SQL Query Writing
AdventureWorks2012
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Simple Query 1

Exploring the Sales portion of the database starting from the SalesOrderDetail table. This will give some information on what is used to track and carry out orders.

SELECT *
FROM Sales.SalesOrderDetail

The result of this query shows that a 'SalesOrderID' is used to track each order. This can be inferred by looking to the 'SalesOrderDetailID' column and recognizing that there are multiple details linked with the same Order ID. The 'CarrierTrackingNumber' is also the same for all entries of the SalesOrderID.

Simple Query 2

Some key information appeared to be missing from the SalesOrderDetail table so I queried the Sales.SalesOrderHeader table to gather a more complete picture of the sales ordering system. (3 pictures are shown to include all headings since there are many and most are very important to the system.)

SELECT *
FROM Sales.SalesOrderHeader

```
USE AdventureWorks2012
SELECT *
FROM Sales.SalesOrderHeader
```

100 %   ▾

☰ Results   ⊞ Messages

	r	AccountNumber	CustomerID	SalesPersonID	TerritoryID	BillToAddressID	ShipToAddressID	ShipMethodID	CreditCardID	CreditCardApprovalCode	CurrencyRateID	Sub
1		10-4020-000676	29825	279	5	985	985	5	16281	105041Vi84182	NULL	205
2		10-4020-000117	29672	279	5	921	921	5	5618	115213Vi29411	NULL	129
3		10-4020-000442	29734	282	6	517	517	5	1346	85274Vi6854	4	327
4		10-4020-000227	29994	282	6	482	482	5	10456	125295Vi53935	4	288
5		10-4020-000510	29565	276	4	1073	1073	5	4322	45303Vi22691	NULL	419
6		10-4020-000397	29898	280	1	876	876	5	806	95555Vi4081	NULL	244
7		10-4020-000146	29580	283	1	849	849	5	15232	35568Vi78804	NULL	143
8		10-4020-000511	30052	276	4	1074	1074	5	13349	105623Vi69217	NULL	505
9		10-4020-000646	29974	277	3	629	629	5	10370	55680Vi53503	NULL	610
10		10-4020-000514	29614	282	6	529	529	5	1566	85817Vi8045	4	359
11		10-4020-000578	29747	283	1	895	895	5	15538	25877Vi80261	NULL	714
12		10-4020-000504	29566	275	3	810	810	5	18017	105888Vi93490	NULL	612
13		10-4020-000200	29890	283	1	855	855	5	13693	25904Vi70960	NULL	812
14		10-4020-000119	30067	282	6	464	464	5	3980	95915Vi20982	4	612
15		10-4020-000618	29844	275	2	821	821	5	1417	35931Vi7271	NULL	374
16		10-4020-000083	29596	282	6	458	458	5	19204	26081Vi99806	4	262
17		10-4020-000670	29827	277	3	631	631	5	11886	126121Vi61402	NULL	571
18		10-4020-000017	29811	275	5	755	755	5	18153	36168Vi94127	NULL	142
19		10-4020-000679	29824	278	6	556	556	5	14030	16302Vi72763	4	779

● Query executed successfully.   dbr.fast.sheridanc.on.ca (1... | s23u19 (52) | AdventureWorks2012 | 00:00:03 | 31,465 rows

```
USE AdventureWorks2012
SELECT *
FROM Sales.SalesOrderHeader
```

100 %   ▾

☰ Results   ⊞ Messages

	reditCardApprovalCode	CurrencyRateID	SubTotal	TaxAmt	Freight	TotalDue	Comment	rowguid	ModifiedDate
1	05041Vi84182	NULL	20565.6206	1971.5149	616.0984	23153.2339	NULL	79B65321-39CA-4115-9CBA-8FE0903E12E6	2005-07-08 00:00:00.000
2	15213Vi29411	NULL	1294.2529	124.2483	38.8276	1457.3288	NULL	738DC42D-D03B-48A1-9822-F95A67EA7389	2005-07-08 00:00:00.000
3	5274Vi6854	4	32726.4786	3153.7696	985.553	36865.8012	NULL	D91B9131-18A4-4A11-BC3A-90B6F53E9D74	2005-07-08 00:00:00.000
4	25295Vi53935	4	28832.5289	2775.1646	867.2389	32474.9324	NULL	4A1ECFC0-CC3A-4740-B028-1C50BB48711C	2005-07-08 00:00:00.000
5	5303Vi22691	NULL	419.4589	40.2681	12.5838	472.3108	NULL	9B1E7A40-6AE0-4AD3-811C-A64951857C4B	2005-07-08 00:00:00.000
6	5555Vi4081	NULL	24432.6088	2344.9921	732.81	27510.4109	NULL	22A8A5DA-8C22-42AD-9241-839489B6EF0D	2005-07-08 00:00:00.000
7	5568Vi78804	NULL	14352.7713	1375.9427	429.9821	16158.6961	NULL	5602C304-853C-43D7-9E79-76E320D476CF	2005-07-08 00:00:00.000
8	05623Vi69217	NULL	5056.4896	486.3747	151.9921	5694.8564	NULL	E2A90057-1366-4487-8A7E-8085845FF770	2005-07-08 00:00:00.000
9	5680Vi53503	NULL	6107.082	586.1203	183.1626	6876.3649	NULL	86D5237D-432D-4B21-8ABC-671942F5789D	2005-07-08 00:00:00.000
10	5817Vi8045	4	35944.1562	3461.7654	1081.8017	40487.7233	NULL	281CC355-D538-494E-9B44-461B36A826C6	2005-07-08 00:00:00.000
11	5877Vi80261	NULL	714.7043	70.5175	22.0367	807.2585	NULL	FABFC5C2-E034-4E0E-A573-6F39E9FA0484	2005-07-08 00:00:00.000
12	05888Vi93490	NULL	6122.082	587.5603	183.6126	6893.2549	NULL	573E52A7-573F-40B6-B695-6F3D242E0C6D	2005-07-08 00:00:00.000
13	5904Vi70960	NULL	8128.7876	780.8136	244.0042	9153.6054	NULL	005FDA9D-62E1-4001-A4AC-A976A7905F94	2005-07-08 00:00:00.000
14	5915Vi20982	4	6124.182	587.6023	183.6257	6895.41	NULL	194202AA-8E15-4932-A2C4-7A7AC0713639	2005-07-08 00:00:00.000
15	5931Vi7271	NULL	3746.2015	357.9614	111.8629	4216.0258	NULL	C5CD3AE9-41F5-4B71-A3F1-D550B928572B	2005-07-08 00:00:00.000
16	6081Vi99806	4	2624.382	251.9407	78.7315	2955.0542	NULL	CE8BCA02-F705-4AAE-A446-5D8B660C3A1B	2005-07-08 00:00:00.000
17	26121Vi61402	NULL	5716.3102	546.8759	170.8987	6434.0848	NULL	9F2CF0EE-F2B8-44D4-897D-7641F4FBD649	2005-07-08 00:00:00.000
18	6168Vi94127	NULL	14203.458	1363.266	426.0206	15992.7446	NULL	28C73732-D2FD-4F0D-A9A8-0E53595235F6	2005-07-08 00:00:00.000
19	6302Vi72763	4	7793.1108	747.1011	233.4691	8773.681	NULL	95FAAF28-6495-40B0-9789-466B195F2F96	2005-07-08 00:00:00.000

● Query executed successfully.   dbr.fast.sheridanc.on.ca (1... | s23u19 (52) | AdventureWorks2012 | 00:00:03 | 31,465 rows

The 'SalesOrderHeader' includes a majority of the information relevant to the AdventureWorks sales orders. It includes multiple identification numbers such as the OrderID, the OrderNumber, the PurchaseOrderNumber, the AccountNumber and the CustomerID. The SaleOrderID is the same identifier as in the previous simple query and the header appears to go into more detail about the specifics of each order. It also provides a nearly complete picture of the order-relevant information in the customer profile with BillToID, the ShipToID, the CreditCardID and even the CurrencyRateID, which appears to convert currencies to or from USD to or from another region, based on ID number. Finally all pricing is included such as the SubTotal, TaxAmt and TotalDue.

Intermediate Query 1

To learn more about the business side of Adventureworks, and the Sales portion specifically, the Sales.SalesPerson table was queried to learn more about compensation for sales people.

SELECT COUNT(Distinct BusinessEntityID) AS 'Number of Sales People',
CommissionPct AS 'Commission Percentage' ,
ROUND(AVG(Bonus), 2) AS 'Bonus Average'
FROM Sales.SalesPerson
Group By CommissionPct

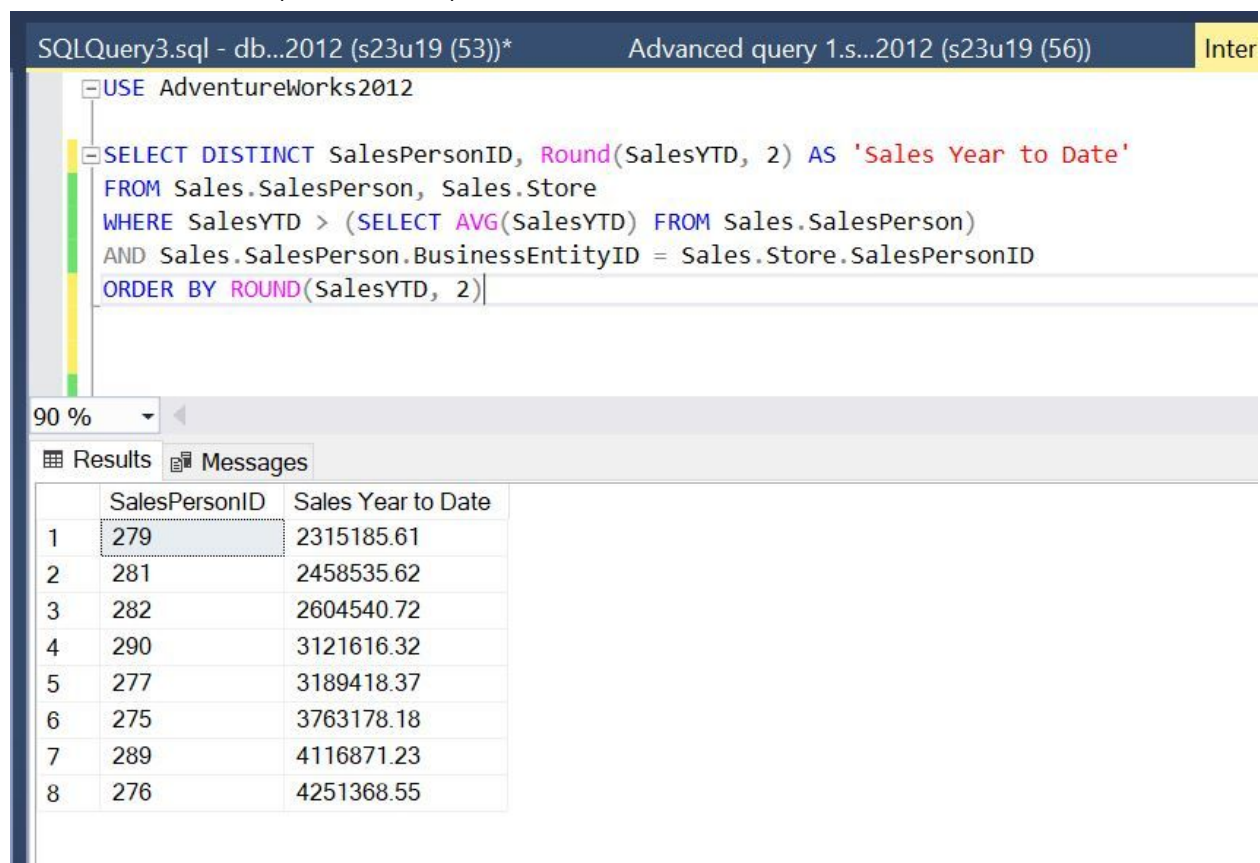|	Number of Sales People	Commission Percentage	Bonus Average
1	3	0.00	0.00
2	4	0.01	3937.50
3	2	0.012	3800.00
4	3	0.015	3166.67
5	1	0.016	985.00
6	2	0.018	2862.50
7	1	0.019	3900.00
8	1	0.02	5150.00

For a large company with over 700 locations, there are surprisingly few sales people. 3 are registered but are not currently earning commissions or bonuses. The rest are scattered among the different levels of commission percentages, with less sales people in the higher commission brackets.

Intermediate Query 2

Building on the previous query, a deeper look into the sales employee's salaries was required to find who is above the average salary.

SELECT DISTINCT SalesPersonID, Round(SalesYTD, 2) AS 'Salary'
FROM Sales.SalesPerson, Sales.Store
WHERE SalesYTD > (SELECT AVG(SalesYTD) FROM Sales.SalesPerson)
AND Sales.SalesPerson.BusinessEntityID = Sales.Store.SalesPersonID
ORDER BY ROUND(SalesYTD, 2)

```
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 USE AdventureWorks2012

 SELECT DISTINCT SalesPersonID, Round(SalesYTD, 2) AS 'Sales Year to Date'
 FROM Sales.SalesPerson, Sales.Store
 WHERE SalesYTD > (SELECT AVG(SalesYTD) FROM Sales.SalesPerson)
 AND Sales.SalesPerson.BusinessEntityID = Sales.Store.SalesPersonID
 ORDER BY ROUND(SalesYTD, 2)
```

90 %

⊞ Results 📃 Messages

	SalesPersonID	Sales Year to Date
1	279	2315185.61
2	281	2458535.62
3	282	2604540.72
4	290	3121616.32
5	277	3189418.37
6	275	3763178.18
7	289	4116871.23
8	276	4251368.55

Out of the 17 sales people found to be working at AdventureWorks, 8 are above the average, although this includes the 3 that are not earning any commission so likely not working, therefore bringing down the average considerably.

Advanced Query 1

Looking to join into other tables to attach names to SalesPersonIDs as well as get the current number of orders they have open in the system. While the orders dramatically range in price,

the more the better. The sale person's previous annual sales is also included alongside their current year to date sales. The final column shows the difference between last years earnings and the employee's year to date earnings. A negative number shows positive sales growth year over year.

```
SELECT p.FirstName AS 'First Name',
p.LastName AS 'Last Name',
sh.SalesPersonID AS 'ID Number',
COUNT(sh.SalesOrderID) AS 'Number of Current Orders',
ROUND(SalesLastYear, 2) AS 'Sales Total Last Year'
FROM Sales.SalesOrderHeader sh INNER JOIN Sales.SalesPerson sp
ON sh.SalesPersonID = sp.BusinessEntityID INNER JOIN Person.Person p
ON p.BusinessEntityID = sp.BusinessEntityID
Group By SalesPersonID, SalesLastYear, FirstName, LastName
ORDER BY SalesLastYear
```


Most employees have a positive year over year sales increase, denoted by a negative number in the final column. Some have even almost doubled their previous years sales.

Advanced Query 2

A table similar to the SalesOrderHeader Table which houses most information related to orders is the SalesOrderHeaderSalesReason. This query was used to analyze averages based on the 'reason for sale' or the point of contact with the customer. The price ranges are dramatic but it provides a good picture of the business revenue and marketing/customer contact methods.

```
SELECT COUNT(hr.SalesOrderID) AS 'Number of Sales',
r.[Name] AS 'Reason for Sale',
ROUND(AVG(SubTotal), 2) AS 'Average Order SubTotal',
ROUND(AVG(Freight), 2) AS 'Average Freight Cost'
FROM Sales.SalesReason r INNER JOIN Sales.SalesOrderHeaderSalesReason hr
ON r.SalesReasonID = hr.SalesReasonID
INNER JOIN Sales.SalesOrderHeader sh ON   sh.SalesOrderID = hr.SalesOrderID
GROUP BY r.[Name]
ORDER BY COUNT(hr.SalesOrderID)
```

```sql
SELECT COUNT(hr.SalesOrderID) AS 'Number of Sales',
r.[Name] AS 'Reason for Sale',
ROUND(AVG(SubTotal), 2) AS 'Average Order SubTotal',
ROUND(AVG(Freight), 2) AS'Average Freight Cost'
FROM Sales.SalesReason r INNER JOIN Sales.SalesOrderHeaderSalesReason hr
ON r.SalesReasonID = hr.SalesReasonID
INNER JOIN Sales.SalesOrderHeader sh ON sh.SalesOrderID = hr.SalesOrderID
GROUP BY r.[Name]
ORDER BY COUNT(hr.SalesOrderID)
```

90 %

⊞ Results ⊞ Messages

	Number of Sales	Reason for Sale	Average Order SubTotal	Average Freight Cost
1	722	Television Advertisement	38.06	0.95
2	1245	Review	1361.35	34.03
3	1395	Other	178.12	4.45
4	1551	Quality	3578.27	89.46
5	1746	Manufacturer	3435.35	85.88
6	3515	On Promotion	1809.91	45.25
7	17473	Price	628.16	15.70

✔ Query executed successfully.   dbr.fast.sheridanc.on.ca (1...

The number of sales in relation to the reason for sale was expected, since 'Price' appears to be a default reason if there was no marketing involved. The average freight cost appears to align closely with the average subtotal, even though the subtotal does not include the freight cost. Weight of products were not explored at this time, which may have a clear effect on freight costs.

AdventureWorks Sales Domain

Sales.SalesOrderDetail

SalesOrderID
SalesOrderDetailID
CarrierTrackingNumber
OrderQty
ProductID
SpecialOfferID
UnitPrice
UnitPriceDiscount
LineTotal
rowguid
ModifiedDate

Sales.SalesOrderHeader

SalesOrderID
RevisionNumber
OrderDate
DueDate
ShipDate
Status
OnlineOrderFlag
SalesOrderNumber
PurchaseOrderNumber
AccountNumber
CustomerID
SalesPersonID
TerritoryID
BillToAddressID
ShipToAddressID
ShipMethodID
CreditCardID
CreditCardApprovalCode
CurrencyRateID
SubTotal
TaxAmt
Freight
TotalDue
Comment
rowguid
ModifiedDate

Sales.SalesPerson

BusinessEntityID
TerritoryID
SalesQuota
Bonus
CommissionPct
SalesYTD
SalesLastYear
rowguid
ModifiedDate

Sales.SalesReason

SalesReasonID
Name
ReasonType
ModifiedDate

Sales.SalesOrderHeaderSalesReason

SalesOrderID
SalesReasonID
ModifiedDate