Lab Guide – Inventory Reorder Alerts

SQL / Excel-centric Copilot Agent

1 | Scenario Summary

A manufacturing plant risks production delays when inventory falls below safe thresholds. The Copilot solution will monitor stock nightly, auto-create purchase requests (PRs) and notify purchasing—whether data lives in SQL Server or weekly Excel uploads.

2 | Learning Objectives

1. Connect Copilot Studio to on-prem SQL *and/or* SharePoint-hosted Excel.
2. Write Power Automate logic to compute reorder quantities.
3. Insert PR rows and send contextual notifications.
4. Build optional forecasting prompts for proactive insight.
5. Compare SQL vs. Excel architecture trade-offs.

3 | Prerequisites

- Gateway + SQL authentication (for SQL option).
- SharePoint document library named **Inventory** (for Excel option).
- Purchasing Manager e-mail + Teams channel `#purchasing`.
- Basic knowledge of expressions (e.g., `ceiling()`, `addDays()`).

4 | Data Model

Option A – SQL Server

Table	Key Columns
InventoryMaster	ItemID (PK), ItemName, Unit, CurrentStock, ReorderThreshold, ReorderMultiple, SupplierID, ModifiedDate
Suppliers	SupplierID (PK), SupplierName, ContactEmail, LeadTimeDays
PurchaseRequests	PRID (PK), ItemID, Quantity, RequestedDate, Status, ApprovedBy

Option B – Excel (SharePoint)

File pattern: `/Inventory/Inventory_YYYYMMDD.xlsx`
Sheets: **InventoryMaster**, **PurchaseRequests** with same columns as SQL.

5 | Lab Exercises

EX 1 – Nightly Monitor Flow

1. Recurrence trigger **02:00**.

2. **Switch**: *SQL or Excel?* (use **Environment Variable**).

3. For each low-stock item:

   ```
   ReorderQty = ceiling( (ReorderThreshold*2 - CurrentStock) / ReorderMultiple )
               * ReorderMultiple
   ```

4. Insert PR row with *Status=Pending Approval*.

5. Append to an *Array* variable for summary.

EX 2 – Notification Logic

If Array length > 0

1. **Send e-mail** to Purchasing Manager with Markdown table of items.

2. **Post adaptive card** in `#purchasing` detailing PR IDs, supplier contacts and ETA based on LeadTimeDays.
   Else

3. Send "All inventory healthy" e-mail.

EX 3 – Copilot Forecast Topic

1. Trigger: "Predict shortages next 7 days".

2. Steps inside topic:

   - Retrieve **InventoryMaster** plus 30-day consumption history (view).

   - Calculate average daily usage per item.

   - Return list where `CurrentStock - (DailyUsage*7) < ReorderThreshold`.

   - Offer button **"Create early PRs"** which calls a child topic that re-uses EX 1 logic with *RequestedDate=Today*.

EX 4 – PR Approval Flow

1. Trigger: SharePoint list item *PurchaseRequests* where Status=Pending Approval.
2. Start **Approvals (Start and wait)**.
3. On *Approve* → update Status=Ordered and send PO template to supplier e-mail.

## 6	Testing Matrix
Test Case	Expected Outcome
Stock below threshold	PR row + Notification sent
No SKU below threshold	"All inventory healthy" e-mail
Excel upload missing sheet	Flow fails gracefully, posts error in Teams
Forecast query	List of predicted shortages returned

7 | Extension Ideas

- Replace simple buffer formula with **statistical safety stock**.
- Add **Power BI** dashboard using DirectQuery to SQL.
- Introduce barcode scan Power App to update *CurrentStock* from shop-floor.