

Masters' Union Assessment

Next-Gen CRM System Challenge

We're building a modern CRM platform using the MERN stack with PostgreSQL and are looking for engineers capable of designing scalable, real-world systems. This assessment will help us evaluate your ability to architect, code, and deliver production-grade web applications.

Overview

Your task is to design and develop a Customer Relationship Management (CRM) platform tailored for fast-scaling startups that need real-time insights, automated follow-ups, and collaborative workflows — all in one place.

Core Objective

Build a modular, scalable CRM with APIs and UI features that can handle real-world sales operations, user roles, and analytics.

Key Features to Implement

- Authentication & Role Management — Implement role-based access control (Admin, Manager, Sales Executive) with JWT-based authentication.
- Lead Management — CRUD operations for leads with tracking of ownership and history trail.
- Activity Timeline — Maintain a detailed log of notes, calls, meetings, and status changes per lead.
- Email & Notification System — Real-time WebSocket notifications and automated email triggers for updates.
- Dashboard & Analytics — Visualize performance metrics using charts (Chart.js or Recharts).
- Integration Layer (Bonus) — REST APIs or webhooks to connect with third-party tools like HubSpot or Slack.

Technical Requirements

- Frontend: React + Redux Toolkit (or Context API)
- Backend: Node.js + Express

- Database: PostgreSQL (with Sequelize or Prisma ORM)
- Real-time: Socket.io or WebSocket
- Authentication: JWT + Bcrypt
- Deployment: Dockerized environment (bonus)
- Testing: Jest / Mocha for at least one module

Evaluation Criteria

Category	Description
Architecture	Clean, modular, and scalable folder structure
Code Quality	Use of best practices, comments, and error handling
Database Design	Normalized schema with efficient relations (users ↔ leads ↔ activities)
API Design	RESTful, versioned, and well-documented endpoints
UI/UX	Intuitive React interface with state management
Performance	Handles concurrent users and real-time updates smoothly
Bonus	Docker setup, CI/CD pipeline, or test coverage

Deliverables

- GitHub repository (Frontend + Backend)
- README.md with setup guide, ER diagram, and API docs
- Hosted demo link (optional, but preferred)

Duration

The total duration for this assessment is ****24 hours**** from the time of assignment.