EECS 495: INTRODUCTION TO DATABASE SYSTEMS

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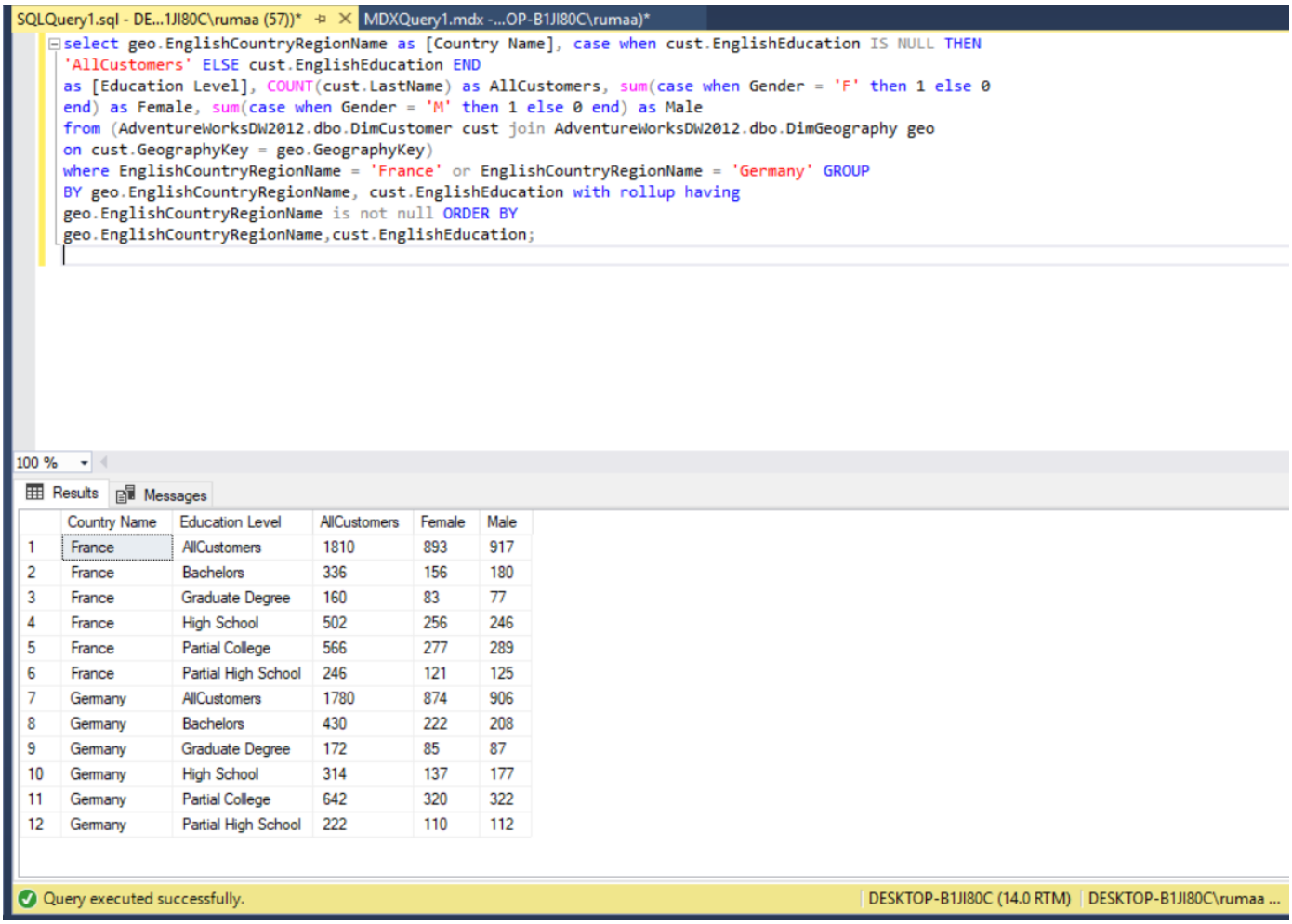
1. **A) Write an SQL query (run against the SQLServer AdventureWorks database) that returns the aggregates needed for the following cross tabulation:**

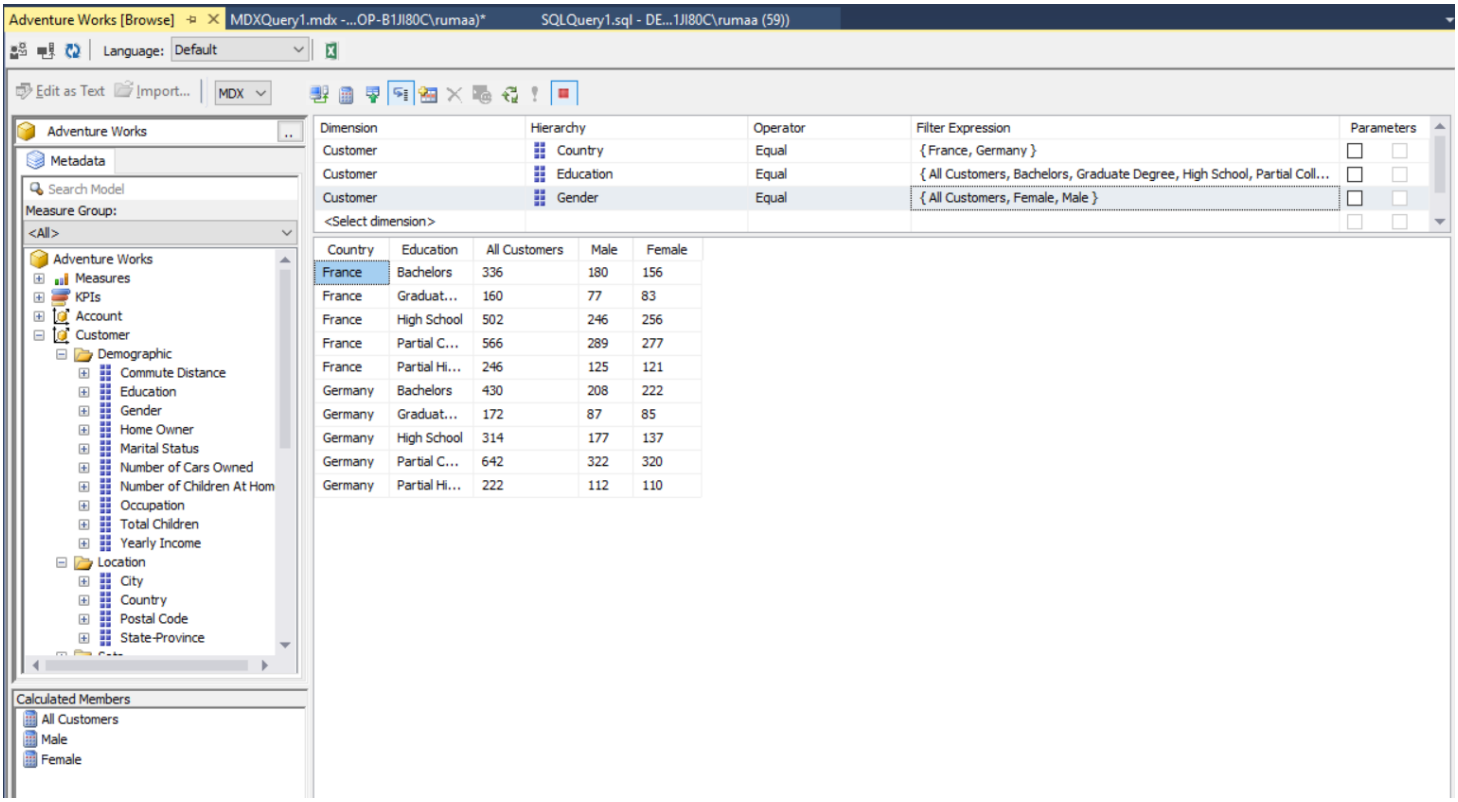
Solution 1.A

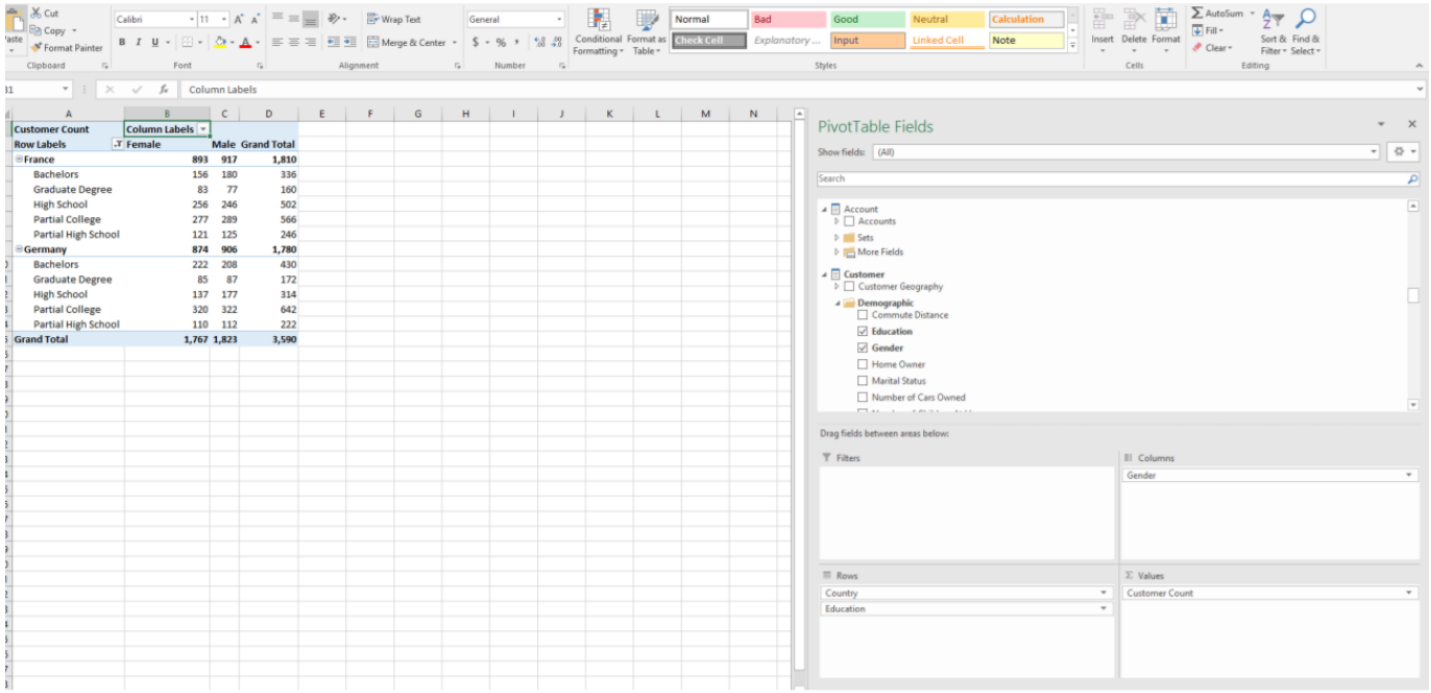
select geo.EnglishCountryRegionName as [Country Name], case when cust.EnglishEducation IS NULL THEN 'AllCustomers' ELSE cust.EnglishEducation END
as [Education Level], COUNT(cust.LastName) as AllCustomers, sum(case when Gender = 'F' then 1 else 0 end) as Female, sum(case when Gender = 'M' then 1 else 0 end) as Male
from (AdventureWorksDW2012.dbo.DimCustomer cust join AdventureWorksDW2012.dbo.DimGeography geo
on cust.GeographyKey = geo.GeographyKey)
where EnglishCountryRegionName = 'France' or EnglishCountryRegionName = 'Germany' GROUP BY geo.EnglishCountryRegionName, cust.EnglishEducation with rollup having geo.EnglishCountryRegionName is not null ORDER BY geo.EnglishCountryRegionName,cust.EnglishEducation;



	Country Name	Education Level	AllCustomers	Female	Male
1	France	AllCustomers	1810	893	917
2	France	Bachelors	336	156	180
3	France	Graduate Degree	160	83	77
4	France	High School	502	256	246
5	France	Partial College	566	277	289
6	France	Partial High School	246	121	125
7	Germany	AllCustomers	1780	874	906
8	Germany	Bachelors	430	222	208
9	Germany	Graduate Degree	172	85	87
10	Germany	High School	314	137	177
11	Germany	Partial College	642	320	322
12	Germany	Partial High School	222	110	112

1. **B) Create now the cross-tabulation using the cube browser**





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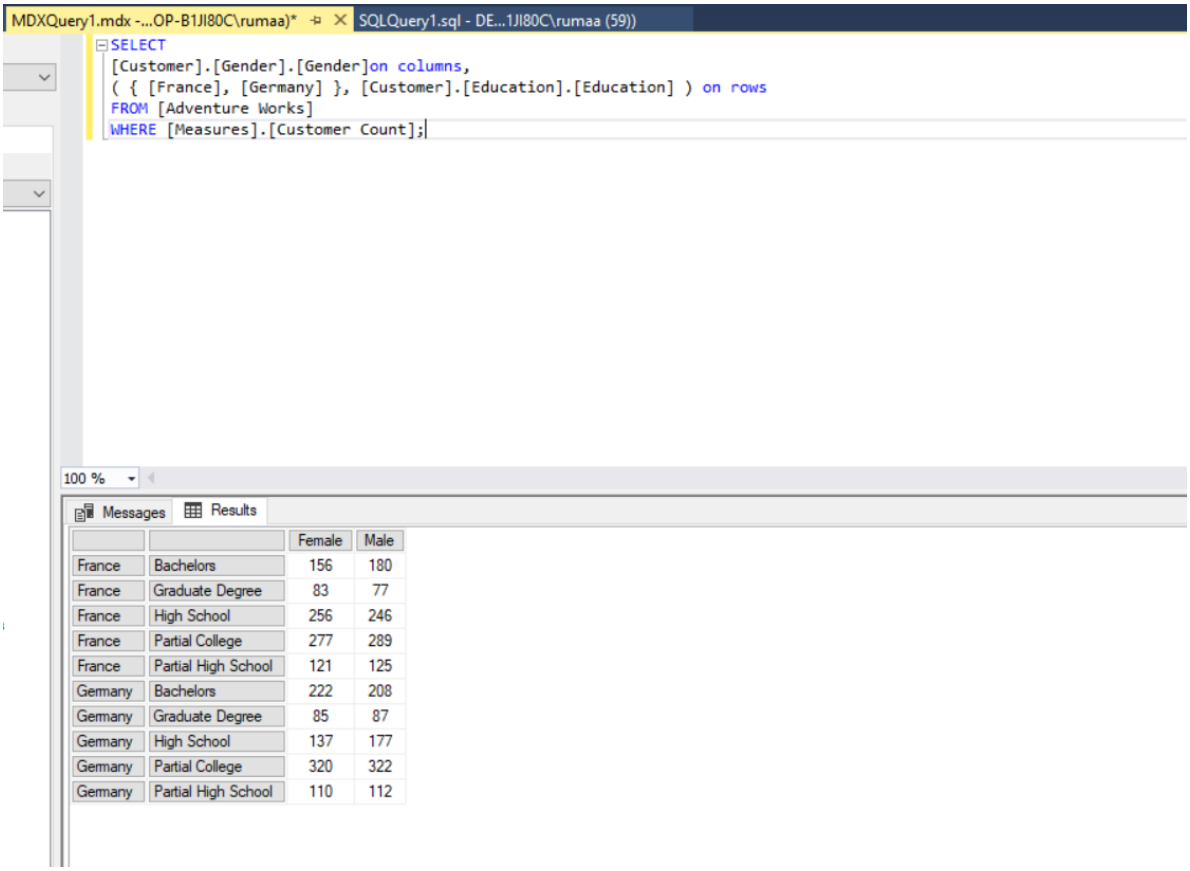
2. Rewrite the MDX-query of question 1, such that the answer becomes:

```
SELECT
[Customer].[Gender].[Gender]on columns,
( { [France], [Germany] }, [Customer].[Education].[Education] ) on rows
FROM [Adventure Works]
WHERE [Measures].[Customer Count];
```



		Female	Male
France	Bachelors	156	180
France	Graduate Degree	83	77
France	High School	256	246
France	Partial College	277	289
France	Partial High School	121	125
Germany	Bachelors	222	208
Germany	Graduate Degree	85	87
Germany	High School	137	177
Germany	Partial College	320	322
Germany	Partial High School	110	112

****

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

```
With Member [Measures].[MaleCount] AS
([Customer].[Gender].[Gender].[Male],[Measures].[Customer Count])

SELECT
[Customer].[Country].members on columns,
( [Customer].[Education].members) on rows
FROM [Adventure Works]
```

```
where [Measures].[MaleCount];
```

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```
With Member [Measures].[MaleCount] AS
([Customer].[Gender].[Gender].[Male],[Measures].[Customer Count])

SELECT
[Customer].[Country].members on columns,
( [Customer].[Education].members) on rows
FROM [Adventure Works]
where [Measures].[MaleCount];
```

100 %

Messages | Results

	All Customers	Australia	Canada	France	Germany	United Kingdom	United States
All Customers	9,351	1,814	804	917	906	979	3,931
Bachelors	2,728	843	187	180	208	292	1,018
Graduate Degree	1,578	152	171	77	87	131	960
High School	1,699	302	160	246	177	187	627
Partial College	2,522	373	187	289	322	254	1,097
Partial High School	824	144	99	125	112	115	229

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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.

```
With Member [Measures].[Male Percentage] as
[Measures].[Customer Count]/([Customer].[Gender].currentmember.parent,
[Measures].[Customer Count]),
format_string = "percent"
SELECT
Nonempty(([Date].[Calendar Year].[Calendar Year])) on columns,
([Customer].[Country].[Country]) on rows
FROM [Adventure Works]
WHERE ([Customer].[Gender].&[M], [Measures].[Male Percentage]);
```

MDXQuery1.mdx -...OP-B1JI80C\rumaa)*

```
With Member [Measures].[Male Percentage] as
[Measures].[Customer Count]/([Customer].[Gender].currentmember.parent,
[Measures].[Customer Count]),
format_string = "percent"
SELECT
Nonempty(([Date].[Calendar Year].[Calendar Year])) on columns,
([Customer].[Country].[Country]) on rows
FROM [Adventure Works]
WHERE ([Customer].[Gender].&[M], [Measures].[Male Percentage]);
```

100 %

Messages | Results

	CY 2005	CY 2006	CY 2007	CY 2008
Australia	50.25%	47.73%	50.75%	49.92%
Canada	38.30%	49.12%	53.13%	49.85%
France	50.85%	51.50%	52.25%	49.17%
Germany	55.26%	44.21%	50.62%	50.49%
United Kingdom	53.13%	53.21%	49.56%	52.56%
United States	51.03%	48.55%	49.17%	50.75%

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

```
SELECT
([Measures].[Internet Sales Amount]) on columns,
NON EMPTY([Customer].Country.Country,[Customer].[City].[City]) on rows
FROM [Adventure Works]
where ({[France], [Germany]});
```

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```
SELECT
([Measures].[Internet Sales Amount]) on columns,
NON EMPTY([Customer].Country.Country,[Customer].[City].[City]) on rows
FROM [Adventure Works]
where ({[France], [Germany]});
```

100 %

Messages | Results

		Internet Sales Amount
France	Bobigny	$90,204.45
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
France	Lieusaint	$57,094.80
France	Lille	$65,419.93
France	Metz	$94,046.23
France	Morangis	$56,432.84
France	Orleans	$91,562.91
France	Orly	$28,478.12
France	Pantin	$77,603.76
France	Paris	$539,725.80
France	Paris La Defense	$45,350.86
France	Roissy en Brie	$52,640.44
France	Roncq	$38,304.87
France	Roubaix	$86,282.63
France	Saint Germain en Laye	$76,177.34
France	Saint Ouen	$34,441.73

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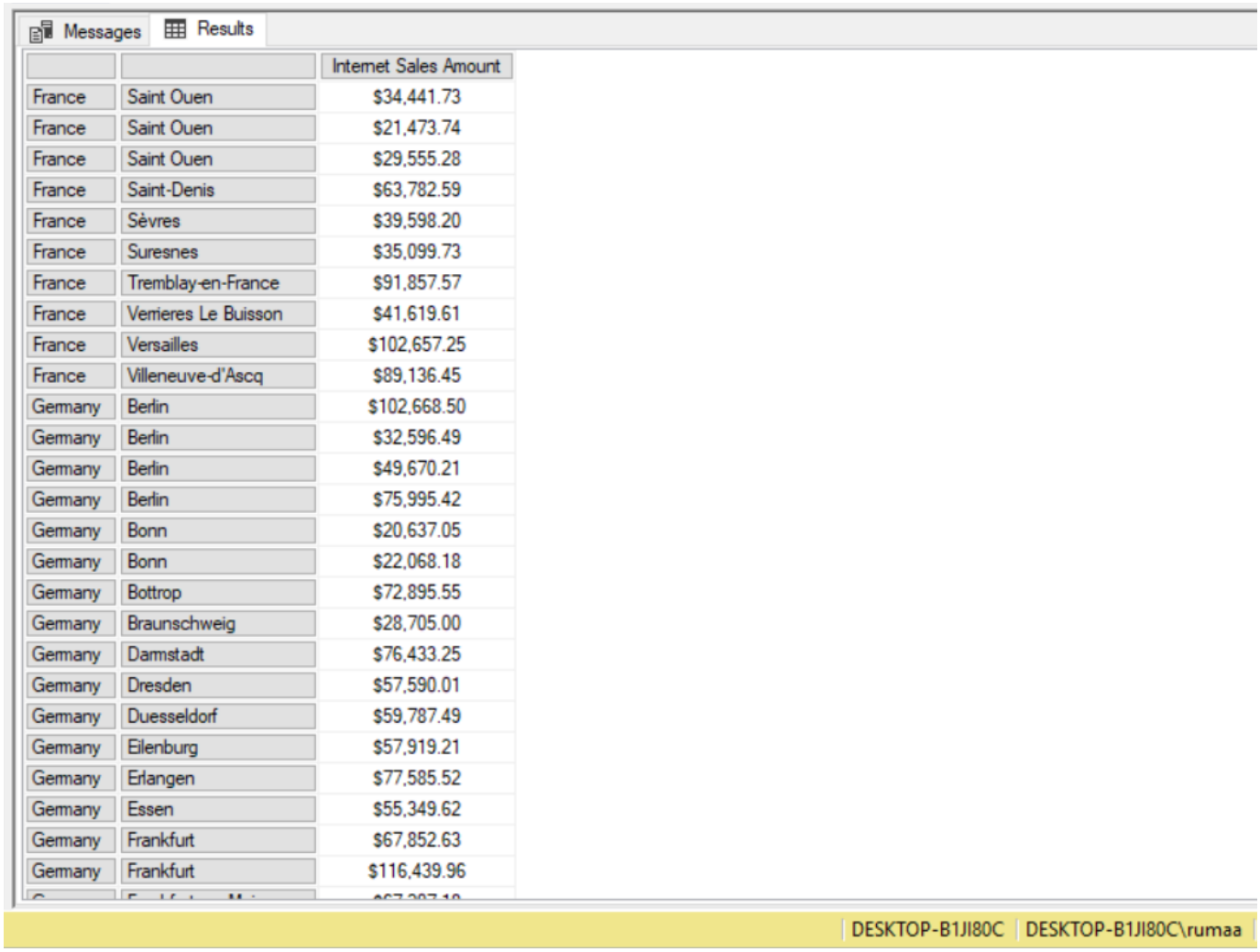
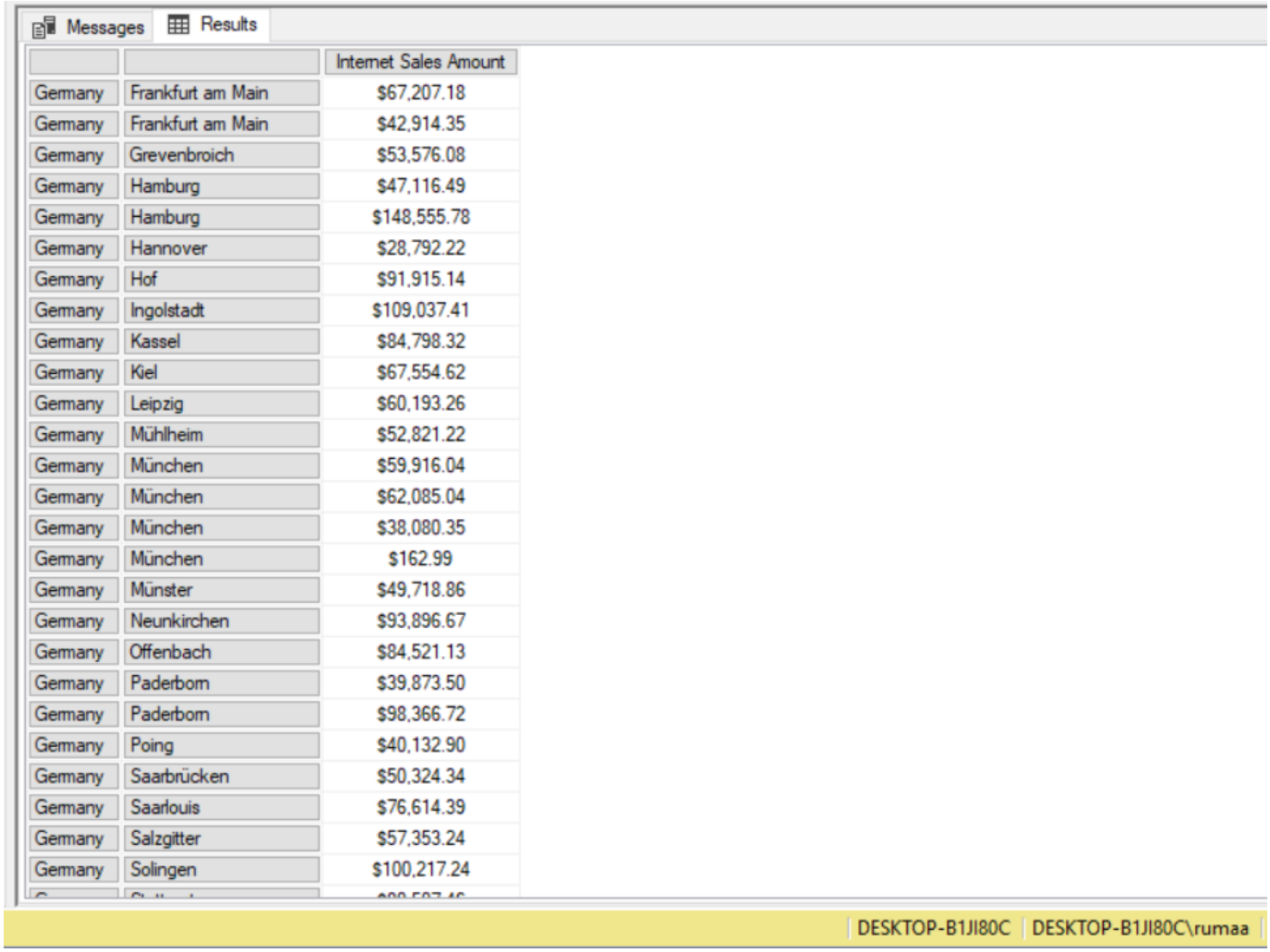


		Internet Sales Amount
France	Saint Ouen	$34,441.73
France	Saint Ouen	$21,473.74
France	Saint Ouen	$29,555.28
France	Saint-Denis	$63,782.59
France	Sèvres	$39,598.20
France	Suresnes	$35,099.73
France	Tremblay-en-France	$91,857.57
France	Verrieres Le Buisson	$41,619.61
France	Versailles	$102,657.25
France	Villeneuve-d'Ascq	$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	$20,637.05
Germany	Bonn	$22,068.18
Germany	Bottrop	$72,895.55
Germany	Braunschweig	$28,705.00
Germany	Darmstadt	$76,433.25
Germany	Dresden	$57,590.01
Germany	Duesseldorf	$59,787.49
Germany	Eilenburg	$57,919.21
Germany	Erlangen	$77,585.52
Germany	Essen	$55,349.62
Germany	Frankfurt	$67,852.63
Germany	Frankfurt	$116,439.96



Messages | Results

		Internet Sales Amount
Germany	Frankfurt am Main	$67,207.18
Germany	Frankfurt am Main	$42,914.35
Germany	Grevenbroich	$53,576.08
Germany	Hamburg	$47,116.49
Germany	Hamburg	$148,555.78
Germany	Hannover	$28,792.22
Germany	Hof	$91,915.14
Germany	Ingolstadt	$109,037.41
Germany	Kassel	$84,798.32
Germany	Kiel	$67,554.62
Germany	Leipzig	$60,193.26
Germany	Mühlheim	$52,821.22
Germany	München	$59,916.04
Germany	München	$62,085.04
Germany	München	$38,080.35
Germany	München	$162.99
Germany	Münster	$49,718.86
Germany	Neunkirchen	$93,896.67
Germany	Offenbach	$84,521.13
Germany	Paderborn	$39,873.50
Germany	Paderborn	$98,366.72
Germany	Poing	$40,132.90
Germany	Saarbrücken	$50,324.34
Germany	Saarlouis	$76,614.39
Germany	Salzgitter	$57,353.24
Germany	Solingen	$100,217.24

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Germany	Stuttgart	$80,507.46
Germany	Sulzbach Taunus	$66,739.77
Germany	Werne	$67,125.55

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