**Activity: Writing Basic SQL Queries with Microsoft Copilot**

SELECT

ProductName,

Category,

Price,

StockLevel

FROM

Products;

SELECT

ProductName,

Category,

Price,

StockLevel

FROM

Products

WHERE

Category = 'Electronics' -- Replace 'Electronics' with the desired category

ORDER BY

Price ASC; -- Sorting by Price in ascending order

SELECT

ProductName,

Category,

Price,

StockLevel

FROM

Products

WHERE

StockLevel <= 10 -- Adjust threshold as needed

ORDER BY

Price ASC; -- Sorting by Price in ascending order

**Activity 2: Creating Complex SQL Queries with Microsoft Copilot**

SELECT

p.ProductName,

s.SaleDate,

st.StoreLocation,

s.UnitsSold

FROM

Sales s

JOIN

Products p ON s.ProductID = p.ProductID

JOIN

Stores st ON s.StoreID = st.StoreID

ORDER BY

s.SaleDate DESC; -- Sorting by most recent sales first

SELECT

p.ProductName,

SUM(s.UnitsSold) AS TotalUnitsSold

FROM

Sales s

JOIN

Products p ON s.ProductID = p.ProductID

GROUP BY

p.ProductName

ORDER BY

TotalUnitsSold DESC; -- Sorting to show top-selling products first

SELECT

sp.SupplierName,

COUNT(\*) AS DelayedDeliveries

FROM

Deliveries d

JOIN

Suppliers sp ON d.SupplierID = sp.SupplierID

WHERE

d.DeliveryDate > d.ExpectedDeliveryDate -- Finding delayed deliveries

GROUP BY

sp.SupplierName

ORDER BY

DelayedDeliveries DESC; -- Sorting by the highest delays first

**Activity 3: Debugging and Optimizing SQL Queries with Microsoft Copilot**

SELECT

p.ProductName,

s.SaleDate,

st.StoreLocation,

s.UnitsSold

FROM

Sales s

LEFT JOIN

Products p ON s.ProductID = p.ProductID

LEFT JOIN

Stores st ON s.StoreID = st.StoreID

ORDER BY

s.SaleDate DESC;

SELECT

p.ProductName,

SUM(s.UnitsSold) AS TotalUnitsSold

FROM

Products p

JOIN

Sales s ON p.ProductID = s.ProductID

GROUP BY

p.ProductName

ORDER BY

TotalUnitsSold DESC;

-- Index for filtering and joining Sales table

CREATE INDEX idx\_sales\_productid ON Sales (ProductID);

CREATE INDEX idx\_sales\_storeid ON Sales (StoreID);

CREATE INDEX idx\_sales\_saledate ON Sales (SaleDate);

-- Index for filtering by category in Products

CREATE INDEX idx\_products\_category ON Products (Category);

-- Index for joining Deliveries with Suppliers

CREATE INDEX idx\_deliveries\_supplierid ON Deliveries (SupplierID);

-- Index for checking delayed deliveries

CREATE INDEX idx\_deliveries\_dates ON Deliveries (DeliveryDate, ExpectedDeliveryDate);

SELECT

p.ProductName,

COALESCE(SUM(s.UnitsSold), 0) AS TotalUnitsSold

FROM

Products p

LEFT JOIN

Sales s ON p.ProductID = s.ProductID

GROUP BY

p.ProductName

ORDER BY

TotalUnitsSold DESC;

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Here’s a brief summary of how ChatGPT assisted in each step of developing the **SmartShop Inventory System**, based on your document:

**Activity 1: Writing Basic SQL Queries with Microsoft Copilot**

ChatGPT helped construct foundational queries to retrieve and filter inventory data from the Products table. It assisted in:

* Listing product details like name, category, price, and stock level.
* Filtering products by category and low stock levels.
* Sorting results by price for better visibility of cost-effective inventory.

**Activity 2: Creating Complex SQL Queries with Microsoft Copilot**

ChatGPT guided the creation of advanced queries to analyze sales trends and supplier performance. Specifically, it:

* Joined multiple tables (Sales, Products, Stores) to track product sales across locations.
* Aggregated sales data to identify top-selling products.
* Generated queries to analyze delayed deliveries by suppliers, offering insights into supply chain reliability.

**Activity 3: Debugging and Optimizing SQL Queries with Microsoft Copilot**

In this phase, ChatGPT helped refine and optimize SQL queries to enhance performance. This included:

* Modifying joins for data completeness (using LEFT JOIN for optional matches).
* Improving query reliability with functions like COALESCE to handle nulls.
* Creating appropriate indexes on frequently filtered and joined columns to improve query speed and scalability.