**Washington State University  
MIS 420 – Business Intelligence Online**

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**T-SQL #1**

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Table

Description automatically generatedWrite your answers to the following questions on this document, and upload this document for grading. Currently the AdventureWorksDW2014 database is on CB-OT-DEVST06.AD.WSU.EDU. You can access it with userID = mfstudent, Password = BIanalyst. Please review Page 9 of Module 2 documentation #1 to identify which fields from the FactResellerSales table are to be counted, summed, or averaged. In general you can count any column (as its counting rows), revenue is in the SalesAmount column, and units are in the Quantity column.  
  
Calculate all values using measure fields from the Fact tables, and textual descriptors from the dimension tables. The dimension tables used are dimReseller, dimGeography and the fact table is FactResellerSales. If you see numbers in the dimension tables, its best not to use these numbers, the convention is to use numbers from transaction tables.

***Chart

Description automatically generatedGraphical user interface, text

Description automatically generatedNote***: each row of the factReseller table represents one row on an invoice, and has a SalesOrderLineNumber. So the data does not easily provide totals by invoice# (aka SalesOrderNumber) In the image to the left you can see that the SalesOrderNumber is repeated. To grab the invoice number just once (for example to count invoices, or calculate an average by invoice) be sure to use COUNT(DISTINCT([column])) to grab one unique instance from a column that has repeating values. Please review Page 9 of Module 2 documentation #1 for further information.

1. A) What is the name of the **Reseller** that had the highest Dollar Sales Amount **(highest total sales -** use a GROUP BY query of the SalesAmount column**)** calculated from the FactReseller table?

**Brakes and Gears**

SQL Code:

SELECT [ResellerName]

, SUM([SalesAmount]) as [Total Sales]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

GROUP BY [ResellerName]

ORDER BY SUM([SalesAmount]) DESC

For this reseller

B) What is their city, state, country location?

**Tooele, Utah, United States**

SQL Code:

SELECT DISTINCT([ResellerName]), [City]

, [StateProvinceName] as [State]

, [EnglishCountryRegionName] as [Country]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [ResellerName] = 'Brakes and Gears'

C) What was the grand total in dollars?

**$ 877,107.19**

SQL Code:

SELECT [ResellerName]

, FORMAT(SUM([SalesAmount]), 'C2') as [Total Sales]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Brakes and Gears'

GROUP BY [ResellerName]

D) What kind of business are they/ Bike shop? Warehouse store? Or Value Added Reseller?

**Value Added Reseller**

SQL Code:

SELECT [ResellerName],[BusinessType]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Brakes and Gears'

GROUP BY [ResellerName],[BusinessType]

E) For this reseller what is the average $ amount of an invoice (use the SalesAmount column)?

**$73,092.27**

SQL Code:

SELECT [ResellerName]

, FORMAT(SUM(SalesAmount) / COUNT(DISTINCT([SalesOrderNumber])), 'C2') as [Avg $ invoice]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Brakes and Gears'

GROUP BY [ResellerName]

F) What is their average # **units** purchased (use the OrderQty column)?

**129 units**

SQL Code:  
SELECT [ResellerName]

, FORMAT(SUM(OrderQuantity) / COUNT(DISTINCT([SalesOrderNumber])), 'N0') as [Avg # units]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Brakes and Gears'

GROUP BY [ResellerName]

1. A) What is the name of the **Reseller** that had the highest average # line items per invoice? (this is similar to the number of items on a receipt at Walmart – count the items of the SalesOrderLineNumber column, and divide that by the number of invoices – this is demonstrated on pg. 9 of module 2.

**Exhibition Showroom**

SQL Code:

SELECT [ResellerName]

, COUNT([SalesOrderLineNumber]) / COUNT(DISTINCT([SalesOrderNumber])) as [Avg # line items per invoice]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

GROUP BY [ResellerName]

ORDER BY COUNT([SalesOrderLineNumber]) / COUNT(DISTINCT([SalesOrderNumber])) DESC

B) What is their city, state, Country location?

**Milton Keynes, England, United Kingdom**

SQL Code:

SELECT DISTINCT([ResellerName]), [City]

, [StateProvinceName] as [State]

, [EnglishCountryRegionName] as [Country]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [ResellerName] = 'Exhibition Showroom'

C) What was the grand total in dollars?

**$156,957.17**

SQL Code:

SELECT [ResellerName]

, FORMAT(SUM([SalesAmount]), 'C2') as [Total Sales]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Exhibition Showroom'

GROUP BY [ResellerName]

D) How many invoices?

**4 invoices**

SQL Code:

SELECT [ResellerName]

, COUNT(DISTINCT([SalesOrderNumber])) as [# Invoices]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Exhibition Showroom'

GROUP BY [ResellerName]

E) what kind of business are they/ Bike shop? Warehouse store? Or Value Added Reseller?

**Warehouse**

SQL Code:

SELECT [ResellerName],[BusinessType]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

WHERE [ResellerName] = 'Exhibition Showroom'

GROUP BY [ResellerName],[BusinessType]

1. A) What is the name of **the city** that had the highest total sales?

**Toronto**

SQL Code:

SELECT [City]

, SUM([SalesAmount]) as [Total Sales]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

GROUP BY [City]

ORDER BY SUM([SalesAmount]) DESC

B) How many invoices for this city?

**176 invoices**

SQL Code:

SELECT [City]

, COUNT(DISTINCT([SalesOrderNumber])) as [# Invoices]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [City] = 'Toronto'

GROUP BY [City]

C) What was the grand total in dollars revenue for this city? (SalesAmount column)

**$4,460,477.69**

SQL Code:

SELECT [City]

, FORMAT(SUM([SalesAmount]), 'C2') as [Revenue]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [City] = 'Toronto'

GROUP BY [City]

D) What is their average # line items per invoice for this city?

**19 line items per invoice**

SQL Code:

SELECT [City]

, COUNT([SalesOrderLineNumber]) / COUNT(DISTINCT([SalesOrderNumber])) as [Avg # line items per invoice]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [City] = 'Toronto'

GROUP BY [City]

E) What are the business types for this city? Bike shop? Warehouse store? Value Added Reseller? All?

**All**

SQL Code:

SELECT [City], [BusinessType]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [City] = 'Toronto'

GROUP BY [City], [BusinessType]

1. A) What is the name of **state or province from France** that had the highest total sales?

**Seine (Paris)**

SQL Code:

SELECT [StateProvinceName] as [State]

, SUM([SalesAmount]) as [Total Sales]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [EnglishCountryRegionName] = 'France'

GROUP BY [StateProvinceName]

ORDER BY SUM([SalesAmount]) DESC

B) How many invoices? (Count(Distinct([SalesOrderNumber]))

**53 invoices**

SQL Code:

SELECT [StateProvinceName] as [State]

, Count(Distinct([SalesOrderNumber])) as [# invoices]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [StateProvinceName] = 'Seine (Paris)'

GROUP BY [StateProvinceName]

C) What was the grand total in dollars?

**$1,452,049.41**

SQL Code:

SELECT [StateProvinceName] as [State]

, FORMAT(SUM(SalesAmount), 'C2') as [Grand Total]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [StateProvinceName] = 'Seine (Paris)'

GROUP BY [StateProvinceName]

D) What is their average # line items per invoice

**19 line items per invoice**

SQL Code:  
SELECT [StateProvinceName] as [State]

, COUNT([SalesOrderLineNumber]) / COUNT(DISTINCT([SalesOrderNumber])) as [Avg # line items per invoice]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [StateProvinceName] = 'Seine (Paris)'

GROUP BY [StateProvinceName]

1. Compare the **total sales by country**.   
   A) If you add the European countries sales together are they greater than the United States?   
   (do this calculation in SQL using an IN statement)

European countries (France, Germany, United Kingdom) total sales: $10,870,534.80

United States total sales: $53,607,801.21

Therefore, European countries sales **are not greater** than the United States.

SQL Code (Find the total sales of European countries):

SELECT FORMAT(SUM(SalesAmount),'C2') as [Total Sales]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

WHERE [EnglishCountryRegionName] IN ('France','Germany','United Kingdom')

B) What countries are in the top 3 based on the grand total?

**United States $53,607,801.21**

**Canada $14,377,925.60**

**France $4,607,537.94**

United Kingdom $4,279,008.83

Germany $1,983,988.04

Australia $1,594,335.38

Therefore, 1st : United States, 2nd : Canada, 3rd : France

SQL Code:

SELECT [EnglishCountryRegionName] as [Country]

, FORMAT(SUM(SalesAmount),'C2') as [Grand Total]

FROM [dbo].[FactResellerSales] as fr

INNER JOIN [dbo].[DimReseller] as dr

ON fr.ResellerKey = dr.ResellerKey

INNER JOIN [dbo].[DimGeography] as g

ON dr.GeographyKey = g.GeographyKey

GROUP BY [EnglishCountryRegionName]

ORDER BY SUM(SalesAmount) DESC

C) What are the total # units sold to American (USA only) resellers?

**132,748 units sold**

SQL Code:

SELECT [EnglishCountryRegionName] as [Country]

, FORMAT(SUM([OrderQuantity]),'N0') as [Total Units Sold]

FROM [dbo].[FactResellerSales] as s

INNER JOIN [dbo].[DimReseller] as r

ON s.[ResellerKey] = r.[ResellerKey]

INNER JOIN [dbo].[DimGeography] as g

ON g.[GeographyKey] = r.[GeographyKey]

WHERE [EnglishCountryRegionName] = 'United States'

GROUP BY [EnglishCountryRegionName]

D) what countries have higher numbers than the United States for average # line items per invoice?

The United States has an average of 15-line items per invoice. Therefore, as a result of confirming that exceeds 15 using the HAVING clause,

United Kingdom: 18, Canada: 16, France: 18  
Hence, **United Kingdom, France, and Canada** have higher numbers than the United States for average line items per invoice.

SQL Code:

SELECT [EnglishCountryRegionName] as [Country]

, COUNT([SalesOrderLineNumber]) / COUNT(DISTINCT([SalesOrderNumber])) as [Avg # line items per invoice]

FROM [dbo].[FactResellerSales] as s

INNER JOIN [dbo].[DimReseller] as r

ON s.[ResellerKey] = r.[ResellerKey]

INNER JOIN [dbo].[DimGeography] as g

ON g.[GeographyKey] = r.[GeographyKey]

GROUP BY [EnglishCountryRegionName]

HAVING COUNT([SalesOrderLineNumber]) / COUNT(DISTINCT([SalesOrderNumber])) > 15

1. Change to the FactInternetSales table to examine individual customers. Total the sales and units, # Invoices, and Invoice average by **City in the United Kingdom**.

***Note: Pull the data from the factInternetSales table connecting that to the customers table and then connecting the DimCustomers table to the DimGeography table.***  
  
A) What city has the most commerce?

**London**

SQL Code:

SELECT [City], FORMAT(SUM(SalesAmount),'C2') as [Total Revenue]

FROM [dbo].[FactInternetSales] as i

INNER JOIN [dbo].[DimCustomer] as c

ON i.CustomerKey = c.CustomerKey

INNER JOIN [dbo].[DimGeography] as g

ON c.GeographyKey = g.GeographyKey

WHERE [EnglishCountryRegionName] = 'United Kingdom'

GROUP BY [EnglishCountryRegionName]

,[StateProvinceName],[City]

ORDER BY SUM(SalesAmount) DESC

B) Record their total units, total revenue, and Average invoice amount.

**Total units: 1,579**

**Total revenue: $802,810.30**

**Average invoice amount: 508**

SQL Code:

SELECT [City]

, FORMAT(SUM([OrderQuantity]), 'N0') as [Total Units]

, FORMAT(SUM([SalesAmount]),'C2') as [Total Revenue]

, FORMAT(AVG([SalesAmount]), 'N0') as [Avg Invoice]

FROM [dbo].[FactInternetSales] as i

INNER JOIN [dbo].[DimCustomer] as c

ON i.CustomerKey = c.CustomerKey

INNER JOIN [dbo].[DimGeography] as g

ON c.GeographyKey = g.GeographyKey

WHERE [EnglishCountryRegionName] = 'United Kingdom'

AND [City] = 'London'

GROUP BY [City]

C) The sales manager once claimed “London records more invoices than the next 5 UK cities combined!” Is it true?

London 686

York 186

Oxford 136

Warrington 135

Milton Keynes 106

Watford 91

London has 686 invoices and the next 5 UK cities combined have 186+136+135+106+91 = 654. Therefore, London has 32 more invoices than the next 5 UK cities combined.

Hence, **TRUE**.

SQL Code:

SELECT TOP(6) [City]

, COUNT(DISTINCT([SalesOrderNumber])) as [# Invoices]

FROM [dbo].[FactInternetSales] as i

INNER JOIN [dbo].[DimCustomer] as c

ON i.CustomerKey = c.CustomerKey

INNER JOIN [dbo].[DimGeography] as g

ON c.GeographyKey = g.GeographyKey

WHERE [EnglishCountryRegionName] = 'United Kingdom'

GROUP BY [City]

ORDER BY SUM(SalesAmount) DESC