TASK-03

PHARMA DATA ANALYSIS

NAME: Lingamaneni Devansh

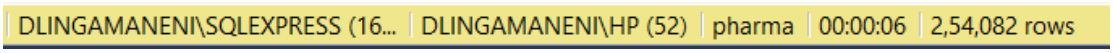
E-MAIL: devansh.lingamaneni@gmail.com

Linked-in: linkedin.com/in/devansh-lingamaneni-26272324a/

- Retrieve all columns for all records in the dataset

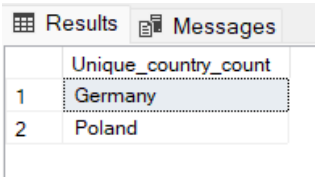
```
SELECT * FROM Pharma_data_analysis;
```

	Distributor	Customer_Name	City	Country	Latitude	Longitude	Channel	Sub_chan
1	Gottlieb-Cruickshank	Zieme, Doyle and Kunze	Lublin	Poland	51.2332992553711	22.5666999816895	Hospital	Private
2	Gottlieb-Cruickshank	Feest PLC	Åšwiecie	Poland	53.4166984558105	18.4333000183105	Pharmacy	Retail
3	Gottlieb-Cruickshank	Medhurst-Beer Pharmaceutical Limited	Rybnik	Poland	50.0833015441895	18.5	Pharmacy	Institution
4	Gottlieb-Cruickshank	Barton Ltd Pharma Plc	CzeladÅº	Poland	50.3333015441895	19.0832996368408	Hospital	Private
5	Gottlieb-Cruickshank	Keeling LLC Pharmacy	Olsztyn	Poland	53.7799987792969	20.4941997528076	Pharmacy	Retail
6	Gottlieb-Cruickshank	Runte-Marquardt Pharmaceutical Ltd	Olecko	Poland	54.0332984924316	22.5	Hospital	Private
7	Gottlieb-Cruickshank	Blick, Pacocha and Schowalter	InowrocÅ‚aw	Poland	52.7957992553711	18.261100769043	Pharmacy	Retail
8	Gottlieb-Cruickshank	Leuschke PLC Pharmacy	CiechanÃ³w	Poland	52.8816986083984	20.6105995178223	Pharmacy	Retail
9	Gottlieb-Cruickshank	Miller-Satterfield Pharma Plc	Nidzica	Poland	53.3582992553711	20.4249992370605	Hospital	Private
10	Gottlieb-Cruickshank	Bashirian-Kassulke Pharma Plc	KrakÃ³w	Poland	50.0614013671875	19.9372005462646	Hospital	Private
11	Gottlieb-Cruickshank	Wolff Group Pharm	Gubin	Poland	51.9500007629395	14.7333002090454	Hospital	Governm
12	Gottlieb-Cruickshank	Denesik, Walter and Beatty Pharma Plc	OstrÃ³w Mazowiecka	Poland	52.7999992370605	21.8999996185303	Pharmacy	Institution
13	Gottlieb-Cruickshank	Breitenberg-Kuhn Pharmacy	Radom	Poland	51.4035987854004	21.1567001342773	Hospital	Private
14	Gottlieb-Cruickshank	McClure, Zemlak and Dibbert Pharma Plc	GdaÅ„sk	Poland	54.36669921875	18.63330078125	Pharmacy	Retail
15	Gottlieb-Cruickshank	Block-Romaguera Pharmaceutical Limited	Tarnowskie GÃ³ry	Poland	50.4500007629395	18.8666992187 5	Hospital	Private
16	Gottlieb-Cruickshank	Hahn, Rutherford and Gislason Pharmaceutical Li...	Åaziska GÃ³rne	Poland	50.1500015258789	18.8332996368408	Hospital	Private
17	Gottlieb-Cruickshank	D'Amore and Sons	WÄ…growiec	Poland	52.7999992370605	17.2000007629395	Hospital	Private



- How many unique countries are represented in the dataset?

```
SELECT DISTINCT(Country) as Unique_country_count FROM
Pharma_data_analysis;
```



- Select the names of all the customers on the 'Retail' channel.

```
SELECT "Customer_Name" as Name,Sub_channel FROM Pharma_data_analysis
WHERE Sub_channel='Retail';
```

Results | Messages

	Name	Sub_channe
1	Feest PLC	Retail
2	Keeling LLC Pharmacy	Retail
3	Blick, Pacocha and Schowalter	Retail
4	Leuschke PLC Pharmacy	Retail
5	McClure, Zemlak and Dibbert Pharma Plc	Retail
6	Lindgren-Simonis Pharm	Retail
7	Will and Sons Pharma Plc	Retail
8	Jakubowski Inc Pharmaceutical Limited	Retail
9	Nader-Gaylord Pharmaceutical Ltd	Retail
10	Emard-O'Connell Pharmacy	Retail
11	Feest PLC	Retail
12	McCullough LLC Pharma Plc	Retail
13	Parisian, Hagenes and Skiles Pharma Plc	Retail
14	Walsh-Brown Pharmacy	Retail
15	Schowalter, Runolfsson and VonRueden Pharmaceutic...	Retail
16	Veum-Kerluke Pharmacy	Retail
17	Koss-Beier	Retail
18	Funk and Sons Pharmaceutical Limited	Retail

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- Find the total quantity sold for the ' Antibiotics' product class.

```
SELECT Product_Class,SUM(Quantity) as TotalQuantity FROM
Pharma_data_analysis
WHERE Product_Class = 'Antibiotics'
GROUP BY Product_Class;
```

Results | Messages

	Product_Class	TotalQuantity
1	Antibiotics	4154321.85704041

- List all the distinct months present in the dataset.

```
SELECT DISTINCT(Month) FROM Pharma_data_analysis;
```

Results Messages

	Month
1	February
2	June
3	August
4	April
5	May
6	December
7	January
8	September
9	October
10	July
11	November
12	March

- Calculate the total sales for each year.

```
SELECT Year,SUM(Sales) as Total_sales FROM Pharma_data_analysis
GROUP BY Year;
```

	Year	Total_sales
1	2019	2930937132.71436
2	2020	2659672415
3	2017	2701480740.81445
4	2018	3506897353.60151

- Find the customer with the highest sales value.

```
SELECT TOP 1 Customer_Name,MAX(Sales) as Total_sales FROM
Pharma_data_analysis
GROUP BY Customer_Name ORDER BY Total_sales DESC;
```

Results Messages

	Customer_Name	Total_sales
1	Mraz-Kutch Pharma Plc	74205600

- Get the names of all employees who are Sales Reps and are managed by 'James Goodwill'.

```
SELECT DISTINCT Name_of_Sales_Rep  FROM Pharma_data_analysis
```

```
WHERE  Manager = 'James Goodwill';
```

Results Messages

	Name_of_Sales_Rep
1	Alan Ray
2	Erica Jones
3	Thompson Crawford

- Retrieve the top 5 cities with the highest sales.

```
SELECT TOP 5 City,MAX(Sales) as Total_sales FROM Pharma_data_analysis
GROUP BY City ORDER BY Total_sales DESC;
```

Results Messages

	City	Total_sales
1	Butzbach	74205600
2	Baesweiler	47012000
3	Cuxhaven	30164400
4	Bottrop	28294700
5	Weinheim	25550000

- Calculate the average price of products in each sub-channel.

```
SELECT Sub_channel,AVG(Price) as Avg_price FROM Pharma_data_analysis
GROUP BY Sub_channel;
```

Results Messages

	Sub_channel	Avg_price
1	Institution	411
2	Government	413
3	Private	410
4	Retail	412

- Join the 'Employees' table with the 'Sales' table to get the name of the Sales Rep and the corresponding sales records.

  Since there is no Unique column between two tables to join, So the

below query is for name of the Sales Rep and the corresponding sales records.

```
SELECT Distinct(Name_of_Sales_Rep),SUM(Sales) as Total_sales FROM
Pharma_data_analysis
GROUP BY Name_of_Sales_Rep ORDER BY Total_sales DESC;
```

Results | Messages

	Name_of_Sales_Rep	Total_sales
1	Jimmy Grey	985969993.944336
2	Abigail Thompson	981056993.83418
3	Sheila Stones	958203898.244141
4	Daniel Gates	950658635.185181
5	Anne Wu	920168301.17395
6	Morris Garcia	901195482.5
7	Stella Given	888340902.419922
8	Jessica Smith	881698369.003174
9	Steve Pepple	875449982.570313
10	Mary Gerrard	875270762.898438
11	Erica Jones	871372192
12	Thompson Crawford	866964886.156738
13	Alan Ray	842637242.199951

- Retrieve all sales made by employees from ' Rendsburg ' in the year 2018.

```
SELECT Name_of_Sales_Rep, SUM(Sales) AS TotalSales FROM
Pharma_data_analysis
WHERE City = 'Rendsburg' AND Year = 2018
GROUP BY Name_of_Sales_Rep;
```

Results Messages

	Name_of_Sales_Rep	TotalSales
1	Abigail Thompson	65022
2	Alan Ray	366832
3	Anne Wu	383869
4	Daniel Gates	49801
5	Erica Jones	980046
6	Jessica Smith	5059318
7	Jimmy Grey	253399
8	Mary Gerrard	74042
9	Morris Garcia	405500
10	Sheila Stones	1581159
11	Stella Given	226347
12	Steve Pepple	1377
13	Thompson Crawford	81915

- Calculate the total sales for each product class, for each month, and order the results by year, month, and product class.

```
SELECT Month,Year,Product_class,SUM(Sales) AS Total_sales FROM
Pharma_data_analysis
GROUP BY Month,Year,Product_class
ORDER BY Month,Year,Product_class;
```

Results Messages

	Month	Year	Product_class	Total_sales
1	April	2017	Analgesics	32223716
2	April	2017	Antibiotics	40029226
3	April	2017	Antimalarial	17789675
4	April	2017	Antipiretics	22868812
5	April	2017	Antiseptics	42712211
6	April	2017	Mood Stabilizers	33176944
7	April	2018	Analgesics	40900282
8	April	2018	Antibiotics	51066094
9	April	2018	Antimalarial	30055102
10	April	2018	Antipiretics	37506975
11	April	2018	Antiseptics	51099263.8000002
12	April	2018	Mood Stabilizers	35782689
13	April	2019	Analgesics	75476855
14	April	2019	Antibiotics	21639579
15	April	2019	Antimalarial	21931436
16	April	2019	Antipiretics	29217030
17	April	2019	Antiseptics	48873874
18	April	2019	Mood Stabilizers	32274897

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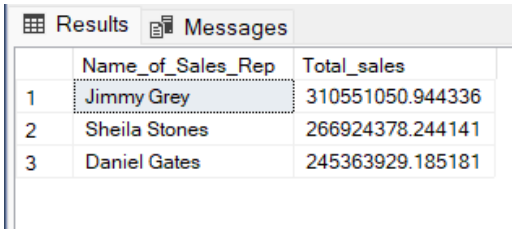
- Find the top 3 sales reps with the highest sales in 2019.

```
SELECT TOP 3 Name_of_Sales_Rep,SUM(Sales) as Total_sales FROM
Pharma_data_analysis
WHERE Year=2019 GROUP BY Name_of_Sales_Rep
ORDER BY Total_sales DESC;
```



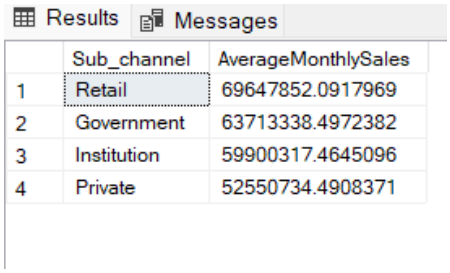
Results | Messages

	Name_of_Sales_Rep	Total_sales
1	Jimmy Grey	310551050.944336
2	Sheila Stones	266924378.244141
3	Daniel Gates	245363929.185181

- Calculate the monthly total sales for each sub-channel, and then calculate the average monthly sales for each sub-channel over the years.

```
WITH MonthlyTotalSales AS (
SELECT Sub_channel, Month, Year, SUM(Sales) AS MonthlySales
FROM Pharma_data_analysis
GROUP BY Sub_channel, Month, Year)

SELECT Sub_channel, AVG(MonthlySales) AS AverageMonthlySales
FROM MonthlyTotalSales
GROUP BY Sub_channel
ORDER BY AverageMonthlySales DESC;
```



Results | Messages

	Sub_channel	AverageMonthlySales
1	Retail	69647852.0917969
2	Government	63713338.4972382
3	Institution	59900317.4645096
4	Private	52550734.4908371

- Create a summary report that includes the total sales, average price, and total quantity sold for each product class.

```
SELECT Product_class,SUM(Sales) AS Total_sales,
AVG(Price) AS Avg_price,SUM(Quantity) as Total_quantity FROM Pharma_data_analysis
GROUP BY Product_class
ORDER BY Total_sales DESC;
```

Results | Messages

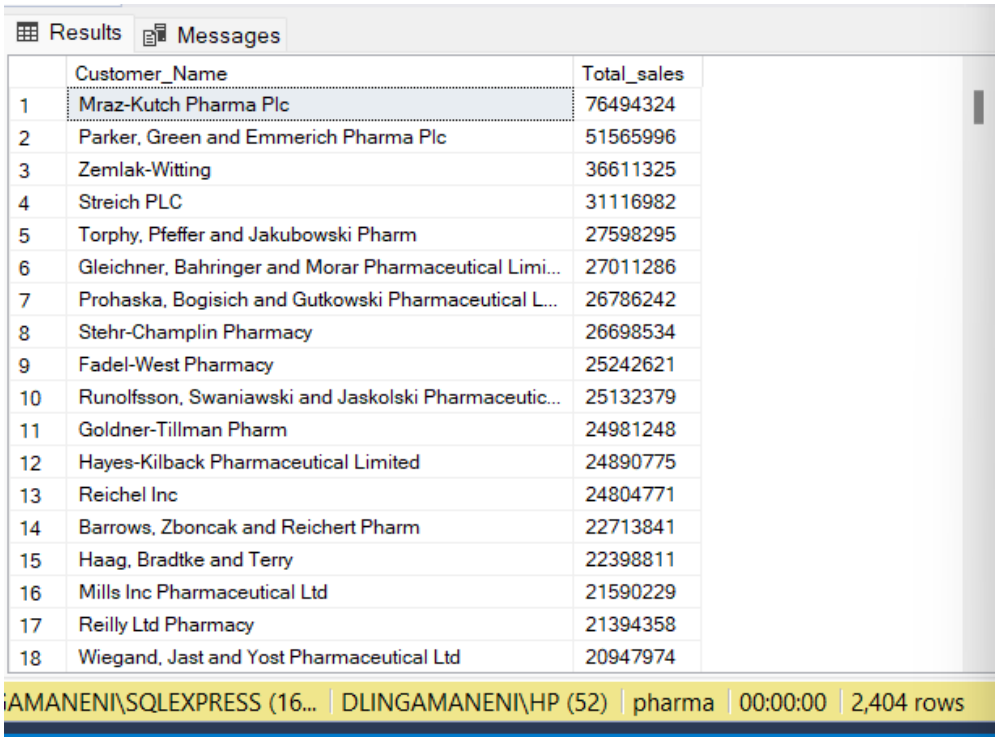
	Product_class	Total_sales	Avg_price	Total_quantity
1	Analgesics	2371515114.28333	432	5553143.78359985
2	Antiseptics	2237524743.64546	412	5499912.71283837
3	Mood Stabilizers	2058909622.63489	400	5169781.14213037
4	Antipiretics	1883305591.16211	469	4052544.05723572
5	Antibiotics	1750277236.5	419	4154321.85704041
6	Antimalarial	1497455333.90454	337	4249075.24966383

SUMMARY REPORT:

- **Product_class**: The product class for which the summary metrics are calculated.
- **Total_sales**: The total sales for each product class.
- **Avg_price**: The average price for each product class.
- **Total_quantity**: The total quantity sold for each product class.

- Find the top 5 customers with the highest sales for each year.

```
SELECT Customer_Name, SUM(Sales) AS Total_sales FROM Pharma_data_analysis
GROUP BY Customer_Name, Year
ORDER BY Total_sales DESC;
```



Results | Messages

	Customer_Name	Total_sales
1	Mraz-Kutch Pharma Plc	76494324
2	Parker, Green and Emmerich Pharma Plc	51565996
3	Zemlak-Witting	36611325
4	Streich PLC	31116982
5	Torphy, Pfeffer and Jakubowski Pharm	27598295
6	Gleichner, Bahringer and Morar Pharmaceutical Limi...	27011286
7	Prohaska, Bogisich and Gutkowski Pharmaceutical L...	26786242
8	Stehr-Champlin Pharmacy	26698534
9	Fadel-West Pharmacy	25242621
10	Runolfsson, Swaniawski and Jaskolski Pharmaceutic...	25132379
11	Goldner-Tillman Pharm	24981248
12	Hayes-Kilback Pharmaceutical Limited	24890775
13	Reichel Inc	24804771
14	Barrows, Zboncak and Reichert Pharm	22713841
15	Haag, Bradtke and Terry	22398811
16	Mills Inc Pharmaceutical Ltd	21590229
17	Reilly Ltd Pharmacy	21394358
18	Wiegand, Jast and Yost Pharmaceutical Ltd	20947974

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- Calculate the year-over-year growth in sales for each country.

```
WITH Year_over_Year AS (
SELECT Country,Year,SUM(Sales) AS Total_sales
FROM Pharma_data_analysis GROUP BY Country,Year
)

SELECT a.Country,a.Year,a.Total_sales,
b.Total_sales AS Previous_Year_Sales,
(a.Total_sales - b.Total_sales) / b.Total_sales AS YY_Growth
FROM Year_over_Year a
LEFT JOIN
Year_over_Year b ON a.Country = b.Country AND a.Year = b.Year + 1
ORDER BY Total_sales;
```

Results | Messages

	Country	Year	Total_sales	Previous_Year_Sales	YY_Growth
1	Poland	2018	680879801.8	NULL	NULL
2	Germany	2020	2659672415	2930937132.71436	-0.0925522129719432
3	Germany	2017	2701480740.81445	NULL	NULL
4	Germany	2018	2826017551.80151	2701480740.81445	0.0460994628262701
5	Germany	2019	2930937132.71436	2826017551.80151	0.0371263019389098

- List the months with the lowest sales for each year

```
WITH MonthlySales AS (
SELECT Year,Month,SUM(Sales) AS Total_sales FROM Pharma_data_analysis
GROUP BY Year, Month
)

SELECT Year,Month,MIN(Total_sales) AS LowestSales FROM MonthlySales
GROUP BY Year, Month
ORDER BY MIN(Total_sales);
```

Results | Messages

	Year	Month	LowestSales
1	2019	January	97664076
2	2020	April	135409908
3	2017	January	151872184
4	2020	January	170724633
5	2019	October	187630559
6	2017	April	188800584
7	2020	August	194367631
8	2020	May	199111059
9	2020	February	199306041
10	2019	July	201712696
11	2020	October	204843892
12	2019	June	205000919.300781
13	2019	May	207988847.191406
14	2020	March	208029649
15	2017	February	208995889
16	2017	March	214767956
17	2018	December	214882167
18	2017	October	219338825

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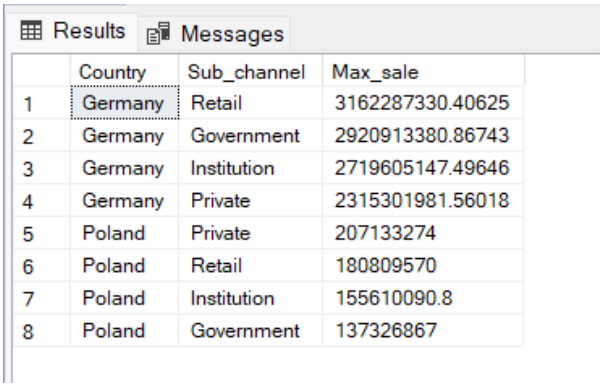
- Calculate the total sales for each sub-channel in each country, and then find the country with the highest total sales for each sub-channel.

```
WITH Sales_sub_Channel AS (
        SELECT Country,Sub_channel,SUM(Sales) AS Total_sales FROM
        Pharma_data_analysis
        GROUP BY Sub_channel, Country
        )

SELECT Country,Sub_channel,MAX(Total_sales) AS Max_sale FROM
Sales_sub_Channel
GROUP BY Sub_channel, Country
ORDER BY Max_sale DESC;
```



Results | Messages

	Country	Sub_channel	Max_sale
1	Germany	Retail	3162287330.40625
2	Germany	Government	2920913380.86743
3	Germany	Institution	2719605147.49646
4	Germany	Private	2315301981.56018
5	Poland	Private	207133274
6	Poland	Retail	180809570
7	Poland	Institution	155610090.8
8	Poland	Government	137326867