**Departments and Modules**

**Inventory Department**

* Parts Inventory Management Module
  + Parts (part\_id, name, supplier, price, quantity, received\_date)
* Finished Products Inventory Management Module
  + Products (product\_id, name, category, price, quantity)

**Purchasing Department**

* Supplier Management Module
  + Suppliers (supplier\_id, name, contact\_info)
* Parts Purchase Orders Module
  + PurchaseOrders (order\_id, part\_id, supplier\_id, quantity, order\_date, expected\_delivery\_date)

**Sales Department**

* Customer Orders Management Module
  + CustomerOrders (order\_id, customer\_id, product\_id, quantity, order\_date, delivery\_deadline)
* Customer Management Module
  + Customers (customer\_id, name, contact\_info)

**Production Department**

* Production Scheduling Module
  + ProductionSchedule (schedule\_id, product\_id, start\_date, end\_date, quantity)
* Production Line Management Module
  + ProductionLine (line\_id, product\_id, status, start\_date, end\_date)

**Finance Department**

* Cost Management Module
  + Costs (cost\_id, part\_id, product\_id, cost\_type, amount, date)
* Final Product Pricing Module
  + Pricing (pricing\_id, product\_id, base\_price, markup\_percentage, final\_price)

**Interdepartmental and Module Connections**

**Inventory and Production:** Parts inventory is transferred from the Inventory Department to the Production Department. Parts inventory is used for production scheduling and production line management.

**Inventory and Sales:** Finished products inventory is used to fulfill customer orders from the Inventory Department.

**Purchasing and Inventory:** Parts purchase orders are added to the parts inventory in the Inventory Department upon receipt.

**Sales and Production:** Customer orders are sent to production scheduling and the production line to produce the required products.

**Finance and All Departments:** Cost management and final product pricing are conducted based on the information provided by all departments.

**Entity Relationships:**

1. Suppliers (1) <--> (M) Parts
2. Suppliers (1) <--> (M) PurchaseOrders
3. Parts (1) <--> (M) PurchaseOrders
4. Parts (1) <--> (M) ProductionLine
5. Products (1) <--> (M) CustomerOrders
6. Customers (1) <--> (M) CustomerOrders
7. Products (1) <--> (M) ProductionSchedule
8. Products (1) <--> (M) ProductionLine
9. Products (1) <--> (1) Pricing
10. Parts (1) <--> (M) Costs
11. Products (1) <--> (M) Costs

**Flows and Possible Operations in Departments**

**Inventory Department**

1. Parts Inventory Management:
   1. Add new parts to inventory
   2. Update parts inventory
   3. Remove parts from inventory
2. Finished Products Inventory Management:
   1. Add finished products to inventory
   2. Update product inventory
   3. Remove products from inventory

**Purchasing Department**

1. Supplier Management:
   1. Add new supplier
   2. Update supplier information
   3. Remove supplier
2. Parts Purchase Orders:
   1. Create new purchase order
   2. Update purchase order
   3. Track purchase order status

**Sales Department**

1. Customer Orders Management:
   1. Create new order
   2. Update order
   3. Track order status
2. Customer Management:
3. Add new customer
4. Update customer information
5. Remove customer

**Production Department**

1. Production Scheduling:
   1. Create new production schedule
   2. Update production schedule
   3. Track production status
2. Production Line Management:
   1. Start product production
   2. Monitor production line status
   3. Complete product production

**Finance Department**

1. Cost Management:
   1. Record costs related to parts and products
   2. Calculate final costs
2. Final Product Pricing:
   1. Set base product prices
   2. Add profit margin percentage
   3. Calculate final prices