

INTERNSHIP

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SQL INTERNSHIP

Pharma Data SQL ASSESSMENT

1. Retrieve all columns for all records in the dataset.

```
select * from Pharma_data ;
```

	Distributor	CustomerName	City	Country	Latitude	Longitude	Channel	Sub-channel	Product Name	ProductClass	Quantity	Price	Sales	Month	Year	Name of Sales Rep	Manager	Sales Team
1	Gerlach LLC	Kozey Ltd Pharma Plc	Griesheim	Germany	49.8594	8.5525	Pharmacy	Institution	Amphesirox	Antiseptics	10	25	250	January	2017	Daniel Gates	Alisha Cordwell	Charlie
2	Gerlach LLC	Blanda, Stehr and Gleason Pharma Plc	Starnberg	Germany	47.9972	11.3406	Hospital	Private	Tetamide	Antibiotics	10	430	4300	January	2017	Sheila Stones	Britanny Bold	Delta
3	Gerlach LLC	Hane Ltd	NÄrringen	Germany	48.6267	9.3353	Hospital	Government	Decidenu Galantirigine	Antipretics	10	590	5900	January	2017	Daniel Gates	Alisha Cordwell	Charlie
4	Gerlach LLC	Koch, Borer and Hagenes Pharmaceutical Ltd	Lauf	Germany	49.5103	11.2772	Hospital	Private	Cricane Acamsumab	Antiseptics	30	22	660	January	2017	Jessica Smith	Britanny Bold	Delta
5	Gerlach LLC	Legros-Runte Pharmaceutical Limited	Neckarsulm	Germany	49.1917	9.2244	Hospital	Private	Doxivorn	Antimalarial	7	516	3612	January	2017	Sheila Stones	Britanny Bold	Delta
6	Gerlach LLC	Wiegand, Jast and Yost Pharmaceutical Ltd	Ludwigshafen	Germany	49.4811	8.4353	Pharmacy	Institution	Antlamin Clnibital	Antibiotics	20	664	13280	January	2017	Morris Garcia	Tracy Banks	Bravo
7	Gerlach LLC	Welch-Langworth Pharm	Papenburg	Germany	53.0667	7.4	Hospital	Private	Sumanazole	Analgesics	32	529	16928	January	2017	Abigail Thompson	Tracy Banks	Bravo
8	Gerlach LLC	Sanford, Franecki and Greenholt Pharmaceutical Ltd	Rheine	Germany	52.2833	7.4333	Pharmacy	Institution	Rapanofenac	Mood Stabilizers	40	187	7480	January	2017	Sheila Stones	Britanny Bold	Delta
9	Gerlach LLC	Kihn Group Pharm	Vaihingen an der Enz	Germany	48.9328	8.9564	Hospital	Private	Pazofenac	Mood Stabilizers	24	123	2952	January	2017	Thompson Crawford	James Goodwill	Alfa
10	Gerlach LLC	Gibson-Hill Pharmaceutical Limited	Friedberg	Germany	50.3353	8.755	Pharmacy	Institution	Ceftatana Serolamide	Antipretics	20	595	11900	January	2017	Thompson Crawford	James Goodwill	Alfa
11	Gerlach LLC	Sipes and Sons Pharma Plc	Radebeul	Germany	51.1033	13.67	Hospital	Private	Malavirine Alindine	Mood Stabilizers	30	767	23010	January	2017	Mary Gerrard	Britanny Bold	Delta
12	Gerlach LLC	Wunsch, Mills and Walter Pharm	Kempen	Germany	51.3658	6.4194	Pharmacy	Retail	Robapril	Antipretics	30	453	13590	January	2017	Stella Given	Alisha Cordwell	Charlie
13	Gerlach LLC	Erdman PLC	Holzminde	Germany	51.8297	9.4483	Pharmacy	Retail	Xenaminphen	Antimalarial	10	195	1950	January	2017	Daniel Gates	Alisha Cordwell	Charlie
14	Gerlach LLC	Kling Inc	Itzehoe	Germany	53.925	9.5164	Hospital	Private	Diprolmus	Antiseptics	30	634	19020	January	2017	Stella Given	Alisha Cordwell	Charlie
15	Gerlach LLC	Walsh-Brown Pharmaceutical Ltd	Bernburg	Germany	51.8	11.7333	Hospital	Private	Anamadin	Antimalarial	70	713	49910	January	2017	Mary Gerrard	Britanny Bold	Delta
16	Gerlach LLC	Collins-Schmidt Pharma Plc	Marburg	Germany	50.8167	8.7667	Pharmacy	Retail	Chonotrisin	Antibiotics	330	591	195030	January	2017	Steve Pepple	Tracy Banks	Bravo
17	Gerlach LLC	Welch-Langworth Pharm	Papenburg	Germany	53.0667	7.4	Hospital	Private	Ketamara Evogel	Antipretics	20	704	14080	January	2017	Alan Ray	James Goodwill	Alfa
18	Gerlach LLC	Fritsch-Hauk Pharmaceutical Ltd	FÄlrich	Germany	49.4783	10.9903	Pharmacy	Retail	Efidomide Evofibrate	Antiseptics	20	612	12240	January	2017	Jimmy Grey	Alisha Cordwell	Charlie
19	Gerlach LLC	Schaefer LLC Pharma Plc	Standal	Germany	52.6	11.85	Pharmacy	Institution	Eproline	Antibiotics	48	780	37440	January	2017	Mary Gerrard	Britanny Bold	Delta
20	Gerlach LLC	Hills, Stroman and Ermer	Rheda-WiedenbrÄuck	Germany	51.8417	8.3	Pharmacy	Retail	Alpradpine	Analgesics	24	445	10680	January	2017	Erica Jones	James Goodwill	Alfa

2. How many unique countries are represented in the dataset?

```
select DISTINCT Country from Pharma_data;
```

	Country
1	Poland
2	Germany

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

```
SELECT CustomerName FROM Pharma_data WHERE [Sub-channel]='Retail';
```

	CustomerName
1	Wunsch, Mills and Walter Pharm
2	Erdman PLC
3	Collins-Schmidt Pharma Plc
4	Fritsch-Hauk Pharmaceutical Ltd
5	Hills, Stroman and Ermer
6	Hermiston LLC Pharmaceutical Ltd
7	Vandervort LLC Pharm
8	Kozey-Schroeder Pharma Plc
9	Hartmann-Wolf Pharmacy
10	Kozey Ltd Pharmacy
11	Nolan, DuBuque and Schultz Pharmacy
12	Kuhic LLC
13	Monahan Ltd Pharma Plc
14	Schuppe Inc
15	Leuschke, Waters and Schowalter Pharma Plc
16	Upton PLC Pharmaceutical Limited
17	Harris-Conroy Pharm
18	Gottlieb-Cruikshank Pharm
19	Harris-Conroy Pharm
20	Romaguera, Moen and Hagenes Pharm

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

```
SELECT COUNT(Quantity) as TotalQuantity FROM Pharma_data Where ProductClass = 'Antibiotics';
```

Results		Messages
	TotalQuantity	
1	36979	

5. List all the distinct months present in the dataset.

```
SELECT DISTINCT Month FROM Pharma_data;
```

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

6. Calculate the total sales for each year.

```
SELECT Year, COUNT(Sales) AS TotalSales from Pharma_data Group by year;
```

Results		Messages
	Year	TotalSales
1	2017	56486
2	2020	51193
3	2018	94434
4	2019	51969

7. Find the customer with the highest sales value.

```
SELECT TOP 1 CustomerName, MAX(Sales) AS HigestSales FROM Pharma_data GROUP by CustomerName ORDER BY HigestSales DESC;
```

Results		Messages
	CustomerName	HigestSales
1	Mraz-Kutch Pharma Plc	74205600

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

```
SELECT [Name of Sales Rep], Manager from Pharma_data Where Manager= 'James Goodwill';
```

	Name of Sales Rep	Manager
1	Thompson Crawford	James Goodwill
2	Thompson Crawford	James Goodwill
3	Alan Ray	James Goodwill
4	Erica Jones	James Goodwill
5	Thompson Crawford	James Goodwill
6	Erica Jones	James Goodwill
7	Alan Ray	James Goodwill
8	Thompson Crawford	James Goodwill
9	Thompson Crawford	James Goodwill
10	Thompson Crawford	James Goodwill
11	Thompson Crawford	James Goodwill
12	Thompson Crawford	James Goodwill
13	Thompson Crawford	James Goodwill
14	Thompson Crawford	James Goodwill
15	Erica Jones	James Goodwill
16	Erica Jones	James Goodwill
17	Thompson Crawford	James Goodwill
18	Alan Ray	James Goodwill
19	Alan Ray	James Goodwill
20	Erica Jones	James Goodwill

Query execut... LAPTOP-FDG43O42 (15.0 RTM) | LAPTOP-FDG43O42\Asus (62) | pharma | 00:00:00 | 58,705 rows

9. Retrieve the top 5 cities with the highest sales.

```
SELECT TOP 5 City, MAX(Sales) AS HighestSales From Pharma_data GROUP BY City Order by City DESC;
```

	City	HighestSales
1	Zwickau	4224000
2	Zweibrücken	2966400
3	Zittau	2980000
4	Zirndorf	3260600
5	Zielona Góra	444528

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

```
SELECT [Product Name], [Sub-channel], AVG(Price) AS AveragePrice FROM Pharma_data GROUP BY [Sub-channel], [Product Name];
```

	Product Name	Sub-channel	AveragePrice
1	Relenvice	Government	459
2	Aspinavir Silovance	Private	549
3	Aldevac	Private	26
4	Comzyme	Private	114
5	Alimethate Insudase	Institution	624
6	Cricane Acamsumab	Retail	22
7	Imiderm Vibranovate	Retail	390
8	Albudazole Erobloc	Private	563
9	Lactubucil	Retail	585
10	Lactubucil	Institution	585
11	Victomine	Private	705
12	Imiderm Vibranovate	Institution	390
13	Pitodomide	Retail	24
14	Primate Univitol	Government	172
15	Exotropin Empizine	Government	785
16	Lovephilus	Government	582
17	Benzoprox	Retail	284
18	Atomorelin	Private	555
19	Victomax	Retail	623
20	Ibruferon	Institution	82

Query executed... LAPTOP-FDG43O42 (15.0 RTM) | LAPTOP-FDG43O42\Asus (62) | pharma | 00:00:00 | 960 rows

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

```
SELECT CustomerName, Sales from Pharma_data WHERE City='Rendsburg' AND Year = '2018'
```

	CustomerName	Sales
1	Barton Ltd Pharm	22900
2	Barton Ltd Pharm	53280
3	Barton Ltd Pharm	2690
4	Barton Ltd Pharm	37100
5	Barton Ltd Pharm	63360
6	Barton Ltd Pharm	51570
7	Barton Ltd Pharm	1656
8	Barton Ltd Pharm	3135
9	Barton Ltd Pharm	22900
10	Barton Ltd Pharm	283950
11	Barton Ltd Pharm	34300
12	Barton Ltd Pharm	11396
13	Barton Ltd Pharm	14840
14	Barton Ltd Pharm	17986
15	Barton Ltd Pharm	2240
16	Barton Ltd Pharm	30700
17	Barton Ltd Pharm	570
18	Barton Ltd Pharm	2120
19	Barton Ltd Pharm	624
20	Barton Ltd Pharm	125600

Query executed s... LAPTOP-FDG43O42 (15.0 RTM) LAPTOP-FDG43O42\Asus (62) pharma 00:00:00 93 rows

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

```
SELECT year, month, ProductClass, SUM(Sales) AS Total_Sales FROM Pharma_data GROUP BY year, month, ProductClass ORDER BY year, month, ProductClass;
```

	year	month	ProductClass	Total_Sales
1	2017	April	Analgesics	32223716
2	2017	April	Antibiotics	40029226
3	2017	April	Antimalarial	17789675
4	2017	April	Antipiretics	22868812
5	2017	April	Antiseptics	42712211
6	2017	April	Mood Stabilizers	33176944
7	2017	August	Analgesics	49744520
8	2017	August	Antibiotics	32449096
9	2017	August	Antimalarial	25887712
10	2017	August	Antipiretics	39342305
11	2017	August	Antiseptics	45881555
12	2017	August	Mood Stabilizers	40529487
13	2017	December	Analgesics	64973444
14	2017	December	Antibiotics	28906649
15	2017	December	Antimalarial	20408987
16	2017	December	Antipiretics	33515804
17	2017	December	Antiseptics	44366481
18	2017	December	Mood Stabilizers	28588177
19	2017	February	Analgesics	32478774
20	2017	February	Antibiotics	38999789

Query executed... LAPTOP-FDG43O42 (15.0 RTM) LAPTOP-FDG43O42\Asus (62) pharma 00:00:00 288 rows

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

```
SELECT TOP 3 [Name of Sales Rep], MAX(Sales) AS Highest_Sale FROM Pharma_data WHERE Year= 2019 GROUP BY [Name of Sales Rep] ORDER BY MAX(Sales) DESC;
```

	Name of Sales Rep	Highest_Sale
1	Jimmy Grey	74205600
2	Anne Wu	30164400
3	Stella Given	28294700

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

```
SELECT DISTINCT Month ,Year, [Sub-channel], SUM(Sales) AS Total_Sales, AVG(Sales) AS Average_Sales
FROM Pharma_data GROUP BY Month ,Year, [Sub-channel];
```

	Month	Year	Sub-channel	Total_Sales	Average_Sales
1	December	2017	Retail	55237346	51768.8341143393
2	June	2017	Private	48940376	46832.8956937799
3	September	2017	Institution	68683137	60460.5079225352
4	June	2018	Institution	95817660	53232.0333333333
5	May	2019	Government	45567465.178759	36337.6915301108
6	December	2018	Institution	48866889	32599.6591060707
7	January	2018	Private	75149489	38050.3741772152
8	June	2019	Government	63581492.5	51818.6572942135
9	January	2017	Government	38865698	36187.800744879
10	August	2020	Institution	47677122	44851.4788334901
11	August	2020	Retail	61283220	49223.4698795181
12	October	2019	Retail	53570722	47240.4955908289
13	July	2019	Retail	50703986	39033.0916089299
14	October	2020	Government	46367808	49327.4553191489
15	December	2020	Retail	115246585	93544.3060064935
16	June	2020	Retail	66904989	57134.9180187874
17	June	2020	Private	52747206	52484.7820895522
18	September	2019	Private	64026373	68258.3933901919
19	November	2019	Institution	55498928	55890.1591137966
20	October	2017	Private	50216498	51084.9420142421

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

```
SELECT ProductClass, SUM(Sales) AS Total_Sales, AVG(Price) AS Average_Price, SUM(Quantity) AS Total_Quantity
FROM Pharma_data GROUP BY ProductClass;
```

	ProductClass	Total_Sales	Average_Price	Total_Quantity
1	Antimalarial	1497455333.90892	337.66720801191	4249075.24967097
2	Analgesics	2371515114.28388	432.571071037519	5553143.78359865
3	Antipiretics	1883305591.17649	469.047679610337	4052544.0572775
4	Antiseptics	2237524743.6455	412.396698502988	5499912.71284735
5	Mood Stabilizers	2058909622.63676	400.493353441775	5169781.14213925
6	Antibiotics	1750277236.54387	419.671056545607	4154321.8570175

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

```
SELECT TOP 5 Year , MAX(Sales) AS TOP_5_Sales FROM Pharma_data GROUP BY Year ORDER BY TOP_5_Sales DESC;
```

	Year	TOP_5_Sales
1	2019	74205600
2	2020	47012000
3	2018	18144000
4	2017	17225000

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

```
WITH SalesWithPreviousYear AS (  
SELECT  
Country,  
Year,  
SUM(Sales) AS TotalSales,  
LAG(SUM(Sales)) OVER (PARTITION BY Country ORDER BY Year) AS PreviousYearSales  
FROM  
Pharma_data  
GROUP BY  
Country, Year  
)  
SELECT  
Country,  
Year,  
TotalSales,  
CASE  
WHEN PreviousYearSales IS NOT NULL THEN ((TotalSales - PreviousYearSales) / PreviousYearSales) * 100  
ELSE NULL  
END AS Year_over_Year_Growth  
FROM  
SalesWithPreviousYear;
```

	Country	Year	TotalSales	Year_over_Year_Growth
1	Germany	2017	2701480740.81559	NULL
2	Germany	2018	2826017551.8	4.60994628252697
3	Germany	2019	2930937132.77983	3.71263019626327
4	Germany	2020	2659672415	-9.25522129922138
5	Poland	2018	680879801.8	NULL

18. List the months with the lowest sales for each year

```
SELECT Month, MIN(Sales) AS LowestSales FROM Pharma_data GROUP BY Month;
```

	Month	LowestSales
1	February	-1048000
2	April	-1393600
3	January	-691200
4	March	-345600
5	December	-1382400
6	May	-3168000
7	September	-1317120
8	June	-1451860
9	October	-1331000
10	July	-1335000
11	November	-2433600
12	August	-4161600

19. 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 SubchannelSales AS (  
SELECT  
Country,  
[Sub-channel],  
SUM(Sales) AS TotalSales
```

```

FROM
Pharma_data
GROUP BY
Country, [Sub-channel]
),
RankedSubchannelSales AS (
SELECT
Country,
[Sub-channel],
TotalSales,
ROW_NUMBER() OVER (PARTITION BY [Sub-channel] ORDER BY TotalSales DESC) AS SalesRank
FROM
SubchannelSales
)
SELECT
Country,
[Sub-channel],
TotalSales
FROM
RankedSubchannelSales
WHERE
SalesRank = 1;

```

	Country	Sub-channel	TotalSales
1	Germany	Government	2920913380.94598
2	Germany	Institution	2719605147.49547
3	Germany	Private	2315301981.56278
4	Germany	Retail	3162287330.39119

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