**Case Study: Manufacturing Production Planning System**

**Problem Statement:**

Design and implement a Manufacturing Production Planning System using Oracle SQL and PL/SQL. The system will be used to manage production schedules, resource allocation, and production tracking. Your task is to create the necessary database schema, populate the database with sample data, and develop PL/SQL procedures to handle production planning, resource allocation, and generating production reports.

**Requirements:**

1. **Production Schedule Management**:
   * Implement the functionality to create, update, delete, and search for production schedules.
   * Ensure that each schedule has attributes such as SCHEDULE\_ID, PRODUCT\_ID, START\_DATE, END\_DATE, and STATUS.
2. **Resource Allocation**:
   * Implement the functionality to allocate resources for production.
   * Ensure that each allocation record has attributes such as ALLOCATION\_ID, SCHEDULE\_ID, RESOURCE\_TYPE, RESOURCE\_ID, QUANTITY, and STATUS.
3. **Production Tracking**:
   * Implement the functionality to track production progress.
   * Ensure that each production log has attributes such as LOG\_ID, SCHEDULE\_ID, PRODUCTION\_DATE, QUANTITY\_PRODUCED, and NOTES.

**Tasks:**

1. **Design the Database Schema**:
   * Create the ProductionSchedules, ResourceAllocations, and ProductionLogs 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 ProductionSchedules, ResourceAllocations, and ProductionLogs tables to facilitate testing of the system.
3. **Develop PL/SQL Procedures**:
   * Create a procedure to handle production schedule management. The procedure should insert, update, and delete production schedules.
   * Create a procedure to manage resource allocation. The procedure should insert, update, and delete resource allocation records.
   * Create a procedure to track production progress. The procedure should insert production log records and update schedule status.
   * Create a procedure to generate production reports, including details such as production schedule information, resource allocations, and production progress.

**Expected Outcomes:**

1. **ProductionSchedules Table**:
   * Contains all information about the production schedules for different products.
2. **ResourceAllocations Table**:
   * Tracks the resource allocations for each production schedule.
3. **ProductionLogs Table**:
   * Records the production progress for each production schedule.
4. **PL/SQL Procedures**:
   * Efficiently manage production schedules, resource allocations, and production progress tracking, maintaining accurate records in the database.

**Deliverables:**

1. SQL scripts to create the ProductionSchedules, ResourceAllocations, and ProductionLogs tables.
2. SQL scripts to insert sample data into the tables.
3. PL/SQL scripts for the procedures to handle production schedule management, resource allocation, production progress tracking, and generating production reports.
4. Documentation explaining how to set up and use the system, including how to run the PL/SQL procedures.

**Database Schema:**

1. **ProductionSchedules Table**:
   * **SCHEDULE\_ID**: Number, Primary Key
   * **PRODUCT\_ID**: Number
   * **START\_DATE**: Date
   * **END\_DATE**: Date
   * **STATUS**: Varchar2(50)
2. **ResourceAllocations Table**:
   * **ALLOCATION\_ID**: Number, Primary Key
   * **SCHEDULE\_ID**: Number, Foreign Key References ProductionSchedules(SCHEDULE\_ID)
   * **RESOURCE\_TYPE**: Varchar2(50)
   * **RESOURCE\_ID**: Number
   * **QUANTITY**: Number
   * **STATUS**: Varchar2(50)
3. **ProductionLogs Table**:
   * **LOG\_ID**: Number, Primary Key
   * **SCHEDULE\_ID**: Number, Foreign Key References ProductionSchedules(SCHEDULE\_ID)
   * **PRODUCTION\_DATE**: Date
   * **QUANTITY\_PRODUCED**: Number
   * **NOTES**: Varchar2(255)

**Case Study Task:**

* **Design**: Create the database schema as provided.
* **Implement**: Insert sample data into the tables.
* **Develop**: Write PL/SQL procedures for handling production schedule management, resource allocation, production progress tracking, and generating production reports.
* **Test**: Test the procedures with various scenarios (e.g., creating production schedules, allocating resources, tracking production progress, generating reports, ensuring proper updates).