SQL

PHARMA DATA ANALYSIS

Presentation by
ROOPA T

Retrieve all columns for all records in the dataset.

SQL

```sql
-- Retrieve all columns for all records in the dataset.--
SELECT COLUMN_NAME FROM INFORMATION_SCHEMA.COLUMNS
WHERE TABLE_NAME = 'pharma_data_analysis' AND TABLE_SCHEMA = 'pharma_data_analysis';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

COLUMN_NAME
Distributor
Customer_Name
Country
Latitude
Longitude
Channel
Sub_Channel
Product_Name
Product_Class
Quantity
Price
Sales
Month
Year
Name_of_Sales...
Manager
Sales_Team

How many unique countries are represented in the dataset?

SQL

```sql
1
2    -- How many unique countries are represented in the dataset? --
3 •  select distinct Country from pharma_data_analysis;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Country
Poland
Germany

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

SQL

```sql
-- Select the names of all the customers on the 'Retail' channel.--
select Customer_Name from pharma_data_analysis where Sub_Channel = 'Retail';
```

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

Customer_Name
Feest PLC
Keeling LLC Pharmacy
Blick, Pacocha and Schowalter
Leuschke PLC Pharmacy
McClure, Zemlak and Dibbert Pharma Plc
Lindgren-Simonis Pharm
Will and Sons Pharma Plc
Jakubowski Inc Pharmaceutical Limited
Nader-Gaylord Pharmaceutical Ltd
Emard-O'Connell Pharmacy
Feest PLC
McCullough LLC Pharma Plc
Parisian, Hagenes and Skiles Pharma Plc
Walsh-Brown Pharmacy
Schowalter, Runolfsson and VonRuede...
Veum-Kerluke Pharmacy
Koss-Beier
Funk and Sons Pharmaceutical Limited
Keeling LLC Pharmacy
Schmitt LLC Pharm
Funk and Sons Pharmaceutical Limited
Wintheiser, Breitenberg and Gottlieb P...

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

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```sql
1
2   --  Find the total quantity sold for the ' Antibiotics' product class. --
3 • select sum(Quantity) as Total_Quantity_Antibiotics from pharma_data_analysis
4   where Product_Class = 'Antibiotics';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Total_Quantity_Antibiotics
1913451

List all the distinct months present in the dataset.

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```
1
2    -- List all the distinct months present in the dataset. --
3 •  select distinct Month from pharma_data_analysis;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Month
January
February
March
April
May
June
July
August
September
October
November
December

Calculate the total sales for each year.

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```
1
2    --  Calculate the total sales for each year. --
3 •  SELECT Year, SUM(Sales) AS Total_Sales FROM pharma_data_analysis GROUP BY Year ORDER BY Year;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Year	Total_Sales
2017	2701480741
2018	2746600763

Find the customer with the highest sales value.

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```sql
1
2    -- Find the customer with the highest sales value. --
3 •  SELECT Customer_Name, SUM(Sales) AS Total_Sales FROM pharma_data_analysis
4    GROUP BY Customer_Name ORDER BY Total_Sales DESC LIMIT 1;
```

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

Customer_Name	Total_Sales
Raynor-Graham	32328845

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

SQL

```sql
-- Get the names of all employees who are Sales Reps and are managed by 'James Goodwill'.--
SELECT Name_of_Sales_Rep FROM pharma_data_analysis
WHERE Name_of_Sales_Rep IS NOT NULL AND Manager = 'James Goodwill';
```

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

Name_of_Sales_Rep
Thompson Crawford
Erica Jones
Alan Ray
Erica Jones
Alan Ray
Alan Ray
Alan Ray
Alan Ray
Thompson Crawford
Erica Jones
Alan Ray
Thompson Crawford
Erica Jones
Alan Ray
Alan Ray
Alan Ray
Erica Jones
Thompson Crawford
Erica Jones
Erica Jones

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

SQL

```sql
-- Calculate the average price of products in each sub-channel.  --
SELECT Sub_Channel, AVG(Price) AS Average_Price FROM pharma_data_analysis
GROUP BY Sub_Channel ORDER BY Sub_Channel;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Sub_Channel	Average_Price
Government	411.6918
Institution	413.3428
Private	409.5800
Retail	411.9988

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

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```
1
2   /*Join the 'Employees' table with the 'Sales' table to get the
3   name of the Sales Rep and the corresponding sales records.*/
4 • SELECT Name_of_Sales_Rep, Sales, Product_Name, Quantity, Price, Month,
5   Year FROM pharma_data_analysis;
```

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

Name_of_Sales_Rep	Sales	Product_Name	Quantity	Price	Month	Year
Mary Gerrard	1472	Topipizole	4	368	January	2018
Jessica Smith	4137	Choriotrisin	7	591	January	2018
Steve Pepple	1980	Acantaine	30	66	January	2018
Mary Gerrard	2610	Lioletine Refliruvax	6	435	January	2018
Anne Wu	9160	Oxymotroban Fexoformin	20	458	January	2018
Thompson Crawford	615	Pazofenac	5	123	January	2018
Sheila Stones	10720	Symbitrim	20	536	January	2018
Mary Gerrard	3710	Morphizolid Tianalin	5	742	January	2018
Stella Given	2204	Lovapur	4	551	January	2018
Morris Garcia	2430	Ampysin	10	243	January	2018
Erica Jones	26670	Trazobalamin	35	762	January	2018
Abigail Thompson	996	Atrabicin Alkerotec	4	249	January	2018
Abigail Thompson	3925	Exotropin Empizine	5	785	January	2018
Jessica Smith	1716	Afinitasol	6	286	January	2018
Anne Wu	3409	Amavirase	7	487	January	2018
Morris Garcia	3025	Neuropogen Empibax	5	605	January	2018
Daniel Gates	2740	Tracdomide	5	548	January	2018
Morris Garcia	8640	Novakyn Tracprox	30	288	January	2018

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

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```sql
1
2    -- Retrieve all sales made by employees from ' Poland ' in the year 2018. --
3 •  SELECT * FROM pharma_data_analysis WHERE Country = 'Poland' AND Year = 2018;
```

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

Distributor	Customer_Name	Country	Latitude	Longitude	Channel	Sub_Channel	Product_Name	Product_Class	Quantity	Price	Sales	Mon
Gottlieb-Cruickshank	Zieme, Doyle and Kunze	Poland	51.2333	22.5667	Hospital	Private	Topipizole	Mood Stabilizers	4	368	1472	Janu
Gottlieb-Cruickshank	Feest PLC	Poland	53.4167	18.4333	Pharmacy	Retail	Choriotrisin	Antibiotics	7	591	4137	Janu
Gottlieb-Cruickshank	Medhurst-Beer Pharmaceutical Limited	Poland	50.0833	18.5	Pharmacy	Institution	Acantaine	Antibiotics	30	66	1980	Janu
Gottlieb-Cruickshank	Barton Ltd Pharma Plc	Poland	50.3333	19.0833	Hospital	Private	Lioletine Refliruvax	Analgesics	6	435	2610	Janu
Gottlieb-Cruickshank	Keeling LLC Pharmacy	Poland	53.78	20.4942	Pharmacy	Retail	Oxymotroban Fexoformin	Analgesics	20	458	9160	Janu
Gottlieb-Cruickshank	Runte-Marquardt Pharmaceutical Ltd	Poland	54.0333	22.5	Hospital	Private	Pazofenac	Mood Stabilizers	5	123	615	Janu
Gottlieb-Cruickshank	Blick, Pacocha and Schowalter	Poland	52.7958	18.2611	Pharmacy	Retail	Symbitrim	Analgesics	20	536	10720	Janu
Gottlieb-Cruickshank	Leuschke PLC Pharmacy	Poland	52.8817	20.6106	Pharmacy	Retail	Morphizolid Tianalin	Mood Stabilizers	5	742	3710	Janu
Gottlieb-Cruickshank	Miller-Satterfield Pharma Plc	Poland	53.3583	20.425	Hospital	Private	Lovapur	Mood Stabilizers	4	551	2204	Janu
Gottlieb-Cruickshank	Bashirian-Kassulke Pharma Plc	Poland	50.0614	19.9372	Hospital	Private	Ampysin	Analgesics	10	243	2430	Janu
Gottlieb-Cruickshank	Wolff Group Pharm	Poland	51.95	14.7333	Hospital	Government	Trazobalamin	Mood Stabilizers	35	762	26670	Janu
Gottlieb-Cruickshank	Denesik, Walter and Beatty Pharma Plc	Poland	52.8	21.9	Pharmacy	Institution	Atrabicin Alkerotec	Antiseptics	4	249	996	Janu
Gottlieb-Cruickshank	Breitenberg-Kuhn Pharmacy	Poland	51.4036	21.1567	Hospital	Private	Exotropin Empizine	Mood Stabilizers	5	785	3925	Janu
Gottlieb-Cruickshank	McClure, Zemlak and Dibbert Pharma ...	Poland	54.3667	18.6333	Pharmacy	Retail	Afinitasol	Antipiretics	6	286	1716	Janu
Gottlieb-Cruickshank	Block-Romaguera Pharmaceutical Limi...	Poland	50.45	18.8667	Hospital	Private	Amavirase	Antipiretics	7	487	3409	Janu
Gottlieb-Cruickshank	Hahn, Rutherford and Gislason Phar...	Poland	50.15	18.8333	Hospital	Private	Neuropogen Empibax	Analgesics	5	605	3025	Janu
Gottlieb-Cruickshank	D'Amore and Sons	Poland	52.8	17.2	Hospital	Private	Tracdomide	Antipiretics	5	548	2740	Janu
Gottlieb-Cruickshank	Koss Ltd Pharmaceutical Limited	Poland	51.1167	15.5833	Hospital	Private	Novakyn Tracprox	Antiseptics	30	288	8640	Janu
Gottlieb-Cruickshank	Fadel-West	Poland	51.1264	15.9198	Pharmacy	Institution	Paronium Atracustone	Analgesics	2	414	828	Janu
Gottlieb-Cruickshank	Lindgren-Simonis Pharm	Poland	53.8647	20.9569	Pharmacy	Retail	Dantocept Ferurenone	Antiseptics	2	307	614	Janu

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

SQL

```
1
2   /*Calculate the total sales for each product class, for each month,
3   and order the results by year, month, and product class.*/
4   SELECT Product_Class, Year, Month, SUM(Sales) AS Total_Sales FROM pharma_data_analysis
5   GROUP BY Year, Month, Product_Class ORDER BY Year, Month, Product_Class;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Product_Class	Year	Month	Total_Sales
Analgesics	2017	April	32223716
Antibiotics	2017	April	40029226
Antimalarial	2017	April	17789675
Antipiretics	2017	April	22868812
Antiseptics	2017	April	42712211
Mood Stabilizers	2017	April	33176944
Analgesics	2017	August	49744520
Antibiotics	2017	August	32449096
Antimalarial	2017	August	25887712
Antipiretics	2017	August	39342305
Antiseptics	2017	August	45881555
Mood Stabilizers	2017	August	40529487
Analgesics	2017	Dece...	64973444
Antibiotics	2017	Dece...	28906649
Antimalarial	2017	Dece...	20408987
Antipiretics	2017	Dece...	33515804
Antiseptics	2017	Dece...	44366481
Mood Stabilizers	2017	Dece...	28588177
Analgesics	2017	Febru...	32478774
Antibiotics	2017	Febru...	38999789

Find the top 3 sales reps with the highest sales in 2018.

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```
1
2   -- Find the top 3 sales reps with the highest sales in 2018.--
3 • SELECT Name_of_Sales_Rep, SUM(Sales) AS Total_Sales FROM pharma_data_analysis
4   WHERE Year = 2018 GROUP BY Name_of_Sales_Rep ORDER BY Total_Sales DESC LIMIT 3;
```

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

Name_of_Sales_Rep	Total_Sales
Abigail Thompson	247791359
Jimmy Grey	229915267
Jessica Smith	229492500

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

SQL

```
1
2   /*Calculate the monthly total sales for each sub-channel,
3   and then calculate the average monthly sales for each sub-channel over the years.*/
4 • SELECT Sub_Channel, Year, Month, SUM(Sales) AS Monthly_Total_Sales FROM pharma_data_analysis
5   GROUP BY Sub_Channel, Year, Month ORDER BY Sub_Channel, Year, Month;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Sub_Channel	Year	Month	Monthly_Total_Sales
Government	2017	April	45892380
Government	2017	August	61552965
Government	2017	December	62902219
Government	2017	February	56120805
Government	2017	January	38865698
Government	2017	July	71080921
Government	2017	June	83329136
Government	2017	March	63392055
Government	2017	May	52318402
Government	2017	November	59672283
Government	2017	October	44153182
Government	2017	September	61297897
Government	2018	April	72326899
Government	2018	August	60592511
Government	2018	December	9724380
Government	2018	February	64930918
Government	2018	January	70292318
Government	2018	July	75247718
Government	2018	June	79118321

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

SQL

```sql
/*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 Average_Price, SUM(Quantity) AS Total_Quantity_Sold
FROM pharma_data_analysis GROUP BY Product_Class ORDER BY Product_Class;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Product_Class	Total_Sales	Average_Price	Total_Quantity_Sold
Analgesics	1073596451	431.7401	2515761
Antibiotics	800294279	417.6875	1913451
Antimalarial	662271380	338.8395	1856495
Antipiretics	872212162	468.0201	1876152
Antiseptics	1040048034	411.6805	2549419
Mood Stabilizers	999659198	400.1922	2433074

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

SQL

```sql
-- Find the top 5 customers with the highest sales for each year. --
WITH RankedCustomers AS (
    SELECT Customer_Name, Year, SUM(Sales) AS Total_Sales,
    ROW_NUMBER() OVER (PARTITION BY Year ORDER BY SUM(Sales) DESC) AS Ranks
    FROM pharma_data_analysis GROUP BY Customer_Name, Year
)
SELECT Customer_Name, Year, Total_Sales
FROM RankedCustomers WHERE Ranks <= 5 ORDER BY Year, Ranks;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_Name	Year	Total_Sales
Wiegand, Jast and Yost Pharmaceutical Ltd	2017	20947974
Raynor-Graham	2017	20691892
Fadel-West Pharmaceutical Ltd	2017	19381932
Kuphal, Herzog and Purdy	2017	16707639
Leannon-West Pharmaceutical Limited	2017	16639689
Watsica, Larson and Labadie Pharmaceutical Ltd	2018	19882211
Zemlak Group Pharm	2018	19684594
Balistreri, Torp and Gulgowski	2018	18223208
Kozey Ltd Pharma Plc	2018	18153929
Wehner-Stehr	2018	17747130

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

SQL

```sql

-- Find the top 5 customers with the highest sales for each year. --
WITH RankedCustomers AS (
    SELECT Customer_Name, Year, SUM(Sales) AS Total_Sales,
    ROW_NUMBER() OVER (PARTITION BY Year ORDER BY SUM(Sales) DESC) AS Ranks
    FROM pharma_data_analysis GROUP BY Customer_Name, Year
)
SELECT Customer_Name, Year, Total_Sales
FROM RankedCustomers WHERE Ranks <= 5 ORDER BY Year, Ranks;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_Name	Year	Total_Sales
Wiegand, Jast and Yost Pharmaceutical Ltd	2017	20947974
Raynor-Graham	2017	20691892
Fadel-West Pharmaceutical Ltd	2017	19381932
Kuphal, Herzog and Purdy	2017	16707639
Leannon-West Pharmaceutical Limited	2017	16639689
Watsica, Larson and Labadie Pharmaceutical Ltd	2018	19882211
Zemlak Group Pharm	2018	19684594
Balistreri, Torp and Gulgowski	2018	18223208
Kozey Ltd Pharma Plc	2018	18153929
Wehner-Stehr	2018	17747130

List the months with the lowest sales for each year.

SQL

```sql

-- 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
),
MinMonthlySales AS (
    SELECT Year, MIN(Total_Sales) AS Min_Sales
    FROM MonthlySales GROUP BY Year
)
SELECT ms.Year, ms.Month, ms.Total_Sales FROM MonthlySales ms JOIN MinMonthlySales mms
ON ms.Year = mms.Year AND ms.Total_Sales = mms.Min_Sales ORDER BY ms.Year, ms.Month;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Year	Month	Total_Sales
2017	January	151872184
2018	December	44208503

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.

SQL

```sql
/*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 SubChannelCountrySales AS (
    SELECT Sub_Channel, Country, SUM(Sales) AS Total_Sales
    FROM pharma_data_analysis GROUP BY Sub_Channel, Country
),
RankedSales AS (
    SELECT Sub_Channel, Country, Total_Sales,
    ROW_NUMBER() OVER (PARTITION BY Sub_Channel ORDER BY Total_Sales DESC) AS Ranks
    FROM SubChannelCountrySales
)
SELECT Sub_Channel, Country, Total_Sales
FROM RankedSales WHERE Ranks = 1 ORDER BY Sub_Channel;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Sub_Channel	Country	Total_Sales
Government	Germany	1223454332
Institution	Germany	1186494062
Private	Germany	1027052205
Retail	Germany	1330201103