CRM + Accounting Management System

1. Executive Summary

The CRM + Accounting Management System is an integrated enterprise platform that bridges customer relationship workflows with financial accounting operations.
It empowers organizations to:

- Convert leads into paying clients
- Manage service operations in real time
- Automate quotation, invoice, and payment tracking
- Generate business insights and reports for decision-making

The system ensures end-to-end automation — from lead acquisition to final payment realization — delivering operational transparency and financial precision.

1.1 Technology Stack

The CRM + Accounting Management System is powered by a modern three-tier architecture designed for performance, scalability, and maintainability.
Each layer performs a distinct function, ensuring modularity and secure data flow across the application.

1.1.1. Frontend (Client Layer)

- Framework: Angular
- Languages & Tools: TypeScript, HTML5, CSS3, Bootstrap 5, Tailwind CSS
- Purpose: Builds the interactive UI and connects to backend APIs for data visualization.
- Highlights: Responsive design, reusable components, and dynamic dashboards.

1.1.2. Backend (Application Layer)

- Framework: Spring Boot (Java)
- Modules: Spring Data JPA, Spring Security (JWT), Lombok, Validation API
- Purpose: Manages business logic, authentication, and RESTful API communication.
- Highlights: Secure, modular, and optimized for enterprise-level scalability.

1.1.3. Database (Persistence Layer)

- Database Engine: MySQL
- ORM Tool: Hibernate (via JPA)
- Purpose: Stores structured data such as clients, invoices, leads, and payments.
- Highlights: Reliable, relational, and cloud-ready.

1.1.4. Supporting Infrastructure

- Version Control: Git + GitHub
- Build Tool: Maven
- Deployment: Render / AWS EC2 / Docker Containers
- Monitoring: Spring Actuator + Logback

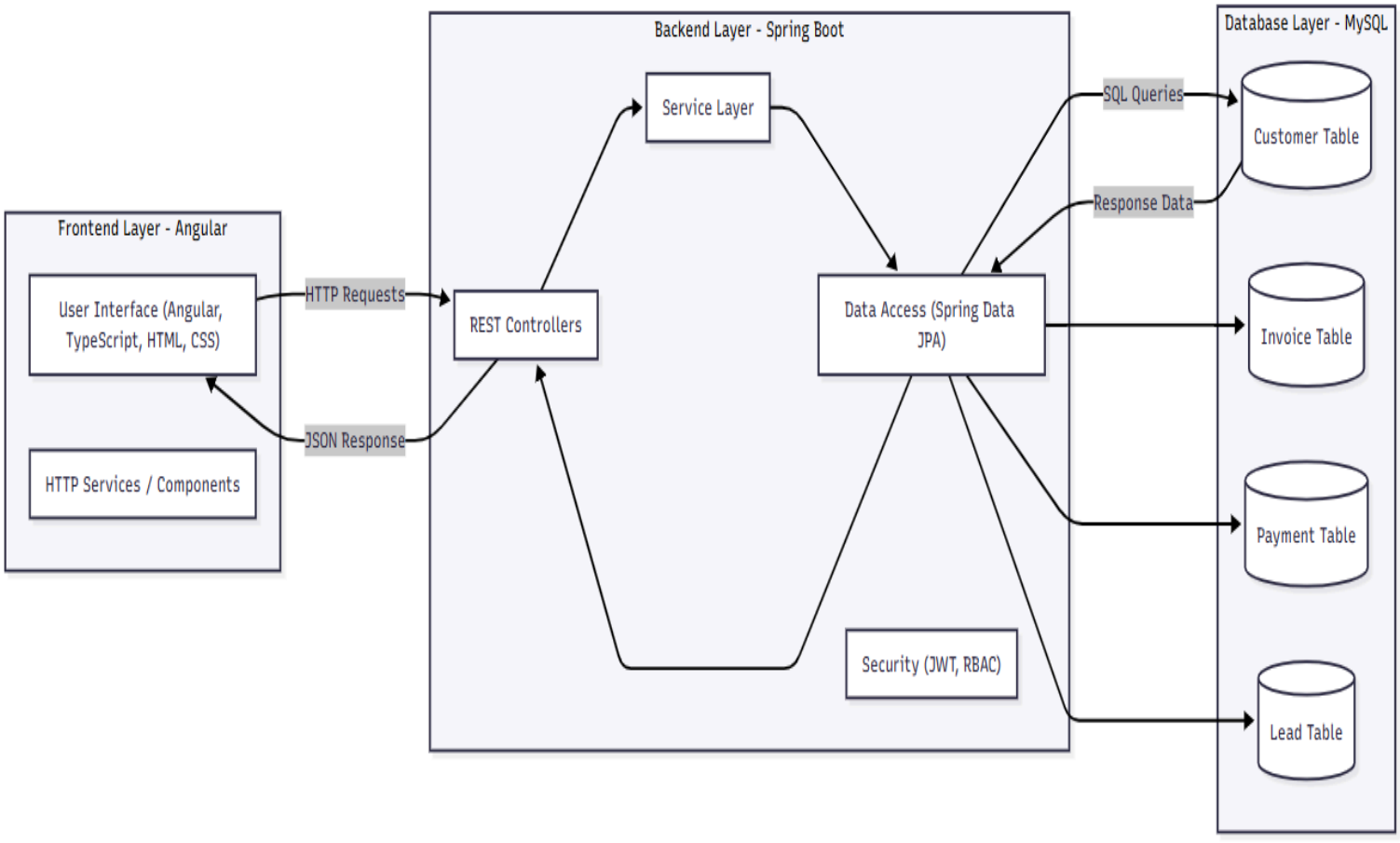
1.1.5. Security & Authentication

- Mechanisms: JWT Authentication, BCrypt Hashing, Role-Based Access Control (RBAC)
- Purpose: Protects sensitive data and enforces least-privilege access.

1.1.6. Visualization & Reporting

- Libraries: Chart.js, ApexCharts, ngx-charts
- Purpose: Generates interactive sales and accounting analytics dashboards.

Architecture Diagram



Summary Table

Layer	Technology	Core Purpose
Frontend	Angular, TypeScript	Responsive UI, Dashboard, Client Interactions
Backend	Spring Boot (Java), JPA, Security	Business Logic, Authentication, API Services
Database	MySQL, Hibernate	Data Persistence and Relationships
DevOps	Docker, Maven, GitHub, Render	Deployment and Version Management
Security	JWT, BCrypt, RBAC	Secure Role-based Access
Visualization	Chart.js, ApexCharts	Analytics & Reporting Dashboards

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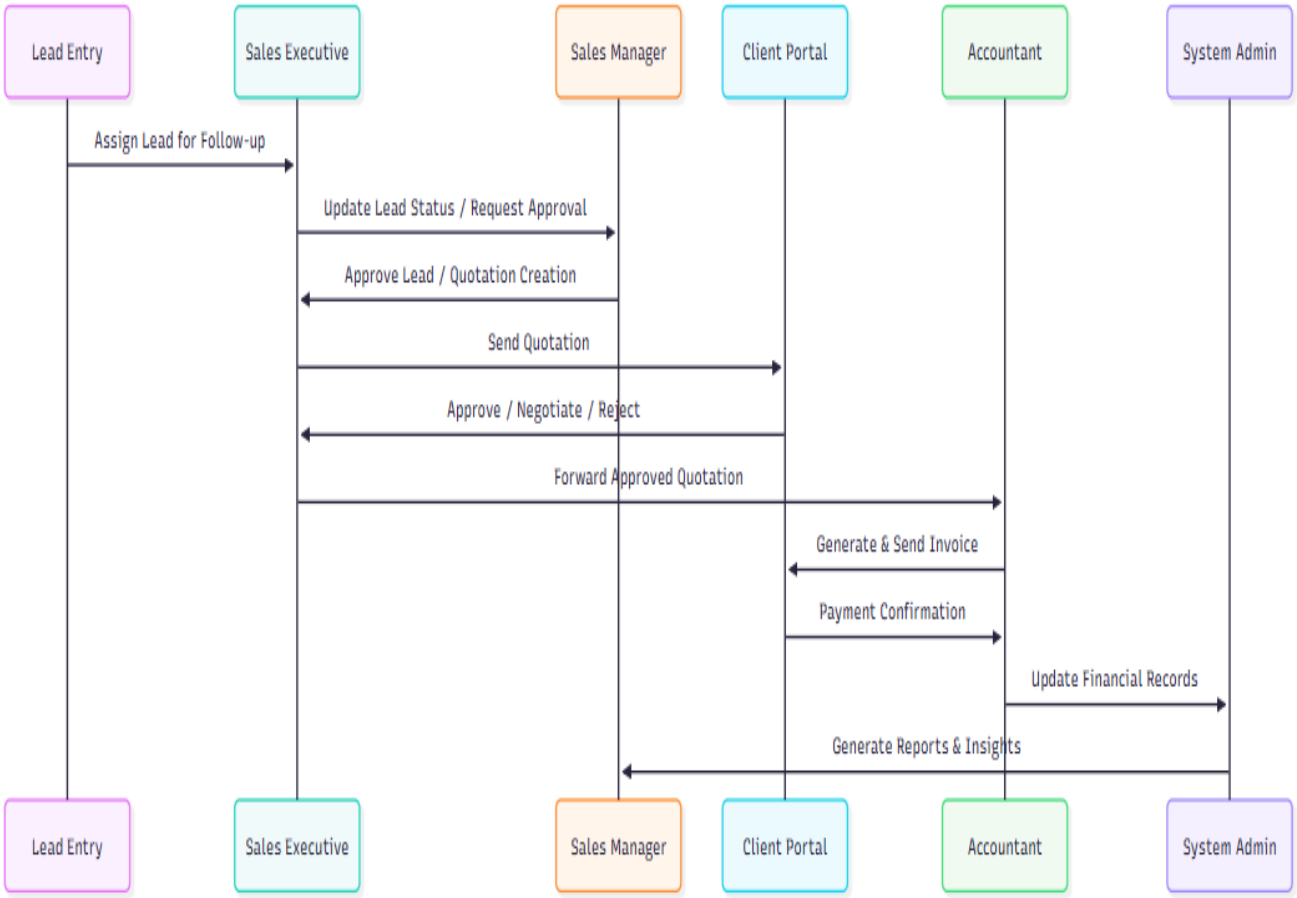
1.2 Overall System Workflow

The CRM + Accounting Management System follows a linear yet modular workflow — connecting sales, client relations, and accounting operations into a single automated pipeline.

Each action taken by a user (based on their role) triggers the next logical process, ensuring efficiency, accuracy, and traceability.

Workflow Steps

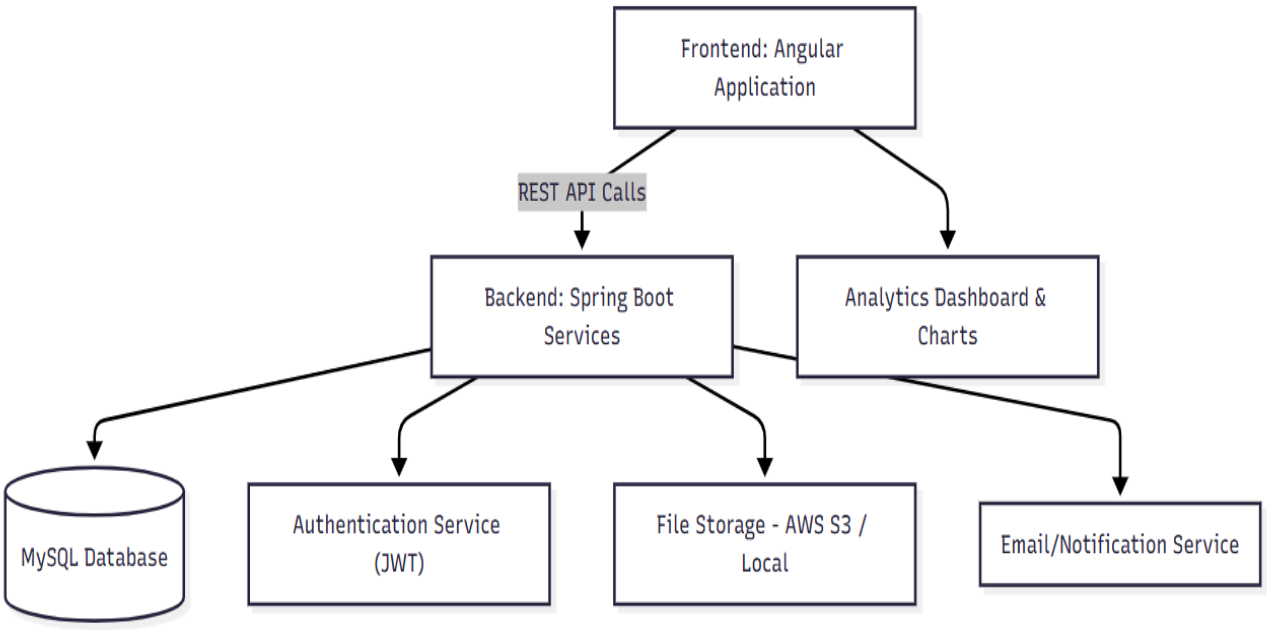
1. **Lead Creation & Assignment**
    - New leads are added manually or imported from external sources.
    - Admin/Sales Manager assigns them to specific Sales Executives.
2. **Follow-Up & Communication**
    - Sales Executives log calls, emails, and meetings.
    - Follow-up reminders ensure timely engagement.
3. **Quotation Generation**
    - Executives create quotations from qualified leads.
    - Managers review and approve them for accuracy and pricing policy.
4. **Client Confirmation**
    - Clients receive quotations through their secure portal.
    - They can approve, request changes, or reject quotations.
5. **Invoice & Payment**
    - Upon approval, the Accountant generates invoices.
    - Payments are recorded, and transaction summaries are auto-updated.
6. **Reporting & Analytics**
    - Managers and Admins can view performance dashboards and revenue metrics.
    - Real-time analytics ensure strategic decision-making.



2. Business Objectives

Objective	Description
Sales Automation	Capture leads, track follow-ups, and automate quotation cycles.
Accounting Integration	Auto-generate invoices and sync with payments.
Customer Retention	Improve client satisfaction via real-time service tracking.
Operational Efficiency	Reduce manual intervention through role-based workflows.
Scalability	Easily adapt to multi-branch or franchise models.

3. High-Level System Architecture



Explanation:

- The Angular frontend provides responsive UI dashboards.
- Spring Boot backend handles API logic, business validation, and database transactions.
- JWT-based authentication ensures secure multi-role access.
- MySQL stores persistent data, while AWS S3 handles documents and invoice storage.

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4. Module Breakdown

4.1 CRM Module

Purpose:

Manages client lifecycle — from lead creation to conversion.

4.1.1. Lead Management

- Tracks potential clients from initial inquiry to conversion.
- Enables status tagging (New, In Progress, Converted, Lost).
- Provides insights into lead sources, response rates, and performance analytics.

4.1.2. Client Database

- Maintains centralized records of all customers, including contact details, business profiles, and transaction history.
- Supports quick lookup, filtering, and client segmentation.
- Ensures data integrity and GDPR-compliant storage.

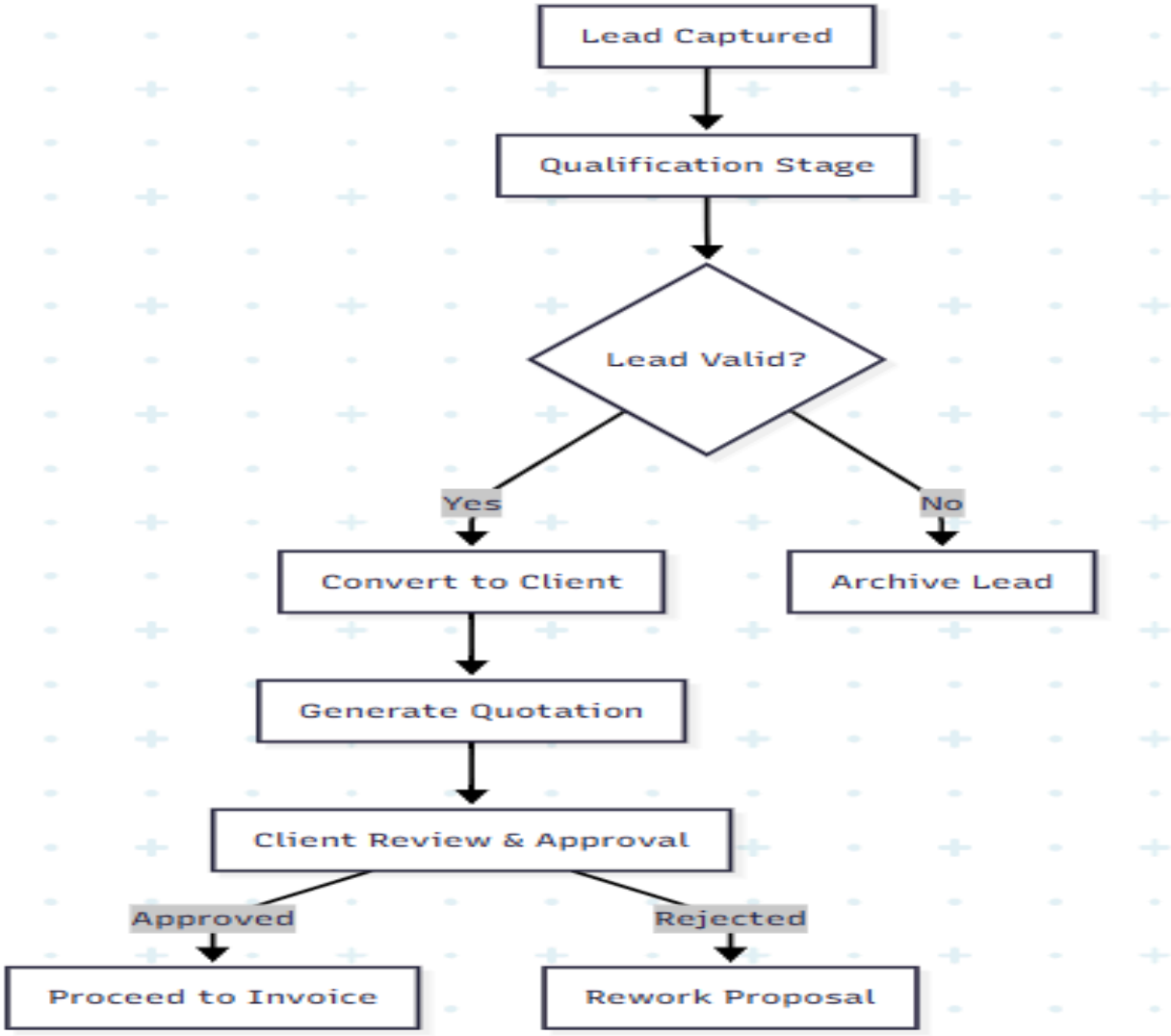
4.1.3. Follow-Up & Call Logs

- Automates reminders and follow-up scheduling for sales executives.
- Records communication history — calls, emails, and meetings — for accountability.
- Improves client engagement and conversion tracking.

4.1.4. Quotation Management

- Generates and manages quotations and pricing proposals.
- Supports approval workflows, discount rules, and version tracking.
- Converts approved quotations directly into invoices or orders.

Workflow:



4.2 Accounting Module

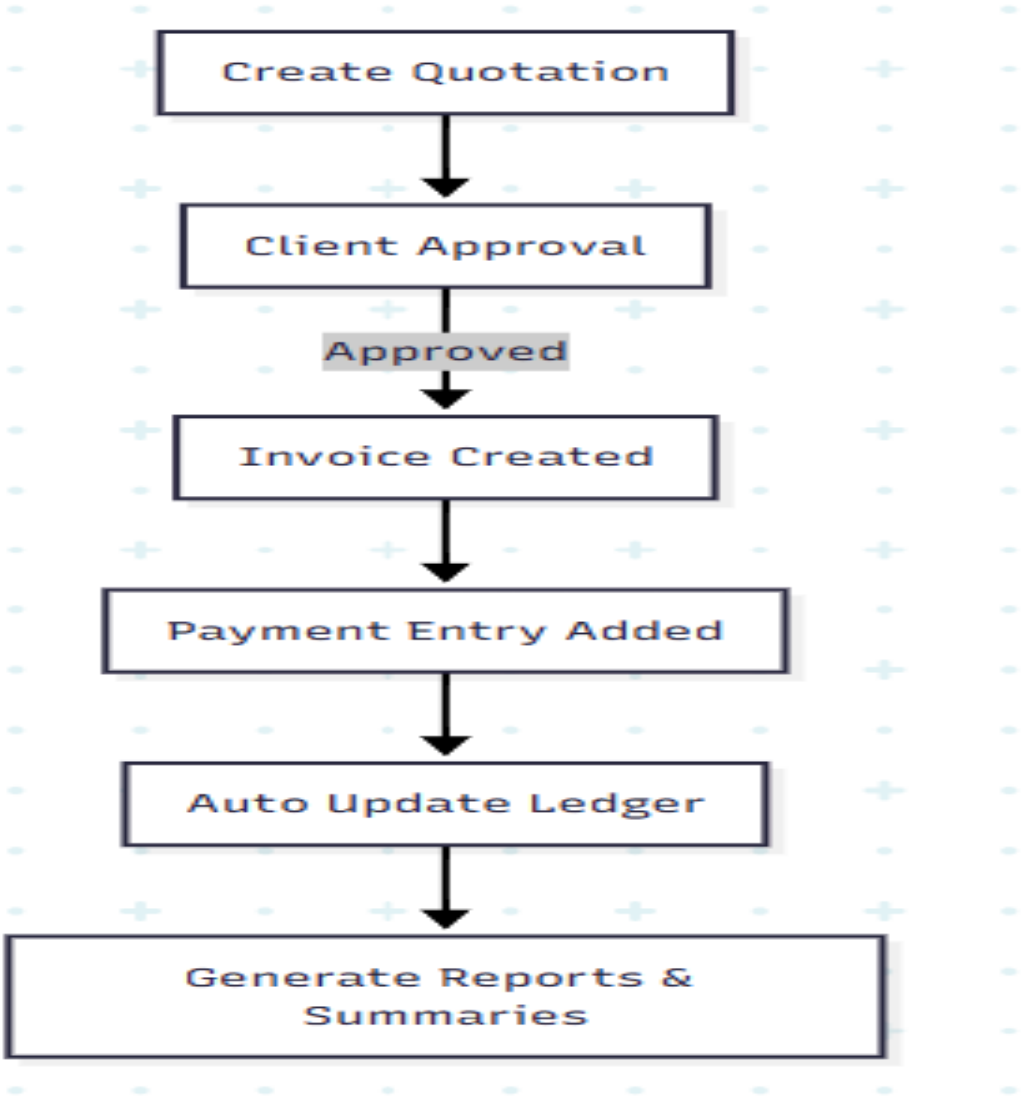
Purpose:

Automates invoice generation, payment recording, and financial analytics.

Submodules:

1. Quotation → Invoice Conversion
2. Payment Tracking
3. Expense Management
4. Tax & Ledger Reports

Workflow:



4.3 Service Management Module

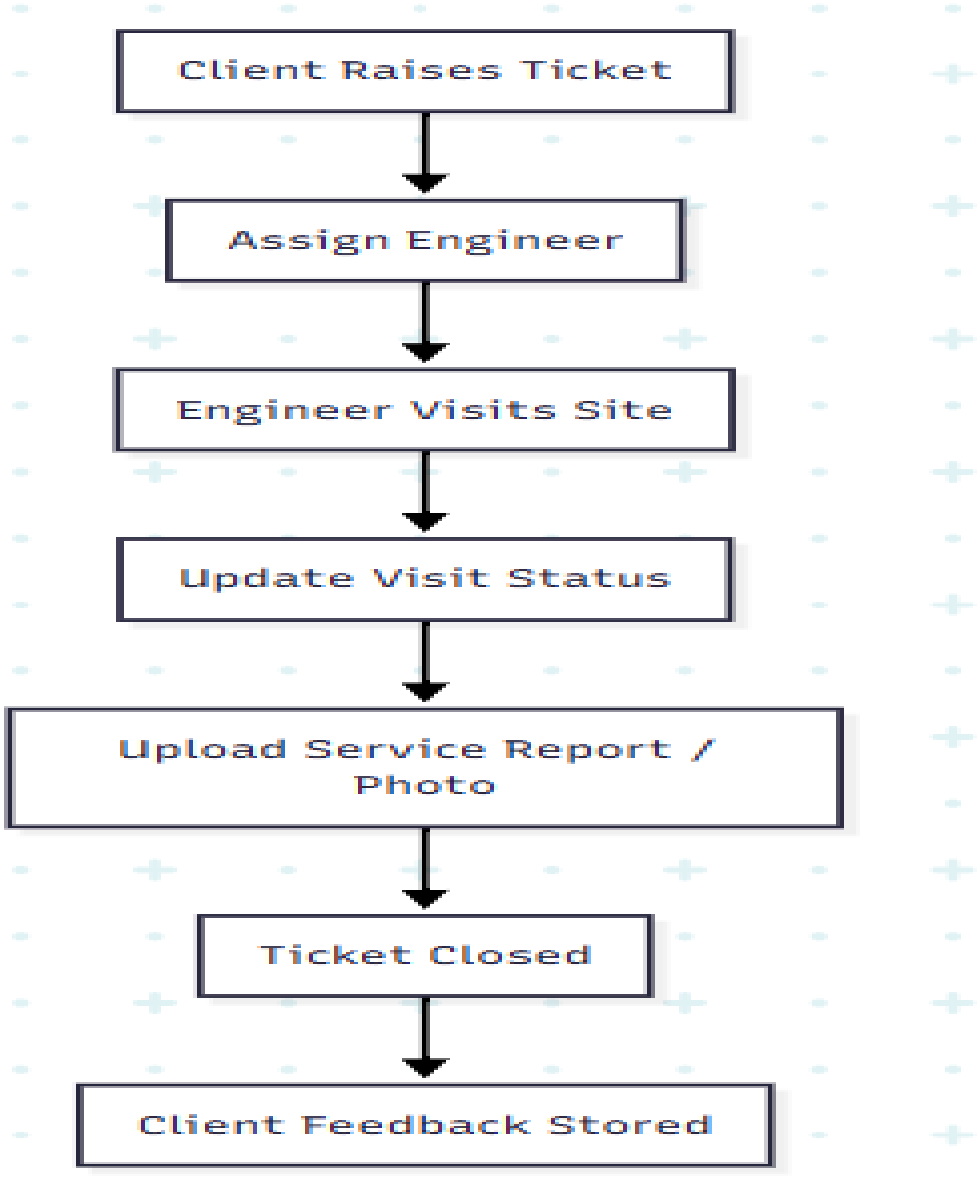
Purpose:

Manages service requests, field engineers, and visit status in real-time.

Submodules:

- Ticket Management
- Engineer Assignment
- Visit Logging & Report Uploads
- Ticket Closure Validation

Workflow:



4.4 Authentication & Role-Based Access Control

Role	Description
Admin	Controls all modules and configurations
Accountant	Manages invoices, payments, and reports
Engineer	Handles assigned service tickets
Client	Views tickets, invoices, and payment status

Roles Defined & Access Flow

The CRM + Accounting System implements Role-Based Access Control (RBAC) to ensure data privacy, hierarchical control, and workflow transparency.
Each role is mapped to specific privileges and restricted data visibility to maintain operational discipline and audit integrity.

4.4.1. Administrator

- Full system control and configuration access.
- Can create, assign, or revoke roles and permissions.
- Monitors all modules (CRM, Accounting, Analytics, Users).
- Approves financial reports and manages backup & compliance.

Key Access: All modules + security & settings.

4.4.2. Sales Manager

- Oversees the lead pipeline, follow-ups, and conversions.
- Assigns leads to executives and reviews performance analytics.
- Approves quotations and manages client feedback.

Key Access: Lead Management, Client Database, Quotation Module, Reports.

4.4.3. Sales Executive

- Manages daily client communication, follow-ups, and quotation creation.
- Updates lead stages and records call logs or meeting summaries.
- Can view assigned clients only (restricted access).

Key Access: Lead Management, Call Logs, Quotations.

4.4.4. Accountant / Finance Officer

- Handles invoices, payments, and financial summaries.
- Reviews and finalizes approved quotations.
- Access limited to accounting and reporting modules.

Key Access: Quotation (Approved Only), Invoice, Payment Reports.

4.4.5. Client (Portal Access)

- Secure self-service access to quotations, invoices, and payment status.
- Can raise service requests or feedback.

Key Access: Quotation View, Invoice View, Service Requests.

Access Flow Overview

Access flow follows a top-down authorization model:

1. Admin defines roles and permissions.
2. Sales Manager allocates leads and monitors progress.
3. Executives execute assigned operations.
4. Accountant processes financial approvals.
5. Clients interact via restricted portals.

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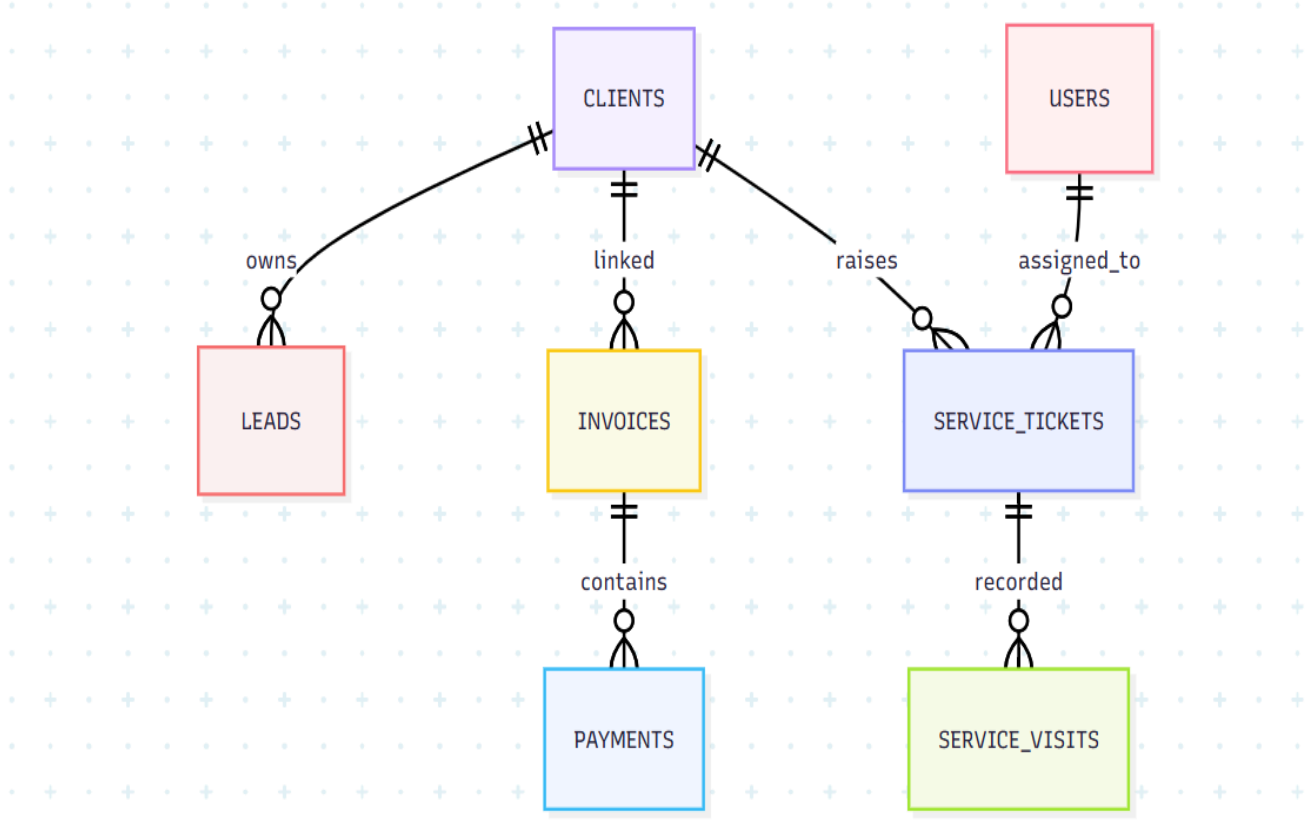
5. Database Design

5.1 Entity Relationship Overview



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6. API Architecture

Method	Endpoint	Description	Role
POST	/api/auth/login	Authenticate user	All
GET	/api/clients	Retrieve clients	Admin, Accountant
POST	/api/leads	Add lead	Admin
POST	/api/invoices	Generate invoice	Accountant
PUT	/api/tickets/{id}	Update service status	Engineer
GET	/api/reports/financial	Monthly reports	Admin

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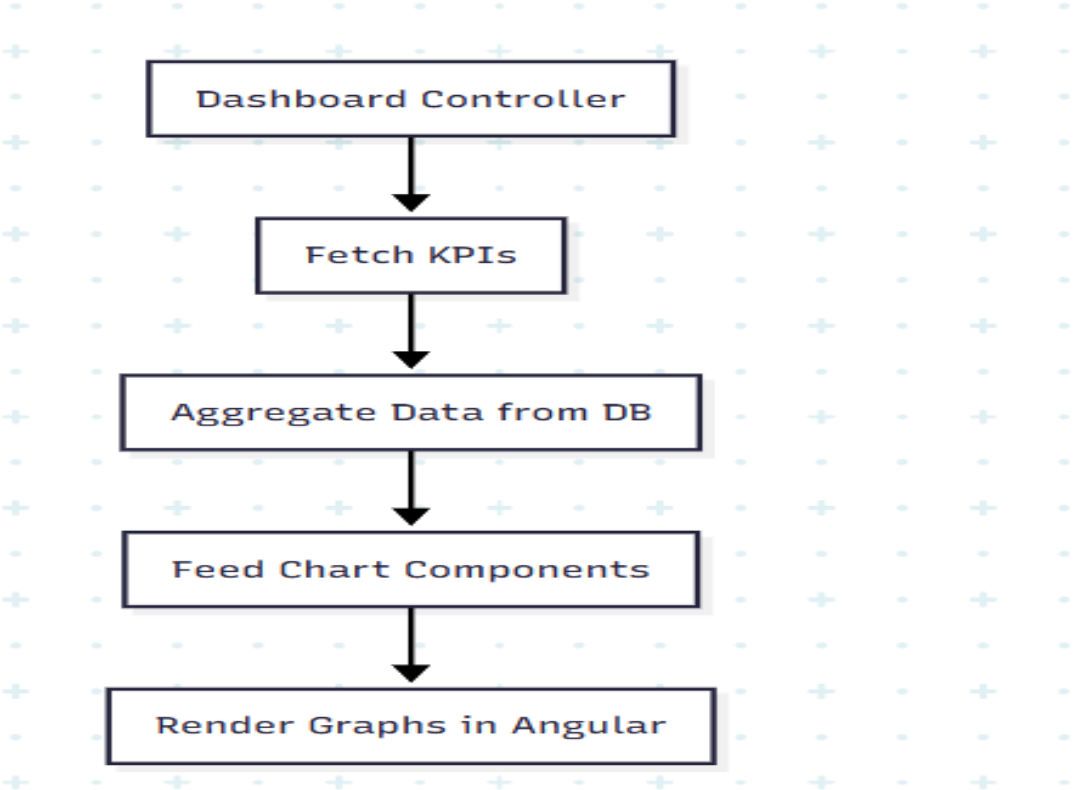
7. Dashboard & Reports

Displayed Metrics:

- Total Leads & Conversions
- Revenue Breakdown (Monthly/Yearly)
- Outstanding Invoices
- Service Performance by Engineer



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8. Security Infrastructure

Layer	Security Measure
Authentication	JWT-based token system
Encryption	BCrypt password hashing
Authorization	Role-based access policies
CORS	Domain-restricted API access
Audit Logs	Tracks all user actions
Input Validation	Prevents SQL & XSS attacks

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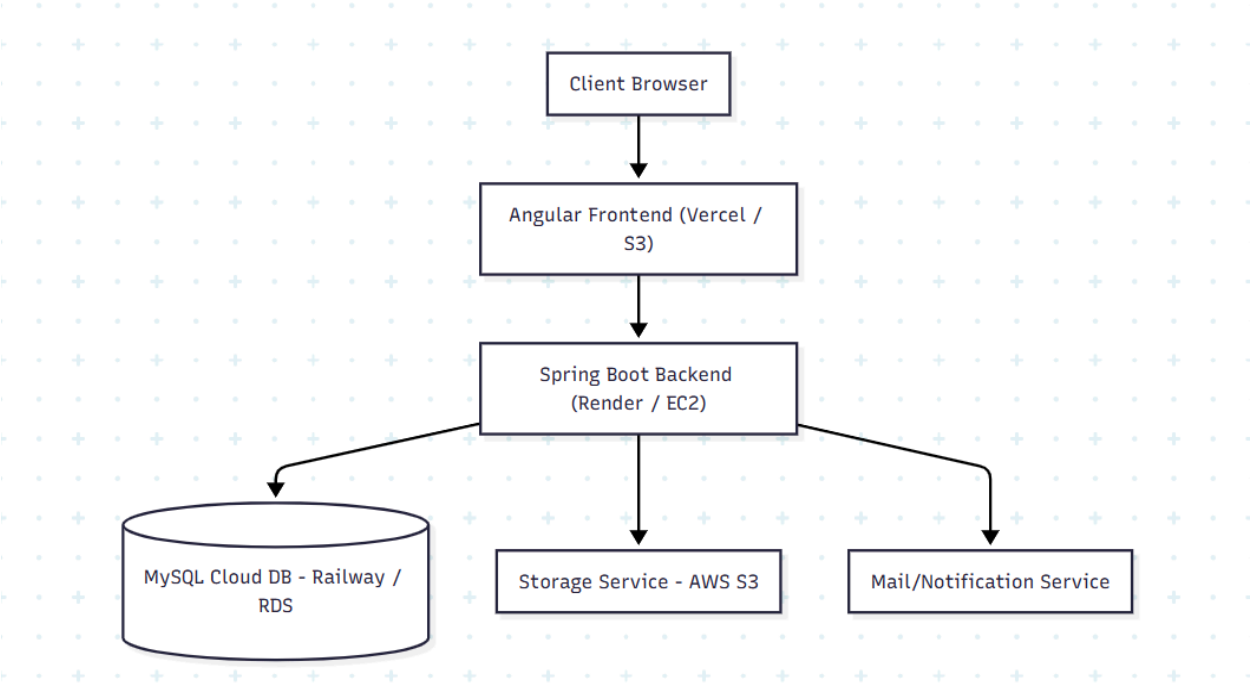
9. Deployment Architecture



Pipeline:

GitHub → CI/CD → Dockerized Spring Boot → Cloud Deployment (Render / AWS) → Auto Restart & Log Monitoring

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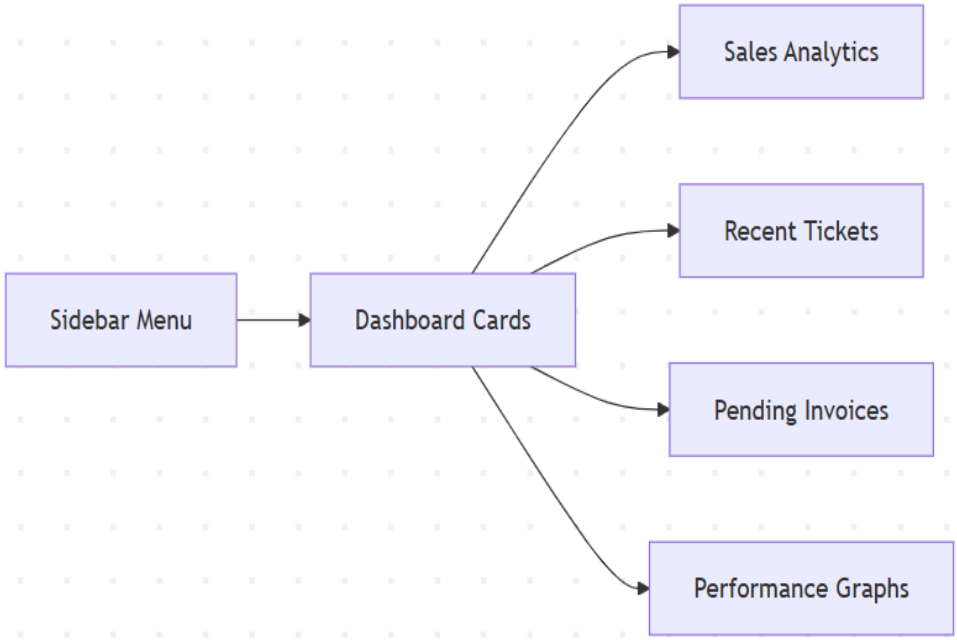
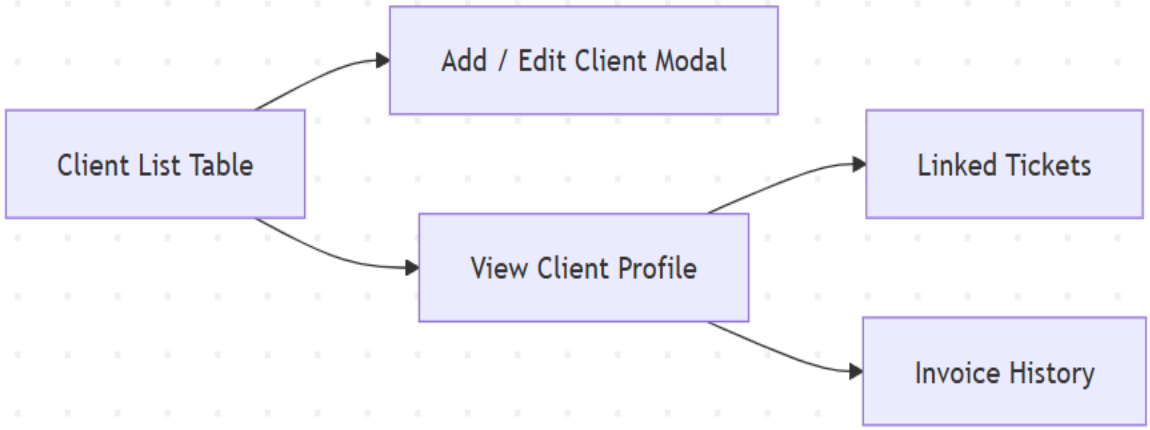
10. UI Wireframes

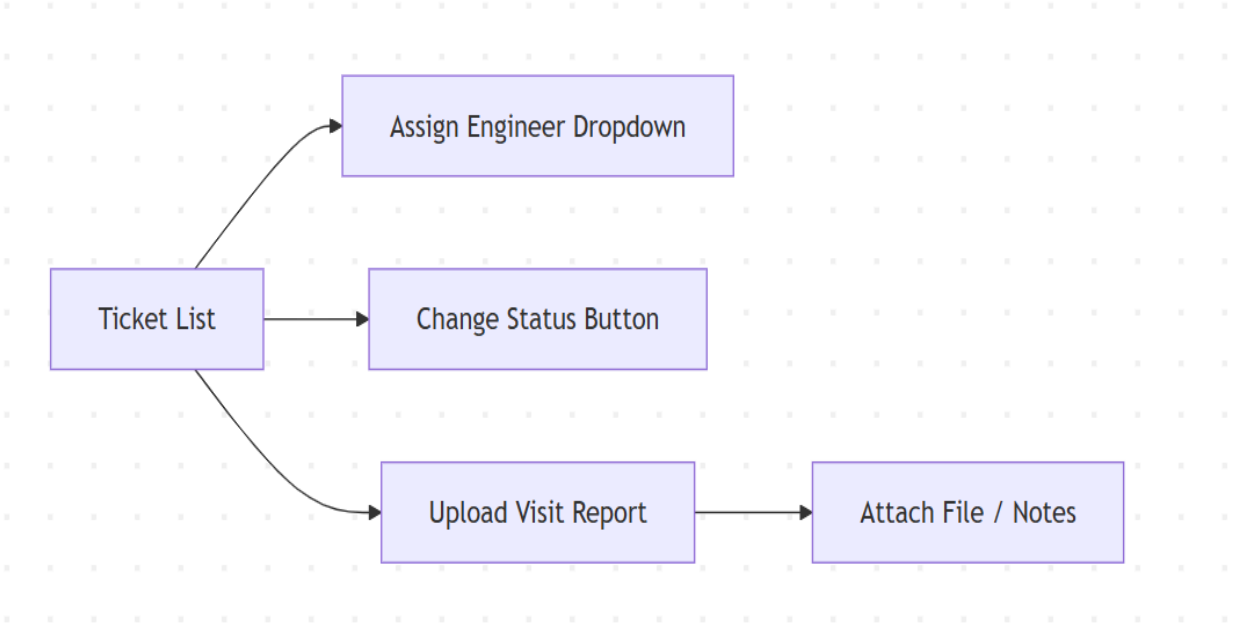
10.1 Dashboard View



10.2 Client Management View



10.3 Service Ticket Panel



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11. Future Enhancements

Area	Enhancement	Benefit
AI Lead Scoring	Use ML to predict lead conversion probability	Smart sales prioritization
Chatbot Integration	Auto-respond to client queries	24×7 engagement
Multilingual Support	English, Hindi, Spanish	Wider adoption
Invoice Auto-Mailer	Triggered when invoice generated	Saves manual work
Advanced BI Dashboards	Integrate Power BI or Metabase	Deeper analytics

12. Conclusion

This documentation provides a complete architectural and functional blueprint for a CRM + Accounting Management System capable of powering an enterprise-grade workflow.
It emphasizes modularity, scalability, and automation — ensuring that every client, developer, and business stakeholder can clearly understand its structure and potential.