ETL for Simple Dimension Tables - Project 3 Summary

Overview:

This project focuses on the ETL (Extract, Transform, Load) process to load data into the Date

Dimension table in an OLAP database using SQL Server Integration Services (SSIS). The task

involves extracting data from a CSV file, transforming it to fit the required schema, and loading it into

the AdventureWorks data warehouse.

ETL Process Implementation:

The ETL process consists of several stages:

1. Extract:

- The source data is imported from a CSV file containing DateKey and other date-related

attributes.

2. Transform:

- Convert DateKey from string format to an integer.

- Extract year, month, and day components.

- Create a FullDate column by concatenating extracted date components.

- Convert FullDate to the appropriate date data type.

- Compute additional attributes such as Quarter, EnglishMonthName, EnglishDayName, and

DayOfWeek.

- Determine if the date is a holiday.

3. Load:

- The transformed data is inserted into the Date Dimension table in the OLAP database.

SSIS Package Details:

The SSIS package consists of multiple control flow tasks designed to execute the ETL steps in

sequence. The process starts with extracting data from the CSV file, performing transformations

using derived column and conversion tasks, and finally loading the processed data into the

destination table.

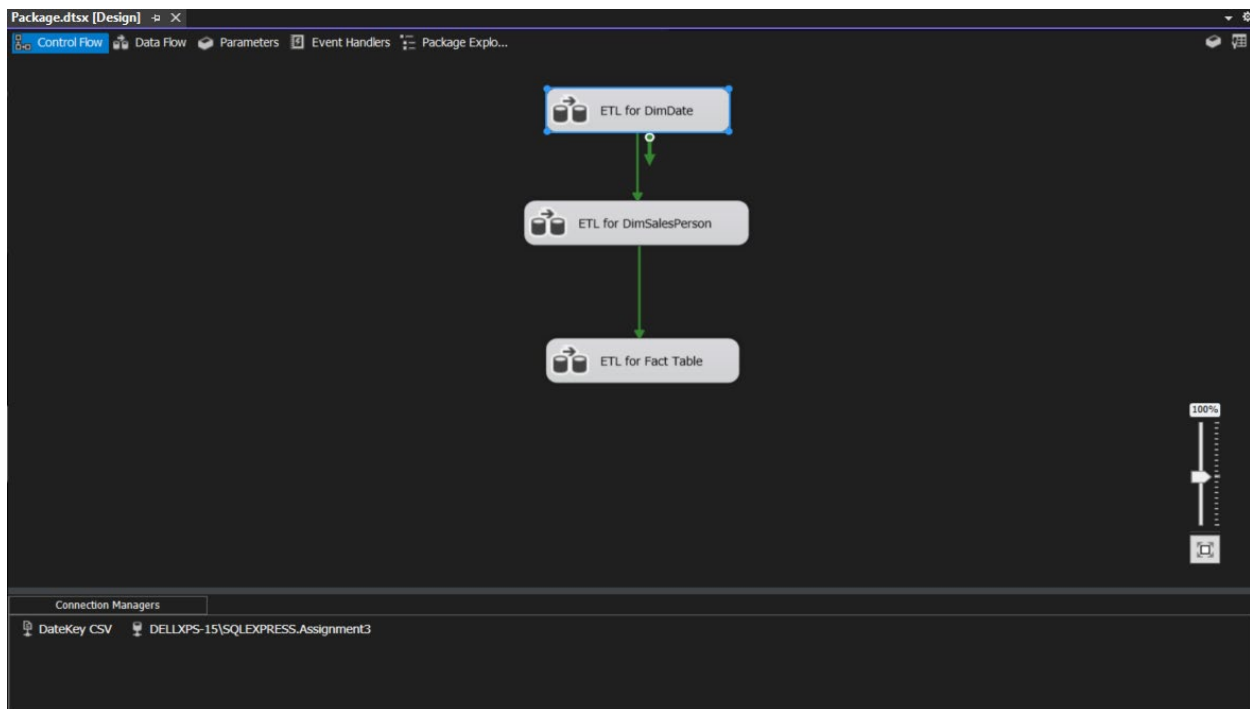Figure 1: SSIS Control Flow showing the sequence of ETL tasks.

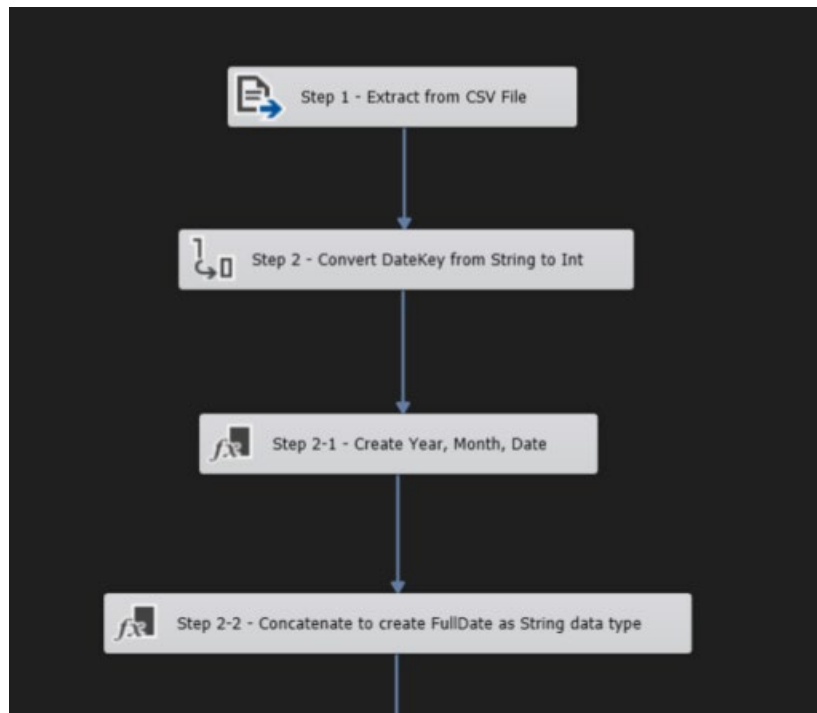Figure 2: Data Flow Task for Extract, Transform, and Load operations.

Figure 3: Derived Column Transformation logic applied during the ETL process.

Figure 4: Configuration of Destination Table mapping in SSIS.

Figure 5: Date Dimension Table Output After ETL Execution

Figure 6: Continuation of Date Dimension Table Output

Step 1 - Extract from CSV File

Step 2 - Convert DateKey from String to Int

Step 2-1 - Create Year, Month, Date

Step 2-2 - Concatenate to create FullDate as String data type

Step 2-3 Create Full Date as Date Data Type

Step 2-4 - Create Quarter as int

Step 2-5 - Create EnglishMonthName

Step 2-6 - Create EnglishDayOfWeek

Step 2-6-1 - Create EnglishDayName
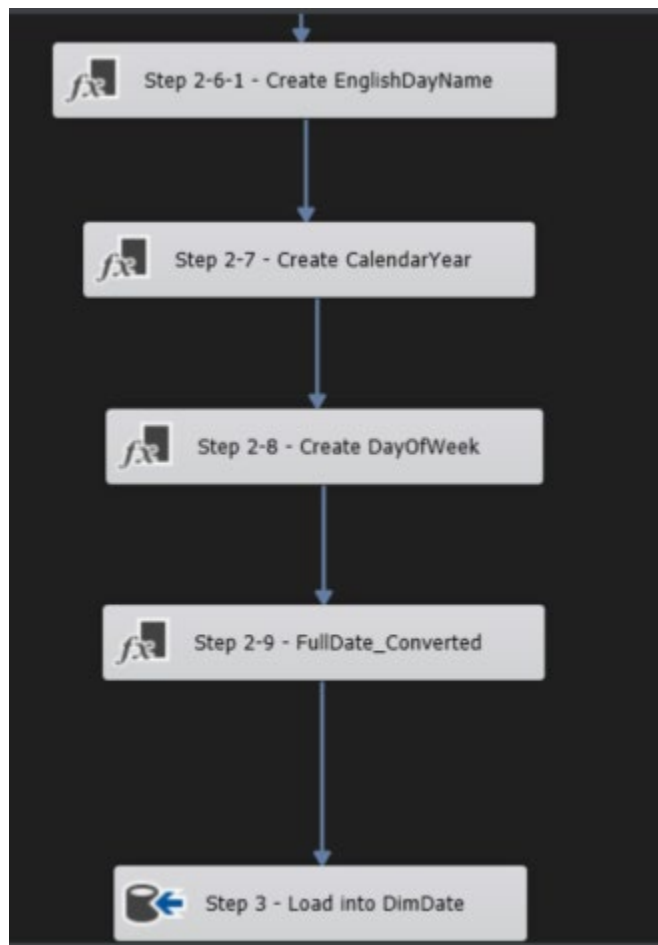
🞖 Results 📄 Messages

	DateKey	EnglishDayName	EnglishMonthName	CalendarYear	Quarter	DayOfWeek	IsHoliday
1	20110531	Tuesday	May	2011	2	3	NULL
2	20110601	Wednesday	Jun	2011	2	4	NULL
3	20110602	Thursday	Jun	2011	2	5	NULL
4	20110603	Friday	Jun	2011	2	6	NULL
5	20110604	Saturday	Jun	2011	2	7	NULL
6	20110605	Sunday	Jun	2011	2	1	NULL
7	20110606	Monday	Jun	2011	2	2	NULL
8	20110607	Tuesday	Jun	2011	2	3	NULL
9	20110608	Wednesday	Jun	2011	2	4	NULL
10	20110609	Thursday	Jun	2011	2	5	NULL
11	20110610	Friday	Jun	2011	2	6	NULL
12	20110611	Saturday	Jun	2011	2	7	NULL
13	20110612	Sunday	Jun	2011	2	1	NULL
14	20110613	Monday	Jun	2011	2	2	NULL
15	20110614	Tuesday	Jun	2011	2	3	NULL

Detach | Copy Data

DateKeyDT_STR	Dat...	YearDT_...	MonthDT_...	DateDT_...	FullDateDT_...	FullDate...	Qua...	EnglishMonthN...	Day...	EnglishDayName	CalendarYear	DayOfWeek	FullDate_Converted
20110531	201...	2011	05	31	2011-05-31	2011-05...	2	May	3	Tuesday	2011	3	5/31/2011
20110601	201...	2011	06	01	2011-06-01	2011-06...	2	Jun	4	Wednesday	2011	4	6/1/2011
20110602	201...	2011	06	02	2011-06-02	2011-06...	2	Jun	5	Thursday	2011	5	6/2/2011
20110603	201...	2011	06	03	2011-06-03	2011-06...	2	Jun	6	Friday	2011	6	6/3/2011
20110604	201...	2011	06	04	2011-06-04	2011-06...	2	Jun	7	Saturday	2011	7	6/4/2011
20110605	201...	2011	06	05	2011-06-05	2011-06...	2	Jun	1	Sunday	2011	1	6/5/2011
20110606	201...	2011	06	06	2011-06-06	2011-06...	2	Jun	2	Monday	2011	2	6/6/2011
20110607	201...	2011	06	07	2011-06-07	2011-06...	2	Jun	3	Tuesday	2011	3	6/7/2011
20110608	201...	2011	06	08	2011-06-08	2011-06...	2	Jun	4	Wednesday	2011	4	6/8/2011
20110609	201...	2011	06	09	2011-06-09	2011-06...	2	Jun	5	Thursday	2011	5	6/9/2011
20110610	201...	2011	06	10	2011-06-10	2011-06...	2	Jun	6	Friday	2011	6	6/10/2011
20110611	201...	2011	06	11	2011-06-11	2011-06...	2	Jun	7	Saturday	2011	7	6/11/2011
20110612	201...	2011	06	12	2011-06-12	2011-06...	2	Jun	1	Sunday	2011	1	6/12/2011
20110613	201...	2011	06	13	2011-06-13	2011-06...	2	Jun	2	Monday	2011	2	6/13/2011
20110614	201...	2011	06	14	2011-06-14	2011-06...	2	Jun	3	Tuesday	2011	3	6/14/2011
20110615	201...	2011	06	15	2011-06-15	2011-06...	2	Jun	4	Wednesday	2011	4	6/15/2011
20110616	201...	2011	06	16	2011-06-16	2011-06...	2	Jun	5	Thursday	2011	5	6/16/2011
20110617	201...	2011	06	17	2011-06-17	2011-06...	2	Jun	6	Friday	2011	6	6/17/2011
20110618	201...	2011	06	18	2011-06-18	2011-06...	2	Jun	7	Saturday	2011	7	6/18/2011
20110619	201...	2011	06	19	2011-06-19	2011-06...	2	Jun	1	Sunday	2011	1	6/19/2011
20110620	201...	2011	06	20	2011-06-20	2011-06...	2	Jun	2	Monday	2011	2	6/20/2011
20110621	201...	2011	06	21	2011-06-21	2011-06...	2	Jun	3	Tuesday	2011	3	6/21/2011
20110622	201...	2011	06	22	2011-06-22	2011-06...	2	Jun	4	Wednesday	2011	4	6/22/2011
20110623	201...	2011	06	23	2011-06-23	2011-06...	2	Jun	5	Thursday	2011	5	6/23/2011
20110624	201...	2011	06	24	2011-06-24	2011-06...	2	Jun	6	Friday	2011	6	6/24/2011
20110625	201...	2011	06	25	2011-06-25	2011-06...	2	Jun	7	Saturday	2011	7	6/25/2011
20110626	201...	2011	06	26	2011-06-26	2011-06...	2	Jun	1	Sunday	2011	1	6/26/2011
20110627	201...	2011	06	27	2011-06-27	2011-06...	2	Jun	2	Monday	2011	2	6/27/2011
20110628	201...	2011	06	28	2011-06-28	2011-06...	2	Jun	3	Tuesday	2011	3	6/28/2011
20110629	201...	2011	06	29	2011-06-29	2011-06...	2	Jun	4	Wednesday	2011	4	6/29/2011
20110630	201...	2011	06	30	2011-06-30	2011-06...	2	Jun	5	Thursday	2011	5	6/30/2011
20110701	201...	2011	07	01	2011-07-01	2011-07...	3	Jul	6	Friday	2011	6	7/1/2011
20110702	201...	2011	07	02	2011-07-02	2011-07...	3	Jul	7	Saturday	2011	7	7/2/2011
20110703	201...	2011	07	03	2011-07-03	2011-07...	3	Jul	1	Sunday	2011	1	7/3/2011
20110704	201...	2011	07	04	2011-07-04	2011-07...	3	Jul	2	Monday	2011	2	7/4/2011
20110705	201...	2011	07	05	2011-07-05	2011-07...	3	Jul	3	Tuesday	2011	3	7/5/2011
20110706	201...	2011	07	06	2011-07-06	2011-07...	3	Jul	4	Wednesday	2011	4	7/6/2011
20110707	201...	2011	07	07	2011-07-07	2011-07...	3	Jul	5	Thursday	2011	5	7/7/2011
20110708	201...	2011	07	08	2011-07-08	2011-07...	3	Jul	6	Friday	2011	6	7/8/2011
20110709	201...	2011	07	09	2011-07-09	2011-07...	3	Jul	7	Saturday	2011	7	7/9/2011
20110710	201...	2011	07	10	2011-07-10	2011-07...	3	Jul	1	Sunday	2011	1	7/10/2011
20110711	201...	2011	07	11	2011-07-11	2011-07...	3	Jul	2	Monday	2011	2	7/11/2011
20110712	201...	2011	07	12	2011-07-12	2011-07...	3	Jul	3	Tuesday	2011	3	7/12/2011