

# EDGE'S DATA MANAGEMENT SYSTEM FUNCTIONALITIES.

As part of the project, we need to develop a Data Management System for the company that will consist of three key modules:

- ❖ Magazine
- ❖ Equipment Pool
- ❖ Geotechnical Lab

Each of these modules will allow administrators and employees in their respective departments to manage data securely through CRUD operations. Additionally, the system will include an Administrator Dashboard to provide high-ranking individuals and directors with an overview of all data, including an estimation of the total net worth of the equipment registered across the three modules.

Below is a detailed list of requirements and functionalities that need to be implemented.

## 1. Module-Specific Requirements

### 1.1. Magazine Module

- ❖ **CRUD Operations:** Admins and employees should be able to create, read, update, and delete magazine records.
- ❖ **Inventory Management:** Track and manage the magazine inventory, including quantities and details of publications.
- ❖ **Reporting:** Include features for generating reports on magazine usage, subscriptions, and inventory status.
- ❖ **Search and Filters:** Advanced search and filtering capabilities for easier navigation through data.

### User Roles:

- ❖ **Magazine Administrators:** Full CRUD permissions.
- ❖ **Magazine Employees:** Limited permissions based on roles.

## **Authentication:**

- ❖ Separate login panel for magazine-related administrators and employees with secure role-based access.

## **1.2. Equipment Pool Module**

- ❖ **CRUD Operations:** Manage equipment records (add, view, update, delete).
- ❖ **Asset Tracking:** Ensure tracking of equipment status, condition, and location.
- ❖ **Inventory Control:** Manage and monitor inventory levels, usage, and asset locations.
- ❖ **Search and Filters:** Advanced search and filtering capabilities for easier navigation through data.

## **User Roles:**

- ❖ **Equipment Pool Administrators:** Full access to all equipment-related functionalities.
- ❖ **Equipment Pool Employees:** Limited access based on defined roles.

## **Authentication:**

- ❖ Secure login panel for equipment pool personnel.

## **1.3. Geotechnical Lab Module**

- ❖ **CRUD Operations:** Manage records for lab experiments and sample tracking.

## **User Roles:**

- ❖ **Geotechnical Lab Administrators:** Full access to all lab-related functionalities.
- ❖ **Geotechnical Lab Employees:** Limited access based on defined roles.

## **Authentication:**

- ❖ Separate login panel for geotechnical lab administrators and employees.

## **2. Administrator Dashboard**

The Administrator Dashboard will provide directors and other authorized personnel with a high-level view of the company's equipment and data across all modules. The goal is to estimate the company's total net worth based on registered equipment and assets.

### **Key Features:**

- ❖ **Data Aggregation:** Consolidated data from the Magazine, Equipment Pool, and Geotechnical Lab modules.
- ❖ **Search and Filters:** Advanced search and filtering capabilities for easier navigation through data.
- ❖ **Net Worth Estimation:** Calculate and display the total value of all equipment across the modules.
- ❖ **Data Visualization:** Use charts, graphs, and dashboards to provide insights into asset distribution, equipment status, and trends.
- ❖ **Reporting Tools:** Enable detailed reporting on equipment usage, inventory, and overall asset valuation.

### **Additional Functionalities:**

**Customizable Dashboards:** Allow directors and high-level users to customize the dashboard for specific data views.

**User Permissions:** Role-based access control, ensuring only authorized personnel can view certain data.

## **3. Authentication and Security**

- ❖ **Login Panels:** Dedicated login panels for each module (Magazine, Equipment Pool, Geotechnical Lab) and the Administrator Dashboard.
- ❖ **Authentication Mechanism:** Username and password for authentication, with two-factor authentication (2FA) for additional security.
- ❖ **Data Encryption:** Encrypt sensitive data in storage and during transmission.
- ❖ **Secure Communication:** Use HTTPS and secure channels for all data exchange.

## 4. Data Management

- ❖ **Centralized Database:** Ensure a unified, scalable database that can handle data across all modules.
- ❖ **Backup & Recovery:** Implement automated backup schedules and disaster recovery protocols.
- ❖ **Data Import/Export:** Provide tools to easily import and export data for integration with external systems or for backups.

## 5. Technical Requirements

For this project, the following tech stacks will be used:

- ❖ Frontend: React or Vue.js (feel free to choose based on your experience).
- ❖ Backend: Node.js (with Express).
- ❖ Database: MongoDB
- ❖ Hosting: We'll deploy the system on AWS or Azure based on company preference.

The system needs to be responsive and highly performant, especially when handling large datasets. Let's aim for an intuitive, user-friendly interface that requires minimal training.