## **SYSTEM OVERVIEW**

This document outlines the features, classes, and flow of an **Inventory Management System**, with separate sections for actors, core functionalities, and classes.

### ****Actors and Their Features****

#### 1. ****Admin Features****

* Manage users (Admins and Employers): Add, update, and delete.
* Oversee inventory: Add, update, or delete stock, and generate reports.
* System settings: Manage database backups or reset the inventory.
* View audit logs for stock changes and user activities.

#### 2. ****Employer Features****

* Manage stock: Add, update, or remove products.
* Track stock levels and inventory operations (low stock, out-of-stock items).
* Generate and export inventory reports in formats like PDF or CSV.

### ****Core Features****

#### 1. ****Stock Management****

* Add new products with details such as product ID, name, category, unit price, quantity, and reorder levels.
* Update product details or adjust stock levels (e.g., restock).
* Delete products no longer in inventory.
* Search and filter inventory (e.g., by low stock, out of stock, or category).

#### 2. ****Order Tracking****

* Record orders, including product details, order date, and fulfillment status.
* Track order history for audit purposes and generate reports.

#### 3. ****Supplier Management****

* **Core Data Tracked**:
  + Supplier Name and Contact Information (phone, email, address).
  + Product categories supplied.
  + Delivery performance history (on-time deliveries, delays).
* **Functions**:
  + Add new suppliers during setup or procurement.
  + Update supplier details like contact info or categories supplied.
  + Maintain supplier logs tied to inventory records or delivery performance.
* **Benefits**:
  + Centralized supplier database for procurement management.
  + Track supplier reliability via delivery reports and performance logs.
  + Improved decision-making for inventory management.

#### 4. ****Notifications****

* Automatic alerts for:
  + Low stock levels.
  + Products requiring reordering.

#### 5. ****Reporting and Analysis****

* Generate stock and supplier performance reports.
* Export reports in offline-friendly formats like PDF or CSV.

#### 6. ****Audit Logs****

* Record all changes to inventory and user actions (e.g., who updated stock, when it happened).

### ****Optimized Class Structure****

#### ****1. Core Classes****

1. **User (Base Class)**
   * **Attributes**: userID, name, email, password, role (Admin or Employer).
   * **Methods**: login(), logout(), viewDashboard().
2. **Admin (Inherits User)**
   * **Specific Methods**:
     + manageUsers()
     + viewAuditLogs()
     + generateReports()
3. **Employer (Inherits User)**
   * **Specific Methods**:
     + manageStock()
     + trackOrders()
     + viewReports()
4. **Product**
   * **Attributes**:
     + productID
     + name
     + category
     + unitPrice
     + quantity
     + reorderLevel
     + supplierID (link to the Supplier class).
   * **Methods**:
     + addProduct()
     + updateProduct()
     + deleteProduct()
     + checkStock()
5. **Order**
   * **Attributes**:
     + orderID
     + productList (array of products).
     + orderDate
     + status
     + supplierID (track supplier details in procurement).
   * **Methods**:
     + addOrder()
     + updateOrderStatus()
     + getOrderDetails()
6. **Report**
   * **Attributes**:
     + reportID
     + type (e.g., stock report or supplier performance).
     + generatedBy
     + date
   * **Methods**:
     + generateReport()
     + exportToFile()

#### ****2. Supplier Class****

This class consolidates all supplier-related functions and attributes.

* **Attributes**:
  + supplierID
  + name
  + contactInfo (email, phone, address)
  + productCategories
  + performanceHistory (e.g., number of late/on-time deliveries)
* **Methods**:
  + addSupplier(): Adds a new supplier to the database.
  + updateSupplierInfo(): Updates supplier details.
  + getSupplierDetails(): Retrieves supplier-specific information.
  + recordDeliveryPerformance(): Logs delivery performance for analysis.

#### ****3. Utility Classes****

1. **DatabaseManager**
   * Handles CRUD operations for storing and retrieving data.
   * Works with a local database like SQLite for offline functionality.
2. **Logger**
   * Records system activities such as stock updates, user logins, and order processing for audit purposes.

### ****System Flow****

#### ****1. Login****

* Admins and Employers log in, leading to their role-specific dashboards.

#### ****2. Dashboards****

* **Admin Dashboard**:
  + Manage users, oversee inventory, generate reports, and view audit logs.
* **Employer Dashboard**:
  + Focus on stock management and order tracking.

#### ****3. Inventory Management****

* Add, update, or remove products.
* Track inventory with search and filter options (low stock, category, etc.).

#### ****4. Order Management****

* Record incoming and outgoing orders.
* Update order statuses and track fulfillment progress.

#### ****5. Supplier Management****

* Add, update, and review supplier information.
* Link inventory records to supplier details.
* Analyze supplier performance for better procurement decisions.

#### ****6. Reporting****

* Generate stock, order, and supplier performance reports.
* Export reports to offline formats (PDF, CSV).

#### ****7. Audit Logs****

* Record every change in the system for accountability and traceability.

### ****Summary of Classes****

* **Core Classes**:
  + User, Admin, Employer, Product, Order, Report, Supplier
* **Utility Classes**:
  + DatabaseManager, Logger