EECS 495: Intro to Database Systems Project 3 – Data Warehouse

1. (a) Write an SQL query (run against the SQL Server Adventure Works database) that returns the aggregates needed for the given cross tabulation.

SQL Query:

```
SELECT geography.EnglishCountryRegionName AS Country,

CASE WHEN customer.EnglishEducation IS NULL THEN 'AllCustomers' ELSE customer.EnglishEducation END AS Education,

COUNT(customer.LastName) AS AllCustomers,

sum(CASE WHEN Gender = 'F' THEN 1 ELSE 0 END) AS Female,

sum(CASE WHEN Gender = 'M' THEN 1 ELSE 0 END) AS Male

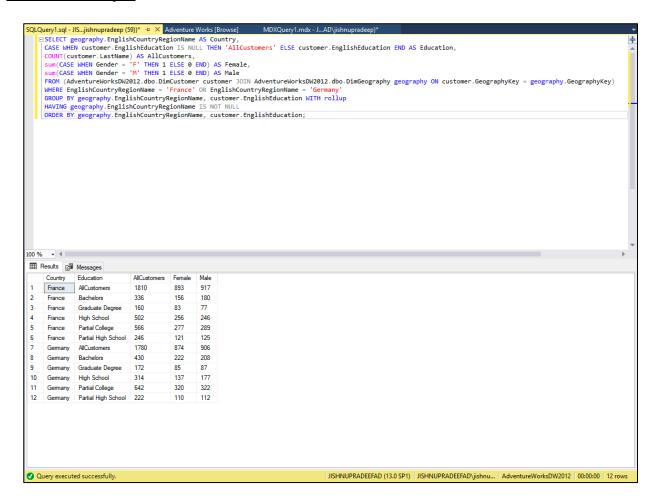
FROM (AdventureWorksDW2012.dbo.DimCustomer customer JOIN AdventureWorksDW2012.dbo.DimGeography geography

ON customer.GeographyKey = geography.GeographyKey)

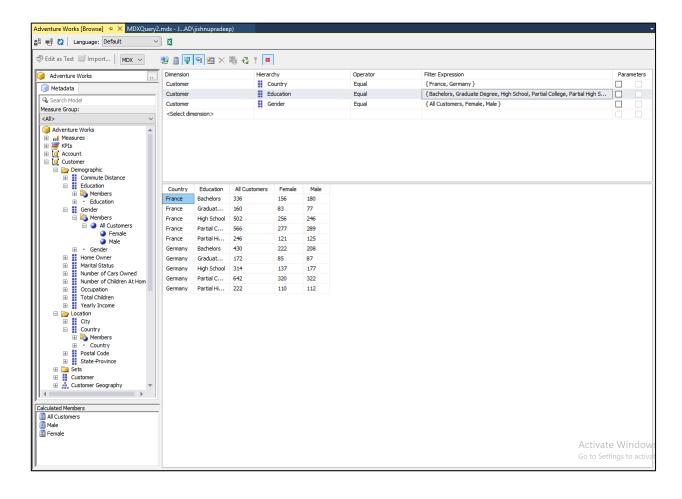
WHERE EnglishCountryRegionName = 'France' OR EnglishCountryRegionName = 'Germany'

GROUP BY geography.EnglishCountryRegionName, customer.EnglishEducation WITH rollup

HAVING geography.EnglishCountryRegionName, customer.EnglishEducation;
```



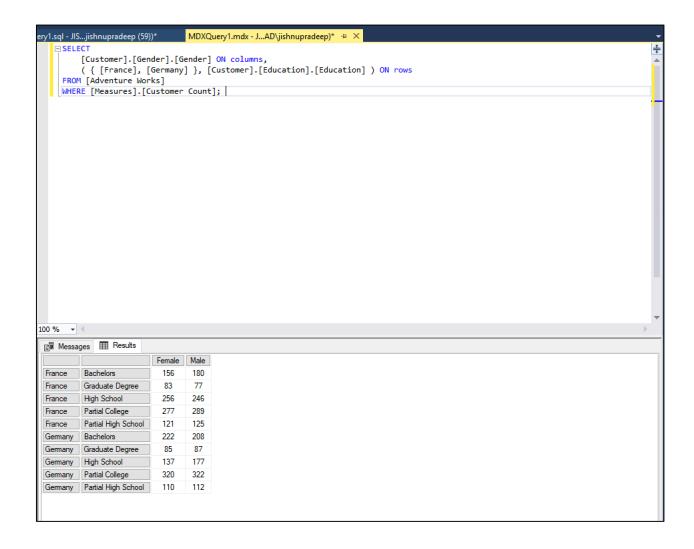
(b). Create now the cross-tabulation using the cube browser



2. Rewrite the MDX-query of question 1, such that the answer becomes as given.

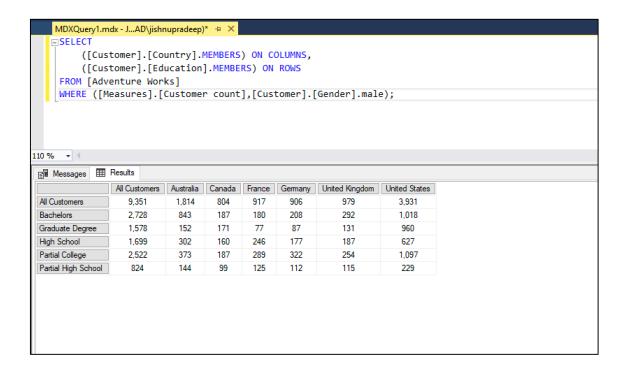
MDX Query:

```
SELECT
    [Customer].[Gender].[Gender] ON COLUMNS,
    ( { [France], [Germany] }, [Customer].[Education].[Education] ) ON
ROWS
FROM [Adventure Works]
WHERE [Measures].[Customer Count];
```



3. Make a cross-table between countries and education level that only includes counts of males.

MDX Query:

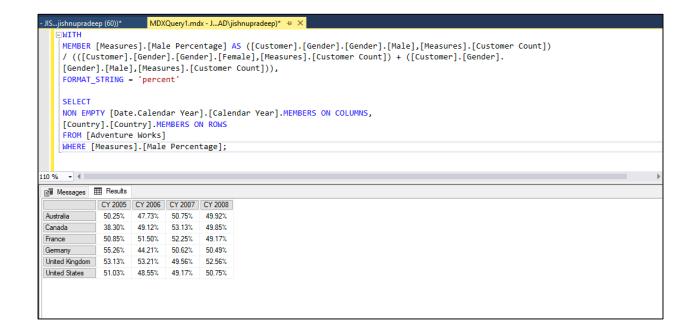


4. Create a measure that counts the percentage of males in the customer count. Use this measure to make an overview of the percentage of males in the customer counts per country and year.

MDX Query:

```
WITH
MEMBER [Measures].[Male Percentage] AS ([Customer].[Gender].[Gender].[Male],[Measures].[Customer Count])
/ (([Customer].[Gender].[Gender].[Female],[Measures].[Customer Count]) + ([Customer].[Gender].
[Gender].[Male],[Measures].[Customer Count])),
FORMAT_STRING = 'percent'

SELECT
NON EMPTY [Date.Calendar Year].[Calendar Year].MEMBERS ON COLUMNS,
[Country].[Country].MEMBERS ON ROWS
FROM [Adventure Works]
WHERE [Measures].[Male Percentage];
```

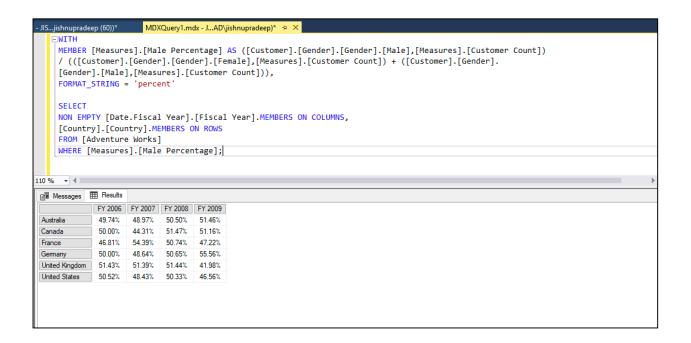


Note: It has been assumed that the question asks for percentage of males in customer counts per country per calendar year. To find the same for fiscal year the following will be the MDX query and output.

MDX Query:

```
WITH
MEMBER [Measures].[Male Percentage] AS ([Customer].[Gender].[Gender].[Male],[Measures].[Customer Count])
/ (([Customer].[Gender].[Gender].[Female],[Measures].[Customer Count]) + ([Customer].[Gender].
[Gender].[Male],[Measures].[Customer Count])),
FORMAT_STRING = 'percent'

SELECT
NON EMPTY [Date.Fiscal Year].[Fiscal Year].MEMBERS ON COLUMNS,
[Country].[Country].MEMBERS ON ROWS
FROM [Adventure Works]
WHERE [Measures].[Male Percentage];
```



5. Generate a list of the internet sales amount in all cities of France and Germany. Omit the empty cells.

MDX Query:

```
SELECT
    ([Measures].[Internet Sales Amount]) ON COLUMNS,
    NON EMPTY([Customer].[City].[City]) ON ROWS
FROM [Adventure Works]
WHERE ({[France], [Germany]});
```

■ Messages ■ Re	esults
	Internet Sales Amount
Berlin	\$102,668.50
Berlin	\$32,596.49
Berlin	\$49,670.21
Berlin	\$75,995.42
Bobigny	\$90,204.45
Bonn	\$20,637.05
Bonn	\$22,068.18
Bottrop	\$72,895.55
Boulogne-Billancourt	\$14,289.24
Boulogne-sur-Mer	\$11,342.92
Braunschweig	\$28,705.00
Cergy	\$46,755.90
Chatou	\$89,830.20
Colombes	\$90,268.51
Colomiers	\$54,641.72
Courbevoie	\$38,809.63
Croix	\$36,781.93
Damstadt	\$76,433.25
Drancy	\$56,031.38
Dresden	\$57,590.01
Duesseldorf	\$59,787.49
Dunkerque	\$75,474.38
Eilenburg	\$57,919.21
Erlangen	\$77,585.52
Essen	\$55,349.62
Frankfurt	\$67,852.63
Frankfurt	\$116,439.96
Frankfurt am Main	\$67,207.18
Frankfurt am Main	\$42,914.35
Grevenbroich	\$53,576.08
Hamburg	\$47,116.49
Hamburg	\$148,555.78
Hannover	\$28,792.22
Hof	\$91,915.14
Ingolstadt	\$109,037.41
Kassel	\$84,798.32
Kiel	\$67,554.62
Leipzig	\$60,193.26
Les Ulis	\$181,244.73
Lieusaint	\$57,094.80

Lille	\$65,419.93
Metz	\$94,046.23
Morangis	\$56,432.84
Mühlheim	\$52,821.22
München	\$59,916.04
München	\$62,085.04
München	\$38,080.35
München	\$162.99
Münster	\$49,718.86
Neunkirchen	\$93,896.67
Offenbach	\$84,521.13
Orleans	\$91,562.91
Orly	\$28,478.12
Paderborn	\$39,873.50
Paderborn	\$98,366.72
Pantin	\$77,603.76
Paris	\$539,725.80
Paris La Defense	\$45,350.86
Poing	\$40,132.90
Roissy en Brie	\$52,640.44
Roncq	\$38,304.87
Roubaix	\$86,282.63
Saarbrücken	\$50,324.34
Saarlouis	\$76,614.39
Saint Germain en Laye	\$76,177.34
Saint Ouen	\$34,441.73
Saint Ouen	\$21,473.74
Saint Ouen	\$29,555.28
Saint-Denis	\$63,782.59
Salzgitter	\$57,353.24
Sèvres	\$39,598.20
Solingen	\$100,217.24
Stuttgart	\$80,507.46
Sulzbach Taunus	\$66,739.77
Suresnes	\$35,099.73
Tremblay-en-France	\$91,857.57
Verrieres Le Buisson	\$41,619.61
Versailles	\$102,657.25
Villeneuve-d'Ascq	\$89,136.45
Weme	\$67,125.55

Note: To have countries included the following MDX query is used.

MDX Query:

```
SELECT
```

[Measures].[Internet Sales Amount] ON COLUMNS,
 NON EMPTY ({ [France], [Germany] }, [city]. [city].MEMBERS) ON ROWS
FROM [Adventure Works];

		Internet Sales Amount
F	Dahiann	\$90.204.45
France	Bobigny	
France	Boulogne-Billancourt	\$14,289.24
France	Boulogne-sur-Mer	\$11,342.92
France	Cergy	\$46,755.90
France	Chatou	\$89,830.20
France	Colombes	\$90,268.51
France	Colomiers	\$54,641.72
France	Courbevoie	\$38,809.63
France	Croix	\$36,781.93
France	Drancy	\$56,031.38
France	Dunkerque	\$75,474.38
France	Les Ulis	\$181,244.73
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France	Sèvres	\$39,598.20
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France	Tremblay-en-France	\$91,857.57
France	Verrieres Le Buisson	\$41,619.61
France	Versailles	\$102.657.25
France	Villeneuve-d'Asca	\$89.136.45
Germany	Berlin	\$102,668.50
Germany	Berlin	\$32,596.49
Germany	Berlin	\$49.670.21
Germany	Berlin	\$75,995.42
Germany	Bonn	\$75,995.42

		Internet Sales Amount
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Germany	Braunschweig	\$28,705.00
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Germany	Dresden	\$57,590.01
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Germany	Essen	\$55,349.62
Germany	Frankfurt	\$67,852.63
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Germany	Leipzig	\$60,193.26
Germany	Mühlheim	\$52,821.22
Germany	München	\$59,916.04
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Germany	Münster	\$49,718.86
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Germany	Offenbach	\$84,521.13
Germany	Paderborn	\$39,873.50
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