Week 4 OLTP vs OLAP

Total revenue by Customer

OLTP(Staging)

	CustomerID	CustomerName	FirstName	LastName	TotalRevenue
1	192	Terry Wheeler	Terry	Wheeler	73476.0000
2	280	Alexis Schmitt	Alexis	Schmitt	67750.0000
3	293	Ashley Davis	Ashley	Davis	67684.0000
4	488	Amber Harris	Amber	Harris	67176.0000
5	299	Maria Pierce	Maria	Pierce	66842.0000
6	454	Jose Williams	Jose	Williams	65269.0000
7	313	David Reyes	David	Reyes	63118.0000
8	414	Robert Nelson	Robert	Nelson	62906.0000
9	48	Carrie Brady	Carrie	Brady	62328.0000
10	273	Samuel Stevens	Samuel	Stevens	61845.0000
11	296	Monica Vasquez	Monica	Vasquez	61089.0000
12	461	Emily Gonzalez	Emily	Gonzalez	61077.0000
13	271	John Armstrong	John	Armstrong	60848.0000
14	465	Samantha Williams	Samantha	Williams	60219.0000
15	277	Michelle Brown	Michelle	Brown	57531.0000
16	470	Jennifer Ferguson	Jennifer	Ferguson	57164.0000
17	116	Nathan Hopkins	Nathan	Hopkins	56906.0000
18	464	Emily Martin	Emily	Martin	56068.0000
19	487	Joshua Warren	Joshua	Warren	55874.0000
20	15	Shelly Perez	Shelly	Perez	55691.0000
21	494	Brenda Young	Brenda	Young	54975.0000
22	18	Thomas Hurst	Thomas	Hurst	54577.0000
23	243	James Smith	James	Smith	54396.0000
24	211	Mary Jones	Mary	Jones	54301.0000
25	46	Robert Jones	Robert	Jones	53522.0000
26	85	Melissa Jones	Melissa	Jones	52183.0000
27	411	Benjamin Lewis	Benjamin	Lewis	51953.0000
28	230	Jimmy Solis	Jimmy	Solis	51767.0000
29	158	Sabrina Reed	Sabrina	Reed	51762.0000
30	226	Kathleen Cain DVM	Kathleen	Cain DVM	51733.0000
31	12	Lisa Stephens	Lisa	Stephens	51466.0000

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OLAP(Dim)

	CustomerKey	CustomerID	CustomerName	TotalRevenue
1	192	192	Terry Wheeler	73476.0000
2	280	280	Alexis Schmitt	67750.0000
3	293	293	Ashley Davis	67684.0000
4	488	488	Amber Harris	67176.0000
5	299	299	Maria Pierce	66842.0000
6	454	454	Jose Williams	65269.0000
7	313	313	David Reyes	63118.0000
8	414	414	Robert Nelson	62906.0000
9	48	48	Carrie Brady	62328.0000
10	273	273	Samuel Stevens	61845.0000
11	296	296	Monica Vasquez	61089.0000
12	461	461	Emily Gonzalez	61077.0000
13	271	271	John Armstrong	60848.0000
14	465	465	Samantha Williams	60219.0000
15	277	277	Michelle Brown	57531.0000
16	470	470	Jennifer Ferguson	57164.0000
17	116	116	Nathan Hopkins	56906.0000
18	464	464	Emily Martin	56068.0000
19	487	487	Joshua Warren	55874.0000
20	15	15	Shelly Perez	55691.0000
21	494	494	Brenda Young	54975.0000
22	18	18	Thomas Hurst	54577.0000
23	243	243	James Smith	54396.0000
24	211	211	Mary Jones	54301.0000
25	46	46	Robert Jones	53522.0000
26	85	85	Melissa Jones	52183.0000
27	411	411	Benjamin Lewis	51953.0000
28	230	230	Jimmy Solis	51767.0000
29	158	158	Sabrina Reed	51762.0000
30	226	226	Kathleen Cain DVM	51733.0000
31	12	12	Lisa Stephens	51466.0000

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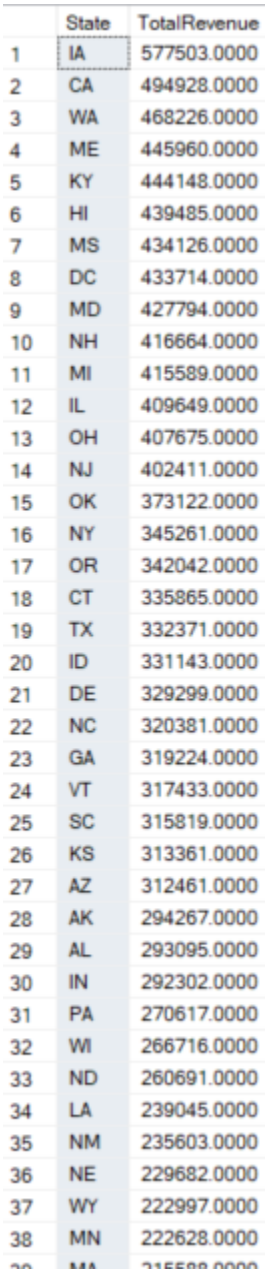
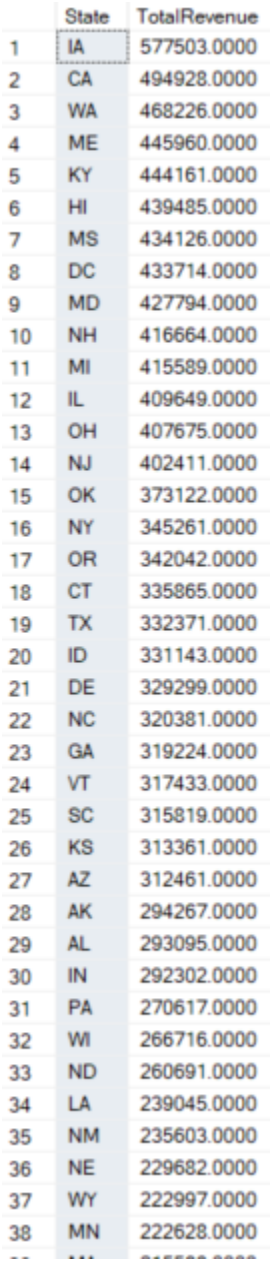
Total revenue by State

OLTP(Staging)	OLAP(Dim)
	
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	State	TotalRevenue
1	IA	577503.0000
2	CA	494928.0000
3	WA	468226.0000
4	ME	445960.0000
5	KY	444148.0000
6	HI	439485.0000
7	MS	434126.0000
8	DC	433714.0000
9	MD	427794.0000
10	NH	416664.0000
11	MI	415589.0000
12	IL	409649.0000
13	OH	407675.0000
14	NJ	402411.0000
15	OK	373122.0000
16	NY	345261.0000
17	OR	342042.0000
18	CT	335865.0000
19	TX	332371.0000
20	ID	331143.0000
21	DE	329299.0000
22	NC	320381.0000
23	GA	319224.0000
24	VT	317433.0000
25	SC	315819.0000
26	KS	313361.0000
27	AZ	312461.0000
28	AK	294267.0000
29	AL	293095.0000
30	IN	292302.0000
31	PA	270617.0000
32	WI	266716.0000
33	ND	260691.0000
34	LA	239045.0000
35	NM	235603.0000
36	NE	229682.0000
37	WY	222997.0000
38	MN	222628.0000

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1	IA	577503.0000
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7	MS	434126.0000
8	DC	433714.0000
9	MD	427794.0000
10	NH	416664.0000
11	MI	415589.0000
12	IL	409649.0000
13	OH	407675.0000
14	NJ	402411.0000
15	OK	373122.0000
16	NY	345261.0000
17	OR	342042.0000
18	CT	335865.0000
19	TX	332371.0000
20	ID	331143.0000
21	DE	329299.0000
22	NC	320381.0000
23	GA	319224.0000
24	VT	317433.0000
25	SC	315819.0000
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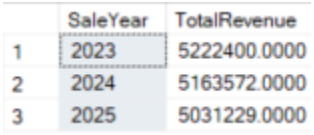
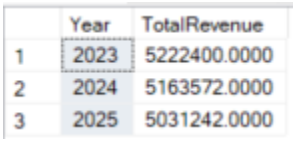
27	AZ	312461.0000
28	AK	294267.0000
29	AL	293095.0000
30	IN	292302.0000
31	PA	270617.0000
32	WI	266716.0000
33	ND	260691.0000
34	LA	239045.0000
35	NM	235603.0000
36	NE	229682.0000
37	WY	222997.0000
38	MN	222628.0000

Total revenue by Year

OLTP(Staging)	OLAP(Dim)
	
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Report : OLTP vs. OLAP

Introduction

OLTP (Online Transaction Processing): is a system that runs business, tracking inventory or documenting sales. At the register the cashier scans items and charges for the items. Everytime an interaction like this happens, the database that the store uses has to be updated and the transaction has to be added. That's the process OLTP tracks and goes through to maintain a running business.

OLAP (Online Analytical Processing): While OLTP tracks, records and maintains the database in such a way for a business. Those who are higher ups don't need to know the specifics of every transaction. Mainly who is the customer and who rang the transaction. They want data and numbers for trends that will help them make decisions in the interest of the business. OLAP is the system that analyzes the business over time, from a scored board to a video game. It requires the data and tables in the OLTP to be transferred into OLAP for analysis purposes.

Design differences (normalization vs. star schema)

OLTP (normalized): Tables are split as this system mainly focuses on data integrity, and duplication termination staying in N3. A typical order read touches many tables: Customers, Orders, OrderLines, Products, Payments, Shipments, etc.

Lots of small joins, optimized for point lookups and single-row writes. Very good for accuracy, not meant for reads of large amounts of lines.

OLAP (star schema): Core of the information that would be presented and need for the job is on one Fact table. It contains descriptive dimensions off it: FactSales (measures: Quantity, TotalSaleAmount, Price, with keys to dimensions) DimCustomer, DimProduct, DimDate. Much fewer joins, and it's meant for fast scanning and compiling of business data.

Business risks of running reports on OLTP

The risk of running reports on OLTP is that it will take quite some time. It's slow and large queries will slow down performance for the system. It throttles in the infrastructures, locking down machines and causing retries over and over. The other issue besides performance is that it can also return inconsistent or missing results. Not a stable reliable option for large reads and compilation. Then if the executives ask you to redo the report, it can really drag down a business.

Recommendation

Use an OLAP warehouse (star schema) for business intelligence. While using OLTP for what it's meant for, consistent transactions then ship data to a warehouse for analytics. It is more accurate, with a more consistent speed. It causes no disruption to the app, and importantly it's Cost-effective at scale, and takes much less resources than OLTP.