

BDAMD

EXERCISE 4 TUTORIAL

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DEI-ISEP

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Control FlowData FlowParametersEvent HandlersPackage Explorer

Foreach SA Create Table Script

Execute SA Script

Foreach DM Create Table Script

Execute DM Script

Foreach CSV File

Load CSV File into Table

Load Temporal Dimensions

Is DimDate Empty?

Load DimDate

Connection Managers

Create DM Tables

Create SA Tables

CSV DimDate

Data Mart

Load CSV Files

master

Staging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

Load the *Data Mart* project finished last class (also available in Moodle) in *Visual Studio*.

Drag a *Sequence Container* from the *SSIS Toolbox* onto the *Control Flow* area underneath the existing components.

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search

SSIS Toolbox

Search SSIS Toolbox

- Send Mail Task
- Web Service Task
- XML Task
- Azure
- Containers
 - For Loop Container
 - Foreach Loop Container
 - Sequence Container**
- Other Tasks
 - Analysis Services Execute DDL Task
 - Back Up Database Task
 - CDC Control Task
 - Check Database Integrity Task
 - Execute SQL Server Agent Job Task
 - Execute T-SQL Statement Task
 - History Cleanup Task
 - Maintenance Cleanup Task
 - Message Queue Task
 - Notify Operator Task
 - Rebuild Index Task
 - Resolving Index Task

Sequence Container

Groups your control flow into more understandable subsystems. For example, scope variables to the container level or group tasks to the same transaction.

[Find Samples](#)

Event Handlers Package Explorer

Table Script

A Script

Foreach DM Create Table Script

Execute DM Script

Load Temporal Dimensions

Is DimDate Empty?

Load DimDate

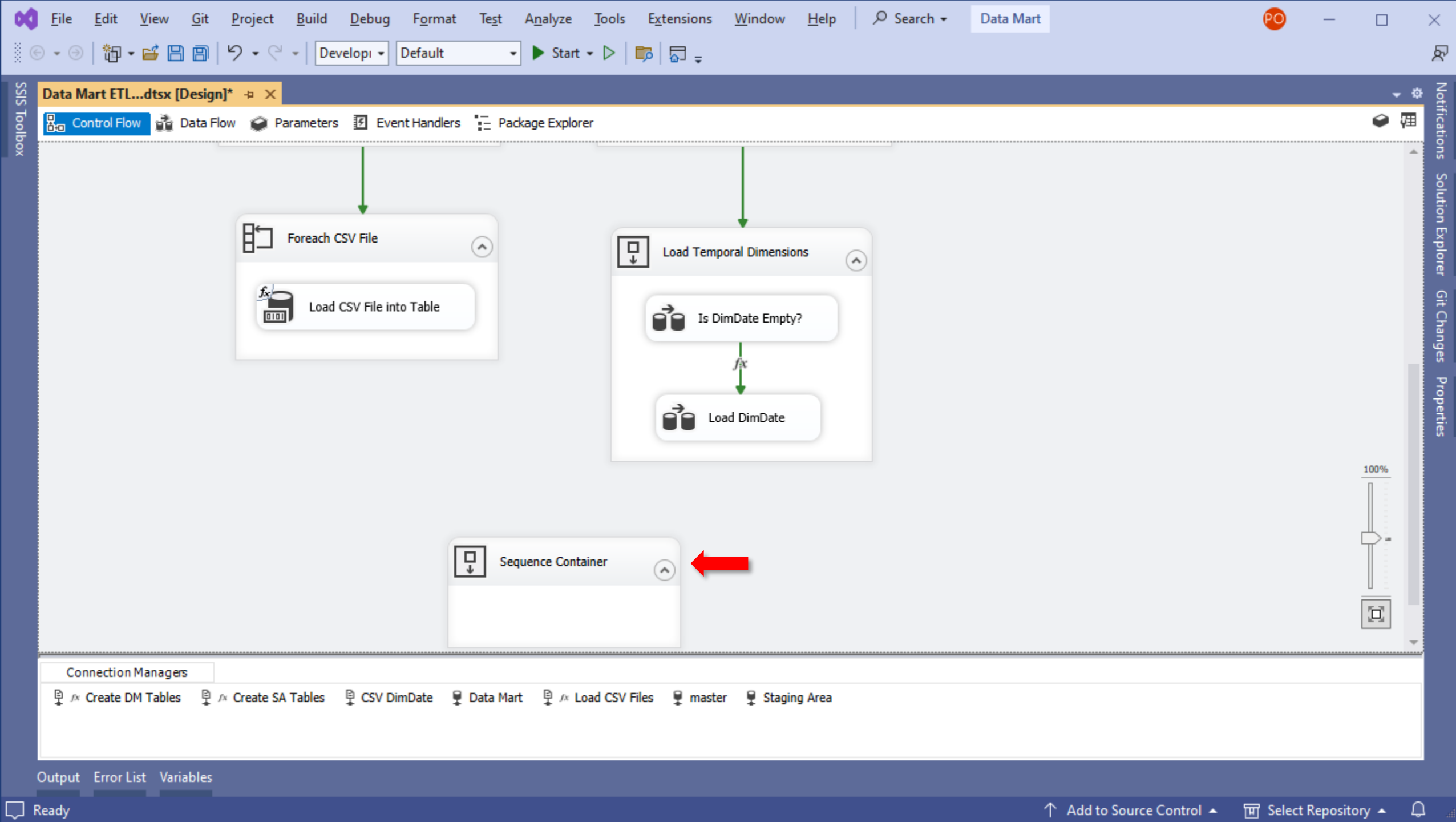
100%

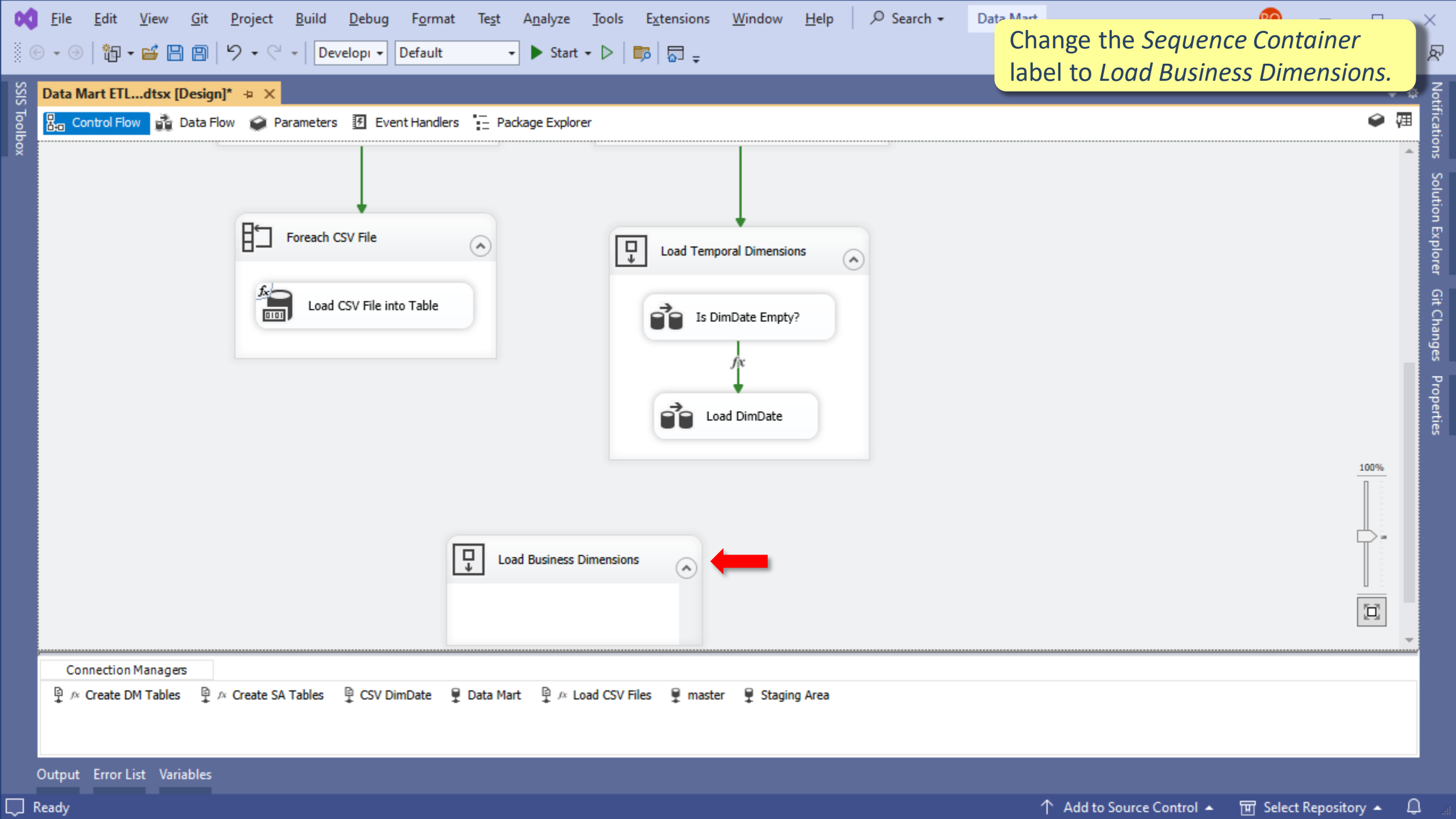
SV DimDate Data Mart Load CSV Files master Staging Area

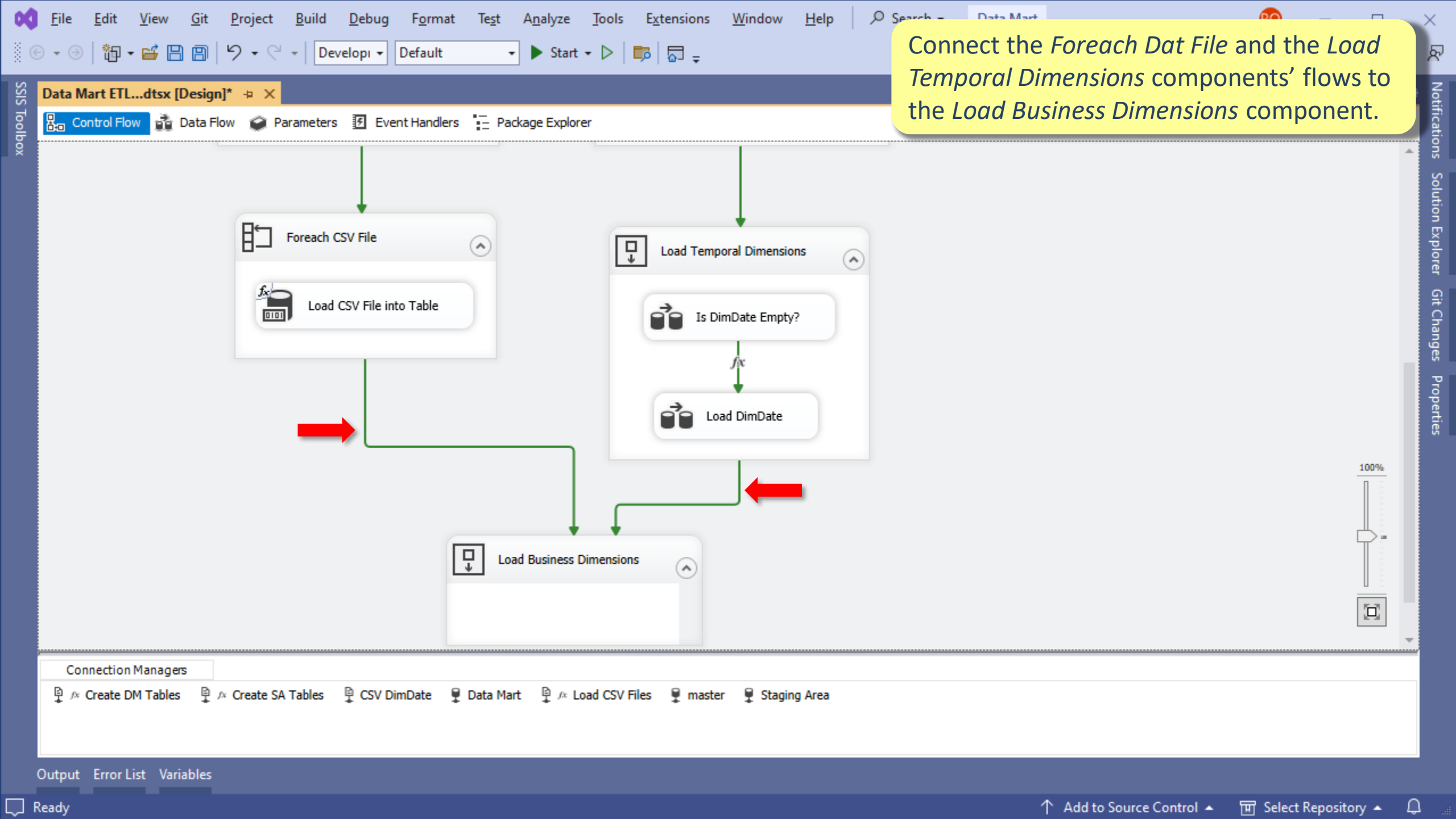
Output Error List Variables

Ready

Add to Source Control Select Repository







Drag a *Data Flow Task* from the *SSIS Toolbox* into the *Load Business Dimensions*.

SSIS Toolbox

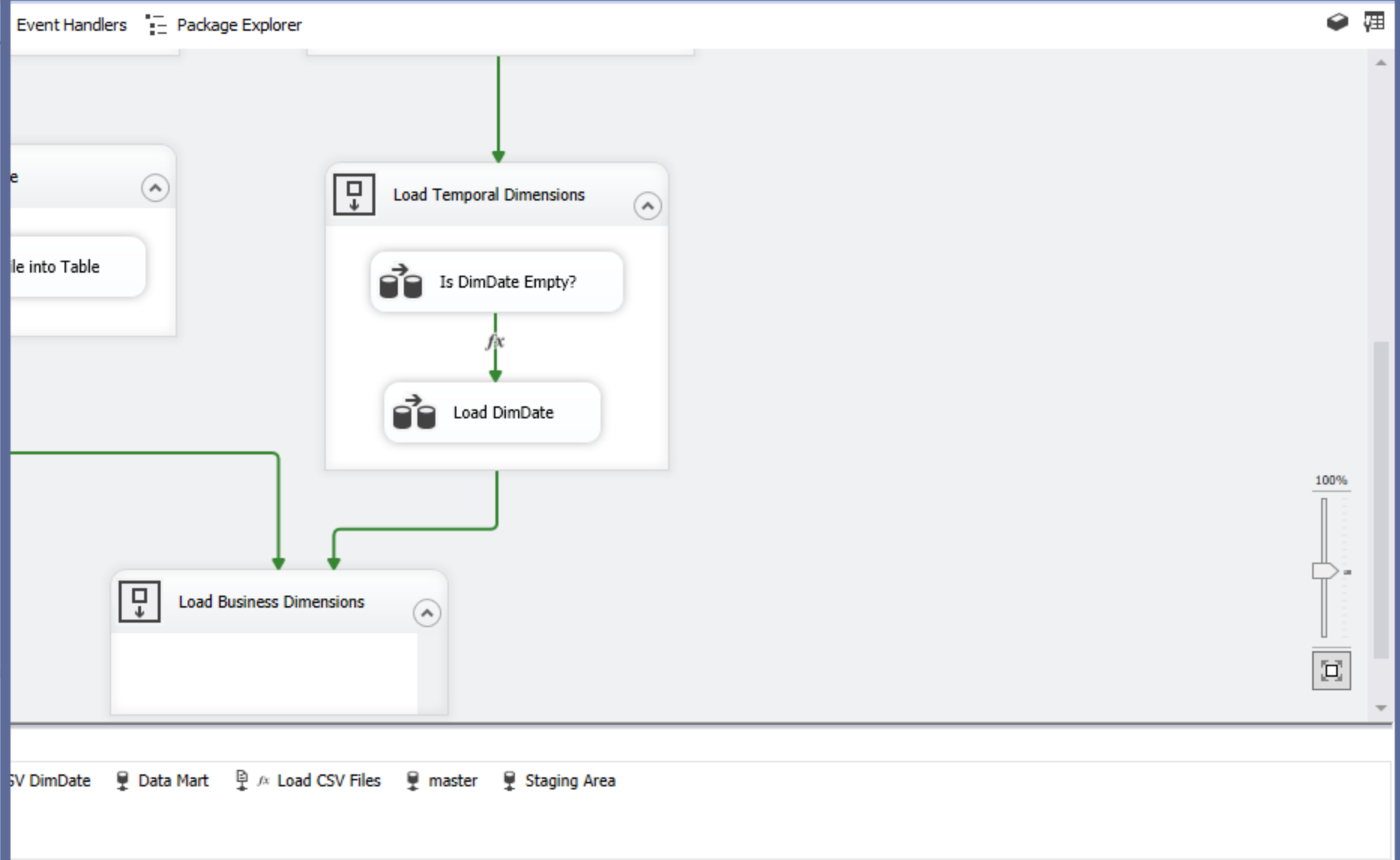
Search SSIS Toolbox

- ▲ Favorites
 - Data Flow Task
 - Execute SQL Task
- ▲ Common
 - Analysis Services Processing Task
 - Bulk Insert Task
 - Data Profiling Task
 - Execute Package Task
 - Execute Process Task
 - Expression Task
 - File System Task
 - FTP Task
 - Hadoop File System Task
 - Hadoop Hive Task
 - Hadoop Pig Task
 - Script Task
 - Send Mail Task
 - Web Service Task
 - XML Task
- Azure

Data Flow Task

Moves data between sources and destinations while transforming and cleaning. Data can be moved between tables and files while efficiently processing the data in memory with transformations. This is an...

[Find Samples](#)



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

Data Mart

DevelopiDefaultStart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Load CSV File into Table

Load Temporal Dimensions

Load Business Dimensions

Data Flow Task

Is DimDate Empty?

Load DimDate

Connection Managers

Create DM Tables

Create SA Tables

CSV DimDate

Data Mart

Load CSV Files

master

Staging Area

Output

Error List

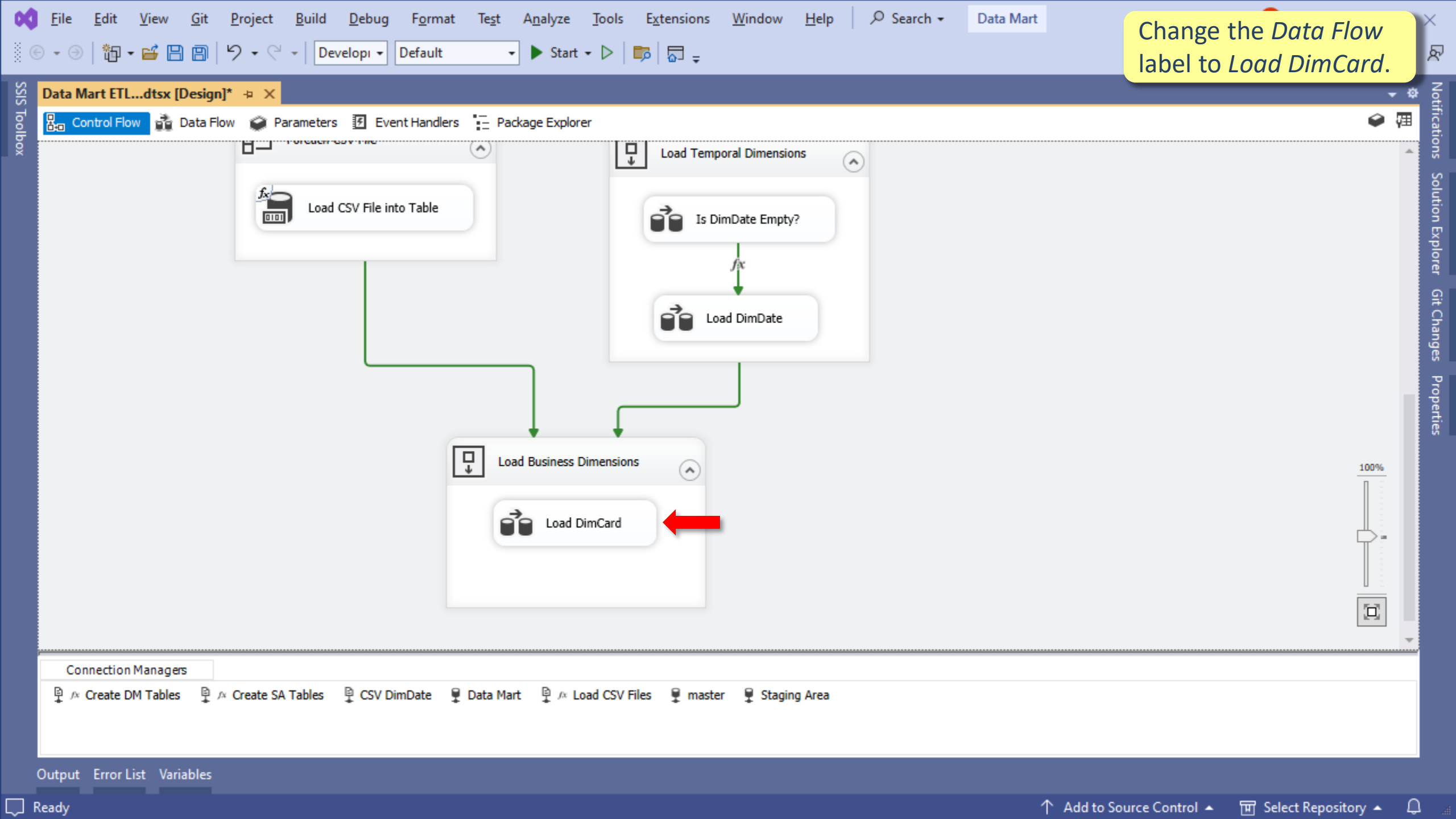
Variables

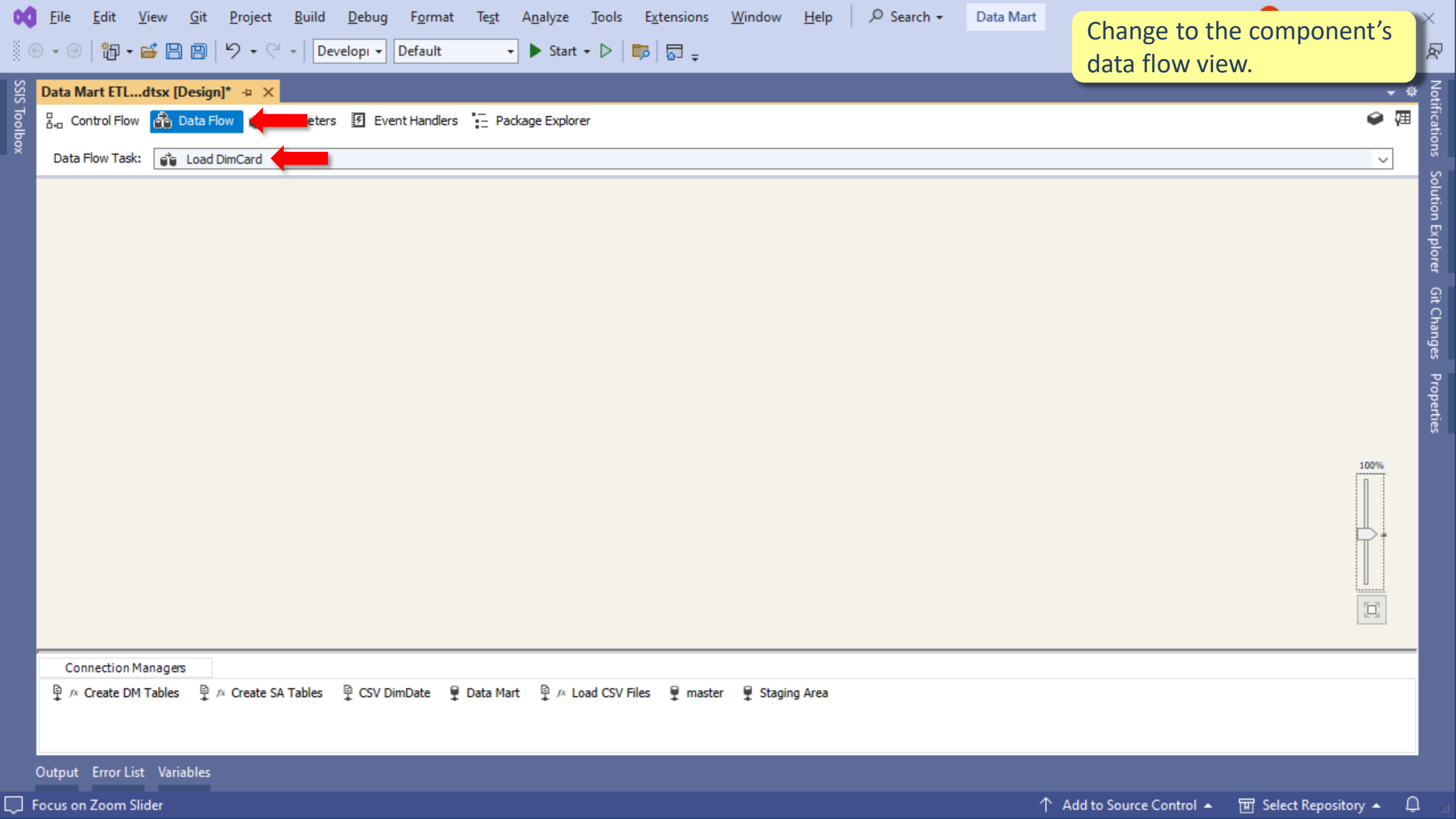
Ready

100%

Add to Source Control

Select Repository





Drag an *OLE DB Source* from the *SSIS Toolbox* onto the Data Flow area.

SSIS Toolbox

Search SSIS Toolbox

- Term Lookup
- Unpivot
- Other Sources
 - ADO NET Source
 - CDC Source
 - Excel Source
 - Flat File Source
 - OLE DB Source**
 - Raw File Source
 - XML Source
- Other Destinations
 - ADO NET Destination
 - DataReader Destination
 - Excel Destination
 - Flat File Destination
 - OLE DB Destination
 - Raw File Destination
 - Recordset Destination
 - SQL Server Compact Destination
 - SQL Server Destination

OLE DB Source

Extracts data from an OLE DB-compliant relational database. Extract from a database table or view, or use a SQL command. For example, extract data from tables in Microsoft Office Access or SQL Server...

[Find Samples](#)

Event Handlers Package Explorer

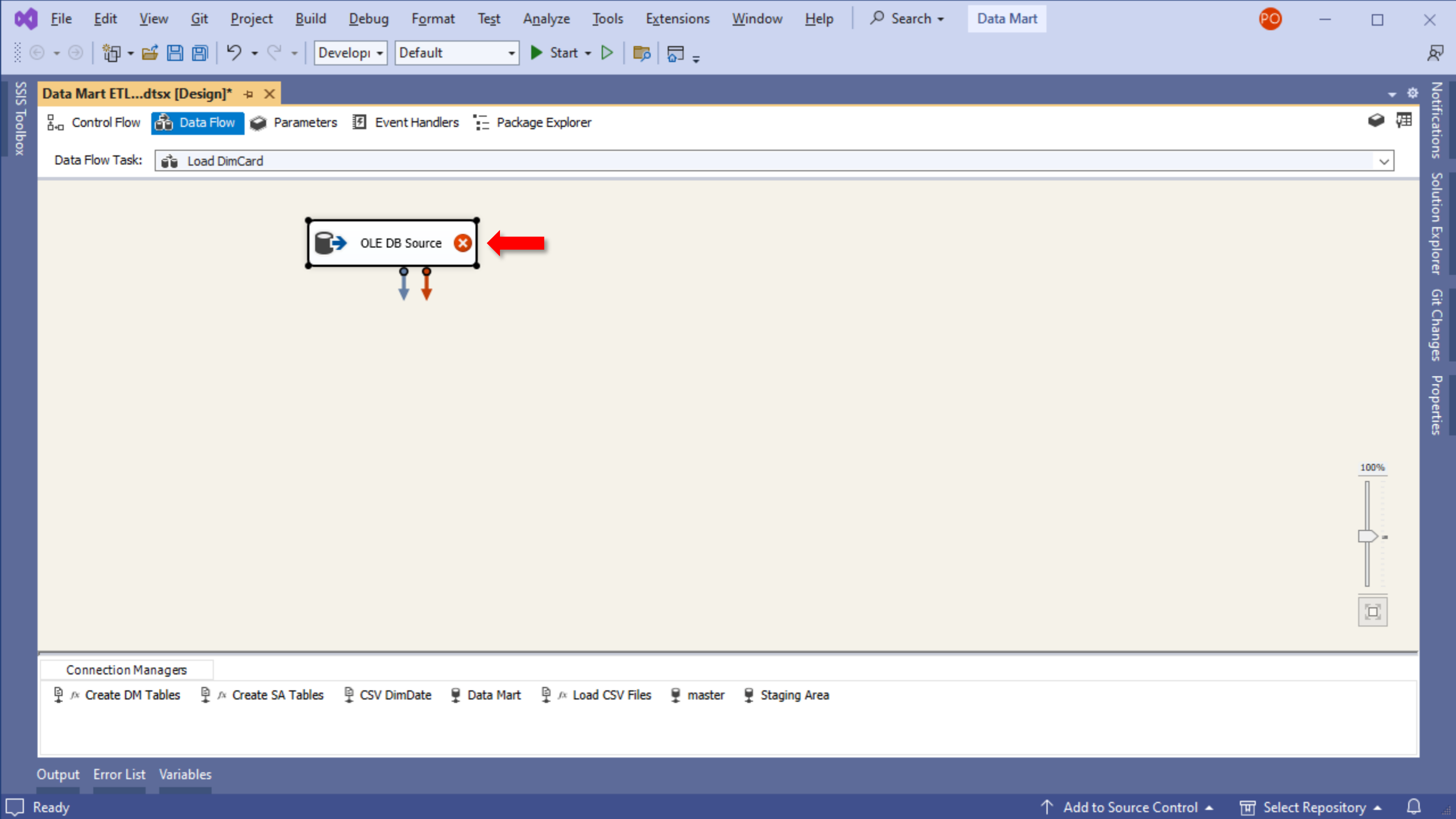
100%

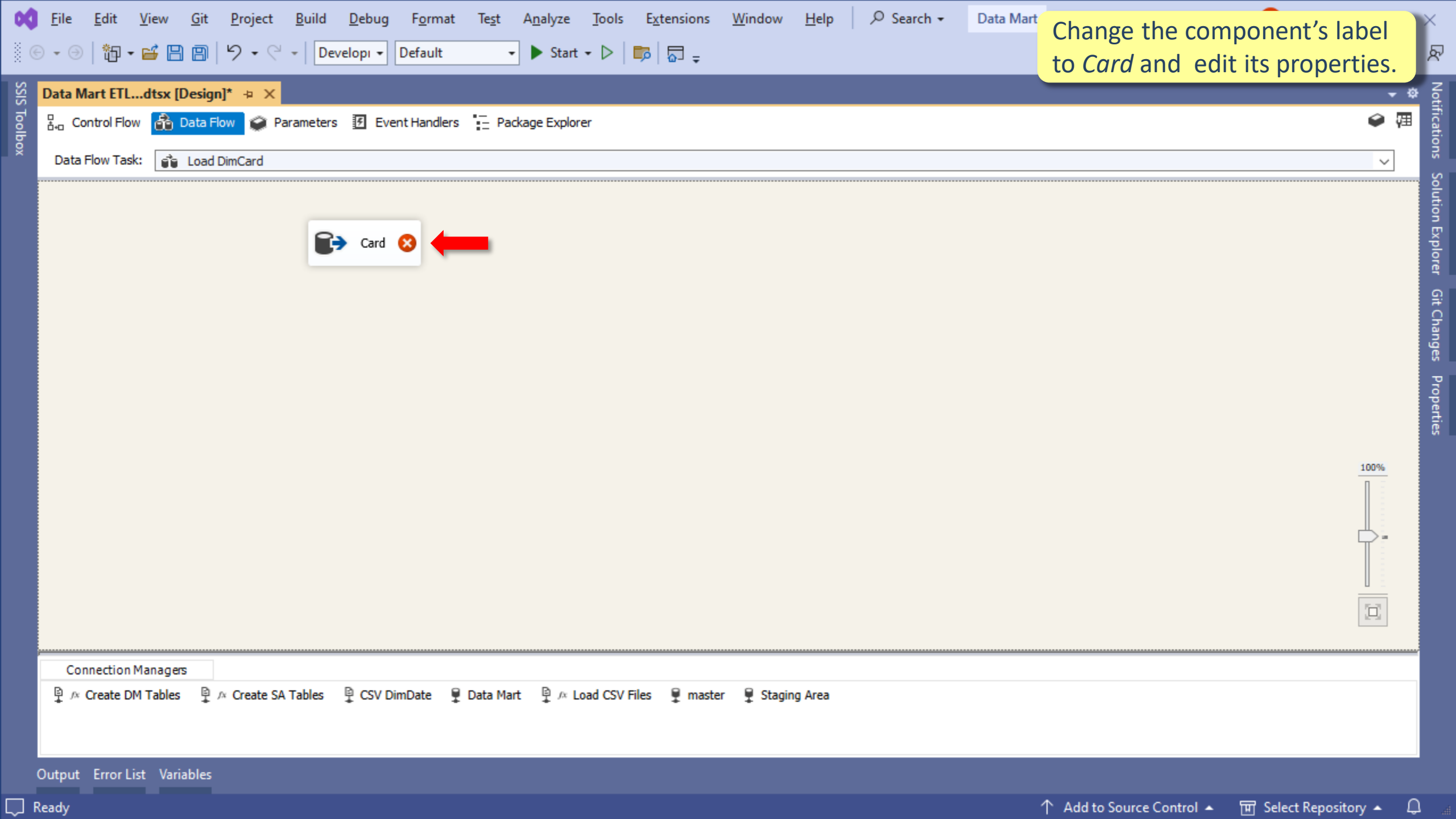
SV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control Select Repository





Change the component's label to *Card* and edit its properties.


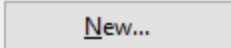
Change the component's properties to access the source data, i.e., the *Card* table stored in the *Staging Area* database.


OLE DB Source Editor




Configure the properties used by a data flow to obtain data from any OLE DB provider.

Connection Manager
Columns
Error Output


Specify an OLE DB connection manager, a data source, or a data source view, and select the data access mode. If using the SQL command access mode, specify the SQL command either by typing the query or by using Query Builder.

OLE DB connection manager:
Staging Area  

Data access mode:
Table or view 

Name of the table or the view:
 [dbo].[Card]  

Preview...

OK  Cancel Help

Drag a *Derived Column* into the *Data Flow* underneath the *Card* component.

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help Search Data M

SSIS Toolbox

Search SSIS Toolbox

- Favorites
 - Destination Assistant
 - Source Assistant
- Common
 - Aggregate
 - Balanced Data Distributor
 - Conditional Split
 - Data Conversion
 - Data Streaming Destination
 - Derived Column**
 - HDFS File Destination
 - HDFS File Source
 - Lookup
 - Merge
 - Merge Join
 - Multicast
 - OData Source
 - ODBC Destination
 - ODBC Source
 - OLE DB Command
 - Row Count

Derived Column

Creates new column values by applying expressions to transformation input columns. Create new columns or overwrite existing ones. For example, concatenate the values from the 'first name' and...

[Find Samples](#)

Event Handlers Package Explorer

Card

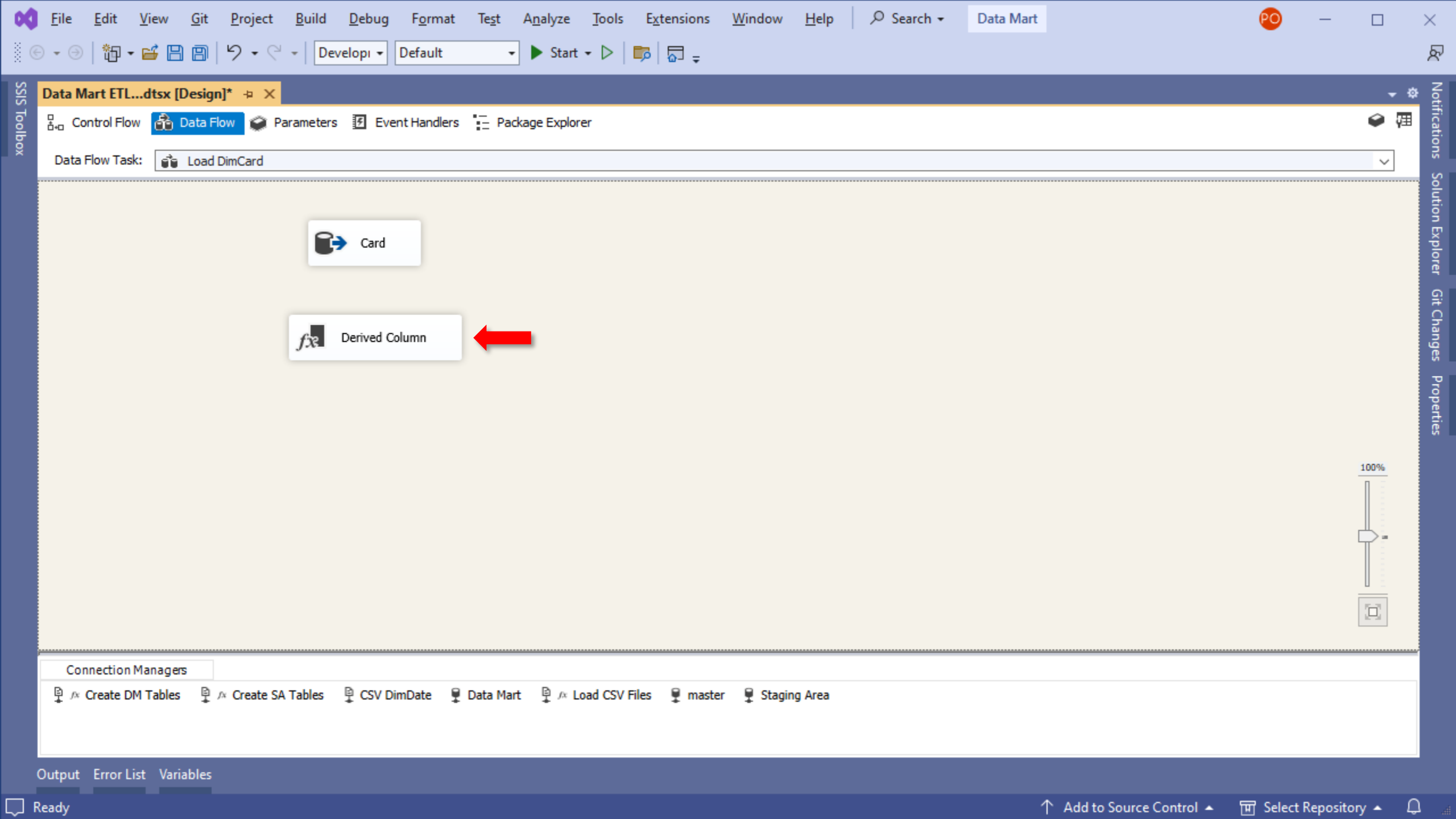
100%

SS DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control Select Repository

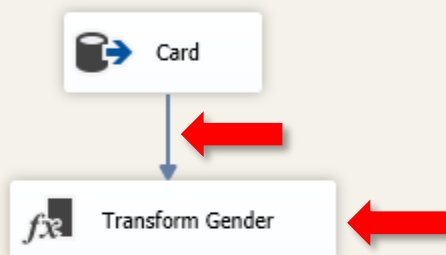


Change the new component's label to *Transform Gender*, connect the flow from the previous component to it and edit it.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Expand the *Operators* folder and drag the *Conditional* operator (also known as ternary operator) onto the *Expression* field.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update columns.

Columns

- CardID
- City
- Region
- PostalCode
- CardStartDate
- Gender
- DateOfBirth
- MaritalStatus
- HasChildren
- NumChildren
- YoungestChildren

> (Greater Than)

< (Less Than)

>= (Greater Than or Equal To)

<= (Less Than or Equal To)

&& (Logical AND)

|| (Logical OR)

? : (Conditional)

& (Bitwise AND)

| (Bitwise Inclusive OR)

Description:

Returns one of two expressions based on the evaluation of a Boolean expression.

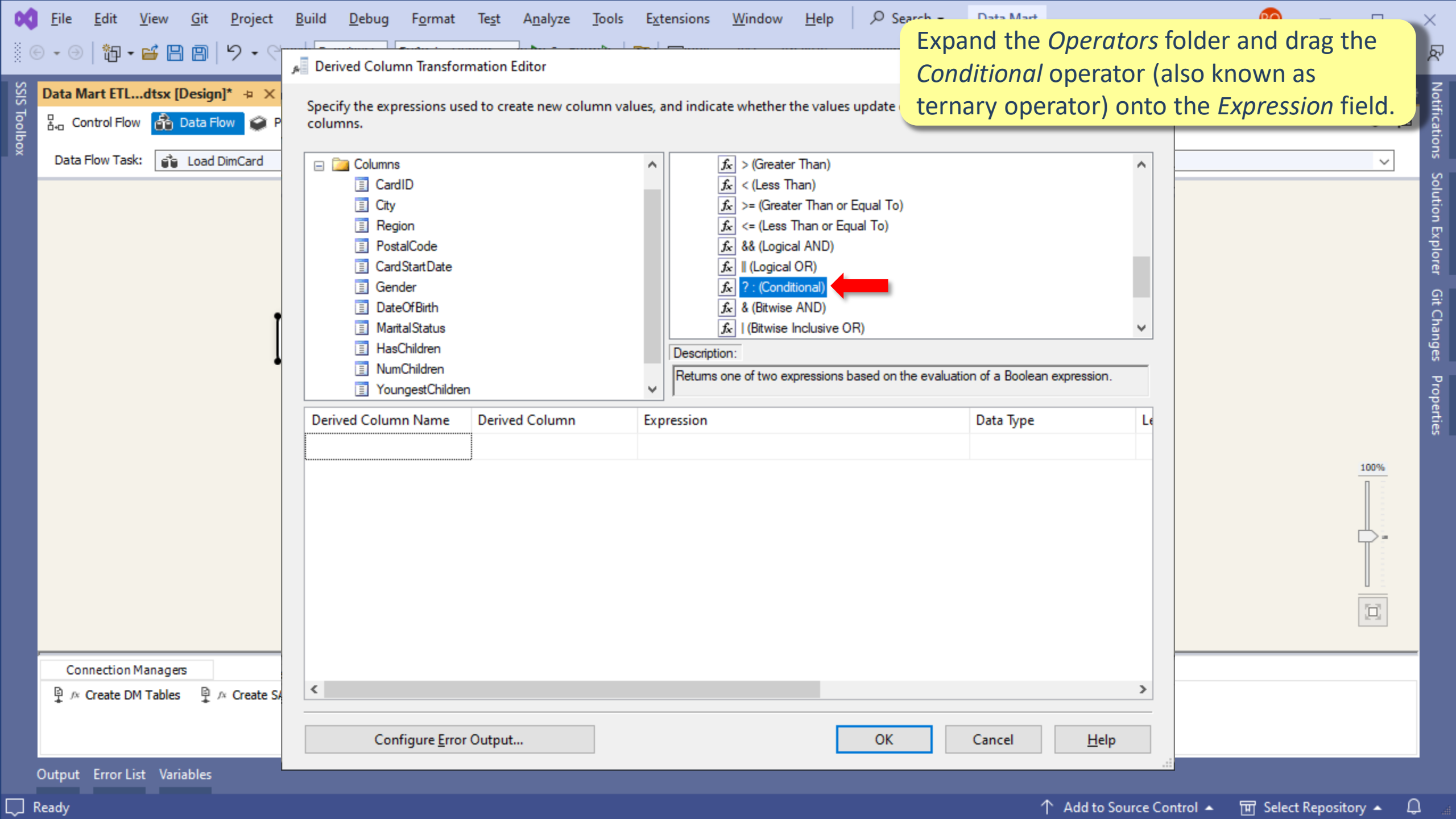
Derived Column Name	Derived Column	Expression	Data Type	Length

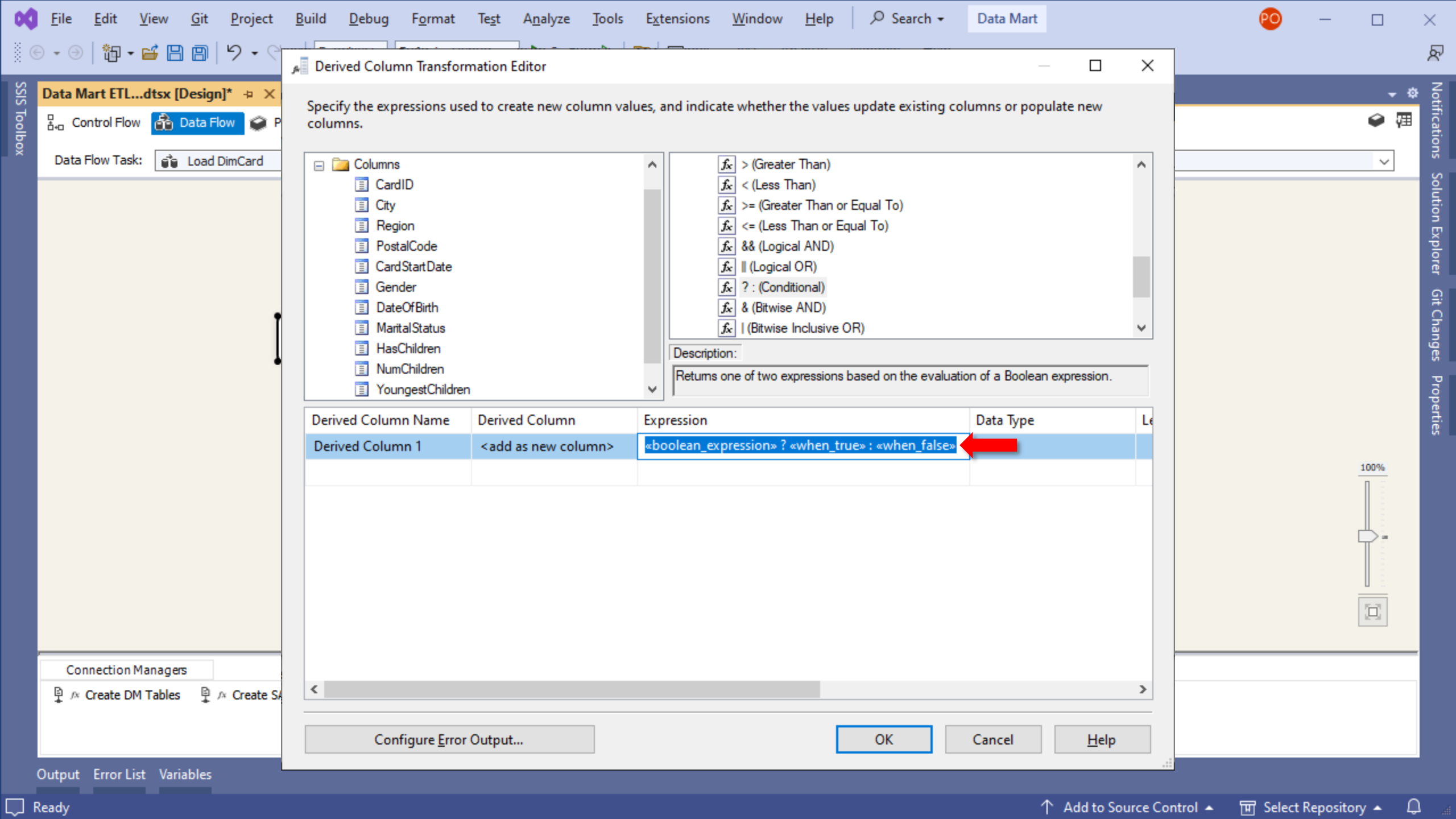
Configure Error Output...

OK

Cancel

Help





Expand Columns and drag the *Gender* column onto the *Boolean_expression*.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow

Data Flow Task: Load DimCard

Connection Managers

Create DM Tables Create SA

Output Error List Variables

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Columns

- CardID
- City
- Region
- PostalCode
- CardStartDate
- Gender**
- DateOfBirth
- MaritalStatus
- HasChildren
- NumChildren
- YoungestChildren

fx > (Greater Than)

fx < (Less Than)

fx >= (Greater Than or Equal To)

fx <= (Less Than or Equal To)

fx && (Logical AND)

fx || (Logical OR)

fx ? : (Conditional)

fx & (Bitwise AND)

fx | (Bitwise Inclusive OR)

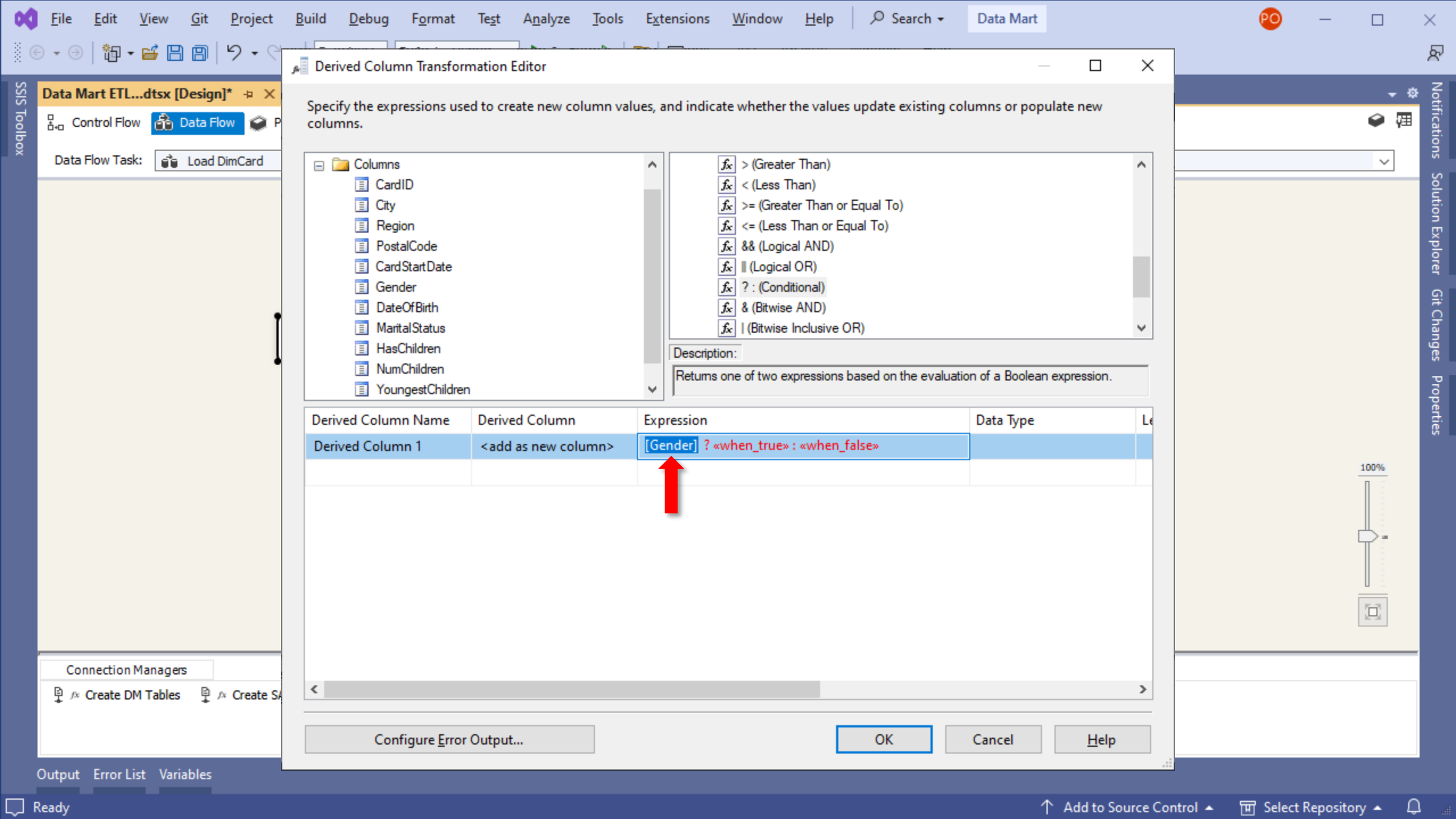
Description:

Returns one of two expressions based on the evaluation of a Boolean expression.

Derived Column Name	Derived Column	Expression	Data Type
Derived Column 1	<add as new column>	«boolean_expression» ? «when_true» : «when_false»	

Configure Error Output... OK Cancel Help





Complete the expression condition with:
== "F"

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Gender
CardID
City
Region
PostalCode
CardStartDate
DateOfBirth
MaritalStatus
HasChildren
NumChildren
YoungestChildren

< (Less Than)
>= (Greater Than or Equal To)
<= (Less Than or Equal To)
&& (Logical AND)
|| (Logical OR)
?: (Conditional)
& (Bitwise AND)
| (Bitwise Inclusive OR)
^ (Bitwise Exclusive OR)

Description:

Derived Column Name	Derived Column	Expression	Data Type	Let
Derived Column 1	<add as new column>	[Gender] == "F" ? «when_true» : «when_false»		

Configure Error Output...

OK

Cancel

Help

Connection Managers

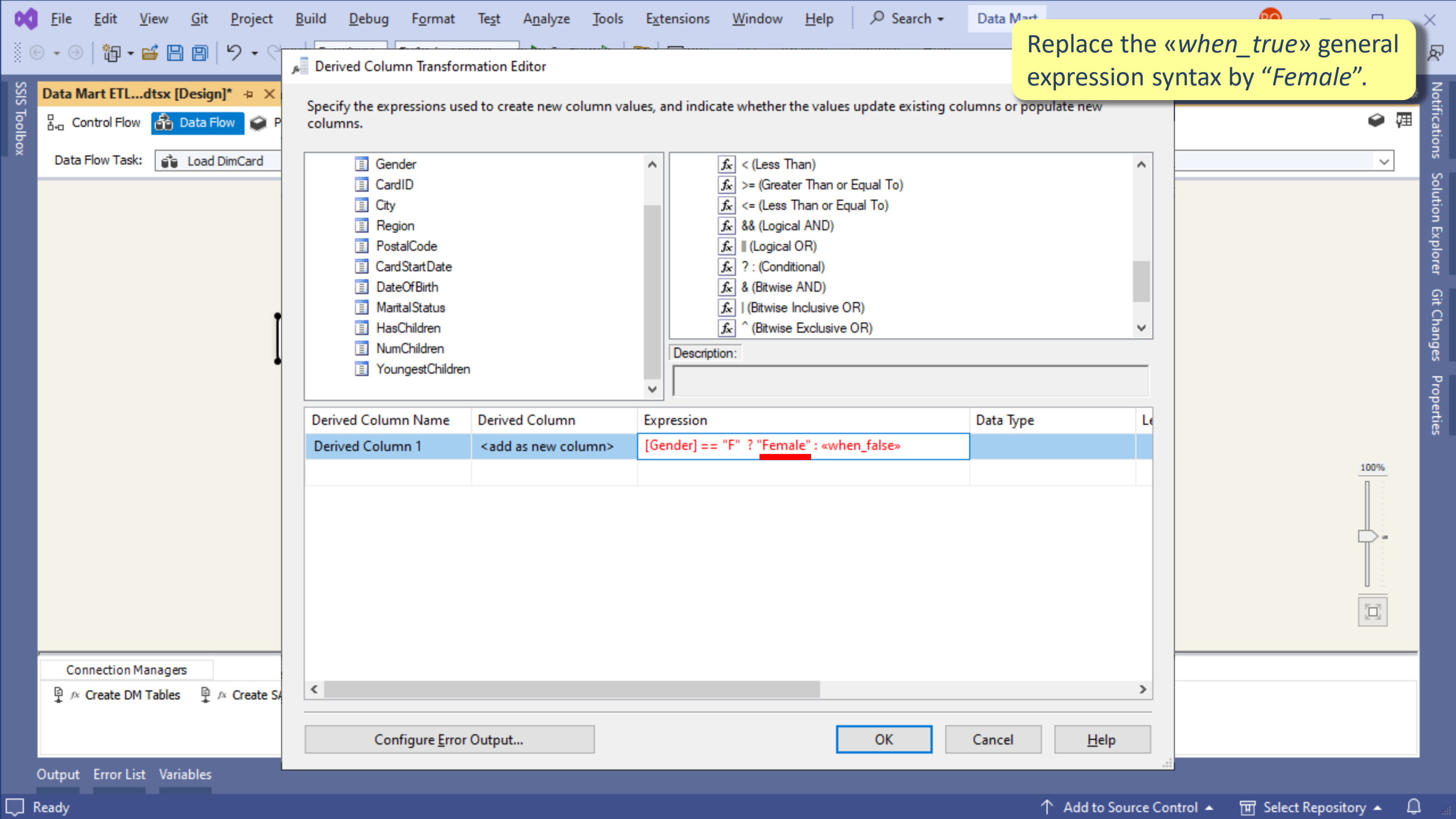
Create DM Tables Create SA

Output Error List Variables

Ready

Add to Source Control

Select Repository



Replace the «when_true» general expression syntax by “Female”.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

- Gender
- CardID
- City
- Region
- PostalCode
- CardStartDate
- DateOfBirth
- MaritalStatus
- HasChildren
- NumChildren
- YoungestChildren

- < (Less Than)
- >= (Greater Than or Equal To)
- <= (Less Than or Equal To)
- && (Logical AND)
- || (Logical OR)
- ? : (Conditional)
- & (Bitwise AND)
- | (Bitwise Inclusive OR)
- ^ (Bitwise Exclusive OR)

Description:

Derived Column Name	Derived Column	Expression	Data Type	Length
Derived Column 1	<add as new column>	[Gender] == "F" ? "Female" : «when_false»		

Replace the «*when_false*» general expression syntax by “Male”.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Gender
CardID
City
Region
PostalCode
CardStartDate
DateOfBirth
MaritalStatus
HasChildren
NumChildren
YoungestChildren

< (Less Than)
>= (Greater Than or Equal To)
<= (Less Than or Equal To)
&& (Logical AND)
|| (Logical OR)
?: (Conditional)
& (Bitwise AND)
| (Bitwise Inclusive OR)
^ (Bitwise Exclusive OR)

Description:

Derived Column Name	Derived Column	Expression	Data Type	Le
Derived Column 1	<add as new column>	[Gender] == "F" ? "Female" : "Male"	Unicode string [DT_WS...	7

Configure Error Output...

OK

Cancel

Help

Connection Managers

Create DM Tables Create SA

Output Error List Variables

Ready

Add to Source Control

Select Repository

Change the *Derived Column Name* to *Gender_Transformed*.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Gender
CardID
City
Region
PostalCode
CardStartDate
DateOfBirth
MaritalStatus
HasChildren
NumChildren
YoungestChildren

< (Less Than)
>= (Greater Than or Equal To)
<= (Less Than or Equal To)
&& (Logical AND)
|| (Logical OR)
?: (Conditional)
& (Bitwise AND)
| (Bitwise Inclusive OR)
^ (Bitwise Exclusive OR)

Description:

Derived Column Name	Derived Column	Expression	Data Type	Length
<u>Gender_Transformed</u>	<add as new column>	[Gender] == "F" ? "Female" : "Male"	Unicode string [DT_WS...	6








Configure Error Output...

OK

Cancel

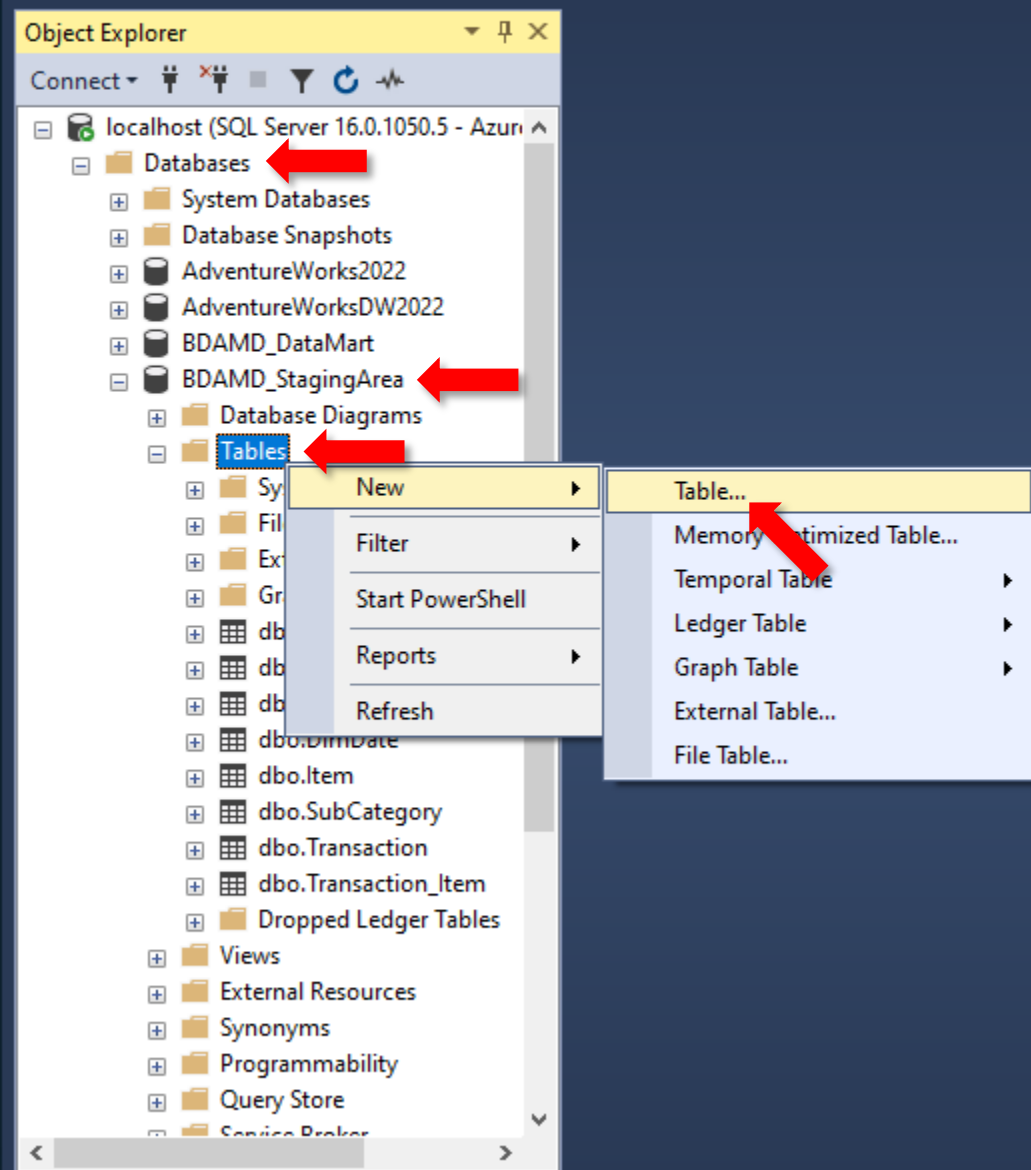
Help



 [Create DM Tables](#)
 [Create SA Tables](#)
 [CSV DimDate](#)
 [Data Mart](#)
 [Load CSV Files](#)
 [master](#)
 [Staging Area](#)



Use SQL Server Management Studio (SSMS) to create a new table in the *Staging Area* database.



File Edit View Project Table Designer Tools Window Help



Add the highlighted attribute/row and its corresponding data type.

Object Explorer

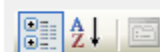
Connect

- localhost (SQL Server 16.0.1050.5 - Azur...
- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorks2022
 - AdventureWorksDW2022
 - BDAMD_DataMart
 - BDAMD_StagingArea
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Brand
 - dbo.Card
 - dbo.Category
 - dbo.DimDate
 - dbo.Item
 - dbo.SubCategory
 - dbo.Transaction
 - dbo.Transaction_Item
 - Dropped Ledger Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker

DESKTOP-ACEDDKF.B...rea - dbo.Table_1* X

Column Name	Data Type	Allow Nulls
MaritalStatus	char(1)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties



(General)

(Name)	MaritalStatus
Allow Nulls	Yes
Data Type	char
Default Value or Binding	
Length	1

(General)

File Edit View Project Table Designer Tools Window Help



Add another attribute, its corresponding data type, uncheck the option "Allow Nulls" and save the table.

Object Explorer

Connect

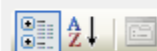
localhost (SQL Server 16.0.1050.5 - Azur

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorks2022
 - AdventureWorksDW2022
 - BDAMD_DataMart
 - BDAMD_StagingArea
 - Database Diagrams
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 - dbo.Item
 - dbo.SubCategory
 - dbo.Transaction
 - dbo.Transaction_Item
 - Dropped Ledger Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker

DESKTOP-ACEDDKF.B...rea - dbo.Table_1* X

Column Name	Data Type	Allow Nulls
MaritalStatus	char(1)	<input checked="" type="checkbox"/>
MaritalStatusDescription	nvarchar(10)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties

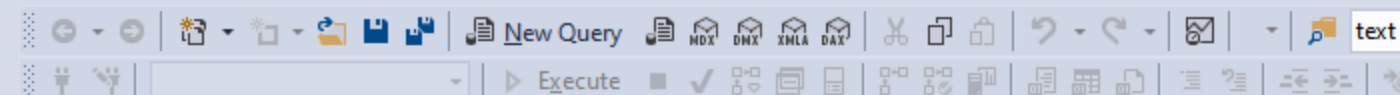


(General)

(Name)	MaritalStatusDescription
Allow Nulls	Yes
Data Type	nvarchar
Default Value or Binding	
Length	10

(General)

File Edit View Project Table Designer Tools Window Help



Name the table as
MaritalStatusDescription_Lookup

Object Explorer

Connect

localhost (SQL Server 16.0.1050.5 - Azur

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorks2022
 - AdventureWorksDW2022
 - BDAMD_DataMart
 - BDAMD_StagingArea
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Brand
 - dbo.Card
 - dbo.Category
 - dbo.DimDate
 - dbo.Item
 - dbo.SubCategory
 - dbo.Transaction
 - dbo.Transaction_Item
 - Dropped Ledger Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker

DESKTOP-ACEDDKF.B...rea - dbo.Table_1* X

Column Name	Data Type	Allow Nulls
MaritalStatus	char(1)	<input checked="" type="checkbox"/>
MaritalStatusDescription	nvarchar(10)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Choose Name

Enter a name for the table:

MaritalStatusDescription_Lookup

OK Cancel

Column Properties

(General)	
(Name)	MaritalStatusDescription
Allow Nulls	Yes
Data Type	nvarchar
Default Value or Binding	
Length	10
(General)	

DESKTOP-ACEDDKF.BDAMD_StagingArea - dbo.Table_1DESKTOP-ACEDDKF.BDAMD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Project Table Designer Tools Window Help


New Query

MDX DMX XMLA DAX

text

Execute

Object Explorer

Connect  Refresh (F5)

localhost (SQL Server 16.0) eAD\PauloOli

Databases

System Databases

Database Snapshots

AdventureWorks2022

AdventureWorksDW2022

BDAMD_DataMart

BDAMD_StagingArea

Database Diagrams

Tables

System Tables

FileTables

External Tables

Graph Tables

dbo.Brand

dbo.Card

dbo.Category

dbo.DimDate

dbo.Item

dbo.MaritalStatusDescription_Lookup

dbo.SubCategory

dbo.Transaction

dbo.Transaction_Item

Dropped Ledger Tables

Views

External Resources

Synonyms




Programmability

Query Store

DESKTOP-ACEDDKF....escription_Lookup

Column Name	Data Type	Allow Nulls
MaritalStatus	char(1)	<input checked="" type="checkbox"/>
MaritalStatusDescription	nvarchar(10)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

Column Properties

(General)

(Name) MaritalStatusDescription

Allow Nulls Yes

Data Type nvarchar

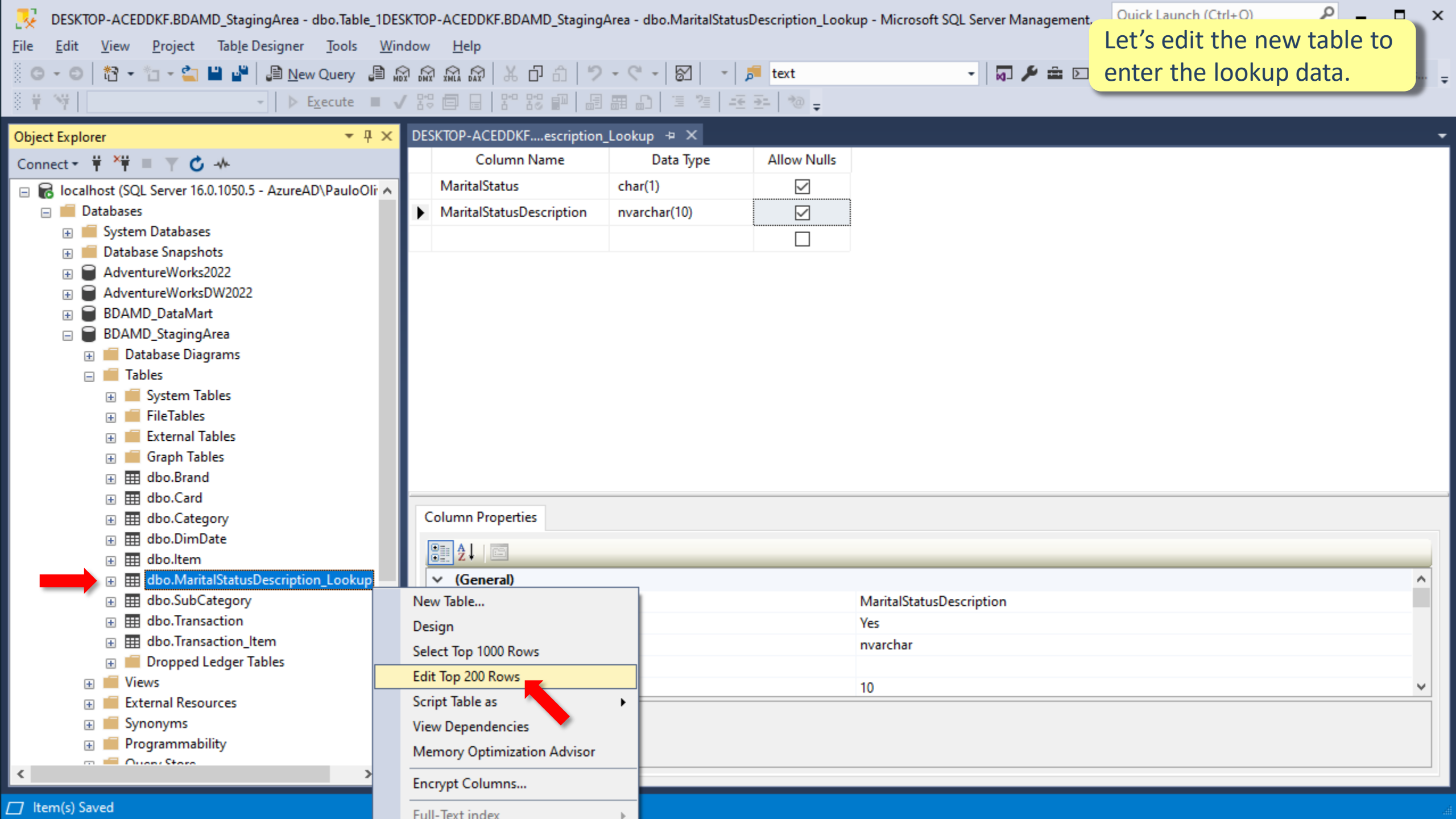
Default Value or Binding

Length 10

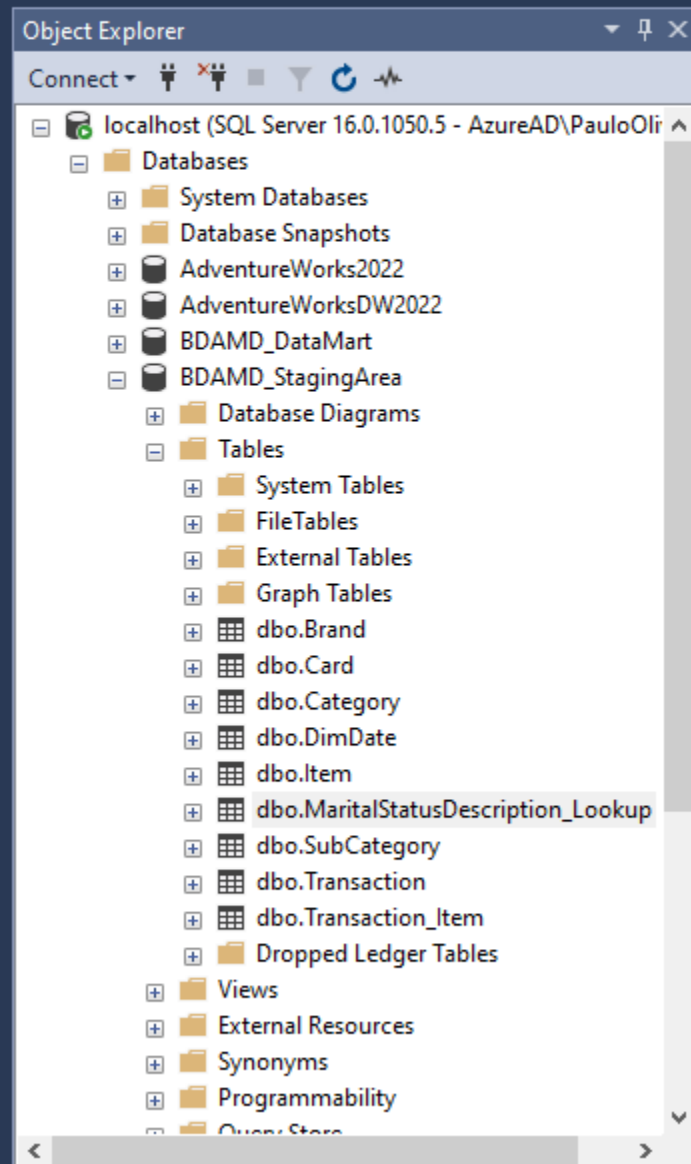
(General)

Item(s) Saved

Refresh the tables in order to see the newly created table.



File Edit View Project Query Designer Tools Window Help



DESKTOP-ACEDDKF....escription_Lookup X

	MaritalStatus	MaritalStatusD...
...	NULL	Unknown
*	NULL	NULL

Insert the first record as shown in the picture to cover the nulls existing in the *MaritalStatus* attribute of the *Card* table.

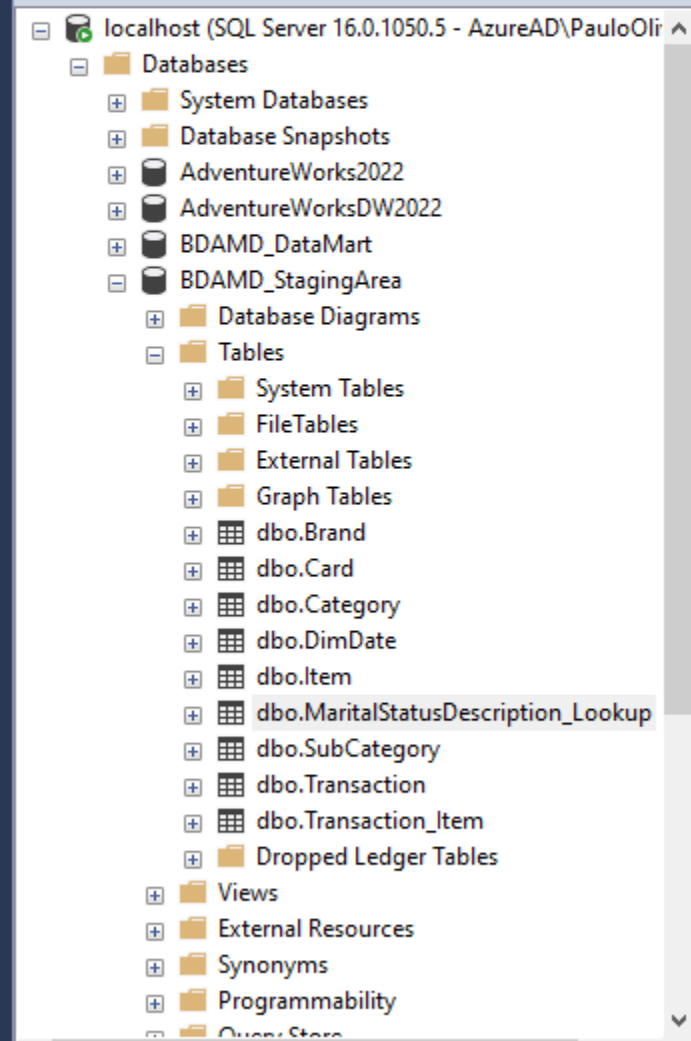
File Edit View Project Query Designer Tools Window Help



Enter two additional records to cover the remaining marital status that exist in the *Card* table.

Object Explorer

Connect



DESKTOP-ACEDDKF....escription_Lookup

MaritalStatus	MaritalStatusD...
NULL	Unknown
S	Single
M	Married
NULL	NULL

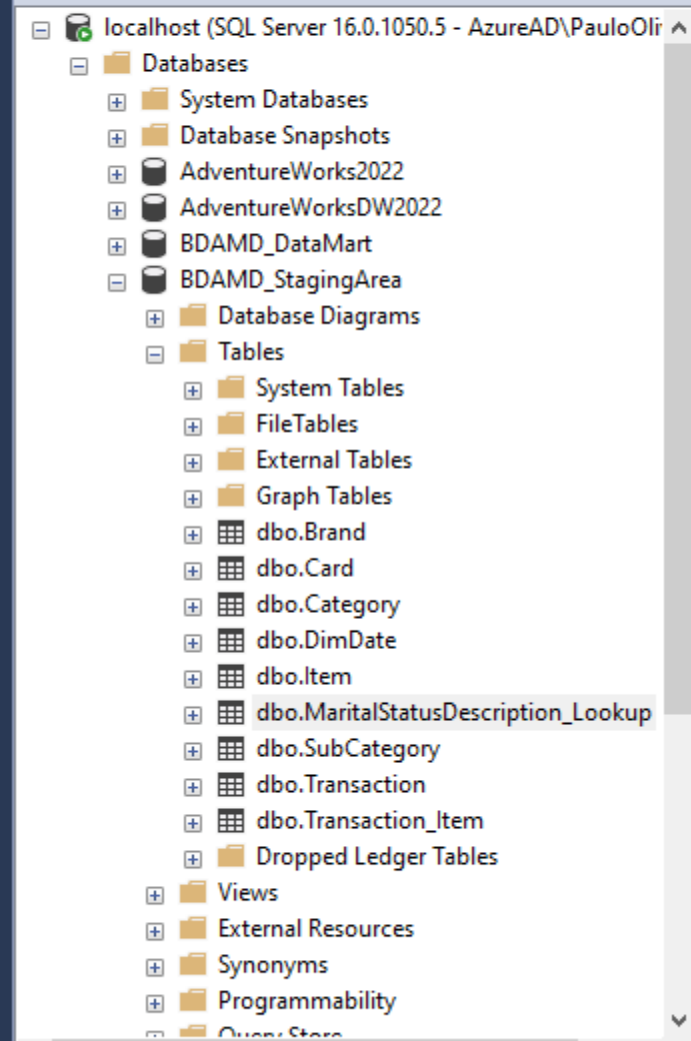
File Edit View Project Query Designer Tools Window Help



Insert two additional records to cover other marital status that may exist in the future.

Object Explorer

Connect



DESKTOP-ACEDDKF....escription_Lookup

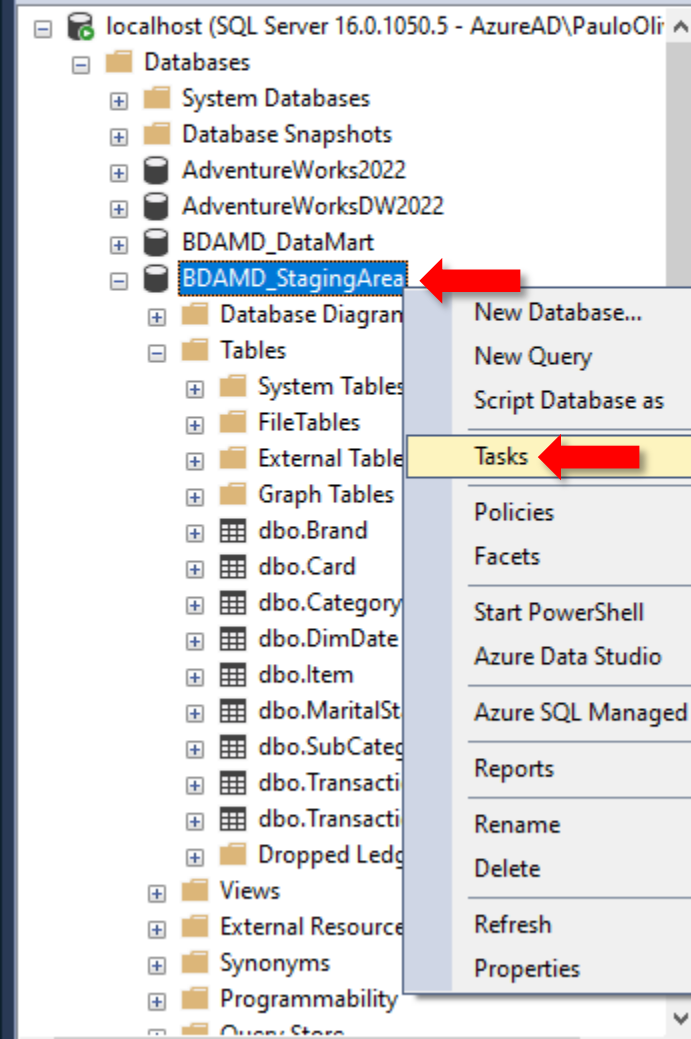
MaritalStatus	MaritalStatusD...
NULL	Unknown
S	Single
M	Married
D	Divorced
W	Widowed
NULL	NULL

File Edit View Project Query Designer Tools Window Help



Object Explorer

Connect



New Database...

New Query

Script Database as

Tasks

Policies

Facets

Start PowerShell

Azure Data Studio

Azure SQL Managed Instance link

Reports

Rename

Delete

Refresh

Properties

DESKTOP-ACEDDKF....escription_Lookup

MaritalStatus	MaritalStatusD...
NULL	Unknown
S	Single
M	Married
D	Divorced
W	Widowed
NULL	NULL

Detach...

Take Offline

Bring Online

Encrypt Columns...

Data Discovery and Classification

Shrink

Back Up...

Restore

Mirror...

Launch Database Mirroring Monitor...

Ship Transaction Logs...

Generate Scripts...

Generate In-Memory OLTP Migration Checklists

Extract Data-tier Application

Let's generate the script for creating and inserting data into the *MaritalStatusDescription_Lookup* table.

File Edit View Project Query Design

Generate Scripts

— □ ×



Introduction

Introduction

[Choose Objects](#)[Set Scripting Options](#)[Summary](#)[Save Scripts](#)[Help](#)

Generate scripts for database objects.

This wizard generates a script of selected database objects. The scripts can be saved for later use in creating databases in an instance of the Database Engine.

There are four steps to complete this wizard:

1. Select database objects.
2. Specify scripting options.
3. Review your selections.
4. Generate scripts, then save them.



To begin the script generation process, click Next.

☐ Do not show this page again.

< Previous

Next >

Finish

Cancel

Object Explorer

Connect ▾

localhost (SQL Server 16.0.1050.5 - Az

Databases

+ System Databases

+ Database Snapshots

+ AdventureWorks2022

+ AdventureWorksDW2022

+ BDAMD_DataMart

+ BDAMD_StagingArea

+ Database Diagrams

+ Tables

+ System Tables

+ FileTables

+ External Tables

+ Graph Tables

+ dbo.Brand

+ dbo.Card

+ dbo.Category

+ dbo.DimDate

+ dbo.Item

+ dbo.MaritalStatusDesc

+ dbo.SubCategory

+ dbo.Transaction

+ dbo.Transaction_Item

+ Dropped Ledger Tables

+ Views

+ External Resources

+ Synonyms

+ Programmability

+ Query Store

File Edit View Project Query Design

Generate Scripts



Choose Objects

Introduction

Choose Objects

Set Scripting Options

Summary

Save Scripts

Help

Select the database objects to script.

- ☐ Script entire database and all database objects
- ☒ Select specific database objects

- ☒ Tables
- ☐ dbo.Brand
 - ☐ dbo.Card
 - ☐ dbo.CardDQP
 - ☐ dbo.Category
 - ☐ dbo.DimDate
 - ☐ dbo.Item
 - ☒ dbo.MaritalStatusDescription_Lookup
 - ☐ dbo.SubCategory
 - ☐ dbo.Transaction
 - ☐ dbo.Transaction_Item

Select All

Deselect All

< Previous

Next >

Finish

Cancel

Select just the
MaritalStatusDescription_Lookup table.

File Edit View Project Query Design

Generate Scripts



Set Scripting Options

Introduction

Choose Objects

Set Scripting Options

Summary

Save Scripts

Specify how scripts should be saved.

☐ Save as notebook

Advanced

File name: C:\Users\PauloOliveira\Documents\script.ipyr

☐ Save as script fileFiles to generate: ☒ Single script file
☐ One script file per object

File name: C:\Users\PauloOliveira\Documents\script.sql

☒ Overwrite existing fileSave as: ☒ Unicode text☐ ANSI text☐ Save to clipboard☒ Open in new query window

< Previous

Next >

Finish

Cancel

File Edit View Project Query Design

Generate Scripts



Set Scripting Options

Introduction

Choose Objects

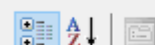
Set Scripting Options

Summary

Save Scripts

Advanced Scripting Options

Options



Script Logins	False
Script Object-Level Permissions	False
Script Owner	False
Script Statistics	Do not script statistics
Script USE DATABASE	True
Types of data to script	Schema and data

Table/View Options

Script Change Tracking	False
Script Check Constraints	True
Script Data Compression Options	False
Script Foreign Keys	True
Script Full-Text Indexes	False
Script Indexes	False

Types of data to script

Generates script that contains schema only or schema and data.

OK

Cancel

Select the option to generate not only the table's schema but also its data.

< Previous

Next >

Finish

Cancel

File Edit View Project Query Design

Generate Scripts



Set Scripting Options

Introduction

Choose Objects

Set Scripting Options

Summary

Save Scripts

Specify how scripts should be saved.

☐ Save as notebook

Advanced

File name: C:\Users\PauloOliveira\Documents\script.ipyr ...

☐ Save as script fileFiles to generate: ☒ Single script file
☐ One script file per object

File name: C:\Users\PauloOliveira\Documents\script.sql ...

☒ Overwrite existing fileSave as: ☒ Unicode text☐ ANSI text☐ Save to clipboard☒ Open in new query window

< Previous

Next >

Finish

Cancel

Introduction

Choose Objects

Set Scripting Options

Summary

Save Scripts

 Help

Review your selections.

- Source
 - Server: DESKTOP-ACEDDKF
 - Database: ARPAD_StagingArea
 - Selected Objects
- Target
 - Destination: Save to new query window
- Options
 - General
 - Table/View Options

[< Previous](#)

[Next >](#)

Cancel

File Edit View Project Query Design

Generate Scripts

— □ ×

**Save Scripts**[Introduction](#)[Choose Objects](#)[Set Scripting Options](#)[Summary](#)**Save Scripts**[Help](#)**Save Scripts**

Action	Result
✓ Getting the list of objects from 'ARPAD_StagingArea'.	Success
✓ Preparing dbo.MaritalStatusDescription_Lookup	Success
✓ Save to new query window	Success

Open

Save Report

< Previous

Next >

Finish

Cancel

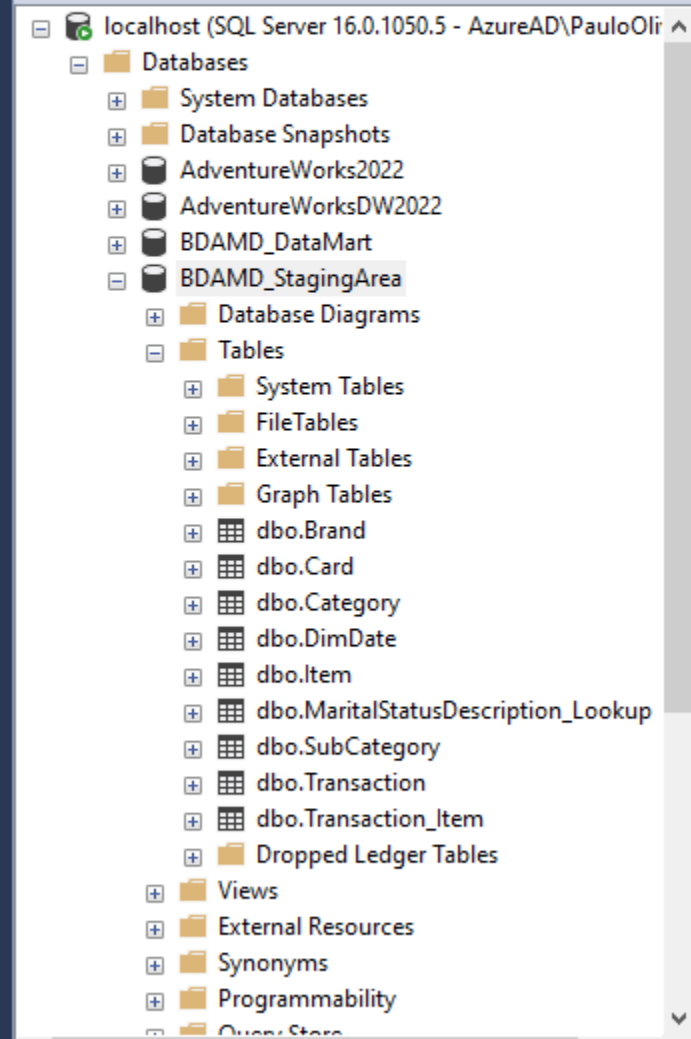
File Edit View Query Project Tools Window Help



Remove all the unnecessary code as the "GOs" that were automatically generated.

Object Explorer

Connect



SQLQuery1.sql - loc... \PauloOliveira (55)

DESKTOP-ACEDDKF....escription_Lookup

DESKTOP-ACEDDKF....escription_Lookup

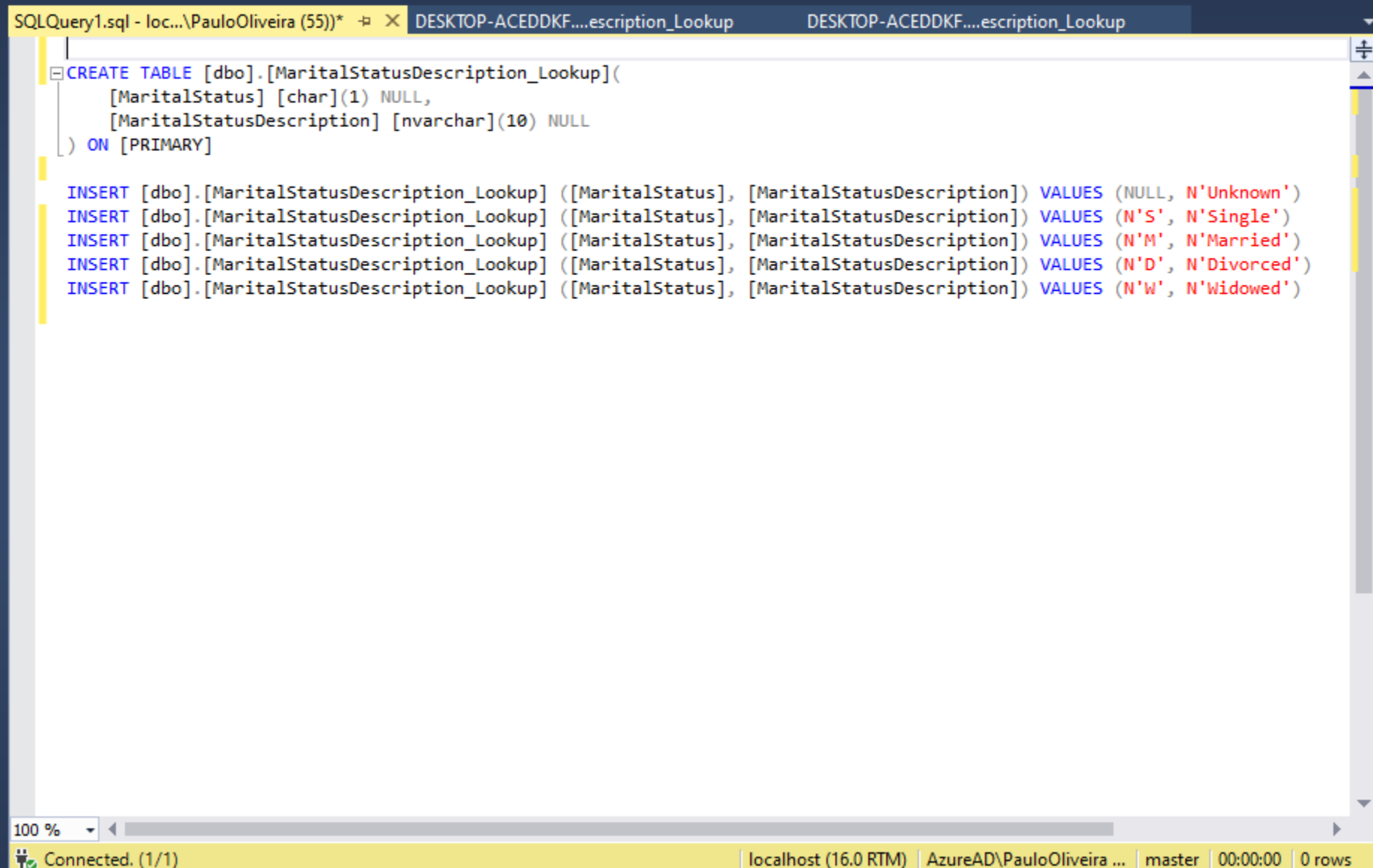
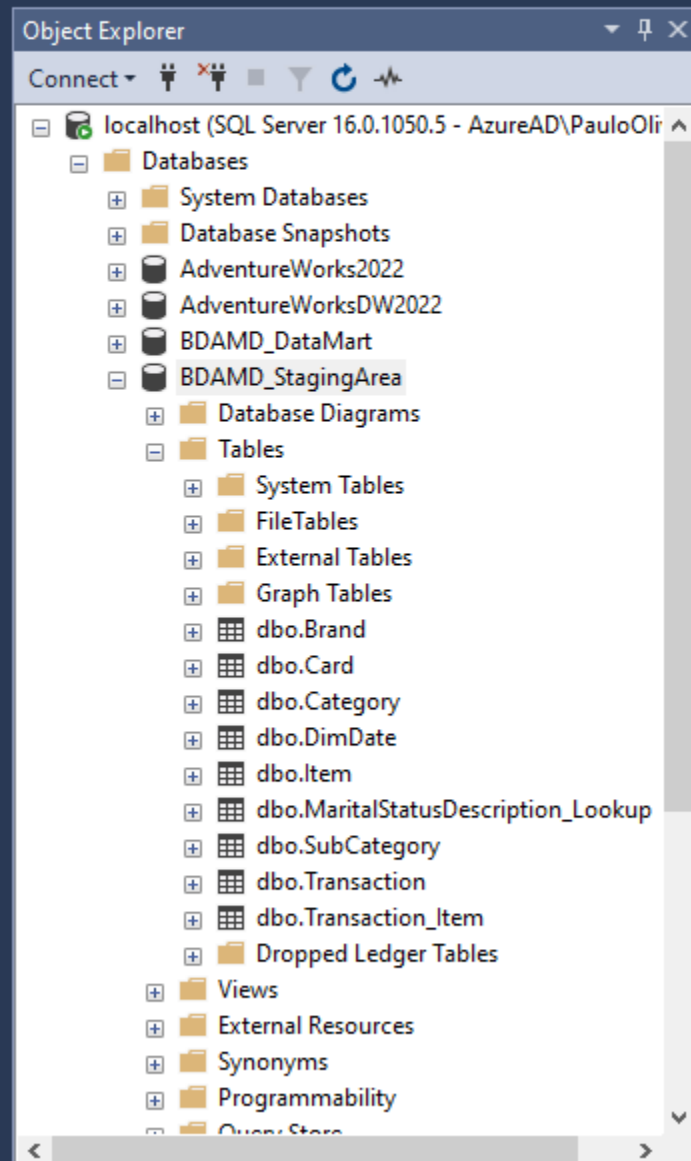
```
USE [BDAMD_StagingArea]
GO
/***** Object: Table [dbo].[MaritalStatusDescription_Lookup]    Script Date: 12/8/2023 10:55:39 PM *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[MaritalStatusDescription_Lookup](
    [MaritalStatus] [char](1) NULL,
    [MaritalStatusDescription] [nvarchar](10) NULL
) ON [PRIMARY]
GO
INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (NULL, N'Unknown')
GO
INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'S', N'Single')
GO
INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'M', N'Married')
GO
INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'D', N'Divorced')
GO
INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'W', N'Widowed')
GO
```

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

File Edit View Query Project Tools Window Help



File Edit View Query Project Tools Window Help



Add the highlighted rows to prevent the creation and insertion of data into the table if it already exists and then save the script.

Object Explorer

Connect

localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (55))*

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorks2022
 - AdventureWorksDW2022
 - BDAMD_DataMart
 - BDAMD_StagingArea
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Brand
 - dbo.Card
 - dbo.Category
 - dbo.DimDate
 - dbo.Item
 - dbo.MaritalStatusDescription_Lookup
 - dbo.SubCategory
 - dbo.Transaction
 - dbo.Transaction_Item
 - Dropped Ledger Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store

SQLQuery1.sql - loc...\PauloOliveira (55))*

DESKTOP-ACEDDKF...escription_Lookup

```
IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'MaritalStatusDescription_Lookup')
BEGIN
    CREATE TABLE [dbo].[MaritalStatusDescription_Lookup](
        [MaritalStatus] [char](1) NULL,
        [MaritalStatusDescription] [nvarchar](10) NULL
    ) ON [PRIMARY]

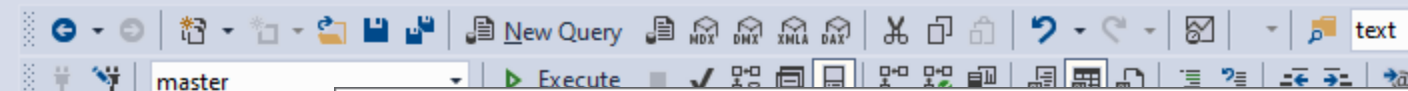
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (NULL, N'Unknown')
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'S', N'Single')
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'M', N'Married')
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'D', N'Divorced')
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription]) VALUES (N'W', N'Widowed')
END
```

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

File Edit View Query Project Tools Window Help



Save the file in the *SQL Scripts* folder inside the *Staging Area* folder of the *Data Mart* project as *CreateStageTableMaritalStatusDescription_Lookup*

Object Explorer

Connect

localhost (SQL Server)

Databases

System Database

Database Snap

AdventureWork

AdventureWork

BDAMD_DataM

BDAMD_Stagin

Database D

Tables

System

FileTabl

Externa

Graph T

dbo.Bra

dbo.Ca

dbo.Ca

dbo.Dir

dbo.It

dbo.Ma

dbo.Su

dbo.Tra

dbo.Tra

Droppe

Views

External Re

Synonyms

Programmability

Query Store

Save File As

This PC > Windows 10 (C:) > Temp > Data Mart > SQL Scripts > Staging Area

Organize

New folder

3D Objects

Desktop

Documents

Downloads

Music

Pictures

Videos

Windows 10 (C:)

CD Drive (D:) Virtua

Network

DESKTOP-ACEDDKI

VBOXSVR

Name

Date modified

Type

Size

CreateStageTableBrand.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

CreateStageTableCard.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

CreateStageTableCategory.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

CreateStageTableItem.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

CreateStageTableSubCategory.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

CreateStageTableTransaction.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

CreateStageTableTransactionItem.sql

12/4/2023 2:57 PM

Microsoft SQL Ser...

1 KB

File name: CreateStageTableMaritalStatusDescription_Lookup.sql

Save as type: SQL Files (*.sql)

Hide Folders

Save

Cancel

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

Return to *Visual Studio* and drag a *Lookup* component onto the *Data Flow* area, underneath the *Transform Gender* component.

The screenshot shows the Visual Studio interface with the SSIS Toolbox on the left and the Data Flow area on the right. The SSIS Toolbox is open, showing a list of components under the 'Common' category. The 'Lookup' component is highlighted with a red arrow. Below the list, a description for the 'Lookup' component is visible, stating: 'Joins additional columns to the data flow by looking up values in a table. For example, join to the 'employee id' column the employees table to get 'hire date' and 'employee name'. We recommend...'. The Data Flow area on the right shows a diagram with a 'Transform Gender' component. The bottom status bar indicates 'Ready' and provides options to 'Add to Source Control' and 'Select Repository'.

SSIS Toolbox

Search SSIS Toolbox

- Favorites
 - Destination Assistant
 - Source Assistant
- Common
 - Aggregate
 - Balanced Data Distributor
 - Conditional Split
 - Data Conversion
 - Data Streaming Destination
 - Derived Column
 - HDFS File Destination
 - HDFS File Source
 - Lookup**
 - Merge
 - Merge Join
 - Multicast
 - OData Source
 - ODBC Destination
 - ODBC Source
 - OLE DB Command
 - Row Count

Lookup

Joins additional columns to the data flow by looking up values in a table. For example, join to the 'employee id' column the employees table to get 'hire date' and 'employee name'. We recommend...

[Find Samples](#)

Event Handlers Package Explorer

ard

rm Gender

100%

SV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control Select Repository

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

NotificationsSolution ExplorerGit ChangesProperties

100%

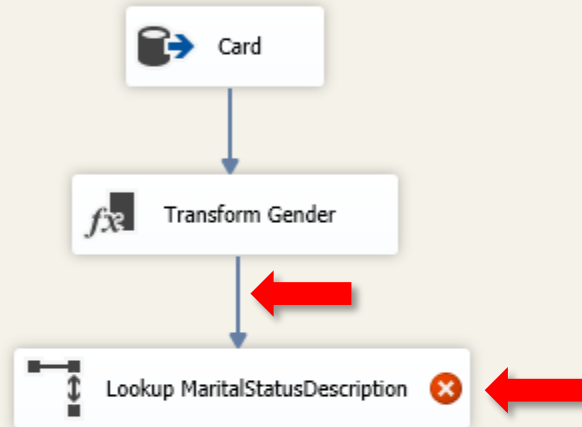
```
graph TD; Card[Card] --> TransformGender[Transform Gender]; TransformGender --> Lookup[Lookup];
```

Change the component's label to *Lookup MaritalStatusDescription*, connect the flow from the previous component to it and edit the component.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Connection Managers

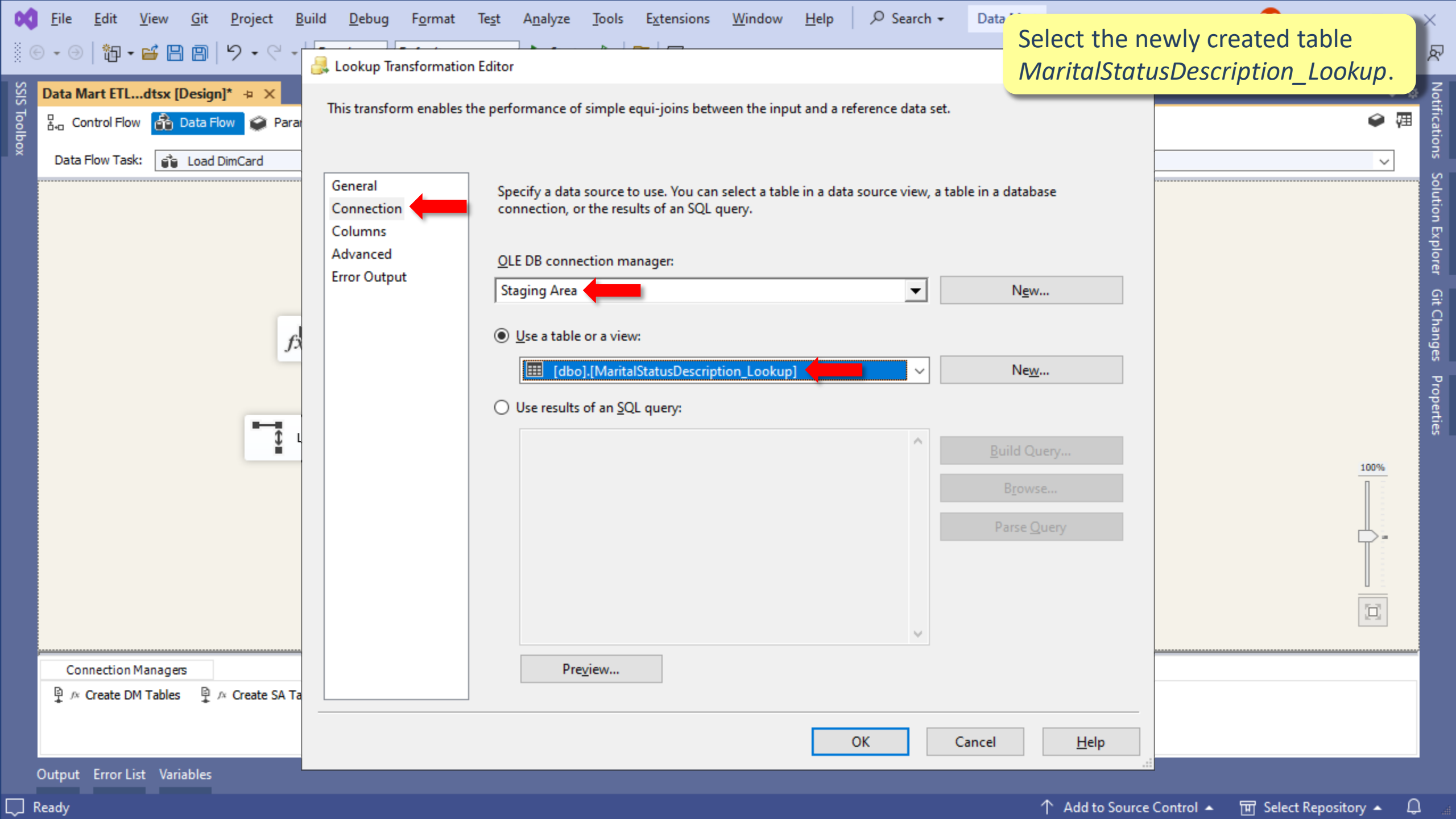
Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control

Select Repository



In the *Columns* tab drag the input *MaritalStatus* attribute onto the lookup *MaritalStatus* attribute and select the *MaritalStatusDescription* attribute as the lookup result.

Lookup Transformation Editor

This transform enables the performance of simple equi-joins between the input and lookup data sources.

General
Connection
Columns
Advanced
Error Output

Available Input Columns

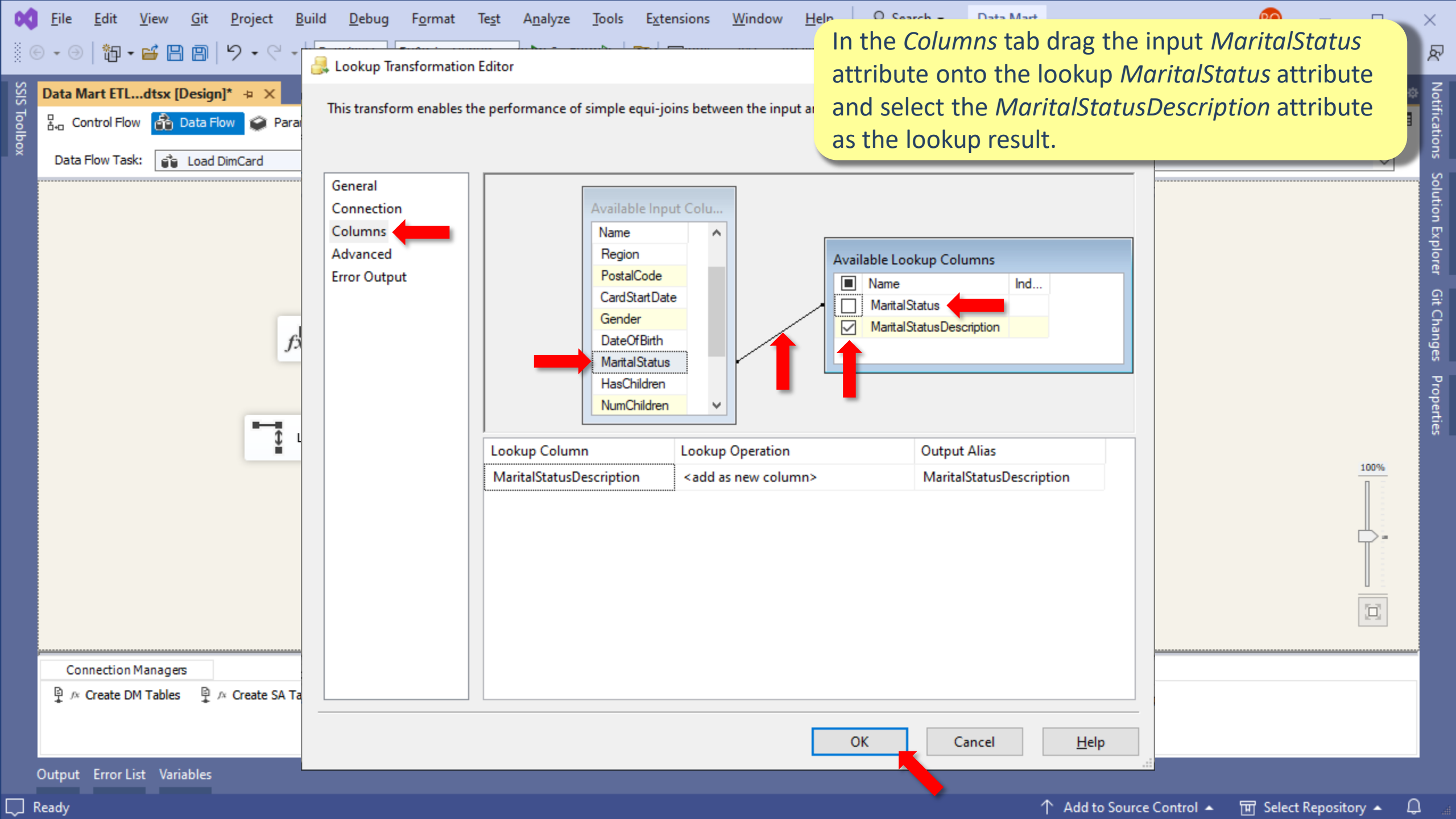
Name
Region
PostalCode
CardStartDate
Gender
DateOfBirth
MaritalStatus
HasChildren
NumChildren

Available Lookup Columns

	Name	Index
<input type="checkbox"/>	MaritalStatus	
<input checked="" type="checkbox"/>	MaritalStatusDescription	

Lookup Column	Lookup Operation	Output Alias
MaritalStatusDescription	<add as new column>	MaritalStatusDescription

OK Cancel Help



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

100%

Connection Managers

Create DM Tables

Create SA Tables

CSV DimDate

Data Mart

Load CSV Files

master

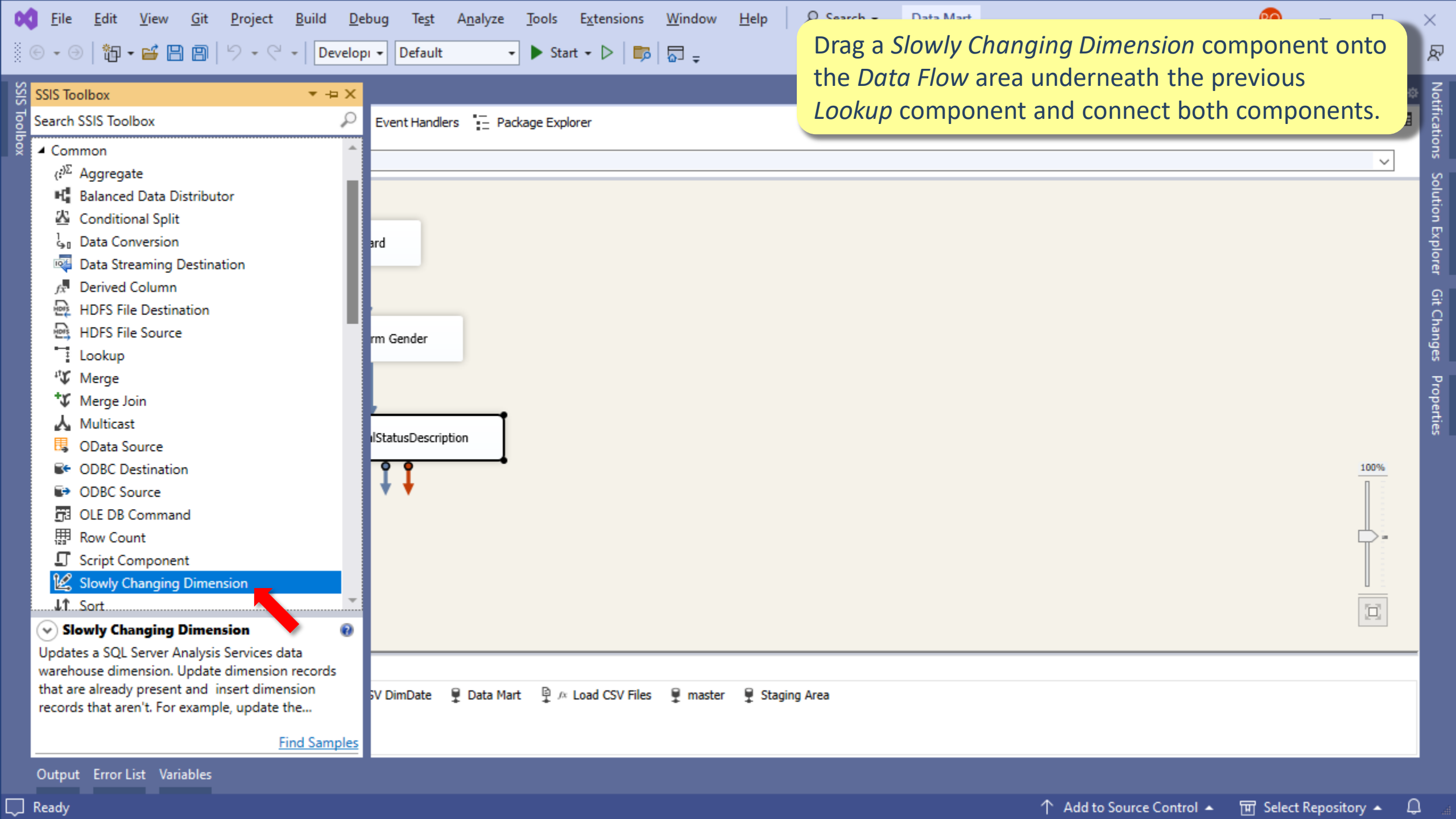
Staging Area

OutputError ListVariables

Ready

Add to Source Control

Select Repository

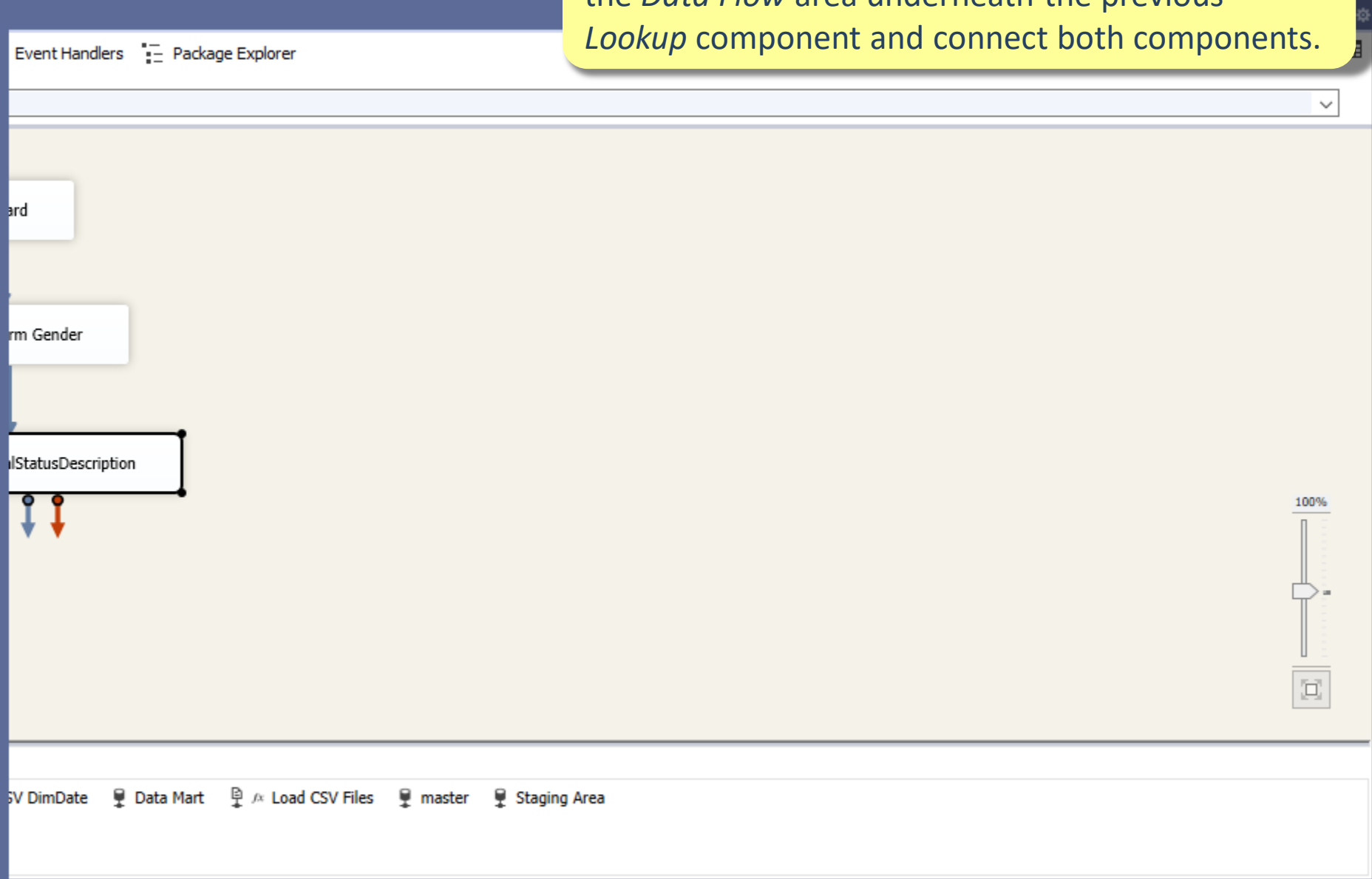


Drag a *Slowly Changing Dimension* component onto the *Data Flow* area underneath the previous *Lookup* component and connect both components.

SSIS Toolbox

Search SSIS Toolbox

- Common
 - Aggregate
 - Balanced Data Distributor
 - Conditional Split
 - Data Conversion
 - Data Streaming Destination
 - Derived Column
 - HDFS File Destination
 - HDFS File Source
 - Lookup
 - Merge
 - Merge Join
 - Multicast
 - OData Source
 - ODBC Destination
 - ODBC Source
 - OLE DB Command
 - Row Count
 - Script Component
 - Slowly Changing Dimension**
 - Sort
- Slowly Changing Dimension**
 - Updates a SQL Server Analysis Services data warehouse dimension. Update dimension records that are already present and insert dimension records that aren't. For example, update the...
 - [Find Samples](#)



As the flow to be sent to the *Slowly Changing Dimension* component, select the *Lookup Match Output* (i.e., output that contains the rows in which the lookup had success – the other flow represents errors which we will handle latter in this tutorial).

File Edit View Git Project Build Debug Format Test Analyze Tools Extensions Window Help Search Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescrip

Slowly Changing Dimension

Input Output Selection

The source or the destination component contains multiple inputs or outputs. Select an input and an output to connect the components.

Output: Lookup Match Output

Input: Slowly Changing Dimension Input

OK Cancel

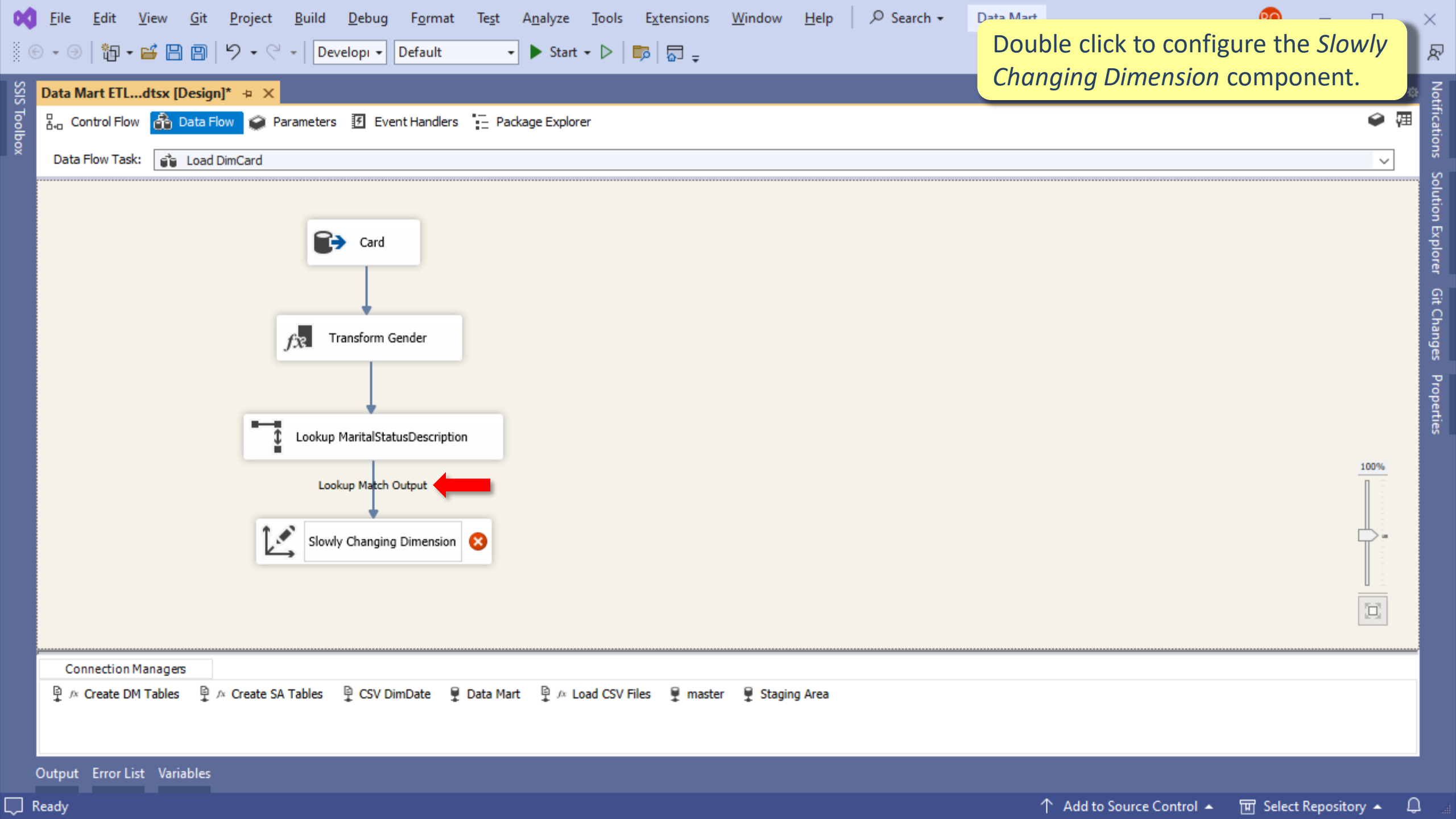
Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control Select Repository



The component's configuration is done through a wizard.

File Edit View Git Project Build Debug Format Test Analyze Tools Extensions Window Help Search Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gen

Lookup MaritalStatus

Lookup Match Out

Slowly Changing Di

Slowly Changing Dimension Wizard

Welcome to the Slowly Changing Dimension Wizard

This wizard helps you configure your data flow to handle a variety of slowly changing dimension types.

You first select the dimension table and map its key column to columns in the Slowly Changing Dimension transformation input. Then you configure support for slowly changing dimension columns.

Click Next to begin configuring the loading of your slowly changing dimension.

☐ Don't show this page again

Help < Back Next > Finish >> Cancel

Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control Select Repository

Select the connection manager for the *Data Mart* database and the *DimCard* as the destination table/dimension.

Slowly Changing Dimension Wizard

Select a Dimension Table and Keys

Select a dimension table to load and map columns in the transformation input to columns in the dimension table.

Connection manager: localhost.DataMart

Table or view: [dbo].[DimCard]

Input Columns	Dimension Columns	Key Type
CardID	CardID	Not a key column
CardStartDate	CardStartDate	Not a key column
City	City	Not a key column
DateOfBirth	DateOfBirth	Not a key column
	EffectiveDate	
	ExpiredDate	
Gender	Gender	Not a key column
	IsCurrent	
MaritalStatus	MaritalStatus	Not a key column
NumChildren	NumChildren	Not a key column
PostalCode	PostalCode	Not a key column
Region	Region	Not a key column
YoungestChil...	YoungestChildren	Not a key column

At least one business key needs to be selected.

Help < Back Next > Finish >> Cancel

Connection Managers

Create DM Tables Create SA Tables CSV DimD

Output Error List Variables

Ready

Add to Source Control

Select Repository

Select the *CardID* as the attribute which is the business key (i.e., primary key) in the source *Card* table.

Slowly Changing Dimension Wizard

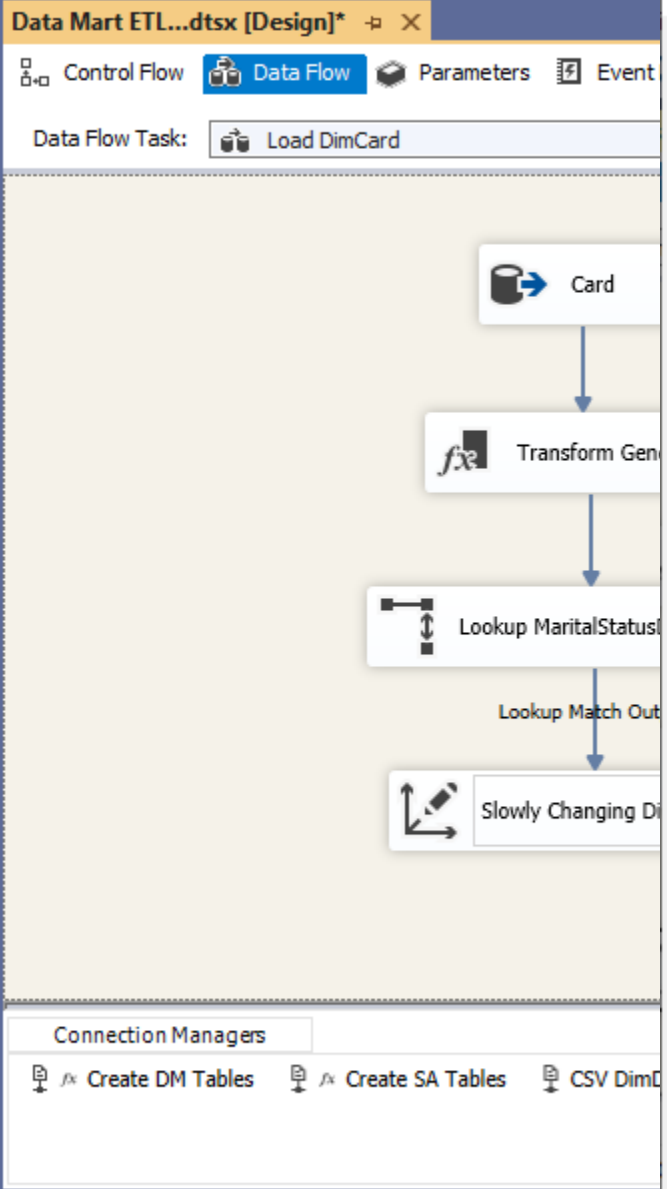
Select a Dimension Table and Keys
Select a dimension table to load and map columns in the transformation input to the dimension table.

Connection manager: localhost.DataMart New...

Table or view: [dbo].[DimCard]

Input Columns	Dimension Columns	Key Type
CardID	CardID	Business key
CardStartDate	CardStartDate	Not a key column
City	City	Not a key column
DateOfBirth	DateOfBirth	Not a key column
	EffectiveDate	
	ExpiredDate	
Gender	Gender	Not a key column
	IsCurrent	
MaritalStatus	MaritalStatus	Not a key column
NumChildren	NumChildren	Not a key column
PostalCode	PostalCode	Not a key column
Region	Region	Not a key column
YoungestChil...	YoungestChildren	Not a key column

Help < Back Next > Finish >> Cancel



Change the highlighted mappings between the source (*Card* table) and destination table (*DimCard* table). The other mappings were automatically established between both tables.

Slowly Changing Dimension Wizard

Select a Dimension Table and Keys

Select a dimension table to load and map columns in the transformation the dimension table.

Connection manager:
localhost.DataMart

Table or view:
[dbo].[DimCard]

Input Columns	Dimension Columns	Key Type
CardID	CardID	Business key
CardStartDate	CardStartDate	Not a key column
City	City	Not a key column
DateOfBirth	DateOfBirth	Not a key column
	EffectiveDate	
	ExpiredDate	
Gender_Transformed	Gender	Not a key column
	IsCurrent	
MaritalStatusDescription	MaritalStatus	Not a key column
NumChildren	NumChildren	Not a key column
PostalCode	PostalCode	Not a key column
Region	Region	Not a key column
YoungestChildren	YoungestChildren	Not a key column

Help

< Back

Next >

Finish >>

Cancel

Data Mart ETL...dtsx [Design]*

Control Flow | Data Flow | Parameters | Event Viewer

Data Flow Task: Load DimCard

Card

Transform Gen

Lookup MaritalStatus

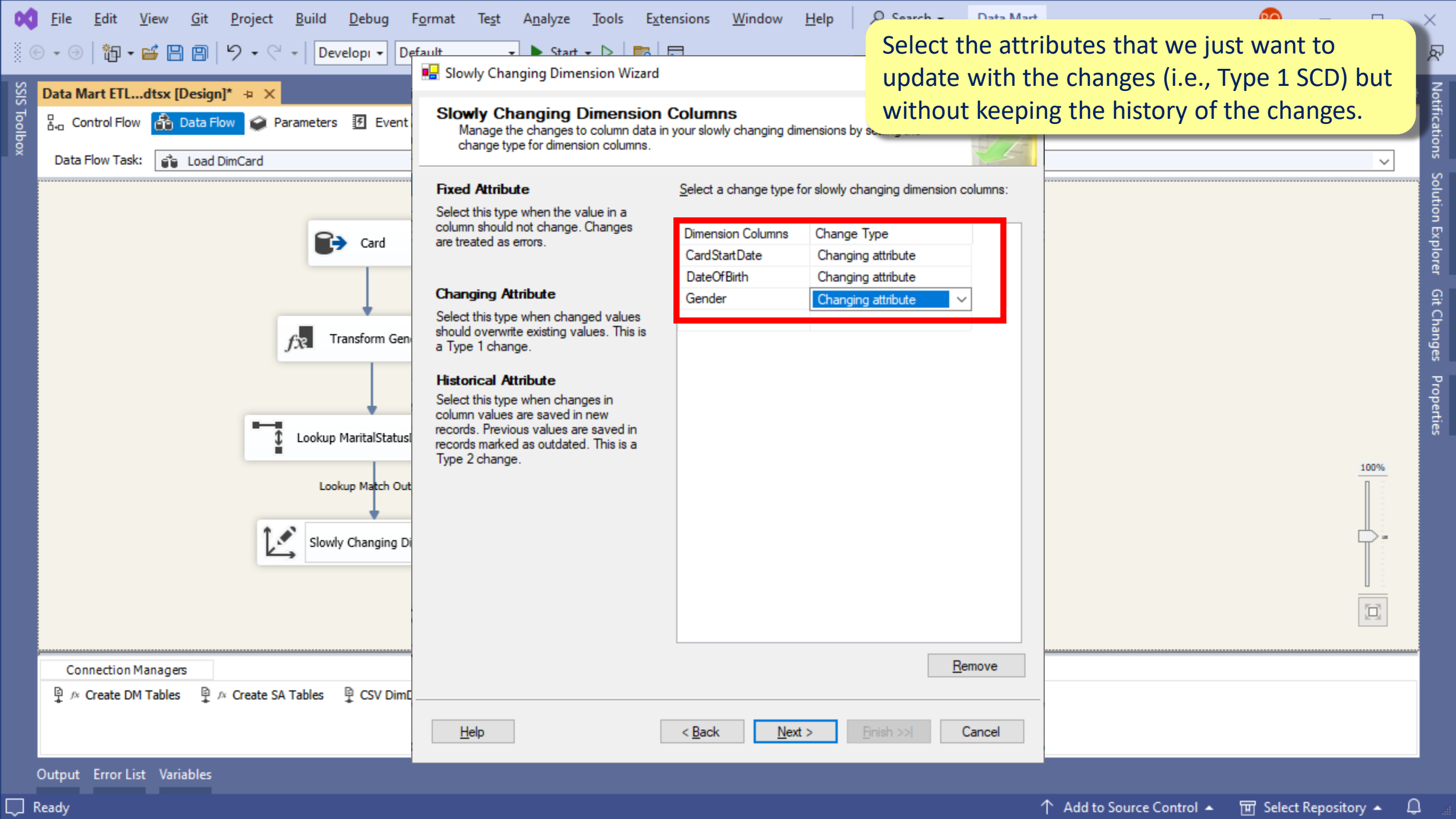
Lookup MaritalStatus

Slowly Changing Dimension

Connection Managers

Create DM Tables | Create SA Tables | CSV DimD

Output | Error List | Variables



Select the attributes that we just want to update with the changes (i.e., Type 1 SCD) but without keeping the history of the changes.

Slowly Changing Dimension Columns

Manage the changes to column data in your slowly changing dimensions by selecting a change type for dimension columns.

Fixed Attribute

Select this type when the value in a column should not change. Changes are treated as errors.

Changing Attribute

Select this type when changed values should overwrite existing values. This is a Type 1 change.

Historical Attribute

Select this type when changes in column values are saved in new records. Previous values are saved in records marked as outdated. This is a Type 2 change.

Select a change type for slowly changing dimension columns:

Dimension Columns	Change Type
CardStartDate	Changing attribute
DateOfBirth	Changing attribute
Gender	Changing attribute

Remove

Help

< Back

Next >

Finish >>

Cancel

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event

Data Flow Task: Load DimCard

Card

Transform Gen

Lookup MaritalStatus

Lookup Match Out

Slowly Changing Di

Connection Managers

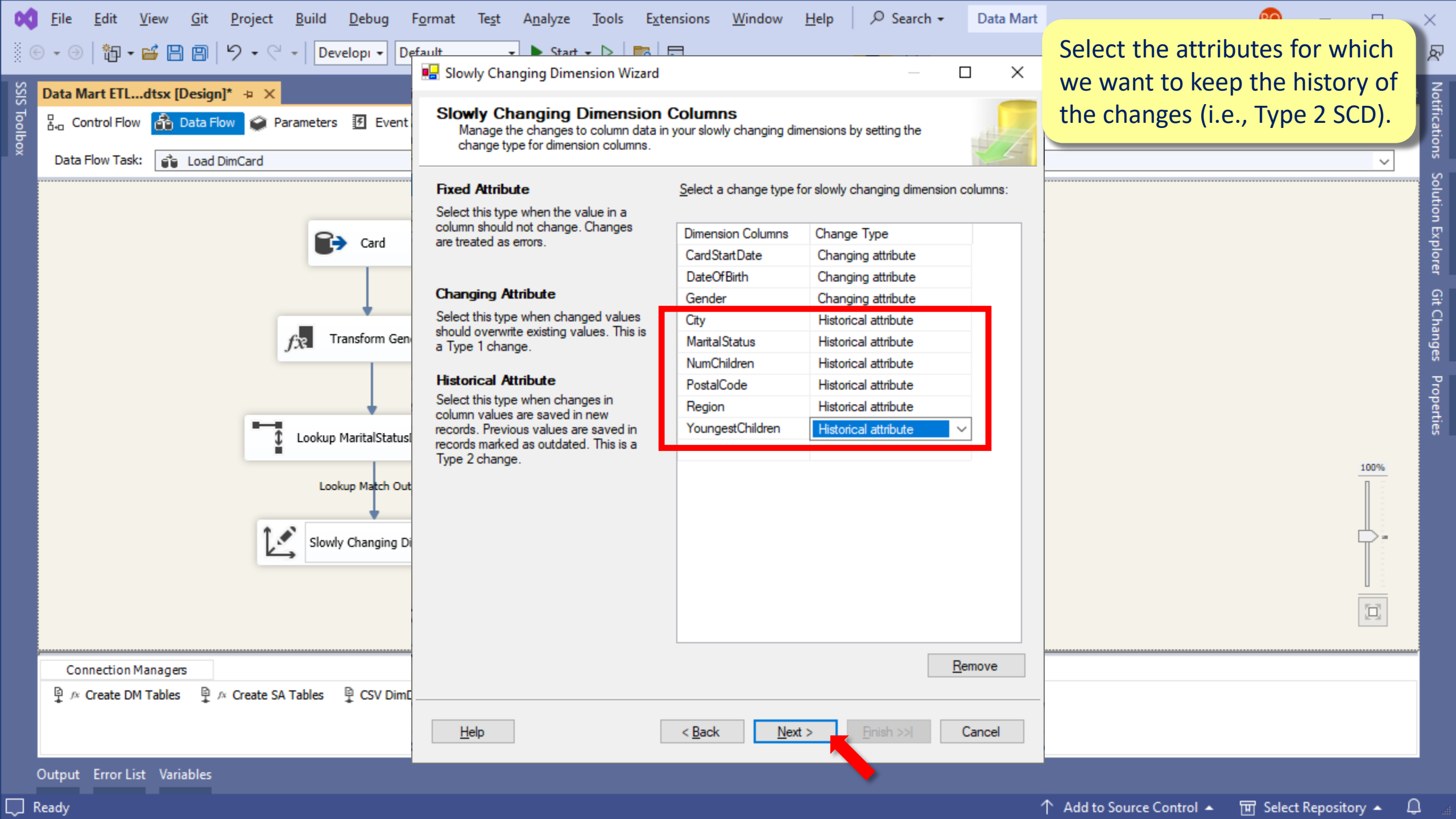
Create DM Tables Create SA Tables CSV DimD

Output Error List Variables

Ready

Add to Source Control

Select Repository



Slowly Changing Dimension Columns

Manage the changes to column data in your slowly changing dimensions by setting the change type for dimension columns.

Fixed Attribute

Select this type when the value in a column should not change. Changes are treated as errors.

Changing Attribute

Select this type when changed values should overwrite existing values. This is a Type 1 change.

Historical Attribute

Select this type when changes in column values are saved in new records. Previous values are saved in records marked as outdated. This is a Type 2 change.

Select a change type for slowly changing dimension columns:

Dimension Columns	Change Type
CardStartDate	Changing attribute
DateOfBirth	Changing attribute
Gender	Changing attribute
City	Historical attribute
MaritalStatus	Historical attribute
NumChildren	Historical attribute
PostalCode	Historical attribute
Region	Historical attribute
YoungestChildren	Historical attribute

Remove

Help

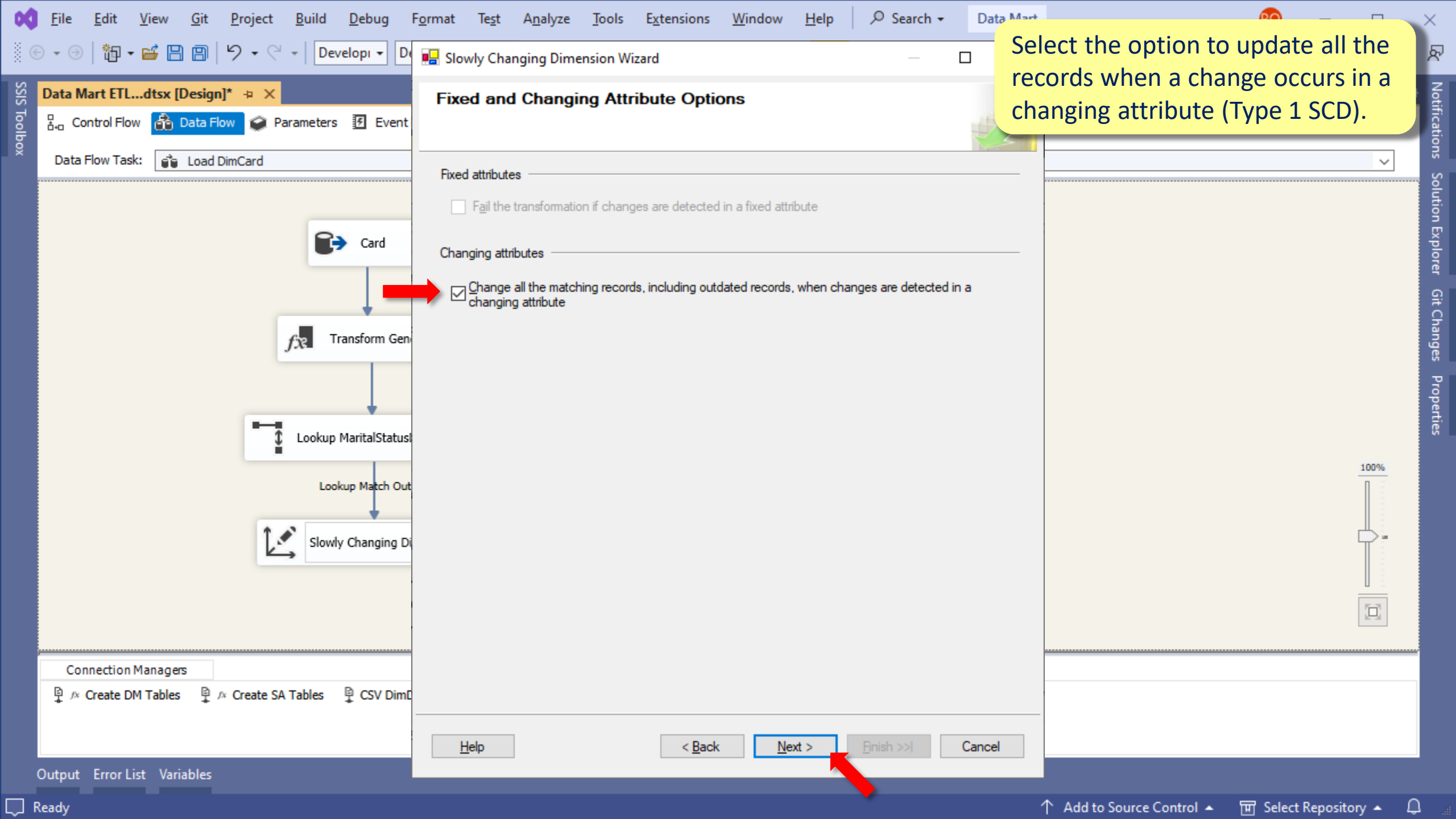
< Back

Next >

Finish >>

Cancel

Select the attributes for which we want to keep the history of the changes (i.e., Type 2 SCD).



Select the option to update all the records when a change occurs in a changing attribute (Type 1 SCD).

Fixed and Changing Attribute Options

Fixed attributes

☐ Fail the transformation if changes are detected in a fixed attribute

Changing attributes

☒ Change all the matching records, including outdated records, when changes are detected in a changing attribute

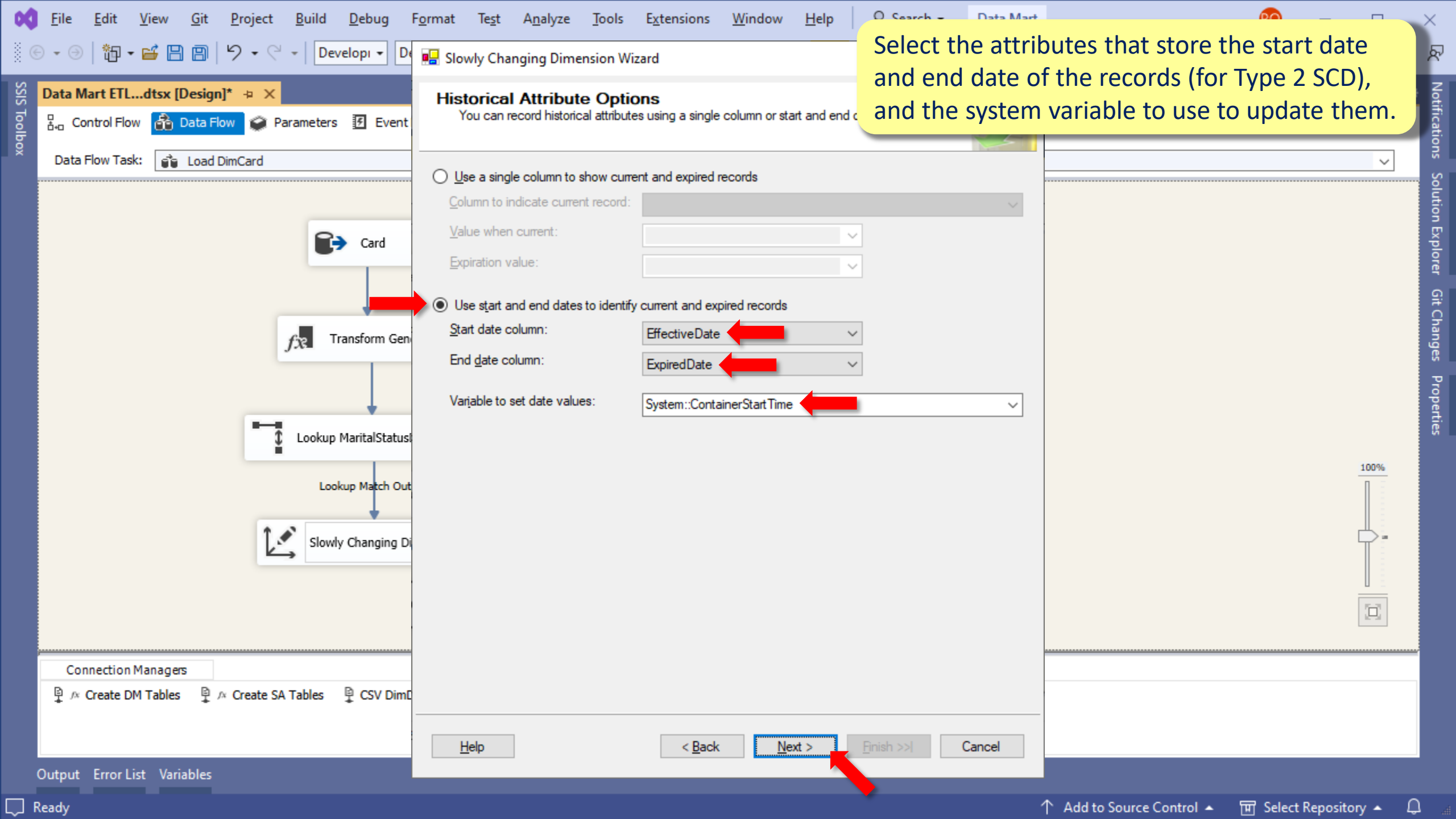
Help

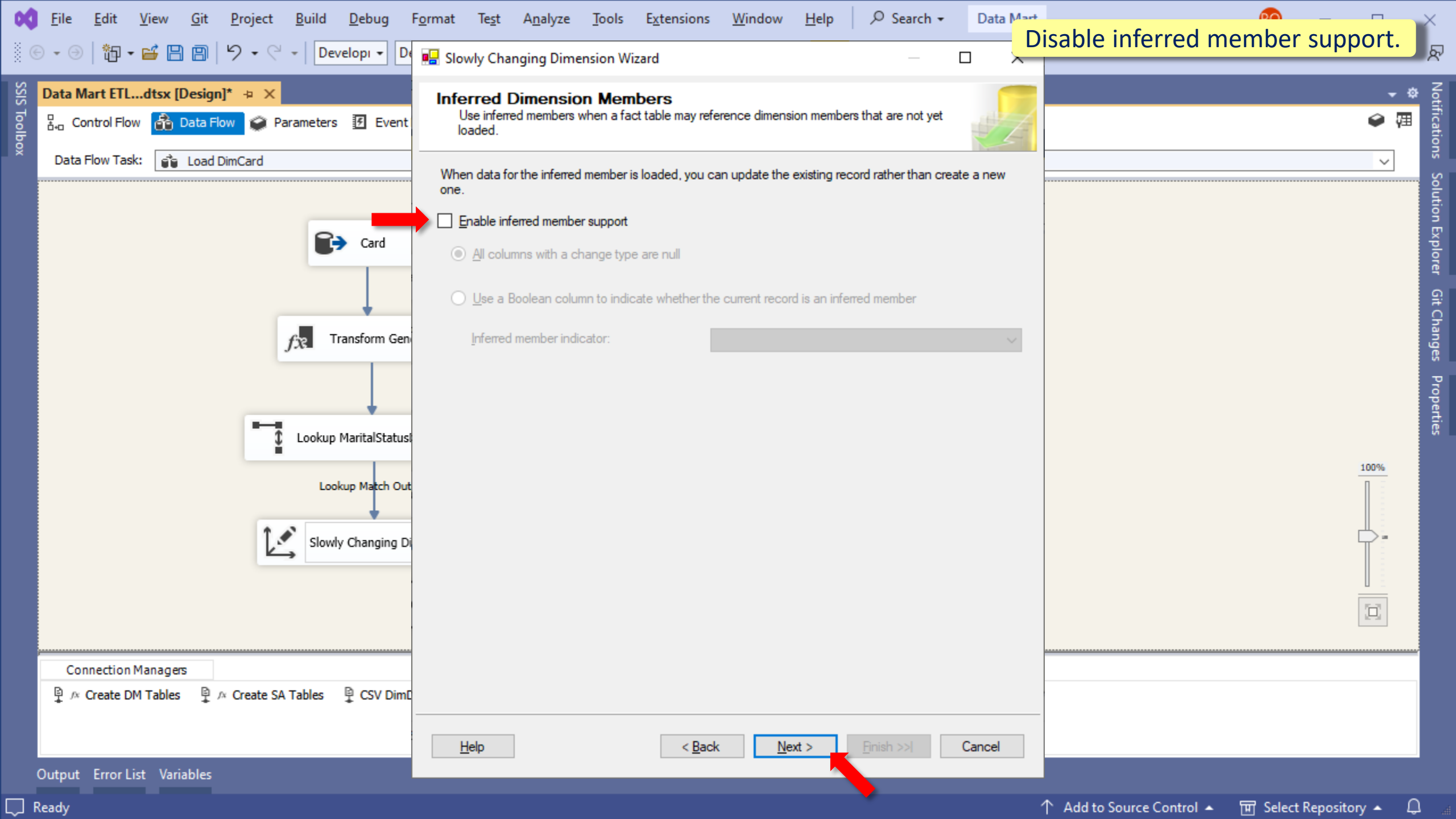
< Back

Next >

Finish >>

Cancel





Disable inferred member support.

Inferred Dimension Members

Use inferred members when a fact table may reference dimension members that are not yet loaded.

When data for the inferred member is loaded, you can update the existing record rather than create a new one.

☐ Enable inferred member support

☒ All columns with a change type are null

☐ Use a Boolean column to indicate whether the current record is an inferred member

Inferred member indicator:

Help

< Back

Next >

Finish >>

Cancel

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent

Data Flow Task: Load DimCard

Card

Transform Gen

Lookup MaritalStatus

Lookup Match Out

Slowly Changing Di

Connection Managers

Create DM TablesCreate SA TablesCSV DimD

OutputError ListVariables

Ready

Slowly Changing Dimension Wizard

Finish the Slowly Changing Dimension Wizard

Review the outputs that the Slow Changing Dimension Wizard will build to support a slowly changing dimension.

The following outputs will be configured:

Slowly Changing Dimension Transformation

New Records

New Record Output

Updates

Changing Attributes Updates Output

Other Outputs

Historical Attribute Output

Help

< Back

Next >

Finish

Cancel

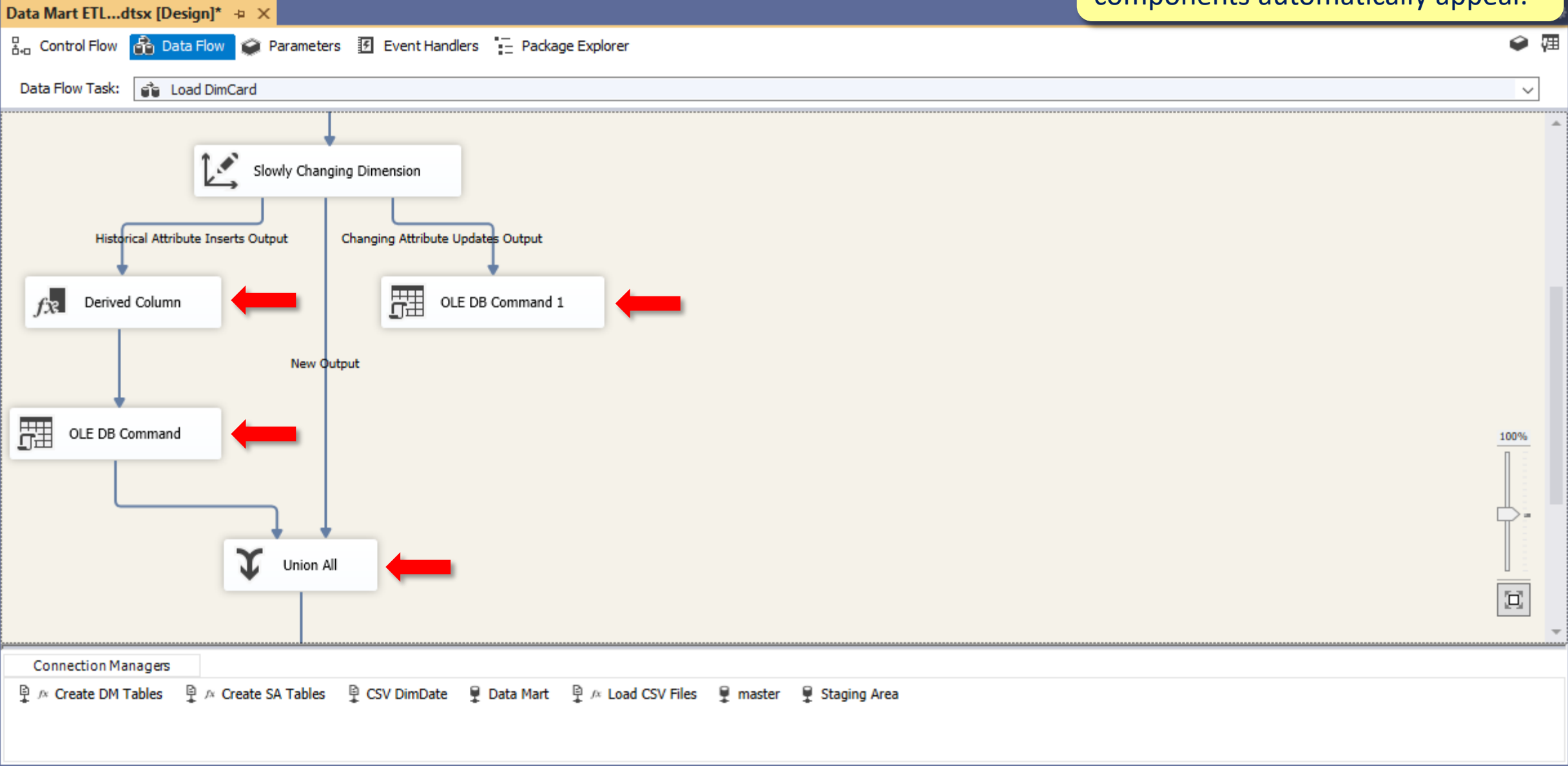
Notifications

Solution Explorer

Git Changes

Properties

After finishing the wizard, a set of components automatically appear.



Output Error List Variables

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

OLE DB Command

Union All

Derived Column 1

Insert Destination

New Output

Connection Managers

Create DM Tables

Create SA Tables

CSV DimDate

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Select Repository

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Properties

OLE DB Command

Union All

Derived Column 1

Insert Destination

New Output

Connection Managers

Create DM Tables

Create SA Tables

CSV DimDate

Data Mart

Load CSV Files

master

Staging Area

OutputError ListVariables

Ready

Add to Source Control

Select Repository

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

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Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Lookup Match Output

Slowly Changing Dimension

Historical Attribute Inserts Output

Changing Attribute Updates Output

Derived Column

OLE DB Command

OLE DB Command 1

New Output

Union All

Connection Managers

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Create SA Tables

CSV DimDate

Data Mart

Load CSV Files

master

Staging Area

OutputError ListVariables

Ready

Edit the OLE DB Command 1.

Notifications

Solution Explorer

Git Changes

Properties

100%

Select the *Component Properties* tab and edit the *SqlCommand* property.

Advanced Editor for OLE DB Command 1

The advanced editor provides access to the low-level properties of data flow components. Additionally, the editor can be used to configure components that do not have a custom user interface.

Connection Managers Component Properties Column Mappings Input and Output Properties

Specify advanced properties for the data flow component.

Properties:

ComponentClassID	{065EEED5-E779-4156-AA69-FE35A54915E6}
ContactInfo	OLE DB Command;Microsoft Corporation; Microsoft SQL Se
Description	Runs an SQL statement for each row in a data flow. For exam
ID	317
IdentificationString	OLE DB Command 1
IsDefaultLocale	True
LocaleID	English (United States)
Name	OLE DB Command 1
PipelineVersion	0
UsesDispositions	True
ValidateExternalMetadata	True
Version	2
Custom Properties	
CommandTimeout	0
DefaultCodePage	1252
SqlCommand	UPDATE [dbo].[DimCard] SET [CardStartDate] = ?,[DateOf ...

SqlCommand

The SQL command to be executed.

Refresh

OK

Cancel

Help

This SQL command is responsible by updating the *Type 1 SCD* attributes (i.e., *CardStartDate*; *DateOfBirth*; *Gender*).

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParameters

Data Flow Task: Load DimCard

Lookup M

Slowly Cha

Historical Attribute Inserts Output

Derived Column

OLE DB Command

Union

Connection Managers

Create DM TablesCreate SA Table

OutputError ListVariables

Ready

Advanced Editor for OLE DB Command 1

The advanced editor provides access to the low-level properties of data flow components. Additionally, it can be used to configure components that do not have a custom user interface.

Connection ManagersComponent PropertiesColumn MappingsInput and Output Properties

Specify advanced properties for the data flow component.

Properties:

ComponentClassID

ContactInfo

Description

ID

IdentificationString

IsDefaultLocale

LocaleID

Name

PipelineVersion

UsesDispositions

ValidateExternalMetadata

Version

Custom Properties

CommandTimeout

DefaultCodePage

SqlCommand

String Value Editor

String value:

UPDATE [dbo].[DimCard]
SET [CardStartDate] = ?,[DateOfBirth] = ?,[Gender] = ?
WHERE [CardID] = ?

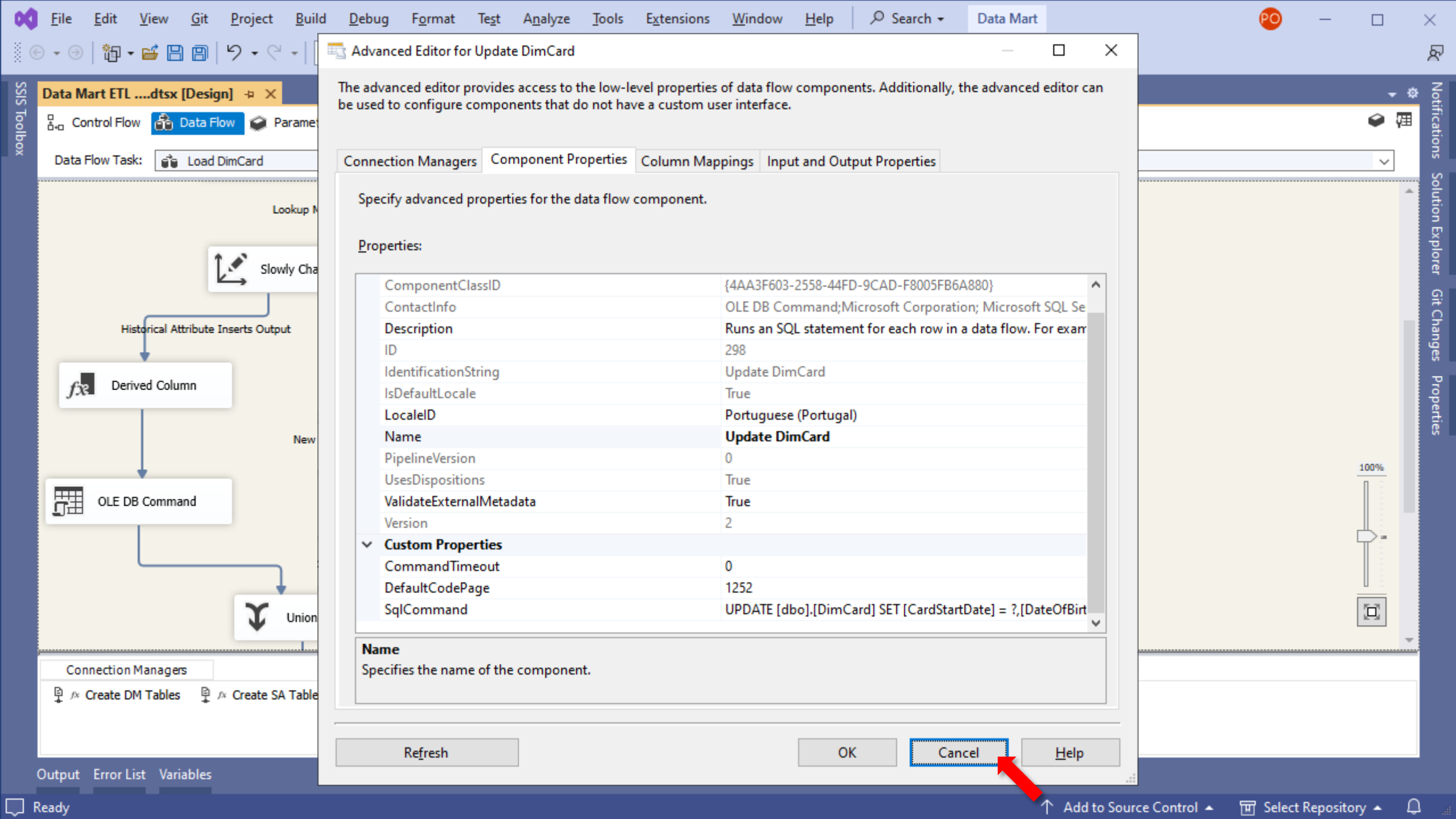
OKCancel

1252DimCard] SET [CardStartDateKey] = ?,[DateOfBirthKey] = ...

SqlCommand

The SQL command to be executed.

RefreshOKCancelHelp



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

Rename the component to *Update DimCard*.

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Lookup Match Output

Slowly Changing Dimension

Historical Attribute Inserts Output

Changing Attribute Updates Output

Derived Column

OLE DB Command

New Output

Union All

Update DimCard

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

DevelopiDefaultStart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Derived Column

Update DimCard

OLE DB Command

Union All

Derived Column 1

New Output

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

Edit the *Derived Column 1* component.

This component is responsible by initializing the *EffectiveDate* attribute of a new record.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

+ Variables and Parameters

+ Columns

+ Mathematical Functions

+ String Functions

+ Date/Time Functions

+ NULL Functions

+ Type Casts

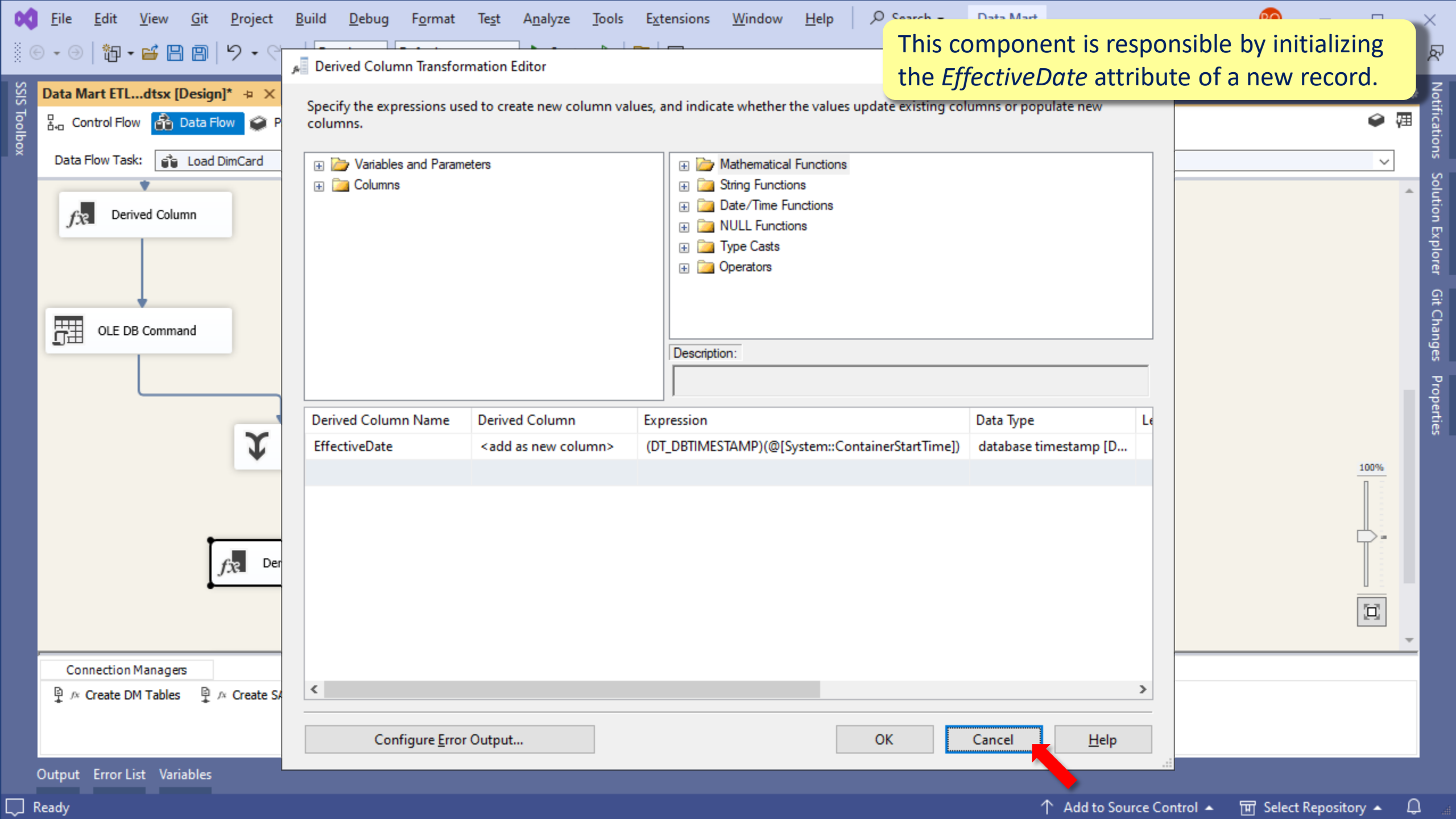
+ Operators

Description:

Derived Column Name	Derived Column	Expression	Data Type	Le
EffectiveDate	<add as new column>	(DT_DBTIMESTAMP)(@[System::ContainerStartTime])	database timestamp [D...	

Configure Error Output...

OK Cancel Help



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

OLE DB Command

New Output

Union All

Set New Record Effective Date

Insert Destination

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Rename the component to *Set New Record Effective Date*.

100%

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

Data Mart

SSIS Toolbox

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

OLE DB Command

New Output

Union All

Set New Record Effective Date

Insert Destination

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Notifications

Solution Explorer

Git Changes

Properties

100%

Edit the *Insert Destination* component.

Check if all the mappings are established. The only exception is *ExpiredDate* because a new record doesn't have an expiration (i.e., end) date.

OLE DB Destination Editor

Configure the properties used to insert data into a relational database using an OLE DB Command

Connection Manager

Mappings ←

Error Output

Available Input Columns

Name
MaritalStatus
HasChildren
NumChildren
YoungestChild
Gender_Transformed
MaritalStatusDescription
EffectiveDate

Available Destination Columns

Name
Gender
DateOfBirth
MaritalStatus
NumChildren
YoungestChild
EffectiveDate
ExpiredDate

Input Column	Destination Column
CardStartDate	CardStartDate
Gender_Transformed	Gender
DateOfBirth	DateOfBirth
MaritalStatusDescription	MaritalStatus
NumChildren	NumChildren
YoungestChildren	YoungestChildren
EffectiveDate	EffectiveDate
<ignore>	ExpiredDate

OK

Cancel

Help

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters

Data Flow Task: Load DimCard

OLE DB Command

Un

Set New Rec

Insert D

Connection Managers

Create DM Tables Create SA Ta

Output Error List Variables

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

Rename the component to *Insert into DimCard*.

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

OLE DB Command

New Output

Union All

Set New Record Effective Date

Insert Into DimCard

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

OLE DB Command

New Output

Union All

Set New Record Effective Date

Insert Into DimCard

Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

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Ready

Add to Source Control Select Repository

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Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Historical Attribute Inserts Output

Changing Attribute Updates Output

Derived Column

Update DimCard

OLE DB Command

Union All

Set New Record Effective Date

New Output

Connection Managers

Create DM Tables

Create SA Tables

CSV DimDate

Data Mart

Load CSV Files

master

Staging Area

OutputError ListVariables

Ready

Add to Source Control

Select Repository

Edit the *Derived Column* component.

This component is responsible by initializing the *ExpiredDate* attribute.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

+

 Variables and Parameters

+

 Columns

+

 Mathematical Functions

+

 String Functions

+

 Date/Time Functions

+

 NULL Functions

+

 Type Casts

+

 Operators

Description:

Configure Error Output...

OK

Cancel

Help

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow

Data Flow Task: Load DimCard

Historical Attribute Inserts Outp

Derived Column

OLE DB Command

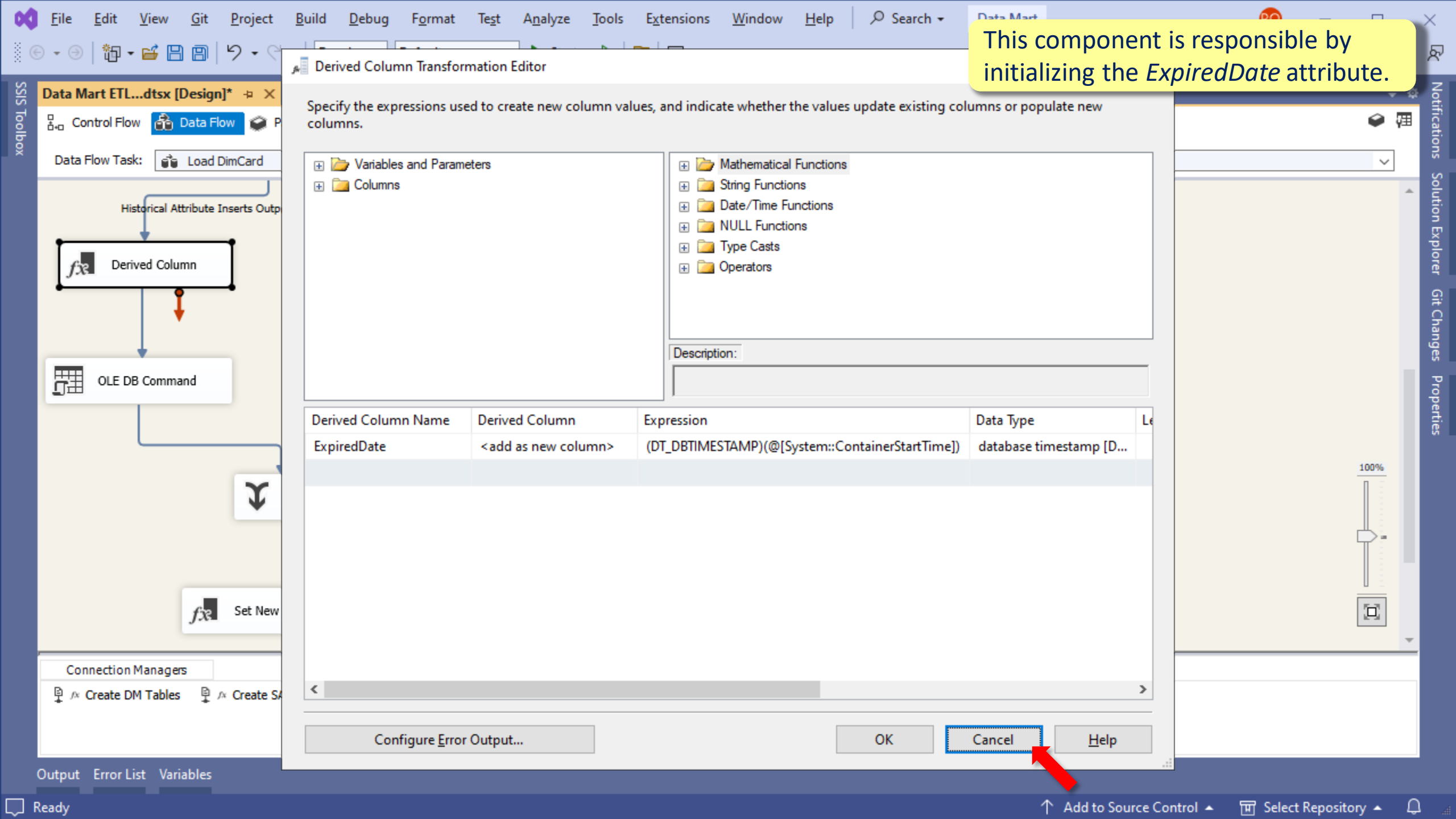
Set New

Connection Managers

Create DM Tables Create SA

Output Error List Variables

100%



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task:Load DimCard

Historical Attribute Inserts Output

Changing Attribute Updates Output

Set Old Record Expired Date

Update DimCard

OLE DB Command

Union All

Set New Record Effective Date

New Output

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source Control

Select Repository

Rename the component to
Set Old Record Expired Date.

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

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Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Historical Attribute Inserts Output

Changing Attribute Updates Output

New Output

Set Old Record Expired Date

Update DimCard

OLE DB Command

Union All

Set New Record Effective Date

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Edit the *OLE DB Command* component.

NotificationsSolution ExplorerGit ChangesProperties

Edit the *OLE DB Command* component.

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

The diagram illustrates a Data Flow Task named "Load DimCard". It features three input components: "Set Old Record Expired Date", "Update DimCard", and "Set New Record Effective Date". The "Set Old Record Expired Date" component outputs "Historical Attribute Inserts Output" to the "OLE DB Command" component. The "Update DimCard" component outputs "Changing Attribute Updates Output" to the "OLE DB Command" component. The "Set New Record Effective Date" component outputs "New Output" to the "Union All" component. The "OLE DB Command" component also receives input from the "Union All" component. The "OLE DB Command" component is highlighted with a red arrow pointing to it from the left. The "Union All" component outputs to the "Set New Record Effective Date" component.

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source Control

Select Repository

Select the *Component Properties* tab and edit the *SqlCommand* property.

Advanced Editor for OLE DB Command

The advanced editor provides access to the low-level properties of data flow components. Additionally, the advanced editor allows you to configure components that do not have a custom user interface.

Connection Managers Component Properties **Mappings** Input and Output Properties

Specify advanced properties for the data flow component.

Properties:

ComponentClassID	{065EEED5-E779-4156-AA69-FE35A54915E6}
ContactInfo	OLE DB Command;Microsoft Corporation; Microsoft SQL Server; (C
Description	Runs an SQL statement for each row in a data flow. For example, ca
ID	176
IdentificationString	OLE DB Command
IsDefaultLocale	True
LocaleID	English (United States)
Name	OLE DB Command
PipelineVersion	0
UsesDispositions	True
ValidateExternalMetadata	True
Version	2
Custom Properties	
CommandTimeout	0
DefaultCodePage	1252
SqlCommand	UPDATE [dbo].[DimCard] SET [ExpiredDate] = ? WHERE [CardID] ...

SqlCommand

The SQL command to be executed.

Refresh

OK

Cancel

Help

This SQL command is responsible by setting the *ExpiredDate* of the outdated record.

Advanced Editor for OLE DB Command

The advanced editor provides access to the low-level properties of data flow components. Additionally, you can configure components that do not have a custom user interface.

Connection Managers Component Properties Column Mappings Input and Output Properties

Specify advanced properties for the data flow component.

Properties:

ComponentClassID
ContactInfo
Description
ID
IdentificationString
IsDefaultLocale
LocaleID
Name
PipelineVersion
UsesDispositions
ValidateExternalMetadata
Version

Custom Properties

CommandTimeout
DefaultCodePage
SqlCommand

1252

UPDATE [dbo].[DimCard] SET [ExpiredDate] = ? WHERE [CardID] = ?

SqlCommand

The SQL command to be executed.

Refresh

OK

Cancel

Help

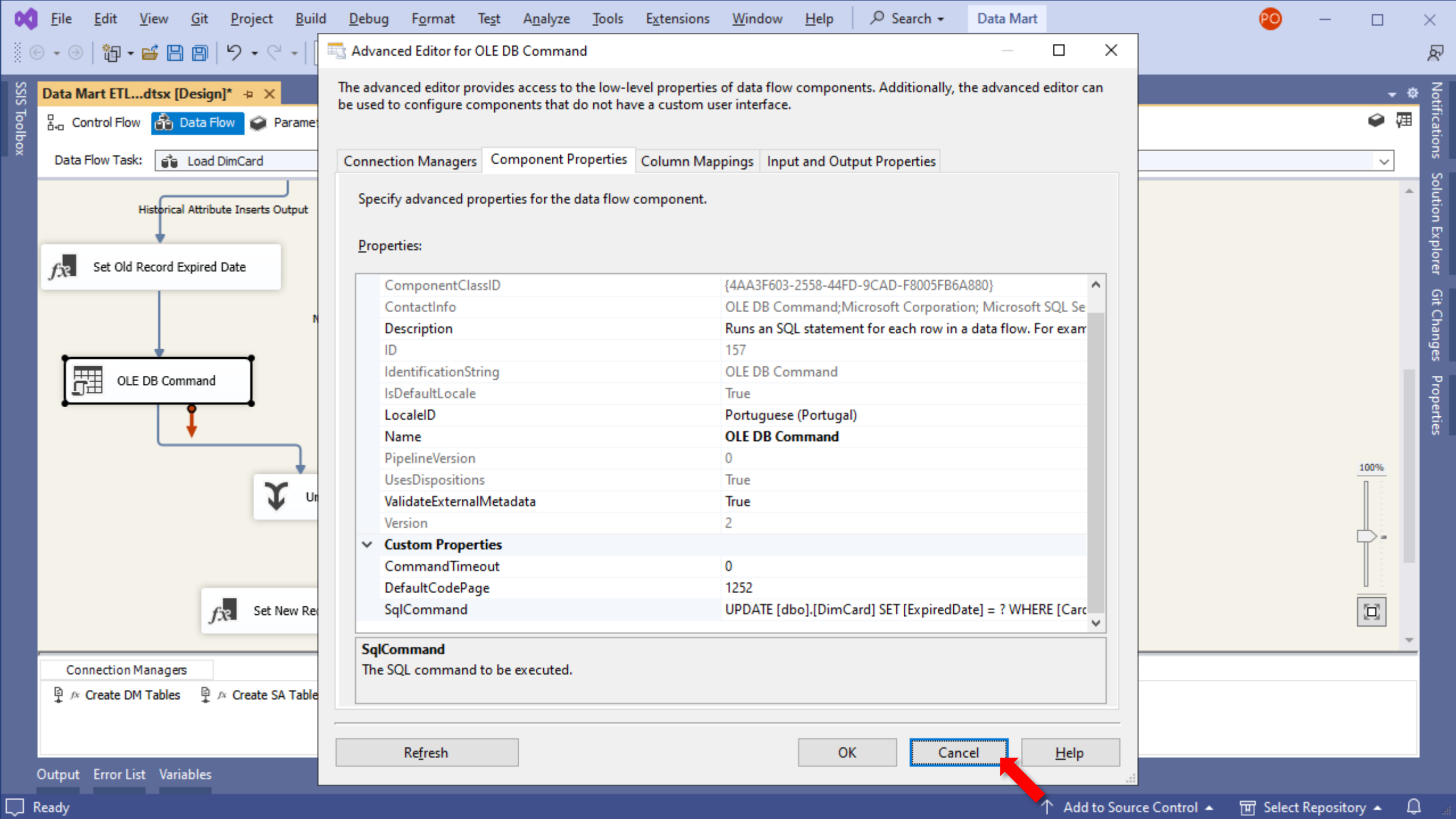
String Value Editor

String value:

```
UPDATE [dbo].[DimCard]
SET [ExpiredDate] = ?
WHERE [CardID] = ? AND [ExpiredDate] IS NULL
```

OK

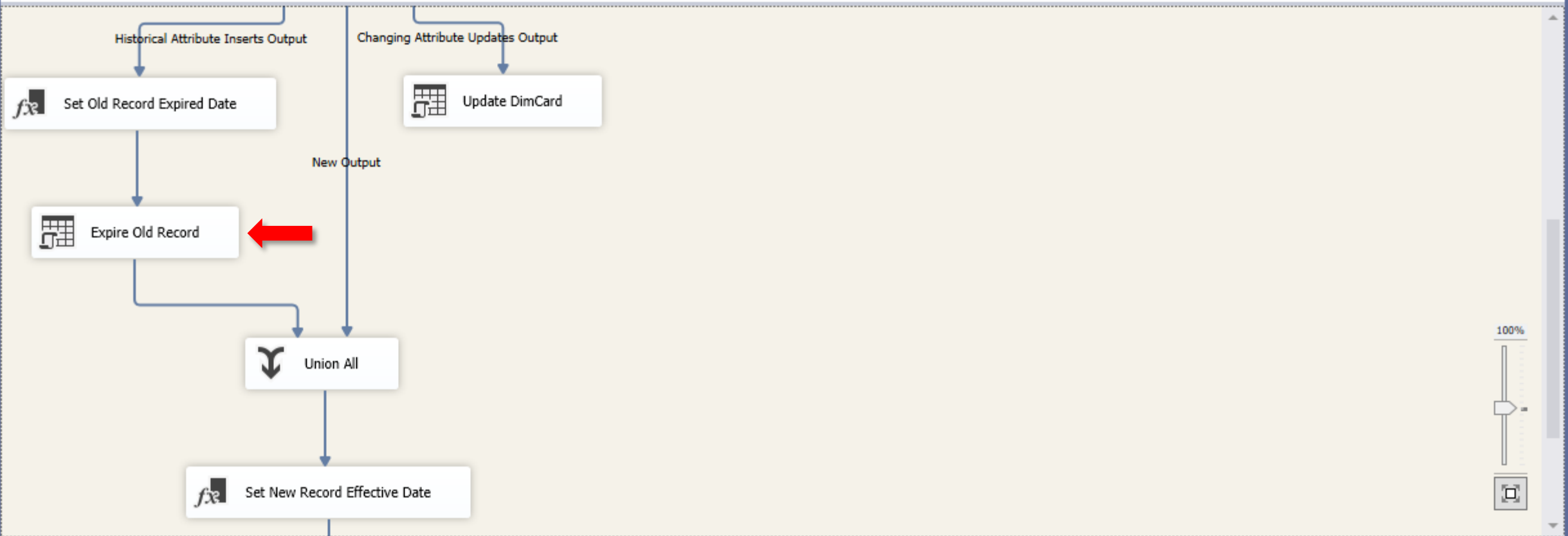
Cancel



Rename the attribute to *Expire Old Record* and execute the package.

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Package execution takes too much time to load all the records (about one hour), so you should stop its execution.

File Edit View Git Project Build Debug Format Test Analyze Tools Extensions Window Help Search

Process: [6884] DtsDebugHost.exe Lifecycle Events Thread: Stack Frame:

Data Mart ETLdtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Progress

Data Flow Task: Load DimCard

Expire Old Record

Union All

9,994 rows

Set New Record Effective Date

9,994 rows

Insert Into DimCard

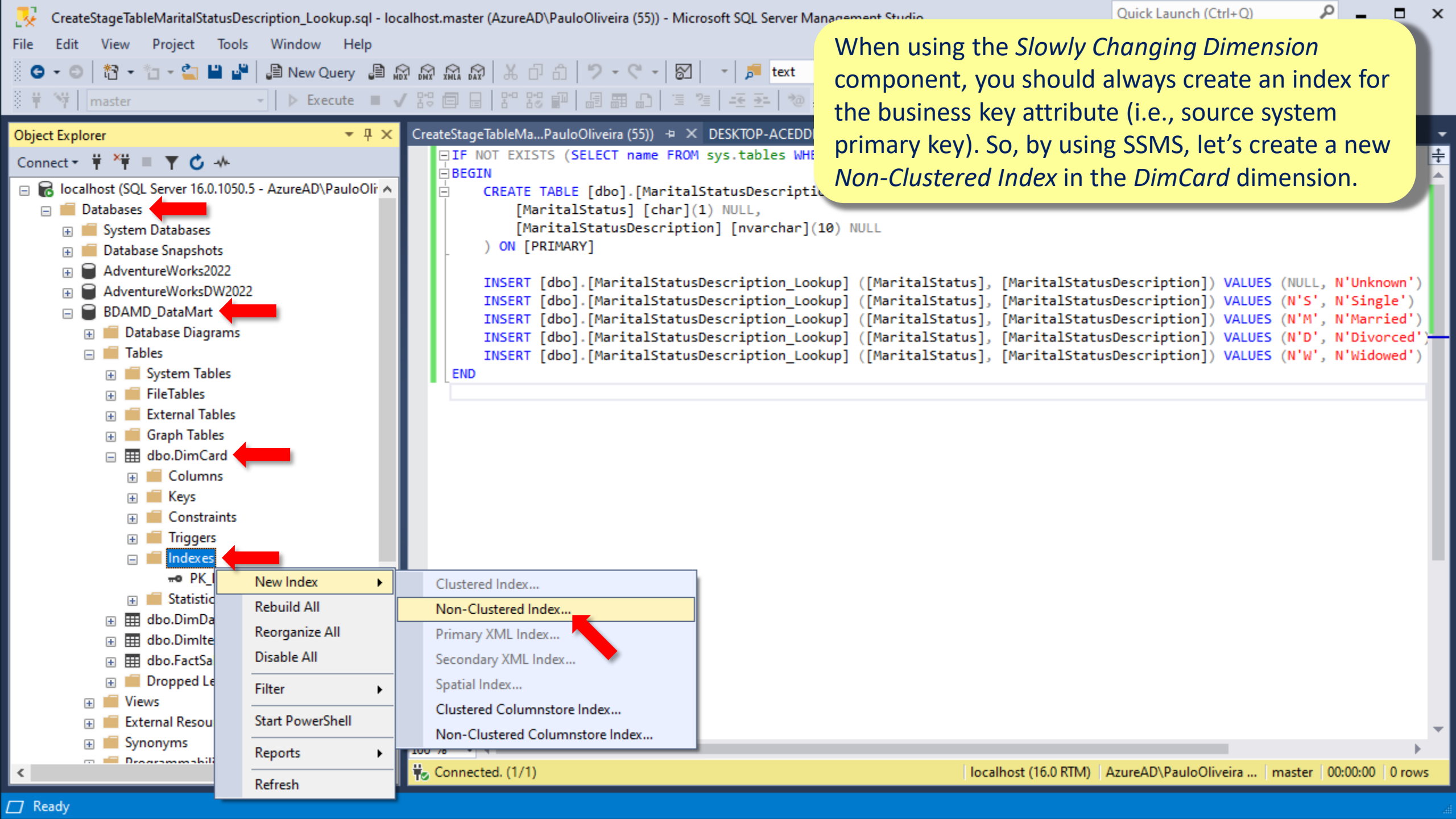
Connection Managers

- Create DM Tables
- Create SA Tables
- CSV DimDate
- Data Mart
- Load CSV Files
- master
- Staging Area

Autos Locals Watch 1 Call Stack Breakpoints Exception Settings Command Window Immediate Window Output

Ready

Add to Source Control Select Repository



When using the *Slowly Changing Dimension* component, you should always create an index for the business key attribute (i.e., source system primary key). So, by using SSMS, let's create a new *Non-Clustered Index* in the *DimCard* dimension.

File Edit View Query Project Tools Window Help


master

Rename the index to *NonClusteredIndex-CardID* and Add the business key attribute.

Object Explorer

Connect

localhost (SQL Server 16.0.1050)

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AdventureWorksDW2022

BDAMD_DataMart

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dbo.DimItem

dbo.FactSales

Dropped Ledger

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Synonyms

Programmability

New Index

Add at least one index key column to the index

Select a page

General

Options

Storage

Filter

Extended Properties

Connection

localhost [AzureAD\PauloOliveira]

Progress

Ready

Script Help

Table name:

DimCard

Index name:

NonClusteredIndex-CardID

Index type:

Nonclustered

Unique

Index key columns

Included columns

Name Sort Order Data Type Size Identity Allow NULLs

Add...

Remove

Move Up

Move Down

OK

Cancel

Help

Select the *CardID* attribute.

File Edit View Query Project Tools Window Help



Object Explorer

Connect ▾

localhost (SQL Server 16.0.1050)

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New Index

Add at least one index key column to the index

Select a page

General

Options

Storage

Filter

Extended Properties

Connection

localhost [AzureAD\PauloOliveira (55)]

[View connection properties](#)

Progress

Ready

Select Columns from 'dbo.DimCard'

Ready

Select table columns to be added to the index:

	Name	Data Type	Size	Identity	Allow NULLs
<input type="checkbox"/>	Name				
<input type="checkbox"/>	CardKey	int	4	Yes	No
<input checked="" type="checkbox"/>	CardID	char(11)	11	No	No
<input type="checkbox"/>	City	nvarchar(50)	100	No	No
<input type="checkbox"/>	Region	nvarchar(50)	100	No	No
<input type="checkbox"/>	PostalCode	nvarchar(10)	20	No	No
<input type="checkbox"/>	CardStartDate	datetime	8	No	No
<input type="checkbox"/>	Gender	nvarchar(6)	12	No	No
<input type="checkbox"/>	DateOfBirth	datetime	8	No	No
<input type="checkbox"/>	MaritalStatus	nvarchar(10)	20	No	No
<input type="checkbox"/>	NumChildren	tinyint	1	No	Yes
<input type="checkbox"/>	YoungestChildren	tinyint	1	No	Yes
<input type="checkbox"/>	EffectiveDate	datetime	8	No	No

OK Cancel Help

lookup

```
VALUES (NULL, N'Unknown')
VALUES (N'S', N'Single')
VALUES (N'M', N'Married')
VALUES (N'D', N'Divorced')
VALUES (N'W', N'Widowed')
```

Add...

Remove

Move Up

Move Down

OK

Cancel

Help

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

Ready

Ln 14

Col 1

Ch 1

INS

Let's create a script for the index just defined.

Object Explorer

Connect

localhost (SQL Server 16.0.1050.1)

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AdventureWorksDW2022

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New Index

Ready

Select a page

General

Options

Storage

Filter

Extended Properties

Connection

localhost [AzureAD\PauloOliveira]

[View connection properties](#)

Progress

Ready

Script

New Query Editor Window Ctrl+Shift+N

File ... Ctrl+Shift+F

Clipboard Ctr+Shift+C

Index name:

NonClusteredIndex-CardID

Index type:

Nonclustered

☐ Unique

Index key columns

Included columns

Name	Sort Order	Data Type	Size	Identity	Allow NULLs
CardID	Ascending	char(11)	11	No	No

CardID

Ascending

char(11)

11

No

No

Add...

Remove

Move Up

Move Down

OK

Cancel

Help

lookup

VALUES (NULL, N'Unknown')

VALUES (N'S', N'Single')

VALUES (N'M', N'Married')

VALUES (N'D', N'Divorced')

VALUES (N'W', N'Widowed')

File Edit View Query Project Tools Window Help



Object Explorer

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dbo.DimDate

dbo.DimItem

dbo.FactSales

Dropped Ledger

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Programmability

New Index

Ready

Select a page

General

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Storage

Filter

Extended Properties

Script Help

Table name:

DimCard

Index name:

NonClusteredIndex-CardID

Index type:

Nonclustered

☐ Unique

Index key columns

Included columns

Name	Sort Order	Data Type	Size	Identity	Allow NULLs
CardID	Ascending	char(11)	11	No	No

Add...

Remove

Move Up

Move Down

OK

Cancel

Help

Return to the index creation window and close it.

lookup

```
VALUES (NULL, N'Unknown')
VALUES (N'S', N'Single')
VALUES (N'M', N'Married')
VALUES (N'D', N'Divorced')
VALUES (N'W', N'Widowed')
```

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

File Edit View Project Tools Window Help



Copy the index creation statement as highlighted in the picture.

Object Explorer

Connect

localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira)

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Constraints

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PK_DimCard (Clustered)

NonClusteredIndex-CardID (Non-Unique)

Statistics

dbo.DimDate

dbo.DimItem

dbo.FactSales

Dropped Ledger Tables

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Supersessions

SQLQuery2.sql - loc...\PauloOliveira (53))

CreateStageTableMa...PauloOliveira (55))

DESKTOP-ACEDDKF....escription_Lookup

USE [BDAMD_DataMart]

GO

SET ANSI_PADDING ON

GO

CREATE NONCLUSTERED INDEX [NonClusteredIndex-CardID] ON [dbo].[DimCard]

(

[CardID] ASC

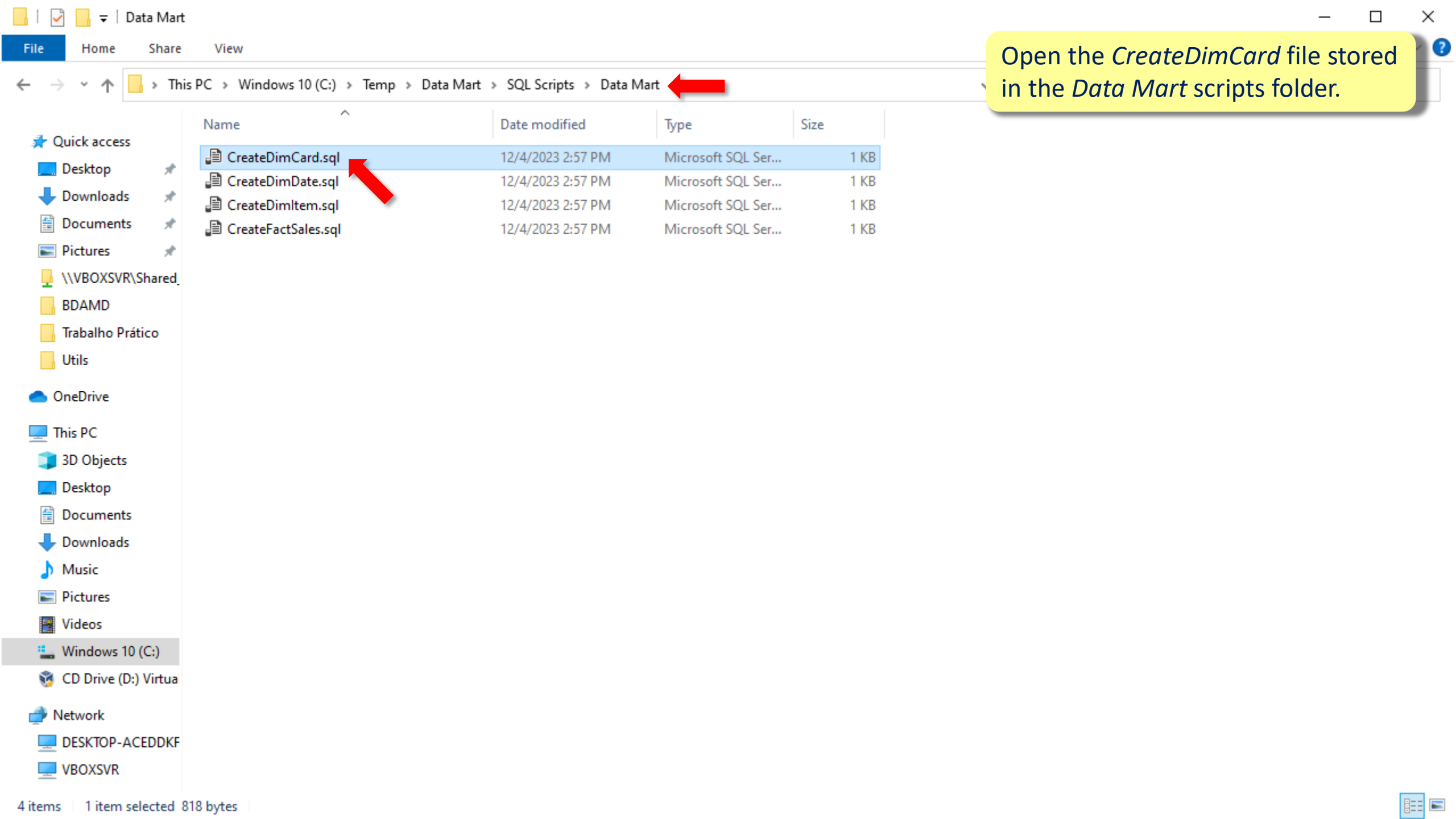
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, SORT_IN_TEMPDB = OFF, DROP_EXISTING = OFF, ONLINE = OFF, ALLOW_ROW_LOCKS = OFF)

GO

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_DataMart | 00:00:00 | 0 rows



Open the *CreateDimCard* file stored in the *Data Mart* scripts folder.

Name	Date modified	Type	Size
CreateDimCard.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateDimDate.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateDimItem.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateFactSales.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX Undo Redo Find & Replace Text

Object Explorer

Connect

localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira)

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BDAMD_DataMart

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Statistics

dbo.DimDate

dbo.DimItem

dbo.FactSales

Dropped Ledger Tables

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Supersessions

CreateDimCard.sql - ...PauloOliveira (57))* SQLQuery2.sql - loc... \PauloOliveira (53)

IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'DimCard')

BEGIN

```
CREATE TABLE [dbo].[DimCard](
    [CardKey] [int] IDENTITY(1,1) NOT NULL,
    [CardID] [char](11) NOT NULL,
    [City] [nvarchar](50) NOT NULL,
    [Region] [nvarchar](50) NOT NULL,
    [PostalCode] [nvarchar](10) NOT NULL,
    [CardStartDate] [datetime] NOT NULL,
    [Gender] [nvarchar](6) NOT NULL,
    [DateOfBirth] [datetime] NOT NULL,
    [MaritalStatus] [nvarchar](10) NOT NULL,
    [NumChildren] [tinyint] NULL,
    [YoungestChildren] [tinyint] NULL,
    [EffectiveDate] [datetime] NOT NULL,
    [ExpiredDate] [datetime] NULL
```

CONSTRAINT [PK_DimCard] PRIMARY KEY CLUSTERED

(

[CardKey] ASC

)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS

) ON [PRIMARY]

CREATE NONCLUSTERED INDEX [NonClusteredIndex-CardID] ON [dbo].[DimCard]

(

[CardID] ASC

)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, SORT_IN_TEMPDB = OFF, DROP_EXISTING = OFF, ONLINE = OFF, ALLOW RO

END

100 %

Connected. (1/1)

localhost (16.0 RTM) AzureAD\PauloOliveira ... BDAMD_DataMart 00:00:00 0 rows

Paste the create index script in the file, make the changes as highlighted in the figure and save the changed script.

Create a *New Query* window
in the *Data Mart* database.

Object Explorer

Connect     

localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira)

Databases

- System Databases
- Database Snapshots
- AdventureWorks2022
- AdventureWorksDW2022
- BDAMD_DataMart**

- Database Diagnostics
- Tables
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 - Triggers
 - Indexes
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 - Non
 - Statistics
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 - dbo.FactSales
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New Database...

New Query

Script Database...

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Start PowerShell

Azure Data Studio

Azure SQL Managed Instance link

Reports

Rename

Delete

Refresh

Properties

CreateDimCard.sql - ...PauloOliveira (57)) SQLQuery2.sql - loc...PauloOliveira (53)) CreateStageTableMa...PauloOliveira (55))

```
IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'DimCard')
BEGIN
    CREATE TABLE [dbo].[DimCard](
        [CardKey] [int] IDENTITY(1,1) NOT NULL,
        [CardID] [char](11) NOT NULL,
        [City] [nvarchar](50) NOT NULL,
        [Region] [nvarchar](50) NOT NULL,
        [PostalCode] [nvarchar](10) NOT NULL,
        [CardStartDate] [datetime] NOT NULL,
        [Gender] [nvarchar](6) NOT NULL,
        [DateOfBirth] [datetime] NOT NULL,
        [MaritalStatus] [nvarchar](10) NOT NULL,
        [NumChildren] [tinyint] NULL,
        [YoungestChildren] [tinyint] NULL,
        [EffectiveDate] [datetime] NOT NULL,
        [ExpiredDate] [datetime] NULL
    )
```

```
CONSTRAINT [PK_DimCard] PRIMARY KEY CLUSTERED
```

Results

Commands completed successfully.

Completion time: 2023-12-08T23:55:08.3515419+00:00

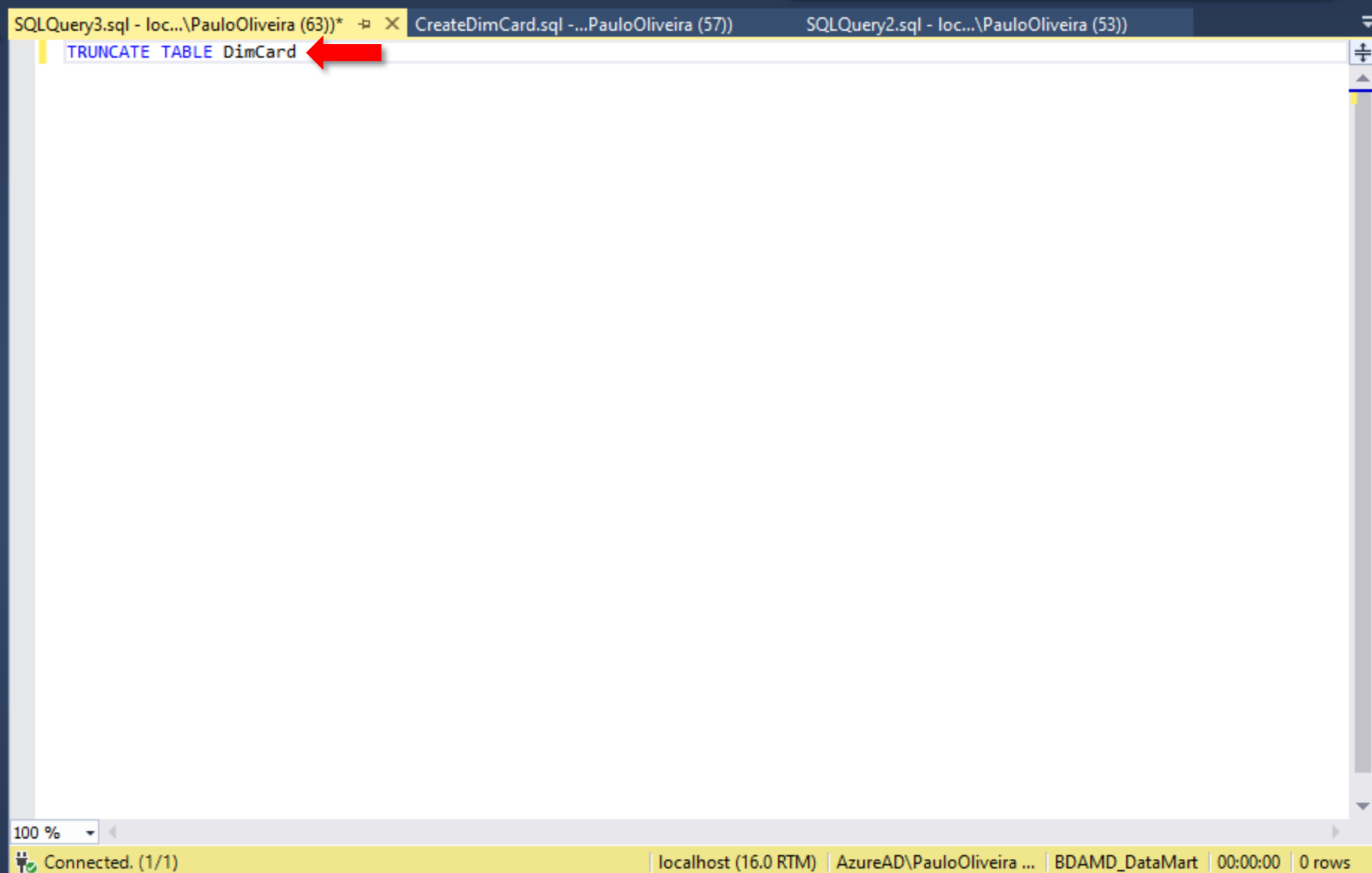
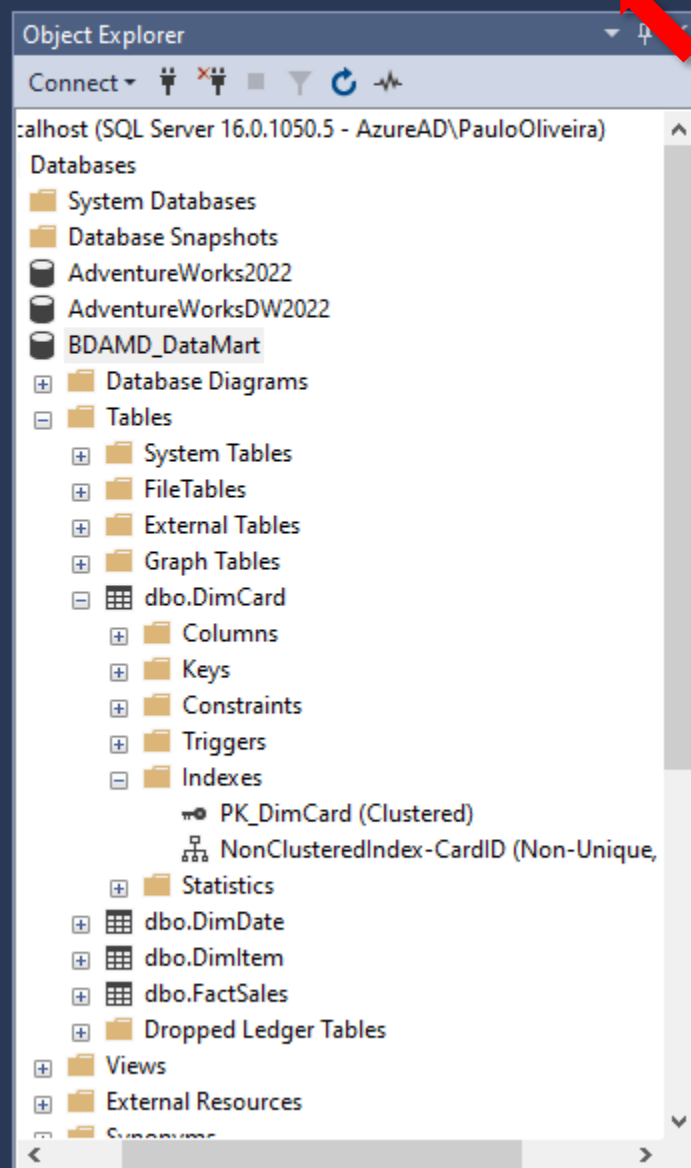
100 %

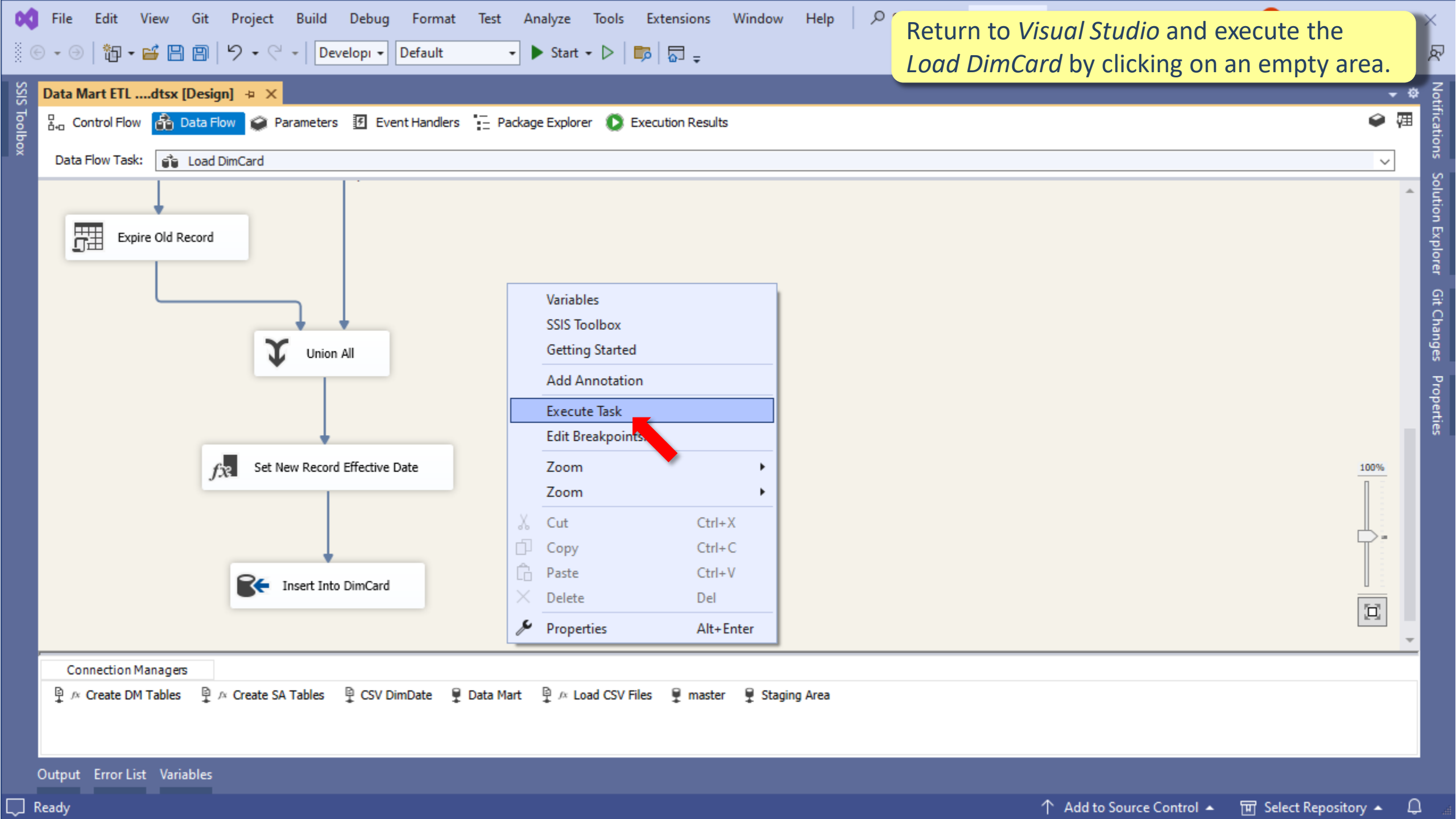
Query executed successfully.

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_DataMart | 00:00:00 | 0 rows



Let's delete all the previously loaded data into the *DimCard* table by executing this SQL statement.

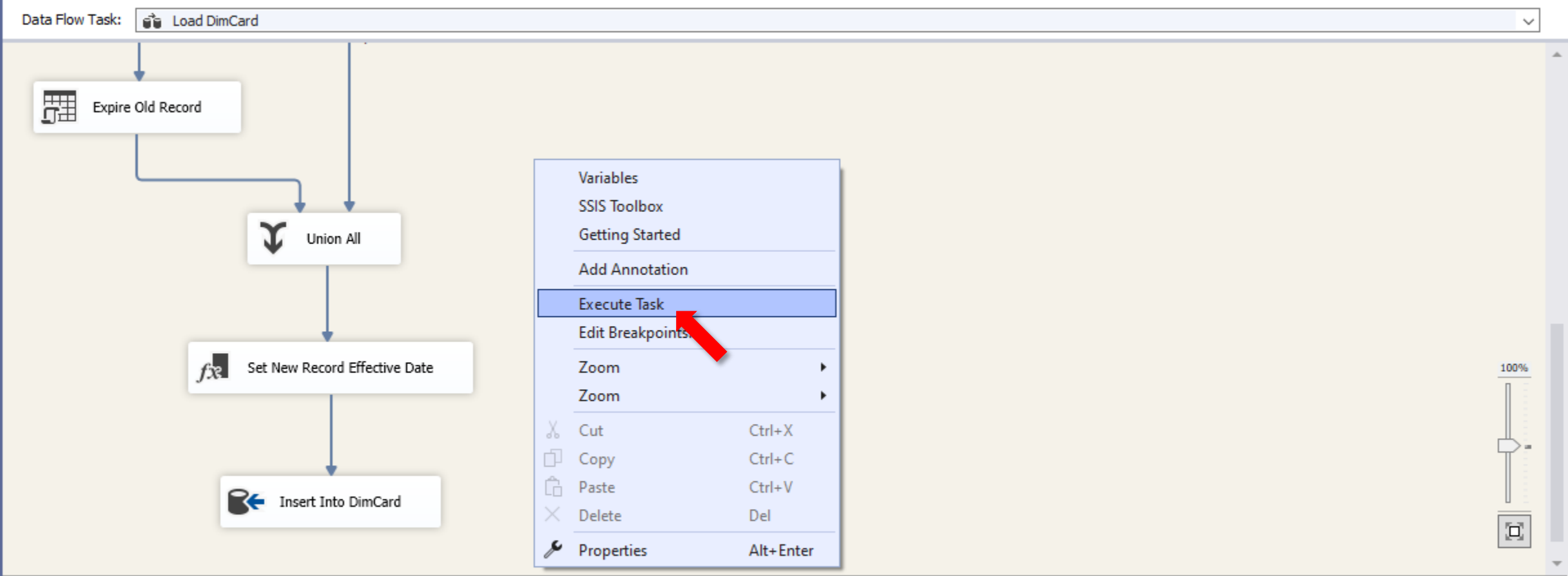




Return to *Visual Studio* and execute the *Load DimCard* by clicking on an empty area.

Data Mart ETLdtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Execution Results



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

140132 rows are loaded into the *DimCard* table in a much faster way.

File Edit View Git Project Build Debug Format Test Analyze Tools Extensions Window Help Search Data Mart

Process: [300] DtsDebugHost.exe Lifecycle Events Thread: Stack Frame:

Data Mart ETLdtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Progress

Data Flow Task: Load DimCard

Expire Old Record

Union All

140,132 rows

Set New Record Effective Date

140,132 rows

Insert Into DimCard

Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Package execution completed. Click here to switch to design mode, or select Stop Debugging from the Debug menu.

Autos Locals Watch 1 Call Stack Breakpoints Exception Settings Command Window Immediate Window Output

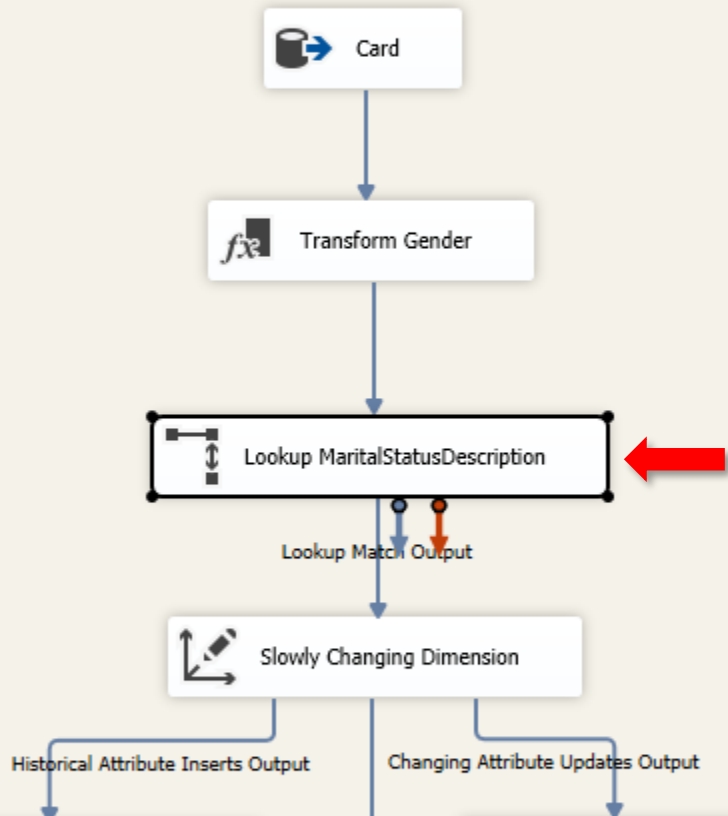
Ready Add to Source Control Select Repository

Stop the execution and edit the *Lookup MaritalStatusDescription* component.

Data Mart ETLdtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Specify that the no matching entries should be redirected to error output.

Lookup Transformation Editor

This transform enables the performance of simple equi-joins between the input and a reference data set.

General
Connection
Columns
Advanced
Error Output

Cache mode

☒ Full cache
☐ Partial cache
☐ No cache

Connection type

☐ Cache connection manager
☒ QLE DB connection manager

Specify how to handle rows with no matching entries

Redirect rows to error output

OK

Cancel

Help

SSIS Toolbox

Data Mart ETLdtsx [Design]

Control Flow Data Flow Parameters

Data Flow Task: Load DimCard

Looku

Historical Attribute Inserts Output

Connection Managers

Create DM Tables Create SA Ta

Output Error List Variables

Notifications

Solution Explorer

Git Changes

Properties

100%

Drag a *Derived Column* component onto the *Data Flow* area next to the *Lookup* component.

SSIS Toolbox

Search SSIS Toolbox

Favorites

- Destination Assistant
- Source Assistant

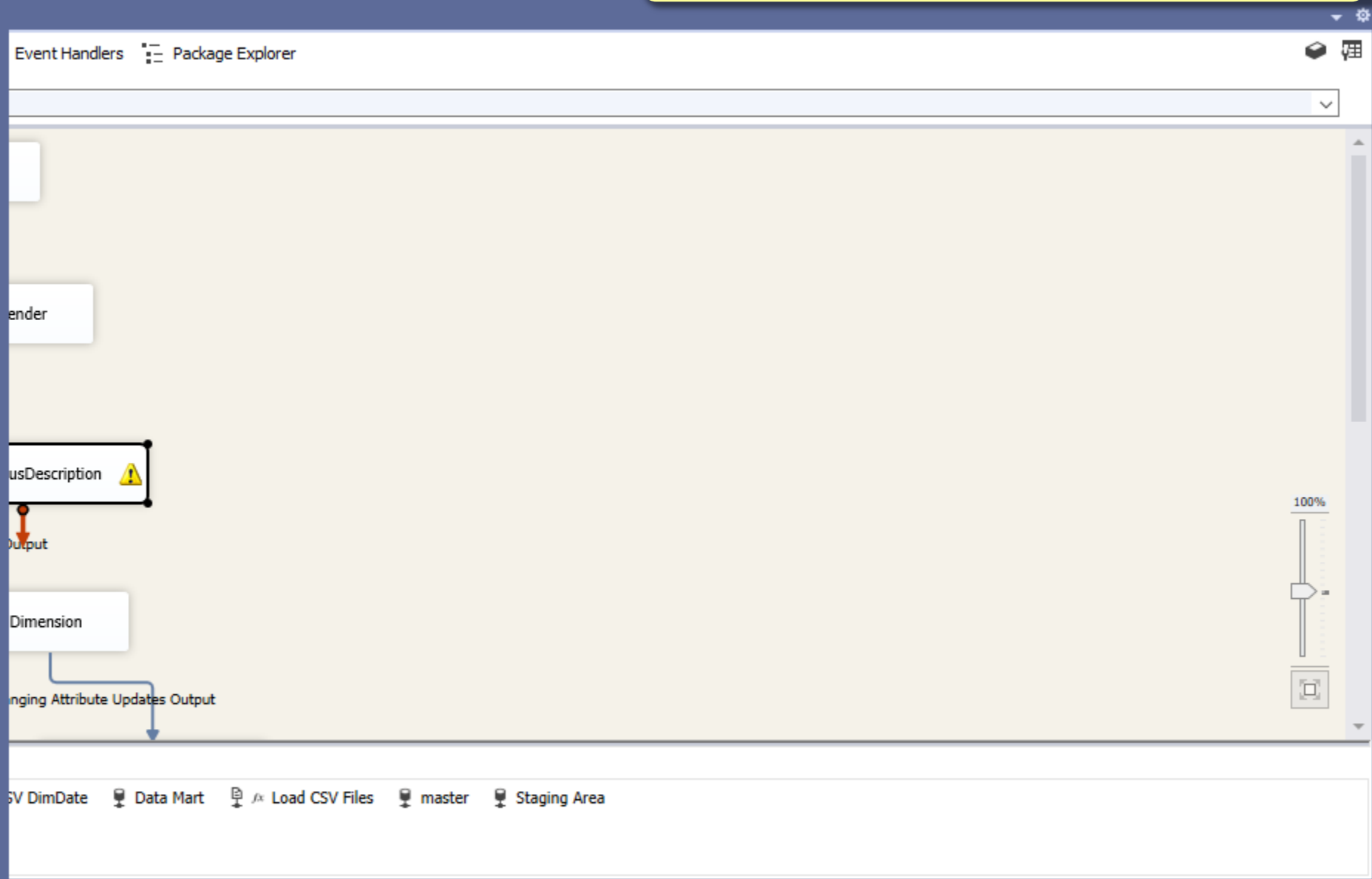
Common

- Aggregate
- Balanced Data Distributor
- Conditional Split
- Data Conversion
- Data Streaming Destination
- Derived Column**
- HDFS File Destination
- HDFS File Source
- Lookup
- Merge
- Merge Join
- Multicast
- OData Source
- ODBC Destination
- ODBC Source
- OLE DB Command
- Row Count

Derived Column

Creates new column values by applying expressions to transformation input columns. Create new columns or overwrite existing ones. For example, concatenate the values from the 'first name' and...

[Find Samples](#)



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Slowly Changing Dimension

Derived Column

Lookup Match Output

Historical Attribute Inserts Output

Changing Attribute Updates Output

Connection Managers

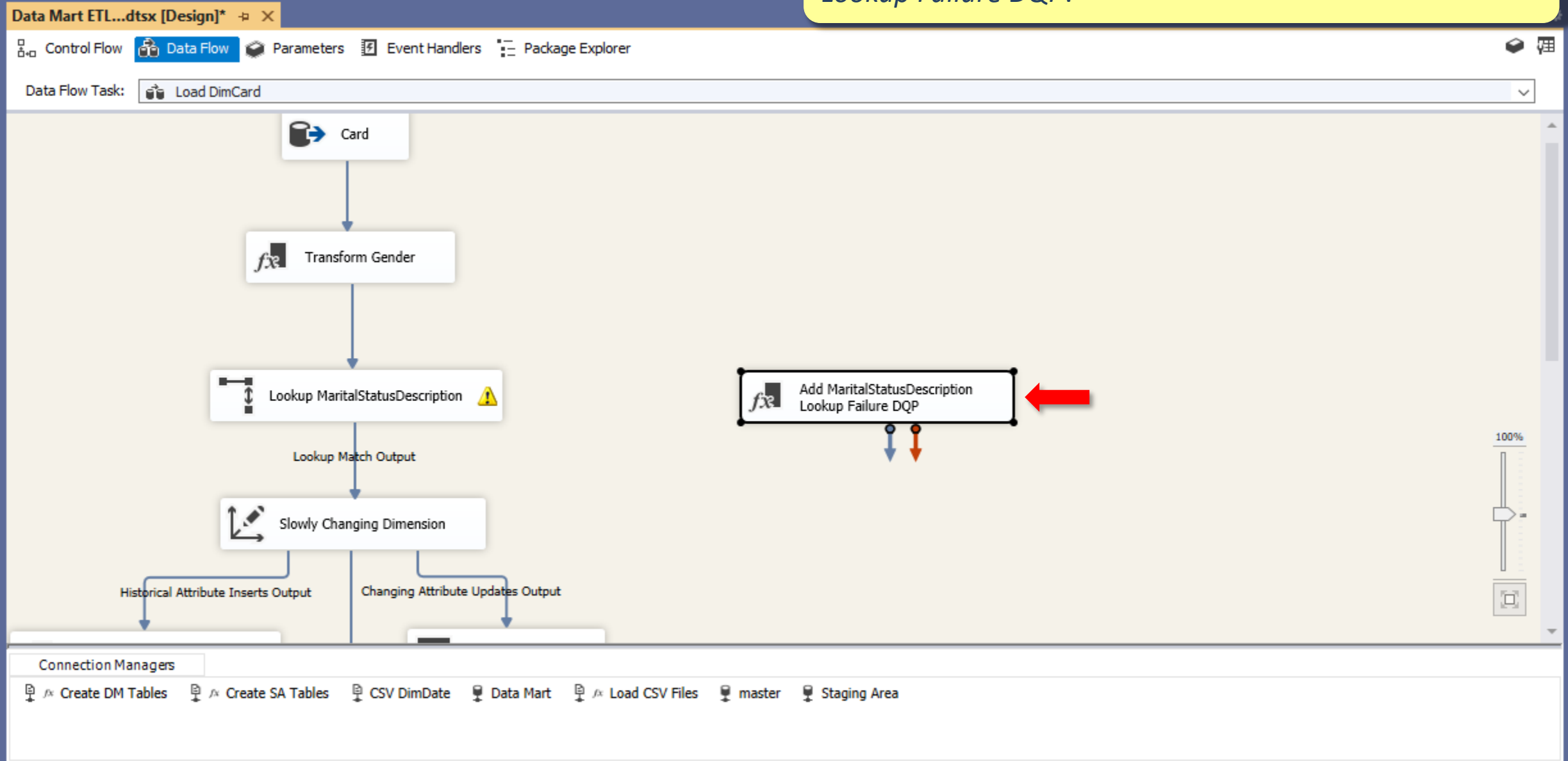
Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

Rename the component as *Add MaritalStatusDescription
Lookup Failure DQP*.



Output Error List Variables

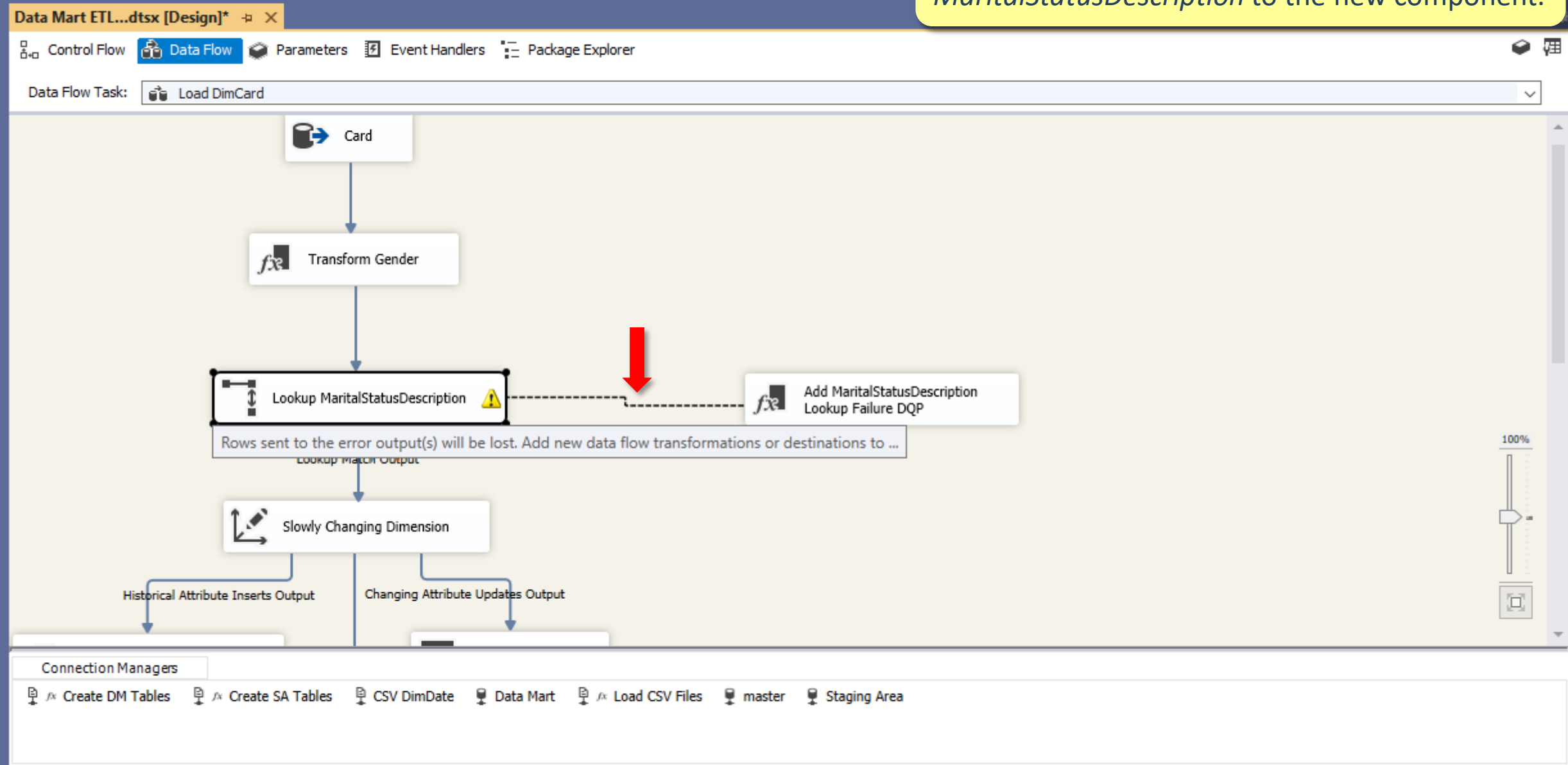
Ready

↑ Add to Source Control

☰ Select Repository



Drag the red flow from the *Lookup MaritalStatusDescription* to the new component.



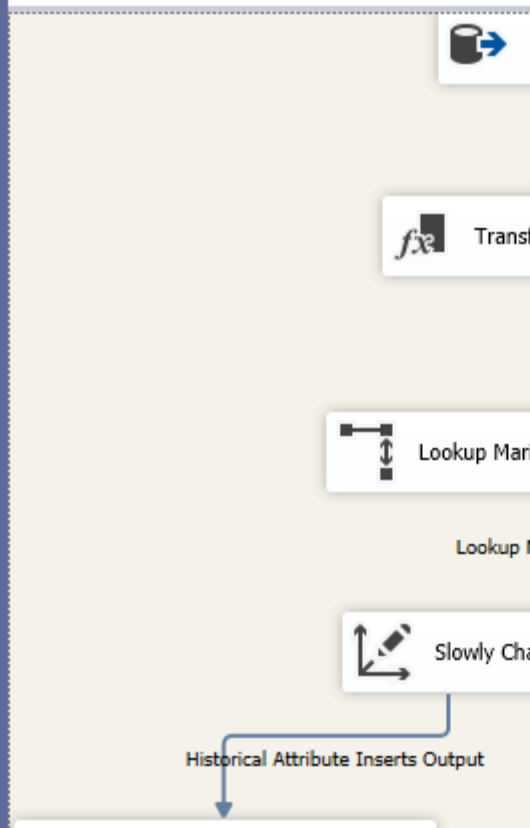
Output Error List Variables

In the *Configure Error Output* dialog window just confirm the Redirect row.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters

Data Flow Task: Load DimCard



Connection Managers

Create DM Tables

Create SA Tables

Configure Error Output

Specify how row-level errors are handled by this component. You can handle errors in the row, or truncation errors in columns. Errors can fail the component, or they can be ignored, or they can be redirected to an error output.

Input or Output	Column	Error	Truncation	Description
Lookup Match...		Redirect row		Lookup
	MaritalStatusD...		Fail component	Copy Column

Set this value to selected cells:

Fail component

Apply

OK

Cancel

Output Error List Variables

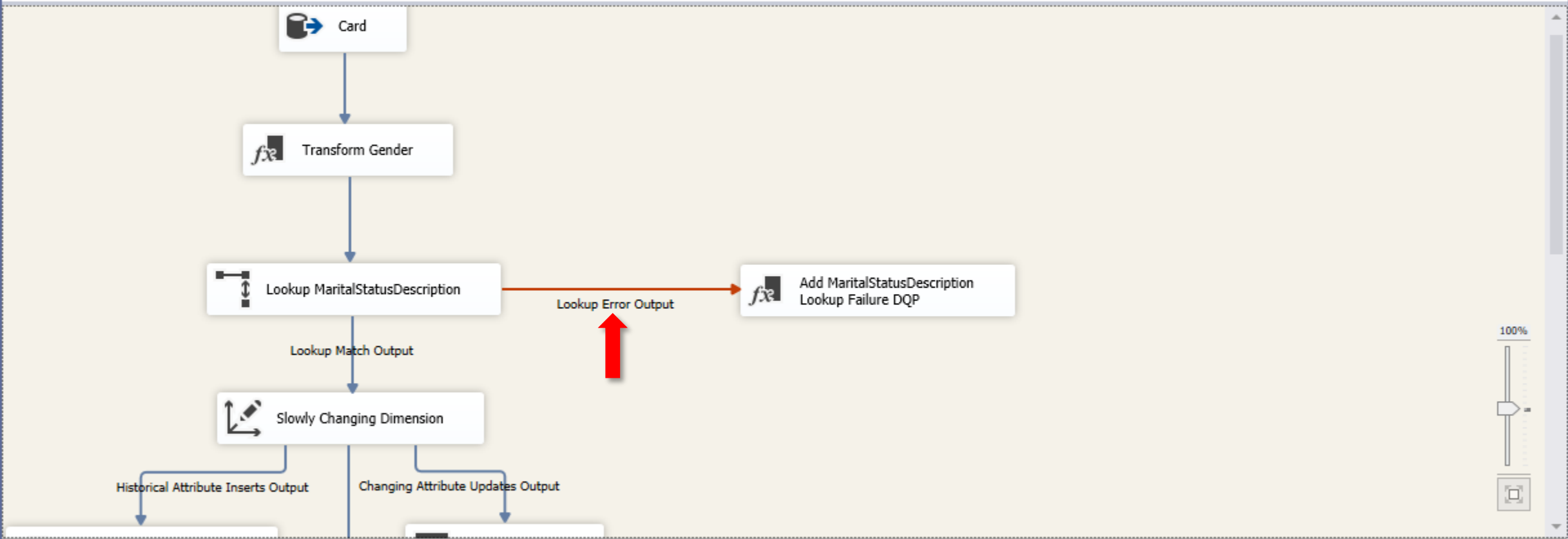
Edit the *Add MaritalStatusDescription Lookup Failure DQP* component.

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Add the new attribute/column *DQP* and its message/expression as presented.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

+

 Variables and Parameters

+

 Columns

+

 Mathematical Functions

+

 String Functions

+

+

+

+

Description:

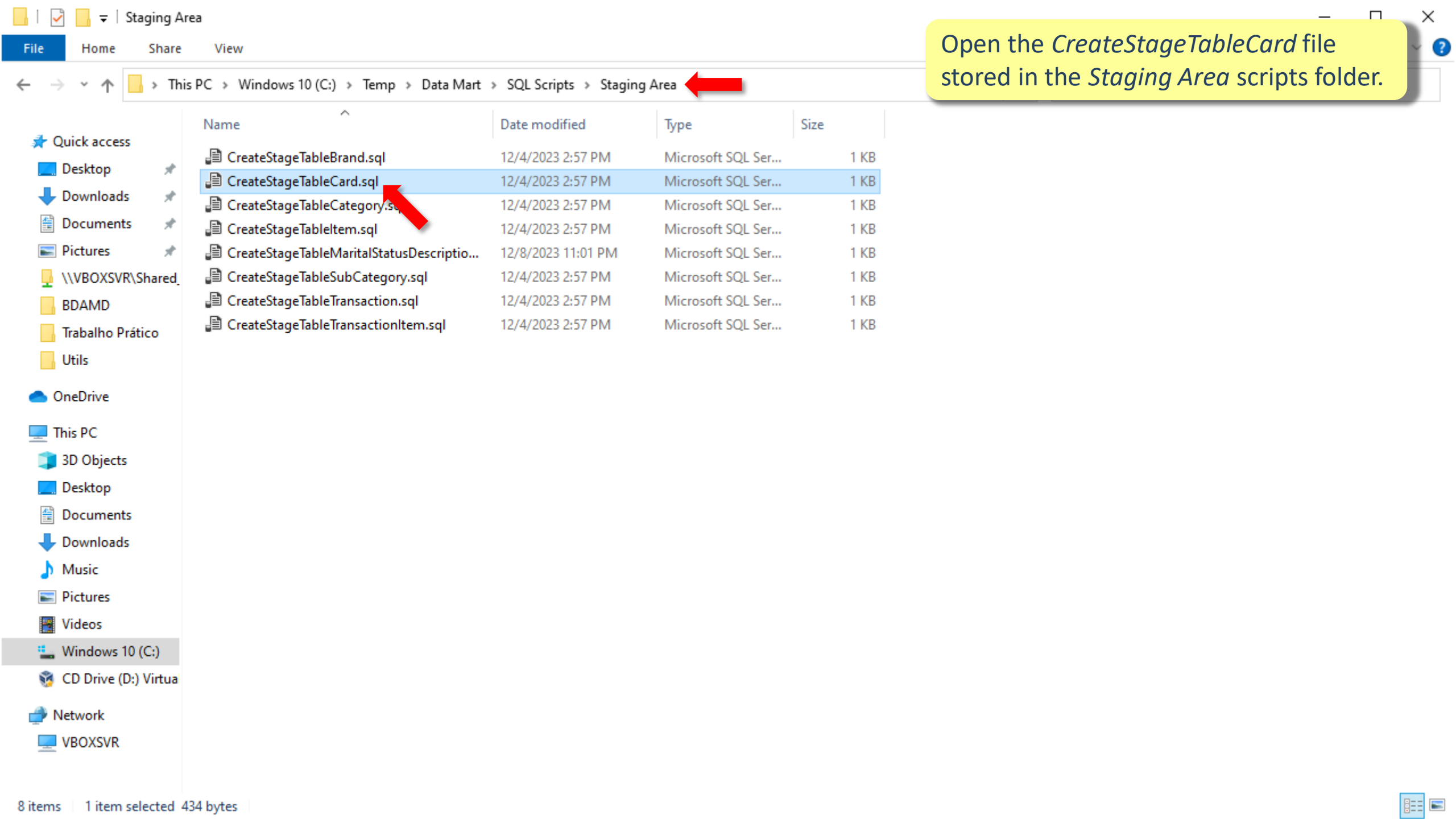
Configure Error Output...

OK

Cancel

Help





Open the *CreateStageTableCard* file stored in the *Staging Area* scripts folder.

Name	Date modified	Type	Size
CreateStageTableBrand.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateStageTableCard.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateStageTableCategory.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateStageTableItem.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateStageTableMaritalStatusDescriptio...	12/8/2023 11:01 PM	Microsoft SQL Ser...	1 KB
CreateStageTableSubCategory.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateStageTableTransaction.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB
CreateStageTableTransactionItem.sql	12/4/2023 2:57 PM	Microsoft SQL Ser...	1 KB

File Edit View Project Tools Window Help

- Connect Object Explorer...
- Disconnect Object Explorer
- New
- Open
- Add
- Close
- Close Solution
- Save CreateStageTableCard.sql Ctrl+S
- Save CreateStageTableCard.sql As...
- Save All Ctrl+Shift+S
- View in Browser Ctrl+Shift+W
- Browse With...
- Page Setup...
- Print... Ctrl+P
- Recent Files
- Recent Projects and Solutions
- Exit Alt+F4

DMX XMLA DAX

text

CreateStageTableCar...PauloOliveira (51))

```
IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'Card')
CREATE TABLE [dbo].[Card]
(
    [CardID] [char](11),
    [City] [nvarchar](50),
    [Region] [nvarchar](50),
    [PostalCode] [nvarchar](10),
    [CardStartDate] [datetime],
    [Gender] [char](1),
    [DateOfBirth] [datetime],
    [MaritalStatus] [char](1),
    [HasChildren] [char](1),
    [NumChildren] tinyint,
    [YoungestChildren] tinyint
)
ELSE
    TRUNCATE TABLE Card
```

Start by saving the script with a different name to create a new one.

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

File Edit View Project Tools Window Help

 New Query        text

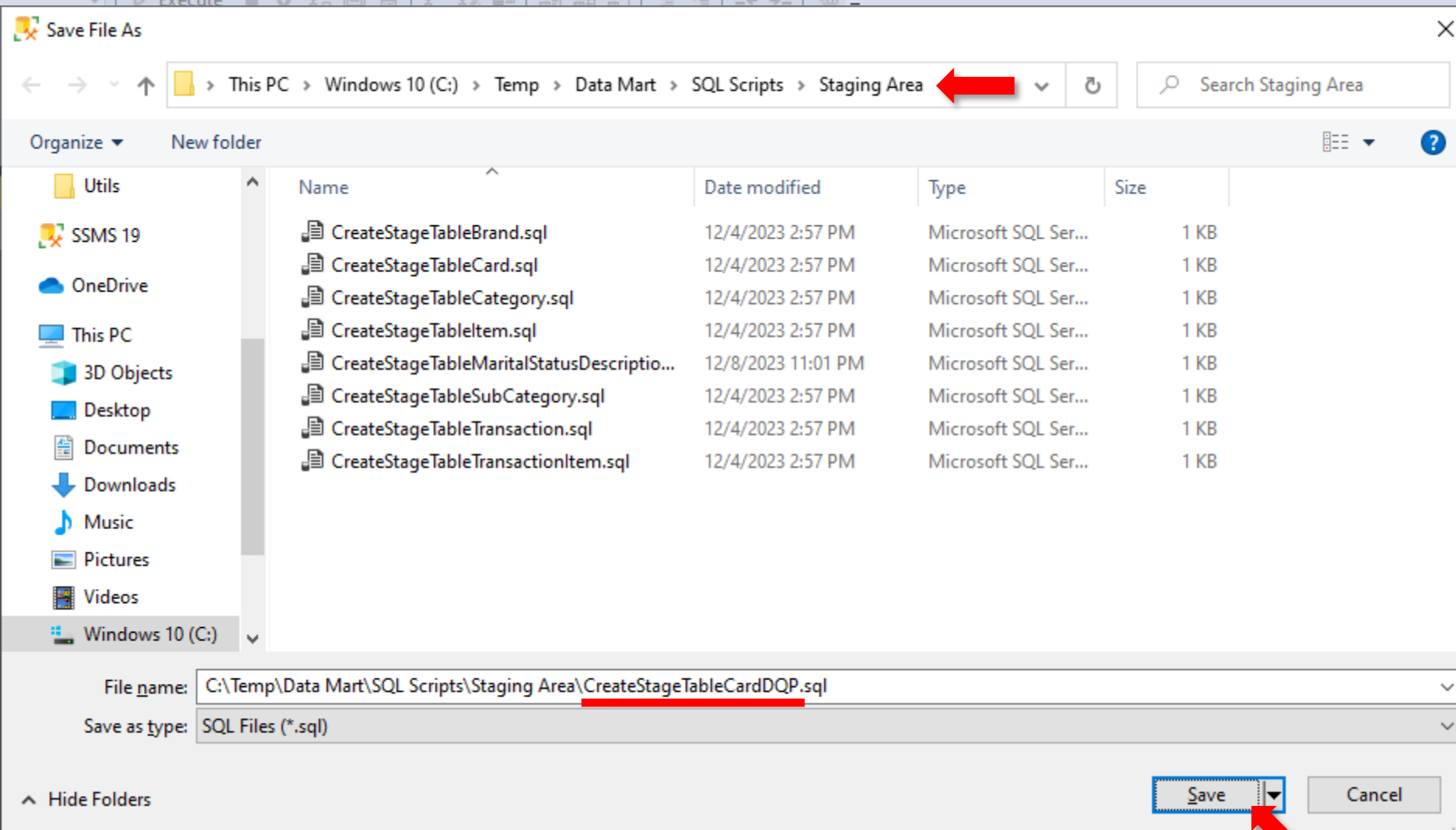
Save the new script as *CreateStageTableCardDQP* also in the *Staging Area* scripts folder.

Object Explorer

Connect

localhost (SQL Server)

- Databases
- Security
- Server Objects
- Replication
- Always On High Availability
- Management
- Integration Services
- SQL Server Agent
- XEvent Profiler



File Edit View Query Project Tools Window Help



Perform the highlighted changes and save the script.

Object Explorer

Connect

- localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (51))
- Databases
- Security
- Server Objects
- Replication
- Always On High Availability
- Management
- Integration Services Catalogs
- SQL Server Agent (Agent XPs disabled)
- XEvent Profiler

CreateStageTableCardDQP.sql - localhost.master (AzureAD\PauloOliveira (51))*

```
IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'CardDQP')
    CREATE TABLE [dbo].[CardDQP]
    (
        [CardID] [char](11),
        [City] [nvarchar](50),
        [Region] [nvarchar](50),
        [PostalCode] [nvarchar](10),
        [CardStartDate] [datetime],
        [Gender] [char](1),
        [DateOfBirth] [datetime],
        [MaritalStatus] [char](1),
        [HasChildren] [char](1),
        [NumChildren] tinyint,
        [YoungestChildren] tinyint,
        DQP [nvarchar](100)
    )
ELSE
    TRUNCATE TABLE CardDQP
```

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

File Edit View Query Project Tools Window Help



Execute the script in the *Staging Area* database to create the *CardDQP* table in the Staging Area.

Object Explorer

Connect

- localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (51))
 - Databases
 - Security
 - Server Objects
 - Replication
 - Always On High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs disabled)
 - XEvent Profiler

CreateStageTableCardDQP.sql - PauloOliveira (51)*

```
IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'CardDQP')
    CREATE TABLE [dbo].[CardDQP]
    (
        [CardID] [char](11),
        [City] [nvarchar](50),
        [Region] [nvarchar](50),
        [PostalCode] [nvarchar](10),
        [CardStartDate] [datetime],
        [Gender] [char](1),
        [DateOfBirth] [datetime],
        [MaritalStatus] [char](1),
        [HasChildren] [char](1),
        [NumChildren] tinyint,
        [YoungestChildren] tinyint,
        DQP [nvarchar](100)
    )
ELSE
    TRUNCATE TABLE CardDQP
```

100 %

Connected. (1/1)

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_StagingArea | 00:00:00 | 0 rows

CreateStageTableCardDQP.sql - localhost.BDAMD_StagingArea (AzureAD\PauloOliveira (51))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

BDAMD_StagingArea Execute

Object Explorer

- localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (51))
 - Databases
 - Security
 - Server Objects
 - Replication
 - Always On High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs disabled)
 - XEvent Profiler

CreateStageTableCardDQP.sql - localhost.BDAMD_StagingArea (AzureAD\PauloOliveira (51))*

```
IF NOT EXISTS (SELECT name FROM sys.tables WHERE name = 'CardDQP')
CREATE TABLE [dbo].[CardDQP]
(
    [CardID] [char](11),
    [City] [nvarchar](50),
    [Region] [nvarchar](50),
    [PostalCode] [nvarchar](10),
    [CardStartDate] [datetime],
    [Gender] [char](1),
    [DateOfBirth] [datetime],
    [MaritalStatus] [char](1),
    [HasChildren] [char](1),
    [NumChildren] tinyint,
    [YoungestChildren] tinyint,
    DQP [nvarchar](100)
)
```

100 %

Messages

Commands completed successfully.

Completion time: 2023-12-09T19:28:44.2363741+00:00

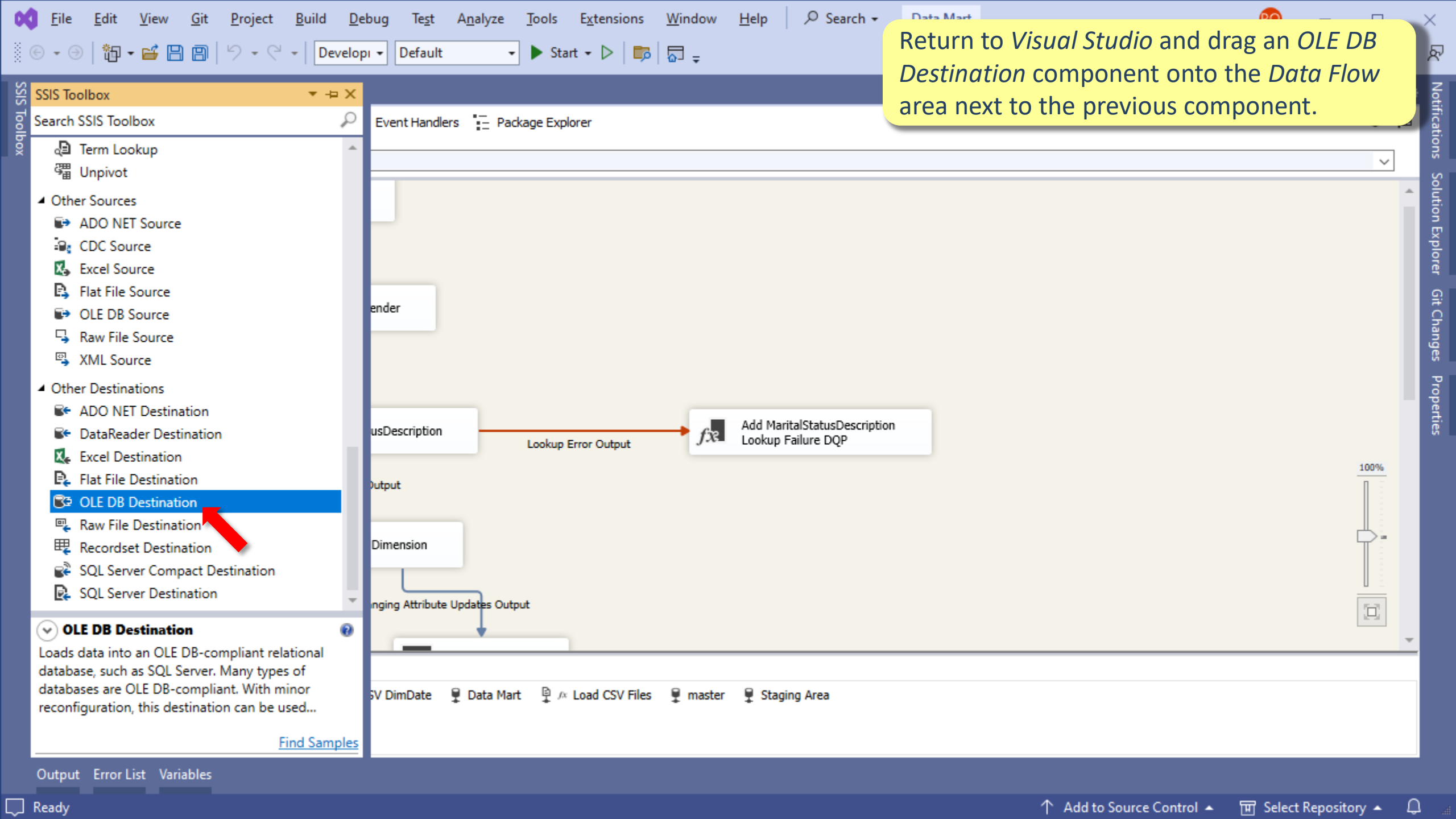
100 %

Query executed successfully. | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_StagingArea | 00:00:00 | 0 rows

Ready Ln 15 Col 25 Ch 19 INS

The script should execute successfully.

Return to *Visual Studio* and drag an *OLE DB Destination* component onto the *Data Flow* area next to the previous component.



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

NotificationsSolution ExplorerGit ChangesProperties

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Slowly Changing Dimension

OLE DB Destination

Add MaritalStatusDescription Lookup Failure DQP

Lookup Error Output

Lookup Match Output

Historical Attribute Inserts Output

Changing Attribute Updates Output

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

Card

Transform Gender

Lookup MaritalStatusDescription

Slowly Changing Dimension

OLE DB Destination

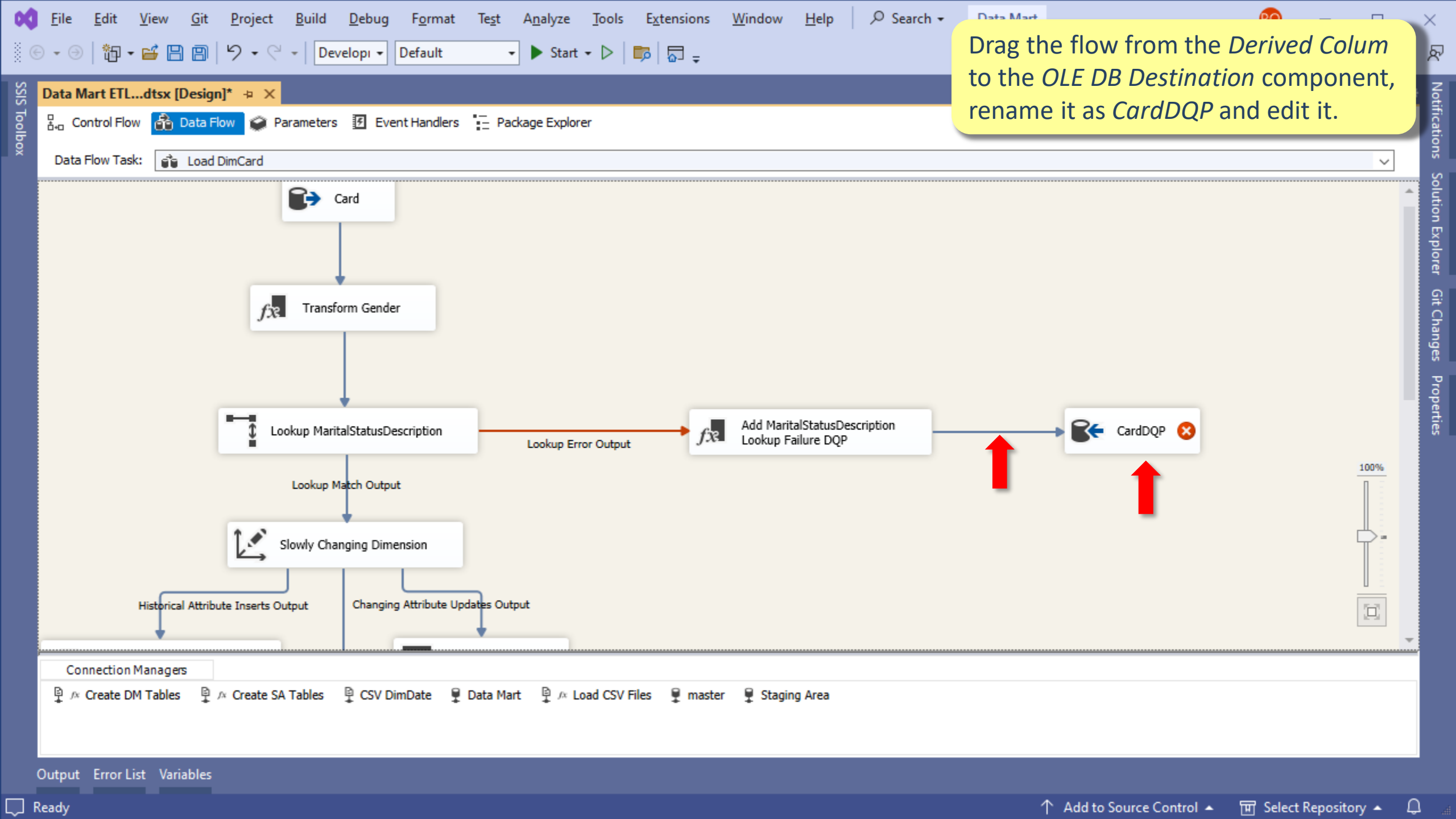
Add MaritalStatusDescription Lookup Failure DQP

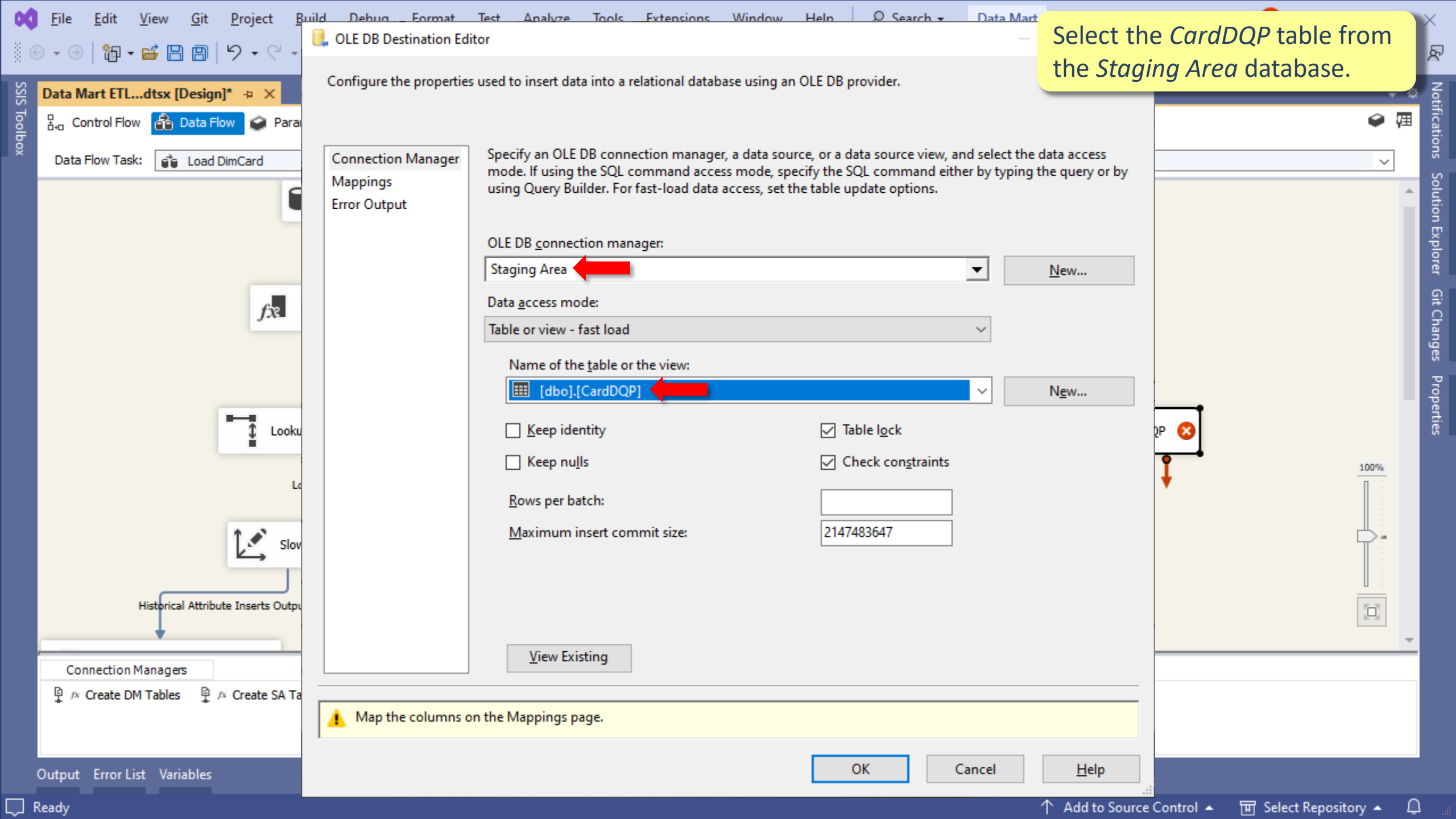
Lookup Error Output

Lookup Match Output

Historical Attribute Inserts Output

Changing Attribute Updates Output





OLE DB Destination Editor

Configure the properties used to insert data into a relational database using an OLE DB provider.

Connection Manager
Mappings
Error Output

Specify an OLE DB connection manager, a data source, or a data source view, and select the data access mode. If using the SQL command access mode, specify the SQL command either by typing the query or by using Query Builder. For fast-load data access, set the table update options.

OLE DB connection manager:

Staging Area

New...

Data access mode:

Table or view - fast load

Name of the table or the view:

[dbo].[CardDQP]

New...

☐ Keep identity

☒ Table lock

☐ Keep nulls

☒ Check constraints

Rows per batch:

Maximum insert commit size:

2147483647

View Existing

⚠ Map the columns on the Mappings page.

OK

Cancel

Help

Select the *CardDQP* table from the *Staging Area* database.

Output Error List Variables

Ready

↑ Add to Source Control

📁 Select Repository



Check if all the attributes are properly mapped.

OLE DB Destination Editor

Configure the properties used to insert data into a relational database using an OLE DB provider.

Connection Manager
Mappings
Error Output

Available Input Columns

Name
CardID
City
Region
PostalCode
CardStartDate
Gender
DateOfBirth

Available Destination Columns

Name
CardID
City
Region
PostalCode
CardStartDate
Gender
DateOfBirth

Input Column	Destination Column
CardID	CardID
City	City
Region	Region
PostalCode	PostalCode
CardStartDate	CardStartDate
Gender	Gender
DateOfBirth	DateOfBirth
MaritalStatus	MaritalStatus
HasChildren	HasChildren
NumChildren	NumChildren
YoungestChildren	YoungestChildren
DQP	DQP

OK

Cancel

Help

File Edit View Query Project Tools Window Help



Object Explorer

Connect

- localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (58))
 - Databases
 - Security
 - Server Objects
 - Replication
 - Always On High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs disabled)
 - XEvent Profiler

SQLQuery1.sql - loc... \PauloOliveira (58))* X CreateStageTableCar...PauloO

```
SELECT *  
FROM Card  
WHERE NumChildren > 10
```

By performing the following new query in the *Card* table, using SSMS, you'll see that there are data quality problems in the *NumChildren* attribute in four rows/records.

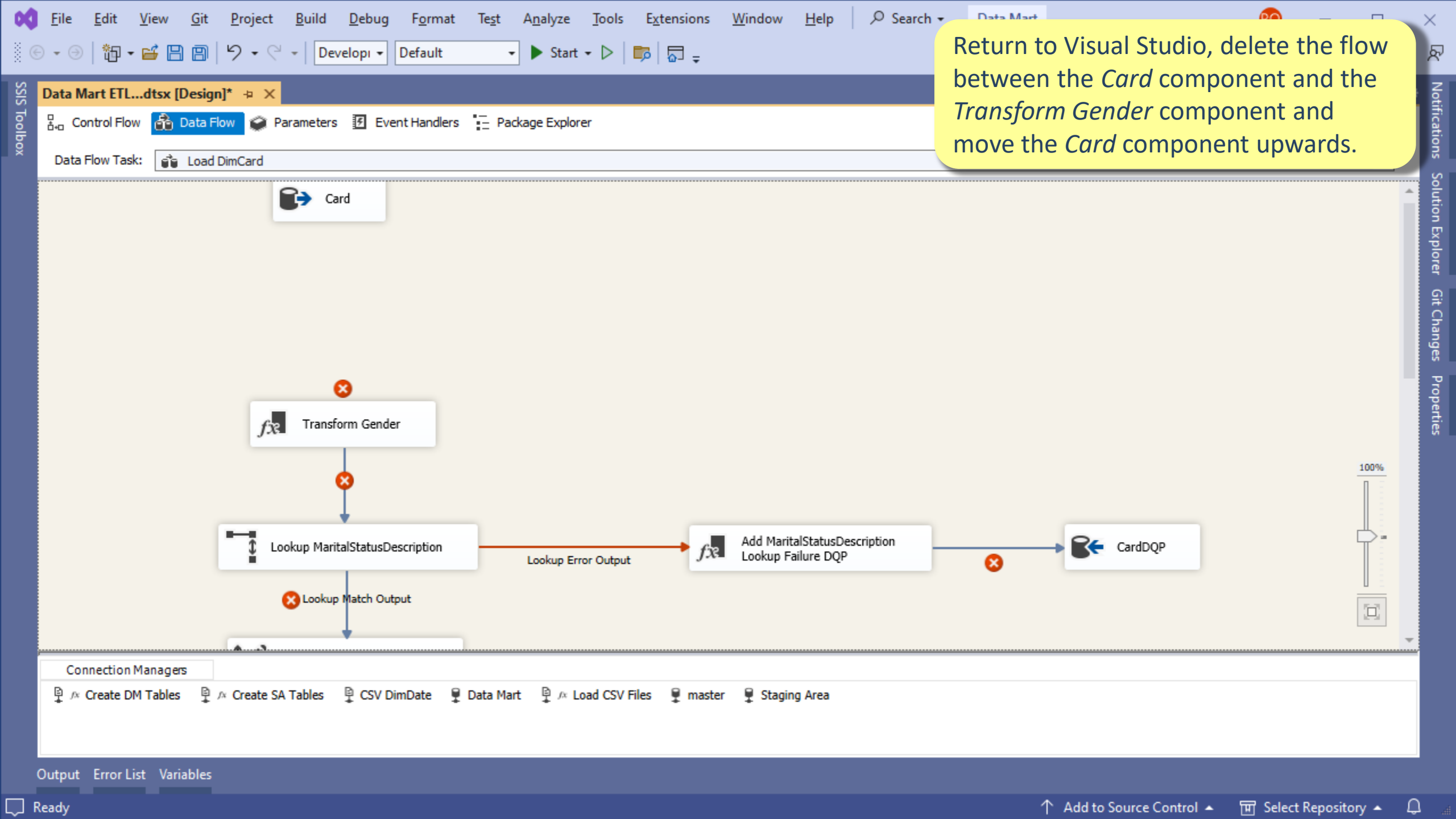
100 %

Results Messages

	CardID	City	Region	PostalCode	CardStartDate	Gender	DateOfBirth	MaritalStatus	HasChildren	NumChildren	Youngest
1	C0102722488	Foxton	Eastern	A079405	1999-06-30 00:00:00.000	F	1966-04-28 00:00:00.000	NULL	Y	255	6
2	C0103994145	Foxton	Eastern	A028289	2000-11-19 00:00:00.000	F	1982-05-17 00:00:00.000	M	Y	255	0
3	C0102982878	Queensbury	Central	A011264	1998-02-25 00:00:00.000	F	1964-05-07 00:00:00.000	M	Y	255	6
4	C0103088764	Ravensville	Eastern	A046862	1998-01-16 00:00:00.000	M	1952-02-15 00:00:00.000	NULL	Y	255	18

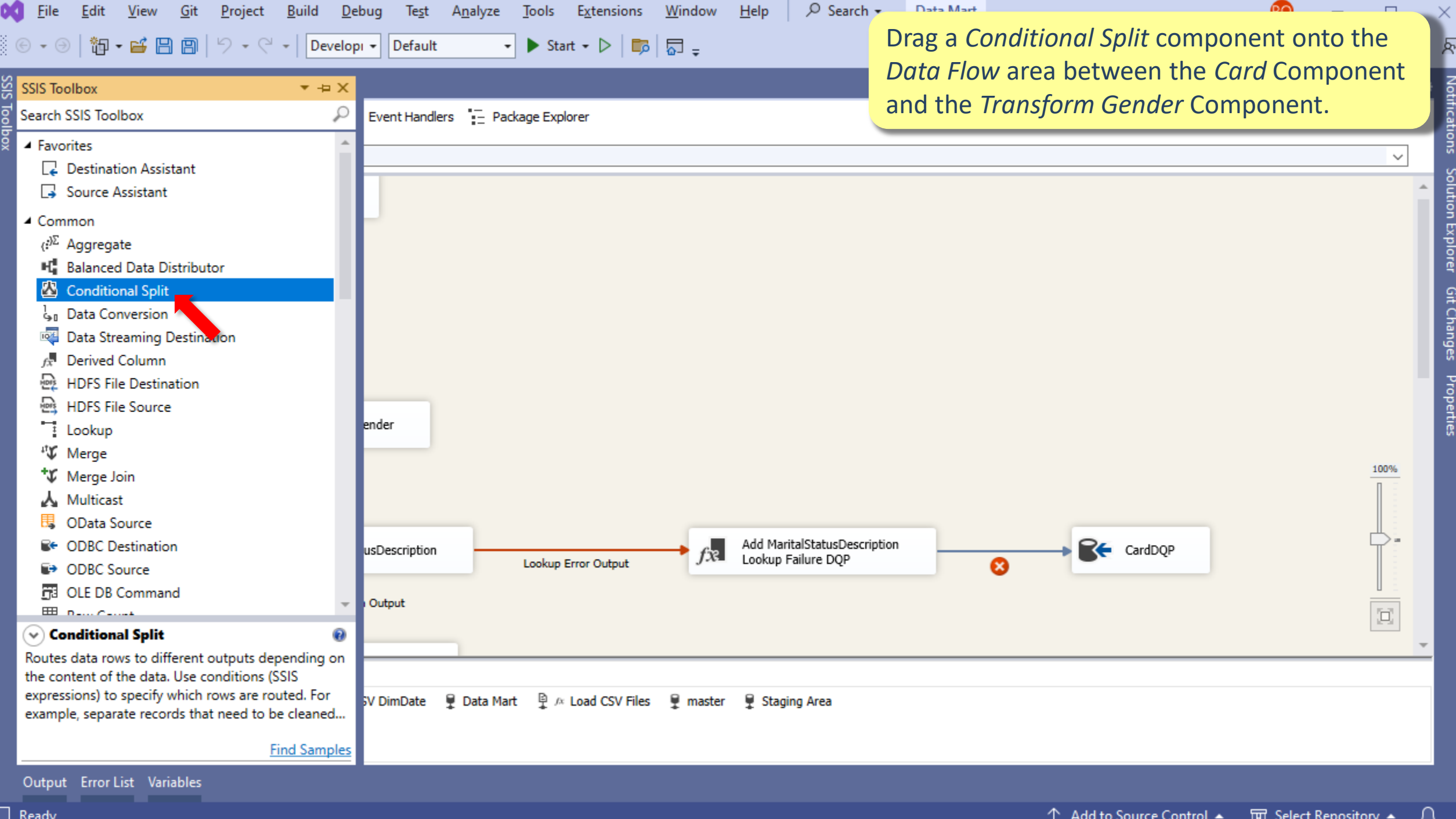
Query executed successfully.

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_StagingArea | 00:00:00 | 4 rows



Return to Visual Studio, delete the flow between the *Card* component and the *Transform Gender* component and move the *Card* component upwards.

Drag a *Conditional Split* component onto the *Data Flow* area between the *Card* Component and the *Transform Gender* Component.



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Search

Data Mart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Conditional Split

Transform Gender

Lookup MaritalStatusDescription

Lookup Match Output

Lookup Error Output

Add MaritalStatusDescription Lookup Failure DQP

CardDQP

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Rename the Conditional Split component to Valid NumChildren?

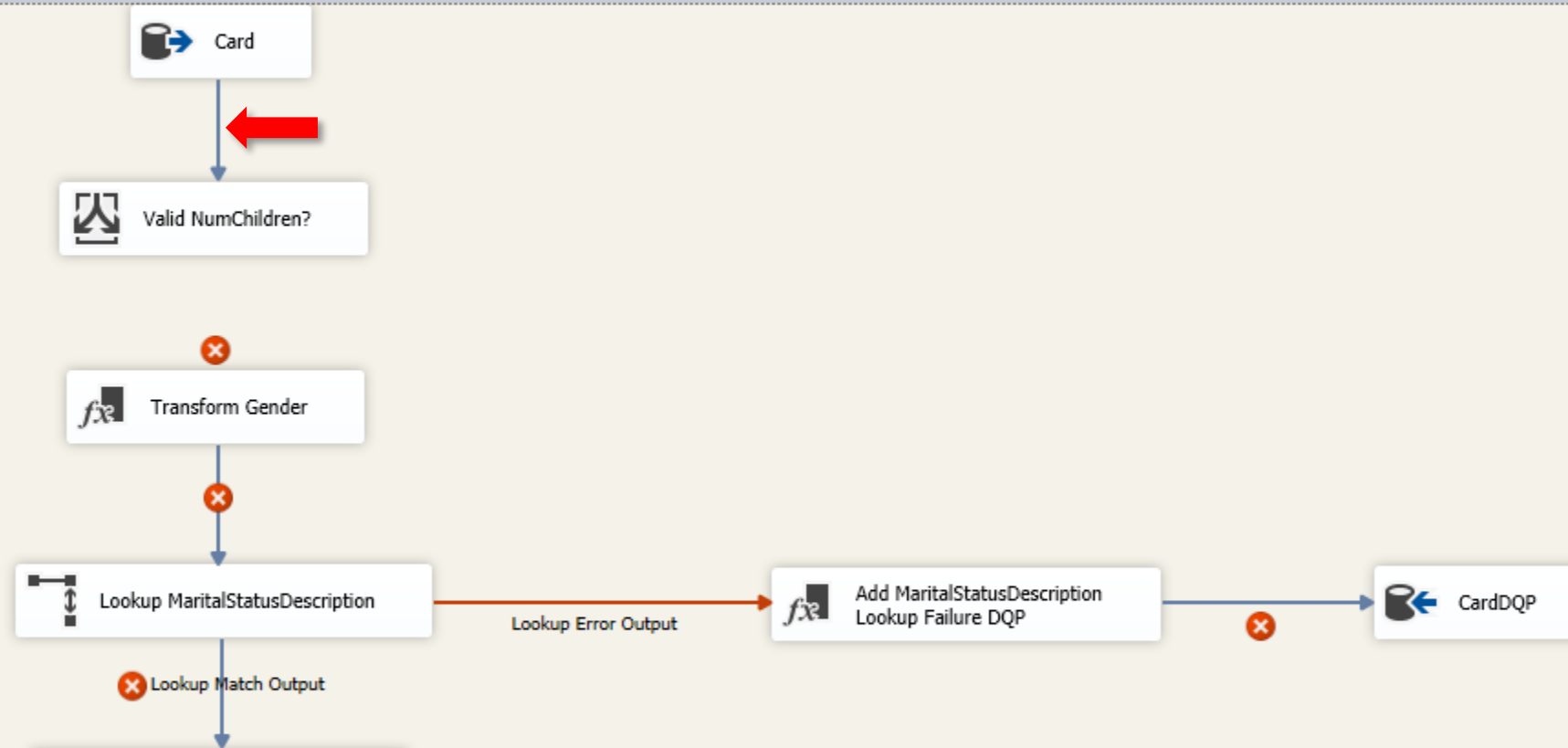
100%

Connect the *Card* flow to the *Valid NumChildren?* and edit this component.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

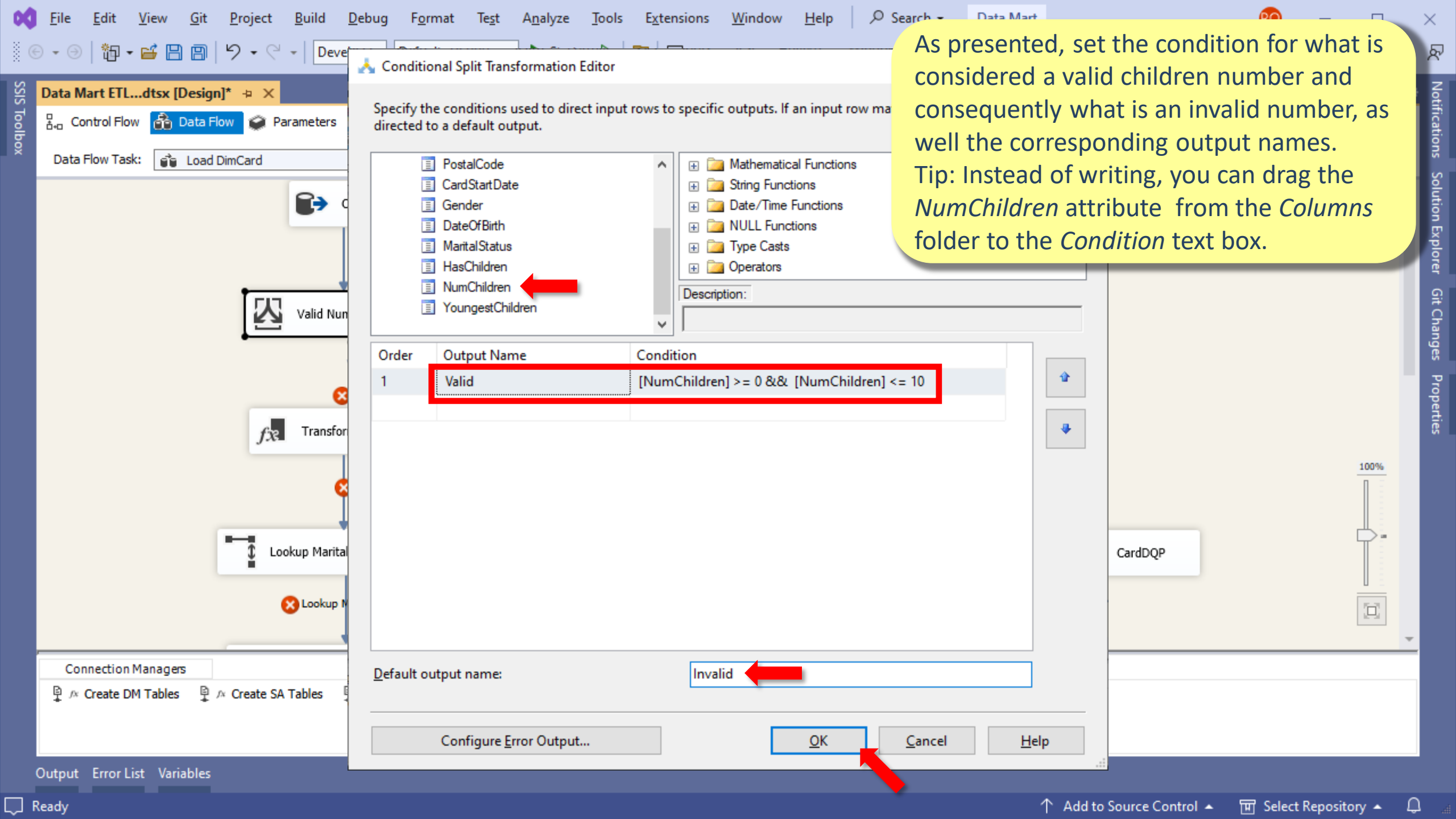
Data Flow Task: Load DimCard



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables



Conditional Split Transformation Editor

Specify the conditions used to direct input rows to specific outputs. If an input row maps to no condition, it is directed to a default output.

- PostalCode
- CardStartDate
- Gender
- DateOfBirth
- MaritalStatus
- HasChildren
- NumChildren
- YoungestChildren

- Mathematical Functions
- String Functions
- Date/Time Functions
- NULL Functions
- Type Casts
- Operators

Description:

Order	Output Name	Condition
1	Valid	[NumChildren] >= 0 && [NumChildren] <= 10

Default output name:

Invalid

Configure Error Output... OK Cancel Help

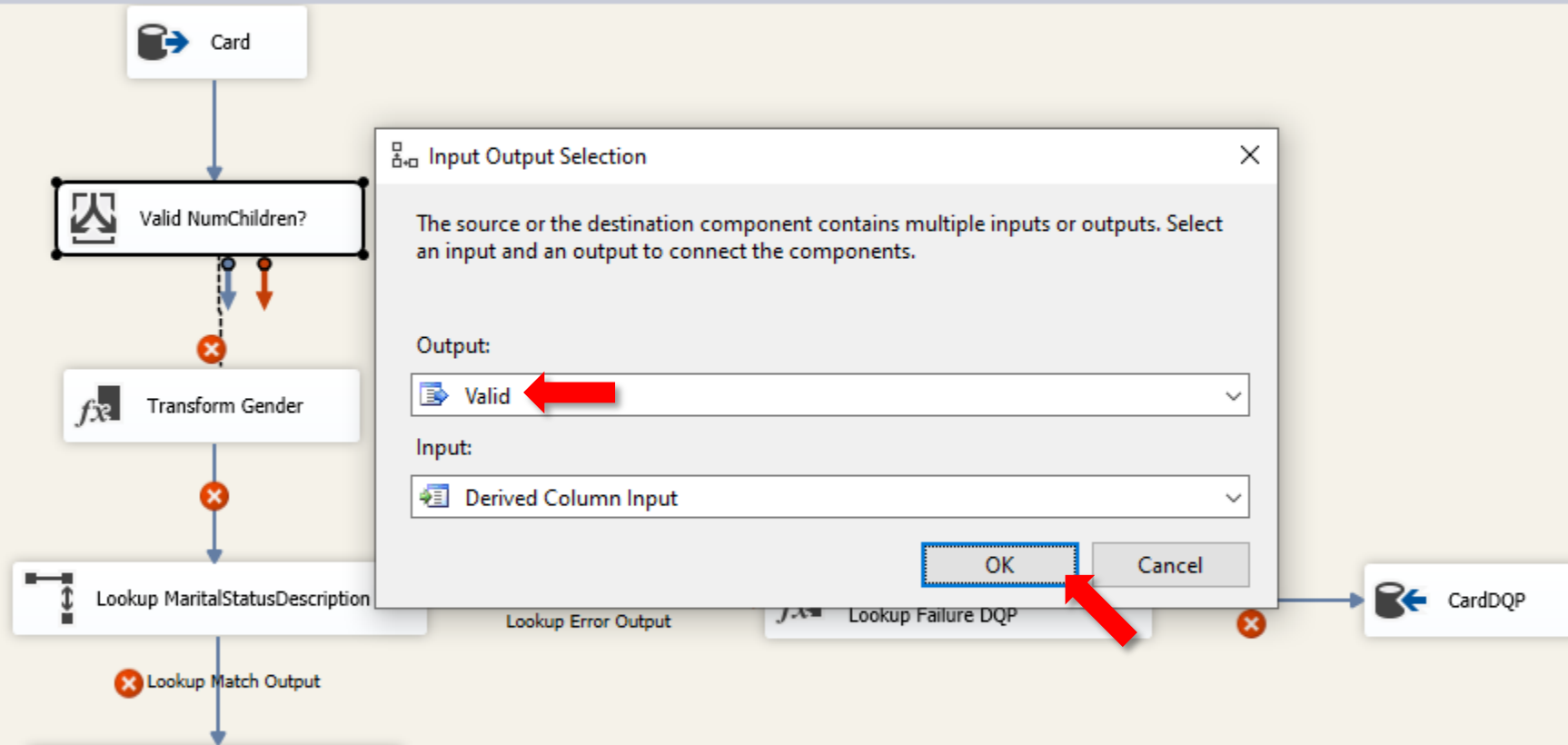
As presented, set the condition for what is considered a valid children number and consequently what is an invalid number, as well the corresponding output names.
Tip: Instead of writing, you can drag the *NumChildren* attribute from the *Columns* folder to the *Condition* text box.

Connect the flow from the *Valid NumChildren?* component to the *Transform Gender* component and select the *Valid* data flow.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Input Output Selection

The source or the destination component contains multiple inputs or outputs. Select an input and an output to connect the components.

Output:

Valid

Input:

Derived Column Input

OK Cancel

Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

Ready

Add to Source Control

Select Repository

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

DevelopiDefaultStart

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Valid NumChildren?

Valid

Transform Gender

Lookup MaritalStatusDescription

Lookup Match Output

Lookup Error Output

Add MaritalStatusDescription Lookup Failure DQP

CardDQP

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Add to Source ControlSelect Repository

NotificationsSolution ExplorerGit ChangesProperties

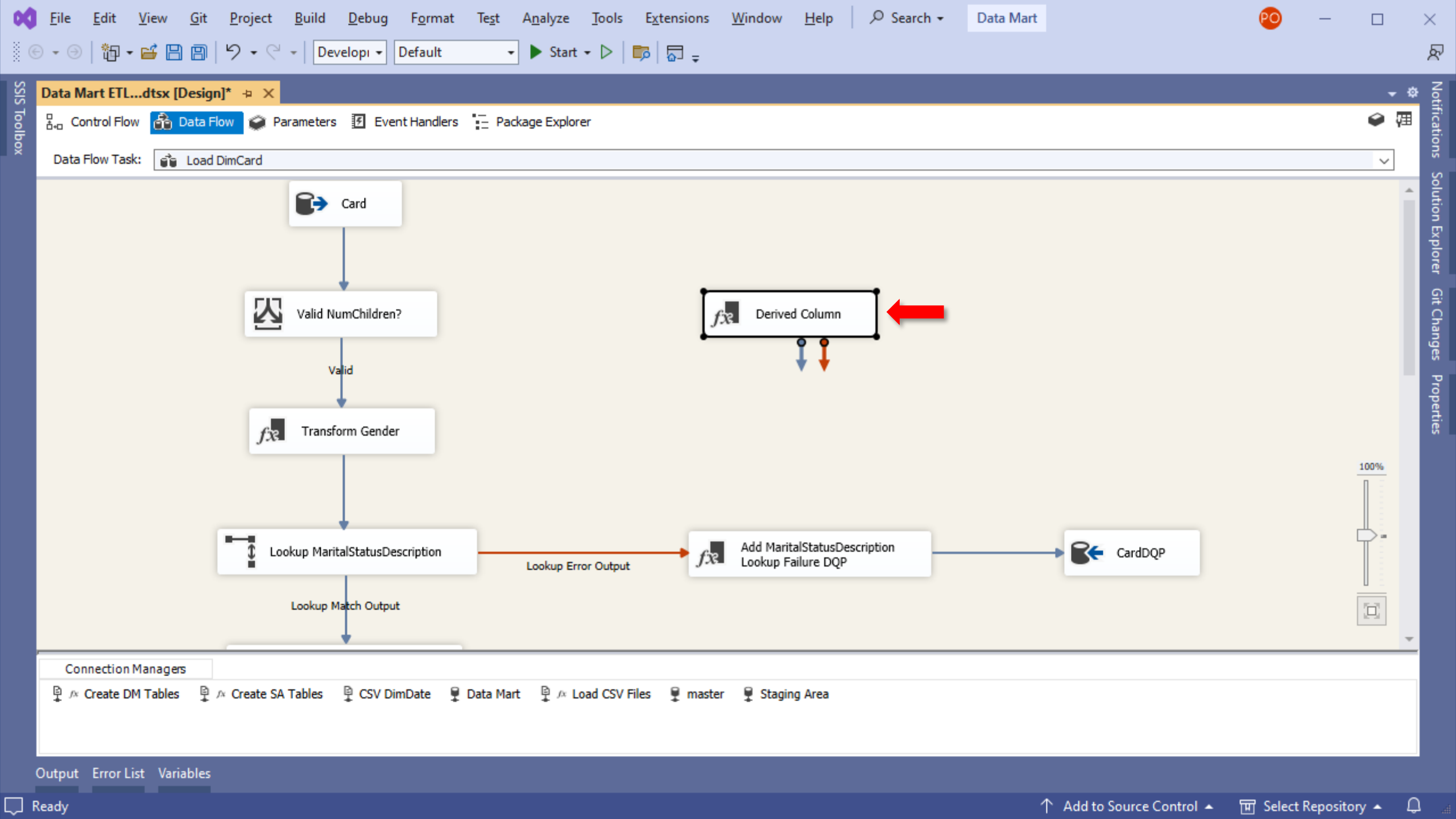
```
graph TD; Card[Card] --> ValidNumChildren[Valid NumChildren?]; ValidNumChildren -- Valid --> TransformGender[Transform Gender]; TransformGender --> Lookup[Lookup MaritalStatusDescription]; Lookup -- "Lookup Match Output" --> MatchOutput[ ]; Lookup -- "Lookup Error Output" --> AddFailureDQP[Add MaritalStatusDescription Lookup Failure DQP]; AddFailureDQP --> CardDQP[CardDQP];
```

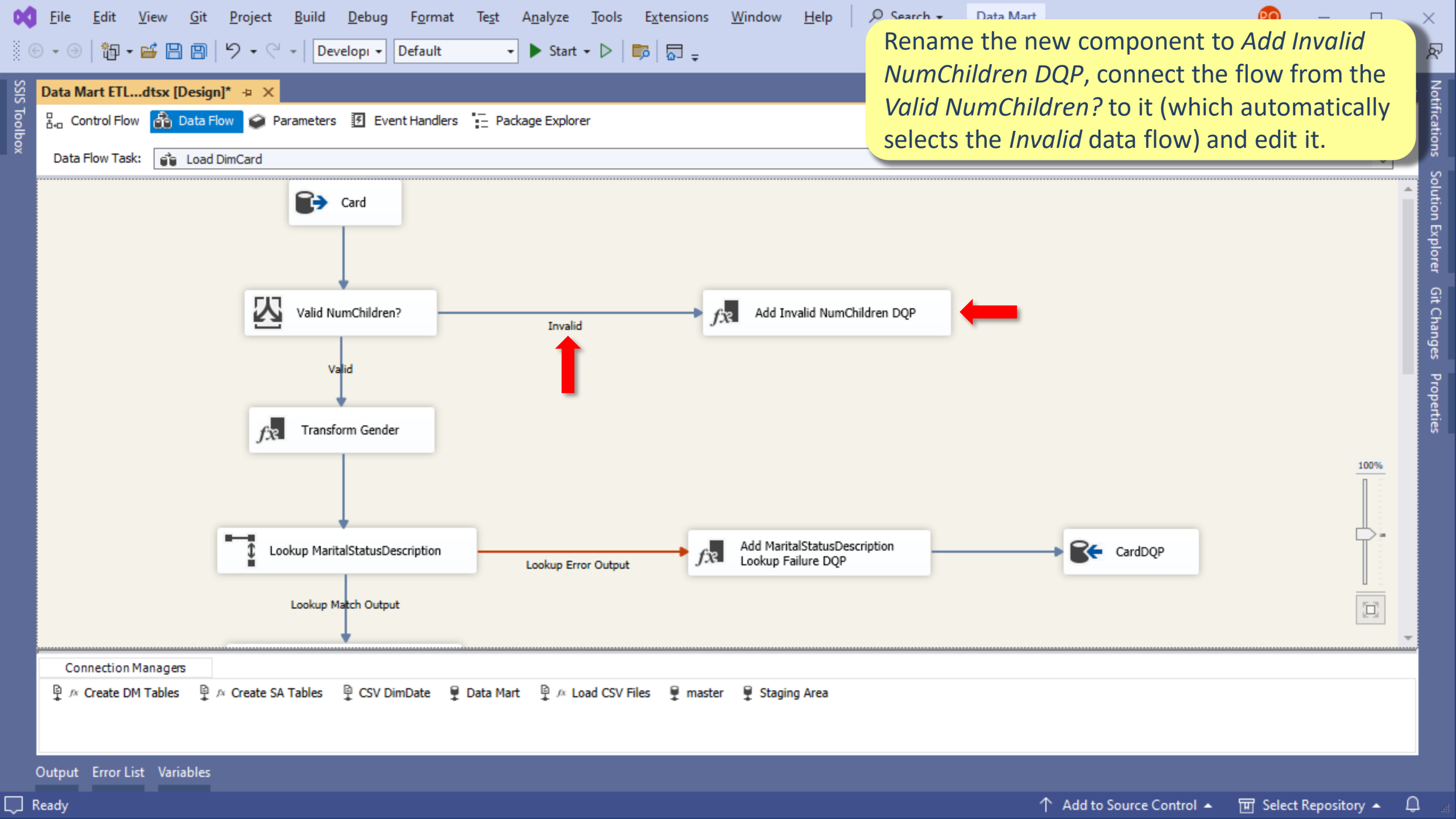

Drag a *Derived Column* component onto the *Data Flow* area next to the *Valid NumChildren?* component.

The screenshot shows the SQL Server Data Tools (SSDT) interface. On the left, the **SSIS Toolbox** is open, displaying a list of components. The **Derived Column** component is highlighted with a red arrow. Below the list, a description for the **Derived Column** component is visible: "Creates new column values by applying expressions to transformation input columns. Create new columns or overwrite existing ones. For example, concatenate the values from the 'first name' and...".

The main workspace shows a **Data Flow** task. A component labeled **Valid NumChildren?** is connected to a component labeled **Add MaritalStatusDescription Lookup Failure DQP** via a red arrow labeled **Lookup Error Output**. This component is then connected to a component labeled **CardDQP** via a blue arrow. The **Package Explorer** on the right shows the project structure, including **Event Handlers** and **Package Explorer**.

The bottom status bar indicates the package is **Ready** and provides options to **Add to Source Control** and **Select Repository**.





Add the new attribute/column *DQP* and its message/expression as presented.

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

+ Variables and Parameters

+ Columns

+ Mathematical Functions

+ String Functions

+ Date/Time Functions

+ NULL Functions

+ Type Casts

+ Operators

Description:

Derived Column Name	Derived Column	Expression	Data Type	Length
DQP	<add as new column>	"NumChildren < 0 or NumChildren > 10"	Unicode string [DT_WS...	3

Configure Error Output...

OK Cancel Help



FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

DevelopDefaultStart

Data Mart ETL...dtsx [Design]*

Control FlowData FlowParametersEvent HandlersPackage Explorer

Data Flow Task: Load DimCard

Card

Valid NumChildren?

Invalid

Add Invalid NumChildren DQP

Transf

Lookup MaritalStatusDescription

Lookup Match Output

Lookup Error Output

Add MaritalStatusDescription Lookup Failure DQP

CardDQP

Operation Failure

All the available inputs on the target component are connected to outputs. Edit this component to define new inputs before proceeding.

OK

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

OutputError ListVariables

Ready

Try to connect the new *Derived Colum* component flow to the *CardDQP* component and you'll see that's not possible because an *OLE DB Destination* only accepts one input.

100%

FileEditViewGitProjectBuildDebugTestAnalyzeToolsExtensionsWindowHelp

SearchData Mart

SSIS Toolbox

Search SSIS Toolbox

Aggregate

Balanced Data Distributor

Conditional Split

Data Conversion

Data Streaming Destination

Derived Column

HDFS File Destination

HDFS File Source

Lookup

Merge

Merge Join

Multicast

OData Source

ODBC Destination

ODBC Source

OLE DB Command

Row Count

Script Component

Slowly Changing Dimension

Sort

Union All

Union All

Combines rows from multiple data flows without sorting. For example, add rows back to a data flow after correction of errors. If sorting is important, we recommend using the Merge transformation.

Find Samples

Event HandlersPackage Explorer

Invalid

Add Invalid NumChildren DQP

Lookup Error Output

Add MaritalStatusDescription Lookup Failure DQP

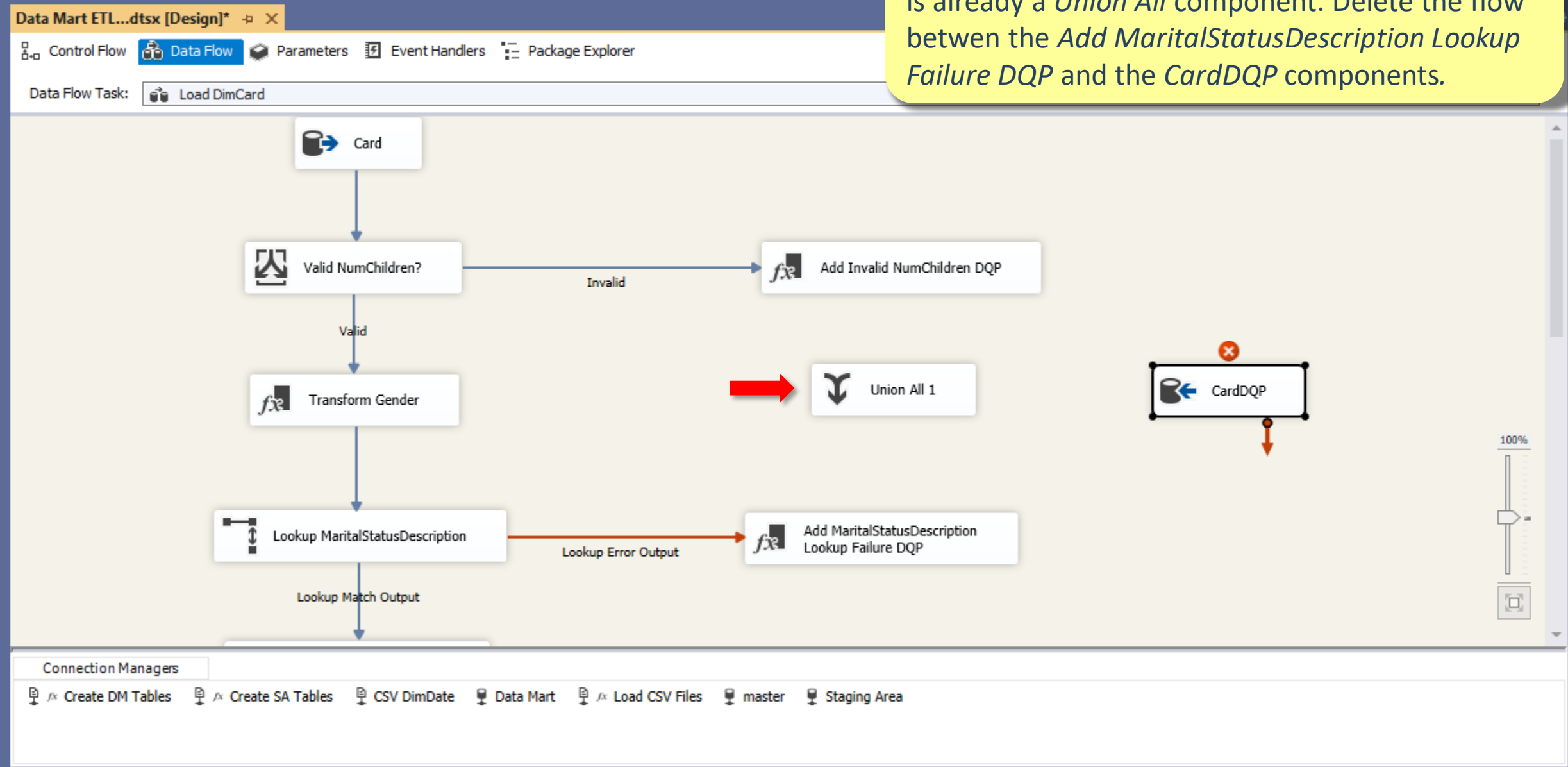
CardDQP

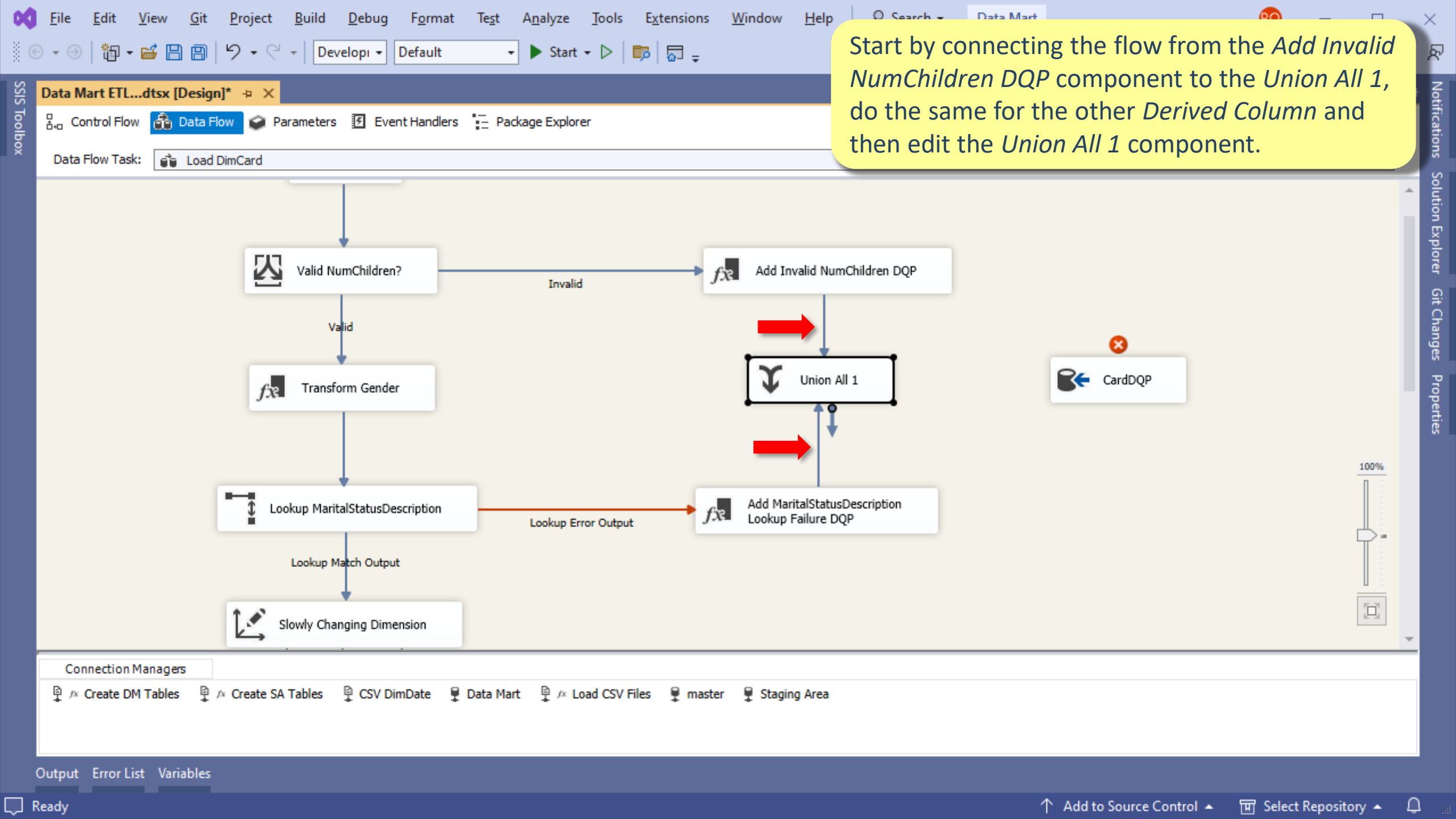
OutputError ListVariables

Ready

Add to Source ControlSelect Repository

The component's label is *Union All 1* because there is already a *Union All* component. Delete the flow between the *Add MaritalStatusDescription Lookup Failure DQP* and the *CardDQP* components.





Check if all the input attributes are properly mapped with the output attributes.

Union All Transformation Editor

Configure the properties used to merge multiple inputs into one output by creating mappings between columns.

Output Column Name	Union All Input 1	Union All Input 2
CardID	CardID	CardID
City	City	City
Region	Region	Region
PostalCode	PostalCode	PostalCode
CardStartDate	CardStartDate	CardStartDate
Gender	Gender	Gender
DateOfBirth	DateOfBirth	DateOfBirth
MaritalStatus	MaritalStatus	MaritalStatus
HasChildren	HasChildren	HasChildren
NumChildren	NumChildren	NumChildren
YoungestChildren	YoungestChildren	YoungestChildren
DQP	DQP	DQP

OK

Cancel

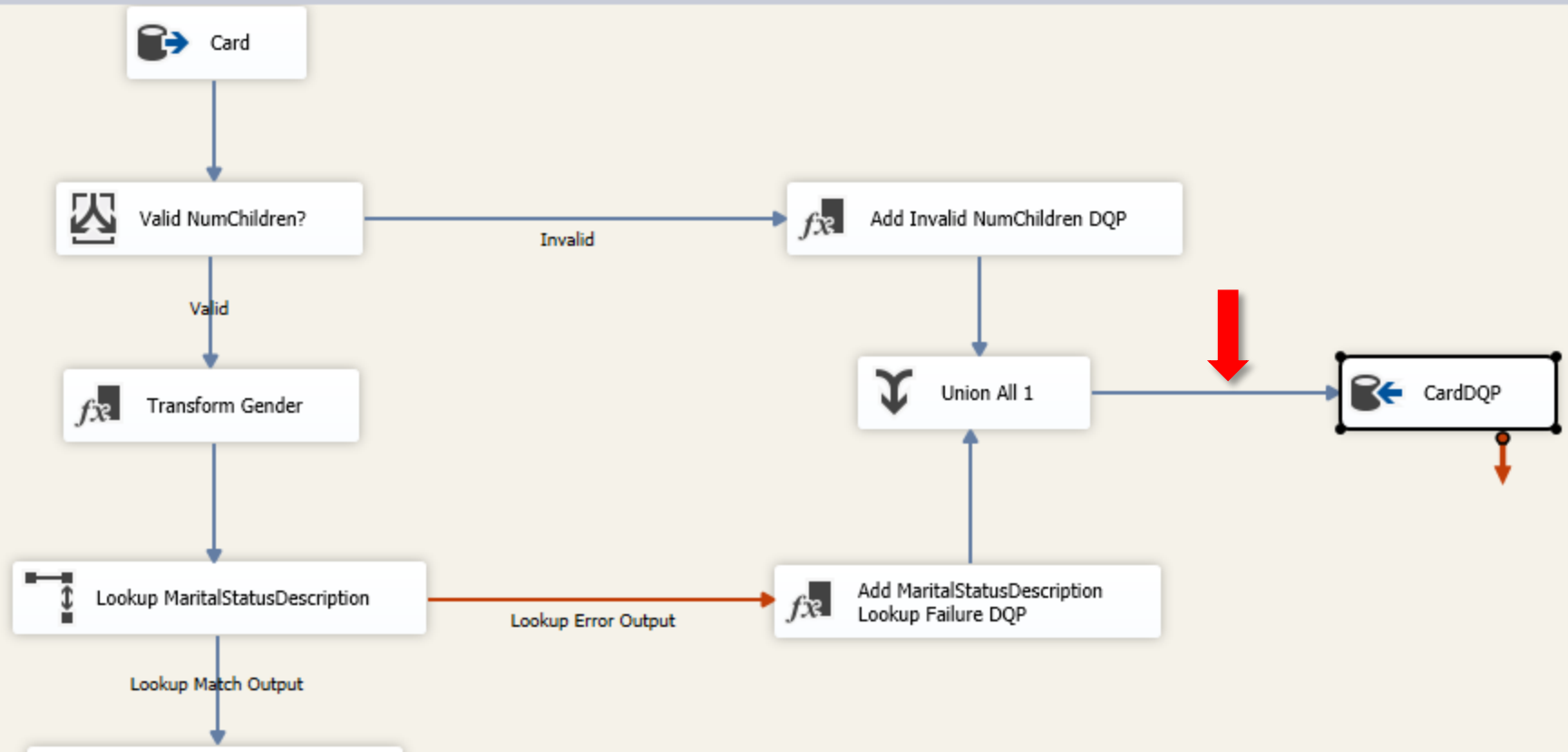
Help

Connect the *Union All 1* component to the *CardDQP* component and edit this component.

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard



Connection Managers

Create DM Tables Create SA Tables CSV DimDate Data Mart Load CSV Files master Staging Area

Output Error List Variables

File Edit View Git Project

SSIS Toolbox

Data Mart ETL...dtsx [Design]*

Control Flow Data Flow Parameters

Data Flow Task: Load DimCard

Connection Managers

Create DM Tables Create SA Tables

Output Error List Variables

Ready

OLE DB Destination Editor

Configure the properties used to insert data into a relational database using an OLE DB provider

Connection Manager

Mappings

Error Output

Available Input Columns

Available Destination Columns

Input Column	Destination Column
CardID	CardID
City	City
Region	Region
PostalCode	PostalCode
CardStartDate	CardStartDate
Gender	Gender
DateOfBirth	DateOfBirth
MaritalStatus	MaritalStatus
HasChildren	HasChildren
NumChildren	NumChildren
YoungestChildren	YoungestChildren
DQP	DQP

OK Cancel Help

Check if all the input attributes are properly mapped to the output/destination attributes.

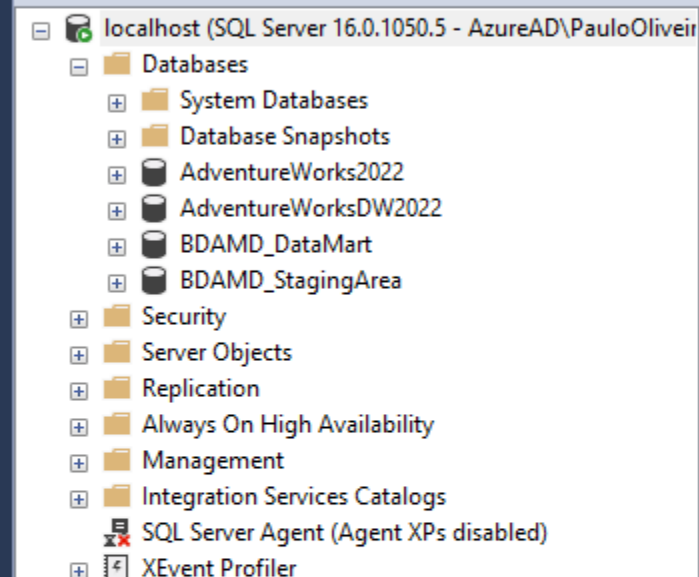
File Edit View Query Project Tools Window Help



In SSMS, execute again the SQL statement that deletes all existing data in the *DimCard* table.

Object Explorer

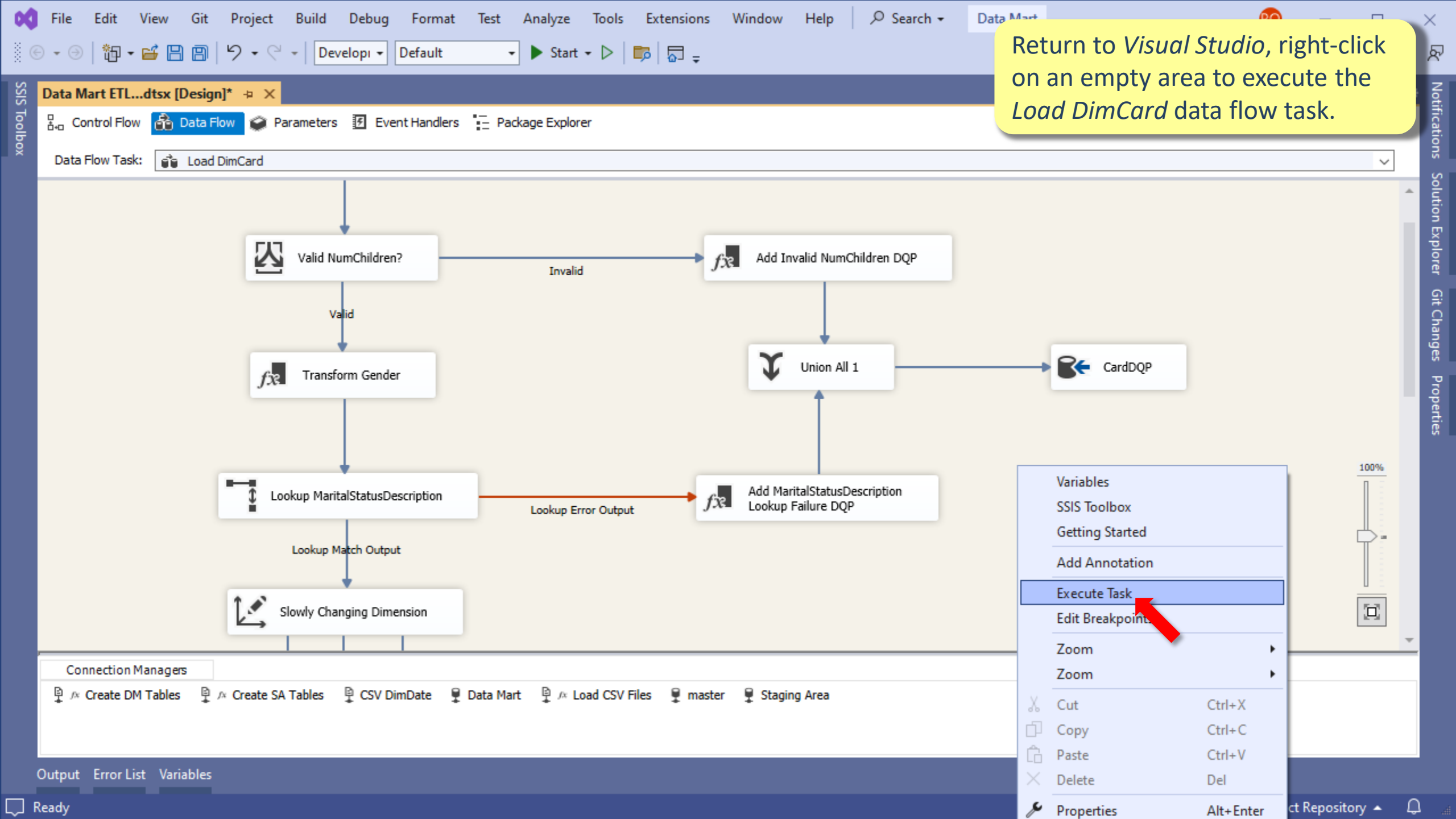
Connect



SQLQuery3.sql - loc...\PauloOliveira (54))* SQLQuery1.sql - loc...\PauloOliveira (58))* CreateStageTableCar...PauloOliveira (51))*

TRUNCATE TABLE DimCard

100 %
Connected. (1/1) | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_DataMart | 00:00:00 | 0 rows



Return to *Visual Studio*, right-click on an empty area to execute the *Load DimCard* data flow task.

Variables

SSIS Toolbox

Getting Started

Add Annotation

Execute Task

Edit Breakpoint

Zoom

Zoom

Cut

Copy

Paste

Delete

Properties

Ctrl+X

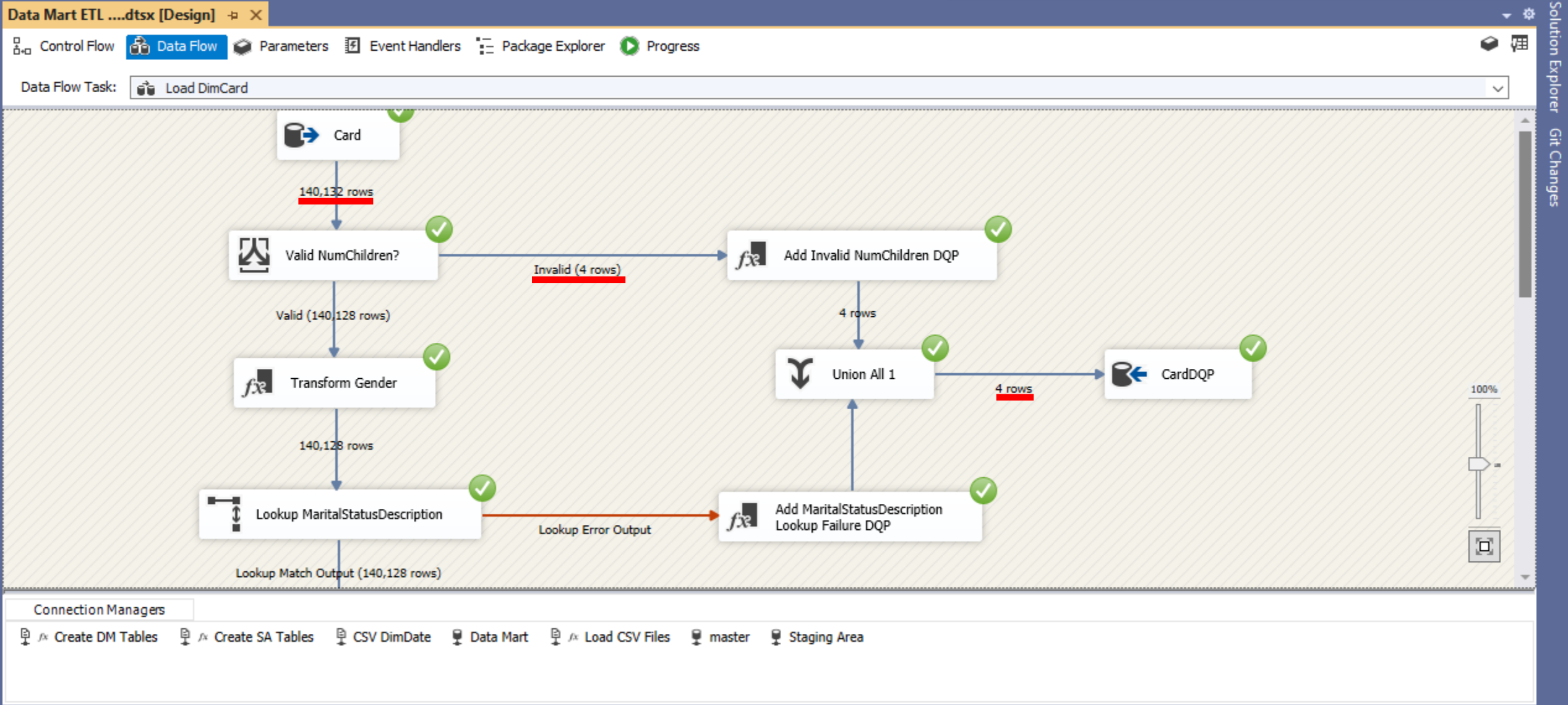
Ctrl+C

Ctrl+V

Del

Alt+Enter

The four invalid records previously presented are filtered out and sent to the *CardDQP* table.



140128 are inserted into the DimCard table, i.e., differs in 4 rows/records less than the previous *Load DimCard* execution.

FileEditViewGitProjectBuildDebugFormatTestAnalyzeToolsExtensionsWindowHelp

Process: [6296] DtsDebugHost.exe

Lifecycle Events Thread:

Continue

Stack Frame

SearchData Mart

Data Mart ETLdtsx [Design]

Control FlowData FlowParametersEvent HandlersPackage ExplorerProgress

Data Flow Task: Load DimCard

Expire Old Record

Union All

140,128 rows

Set New Record Effective Date

140,128 rows

Insert Into DimCard

Connection Managers

Create DM TablesCreate SA TablesCSV DimDateData MartLoad CSV FilesmasterStaging Area

Package execution completed. Click here to switch to design mode, or select Stop Debugging from the Debug menu.

AutosLocalsWatch 1Call StackBreakpointsException SettingsCommand WindowImmediate WindowOutput

Ready

Add to Source ControlSelect Repository

Solution ExplorerGit Changes



Using SSMS, right click on *DimCard* to Select the Top 1000 rows stored in the DimCard table.

File Edit View Query Project Tools Window Help



Scroll horizontally to the right.

Object Explorer

Connect

localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (57))

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorks2022
 - AdventureWorksDW2022
 - BDAMD_DataMart
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.DimCard
 - dbo.DimDate
 - dbo.DimItem
 - dbo.FactSales
 - Dropped Ledger Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Storage
 - Security
- BDAMD_StagingArea
- Security
- Server Objects

SQLQuery4.sql - loc... \PauloOliveira (57)

```
SELECT TOP (1000) [CardKey]
      ,[CardID]
      ,[City]
      ,[Region]
      ,[PostalCode]
      ,[CardStartDate]
      ,[Gender]
      ,[DateOfBirth]
      ,[MaritalStatus]
      ,[NumChildren]
      ,[YoungestChildren]
      ,[EffectiveDate]
      ,[ExpiredDate]
FROM [BDAMD_DataMart].[dbo].[DimCard]
```

100 %

Results Messages

	CardKey	CardID	City	Region	PostalCode	CardStartDate	Gender	DateOfBirth	MaritalStatus	NumChildren	YoungestChildren
1	1	C0100952546	Catburg	Eastern	A092297	1999-09-08 00:00:00.000		0:00:00.000	Married	2	0
2	2	C0105665308	Catburg	Eastern	A046172	1998-06-24 00:00:00.000	Male	1935-01-02 00:00:00.000	Single	0	36
3	3	C0103078019	Ravensville	Eastern	A046172	2000-05-08 00:00:00.000	Male	1981-04-27 00:00:00.000	Married	3	0
4	4	C0103128960	Catburg	Eastern	A046172	1999-10-31 00:00:00.000	Female	1957-05-21 00:00:00.000	Unknown	0	12
5	5	C0104255138	Catburg	Eastern	A092538	1999-08-07 00:00:00.000	Male	1955-05-06 00:00:00.000	Single	1	19
6	6	C0101225068	Ravensville	Eastern	A023172	1999-10-17 00:00:00.000	Female	1969-03-19 00:00:00.000	Single	0	4
7	7	C0100444363	Catburg	Eastern	A023172	1999-09-08 00:00:00.000	Male	1961-11-26 00:00:00.000	Single	0	13
8	8	C0101074097	Queensbury	Central	A023172	1998-08-08 00:00:00.000	Female	1959-02-02 00:00:00.000	Married	1	13
9	9	C0101654370	Foxtton	Eastern	A023255	2000-05-23 00:00:00.000	Female	1962-12-15 00:00:00.000	Unknown	1	11
10	10	C0100808411	Queensbury	Central	A093115	2000-08-27 00:00:00.000	Female	1962-05-12 00:00:00.000	Married	0	8

Query executed successfully.

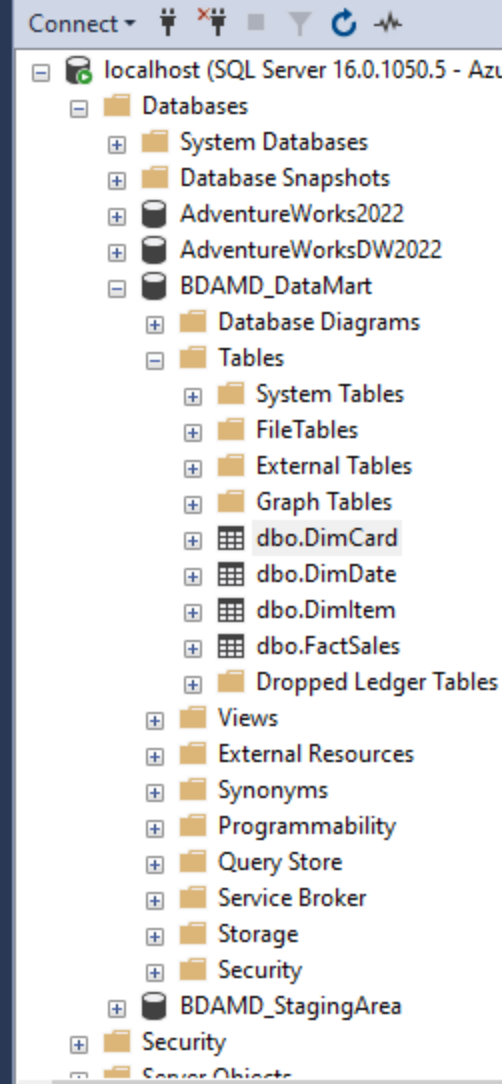
localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_DataMart | 00:00:00 | 1,000 rows

File Edit View Query Project Tools Window Help



As expected, it's possible to see that all records have an *EffectiveDate* and don't have an *ExpiredDate*.

Object Explorer



SQLQuery4.sql - loc...\PauloOliveira (57)

```
SELECT TOP (1000) [CardKey]
    , [CardID]
    , [City]
    , [Region]
    , [PostalCode]
    , [CardStartDate]
    , [Gender]
    , [DateOfBirth]
    , [MaritalStatus]
    , [NumChildren]
    , [YoungestChildren]
    , [EffectiveDate]
    , [ExpiredDate]
FROM [BDAMD_DataMart].[dbo].[DimCard]
```

100 %

Results Messages

	PostalCode	CardStartDate	Gender	DateOfBirth	MaritalStatus	NumChildren	YoungestChildren	EffectiveDate	ExpiredDate
1	A092297	1999-09-08 00:00:00.000	Female	1976-02-03 00:00:00.000	Married	2	0	2023-12-09 20:22:10.000	NULL
2	A046172	1998-06-24 00:00:00.000	Male	1935-01-02 00:00:00.000	Single	0	36	2023-12-09 20:22:10.000	NULL
3	A046172	2000-05-08 00:00:00.000	Male	1981-04-27 00:00:00.000	Married	3	0	2023-12-09 20:22:10.000	NULL
4	A046172	1999-10-31 00:00:00.000	Female	1957-05-21 00:00:00.000	Unknown	0	12	2023-12-09 20:22:10.000	NULL
5	A092538	1999-08-07 00:00:00.000	Male	1955-05-06 00:00:00.000	Single	1	19	2023-12-09 20:22:10.000	NULL
6	A023172	1999-10-17 00:00:00.000	Female	1969-03-19 00:00:00.000	Single	0	4	2023-12-09 20:22:10.000	NULL
7	A023172	1999-09-08 00:00:00.000	Male	1961-11-26 00:00:00.000	Single	0	13	2023-12-09 20:22:10.000	NULL
8	A023172	1998-08-08 00:00:00.000	Female	1959-02-02 00:00:00.000	Married	1	13	2023-12-09 20:22:10.000	NULL
9	A023255	2000-05-23 00:00:00.000	Female	1962-12-15 00:00:00.000	Unknown	1	11	2023-12-09 20:22:10.000	NULL
10	A093115	2000-08-27 00:00:00.000	Female	1962-05-12 00:00:00.000	Married	0	8	2023-12-09 20:22:10.000	NULL





Query executed successfully.

localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_DataMart | 00:00:00 | 1,000 rows

File Edit View Query Project Tools Window Help

 text

Object Explorer

Connect    

localhost (SQL Server 16.0.1050.5 - AzureAD\PauloOliveira (57))

- Databases
 - System Databases
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 - Dropped Ledger Tables
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 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Storage
 - Security
- BDAMD_StagingArea
- Security
- Server Objects

SQLQuery4.sql - loc...\PauloOliveira (57))*

```
SELECT *  
FROM [BDAMD_DataMart].[dbo].[DimCard]
```

100 %

Results Messages

	CardKey	CardID	City	Region	PostalCode	CardStartDate	Gender	DateOfBirth	MaritalStatus	NumChildren	Youngest
1	1	C0100952546	Catburg	Eastern	A092297	1999-09-08 00:00:00.000	Female	1976-02-03 00:00:00.000	Married	2	0
2	2	C0105665308	Catburg	Eastern	A046172	1998-06-24 00:00:00.000	Male	1935-01-02 00:00:00.000	Single	0	36
3	3	C0103078019	Ravensville	Eastern	A046172	2000-05-08 00:00:00.000	Male	1981-04-27 00:00:00.000	Married	3	0
4	4	C0103128960	Catburg	Eastern	A046172	1999-10-31 00:00:00.000	Female	1957-05-21 00:00:00.000	Unknown	0	12
5	5	C0104255138	Catburg	Eastern	A092538	1999-08-07 00:00:00.000	Male	1955-05-06 00:00:00.000	Single	1	19
6	6	C0101225068	Ravensville	Eastern	A023172	1999-10-17 00:00:00.000	Female	1969-03-19 00:00:00.000	Single	0	4
7	7	C0100444363	Catburg	Eastern	A023172	1999-09-08 00:00:00.000	Male	1961-11-26 00:00:00.000	Single	0	13
8	8	C0101074097	Queensbury	Central	A023172	1998-08-08 00:00:00.000	Female	1959-02-02 00:00:00.000	Married	1	13
9	9	C0101654370	Foxtton	Eastern	A023255	2000-05-23 00:00:00.000	Female	1962-12-15 00:00:00.000	Unknown	1	11
10	10	C0100808411	Queensbury	Central	A093115	2000-08-27 00:00:00.000	Female	1962-05-12 00:00:00.000	Married	0	8

Query executed successfully.

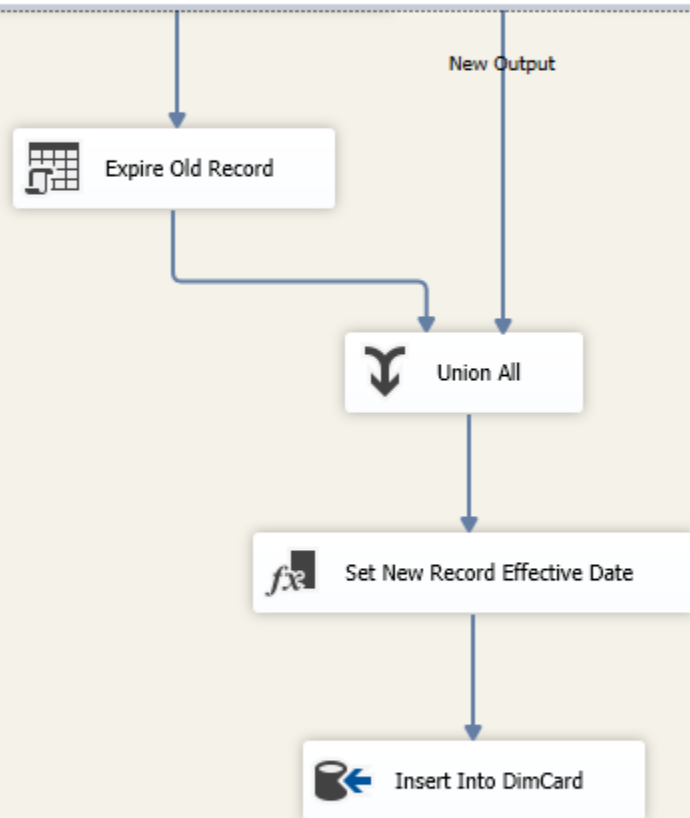
localhost (16.0 RTM) | AzureAD\PauloOliveira ... | BDAMD_DataMart | 00:00:07 | 140,128 rows

Change the query in order to select all existing data to confirm that 140128 records were actually loaded into the *DimCard* table.

Data Mart ETLdtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Execution Results

Data Flow Task: Load DimCard



Connection Managers

f/x Create DM Tables f/x Create SA Tables CSV DimDate Data Mart f/x Load CSV Files master Staging Area

Output Error List Variables

Return to Visual Studio, stop execution, save the changes to the *Data Mart* project and exit. You have successfully completed this tutorial!