

## REPORT MAKING ASSIGNMENT (DBMS LAB)

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### **Task:**

**Using the document provided on your lms do the following steps:**

**Step1: use database structure file and create table in database named north wind**

**Step2: after creating all the tables create ERD diagram.**

**Step3: check what connection each table have with each other and create a problem statement**

**Step4: after using the erd diagram for your problem statement use the insertion file to input the data within the table**

**Step5: write queries for your required problem and take its screen shots along with that save the file in csv format**

**Step6: visualize data using Excel or Power Bi**

**Step7: create a report with problem statement, screen shots, queries, and visualization**

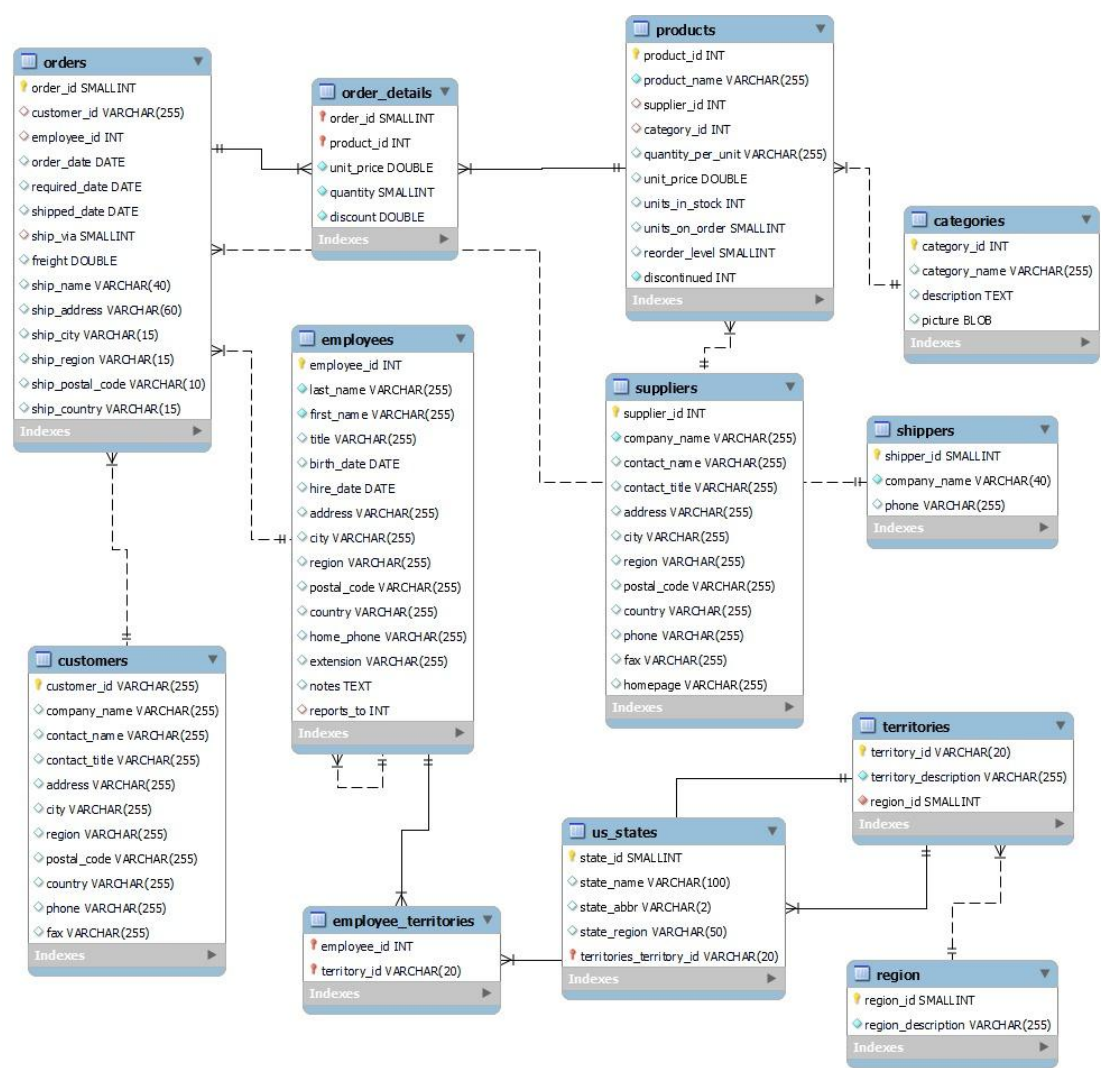
### **Problem Statement:**

The Northwind database is utilized by a global trading company to manage various business operations, including customer orders, employee territories, product inventories, supplier relationships, and shipping logistics. Northwind seeks an in-depth analysis across several key dimensions to optimize operations and drive strategic insights. This analysis will focus on the following areas:

- 1. Sales Performance:** Assess total sales revenue by product and category to identify top-performing areas. Highlight the **Top 5 Products by Sales Volume** and uncover sales trends to guide inventory and marketing strategies.
- 2. Customer Insights:** Identify the **Top 5 Countries with the Most Customers** and analyze customer behavior based on order frequency, average order value, and geographic distribution. This will enhance customer retention efforts and help tailor region-specific marketing strategies.
- 3. Top Customers by Sales Value:** Recognize high-value customers by calculating total sales contributions, enabling targeted loyalty and reward programs.
- 4. Employee Performance:** Evaluate employee effectiveness by measuring order count and revenue managed by each employee and across territories, providing insights for performance assessments and resource allocation.
- 5. Supply Chain Analysis:** Review supplier performance and product availability to maintain steady inventory levels and minimize stockouts, ensuring reliable product fulfillment.

6. **Shipping Efficiency:** Examine shipping data, focusing on **Shipping Cost and Duration by Shipper** to identify cost-effective options and improve delivery timelines.

ERD DIAGRAM:



## SQL QUERIES:

### 1. TOP CUSTOMERS BY SALES VALUE:

specific category sales by product category\* customers by country Top 5 Products by Sales Volume top customers by sales values Total Sa

Limit to 1000 rows

```
1 -- top customers by sales values
2 • SELECT
3     cu.customer_id,
4     cu.company_name,
5     SUM(od.unit_price * od.quantity * (1 - od.discount)) AS customer_sales
6 FROM
7     customers cu
8     JOIN orders o ON cu.customer_id = o.customer_id
9     JOIN order_details od ON o.order_id = od.order_id
10 GROUP BY
11     cu.customer_id, cu.company_name
12 ORDER BY
13     customer_sales DESC
14 ! TMTT 10:
```

Result Grid Filter Rows: Export: Wrap Cell Content: Fetch rows:

customer_id	company_name	customer_sales
QUICK	QUICK-Stop	110277.30500000001
ERNSH	Ernst Handel	104874.9785
SAVEA	Save-a-lot Markets	104361.95000000001
RATTC	Rattlesnake Canyon Grocery	51097.80049999999
HUNGO	Hungry Owl All-Night Grocers	49979.905000000006
HANAR	Hanna Moos	32841.369999999995
KOENE	Königlich Essen	30908.384000000002
FOLKO	Folk och få HB	29567.5625

### 2. TOTAL SALES REVENUE BY PRODUCT AND CATEGORY

specific category sales by product category\* customers by country Top 5 Products by Sales Volume top cus

Limit to 1000 rows

```
1 -- Total Sales Revenue by Product and Category:
2 • SELECT
3     c.category_name,
4     p.product_name,
5     SUM(od.unit_price * od.quantity * (1 - od.discount)) AS total_sales
6 FROM
7     products p
8     JOIN categories c ON p.category_id = c.category_id
9     JOIN order_details od ON p.product_id = od.product_id
10 GROUP BY
11     c.category_name, p.product_name
12 ORDER BY
13     total_sales DESC;
14
```

Result Grid Filter Rows: Export: Wrap Cell Content:

category_name	product_name	total_sales
Beverages	Côte de Blaye	141396.735
Meat/Poultry	Thüringer Rostbratwurst	80368.672
Dairy Products	Radette Courdavault	71155.7
Confections	Tarte au sucre	47234.97
Dairy Products	Camembert Pierrot	46825.48
Grains/Cereals	Gnocchi di nonna Alice	42593.06
Produce	Manjimun Dried Apples	41810.65

Result 1 x

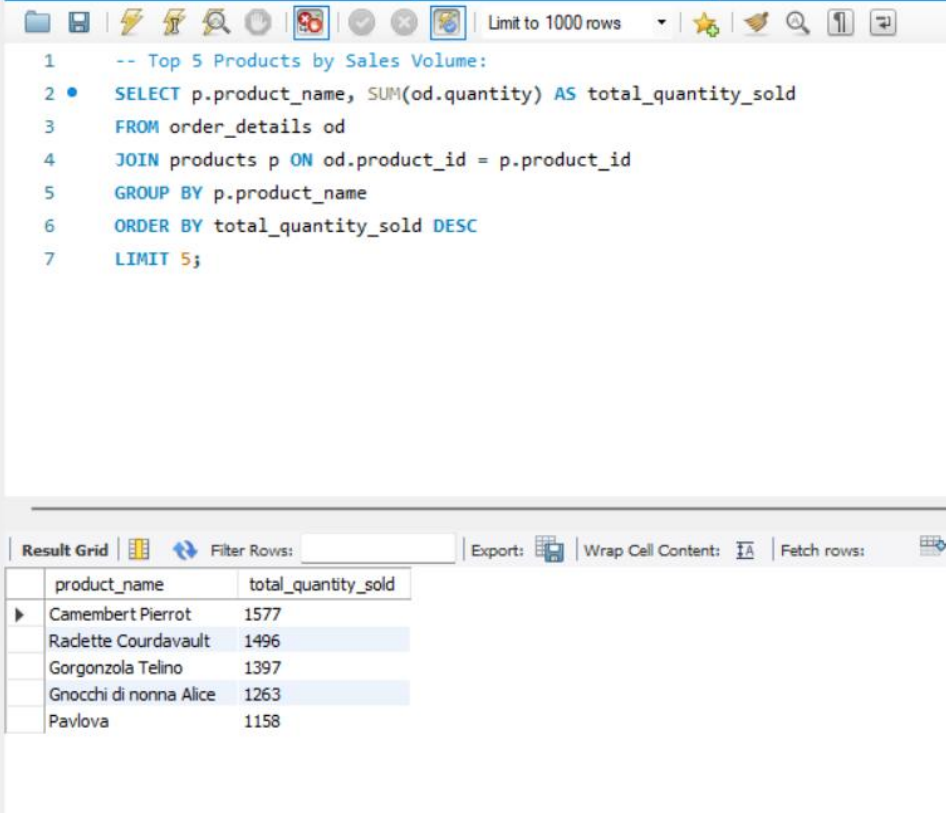
### 3. EMPLOYEE PERFORMANCE BY ORDER COUNT AND REVENUE:

specific category   sales by product category*   customers by country   Top 5 Products by Sales Volume   top customers by sales values				
Limit to 1000 rows				
<pre>1  -- Employee performance by order count and revenue 2  •  SELECT 3      e.employee_id, 4      COUNT(o.order_id) AS total_orders, 5      SUM(od.unit_price * od.quantity * (1 - od.discount)) AS total_revenue 6  FROM 7      employees e 8      JOIN orders o ON e.employee_id = o.employee_id 9      JOIN order_details od ON o.order_id = od.order_id 10 GROUP BY 11     e.employee_id 12 ORDER BY 13     total_revenue DESC; 14</pre>				
Result Grid   Filter Rows:   Export:   Wrap Cell Content:				
	employee_id	total_orders	total_revenue	
▶	4	420	232890.84600000005	
	3	321	202812.84299999996	
	1	345	192107.60450000007	
	2	241	166537.755	
	8	260	126862.27749999995	
	7	176	124568.23500000002	
	9	107	77308.06650000002	
	6	168	73913.12950000001	

### 4. SHIPPING COST AND DURATION BY SHIPPER:

y product category*   customers by country   Top 5 Products by Sales Volume   top customers by sales values   Total Sales				
Limit to 1000 rows				
<pre>1  -- Shipping Cost and Duration by Shipper: 2  •  SELECT 3      s.company_name AS shipper, 4      COUNT(o.order_id) AS total_orders, 5      AVG(o.freight) AS avg_shipping_cost, 6      AVG(DATEDIFF(o.shipped_date, o.order_date)) AS avg_shipping_duration 7  FROM 8      shippers s 9      JOIN orders o ON s.shipper_id = o.ship_via 10 GROUP BY 11     s.company_name 12 ORDER BY 13     avg_shipping_cost DESC 14 LIMIT 1000; 15</pre>				
Result Grid   Filter Rows:   Export:   Wrap Cell Content:				
	shipper	total_orders	avg_shipping_cost	avg_shipping_duration
▶	United Package	326	86.6406441717791	9.2349
	Federal Shipping	255	80.44121568627443	7.4739
	Speedy Express	249	65.00132530120482	8.5714

## 5. TOP 5 PRODUCTS BY SALES VOLUME:



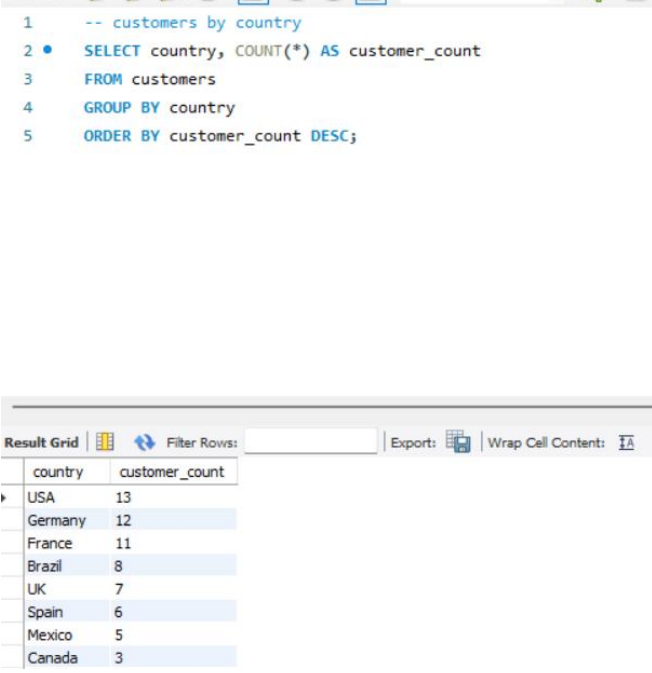
The screenshot shows a SQL IDE interface. At the top, there's a toolbar with various icons and a dropdown menu set to "Limit to 1000 rows". Below the toolbar, a SQL query is entered in a text area. The query is as follows:

```
1  -- Top 5 Products by Sales Volume:
2  • SELECT p.product_name, SUM(od.quantity) AS total_quantity_sold
3  FROM order_details od
4  JOIN products p ON od.product_id = p.product_id
5  GROUP BY p.product_name
6  ORDER BY total_quantity_sold DESC
7  LIMIT 5;
```

Below the query editor, there's a "Result Grid" section. It includes a "Filter Rows:" input field, an "Export:" button, a "Wrap Cell Content:" checkbox, and a "Fetch rows:" button. The result grid displays the following data:

product_name	total_quantity_sold
Camembert Pierrot	1577
Raclette Courdavault	1496
Gorgonzola Telino	1397
Gnocchi di nonna Alice	1263
Pavlova	1158

## 6. CUSTOMERS BY COUNTRY:



The screenshot shows a SQL IDE interface. At the top, there's a toolbar with various icons and a dropdown menu set to "Limit to 1000 rows". Below the toolbar, a SQL query is entered in a text area. The query is as follows:

```
1  -- customers by country
2  • SELECT country, COUNT(*) AS customer_count
3  FROM customers
4  GROUP BY country
5  ORDER BY customer_count DESC;
```

Below the query editor, there's a "Result Grid" section. It includes a "Filter Rows:" input field, an "Export:" button, a "Wrap Cell Content:" checkbox, and a "Fetch rows:" button. The result grid displays the following data:

country	customer_count
USA	13
Germany	12
France	11
Brazil	8
UK	7
Spain	6
Mexico	5
Canada	3

## 7. TOP 5 COUNTRIES WITH MOST CUSTOMERS:

```

1  -- top 5 countries with most customers
2
3  • SELECT country, COUNT(*) AS customer_count
4    FROM customers
5    GROUP BY country
6    ORDER BY customer_count DESC
7    LIMIT 5;

```

country	customer_count
USA	13
Germany	12
France	11
Brazil	8
UK	7

## DATA VISUALIZATION:

### DASHBOARD 01:





## DASHBOARD 02:

