Memo
To: Client Stakeholders
From: Brittany Hancock
Subject: Week 3 ClientWarehouse Star Schema Design

Purpose: This week I took the cleaned staging data from Week 2 and moved it into a warehouse setup for analysis. The main goal was to organize it into a star schema using SQL Server and SSIS.

Design Summary:
-- I built a star schema because it keeps the structure simple and works well for reporting. The main table, FactSales, stores sales numbers like quantity, unit price and total sale amount. The dimension tables, DimCustomer, DimProduct, and DimDate, hold the descriptive details that identify who bought the product, what the product was, and when the sale happened. Each table has a key that connects everything together.

ETL Process:
-- I extended my SSIS package by adding Data Flow Tasks to load data from the staging area into the warehouse. The dimension tables loaded first, followed by FactSales. Lookup transformations matched each fact record to the right CustomerKey, ProductKey, and DateKey. The package ran without errors, and there were no orphan rows or mismatched totals.

Validation Results:
-- DimCustomer: 151 rows
-- DimProduct: 151 rows
-- DimDate: 118 rows
-- FactSales: 144 rows
All integrity checks passed, and the totals were correct.

Reflection:
-- This project helped me understand how the warehouse brings all the cleaned data together. Seeing how the tables connect made it clear how Business Intelligence tools can read and analyze the data later on.

Figure 1. SSIS Control Flow showing sequential execution of all data flow tasks (Customers, Prodcuts, Sales, and warehouse loads)
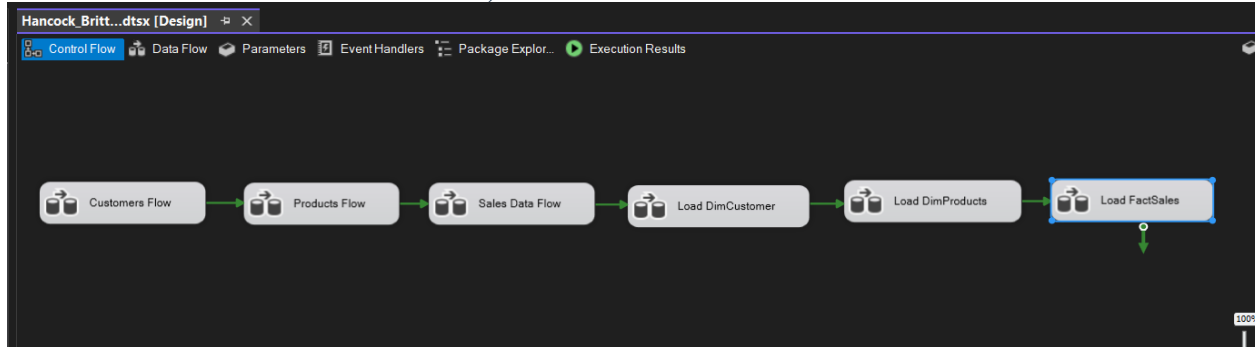

Figure 2. Data Flow for loading FactSales using Lookups for CustomerKey, ProductKey, and DateKey, followed by Derived Column and destination mapping.
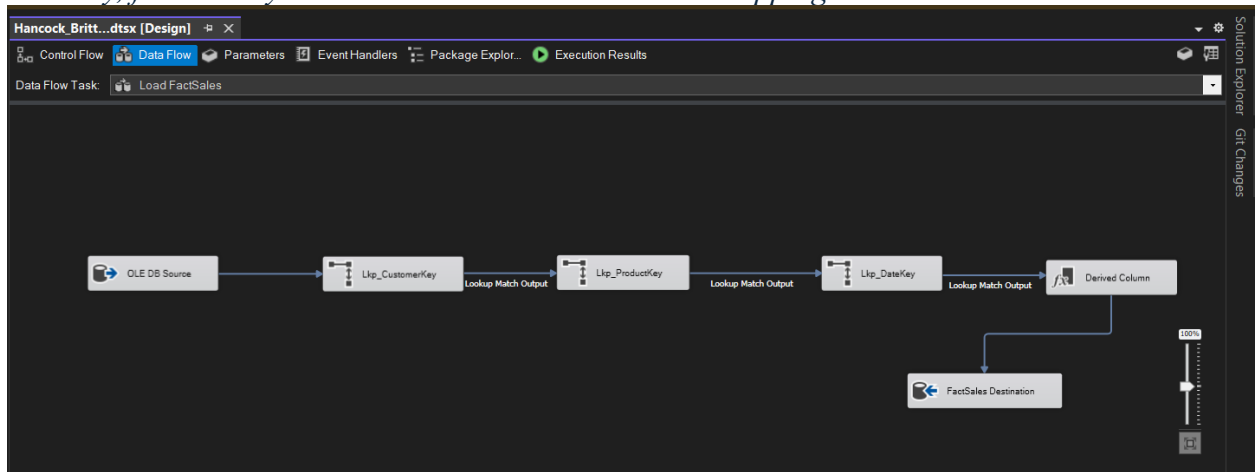
Figure 3. ERD of the ClientWarehouse star schema linking FactSales to DimCustomer, DimProduct, and DimDate tables.
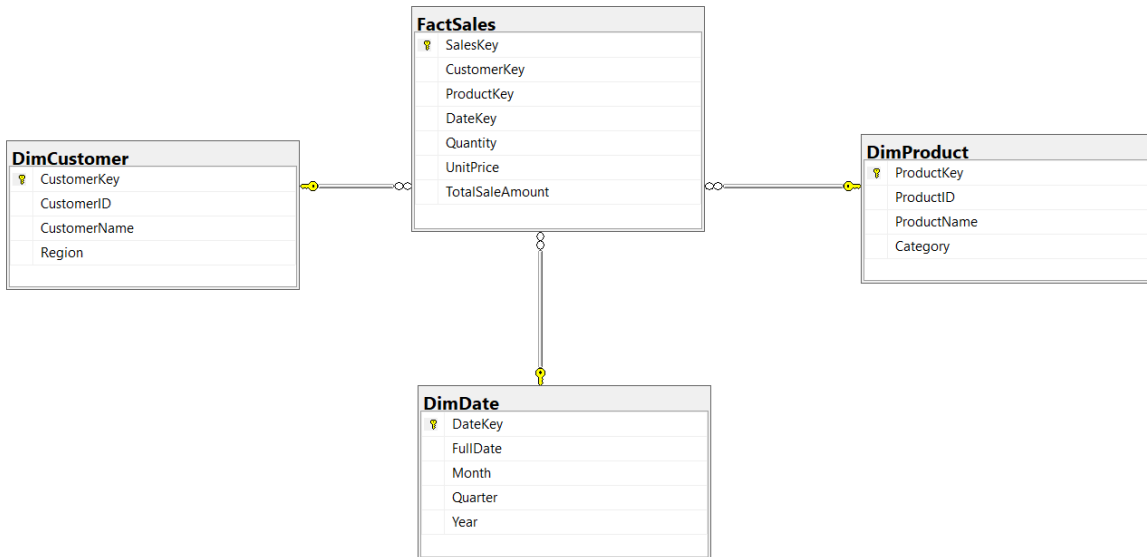
Figure 4. SQL validation results confirming populated warehouse tables, zero orphan records, and correct totals.

| | SQLQuery16.sql - (...ANYSHP\femal (66))* | | SQLQuery15.sql - (...ANYSHP\femal (56))* | | SQLQuery14.sql - (...ANYSHP\femal (55))* |

81 %

⊞ Results 🗎 Messages

	DimCustomerRows
1	151

	DimProductRows
1	151

	DimDateRows
1	118

	FactSalesRows
1	144

	OrphanCustomers
1	0

	OrphanProducts
1	0

	OrphanDates
1	0

	BadTotals
1	0

	SalesKey	CustomerName	Region	ProductName	Category	FullDate	Quantity	UnitPrice	TotalSaleAmount
1	1	Dawn Patel	CA	State 186	ELECTRONICS	2025-03-31	16	913.25	14612.00
2	2	Chad Lang	WA	Community 876	FURNITURE	2024-12-05	0	852.86	0.00
3	3	Alexa Ortiz	WA	Traditional 743	HOME APPLI...	2025-03-25	0	151.45	0.00
4	4	Cindy Lamb	WA	Skin 389	FURNITURE	2024-10-23	20	0.00	0.00
5	5	Julie Daniels	CA	Health 689	ELECTRONICS	2024-11-20	25	447.02	11175.50
6	6	Jacob Jordan	WA	Huge 306	HOME APPLI...	1900-01-01	47	964.00	45308.00
7	7	Jeffrey Watts	CA	She 312	OTHER	2025-05-04	0	846.51	0.00
8	8	Unknown Cust...	UN	Prevent 533	HOME APPLI...	2024-12-10	46	102.22	4702.12
9	9	Jonathan And...	OR	Management ...	FURNITURE	2025-02-21	0	673.73	0.00
10	10	Kenneth Steve...	CA	Practice 791	FURNITURE	2025-02-28	12	957.82	11493.84

Figure 5. Sample rows from FactSales table showing CustoemrKey, ProductKey, DateKey, Quantity, and TotalSaleAmount.

	SalesKey	CustomerKey	ProductKey	DateKey	Quantity	UnitPrice	TotalSaleAmount
1	1	151	76	20250331	16	913.25	14612.00
2	2	67	47	20241205	0	852.86	0.00
3	3	78	133	20250325	0	151.45	0.00
4	4	131	108	20241023	20	0.00	0.00
5	5	130	31	20241120	25	447.02	11175.50
6	6	146	12	19000101	47	964.00	45308.00
7	7	144	67	20250504	0	846.51	0.00
8	8	1	37	20241210	46	102.22	4702.12
9	9	38	4	20250221	0	673.73	0.00
10	10	88	27	20250228	12	957.82	11493.84
11	11	45	142	20250611	18	608.18	10947.24