odoo

You can choose any one problem statement out of given two!

All the best!

Problem Statement 1:-

Manufacturing - *From Order to Output, All in One Flow*

Problem Statement

Develop a modular manufacturing management application that enables businesses to create, track, and manage their end-to-end production process digitally.The platform aims to replace fragmented spreadsheets and manual tracking with a centralized, user-friendly platform.

Key Challenges in Existing Manufacturing Process:

1. Fragmented systems for manufacturing orders, stock management, and BOM (Bill of Materials).
2. Lack of visibility into production stages and work order progress.
3. No dynamic filtering/dashboard to quickly see order status.
4. Limited integration between stock, production, and reporting.
5. Manual paperwork for BOMs, stock ledgers, and reports → prone to errors.

Target Users

1. Manufacturing Managers – oversee production orders and workflows.
2. Operators / Shop-floor Workers – execute assigned work orders and update status.
3. Inventory Managers – track stock movement, raw material usage, and ledger balance.
4. Business Owners / Admins – monitor overall production KPIs, generate reports, and ensure traceability.

Use Case Scenarios

1. Authentication & Access
    - User signs up/logs in.
    - Redirected to Manufacturing App Dashboard.

2. Dashboard & Filtering
    - The landing page lists all manufacturing orders.
    - Dynamic dashboard filter → by order state (Planned, In Progress, Done, Canceled).

3. Navigation via Master Menu (Right Sidebar)
    - Manufacturing Orders: Create and track production orders.(same app dashboard)
    - Work Orders: Assign and manage work steps for operators.
    - Work Centers: Manage machines/locations capacity, downtime, and utilization.
    - Stock Ledger: Track material movement and inventory balance.
    - Bills of Material (BOM): Define material requirements per finished good.

4. Profile & Setup (Left Sidebar)
    - Click avatar → side profile menu opens.
    - Options: *My Profile*, *My Reports*.

Authentication

- Common Login/Signup Page for all users.
- OTP verification for forgot password.

Core Features

End User (Manufacturing Manager / Admin/ User)

- Dashboard View:
    - Real-time list of all manufacturing orders.
    - Component availability
    - Filters by status/state.
    - Quick KPIs: Orders completed, in-progress, delayed.

- Manufacturing Orders:
    - Create/edit/delete production orders.
    - Attach BOMs, work centers, deadlines.
    - Track progress & dependencies.

- Work Orders:
    - Assign to operators.
    - Track status updates (Started, Paused, Completed).
    - Capture comments, issues, delays.

- Work Centers:

    - Work Center costing per hour

- Stock Ledger:
    - Real-time movement of raw materials & finished goods.
    - Automatic updates after work order completion.
    - Product creation and maintain stock

- BOM (Bill of Materials):
    - Set material quantities,components and work orders
    - Link BOM to manufacturing orders.

Profile & Reports

- Profile Menu (Left Side):
    - *My Profile* – update personal details, password.
      Profile Reports – view own completed work orders or tasks also check total work duration report.

Additional Features

- Analytics dashboard: Production throughput, order delays, resource utilization.
- Exportable reports (Excel/PDF) for user.
- Scalable architecture → new modules (Quality Check, Maintenance) can be added later.

Mockup: [See the Blueprint]

Good to know concept in Manufacturing

- **Bill of Materials (BoM):** Recipe of raw materials and operations needed to make a product.
- **Manufacturing Order (MO):** A process form to manufacture a product of a defined quantity.
- **Work Orders (WO):**Operations/ Jobs required to manufacture a product
- **Work Centers:** Machines/ Workshop where manufacturing operations take place.
- **Stock Ledger/ Product Master :** Create products and maintain stock availability.

Understanding Bill of Materials (BoM)

- A BoM defines how a product is built.
- It lists components (raw materials) required to make a finished product.

👉 Example:
Product: Wooden Table – Quantity –1 Unit

BoM Recipe

Components	Operations
4 × Wooden Legs	Assembly -60 mmins
1 × Wooden Top	Painting -30 mins
12 × Screws	Packing -20 mins
1 × Varnish Bottle	

When an MO is created for 1 Wooden Table, It should automatically populate the recipe and adjust the recipe based on MO quantity to be produced.

Manufacturing Order (MO)

- Once you have a requirement for a Wooden Table, create a Manufacturing Order (MO)to manufacture it.

- The MO should contain:
    - Finished Product (what to produce).
    - Quantity to produce.
    - Schedule Start Date
    - Assignee
    - Raw Materials (auto-fetched from BoM).

Work Order/Operations

- A Work Order (WO) is a step in the manufacturing process.
- When you confirm a Manufacturing Order (MO), it allows you to work on operations with a start/pause button.

👉 Example: To produce a Wooden Table:

Assembly **@ *Assembly LIne*** for 60 mins
Painting **@ *Paint Floor*** for 30 mins
Packing **@ *Packaging Line*** for 20 mins

Each of these steps is a Work Order under the same MO.

Work Center

- A Work Center is a physical location, machine, or team where a Work Order is executed.

👉 Example:
- ***Assembly Line*** → Work Center for Assembly step.
- ***Paint Floor*** → Work Center for Painting
- ***Packaging Line*** → Work Center for Packaging.

Production of Finished Goods

- After consumption, the system **adds finished goods** to stock.
- This increases the inventory of the final product (tables, chairs, etc.).

Stock Ledger / Product Master

- The **Stock Ledger** records every material movement in the system.

👉 Example (from file flow): When making ***10 Units Wooden Tables***:

• **Stock Out (Consumption)** **Negative Product Movement** Legs: - 40 Units Tops: -10 Units Screws: -120 Units Varnish: -10 Bottles	• **Stock In (Production)** **Positive Product Movement** Tables: +10 Units

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What Students Need to Understand

- **MO is the big container** → Holds everything.
- **WO are sub-steps** → Break MO into tasks.
- **Work Centers are resources** → Where the tasks are executed.
- **Stock Ledger is the evidence** → Tracks every material in & out and show available stock

Problem Statement 2:-

Shiv Accounts Cloud: Orders, Invoices & Real-Time Reports

1. Overview

A cloud-based accounting system for **Shiv Furniture** that enables:

- Entry of core master data (Contacts, Products, Taxes, Chart of Accounts).
- Smooth recording of sales, purchases, and payments using the master data.
- Automated generation of financial and stock reports like Balance Sheet, Profit & Loss (P&L), and Stock Statement.

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2. Primary Actors

- **Admin (Business Owner)** – Creates/ Modify/ Archived Master Data, Record Transaction and View Report
- **Invoicing User (Accountant)** – Creates Master Data, Records Transactions, Views Reports.
- **Contact -** Contact users can be created when creating **Contact Master** data. Only view their own invoice/bills and make payment.
- **System** – Validates data, computes taxes, updates ledgers, and generates reports.

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3. Master Data Modules

1. **Contact Master**

- Fields: Name, Type (Customer/Vendor/Both), Email, Mobile, Address (City, State, Pincode), Profile Image.
- Example:
  - Vendor: *Azure Furniture*
  - Customer: *Nimesh Pathak*

2. **Product Master**
   - Fields: Product Name, Type (Goods/Service), Sales Price, Purchase Price, Sale Tax %, Purchase Tax %, HSN Code, Category.
   - Example: Office Chair, Wooden Table, Sofa, Dining Table.

3. **Tax Master**
   - Fields: Tax Name, Computation Method (Percentage/Fixed Value), Applicable on Sales/Purchase.
   - Example: GST 5%, GST 10%.

4. **Chart of Accounts Master**

   Concept : Chart of Accounts (CoA) is essentially the master list of all ledger accounts used to classify every financial transaction in an organization. Each account in the CoA acts like a category or bucket where related transactions are grouped (e.g., Cash, Bank, Sales Income, Purchase Expense).

   Fields: Account Name, Type (Asset, Liability, Expense, Income, Equity).

   - Example:
     - Assets: Cash, Bank, Debtors,
     - Liabilities : Creditors
     - Income: Sale Income
     - Expenses: Purchases Expense

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4. Transaction Flow

Users can use master data to create and link transactions:

Process	Details/Fields
Purchase Order	Select Vendor, Product, Quantity, Unit Price, Tax (5%/10%).
Vendor Bill	Convert PO to Bill, record invoice date, due date, and register payment (Cash/Bank).
Sales Order	Select Customer, Product, Quantity, Unit Price, Tax.
Customer Invoice	Generate Invoice from SO, set tax and receive payment via Cash/Bank.
Payment	Register against bill/invoice - select bank or cash.

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5. Reporting Requirements

After transactions are recorded, the system must generate:

1. **Balance Sheet** – Real-time snapshot of Assets, Liabilities, and Equity.
2. **Profit & Loss Account** – Income from product sales minus purchases/expenses to show net profit.
3. **Stock Account / Inventory Report** – Current quantity, valuation, and movement of products (e.g., Office Chair stock level).

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6. Key Use-Case Steps

6.1 Create Master Data

1. Users
2. Adds Contacts (e.g., Azure Furniture, Nimesh Pathak).
3. Adds Products (e.g., Wooden Chair with Sales Tax 5%).

4. Defines Tax rates (5%, 10%).
5. Sets up Chart of Accounts.

6.2 Record Purchase

1. User creates Purchase Order for *Azure Furniture*.
2. On receipt, user converts PO to Vendor Bill.
3. Payment recorded via Bank.

6.3 Record Sale

1. User creates Sales Order for *Nimesh Pathak* for 5 Office Chairs.
2. Generates Customer Invoice.
3. Payment recorded via Cash / Bank

6.4 Generate Reports

1. User selects reporting period.
2. System compiles:
    - Balance Sheet showing Assets & Liabilities.
    - Profit & Loss showing total sales, purchases, expenses, and net profit.
    - Stock report showing Purchased Qty (+), Sales Qty (-), Available

Mockup Link - https://link.excalidraw.com/l/65VNwvy7c4X/AtwSUrDjbwK

Good to know concept in Accounting

- **Chart of Accounts (CoA)**

A structured list of all accounts used in the company's financial system. Contains Assets, Liabilities, Income, Expenses, and Equity accounts. Example: Cash, Bank, Accounts Receivable, Sales Revenue, Purchases, etc.

- **Profit and Loss Report (P&L)**

Also called Income Statement. Shows company's revenues, costs, and expenses over a period. Tells whether the business made a profit or a loss.

- **Sale Order (SO)**

A document confirming a customer's order before delivery/invoicing. Usually created after a quotation is accepted.

- **Purchase Order (PO)**

A document sent to a vendor to confirm you are buying products/services. Acts as an official request for supply.

- **Vendor Bill**

The accounting record of a purchase invoice received from a vendor. Entered into the system to track payables and due payments.

- **HSN (Harmonized System of Nomenclature)**

A system of classification for goods (used in GST and international trade). Each product has an HSN code to standardize tax rates and reporting.

Api Documentation - https://drive.google.com/file/d/1zeyV15pIQekxdDXn3p9pmssCvaQUMEBe/view?usp=sharing

- **Balance Sheet**

  A financial statement that shows a company's financial position at a specific date (like 31st March). It follows the equation: Assets = Liabilities + Equity

- **Partner Ledger**

  A detailed report showing all transactions (invoices, payments, credit notes) with each customer/vendor. Helps track who owes you money (customers) and whom you owe (vendors).

Why is this Hackathon Problem Important?

- Students will learn **real-world ERP workflows**.
- Understand **how modules talk to each other** for EX (Sales → MRP → Inventory).
- Practice problem-solving using **business logic**, not just coding.