**Case Study: Manufacturing Equipment Maintenance System**

**Problem Statement:**

Design and implement a Manufacturing Equipment Maintenance System using Oracle SQL and PL/SQL. The system will be used to manage equipment details, maintenance schedules, and maintenance logs. Your task is to create the necessary database schema, populate the database with sample data, and develop PL/SQL procedures to handle scheduling maintenance, logging maintenance activities, and generating maintenance reports.

**Requirements:**

1. **Equipment Management**:
   * Implement the functionality to add, update, delete, and search for equipment.
   * Ensure that each equipment has attributes such as EQUIPMENT\_ID, NAME, TYPE, PURCHASE\_DATE, LAST\_MAINTENANCE\_DATE, and STATUS.
2. **Maintenance Schedule Management**:
   * Implement the functionality to create, update, delete, and track maintenance schedules.
   * Ensure that each schedule has attributes such as SCHEDULE\_ID, EQUIPMENT\_ID, MAINTENANCE\_DATE, and DESCRIPTION.
3. **Maintenance Log Management**:
   * Implement the functionality to log and track maintenance activities.
   * Ensure that each log has attributes such as LOG\_ID, EQUIPMENT\_ID, LOG\_DATE, DESCRIPTION, and STATUS.

**Tasks:**

1. **Design the Database Schema**:
   * Create the Equipment, MaintenanceSchedules, and MaintenanceLogs tables with the appropriate fields and constraints.
   * Define primary keys and foreign keys to maintain data integrity.
2. **Populate the Database with Sample Data**:
   * Insert sample records into the Equipment, MaintenanceSchedules, and MaintenanceLogs tables to facilitate testing of the system.
3. **Develop PL/SQL Procedures**:
   * Create a procedure to handle maintenance scheduling. The procedure should insert a new schedule record and update the equipment's status.
   * Create a procedure to log maintenance activities. The procedure should insert a new log record and update the last maintenance date of the equipment.
   * Create a procedure to generate maintenance reports, including details such as equipment information, maintenance schedules, and maintenance logs.

**Expected Outcomes:**

1. **Equipment Table**:
   * Contains all information about the equipment in the manufacturing facility.
2. **MaintenanceSchedules Table**:
   * Tracks the maintenance schedules for each piece of equipment.
3. **MaintenanceLogs Table**:
   * Logs the maintenance activities performed on each piece of equipment.
4. **PL/SQL Procedures**:
   * Efficiently manage maintenance scheduling, logging activities, and generating maintenance reports, maintaining accurate records in the database.

**Deliverables:**

1. SQL scripts to create the Equipment, MaintenanceSchedules, and MaintenanceLogs tables.
2. SQL scripts to insert sample data into the tables.
3. PL/SQL scripts for the procedures to handle maintenance scheduling, logging activities, and generate maintenance reports.
4. Documentation explaining how to set up and use the system, including how to run the PL/SQL procedures.

**Database Schema:**

1. **Equipment Table**:
   * **EQUIPMENT\_ID**: Number, Primary Key
   * **NAME**: Varchar2(100)
   * **TYPE**: Varchar2(50)
   * **PURCHASE\_DATE**: Date
   * **LAST\_MAINTENANCE\_DATE**: Date
   * **STATUS**: Varchar2(50)
2. **MaintenanceSchedules Table**:
   * **SCHEDULE\_ID**: Number, Primary Key
   * **EQUIPMENT\_ID**: Number, Foreign Key References Equipment(EQUIPMENT\_ID)
   * **MAINTENANCE\_DATE**: Date
   * **DESCRIPTION**: Varchar2(255)
3. **MaintenanceLogs Table**:
   * **LOG\_ID**: Number, Primary Key
   * **EQUIPMENT\_ID**: Number, Foreign Key References Equipment(EQUIPMENT\_ID)
   * **LOG\_DATE**: Date
   * **DESCRIPTION**: Varchar2(255)
   * **STATUS**: Varchar2(50)

**Case Study Task:**

* **Design**: Create the database schema as provided.
* **Implement**: Insert sample data into the tables.
* **Develop**: Write PL/SQL procedures for handling maintenance scheduling, logging activities, and generating maintenance reports.
* **Test**: Test the procedures with various scenarios (e.g., scheduling maintenance, logging maintenance, generating reports, ensuring proper updates).