPIs) sourced from over **16 different internal applications**.
- Provides a **role-based interface**—each user sees content based on their designation and permissions.
- Allows seamless redirection to other applications using **Single Sign-On (SSO)** without the need to log in again.
- Includes an **Applications Menu** with icons that dynamically reflect the apps available to the logged-in user.

User Management System (UMS)

- Manages **user registration, authentication, authorization**, and **role management**.
- Includes modules like:
    - **User Master**: Add, edit, or deactivate users.
    - **Role Master**: Define user roles and permissions.
    - **Role-Menu Mapping**: Control application access for each role.
    - **Audit Logs**: Maintain records of all user activities and changes for accountability.
- Ensures **secure and centralized access** control across all MHADA applications.

Vendor Management System (VMS)

- Enables **vendors and contractors** to register and interact with MHADA.
- Includes features such as:
    - **Multi-step vendor registration** with document uploads
    - **Vendor listing and approval workflow**
    - Status tracking and administrative verification
- Streamlines the **vendor onboarding and management process**, which was previously done manually.

SSO (Single Sign-On) Portal

- Functions as a **central access point** for all MHADA applications.
- Once a user logs in via the SSO portal, they can access all other authorized applications without re-authentication.
- Ensures a **unified, secure login experience**, reducing the need for managing multiple credentials.
- APIs are developed to support SSO integration with existing systems.

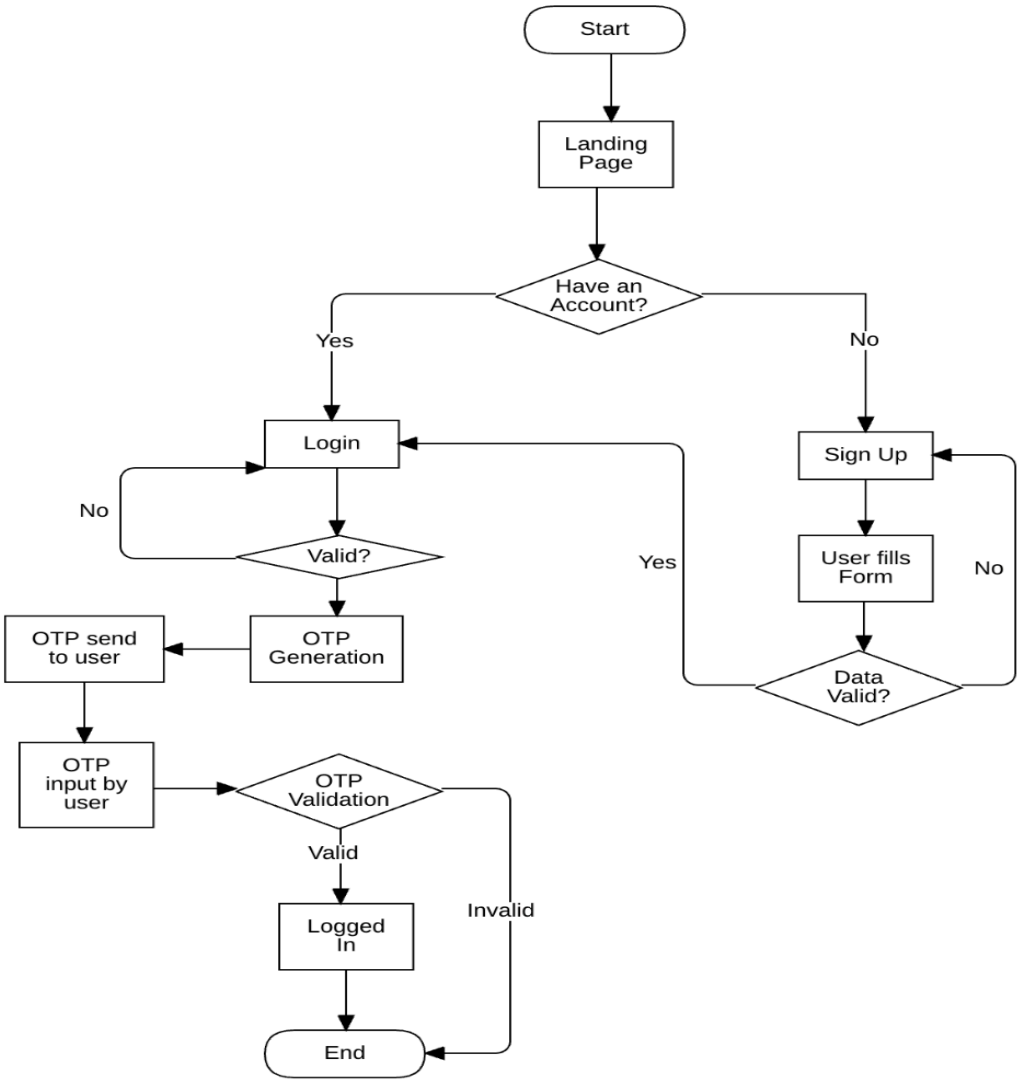


Fig. 2: Login / Sign Up Flow

A login page will be developed, using which users will be able to log into the application and access the functionalities depending on their access role. Along with the login option, forgot password, forgot username, and new user registration facilities will be available on the login page.

Modules

- web form for input
- Login Verification
- Forgot Password
- Forgot Username
- New User Registration

About Project Intern Role in the Industry

About the Project

The project I was involved in during my internship is a comprehensive enterprise-level web application designed for **MHADA (Maharashtra Housing and Area Development Authority)**. The primary objective of this project is to digitally transform internal operations by integrating various departments and applications under a unified platform known as **IDTS (Integrated Digital Transformation System)**.

The IDTS platform serves as a centralized portal that connects multiple modules such as the **User Management System (UMS)**, **Vendor Management System (VMS)**, and role-based dashboards for different MHADA authorities including the **Vice President (VP)** and **Chief Engineer (CE)**. This solution aims to simplify user access, enhance efficiency, and improve transparency across all MHADA departments.

Key features of the project include:

- **Single Sign-On (SSO)** integration across MHADA applications
- Role-based dashboards displaying graphs, KPIs, and live metrics
- User and role management system
- Vendor registration and approval workflows
- Seamless integration of over 16 different applications via APIs

The project follows a modular architecture, using modern front-end technologies and a robust back-end stack to ensure scalability and maintainability. The entire system is hosted and deployed using **IIS (Internet Information Services)**.

Intern Role in the Industry

As a **Software Developer Intern** (**Front-End Developer)**, I was actively involved in the development and enhancement of key modules within the IDTS platform and Vendor Management System. My role required translating UI/UX designs into functional user interfaces using **React JS** and **Material UI (MUI)** while collaborating with back-end teams to integrate RESTful APIs.

Key Responsibilities:

- Designed and implemented dynamic and responsive UI components
- Created dashboards specific to various MHADA staff roles (e.g., VP, CE)

- Developed the application menu interface for SSO-based navigation
- Integrated API data for graphs, tables, and live KPIs
- Designed and developed user and vendor registration forms
- Ensured cross-browser compatibility and responsive behavior

In addition to technical development, I participated in Agile team practices such as:

- Daily stand-ups
- Sprint planning and reviews
- Task tracking using Jira
- Code versioning via GitLab

Working in a real-world enterprise setting helped me understand the importance of writing clean, maintainable code and the role of effective collaboration in large teams. I also gained hands-on experience with industry-standard tools, deployment processes, and version control systems.

This internship provided a bridge between academic learning and industry expectations. It enhanced my problem-solving abilities, improved my technical skills, and gave me insights into professional software development workflows. Through this experience, I’ve become more confident in my capabilities as a developer, ready for full-time roles in the tech industry.

About Internship Work

During my internship as a **Software Developer Intern (Front-End)**, I had the opportunity to work on a large-scale enterprise software solution being developed for **MHADA (Maharashtra Housing and Area Development Authority)**. The application is designed to digitally transform and streamline various internal processes by integrating multiple systems such as **User Management System (UMS)**, **Vendor Management System (VMS)**, and a centralized **IDTS (Integrated Digital Transformation System)** dashboard.

I was primarily responsible for front-end development, working on the **IDTS** and **Vendor Management System** modules. This experience gave me in-depth exposure to designing modern, responsive user interfaces, integrating APIs, and working with real-time dashboards tailored to various MHADA roles and users.

1. IDTS – Integrated Digital Transformation System

The **IDTS module** serves as the central hub for MHADA users, offering dashboards, user access, and integration with multiple MHADA applications. My key responsibilities in this module included:

a. Dashboard Development

- Created multiple dashboards tailored to MHADA designations such as **Vice President (VP)**, **Chief Engineer (CE)**, and other administrative roles.
- Used **React JS** and **Material UI (MUI)** to design responsive dashboards showing:
    - Graphs
    - KPI metrics
    - Tabular data
- Integrated data from over **16 APIs** across different applications to display real-time analytics.

b. Application Menu with SSO Integration

- Developed an **Application Menu UI** that lists accessible MHADA apps for logged-in users.
- Implemented role-based dynamic rendering to show only those applications the user is authorized.
- Worked closely with the backend team to integrate **Single Sign-On (SSO)** functionality, allowing users to navigate across applications without re-authentication.

c. User Management Integration

- Built interfaces for user registration, role assignment, and profile management.
- Designed forms and tables to manage user data, leveraging MUI components like DataGrids, Modals, and Alerts for better UX.

d. Deployment Support

- Assisted in deploying the frontend on the **IIS (Internet Information Services)** server.
- Conducted UI testing to ensure smooth performance post-deployment.

2. Vendor Management System (VMS)

In the **Vendor Management System**, I was responsible for creating the entire front-end module to manage vendors who interact with MHADA for various services.

Key Features I Worked On:

- **Vendor Registration Forms**: Designed multi-step forms with validations for vendors to register, upload documents, and provide contact information.
- **Vendor Listing**: Built data tables with sorting, filtering, and pagination to list all registered vendors.
- **Vendor Approval Workflow**: Developed UI components to support the vendor approval and verification process by MHADA staff.

- **API Integration**: Connected the frontend with backend APIs for CRUD operations, real-time status updates, and file uploads.
- **Responsive Design**: Ensured the system worked smoothly across devices and screen sizes using custom CSS and MUI breakpoints.

Technology Stack Used

- **Frontend Framework**: React JS
- **Component Library**: Material UI (MUI)
- **Styling**: CSS, MUI's theming system
- **Version Control**: GitLab (Merge Requests, Branching Strategy)
- **API Integration**: Axios, REST APIs
- **Backend Collaboration**: .NET Core (C#)
- **Database**: PostgreSQL
- **Deployment**: IIS Server
- **Task Management**: Jira

Development Methodology & Tools

We followed **Agile development practices**, using **Jira** for sprint planning, daily standups, and task tracking. Tasks were assigned via Jira boards, and I participated in weekly sprint reviews and backlog grooming sessions. This helped me understand real-world Agile workflows and how cross-functional teams collaborate.

Using **GitLab**, I regularly committed and pushed code, worked on feature branches, and raised merge requests for peer review. This taught me the importance of clean code, modular design, and code review processes.

Soft Skills and Learnings

- Improved communication and collaboration in a professional team environment.
- Learned how to break large features into smaller deliverables and prioritize effectively.
- Understood how front-end and back-end teams coordinate for full-stack development.

- Gained experience writing **clean, reusable, and maintainable code** following component-based architecture.
- Learned to debug API issues and test UIs using browser developer tools and Postman.

Applications

The software solution developed for MHADA serves several practical applications across departments and user roles. Its goal is to improve administrative efficiency, standardize processes, and enable better governance through digital means. Below are the primary **uses and applications** of the system:

1. Centralized Access via Single Sign-On (SSO)

- Provides users with **one secure login** to access all authorized MHADA applications.
- Eliminates the need to remember multiple credentials.
- Enhances security and simplifies user experience across departments.

2. Role-Based Dashboards

- Displays **custom dashboards** tailored to user designations like **Vice President, Chief Engineer, or Department Staff**.
- Dashboards show relevant **KPIs, graphs, and reports** to support data-driven decision-making.
- Helps senior officials monitor department performance at a glance.

3. User and Role Management

- Allows administrators to **create, update, and deactivate users** based on roles.
- Controls access to applications and menus through **role-menu mapping**.
- Ensures that only authorized users can access sensitive data and features.

4. Vendor Registration and Management

- Enables **contractors and vendors** to register digitally with MHADA.
- Supports **document uploads, verification workflows, and status tracking**.
- Reduces manual paperwork and speeds up the vendor onboarding process.

5. Real-Time Monitoring and Reporting

- Pulls live data from over **16 integrated applications** and presents it through graphs, tables, and cards.

- Provides actionable insights to leadership for **performance tracking and governance**.
- Reduces dependency on manual reporting by automating data collection and display.

6. Enhanced Efficiency in Departmental Workflows

- Digital transformation of repetitive manual tasks (e.g., user registration, vendor approvals).
- Saves time and reduces administrative burden across all departments.
- Promotes inter-departmental coordination and centralized data sharing.

These applications, developed under the umbrella of IDTS, aim to:

- Improve operational efficiency within MHADA.
- Enable transparency through digital records and dashboards.
- Enhance user experience via modern UI and unified access.
- Support role-based workflows and accountability.

Together, these applications will not only transform how MHADA operates internally but also lay a foundation for future digital initiatives across departments.

Outcomes

During the course of this internship, I gained valuable technical and professional experience that contributed to my overall growth as a developer. The key outcomes of this internship include:

- Acquired a solid understanding of the **real-world Software Development Life Cycle (SDLC)** and how projects are managed in an enterprise environment.
- Gained **hands-on experience with version control systems** such as Git, using platforms like GitLab for code collaboration and deployment.
- Improved ability to write **clean, maintainable, and reusable frontend code**, following best practices and modern coding standards.
- Actively participated in **Agile methodologies,** including daily stand-ups, sprint planning, and task tracking.
- Learned to use **project management tools like Jira** for task assignment, progress tracking, and team coordination.
- Practiced writing **clear technical documentation** and progress reports for better communication within the team.
- Understood **team dynamics, workplace etiquette**, and the importance of collaborative problem-solving in a professional setting.

References

- MHADA Official Website: https://mhada.gov.in/en
- Ceinsys Tech Ltd. : https://www.ceinsys.com/

Details of Industry internship/training along with photocopy of its certificate.

I completed my industry internship at **Ceinsys Tech Ltd.**, a technology-driven company providing geospatial, engineering, and enterprise solutions. The internship lasted for a period of **6 months**.

During this time, I worked as a **Software Developer (Frontend)** on a digital transformation project for **MHADA (Maharashtra Housing and Area Development Authority)**. My responsibilities included developing role-based dashboards, working on the User Management System, integrating Single Sign-On (SSO), and building UI components using React and MUI.

Ceinsys Tech Ltd., under the guidance of Abhijeet Varma Sir, enabled me to gain practical exposure to industry-grade software development practices and modern technologies.

A copy of the internship completion certificate is attached along with this report for reference.

Photograph with Industry Mentor