**Pharmaceutical Management System**

**Project**

**Objective:**

* Design a structured and relational database for managing the pharmaceutical manufacturing process.
* Track raw material procurement, testing, and usage in medicine production.
* Manage the production and quality testing of medicines effectively.
* Maintain accurate stock records of tested and approved medicines.
* Record and monitor customer orders and automate dispatch tracking.
* Implement stored procedures for generating reports and analyzing production status.
* Ensure data integrity and traceability across all stages of the manufacturing workflow using foreign key constraints.

**Why This Project?**

This project was chosen to address these challenges by creating a centralized and well-structured SQL-based database system that streamlines all critical aspects of the manufacturing workflow. It helps in:

* Maintaining accurate records of raw materials and medicines.
* Ensuring quality checks are traceable and well-documented.
* Managing stock efficiently after quality approvals.
* Keeping track of customer orders and dispatches.
* Reducing data redundancy and improving consistency with relational integrity.

By implementing this database system, the overall efficiency, accuracy, and traceability of the pharmaceutical manufacturing process can be significantly improved.

**Features:**

* **Raw Material Management:**
* Records details of raw materials received from suppliers.
* Tracks quantity and quality test status.
* **Medicine Production Tracking:**
* Stores information about manufactured medicines.
* Links each medicine with the raw materials used.
* **Quality Testing System:**
* Maintains records of raw material and medicine test results.
* Supports approval/rejection status tracking.
* **Stock Management:**
* Tracks tested and approved medicines available in stock.
* Updates stock after production and quality approval.
* **Order Processing:**
* Manages customer orders with medicine IDs and quantities.
* Records date-wise order details.
* **Dispatch Management:**
* Handles dispatch status for each order.
* Supports default and real-time status tracking (e.g., "in\_progress", "completed").
* **Stored Procedures for Reporting:**
* Automatically generates medicine status reports on a selected date using procedures.
* Automatically generates raw material status reports on a selected date using procedures.
* Automatically generates production medicine reports on a selected date using procedures.
* Automatically generates raw material stock reports on a selected date using procedures.
* Automatically generates orders reports on a selected date using procedures.
* Automatically generates dispatch reports on a selected date using procedures.
* Raw Material Usage :
* Purpose: Checks if required raw material quantity is available before allowing production.
* Benefit: Prevents production if raw material stock is insufficient.
* **Relational Database with Foreign Key Constraints:**
* Ensures data integrity across all tables.
* Maintains consistent links between raw material, production, orders, and dispatch.
* **Triggers Used to automate :**
* **Stock Update Trigger (After Insert on Raw**\_test**)**
* **Purpose:** When a raw material passes the quality test and is inserted into the **Raw**\_test table, the corresponding quantity is automatically added to the Raw\_Pass\_Stock or Raw\_Fail\_Stock table.
* **Trigger Type:** AFTER INSERT
* **Benefit:** No need to manually update stock after test approval or rejection .
* **Stock Update Trigger (After Insert on** Quality\_test**)**
* **Purpose:** When a medicine passes the quality test and is inserted into the Quality\_test table, the corresponding quantity is automatically added to the stock\_pass or stock\_fail table.
* **Trigger Type:** AFTER INSERT
* **Benefit:** No need to manually update stock after test approval or rejection .

**Implementation Steps:**

* Database design and schema development.
* Populate tables with sample data for testing.
* Create and test stored procedures and triggers.

**ER MODEL :**

