Civil Engineering Materials Inventory Management System using SQL

Project Description:

The project involves creating a database system to manage the inventory of materials used in civil engineering projects. This system will track materials, their quantities, suppliers, and transactions related to these materials.

Database Structure:

1. **Materials Table:**
    - **Columns:** material_id, material_name, unit, current_stock, minimum_stock_level, supplier_id
2. **Suppliers Table:**
    - **Columns:** supplier_id, supplier_name, contact_person, phone, email
3. **Transactions Table:**
    - **Columns:** transaction_id, material_id, transaction_date, transaction_type (inward or outward), quantity, remarks

Functionality:

4. **Material Management:**
    - Add new materials to the database.
    - Update existing material details (e.g., current stock, minimum stock level).
    - Remove materials (soft delete).
5. **Supplier Management:**
    - Add new suppliers to the database.
    - Update supplier details.
    - View supplier information.
6. **Transaction Management:**
    - Record inward transactions (materials received from suppliers).
    - Record outward transactions (materials issued for projects).

- View transaction history.

7. **Reporting:**
    - Generate reports such as current stock levels of materials.
    - Alert for materials below the minimum stock level.
    - Supplier-wise transaction summaries.

Queries:

Retrieve all materials below the minimum stock level.

SQL :

```
SELECT *
FROM materials
WHERE current_stock < minimum_stock_level;
```

Calculate total quantity of a specific material received from all suppliers.

SQL :

```
SELECT material_name, SUM(quantity) AS total_received
FROM transactions
JOIN materials ON transactions.material_id = materials.material_id
WHERE transaction_type = 'inward'
AND materials.material_name = 'Concrete'
GROUP BY material_name;
```

List all suppliers along with their contact details.

SQL :

```
SELECT supplier_name, contact_person, phone, email
FROM suppliers;
```