**Lab 10 – Aarish Salam Memon - A20499744**

**STEP – 2 (Populate the tables)**

Graphical user interface, text

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Table Suppliers –

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Table Products –

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Table Customers –

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Table Sales –

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Table Invoices –

Graphical user interface, text, application

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Table Order\_Items –

Graphical user interface, text, application

Description automatically generated

Table Shippers –

Graphical user interface, application

Description automatically generated

Table Orders –

Graphical user interface, text, application

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**STEP 3 – Cycle Through the Supply Chain Process**

[Action 1/Operation 1]

Text, application

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Two Products ordered as Office Supplies from the Supplier ‘25’

[Action 2/Operation 2]

Text

Description automatically generated

Invoice was created for today’s date for the order placed by Customer X that is ‘Aarish Memon’.

Graphical user interface, text, application

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Product Availability Confirmed.

Graphical user interface, text, application

Description automatically generated

Order added to shipping.



Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Added Quantity in the table of Products so it can specify the quantity for each product.

Graphical user interface, text, application, email

Description automatically generated

Total Quantity Table Created and used the product ID to reference the product with the total quantity it has.

Graphical user interface, text, application, email

Description automatically generated

Trigger Created for updating the quantity on hand, it is to update the quantity

In the warehouse after a certain order is confirmed.

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Description automatically generated

With the same trigger just a output is displayed “ORDER IS SUCCESSFUL” and this would work as a notification to suppliers that the items are out of inventory.

* The customer is alerted that the products have been shipped

For this similar same trigger can be created as we add any row to the shipping table it gives customer the notification that we have shipped the products.

* The Customer Service Department has been alerted that the customer’s order has been processed and will contact the customer when the order has been delivered.

Graphical user interface, table

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Created a table for customer service, added the customer ID as a foreign key here to see which representative is assigned with which client, Also the status of their orders so they can communicate properly.

[Action 3 / Operation 3] – Review Your Schema

* Remove order\_status from the sales table. In this manner, sales will just focus on sale\_sid and sales\_person and not on the order, which will keep the table normalized.

Graphical user interface, text, application

Description automatically generated

A picture containing graphical user interface

Description automatically generated

Altered Sales Table.

* Add shipping\_Id to orders, which already has an order\_status.

Order\_status takes a value "Ready" or "SHIPPED or DELIVERED".

Ready means it is being readied for shipping, SHIPPED means in transit and DELIVERED means it was handed over to the customer.

Graphical user interface, text, application, email

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* Add quantity to the products table so that we know how much quantity the supplier has currently.

It has been already done when I created the trigger attaching the screenshot again

Graphical user interface, text, application, email

Description automatically generated

* Added a new table Warehouse\_Quantity to track the quantity available for each product at the warehouse. When Items are shipped, this table will show the reduction in the amount and new items from supplier will be added here. This tracks Quantity on Hand ( QOH ) .

This is already done by me, created a table named as TotalQuantity. It reduces the quantity number whenever an order is made.

Graphical user interface, text, application, email

Description automatically generated

* Add a new table called Invoice\_Detail which tracks invoice\_id, product\_id, quantity per product and amount per product. More information can be added here including tax, discounts, etc.

Graphical user interface, application, Word

Description automatically generated

Table Created, Let’s Populate it.

Text, table

Description automatically generated

Populated the table with Invoice ID, Product ID, Quantity of Product, Amount of the product and Discount applicable.

**STEP – 4**

* Lag Time

Graphical user interface, text, application, email

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* Lead Time

Graphical user interface, text, application, email

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**STEP – 6**

* Q & A

1. Explain how your supply chain schema would handle the promotion of a product. For example, this week only the distributor is offering a 10 for $ 10 sale on certain office supplies.

**Answer:** That is simple as all the tables are inter-connected and we in the last step added a section of discount in the orders table it would be reflected to each table also if that doesn’t works we have on more way to do in which we create separate table for promotions and link that with products and according to the product\_ID seller can fill the discounted amount so everyone can be aware of that also it would be having a column of discount expires in so it would make sure that the price is back to normal after the discounted promotion is over.

1. Explain how you would use your database schema to alert the distributor to replenish the warehouse.

**Answer:** That’s pretty simple, we can achieve that by creating trigger to some specific amount let’s say the quantity to 25 so whenever it reaches 25 it triggers a message to refill the warehouse and because that would be a desktop application so out JAVA Developers can create a notification for that trigger.

1. If you were designing some PL / SQL triggers for this application, list at least five triggers that you would design.

**Answer:** There are multiple triggers that can be created for this application, such as

* + - Notification to the Supplier that the warehouse is empty.
    - Notify the customer that your item has been shipped.
    - When a customer orders any product and it says not available it should also give a notification to fill that product up in the warehouse.
    - Trigger to put the item on the top which has highest views for the day.
    - Auto Invoice Generation.

1. One of the foundations of the supply chain is operations, which includes

forecasting, Just in Time (JIT) , quality, inventory management and information system design.

Considering a restaurant supplies franchise, comment on how this enterprise could effectively utilizes these categories of operations.

**Answer:** Day-to-Day tasks are not that different when it comes to their management environment, considering this same application schema we can create an effortless application for food franchises.

Difference in Tables would be Food, Drinks, Sales, Customers, Orders, Invoices, Inventory, Headquarters. The flow of the app would be like

**Factory → Headquarter → Franchise → Cooking & Serving → End Customer**

This flow would be covering every supply chain operations from forecasting to quality to inventory management.

1. Suppose the products ordered by Customer X have embedded RFID labeling device(s). How would your database schema be used to track the position / location of the products in the chain and to assist in quicker delivery?

**Answer:** The only difference that it would make is that we allow the RFID device to auto generate the Invoice\_ID Number and then we don’t have to update the system regarding the shipping and invoices the RFID Auto generator would be doing everything.