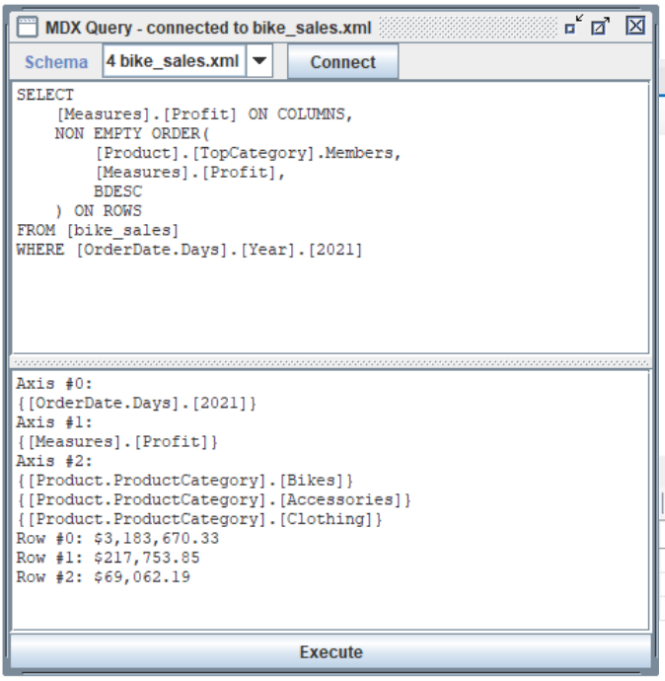
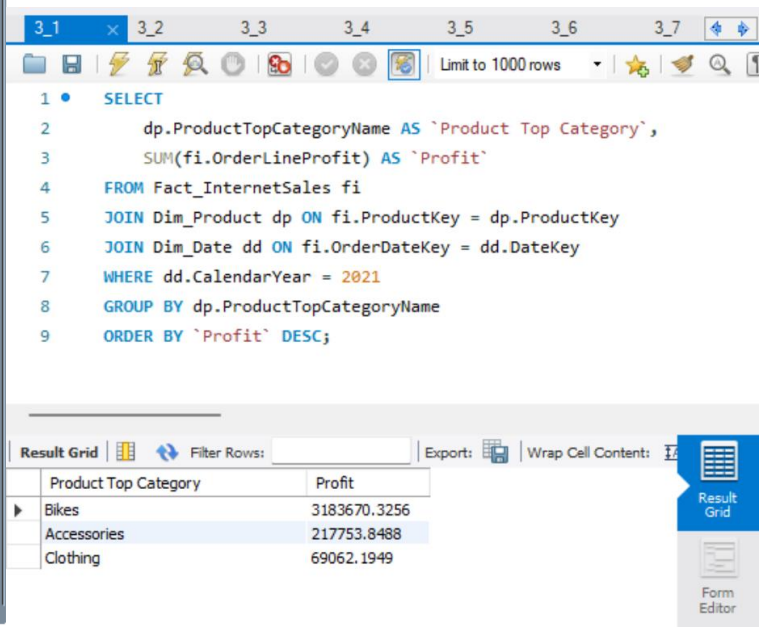
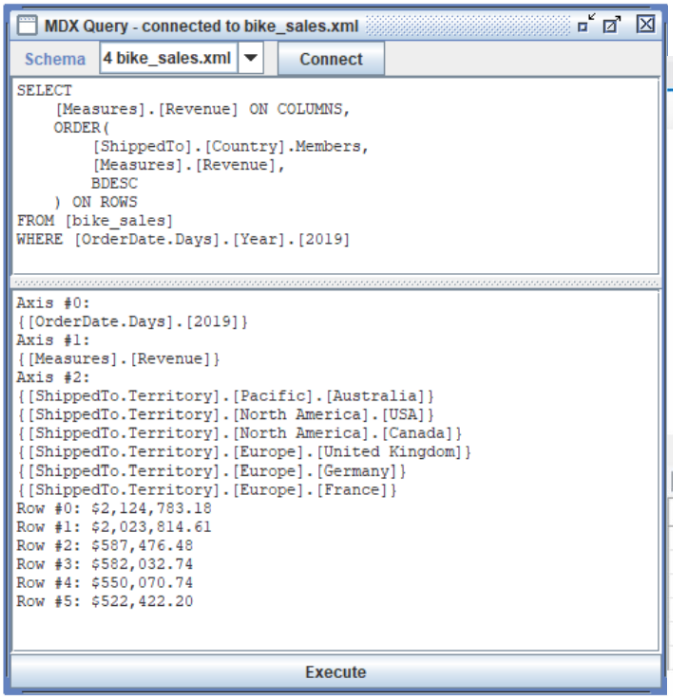
# BI Assignment 3 – Task 3

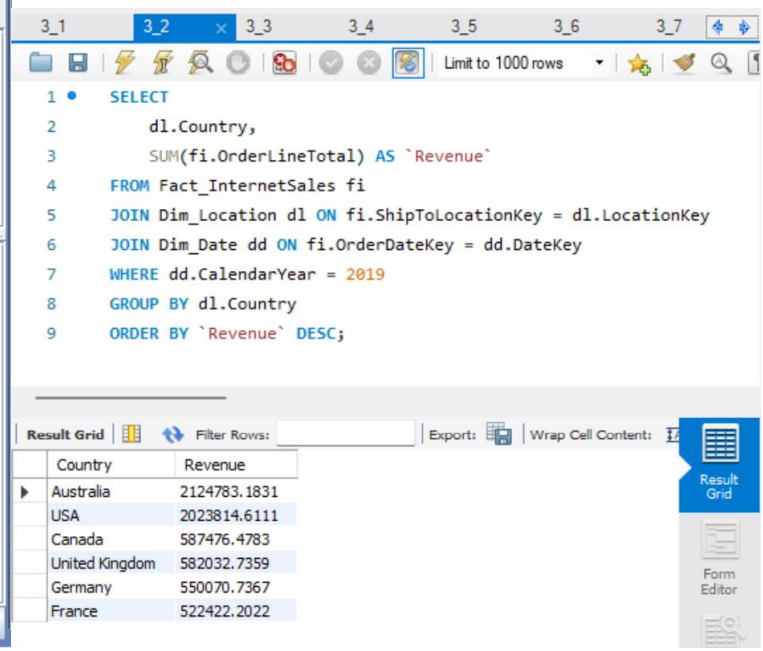
### 3.1 (MDX and SQL)



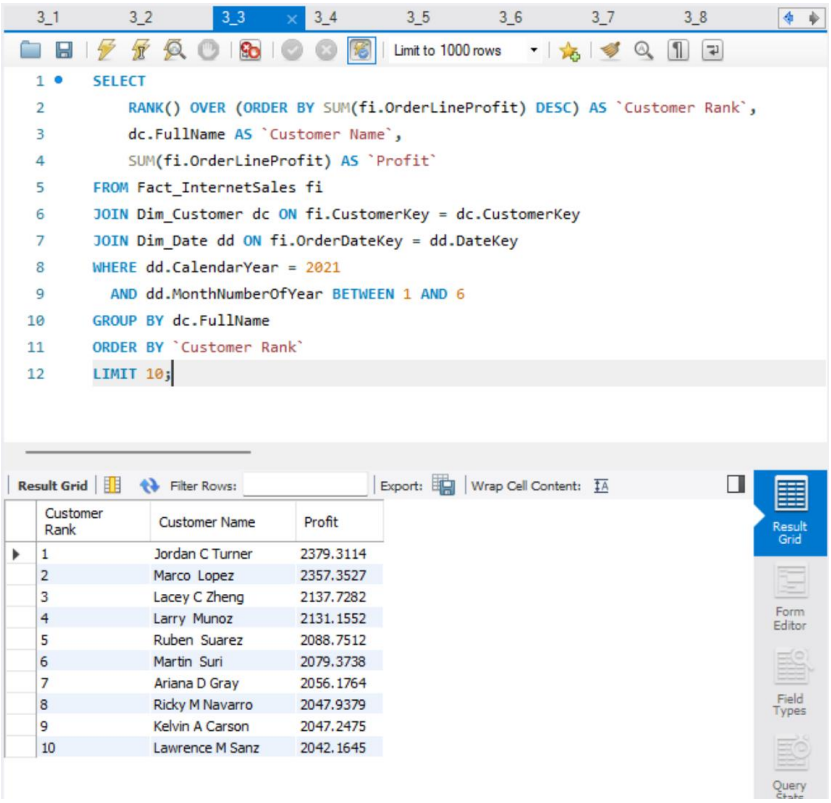




### 3.2 (MDX and SQL)



### 3.3 (SQL)

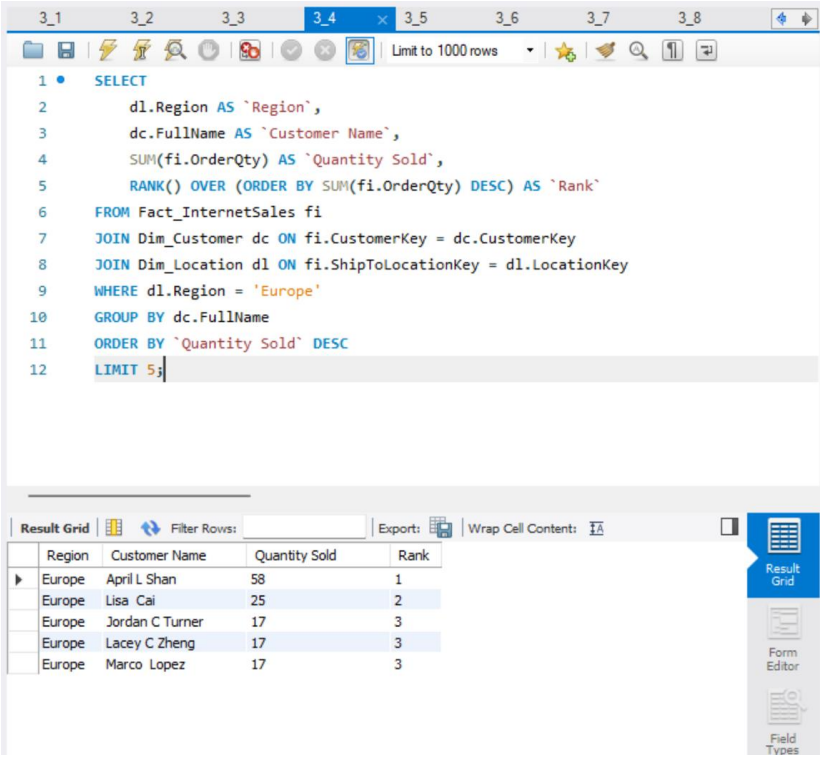


```sql
SELECT
    RANK() OVER (ORDER BY SUM(fi.OrderLineProfit) DESC) AS `Customer Rank`,
    dc.FullName AS `Customer Name`,
    SUM(fi.OrderLineProfit) AS `Profit`
FROM Fact_InternetSales fi
JOIN Dim_Customer dc ON fi.CustomerKey = dc.CustomerKey
JOIN Dim_Date dd ON fi.OrderDateKey = dd.DateKey
WHERE dd.CalendarYear = 2021
  AND dd.MonthNumberOfYear BETWEEN 1 AND 6
GROUP BY dc.FullName
ORDER BY `Customer Rank`
LIMIT 10;
```

Result Grid

| Customer Rank | Customer Name | Profit |
|---|---|---|
| 1 | Jordan C Turner | 2379.3114 |
| 2 | Marco Lopez | 2357.3527 |
| 3 | Lacey C Zheng | 2137.7282 |
| 4 | Larry Munoz | 2131.1552 |
| 5 | Ruben Suarez | 2088.7512 |
| 6 | Martin Suri | 2079.3738 |
| 7 | Ariana D Gray | 2056.1764 |
| 8 | Ricky M Navarro | 2047.9379 |
| 9 | Kelvin A Carson | 2047.2475 |
| 10 | Lawrence M Sanz | 2042.1645 |

### 3.4 (SQL)

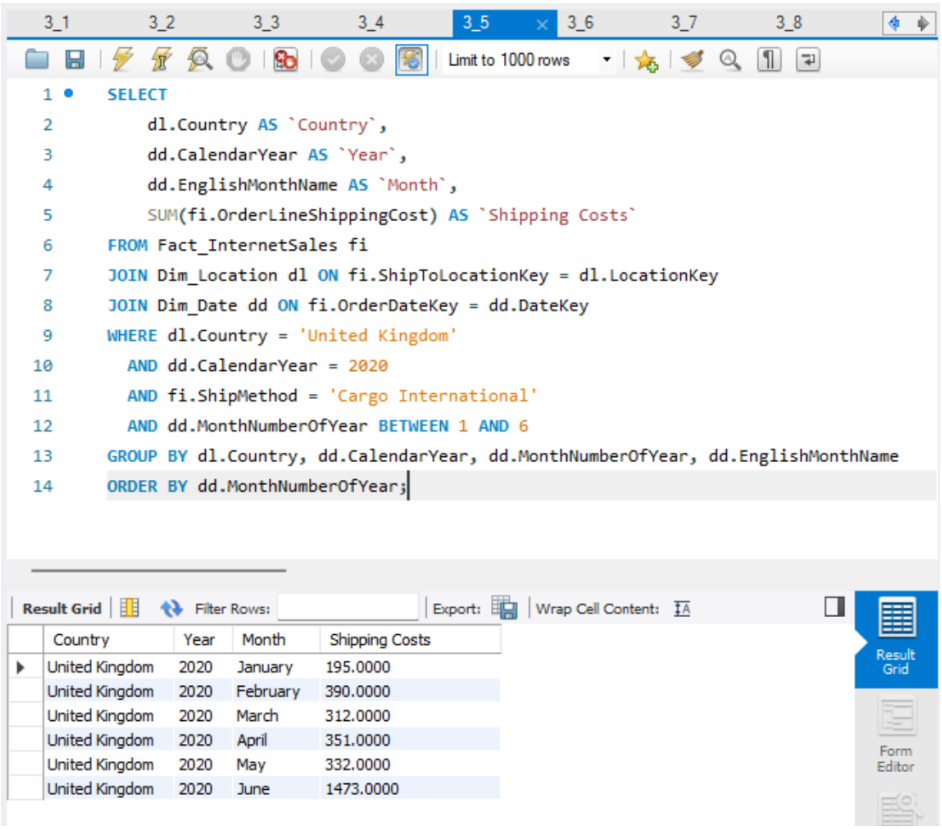


```sql
SELECT
    dl.Region AS `Region`,
    dc.FullName AS `Customer Name`,
    SUM(fi.OrderQty) AS `Quantity Sold`,
    RANK() OVER (ORDER BY SUM(fi.OrderQty) DESC) AS `Rank`
FROM Fact_InternetSales fi
JOIN Dim_Customer dc ON fi.CustomerKey = dc.CustomerKey
JOIN Dim_Location dl ON fi.ShipToLocationKey = dl.LocationKey
WHERE dl.Region = 'Europe'
GROUP BY dc.FullName
ORDER BY `Quantity Sold` DESC
LIMIT 5;
```

Result Grid

| Region | Customer Name | Quantity Sold | Rank |
|---|---|---|---|
| Europe | April L Shan | 58 | 1 |
| Europe | Lisa Cai | 25 | 2 |
| Europe | Jordan C Turner | 17 | 3 |
| Europe | Lacey C Zheng | 17 | 3 |
| Europe | Marco Lopez | 17 | 3 |

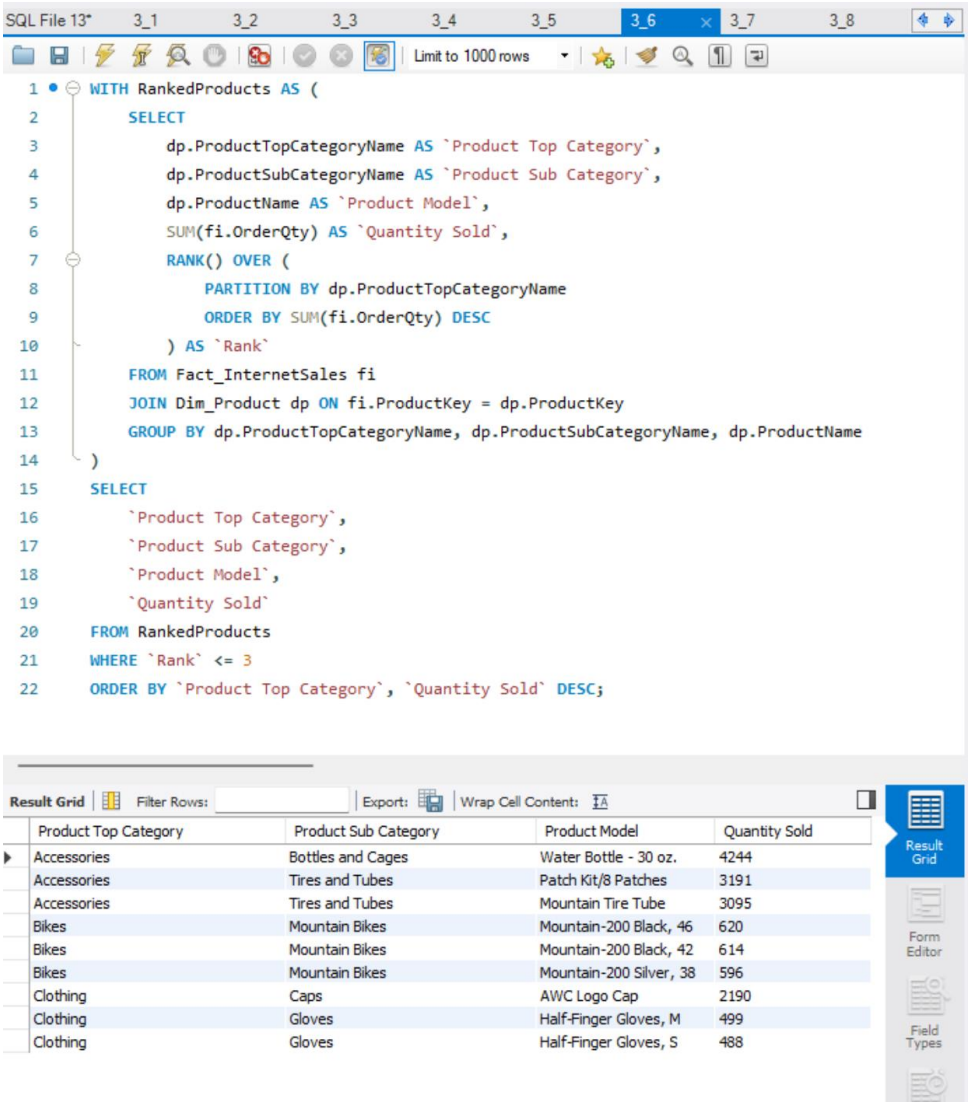
### 3.5 (SQL)



```sql
SELECT
    dl.Country AS `Country`,
    dd.CalendarYear AS `Year`,
    dd.EnglishMonthName AS `Month`,
    SUM(fi.OrderLineShippingCost) AS `Shipping Costs`
FROM Fact_InternetSales fi
JOIN Dim_Location dl ON fi.ShipToLocationKey = dl.LocationKey
JOIN Dim_Date dd ON fi.OrderDateKey = dd.DateKey
WHERE dl.Country = 'United Kingdom'
  AND dd.CalendarYear = 2020
  AND fi.ShipMethod = 'Cargo International'
  AND dd.MonthNumberOfYear BETWEEN 1 AND 6
GROUP BY dl.Country, dd.CalendarYear, dd.MonthNumberOfYear, dd.EnglishMonthName
ORDER BY dd.MonthNumberOfYear;
```

| Country | Year | Month | Shipping Costs |
|---|---|---|---|
| United Kingdom | 2020 | January | 195.0000 |
| United Kingdom | 2020 | February | 390.0000 |
| United Kingdom | 2020 | March | 312.0000 |
| United Kingdom | 2020 | April | 351.0000 |
| United Kingdom | 2020 | May | 332.0000 |
| United Kingdom | 2020 | June | 1473.0000 |

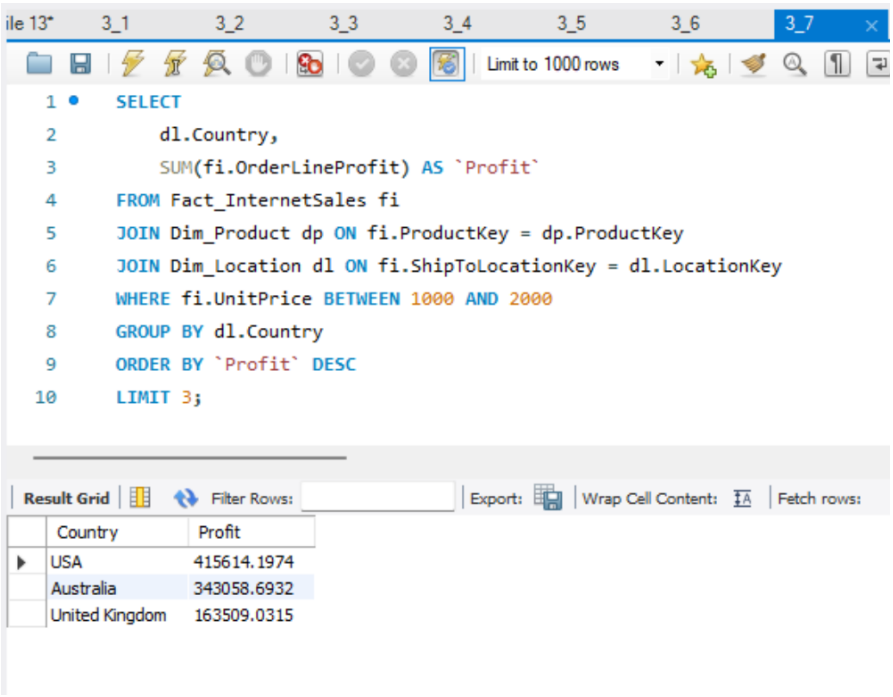
### 3.6 (SQL)



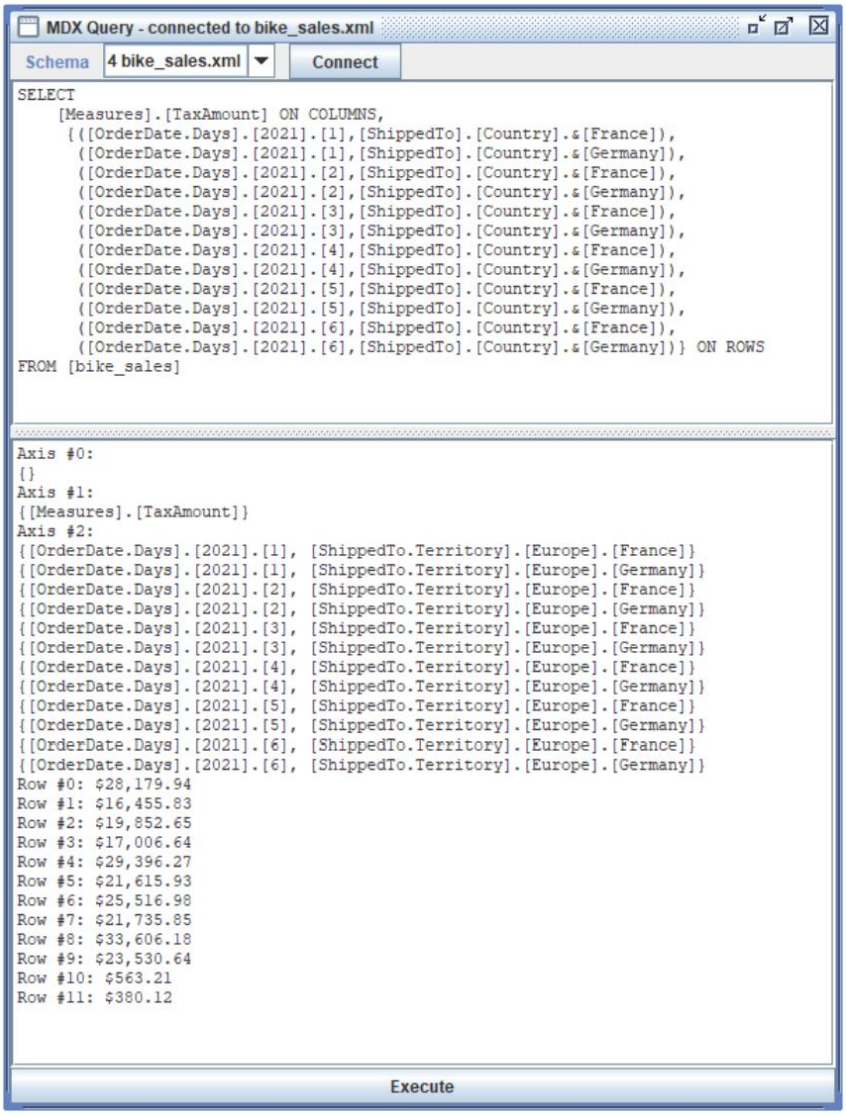
```sql
WITH RankedProducts AS (
    SELECT
        dp.ProductTopCategoryName AS `Product Top Category`,
        dp.ProductSubCategoryName AS `Product Sub Category`,
        dp.ProductName AS `Product Model`,
        SUM(fi.OrderQty) AS `Quantity Sold`,
        RANK() OVER (
            PARTITION BY dp.ProductTopCategoryName
            ORDER BY SUM(fi.OrderQty) DESC
        ) AS `Rank`
    FROM Fact_InternetSales fi
    JOIN Dim_Product dp ON fi.ProductKey = dp.ProductKey
    GROUP BY dp.ProductTopCategoryName, dp.ProductSubCategoryName, dp.ProductName
)
SELECT
    `Product Top Category`,
    `Product Sub Category`,
    `Product Model`,
    `Quantity Sold`
FROM RankedProducts
WHERE `Rank` <= 3
ORDER BY `Product Top Category`, `Quantity Sold` DESC;
```

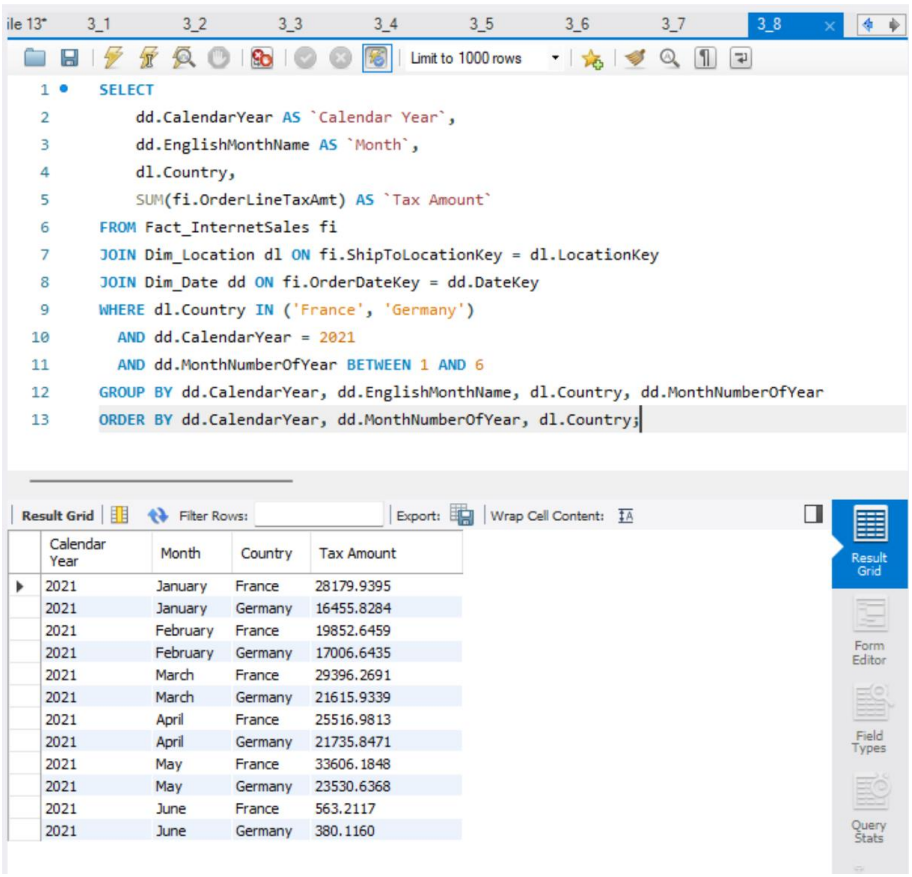
| Product Top Category | Product Sub Category | Product Model | Quantity Sold |
|---|---|---|---|
| Accessories | Bottles and Cages | Water Bottle - 30 oz. | 4244 |
| Accessories | Tires and Tubes | Patch Kit/8 Patches | 3191 |
| Accessories | Tires and Tubes | Mountain Tire Tube | 3095 |
| Bikes | Mountain Bikes | Mountain-200 Black, 46 | 620 |
| Bikes | Mountain Bikes | Mountain-200 Black, 42 | 614 |
| Bikes | Mountain Bikes | Mountain-200 Silver, 38 | 596 |
| Clothing | Caps | AWC Logo Cap | 2190 |
| Clothing | Gloves | Half-Finger Gloves, M | 499 |
| Clothing | Gloves | Half-Finger Gloves, S | 488 |

### 3.7 (SQL)




### 3.8 (MDX and SQL)






| Calendar Year | Month | Country | Tax Amount |
|---|---|---|---|
| 2021 | January | France | 28179.9395 |
| 2021 | January | Germany | 16455.8284 |
| 2021 | February | France | 19852.6459 |
| 2021 | February | Germany | 17006.6435 |
| 2021 | March | France | 29396.2691 |
| 2021 | March | Germany | 21615.9339 |
| 2021 | April | France | 25516.9813 |
| 2021 | April | Germany | 21735.8471 |
| 2021 | May | France | 33606.1848 |
| 2021 | May | Germany | 23530.6368 |
| 2021 | June | France | 563.2117 |
| 2021 | June | Germany | 380.1160 |