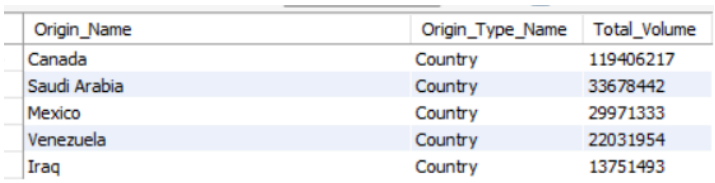
- Identify the top 5 countries from which the United States imported crude oil the most in terms of total volume over the entire period from 2009 to 2024. Include the total volume of crude oil imported from each country in the result."

```
SELECT Origin_Name,
        Origin_Type_Name,
        SUM(Quantity) AS Total_Volume
FROM my_data.oil
WHERE Year BETWEEN 2009 AND 2024 AND Origin_Type_Name = 'Country'
GROUP BY Origin_Name,
                Origin_Type_Name
ORDER BY Total_Volume DESC
LIMIT 5
```



Origin_Name	Origin_Type_Name	Total_Volume
Canada	Country	119406217
Saudi Arabia	Country	33678442
Mexico	Country	29971333
Venezuela	Country	22031954
Iraq	Country	13751493

- Analyze the monthly trends in crude oil imports over the entire period from 2009 to 2024. Calculate the average volume of crude oil imported per month and identify any significant fluctuations or seasonal patterns in import volumes."

```
SELECT
        Month,
        AVG(Quantity) AS Avg_Vol
        FROM my_data.oil
   WHERE Year BETWEEN 2009 AND 2024
GROUP BY
        Month
```

	Month	Avg_Vol
▶	1	2516.5074
	2	2287.1603
	3	2486.6964
	4	2402.5817
	5	2454.5420
	6	2390.5895
	7	2430.2978
	8	2454.0275
	9	2387.3407
	10	2379.2376
	11	2409.0930
	12	2494.7619

- Calculate the year-over-year growth rate in crude oil imports for each year from 2010 to 2024. Determine which years experienced the highest and lowest growth rates in import volumes and provide the percentage change."

```
WITH Yearly_Imports AS (SELECT
        Year,
   SUM(Quantity) AS Total_Vol
FROM
        my_data.Oil
WHERE Year BETWEEN 2010 AND 2024
GROUP BY
        Year
),
Yearly_Growth AS
(SELECT
        alpha.Year,
   alpha.Total_Vol,
   beta.Total_Vol AS Pre_Tol_Vol,
   ((alpha.Total_Vol - beta.Total_Vol) / CAST(beta.Total_Vol AS DECIMAL)) * 100 AS
Growth_Rate
FROM
```

```
        Yearly_Imports AS alpha
LEFT JOIN
        Yearly_Imports AS beta
ON
        alpha.Year = beta.Year + 1
),
results AS (SELECT
        Year,
   Total_Vol,
   Pre_Tol_Vol,
   Growth_Rate,
CASE
        WHEN Growth_Rate IS NULL THEN 'NULL'
        ELSE
   CONCAT(ROUND(Growth_Rate,2),'%')
   END AS Final_Growth_Rate
FROM
        Yearly_Growth
ORDER BY
        Growth_Rate DESC)

-- To find the year with the highest growth rate
SELECT
   Year,
   growth_rate
FROM
   results
WHERE
   growth_rate = (SELECT MAX(growth_rate) FROM Yearly_Growth);

-- To find the year with the lowest growth rate
SELECT
   Year,
   growth_rate
FROM
   results
WHERE
   growth_rate = (SELECT MIN(growth_rate) FROM Yearly_Growth);
```

–you will have to run either the max or min part one at a time with the rest of the code to get result

Year	Total_Vol	Pre_Tol_Vol	Growth_Rate	Final_Growth_Rate
2016	80446408	75247452	6.9091	6.91%
2021	62620782	60324572	3.8064	3.81%
2023	65943430	64215886	2.6902	2.69%
2022	64215886	62620782	2.5472	2.55%
2017	81483304	80446408	1.2889	1.29%
2015	75247452	75049128	0.2643	0.26%
2018	79381288	81483304	-2.5797	-2.58%
2011	93872828	97581904	-3.8010	-3.80%
2014	75049128	78700272	-4.6393	-4.64%
2012	86378796	93872828	-7.9832	-7.98%
2013	78700272	86378796	-8.8894	-8.89%
2019	69253016	79381288	-12.7590	-12.76%
2020	60324572	69253016	-12.8925	-12.89%
2024	5751256	65943430	-91.2785	-91.28%
2010	97581904	NULL	NULL	NULL

Year	Growth_Rate
2016	6.9091

Year	Growth_Rate
2024	-91.2785

- Investigate the distribution of crude oil imports across different U.S. ports of entry. Determine the top 3 ports of entry in terms of total volume imported and the average volume of crude oil imported per shipment for each port."

```
SELECT
   Destination_Type_Name AS Port_of_Entry,
   SUM(Quantity) AS Total_Imported_Volume,
   AVG(Quantity) AS Average_Imported_Volume_Per_Shipment
FROM
   my_data.oil
GROUP BY
   Destination_Type_Name
```

```
ORDER BY
   Total_Imported_Volume DESC
LIMIT 3
```

Port_of_Entry	Total_Imported_Volume	Average_Imported_Volume_Per_Shipment
Refinery	167359914	1099.5113
Refinery State	167359914	2258.9951
Refinery PADD	167359914	4891.8483

- Determine the market share of the top 5 oil companies in the United States based on the total volume of crude oil imports they handled over the entire period from 2009 to 2024. Include the percentage of total imports for each oil company."

```
WITH Top_Oil_Companies AS
(SELECT
        Destination_Name AS Oil_Companies,
        SUM(Quantity) AS Total_Volume
FROM
        my_data.Oil
WHERE BINARY Destination_Name = UPPER(Destination_Name) AND Destination_Name
REGEXP '[A-Z]+$'
        AND YEAR BETWEEN 2009 AND 2024
GROUP BY
        Destination_Name
ORDER BY
        Total_Volume DESC
LIMIT 5
),
Total_Imports_From_Five AS
(SELECT
   SUM(Total_Volume) AS Total_Imports
FROM
        Top_Oil_Companies

),
Results AS
(SELECT
        alpha.Total_Volume,
```

```
    alpha.Oil_Companies AS Oil_Companies,
    beta.Total_Imports,
    ((alpha.Total_Volume) / beta.Total_Imports) * 100 AS Percentage_Of_Total_Imports
FROM
        Top_Oil_Companies AS alpha
CROSS JOIN
        Total_Imports_From_Five AS beta
)
SELECT
        Oil_Companies,
    CASE
                WHEN Percentage_Of_Total_Imports IS NULL THEN 'NULL'
      ELSE
                CONCAT(ROUND(Percentage_Of_Total_Imports,2),'%')
      END AS
      Percentage_Of_Total_Imports_Result
FROM
        Results
```

Oil_Companies	Percentage_Of_Total_Imports_Result
EXXONMOBIL REFINING & SPLY CO / JOLIET / IL	20.95%
MOTIVA ENTERPRISES LLC / PORT ARTHUR / TX	20.64%
BP PRODUCTS NORTH AMERICA / WHITING REFINERY / IN	20.57%
FLINT HILLS RESOURCES LP / PINE BEND REFINERY / MN	19.37%
CHEVRON USA / PASCAGOULA / MS	18.47%

- Classify the types of crude oil imported into the United States based on their properties (e.g., sweet, sour, light, heavy). Calculate the total volume of each type of crude oil imported and determine the percentage distribution of each type."

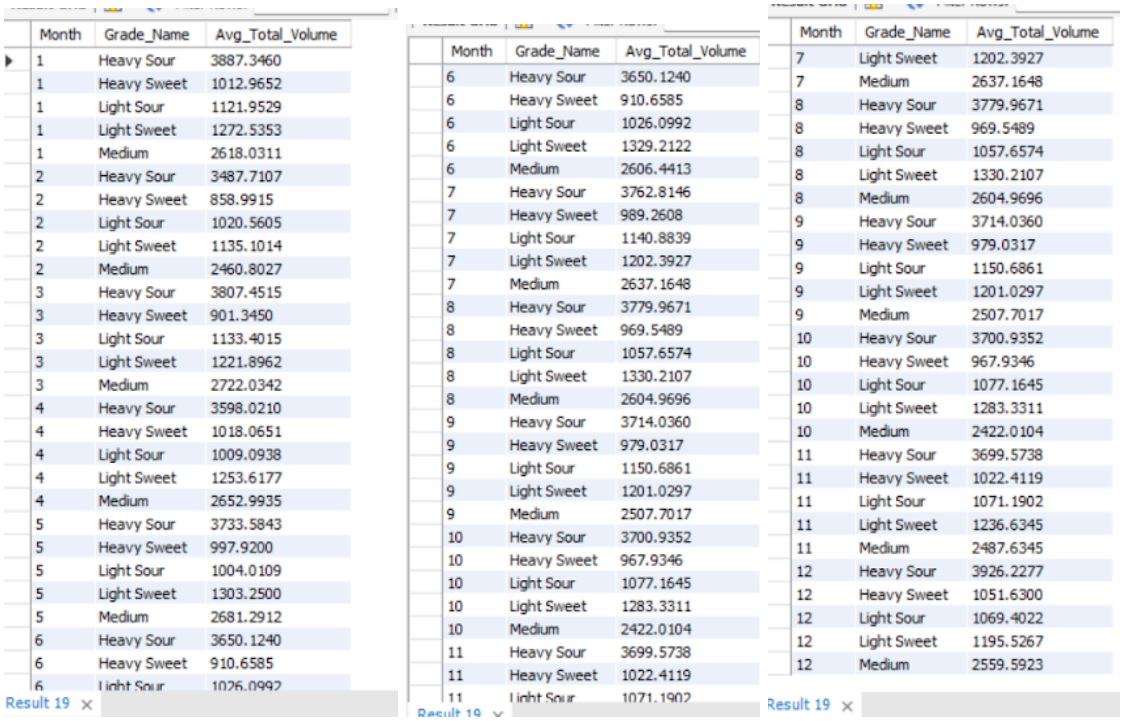
```
WITH Cruide_Oil AS
(SELECT
        Grade_Name,
        SUM(Quantity) AS Total_Volume
FROM my_data.oil
GROUP BY
        Grade_Name
ORDER BY
        Total_Volume DESC
),
Total AS
(SELECT
```

```
        SUM(Total_Volume) AS Sum_Of_Total_Volume
FROM
        Cruide_Oil
),
Results AS
(SELECT
        alpha.Grade_Name,
   alpha.Total_Volume,
   beta.Sum_Of_Total_Volume,
   ((alpha.Total_Volume) / beta.Sum_Of_Total_Volume) * 100 AS
Percentage_Distribution_Of_Each_Type
FROM
        Cruide_Oil AS alpha
CROSS JOIN
        Total AS beta
)
SELECT
        Grade_Name,
   Total_Volume,
   Sum_Of_Total_Volume,
   CASE
        WHEN Percentage_Distribution_Of_Each_Type IS NULL THEN 'NULL'
   ELSE
                CONCAT(ROUND(Percentage_Distribution_Of_Each_Type,2),'%')
        END AS Final_Percentage_Distribution_Of_Each_Type
FROM
        Results
```

Grade_Name	Total_Volume	Sum_Of_Total_Volume	Final_Percentage_Distribution_Of_Each_Type
Heavy Sour	598600688	1171519398	51.10%
Medium	372162574	1171519398	31.77%
Light Sweet	99507912	1171519398	8.49%
Light Sour	55276984	1171519398	4.72%
Heavy Sweet	45971240	1171519398	3.92%

- Investigate if there is any seasonal variation in crude oil import volumes based on the type of crude oil. Calculate the average volume of each type of crude oil imported for each month of the year and identify any significant peaks or troughs."

```
SELECT
        Month,
        Grade_Name,
   AVG(Quantity) AS Avg_Total_Volume
FROM my_data.oil
GROUP BY
        Month,
   Grade_Name
ORDER BY
        Month, Grade_Name
```



Month	Grade_Name	Avg_Total_Volume
1	Heavy Sour	3887.3460
1	Heavy Sweet	1012.9652
1	Light Sour	1121.9529
1	Light Sweet	1272.5353
1	Medium	2618.0311
2	Heavy Sour	3487.7107
2	Heavy Sweet	858.9915
2	Light Sour	1020.5605
2	Light Sweet	1135.1014
2	Medium	2460.8027
3	Heavy Sour	3807.4515
3	Heavy Sweet	901.3450
3	Light Sour	1133.4015
3	Light Sweet	1221.8962
3	Medium	2722.0342
4	Heavy Sour	3598.0210
4	Heavy Sweet	1018.0651
4	Light Sour	1009.0938
4	Light Sweet	1253.6177
4	Medium	2652.9935
5	Heavy Sour	3733.5843
5	Heavy Sweet	997.9200
5	Light Sour	1004.0109
5	Light Sweet	1303.2500
5	Medium	2681.2912
6	Heavy Sour	3650.1240
6	Heavy Sweet	910.6585
6	Light Sour	1026.0992
6	Light Sweet	1329.2122
6	Medium	2606.4413
7	Heavy Sour	3762.8146
7	Heavy Sweet	989.2608
7	Light Sour	1140.8839
7	Light Sweet	1202.3927
7	Medium	2637.1648
8	Heavy Sour	3779.9671
8	Heavy Sweet	969.5489
8	Light Sour	1057.6574
8	Light Sweet	1330.2107
8	Medium	2604.9696
9	Heavy Sour	3714.0360
9	Heavy Sweet	979.0317
9	Light Sour	1150.6861
9	Light Sweet	1201.0297
9	Medium	2507.7017
10	Heavy Sour	3700.9352
10	Heavy Sweet	967.9346
10	Light Sour	1077.1645
10	Light Sweet	1283.3311
10	Medium	2422.0104
11	Heavy Sour	3699.5738
11	Heavy Sweet	1022.4119
11	Light Sour	1071.1902
11	Light Sweet	1236.6345
11	Medium	2487.6345
12	Heavy Sour	3926.2277
12	Heavy Sweet	1051.6300
12	Light Sour	1069.4022
12	Light Sweet	1195.5267
12	Medium	2559.5923

Result 19

- Assess the dependency of the United States on crude oil imports by comparing the ratio of imported crude oil volume to domestic crude oil production. Calculate this ratio for each year from 2009 to 2023 and determine if there are any trends indicating increasing or decreasing import dependency."

```
WITH Imported AS
(SELECT
        Year,
        SUM(Quantity) AS Imported_Total_Volume
FROM my_data.oil
WHERE Year BETWEEN 2009 AND 2023
GROUP BY
        Year
),
Domestic AS
(SELECT
        Year,
   U_S_Field_Production_of_Crude_Oil_Thousand_Barrels
FROM
        my_data.united_states_oil
WHERE Year BETWEEN 2009 AND 2023
)
SELECT
        alpha.Year,
        alpha.Imported_Total_Volume,
   beta.Year,
        beta.U_S_Field_Production_of_Crude_Oil_Thousand_Barrels,

(alpha.Imported_Total_Volume/beta.U_S_Field_Production_of_Crude_Oil_Thousand_Barrels)
AS Ratio
FROM
        Imported AS alpha
LEFT JOIN
        Domestic AS beta
ON
        alpha.Year = beta.Year
```

Year	Imported_Total_Volume	Year	U_S_Field_Production_of_Crude_Oil_Thousand_Ba	Ratio
2009	95269076	2009	1955194	48.7261
2010	97581904	2010	2001805	48.7470
2011	93872828	2011	2071085	45.3254
2012	86378796	2012	2387700	36.1766
2013	78700272	2013	2735821	28.7666
2014	75049128	2014	3208643	23.3897
2015	75247452	2015	3445393	21.8400
2016	80446408	2016	3237795	24.8460
2017	81483304	2017	3415448	23.8573
2018	79381288	2018	3997180	19.8593
2019	69253016	2019	4493544	15.4117
2020	60324572	2020	4142504	14.5623
2021	62620782	2021	4112721	15.2261
2022	64215886	2022	4347377	14.7712
2023	65943430	2023	4718434	13.9757