ERP v1 – Filtered Functional Specification (Learning-Oriented)

1. Purpose of This Document

This document defines the **filtered and simplified scope** of an ERP system (ERP v1) created for **learning full-stack development**. It is derived from a large BA-level ERP document and intentionally reduced to focus on **core concepts** required for backend, frontend, database design, and interviews.

This ERP is **not enterprise-complete**. It is **engineer-complete**.

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2. Target Outcomes

By building this system, the developer will gain hands-on experience in: - Full-stack architecture (React + Python) - REST API design - Authentication & authorization - Relational database modeling (MySQL) - Role-based access control - Real-world business workflows

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3. Technology Stack (Planned)

- **Frontend:** React.js
- **Backend:** Python (FastAPI or Django)
- **Database:** MySQL
- **Authentication:** JWT-based auth
- **Architecture:** Monolithic REST API

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4. User Roles

The system supports the following roles:

4.1 Admin

- Full access to all modules
- Manages users, roles, and permissions

4.2 Manager

- Manages employees, inventory, and CRM records
- Approves leave requests

4.3 User (Employee)

- • Views own profile
- • Submits leave requests
- • Views assigned data

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5. Core Modules Overview

Included Modules (ERP v1)

1. Core Platform (Authentication & Authorization)
2. HR Management (Basic)
3. Inventory Management
4. CRM (Basic)
5. Dashboard & Reporting (Basic)

Explicitly Excluded (Out of Scope)

- • Payroll & Finance
- • Manufacturing
- • Procurement
- • Advanced BI / Analytics
- • Multi-company / multi-warehouse
- • External integrations

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6. Module Specifications

6.1 Core Platform Module

Purpose

Provides the foundation for security, access control, and system governance.

Functional Scope

- • User authentication (email + password)
- • JWT-based login & logout
- • Role-based access control (RBAC)
- • User management
- • Audit logging

Key Features

- Create, update, deactivate users
- Assign roles to users
- Protect APIs using role/permission checks
- Record audit logs for critical actions

Core Entities

- User
- Role
- Permission
- AuditLog

6.2 HR Management Module (Basic)

Purpose

Manages employee data and simple HR workflows.

Functional Scope

- Employee profiles
- Department assignment
- Leave request workflow

Key Features

- Create and manage employee records
- Assign employees to departments
- Submit leave requests
- Manager approval / rejection

Core Entities

- Employee
- Department
- LeaveRequest

Notes

- Payroll, recruitment, performance reviews are **excluded**

6.3 Inventory Management Module

Purpose

Tracks products and stock movement.

Functional Scope

- Product master data
- Stock in / stock out operations
- Stock adjustments
- Low stock alerts

Key Features

- Add and update products
- Record goods received (stock in)
- Record goods issued (stock out)
- Automatically update stock quantities

Core Entities

- Product
- InventoryTransaction

Notes

- Single warehouse only
- No barcode or forecasting features

6.4 CRM Module (Basic)

Purpose

Manages customer relationships and sales pipeline.

Functional Scope

- Customer management
- Lead tracking
- Opportunity pipeline

Key Features

- Create and manage customers
- Track leads
- Update opportunity status (e.g., New → In Progress → Won / Lost)

Core Entities

- Customer
- Lead
- Opportunity

Notes

- Campaigns, email marketing, SLA management are excluded

6.5 Dashboard & Reporting

Purpose

Provides high-level visibility into system activity.

Functional Scope

- Summary cards
- Recent activity tables

Key Features

- Total users, employees, products, customers
- Recent inventory transactions
- Recent leave requests

Notes

- Charts are optional
- No advanced analytics

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7. Non-Functional Requirements

- Secure password storage (hashing)
- Clean API structure
- Consistent error handling
- Simple, responsive UI

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8. Future Enhancements (Out of Scope for v1)

These features may be mentioned in interviews but are not implemented: - MFA / SSO - Payroll & finance - Notifications (email/SMS) - Advanced reporting - Microservices architecture

9. Summary

ERP v1 is a **learning-focused full-stack system** that demonstrates: - Real-world business modules - Backend–frontend integration - Database-driven design - Role-based workflows

This document represents **what is actually being built** — not what is theoretically possible.