Industrial Internship Report

Tech Elecon Pvt Ltd.

Submitted by

PATEL MAHIMA MUKESHBHAI
(12102040701105)

In Partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

in

Computer Engineering

Madhuben and Bhanubhai Patel Institute of Technology

CVM University,

Vallabh Vidyanagar – 388120

A.Y.2025-26 EVEN TERM

Madhuben and Bhanubhai Patel Institute of Technology

Computer Engineering

CERTIFICATE

This is to certify that **Mahima Mukeshbhai Patel (12102040701105)** has submitted the Industrial Internship report based on internship undergone at **Tech Elecon Pvt Ltd.** For a period of **16 weeks** from **01/01/2025** to **30/04/2025** in partial fulfilment for the degree of Bachelor of Engineering in **Computer Engineering, Madhuben and Bhanubhai Patel Institute of Technology** at The Charutar Vidya Mandal (CVM) University, Vallabh Vidyanagar during the academic year 2024-25.

Prof. Sneh Vyas   Dr. Gopi Bhatt

Internal Guide   Head of the Department

HR/TEPL/149   24.12.2024

To,

Madhuben & Bhanubhai Patel Institute of Technology,
V V Nagar.

Permission for Internship

Dear Sir/M'am,

With reference to your letter dated.19.12.2024, we are pleased to grant permission to *Ms.Mahimaben Patel/ Ms.Aesha Hiteshkumar Patel & Ms.Sakshi Makwana* student of *Computer Engineering* for *Internship* in our organization from *01.01.2025 to 30.04.2025.*

The following points are to be adhered by the student.

- Laptops, Pen-Drives & other hard drives are not permitted inside the company premises.
- Appropriate dressing & grooming will be appreciated. Jeans & T Shirts are not allowed.
- Female students have to wear dress and Kurtis only.
- Photography & Videography is strictly prohibited in the premises.
- Trainee/s has to strictly comply with the Company's timings & schedule.
- In case of any casualty the Company will not be held responsible.
- On Completion of training the trainee/s has to submit a copy of Training Report duly signed by concern guide to obtain the Training Certificate.
- In case of any ambiguity / difficulty, the trainee is required to approach HR Department. The detailed guideline are attached overleaf.

For, Tech Elecon Pvt.Ltd.

Nirali Trivedi
Group HR Head
Cc. Satyam Raval

TECH ELECON PVT. LTD.
Anand Sojitra Road, Vallabh Vidyanagar - 388 120, Gujarat, India | Email: inquiry@techelecon.com | Web: www.techelecon.com
Phone: +91 2692 227292/91. CIN: U72900GJ2012PTC070532
Branch Office: **Vadodara:** FF/106, Panorama Complex, R. C. Dutt Road, Alkapuri, Vadodara – 390005. Mobile: +91 90990 36045 E-mail: inquiry@techelecon.com
Kolkata: 68, Sarat Bose Road, Kolkata - 700025. Ph. No: 033 24761861 / 24760904

TO WHOM IT MAY CONCERN

This is to certify that **PATEL MAHIMA MUKESHBHAI**, a student of **BACHELORE OF COMPUTER ENGINEERING** of **MADHUBEN AND BHANUBHAI PATEL INSTITUTE OF TECHNOLOGY , NEW VALLABH VIDYANAGAR** has successfully completed her internship in the field of React.js from **01/01/2025** to **30/04/2025** under the guidance of **Mr. Satyam Raval,** Deputy General Manager at **Tech Elecon Pvt Ltd**.

Her internship activities include successful completion of the assigned project at the given period of time along with abiding by companies' rules and regulation.

During the period of her internship program with us, she had been exposed to different processes and was found diligent, hardworking, and inquisitive.

We Wish her every success in her life and career.

For Tech Elecon Pvt Ltd

DECLARATION

I, **Mahima Mukeshbhai Patel (12102040701105)**, hereby declare that the industrial Internship report submitted in partial fulfilment for the degree of Bachelor of Engineering in Computer Engineering, Madhuben & Bhanubhai Patel Institute of Technology, The Charutar Vidya Mandal (CVM) University, Vallabh Vidyanagar, is a Bonafide record of work carried out by me at Tech Elecon Pvt Ltd. Under the supervision of Mr. Satyam Raval and that no part of this report has been directly copied from any students' reports under taken from any other source providing due references.

Name of the Student   Sign of Student

Mahima Mukeshbhai Patel

ACKNOWLEDGEMENT

ABSTRACT

This internship report presents the work undertaken during my 16-week internship at Tech Elecon Pvt Ltd., focusing on the development of an Customer Relationship Management System using React JS. The objective of this internship was to gain hands-on experience in web development while understanding the complexities of asset tracking and management in an enterprise environment.

During the internship, I worked on designing and implementing various modules of the Admin Dashboard, including Customer Management, Task Management, Leads Management, Customer Support, Admin Profile, Admin Setting, Sales Management, Marketing Management, and User Management. The project followed a MERN stack architecture, integrating MongoDB Compass, Express.js, React.js, and Node.js to create a scalable and responsive application.

Key highlights of my work include:

• Developing interactive and user-friendly interfaces using React JS

• Implementing role-based authentication using JWT.

• Integrating RESTful APIs for dynamic data management.

• Performing frontend-backend integration for seamless data flow.

Through this internship, I enhanced my technical skills in React.js, API integration, and UI/UX design, while also improving my problem-solving and teamwork abilities. The experience gained during this period has been invaluable in bridging the gap between academic learning and real-world software development.

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1. OVERVIEW OF THE COMPANY

Tech Elecon Pvt. Ltd. is a renowned technology company that has been a key player in the software industry for several years. With a strong foundation in software development, enterprise solutions, and digital transformation, the company has built a reputation for delivering cutting-edge, scalable, and high-performance solutions to a diverse clientele.

The company offers a wide range of products and services, including custom software development, web and mobile applications, enterprise resource planning (ERP) systems, cloud-based solutions, and AI-driven applications. By leveraging the latest technologies such as React JS, Node JS, Python, ASP .NET, and Flutter, Tech Elecon Pvt. Ltd. ensures that its solutions are modern, secure, and future-ready.

1.1 HISTORY

• Incorporation: Tech Elecon Private Limited was incorporated on May 30, 2012.

• Company Classification: It is classified as a Non-Government Company and is registered with the Registrar of Companies, Ahmedabad.

• Business Activities: The company is involved in various computer-related activities, such as:

- • Maintenance of websites for other firms.

- • Creation of multimedia presentations for businesses.

• Board of Directors:

- • Ravinkumar Shah

- • Prayasvin Patel

- • Pradip Manubhai Patel

1.2 COMPANY PROFILE

Tech Elecon Pvt. Ltd. is the It division of the Elecon group of companies and has more than 25 years of experience in the fields of hardware, software, and networking solutions. It is situated in the heart of Vithal Udyognagar Industrial Estate and in the proximity of the educational town of Vallabh Vidyanagar. Tech Elecon all set to reach new heights in the field of IT solutions. Tech Elecon is ready with all sorts of solutions and delivers any application that is web based and further our solutions are designed to adapt your business rather than your business adapting the software. Their solutions are 100%fruitful and empower you to take control of client's business online and in real time. Tech Elecon

have more than 100 employees with specialized skills in software development, custom software development, and e-commerce software development using custom software programming including .NET,C#.NET, PHP, and Open Source and Oracle.

1.3 DIFFERENT SERVICES OF THE COMPANY

Tech Elecon has extensive experience in providing IT services and has successfully adapted to technological advancements, making it the leading IT infrastructure management service provider in the region. Our cutting edge delivery model covers all the stages of the solution lifecycle, including planning, deploying, managing, maintaining, auditing, upgrading, and improving.

Tech Elecon recognize that each client has unique needs and expectations when it comes to infrastructure and service providers. Our clients have the flexibility to choose from a wide range of IT infrastructure management and performance services based on their specific requirements. They can opt for on-site services on hybrid solutions that include on-site troubleshooting and support services.

Tech Elecon provides various services for business:

- Hardware maintenance and repairing
- Service desk management
- Desktop management
- Network management
- Messaging administrator
- Back-up managemnent

 Other services:

- Software Development Services
- Software Licensing
- Microsoft Product Implementation
- Linux Servers/ Desktop Implementation

1.4 DIFFERENT DEPARTMENTS

To ensure seamless operations and efficient management, Tech Elecon Pvt. Ltd. is
structured into multiple specialized departments:
• Software Development Department – Focuses on building innovative software
solutions, including web and mobile applications.

• Hardware Department – Handles research, development, and integration of hardware solutions.

• ERP Department – Specializes in Enterprise Resource Planning (ERP) systems for business management.

• Networking Department – Ensures secure and scalable network infrastructure for clients.

• Quality Assurance (QA) Department – Responsible for testing, debugging, and performance optimization to deliver high-quality software.

1.5 SEQUENCE OF OPERATIONS FOR MANUFACTURING THE END

Tech Elecon Pvt. Ltd. follows a systematic approach in the development and delivery of its products. The process includes the following steps:

1.5.1. Client Requirement Understanding

• The first and most crucial step of the process is gathering and analyzing client requirements.

• The software development team works closely with clients to understand their business challenges and objectives.

• A detailed requirements document is created to outline technical specifications, features, and functionalities.

1.5.2. Planning

• After gathering requirements, the project team develops a strategic plan that includes:

  o Project scope definition.

  o Milestone setting for each development phase.

  o Resource allocation, including manpower, technology, and budget.

  o Risk assessment to identify potential challenges.

1.5.3. Development

• The development phase involves coding, prototyping, and feature implementation based on client needs.

• The software development team ensures that the application meets functional and non-functional requirements, including:

  o Scalability

  o Performance optimization

1.5.4. Review and Quality Assurance (QA)

• Once development is complete, the QA team performs rigorous testing, which includes:

    o Functional Testing – Ensuring all features work as expected.

    o Performance Testing – Checking application speed and responsiveness.

    o Security Testing – Identifying and fixing vulnerabilities.

    o User Acceptance Testing (UAT) – Validating the product with client feedback.

1.5.5. Release or Deployment

• After successful testing, the software is deployed in a live environment.

• The deployment process includes:

    o Final approval from the client.

    o Server setup and data migration.

    o User training and documentation.

1.5.6. Maintenance & Support

• Post-deployment, the company provides ongoing support to ensure:

    o Bug fixes and performance enhancements.

    o Regular updates and feature additions.

    o Technical support for clients.

2.OVERVIEW OF DIFFERENT DEPARTMENT

2.1 DIFFERENT DEPARTMENTS

Tech Elecon Pvt. Ltd. has several specialized departments that work together to ensure the efficient functioning of the company. Each department plays a crucial role in software development, IT infrastructure management, and networking solutions.

2.1.1. ERP Department (Enterprise Resource Planning)

The ERP department is responsible for implementing, maintaining, and upgrading the ERP system within the organization. An ERP system integrates various business functions such as:

• Accounting & Finance – Managing financial transactions, payroll, and taxation.

• Human Resources – Employee records, payroll management, and performance tracking.

• Procurement & Inventory – Stock management, supplier coordination, and purchase tracking.

This department works closely with other teams to customize and optimize the ERP system based on the organization's needs. They also provide technical support and user training to ensure employees can effectively use the system.

2.1.2. Software Development Department

The software development department is responsible for designing, developing, and maintaining web and mobile applications. Their key responsibilities include:

• Developing applications using technologies such as .NET, ReactJS, Python, Flutter, and JavaScript.

• Ensuring seamless functionality and security of IT infrastructure.

• Providing technical assistance to employees and clients to troubleshoot software related issues.

2.1.3. Networking and Hardware Department

The Networking and Hardware department is responsible for the physical and digital infrastructure of the company. Their duties include:

- Designing, maintaining, and troubleshooting computer hardware components.

- Setting up and configuring secure, high-performance network systems.

- Ensuring data security by implementing encryption, firewalls, and cybersecurity protocols.

- Providing support for networking components like routers, switches, and servers.

Tech Elecon Pvt. Ltd. collaborates with leading OEMs (Original Equipment Manufacturers) such as Juniper, Cisco, HP, Dell, and Brocade. The team conducts audits of existing IT infrastructure and recommends customized networking solutions based on client requirements.

2.2   DIFFERENT STAGES OF SOFTWARE PRODUCTION

Tech Elecon Pvt. Ltd. follows an Agile Software Development Model, which allows for continuous improvement and faster delivery of software products.

Key Stages of Agile Development

- **Sprint Planning –** The project is divided into multiple phases, known as sprints, each focusing on a specific module or feature.

- **Incremental Development –** At the end of each sprint, a working version of the software is delivered.

- **Feedback & Iteration –** Based on user feedback, adjustments and refinements are made.

- **Final Product Release –** After multiple iterations, the final version is tested, optimized, and deployed.

Fig 2.2 Agile Process

2.3 PRODUCTION STAGES

Explain each stage of production in detail:

- Project Setup & Structure Planning

- Authentication & Authorization

- Frontend UI & UX Development

- Backend API & Database Integration

- Testing, Deployment & Optimization

2.4 TECHNICAL SPECIFICATION OF MAJOR EQUIPMENT

List the technologies and tools used in various departments:

- **Frontend Development:** ReactJS

- **Backend Development:** Node.js, Express.js

- **Database Management:** MongoDB Compass

- **Authentication:** JWT (JSON Web Tokens)

- **Development Tools:** VS Code, GitHub

3. INTRODUCTION TO INTERNSHIP AND PROJECT

3.1 PROJECT/INTERNSHIP SUMMARY

CRM System built using the MERN stack to streamline business interaction with customers. The Platform features role-based authentication, intuitive dashboards, customers and lead management, task management, Appointment, Monitoring, Customer Support, Profile and settings and secure data handling. The Frontend is built with React Js and Material UI for a responsive, modern UI, While the backend used node js , express js and Mongo DB for scalable API development and data storage. This CRM is designed for efficiencies, accessibility, and real-time management of customer data.

3.2 PURPOSE

1. Centralized Customer Data – Store all customer information in one secure and accessible platform.

2. Lead Management – Track, manage and nurture leads through the sales pipelines.

3. Sales Optimization – Streamline sales processes and monitor performance to improve coversion rates.

4. Task Automation – Automate repetitive tasks lie follow-ups, reminders and data entry to save time.

5. Improved Customer Support – Provide timely and organized support through tracking customer interaction.

6. Data Analytics & insights – Analyze customer behaviour and sales data to support strategic decisions.

7. Team Collaboration – Enhance Coordination across departments with shared access to customer records.

3.3 SCOPE

The scope of the Customer Relationship Management project undertaken during my

internship was center on the design, development and implementation of a comprehensive

CRM system tailored to improve customer interaction, optimize sales processes and

enhance overall customer service.

Project Scope:

1. User Authentication & Role Management

o Implementation of secure login and signup functionality with role-based

authentication

o Different dashboards for Admin and User with restricted access based on roles

2. Dashboard and User Interface

o Design and development of an interactive, user-friendly dashboard using React js and Material UI.

o Implementation of a Sidebar and navbar for easy navigation between different modules.

3. Customer and Lead Management

o Feature to add, update and track customer data, including contact information and communication history.

o Search and filter functionality for efficient customer and lead management.

o Implementation of a lead tracking system to monitor potential customer engagement and conversion rate.

4. Task and Workflow Automation

o Automation of follow-ups, reminders, and notification for maintain customer interactions.

5. Sales and Performance Analytics

o Dashboard widgets for real-time reports on customer trends and business performance.

6. Backend Development & Database Management

o Development of a RESTful API using Node.js and Express.js for data handling.

o Database management using MongoDB with Mongoose including customer and sales records.

The CRM project aim to provide an efficient, scalable and secure platform for businesses to manage customer relationships effectively. With advanced sale tracking, automation and analytics, this system will help businesses enhance customer engagement and drive growth. The scope of this project covers frontend, backend, security and future scalability, ensuring a comprehensive and industry-standard CRM solution.

3.3.1 Limitation of CRM

1. Managing Complex Sate in the Frontend

Challenge: Handling dynamic data, such as customer records, sales data and user sessions, led to issues with state management, making it difficult to maintain consistency across components.

Solution:

- o Implemented React Context API for lightweight state management where needed.
- o Utilized React Query for API state management to handle data fetching, caching and synchronization.

2. Backend API Performance and Scalability

Challenge: Slow API response times and inefficient handling of a large number of customer records affected system performance.

Solution:

- o Optimized API queries using MongoDB indexing and Mongoose aggregation pipelines.
- o Used Redis caching for frequently accessed data to reduce database load.

3. Database Design and Management

Challenge: Structuring the database to support customer interactions, sales tracking and lead management without performance issues.

Solutions:

- o Designed a normalized database schema using MongoDB with Mongoose to optimize relationships between collections.

3.4 TECHNOLOGY AND LITERATURE REVIEW

The AMS project was developed using modern web technologies to ensure scalability, efficiency, and security.

• **Frontend:** Built with React.js, providing dynamic user interfaces and seamless state management.

• **Backend:** Developed using Node.js and Express.js, enabling scalable server-side processing.

• **Database:** MongoDB Compass

• **Authentication**: JWT for secure user sessions, with Bcrypt.js ensuring password

encryption.

• **UI Design:** material UI, enhancing efficiency in styling and layout

responsiveness.

• **API Testing:** Thunder Client, used to validate and debug API endpoints.

3.4.1. Literature Review

A detailed analysis of exiting Customer Relationship Management solution revealed gaps in automation, security and accessibility. CRM was designed to address these gaps by integrating lead management, customer management, customer support, monitoring, Appointment and real time tracking.

3.5 PROJECT/ INTERNSHIP PLANNING

3.5.1 Development approach and justification

The project followed the Agile Development Methodology, which ensured:

• **Iterative Development**: Frequently taking updates and feature enhancements

through sprints.

• **Quick Feedback Integration:** Addressing stakeholder inputs in each development

cycle.

• **Quality Assurance:** Continuous testing and debugging to ensure a stable and

efficient system.

3.5.2 Effort, Time, and Cost Estimation

• **Time Estimation:** The project spanned 16 weeks, with structured phases:

   o Planning and Requirement Analysis (Weeks 1-2)

   o System Design (Weeks 3-5)

    o Frontend & Backend Development (Weeks 6-12)

• **Effort Estimation:** Approximately 640 hours, based on a weekly 40-hour schedule.

• **Cost Estimation**: Included expenses for development resources, cloud storage, API

testing tools, and deployment services.

3.5.3 Roles and Responsibility

Since the Customer Relationship Management System (CRM) was developed as an individual project, all responsibilities were undertaken independently. Each aspect of the system was carefully planned and executed to ensure a seamless and efficient solution. The key responsibilities included:

1. Frontend Development:

o Designed and implemented a responsive user interface using React.js and

Tailwind CSS.

o Managed state efficiently with React Context API to ensure smooth data

flow.

o Integrated APIs for real-time asset tracking and user interactions.

2. Backend Development:

o Developed secure and scalable RESTful APIs using Node.js and Express.js.

o Implemented authentication and role-based access control (RBAC) with

JWT.

o Managed asset data and user records using MongoDB Compass.

3. Project Planning & Management:

o Defined project milestones, structured development phases, and tracked

progress.

o Ensured a systematic development approach by following Agile principles.

o Managed documentation, including requirement specifications and

technical guides.

3.7 Project Planning and TimeLine

The project adhered to a structure timeline based on Agile methodology, ensuring interative improvements and efficient issue resolution.

Development Phases:

- Requirement Analysis & Planning (Wee 1-2):
    - o Stakeholder meetings, requirement gathering, and technology stack selection.
- System Design (Weeks 3-5):
    - o Wireframing, database schema definition and API design.
- Frontend & Backend Development (Weeks 6-12):
    - o UI implementation using React.js
    - o Backend services developed with Node.js & Express.js

By following this structure plan, the CRM project will be successfully delivered a scalable, secure and user – friendly Customer Relationship Management solution for Tech Elecon Pvt Ltd.

3.6 PROJECT PLANNING AND TIMELINE

The project adhered to a structure timeline on Agile methodology , ensuring iterative improvements and efficient issue resolution.

Development Phases:

- Requirement Analysis & Planning (Week 1-2):
    - Stakeholder meeting, requirement gathering and technology stack selection.
- System Design (Week 3-5)
    - Wireframing database schema definition, and API design.
- Frontend & Backend Development
    - UI implementation using React.js
    - Backend services developed with Node.js & Express.js
    - Database integration with MongoDB Compass.

By following this structured plan, the CRM project will be successfully delivered a scalable, secure, and user-friendly Customer Relationship Management solution for Tech Elecon Pvt. Ltd.

4. SYSTEM ANALYSIS

4.1 STUDY OF CURRENT SYSTEM

- **Complex UI** – Interfaces are cluttered and hard to navigate.

- **Limited Customization** – Users can't easily modify fields or workflows.

- **Weak Integrations** – Difficult to connect with external tools and platforms.

- **Poor Mobile Experience** – Mobile support lacks full functionality.

- **Security Gaps** – Inadequate role-based access and data protection.

- **Scalability Issues** – Systems slow down with increasing data/users.

- **High Costs** – Premium CRMs have expensive licensing and hidden charges.

- **Low Automation** – Manual work dominates due to limited workflow tools.

- **Basic Reporting** – Analytics are limited and not real-time.

- **Steep Learning Curve** – Users require training to operate the CRM.

4.2 PROBLEMS AND WEAKNESSES OF CURRENT SYSTEM

- **Complex and Unintuitive User Interface**

    Users struggle to navigate and understand the system without training.

- **Lack of Flexibility and Customization**

    Fields, forms, workflows, and dashboards are often rigid and hard to tailor.

- **High Cost for Small Businesses**

    Premium features are locked behind expensive subscriptions, limiting accessibility.

- **Poor Integration with Third-party Apps**

    Limited or no support for tools like Gmail, Outlook, WhatsApp, or payment systems.

- **Low Mobile Optimization**

    Mobile versions lack essential features, reducing productivity on-the-go.

- **Security Vulnerabilities**

    Insufficient role-based access control and lack of data encryption.

- **Scalability Constraints**

    System performance drops as user base and data volume grow.

- **Manual Task Dependency**

    Lack of automation forces users to perform repetitive tasks manually.

- **Limited Real-time Analytics**

    Reporting tools are outdated, slow, and lack visual insights..

4.3 FEATURES OF SYSTEM

4.3.1 Admin Module

Feature	Description
Lead Management	Manage leads with options to create, assign, track, and convert.
Sales Tracking	Track sales pipeline with real-time data and analytics on lead conversion rates and sales performance.
Monitoring	Monitor system activity, lead statuses, user activity, and other real-time metrics to ensure smooth operation.
Customer Support	Provide tools for customer support management, including ticket tracking and customer interaction history.
Task Management	Assign and manage tasks for users with due dates, priorities, and reminders.
Settings	Admin can configure global settings for notifications, user roles, and data management policies.
Profile	Admin can manage their profile and settings (e.g., password, contact info, role).
Notification	Set up and manage notifications for system events (task deadlines, lead changes, etc.).
Light/Dark Mode	Toggle between light and dark modes for the UI, ensuring accessibility and user preference.

Table: 4.3.1 Admin Module

4.3.2 User Module

Feature	Description
Ticket Management	Users can create, view, and manage tickets for customer service or technical support requests.
Request Management	Users can create and manage requests related to tasks, features, or other internal needs.
Settings	Users can manage their account settings, such as notification preferences, password, and other personal settings.
Profile Page	Users can update and view their profile information (e.g., name, role, contact details, and user preferences).

Table: 4.3.2 User Module

5. SYSTEM DESIGN

5.1 Data Dictonary

5.1.1 Users Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB ID
name	String	Yes	Full name of the user
email	String	Yes	Unique email address
password	String	Yes	Hashed password
resetToken	String / Null	No	Token for password reset process
otp	String / Null	No	One-Time Password for verification or reset
otpExpires	Date / Null	No	Expiry time for the OTP
bio	String / Null	No	Short biography/about user
dob	Date / Null	No	Date of birth
phone	String / Null	No	Contact phone number
address	String / Null	No	Full address
organization	String / Null	No	Organization/company name
occupation	String / Null	No	Job title or profession
skills	Array of Strings	No	List of skills (e.g., ["JavaScript", "Python"])
photo	String / Null	No	URL/path to profile picture
isAdmin	Boolean (Default: false)	No	Whether the user has admin rights

Table: 5.1.1 Users

5.1.2 Task Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
title	String	Yes	Title or name of the task
dueDate	Date	No	Task's deadline or due date
priority	String (Low, Medium, High)	No	Priority level of the task
company	String	No	Related company or organization name
completed	Boolean	No	Status if the task is completed or not

Table: 5.1.2 Task

5.1.3 Support Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
id	String or Number	Yes	Custom support ticket ID
subject	String	Yes	Subject of the support request
description	String	Yes	Detailed description of the issue
status	String (e.g., Open, In Progress, Resolved, Closed)	Yes	Current status of the ticket
priority	String (e.g., Low, Medium, High, Critical)	No	Priority level of the ticket

userId	ObjectId or String	Yes	ID of the user who created the ticket
username	String	Yes	Name of the user who created the ticket
relatedResources	Array of Strings	No	Links, file paths, or IDs related to the issue

Table: 5.1.3 Support

5.1.4 Sales Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
id	String or Number	Yes	Custom sale ID (your own identifier, not MongoDB's _id)
customerName	String	Yes	Name of the customer
amount	Number	Yes	Total sale amount
status	String (e.g., Pending, Completed, Canceled)	Yes	Current status of the sale

Table: 5.1.4 Sales

5.1.5 Notification Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
id	String or Number	Yes	Custom notification ID

title	String	Yes	Title of the notification
message	String	Yes	Detailed message or content
type	String (e.g., Info, Warning, Alert, Success)	Yes	Type/category of notification
isRead	Boolean	No	Whether the notification has been read (false by default)

Table: 5.1.5 Notification

5.1.6 Message Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
ticketId	ObjectId or String	Yes	ID of the related support ticket
senderId	ObjectId or String	Yes	ID of the user or admin sending the message
senderRole	String (e.g., User, Admin, Support)	Yes	Role of the sender
message	String	Yes	Message content text
timestamp	Date	Yes	Time when the message was sent

Table: 5.1.6 Message

5.1.7 Lead Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID

id	String or Number	Yes	Custom lead ID (your own identifier, separate from _id)
name	String	Yes	Name of the lead person or organization
contactInfo	String	Yes	Contact details (email, phone, etc.)
status	String (e.g., New, Contacted, Qualified, Lost)	Yes	Current status of the lead
customerId	ObjectId or String	No	Reference to related customer if converted

Table: 5.1.7 Lead

5.1.8 Feedback Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
name	String	Yes	Name of the person giving feedback
email	String	Yes	Email address of the feedback provider
rating	Number (1-5)	Yes	Rating given by the user (1 to 5 scale)
message	String	Yes	Feedback message/content
occupation	String	No	Occupation of the feedback provider
organization	String	No	Organization name (if applicable)
userId	ObjectId or String	No	ID of the user (if linked to the system)

img	String / Null	No	Image URL or path for the feedback provider's photo (optional)

Table: 5.1.8 Feedback

5.1.9 Customer Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
name	String	Yes	Name of the customer
email	String	Yes	Email address of the customer
phone	String	Yes	Phone number of the customer
amount	Number	Yes	Total amount spent or related to the customer
segment	String	No	Customer segment (e.g., VIP, Regular, New)
status	String (e.g., Active, Inactive)	Yes	Current status of the customer
leadStatus	String (e.g., New, Contacted, Converted, Lost)	Yes	Current lead status of the customer
leadId	ObjectId or String	No	Reference to the associated lead ID, if applicable

Table: 5.1.9 Customer

5.1.10 Campaign Schema

Field	Type	Required	Description
_id	ObjectId	Yes	Unique MongoDB document ID
title	String	Yes	Title of the campaign
campaignType	String (e.g., Email, SMS, Social Media)	Yes	Type of campaign
subject	String	Yes	Subject line of the campaign (for email campaigns)
body	String	Yes	Body/content of the campaign message
message	String	Yes	General message for the campaign
recipients	Array of Strings	Yes	List of recipient emails or phone numbers (depending on campaign type)
schedule	Date	Yes	Date and time when the campaign is scheduled to be sent
emailPost	String (URL)	No	Post-sending URL or endpoint for tracking or actions

Table: 5.1.10 Campaign

5.2 DFD (DATA FLOW DIAGRAM):

- DFD Level 0 (Context Diagram): Shows the system as a whole and its interactions with external entities
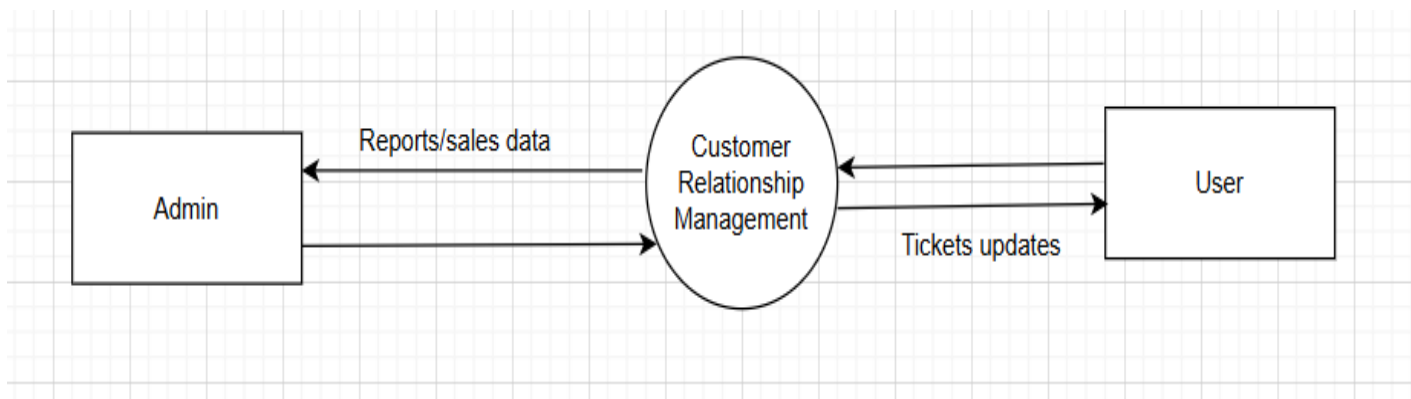
Figure: 5.2.1 DFD Level 0 Diagram
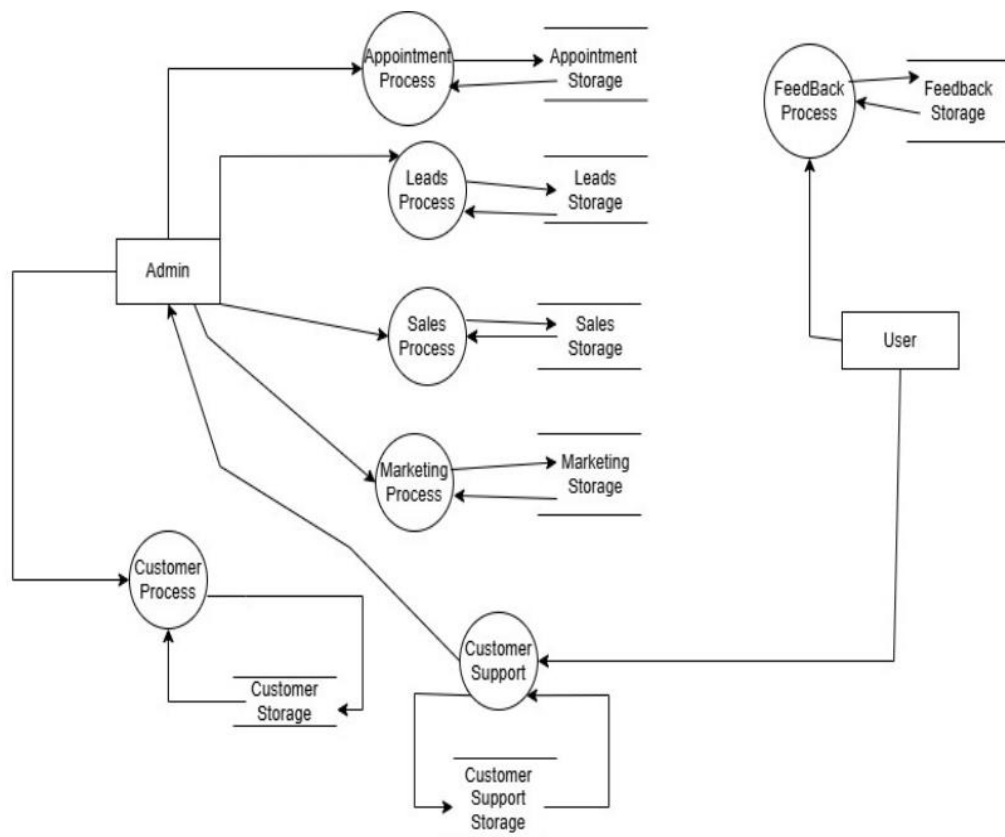
Figure: 5.2.2 DFD Level 1 Diagram

5.3 USE CASE DIAGRAM

- Illustrates the different use cases (function) that actors (users) can perform with the system.
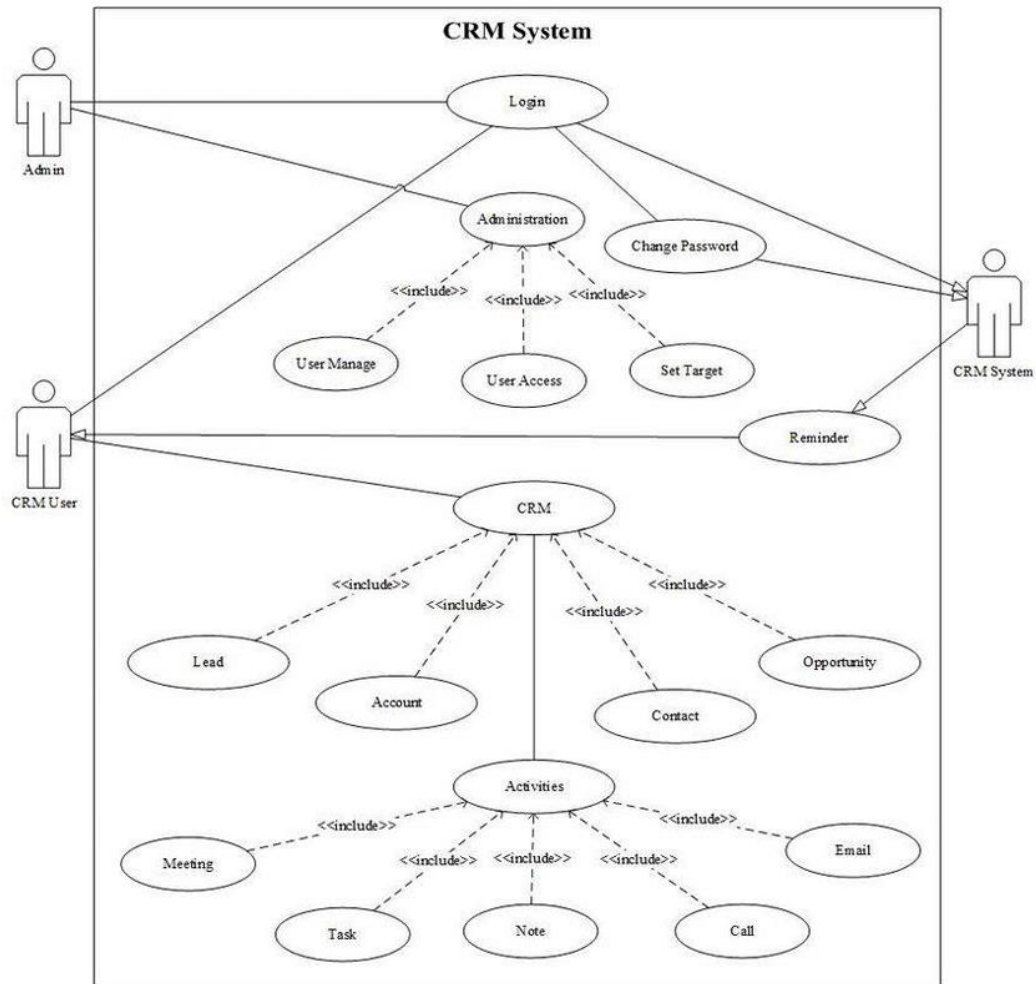
Figure: 5.3.1 Use Case Diagram

5.4 Activity Diagram

5.4.1 Admin Module
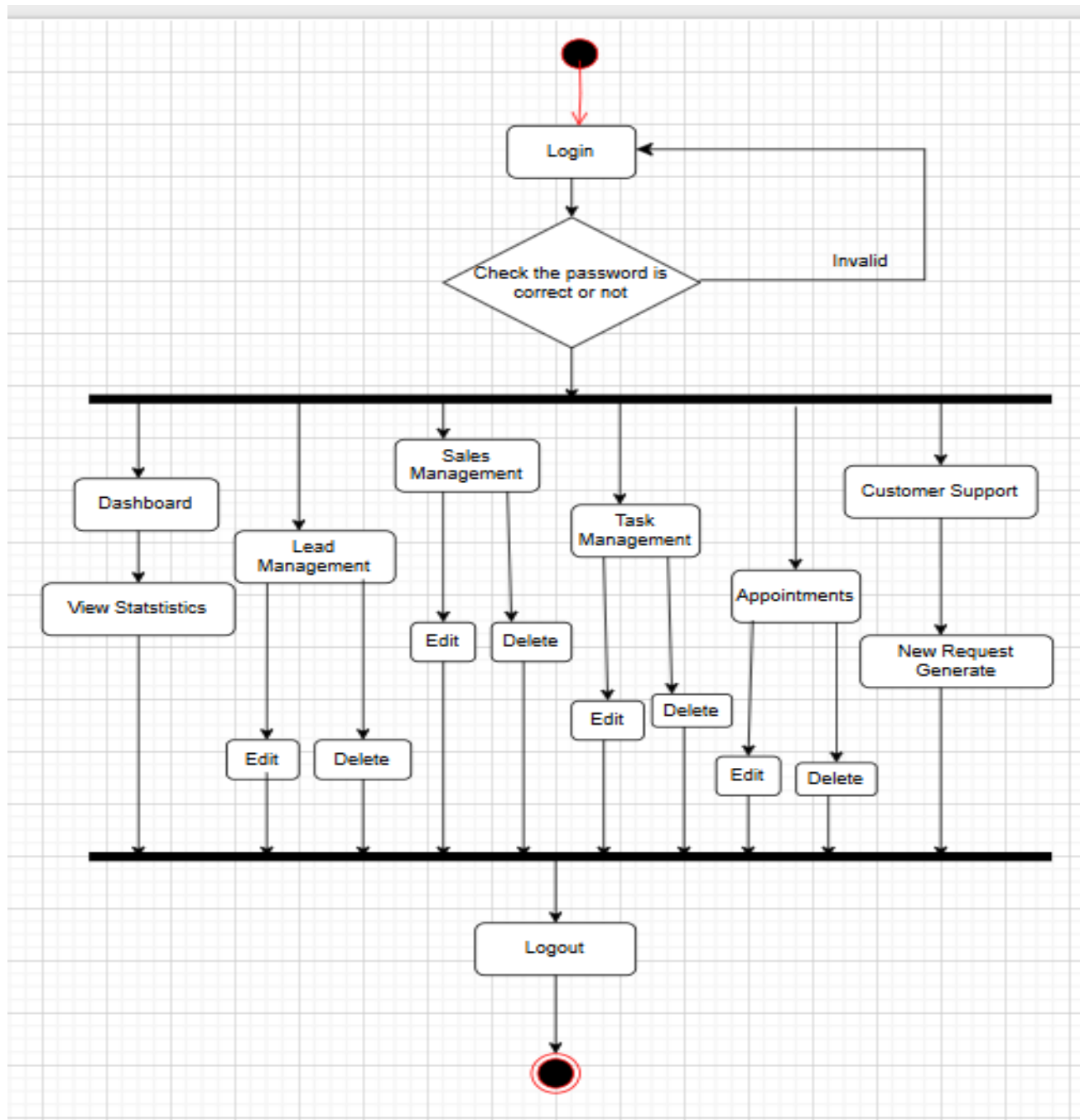
Figure: 5.4.1 Activity diagram (Admin Module)

5.4.2 User Module
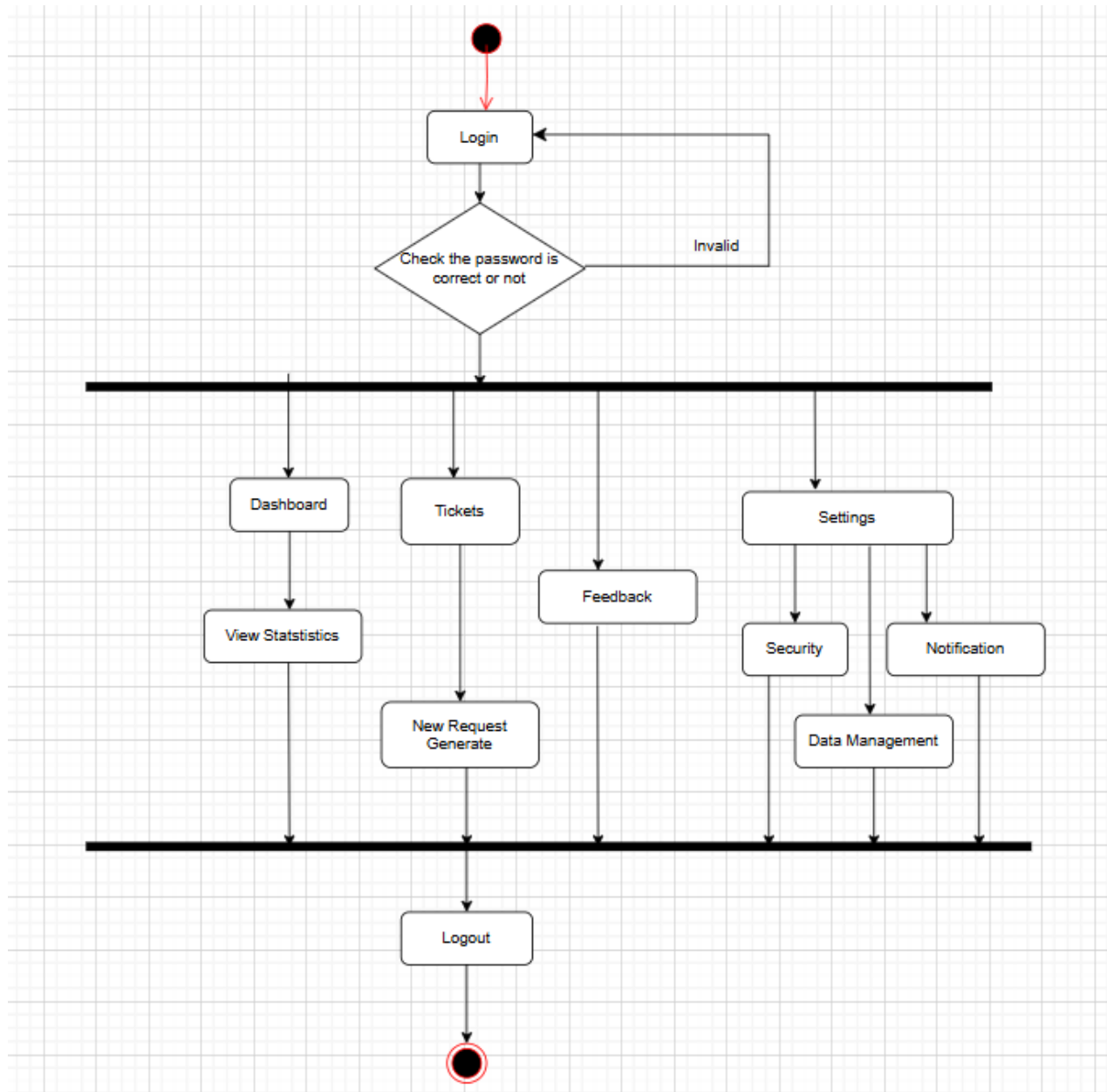
Figure: 5.4.2 Activity Diagram(User Module)

6   IMPLEMENTATION

6.1 IMPLEMENTATION PLATFORM/ENVIRONMENT

The Customer Relationship Management System(CRM) was implemented using the following platform and environment.

- Operating System: Windows 11
- Development IDE: Visual Studion Code
- Frontend Framework: React.js
- Backend Framework: Node.js with Express.js
- Database: MongoDB Compass
- Version Control: Git with GitHub
- Package Manager: npm (Node Package Manager)

The environment provided a robust and efficient foundation for the development of the CRM.

6.2 MODULES SPECIFICATION(S)

The CRM implementation was divided into several key modules, each with specific functionalities and technologies.

1. **Admin Module**

    Description:

    The Admin module is the control center of the CRM system.It allows administrator to manage customer data, sales activities, marketing campaigns, support processes, and appointments.

    Key Features:

    - Dashboard: Overview of sales, leads, tasks and appointments.
    - Leads: Add, assign, track and manage leads
    - Customers Management: Handles customer records, segmentation and history.
    - Task Management: Creates, assigns, and track team tasks and progress.
    - Sales: Manages deals, sales pipelines and performance analytics.
    - Appointments: Schedules, tracks campaigns with analytics and targeting.
    - Customer Support: Manages support tickets, agents, and resolution tracking.

- Profile: Allows users to view and edit their personal details.

- Security: Manages password, authentication, and device sessions.

- Notification: Handles alerts, preference and notification history.

2. User Module

- Dashboard: Displays personalized overview of tickets, feedback, and notification.

- Tickets: Allows users to raise , view, and track support tickets.

- Feedback: Enables users to submit and manage feedback on services/ products.

- Setting: Lets users configure preferences account setting and notification.

6.3 RESULTS AND SCREENSHOTS OF THE SYSTEM

6.3.1. Login Page – CRM

Functionality

- Allow Admin and Customer to login

- Upon Successfully authentication, users will be redirected to their respective dashboards (Admin or Customer)

Figure: 6.3.1 Login Form

6.3.2 Admin Dashboard – CRM

- This is the Admin Dashboard of the CRM designed for monitoring and managing efficiently.
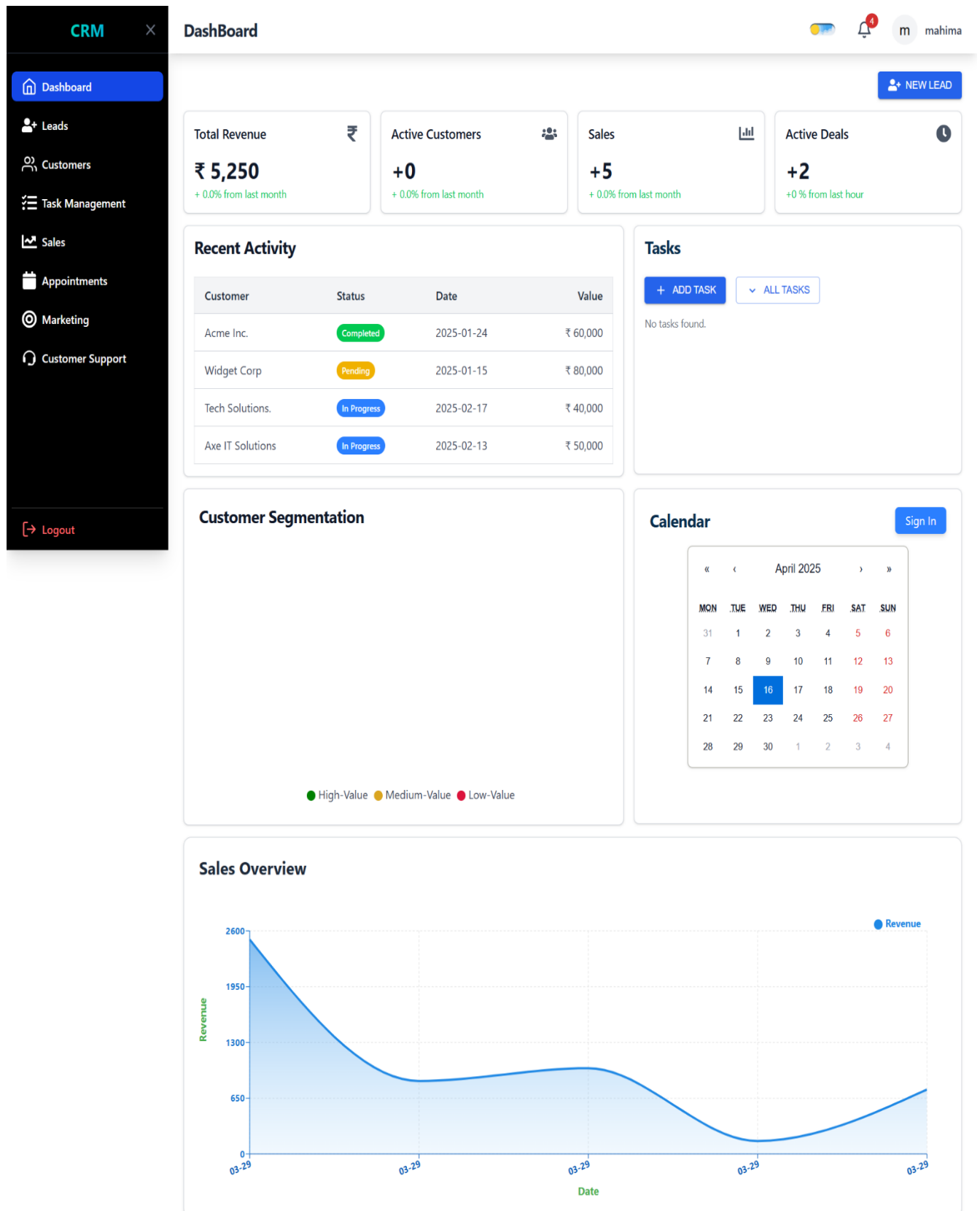
Figure: 6.3.2 Dashboard Page

6.3.3 Leads Page

- Admins can efficiently manage leads by adding, updating, or removing entries.
- Filtering and Search enable quick lead retrieval.
- Export functionality allows reporting or data sharing.
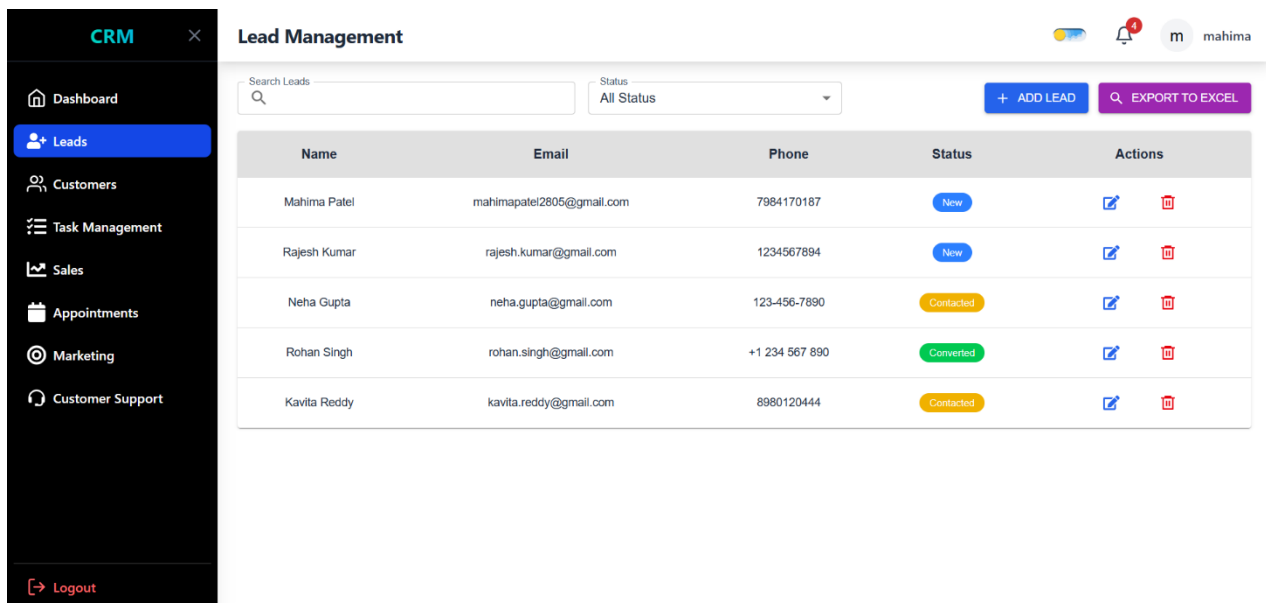
Figure: 6.3.3 Lead Management Page

6.3.3(1) Add New Lead Page
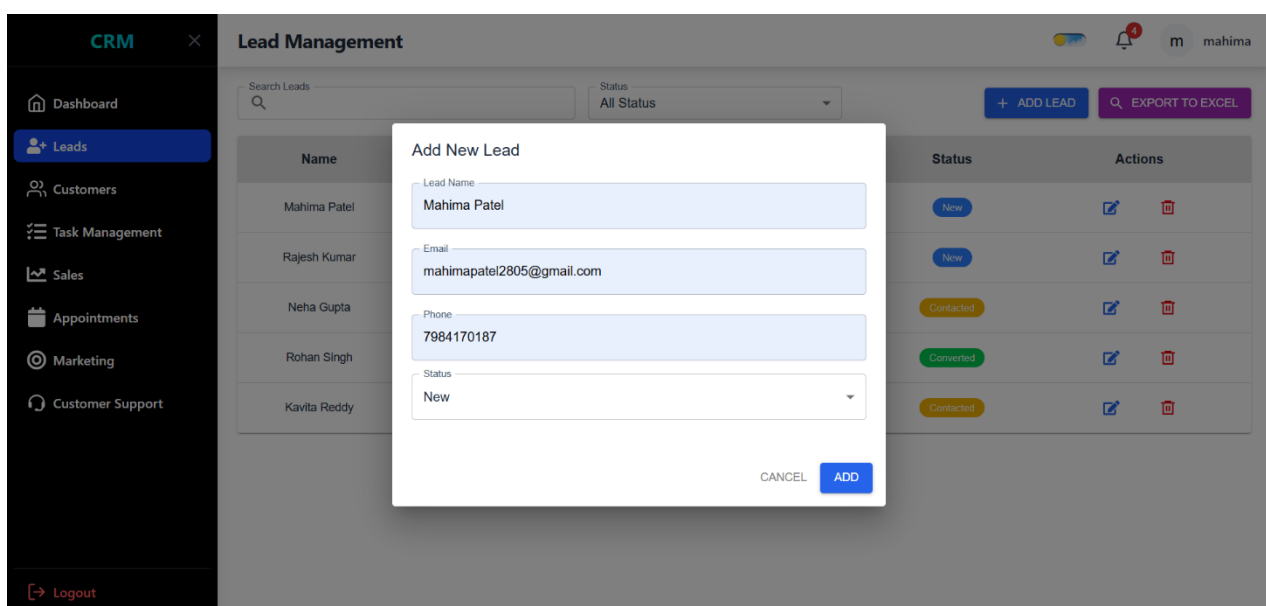
Figure: 6.3.3(1) Add New Lead Page

6.3.3(2) Update Lead Page
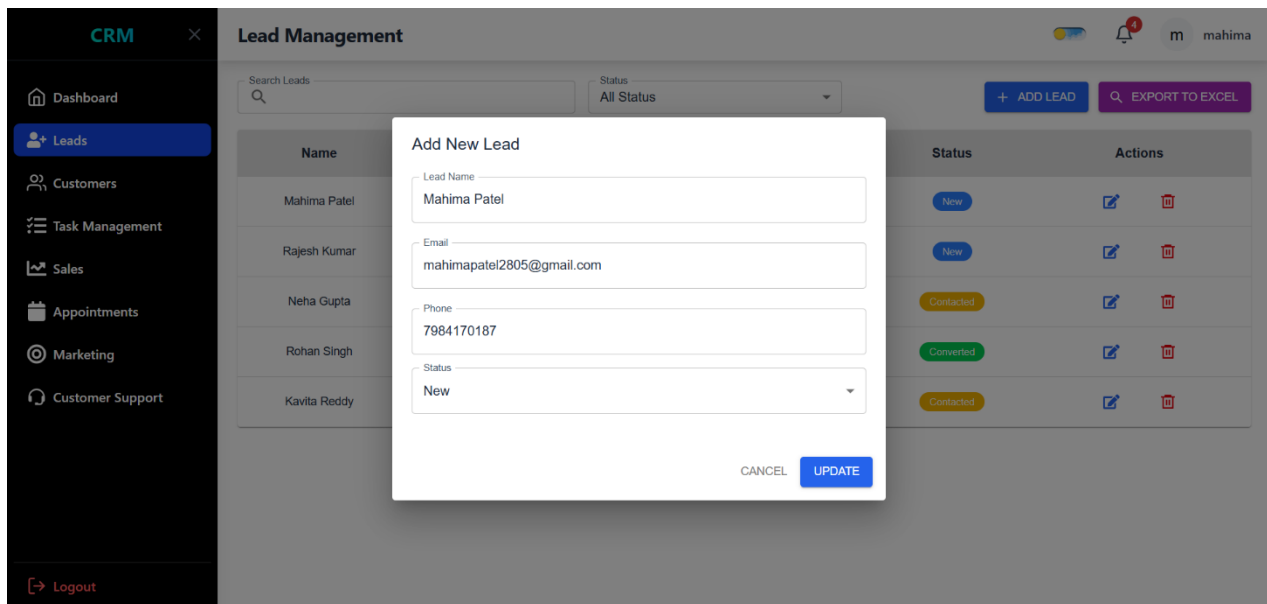
Figure: 6.3.3(2)   Edit Lead Page

6.3.3(3) Search/Filter Page
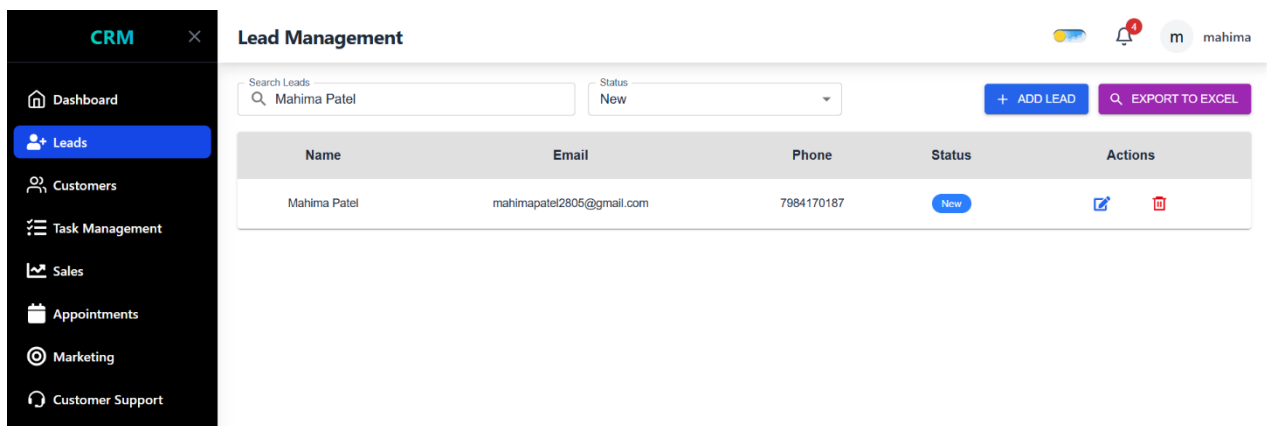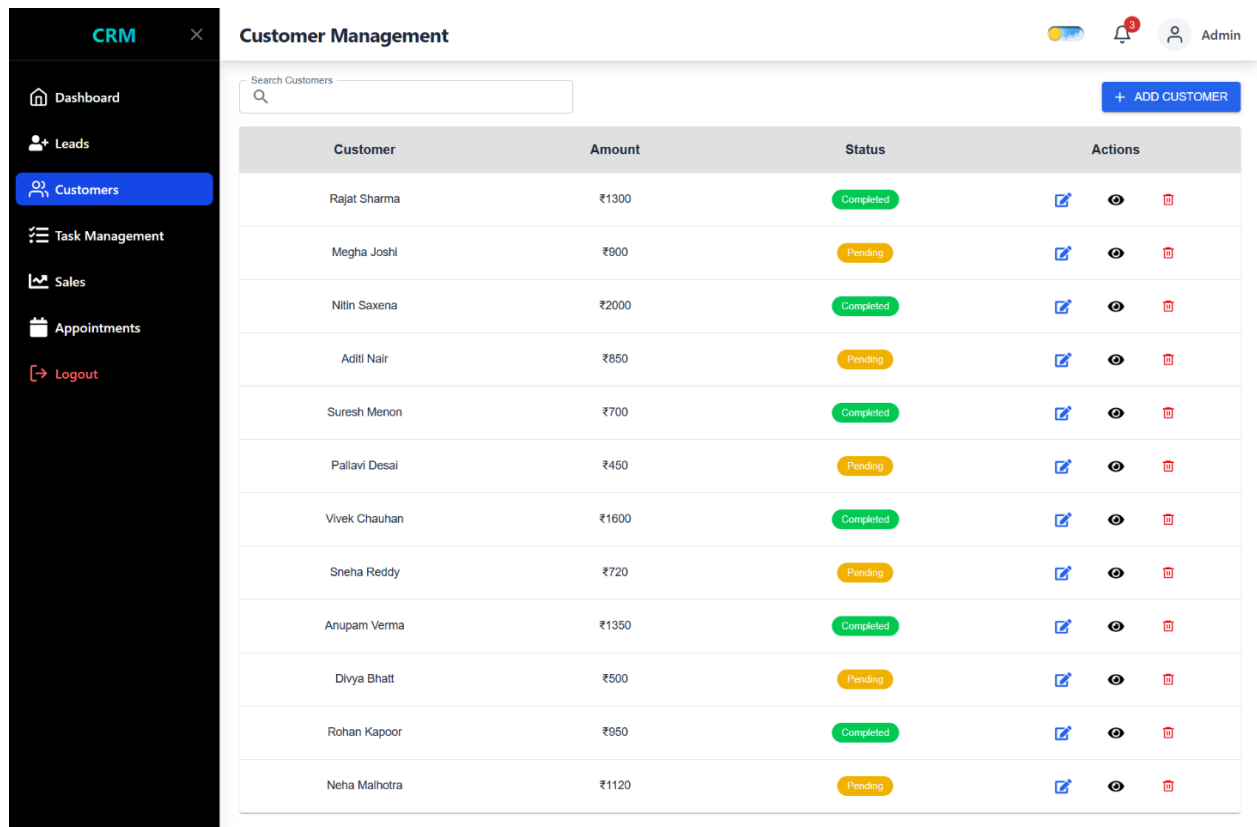
Figure: 6.3.3(3)   Search/Fiter Page

6.3.4 Customer Page

Figure: 6.3.4 Customer Page

6.3.4(1) Add Customer Page

Figure: 6.3.4(1) Add Customer Page

6.3.4(2) Edit Customer Page
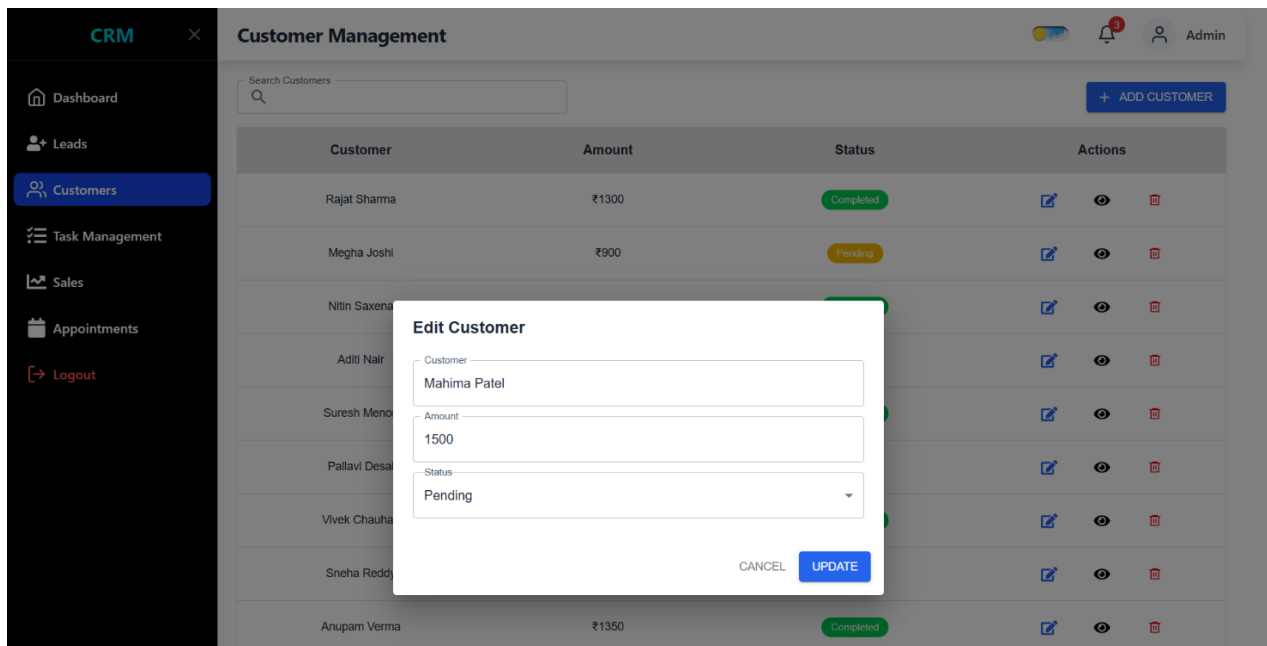
Figure: 6.3.4(2) Edit Customer Page

6.3.5 Task Management Page
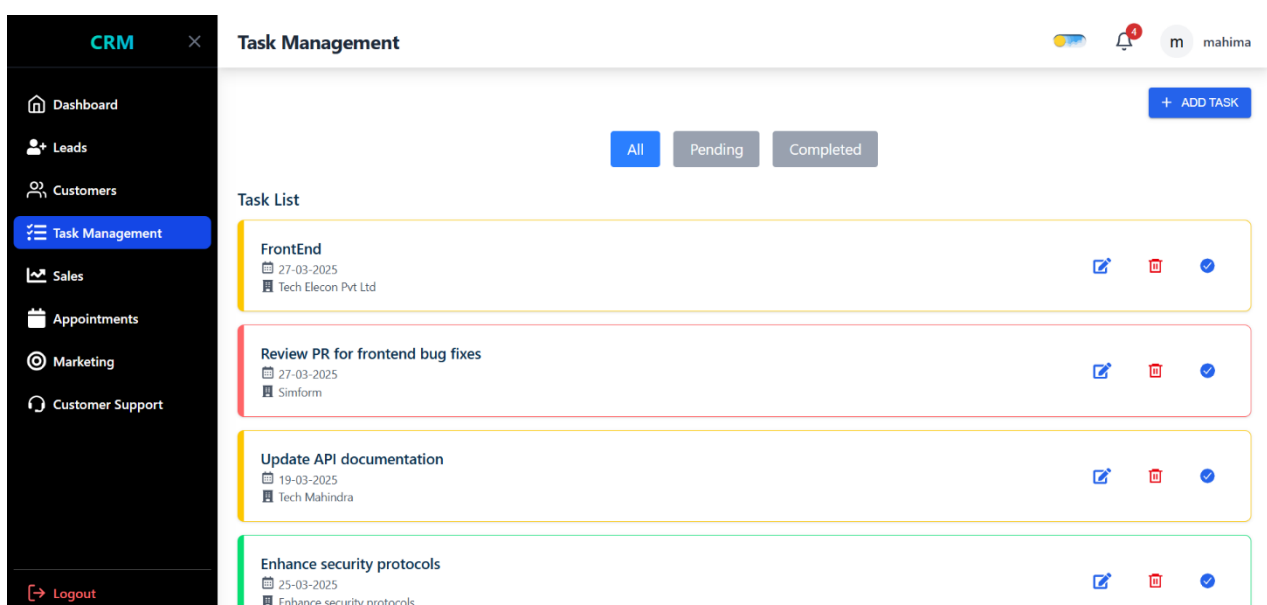
Figure 6.3.5 Task Management Page

6.3.6 Sales
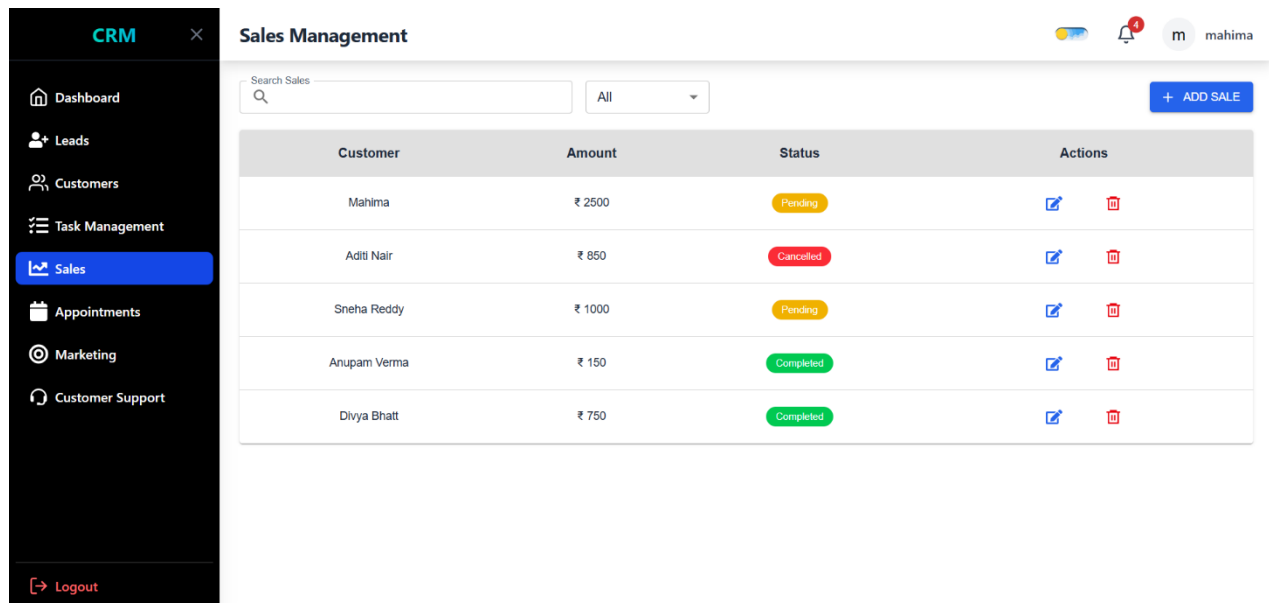
Figure: 6.3.6 Sales Management Page

6.3.6(1) Add New Sale
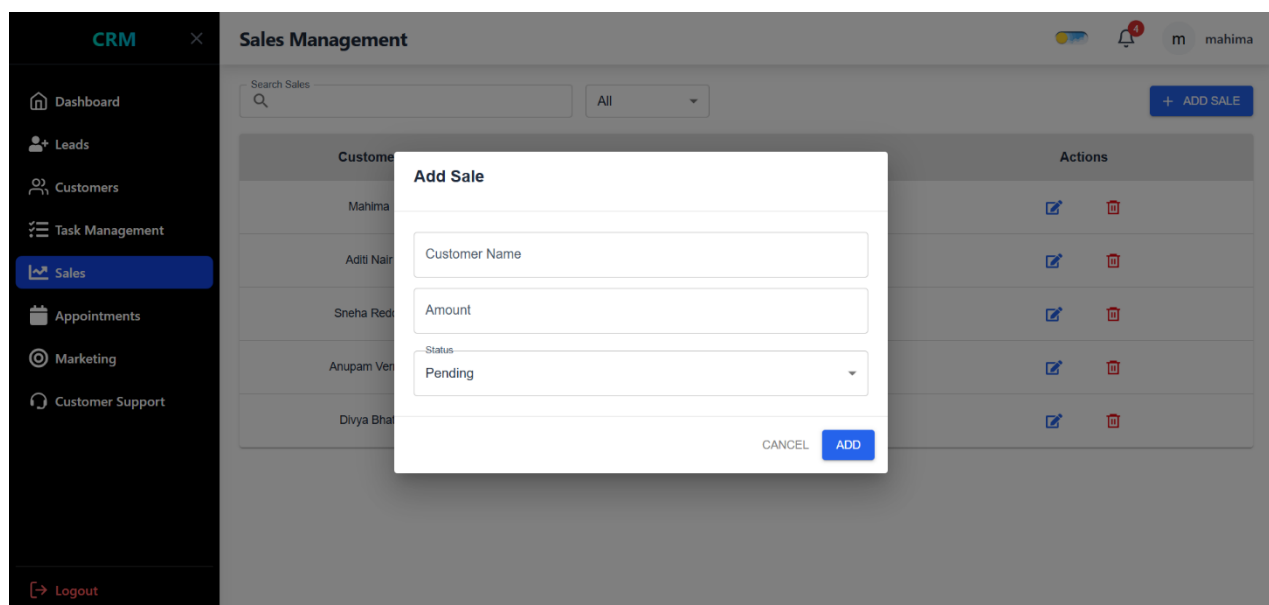
Figure: 6.3.6 (1) Add New Sale

6.3.6(2) Edit Sale Page
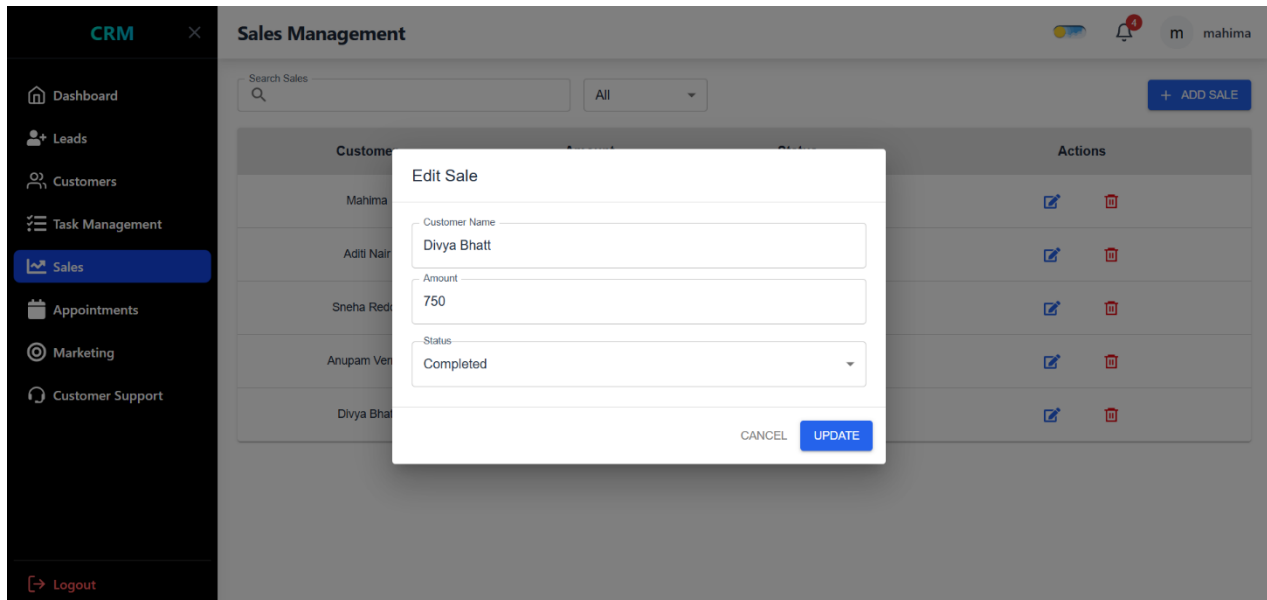
Figure: 6.3.6(2) Edit Sale Page

6.3.7 Appointment Page
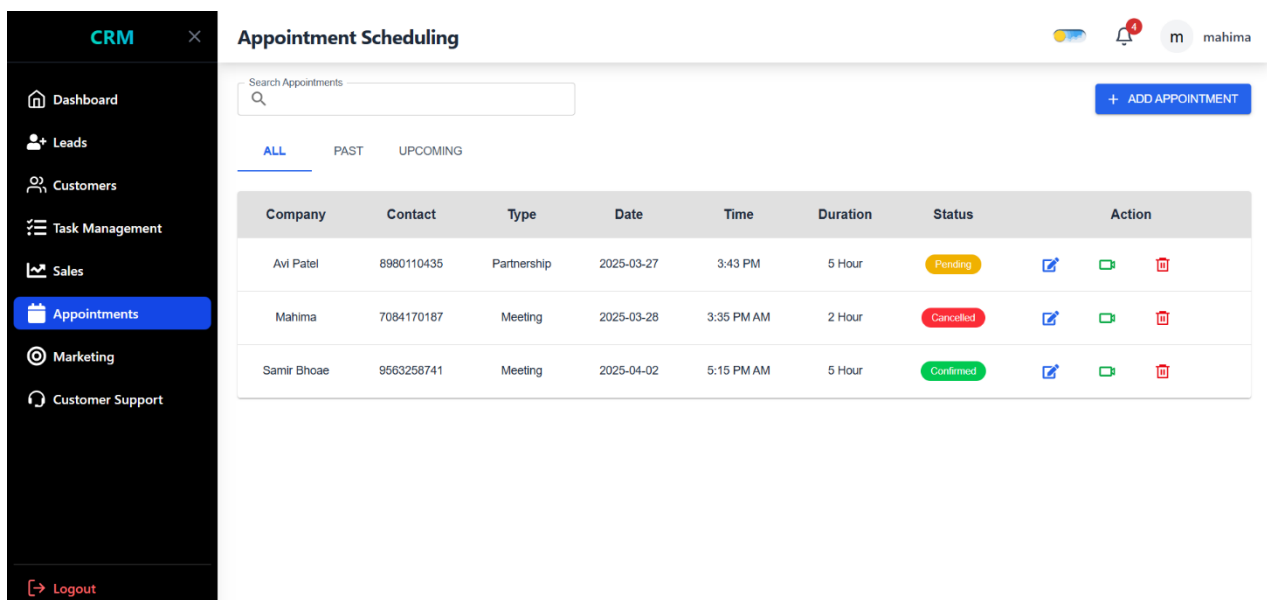
Figure: 6.3.7 Appointment Page

6.3.7(1) New Appointment Page

Figure: 6.3.7(1) New Appointment Page

6.3.7(2) Edit Appointment Page

Figure: 6.3.7(2) Edit Appointment Page

6.3.8 Marketing Page
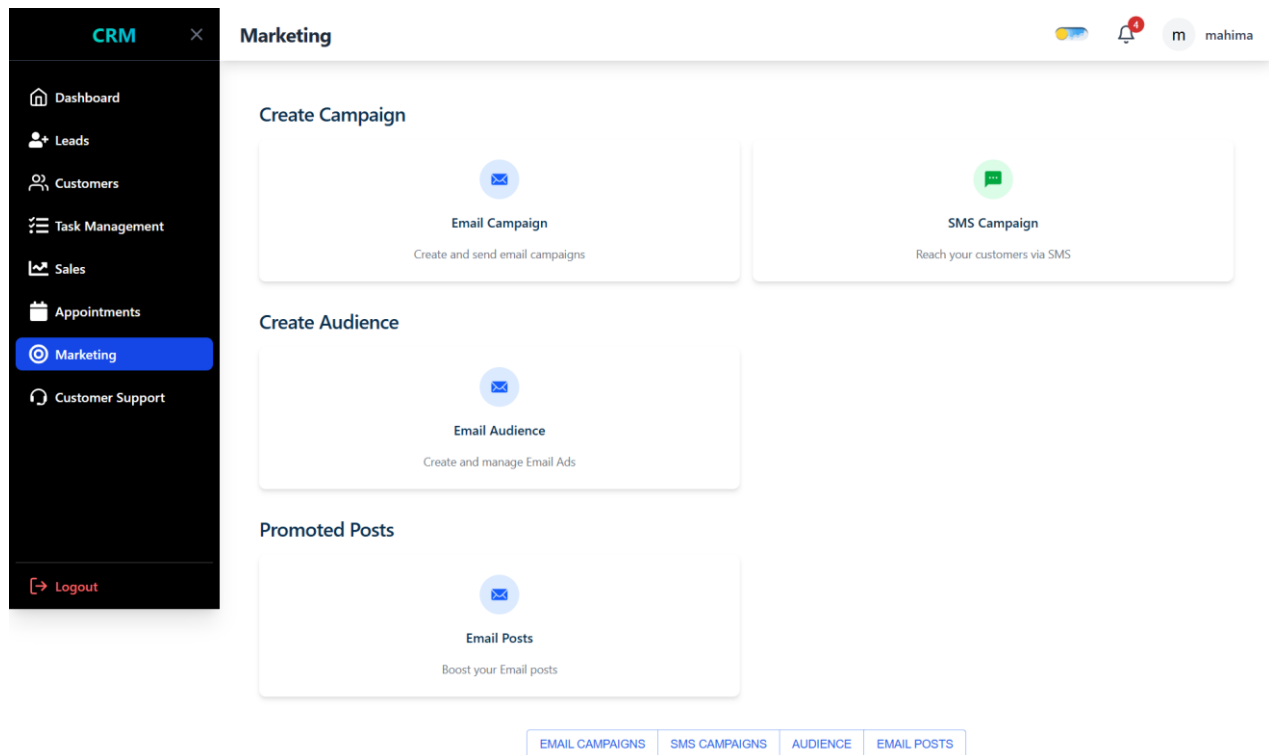
Figure: 6.3.8 Marketing Page

6.3.8 (1) Email Campaign Page
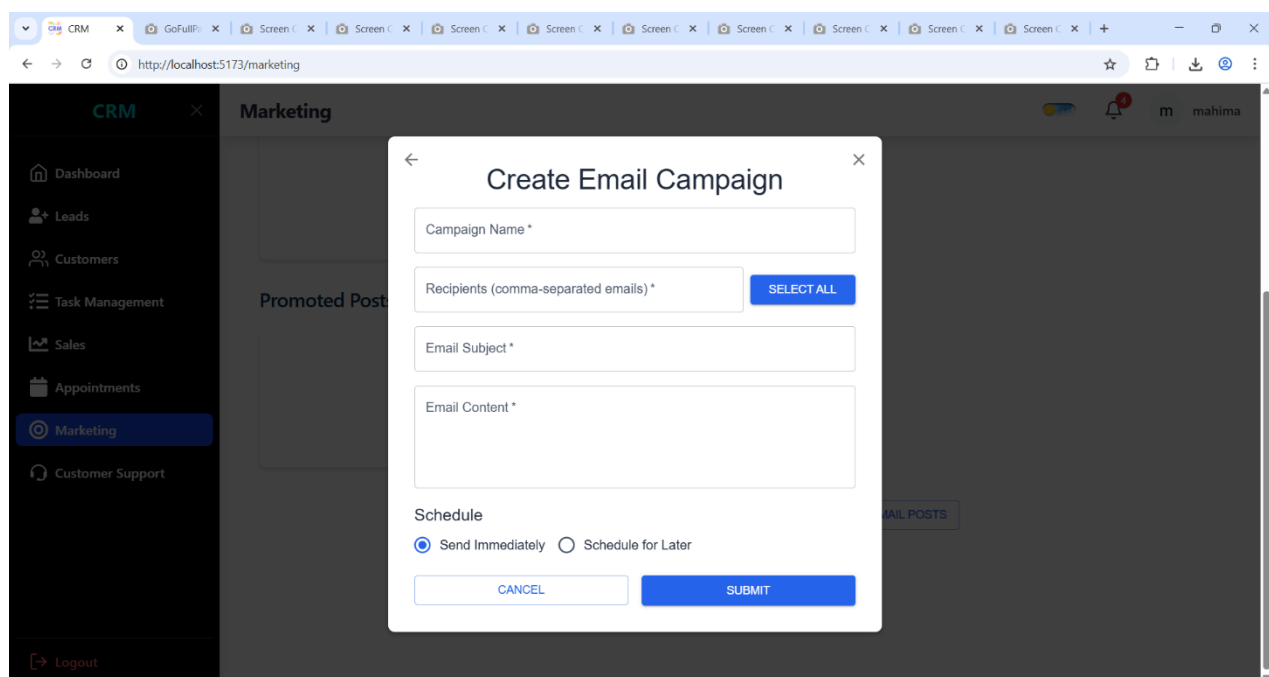
Figure: 6.3.8 (1) Email Campaign Page

6.3.8(2) Create SMS Campaign

Figure: 6.3.8(2) Create SMS Campaign

6.3.8(3) Audience Targeting

Figure: 6.3.8(3) Audience Targeting Page

6.3.8(4) Promote a Post

Figure: 6.3.8(4) Promote a Post Page

6.3.9 Customer Support Page

Figure 6.3.9 Customer Support Page

6.3.9(1) New Request Page
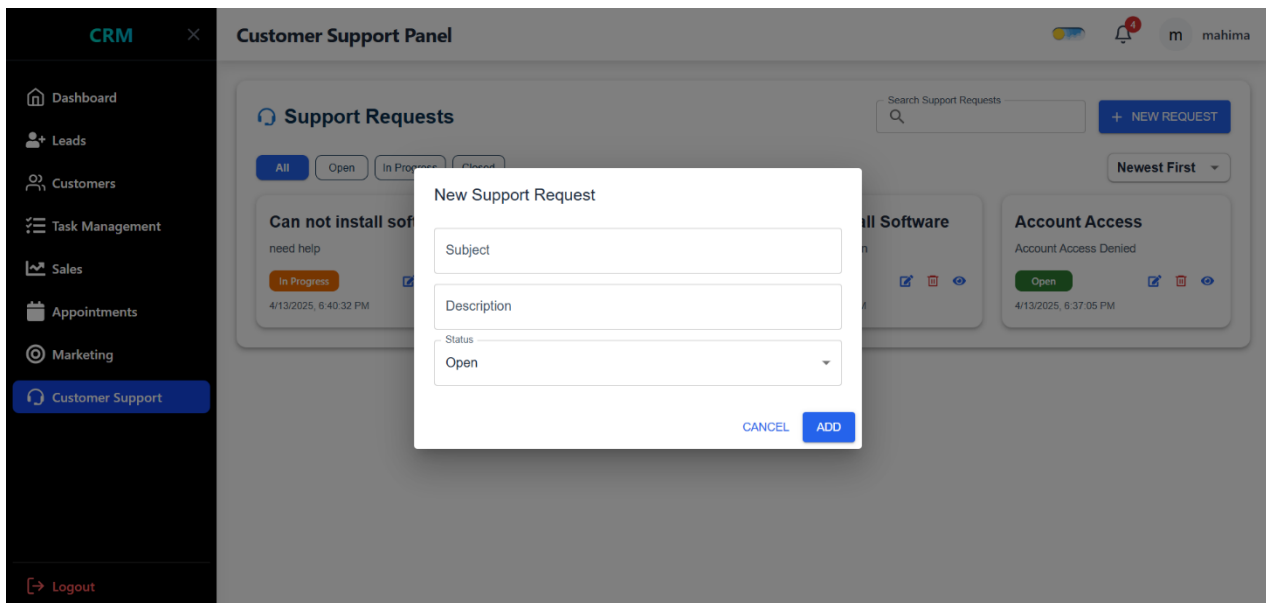
Figure: 6.3.9(1) New Request Page
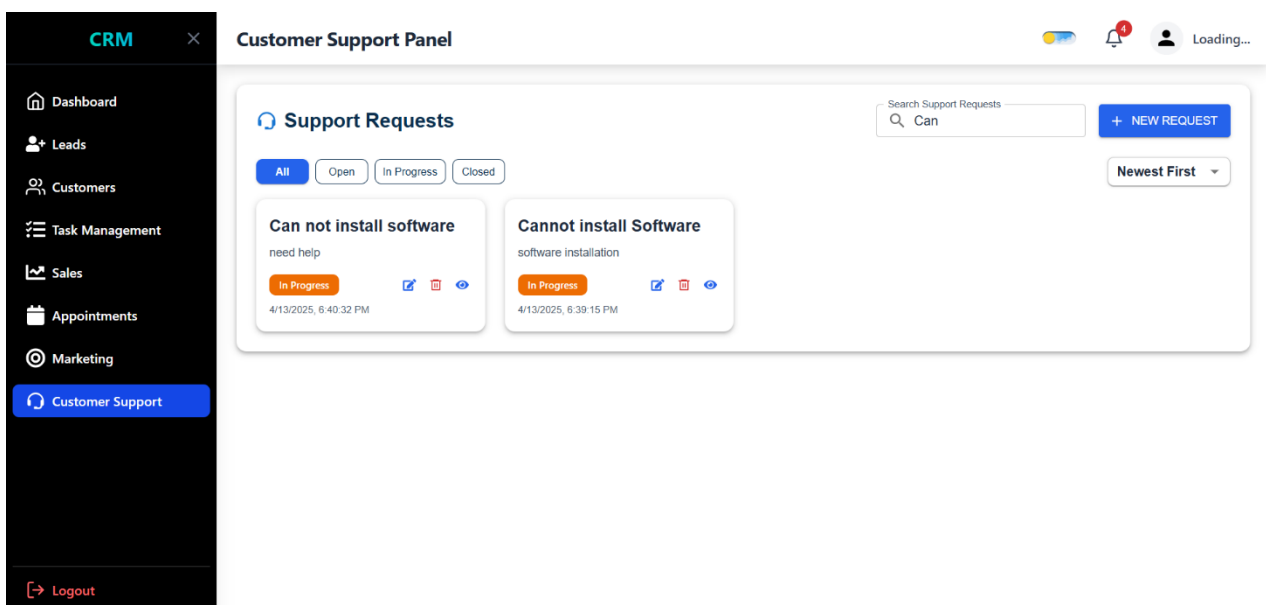
6.3.9(2) Search Support Request

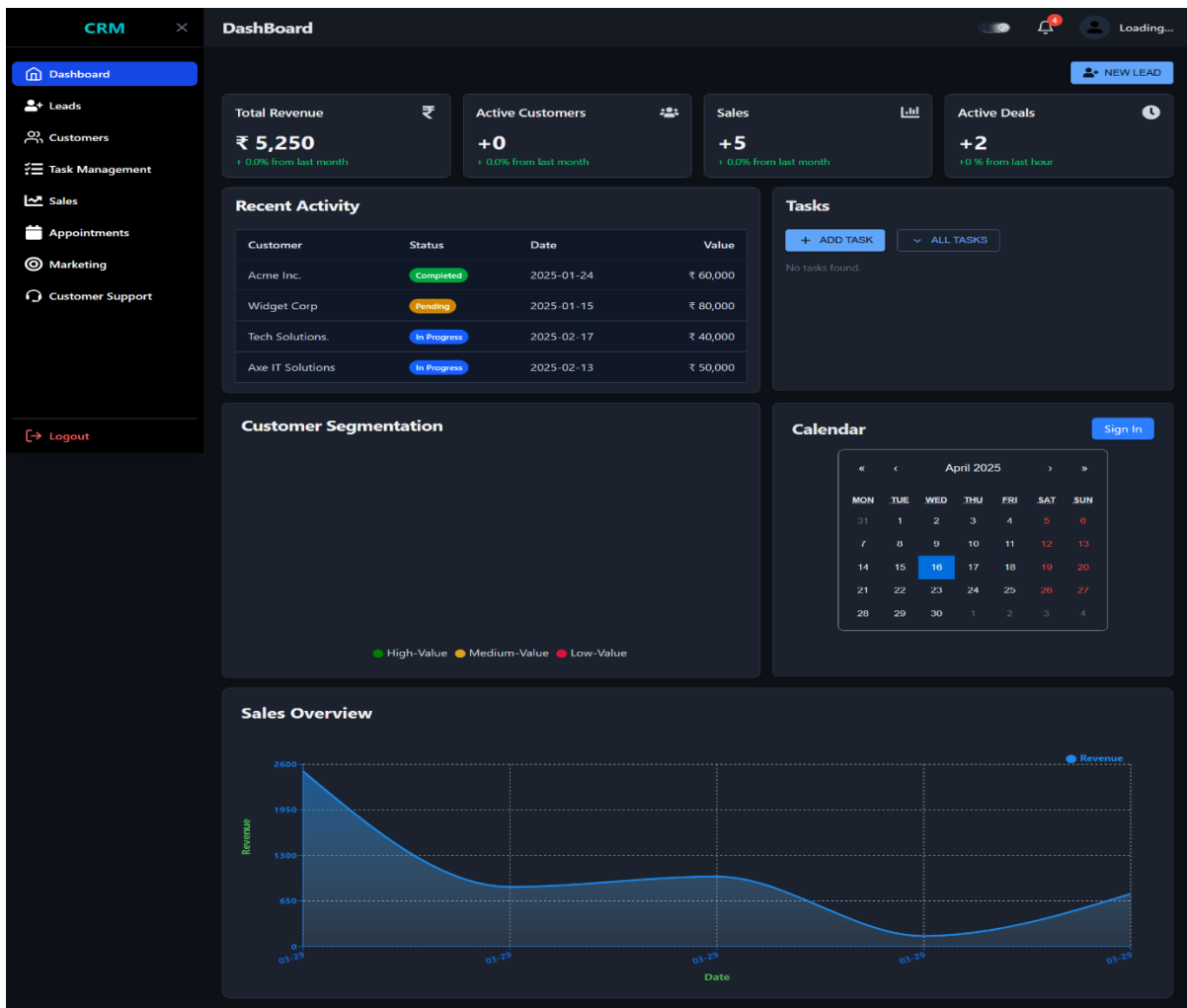Figure: 6.3.9(2) Search Support Request

6.3.10 Light Mode/Dark Mode

Figure: 6.3.10 Light/Dark Mode
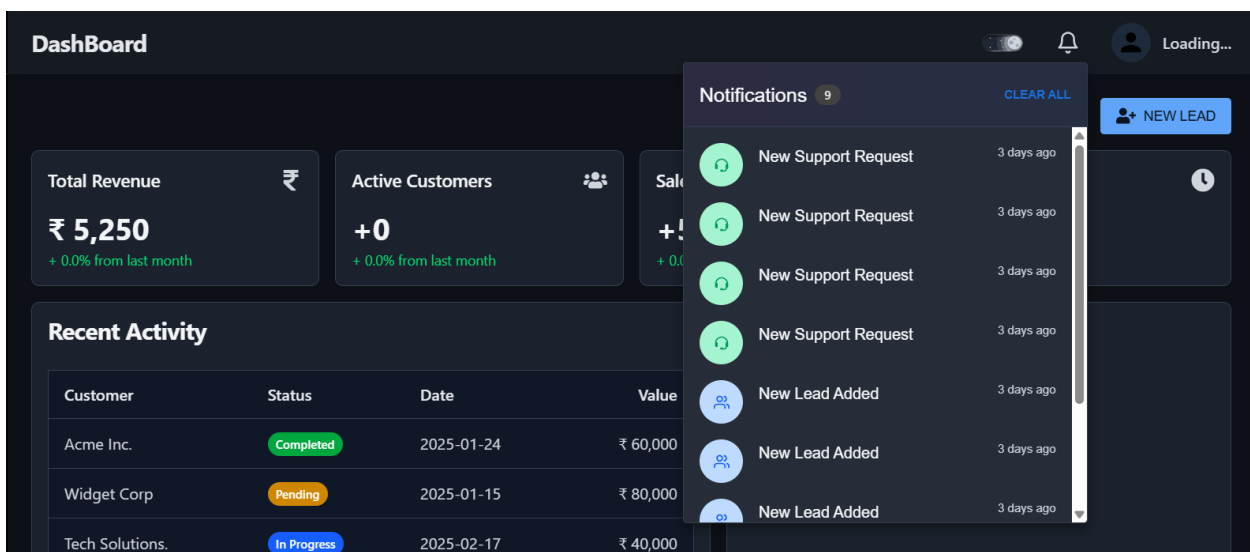
6.3.11 Notification Page

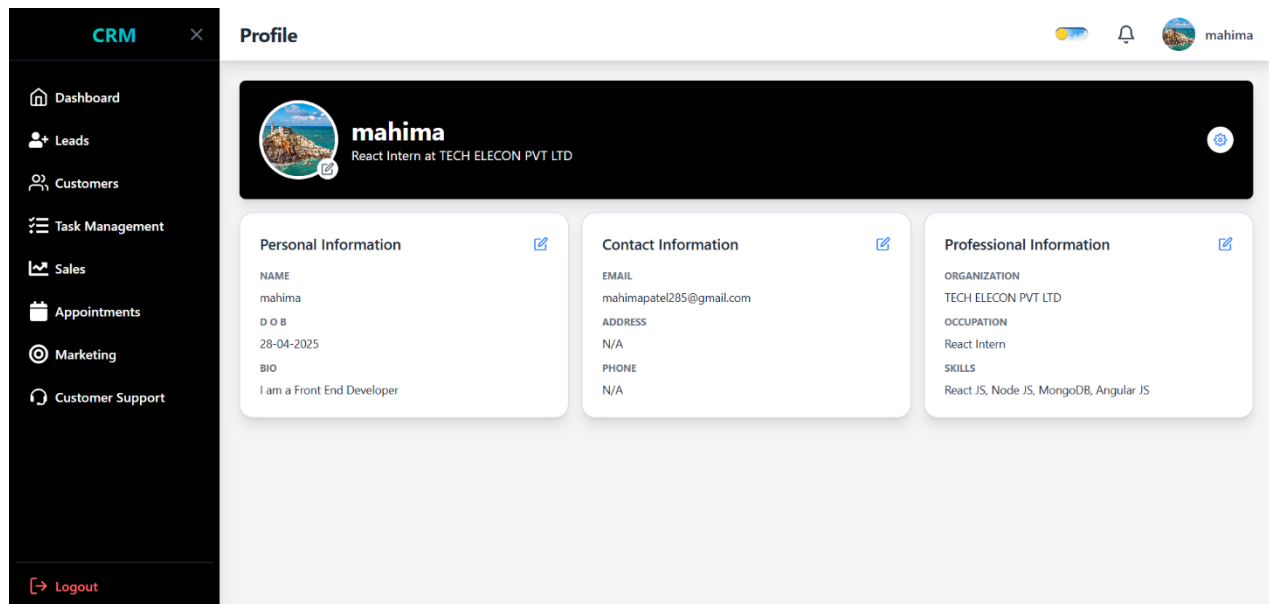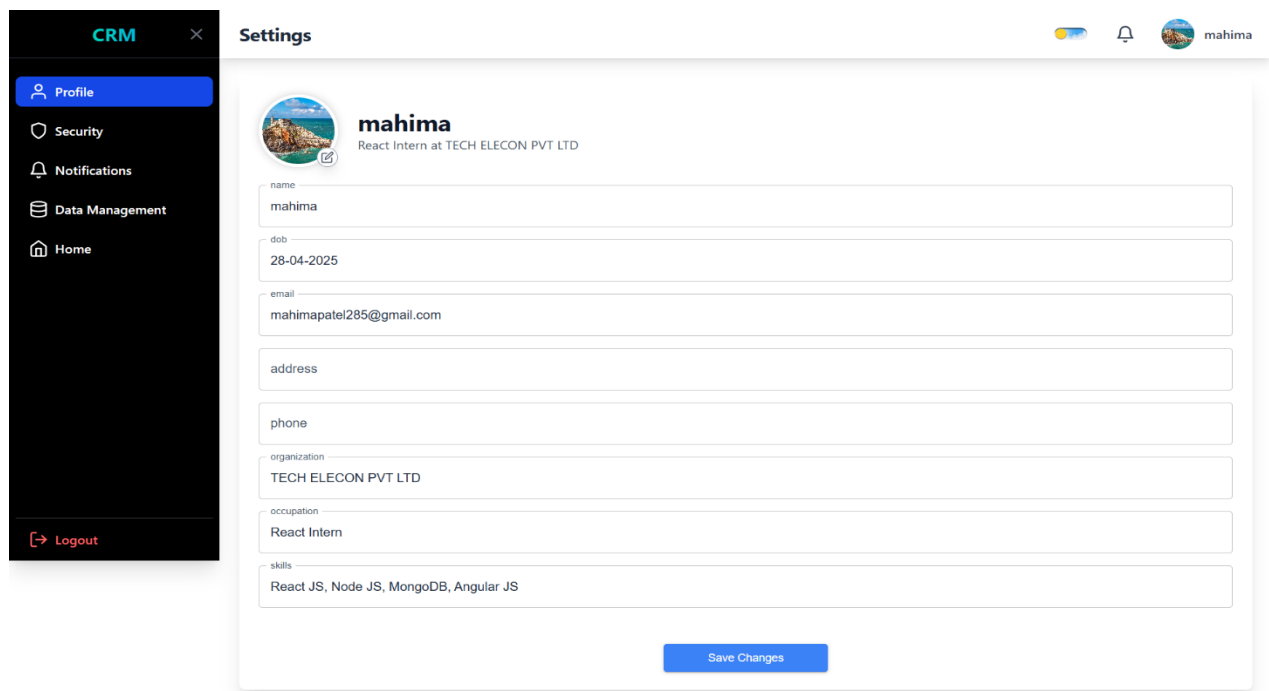Figure: 6.3.11 Notification Page

6.3.12 Profile Page

Figure: 6.3.12 Profile Page

6.3.13 Setting Page

Figure: 6.3.13 Setting Page

6.3.13(1) Security Page

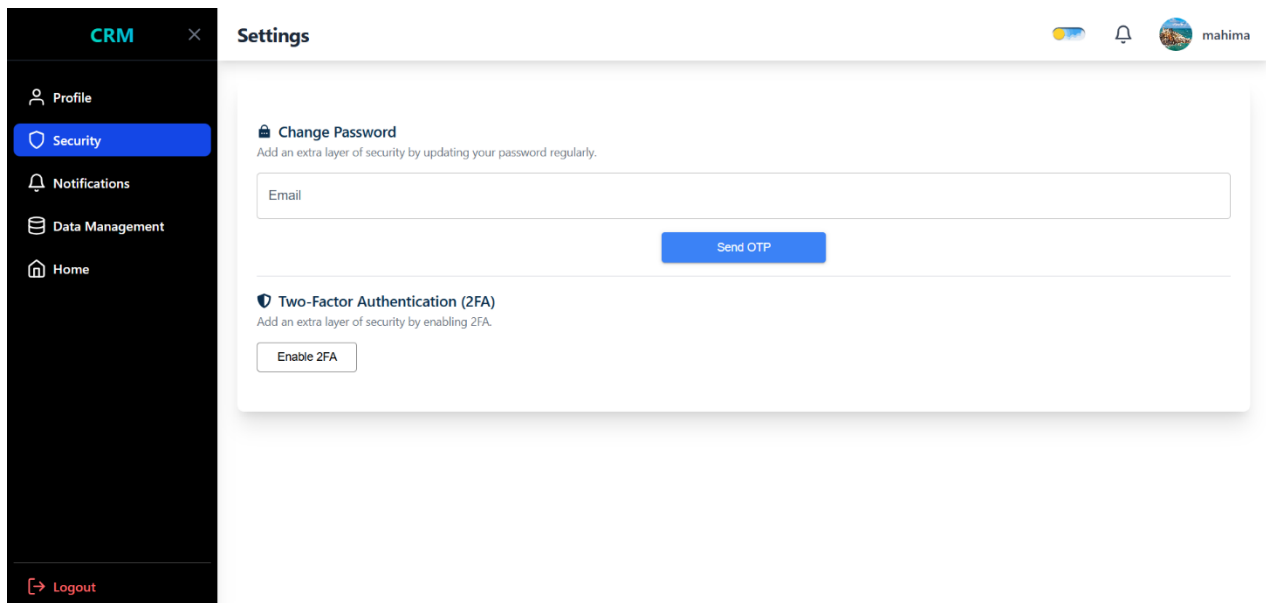Figure: 6.3.13(1) Security Page

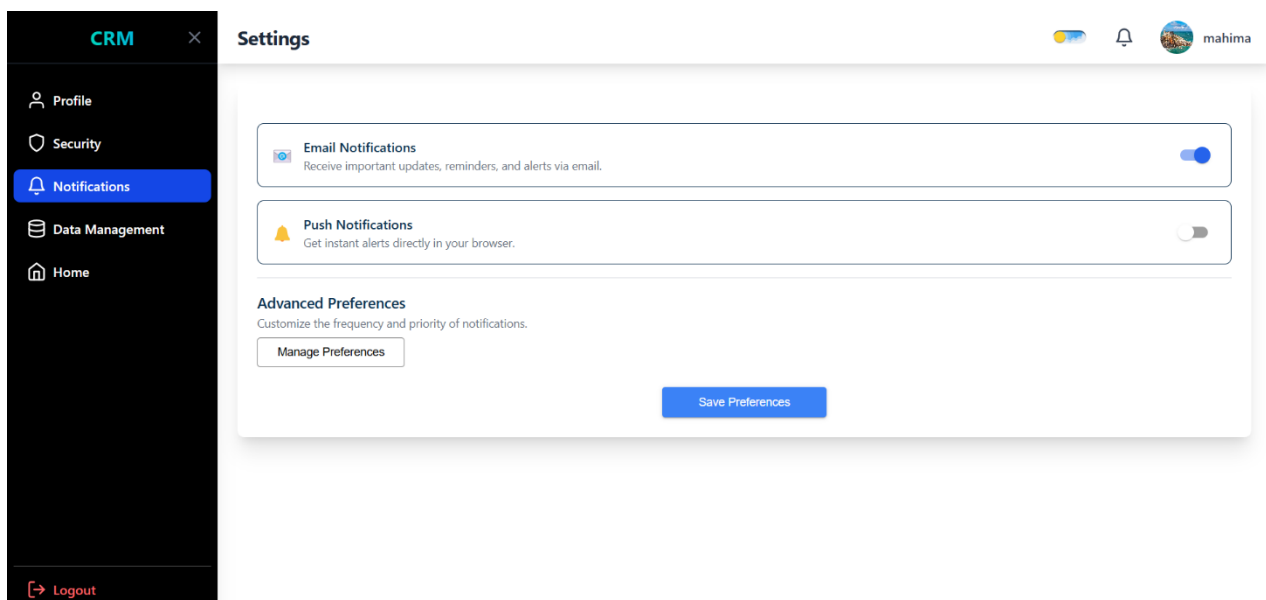## 6.3.13(2) Notification Page

Figure: 6.3.13(2) Notification Page
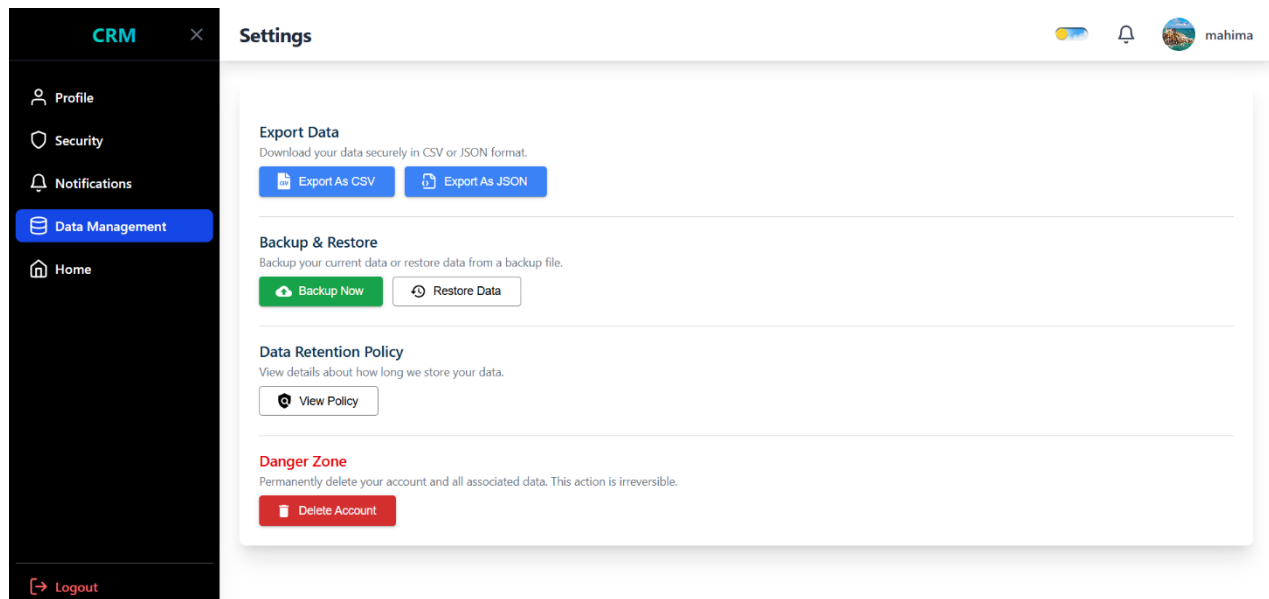
6.3.13(3) Data Management Page

Figure: 6.3.13(3) Data Management Page
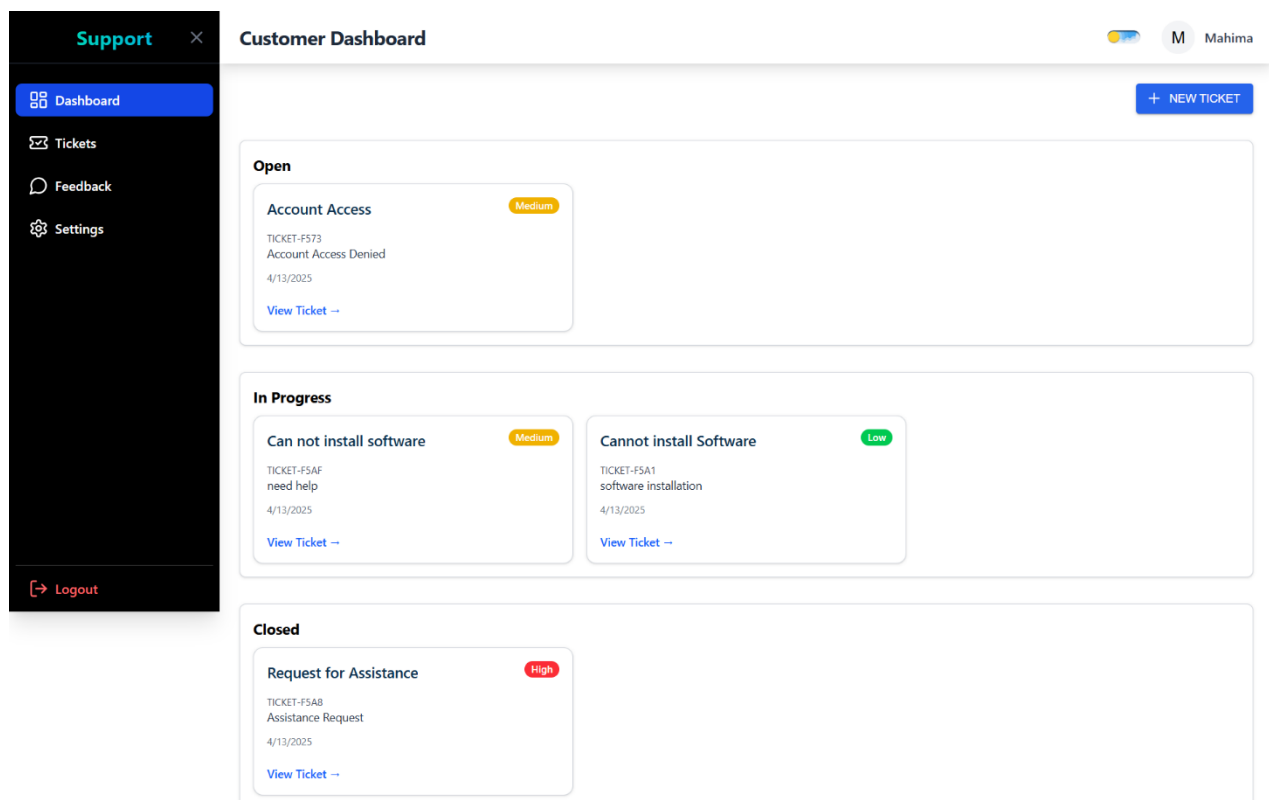
6.3.14 User Dashboard

Figure: 6.3.14 User Dashboard Page

6.3.15 Tickets Page

Figure: 6.3.15 Tickets Page

6.3.16 Feedback Page

Figure: 6.3.16 Feedback Page

6.3.17 Setting Page

Figure: 6.3.17 Setting Page

7 DISCUSSION & COCLUSION

7.1 OVERALL ANALYSIS OF INTERNSHIP / PROJECT VIABILITIES

During my internship, I was actively involved in the development of a Customer Relationship Management (CRM) system using the MERN stack, which includes MongoDB, Express.js, React.js, and Node.js. The primary goal of the project was to create a scalable and interactive CRM platform, similar in functionality to tools like Zoho CRM or Salesforce, with distinct dashboards for Admin and User roles.

Throughout the internship, I gained hands-on experience in both frontend and backend development. On the frontend, I worked extensively with React.js and Material UI to design and build the user interface, ensuring a responsive and intuitive layout. I developed authentication pages for login and signup that allowed role selection between Admin and User, and implemented conditional redirection to the appropriate dashboards upon successful login. I also contributed to the creation of reusable components like navigation bars and sidebars, which varied based on user roles to enhance usability and maintain design consistency.

On the backend, I used Node.js and Express.js to build RESTful APIs and set up secure authentication workflows using JWT and bcrypt. I followed the MVC architecture to keep the backend structured and scalable. The database was handled using MongoDB and Mongoose, where I designed schemas and managed collections for users, leads, and customers. I also used MongoDB Compass for visualizing and managing the database effectively.

This internship significantly improved my understanding of full-stack web development. It helped me develop a practical approach to structuring large-scale applications, managing role-based access, handling secure data transactions, and creating modular code. Overall, the experience was highly enriching and provided me with valuable insights into real-world software development using the MERN stack.

7.2 INTERNSHIP PROGRESS REVIEW MEETING WITH INDUSTY MENTOR

7.2.1 Meeting Schedule

The Internship Progress Review Meetings are conducted every Thursday with the assigned industry mentor/guide. These meetings serve as a platform to discuss project updates, challenges faced, and future action plans.

7.2.2 Objectives of the Meeting

• To track the progress of the assigned tasks.

• To receive feedback and guidance from the industry mentor.

• To address any technical or operational challenges.

• To ensure alignment with the project goals and industry standards.

7.2.3 Meeting Agenda

1. Review of Weekly Progress

• Summary of completed tasks.

• Key achievements and milestones.

2. Challenges & Roadblocks

• Discussion on difficulties faced during the implementation.

• Suggestions and solutions from the mentor.

3. Feedback & Suggestions

• Mentor's insights on improving work efficiency.

• Quality assessment and recommended improvements.

4. Planning for the Upcoming Week

• Defining goals and deliverables for the next phase.

• Action plan and responsibilities.

5. Conclusion & Takeaways

• Key discussion points summarized.

7.3 PROBLEM ENCOUNTERED AND POSSIBLE SOLUTION

During the development of the AMS, several challenges were encountered:

• API Integration Issues: Difficulties in integrating certain APIs due to compatibility issues or documentation gaps. This was resolved through extensive testing and debugging, as well as seeking guidance from senior developers.

• Data Validation: Ensuring data integrity and consistency required robust validation mechanisms. This was addressed by implementing stringent input validation on both the frontend and backend, reducing data entry errors.

• Performance Optimization: Optimizing the performance of the CRM to handle large datasets required careful attention. This was achieved through code optimization, database indexing, and efficient data retrieval strategies.

7.4 SUMMARY OF INTERNSHIP / PROJECT WORK

Throughout the 12-week internship, I actively contributed to the design, development, and implementation of the CRM. My responsibilities included:

• Designing and implementing user interfaces using React.js and Tailwind CSS.

• Developing RESTful APIs using Node.js and Express.js.

• Integrating MongoDB Compass for efficient data storage and retrieval.

• Implementing JWT-based authentication and role-based access control.

• Conducting thorough testing and debugging to ensure system stability and performance. This hands-on experience significantly enhanced my technical skills and provided valuable insights into real-world software development practices.

7.5 LIMITATION AND FUTURE ENHANCEMENT

The CRM, in its current state, has certain limitation.

- Lack of Mobile Access: The System is currently accessible only through a web browser, limiting its usability for on the go lead and sales tracking.

- Absence of predictive maintenance: The system does not incorporate predictive maintenance capabilities.
- Offline Functionality: The system require a constant internet connection, restricting its use in areas with limited connectivity.

Future enhancement could include:

- **Mobile App Development:** Developing a mobile app for both IOS and Android platform to enable seamless sales and leads tracking from mobile devices.
- **AI-Powered Predictive Maintenance:** Integrating machine learning algorithms to predict lead, sale failures and schedule maintenance proactively.

8 CONCLUSION

The CRM project developed during this internship provided extensive hands-on experience in full-stack CRM development. The primary objective was to build a structured, scalable, and user-friendly customer relationship management system with role-based authentication for both admins and users. The project focused on designing an intuitive frontend using React.js and Material UI, ensuring a modern and seamless user experience similar to industry-standard CRMs like Zoho CRM and Salesforce. The authentication system was successfully implemented, allowing users to sign up, log in, and be redirected to their respective dashboards based on their roles. The backend, built using Node.js, Express.js, and MongoDB, was structured to handle authentication securely while maintaining a scalable architecture for future enhancements.

Throughout the development process, various challenges were encountered, such as implementing secure authentication, designing an efficient UI, and managing role-based access control. Overcoming these challenges helped strengthen skills in frontend development, backend API creation, database management, and system integration. The project followed a structured and modular approach, ensuring maintainability and scalability for future features such as lead and customer management, profile settings, and advanced analytics. Additionally, the database was designed using MongoDB, with a well-defined schema for efficient data storage and retrieval. The integration of the frontend and backend was carried out in a seamless manner, aligning with industry best practices for CRM development.

This internship project was an enriching experience that bridged the gap between theoretical knowledge and practical application. It provided deep insights into the development of enterprise-level CRM solutions, covering UI/UX design, authentication, data management, and project structuring. Moving forward, additional features and enhancements will be integrated to make the system more comprehensive and efficient. The knowledge and skills gained from this project have been invaluable, offering a strong foundation for future development in CRM and enterprise software solutions.

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