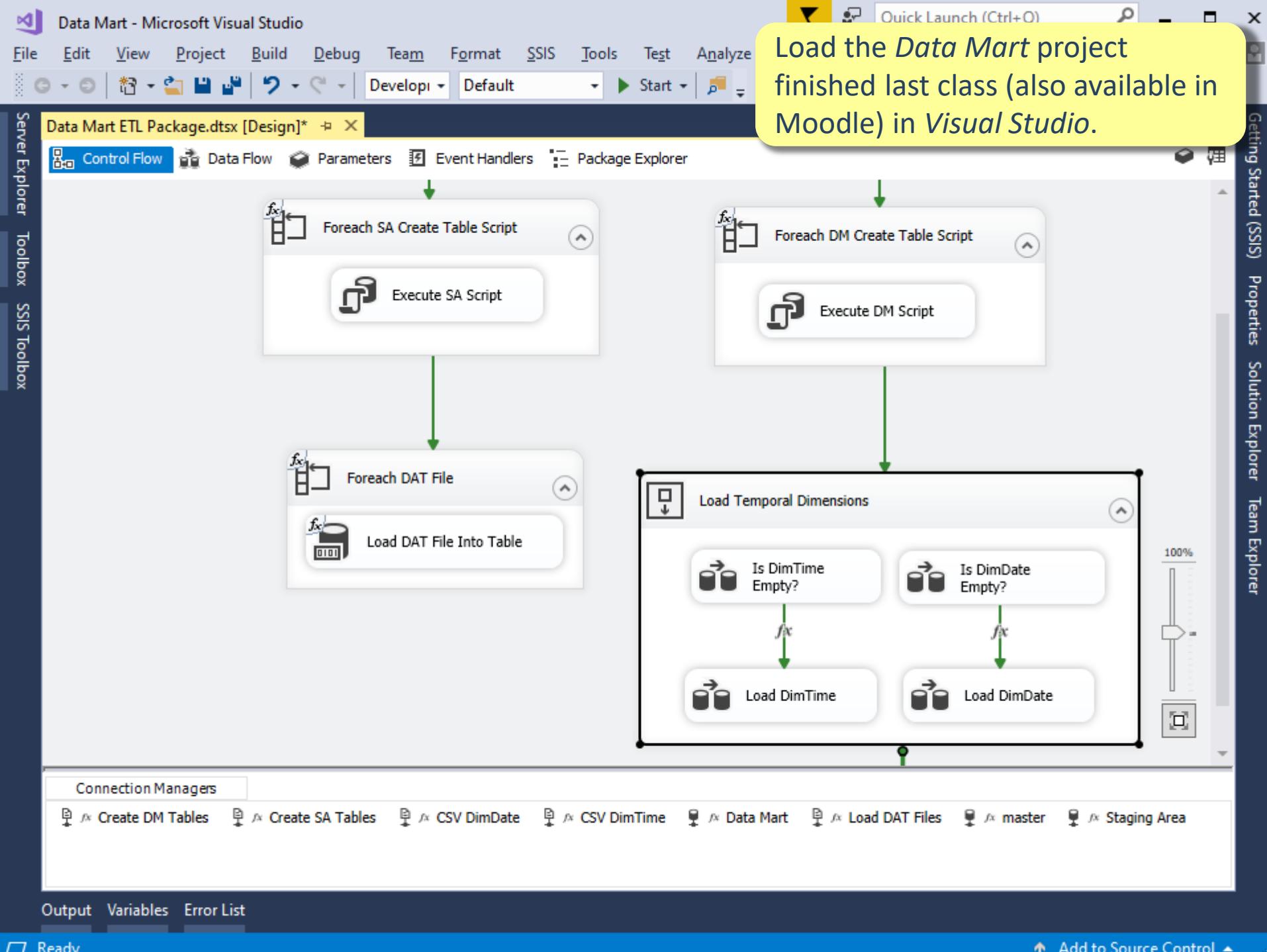
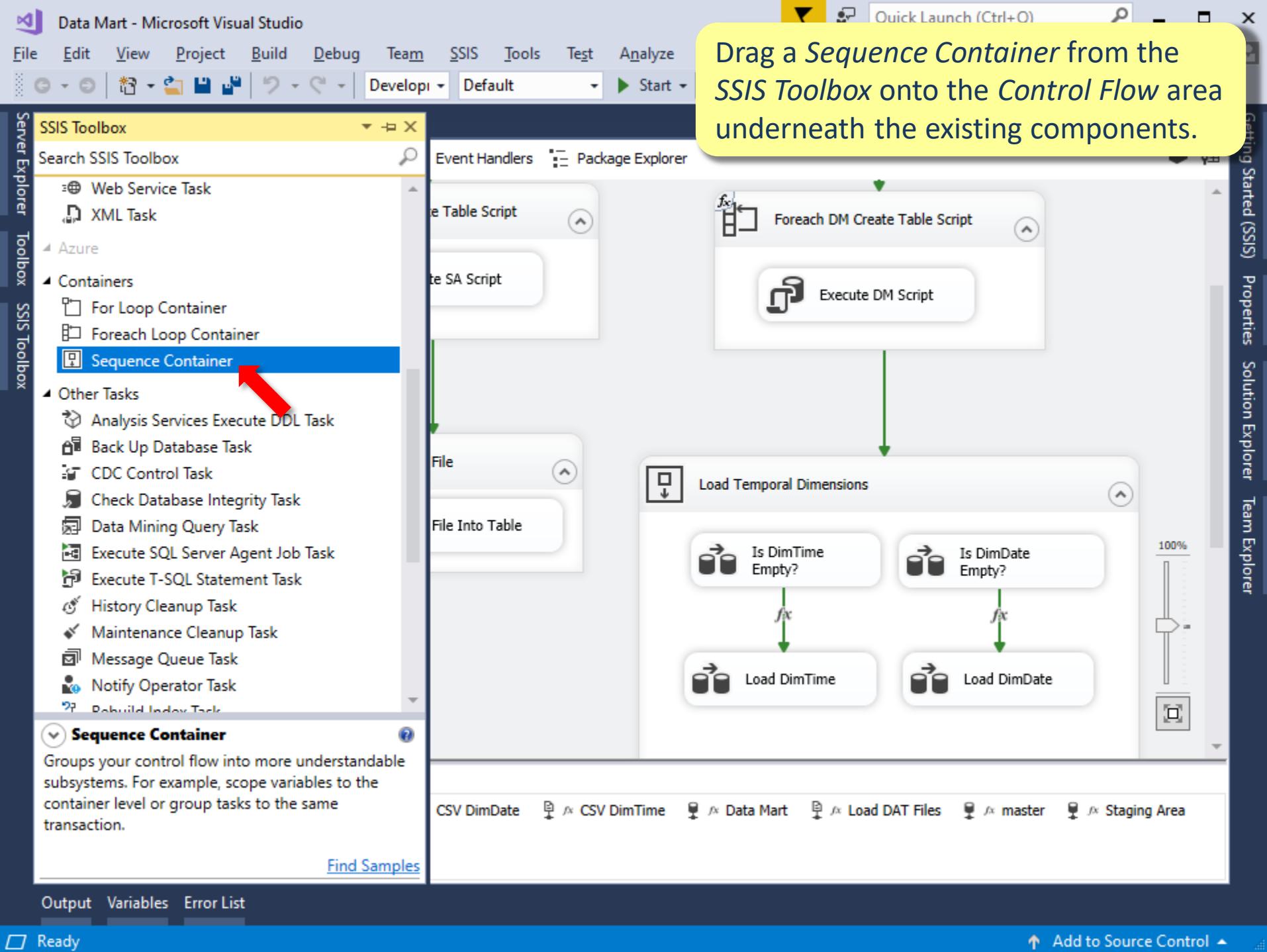


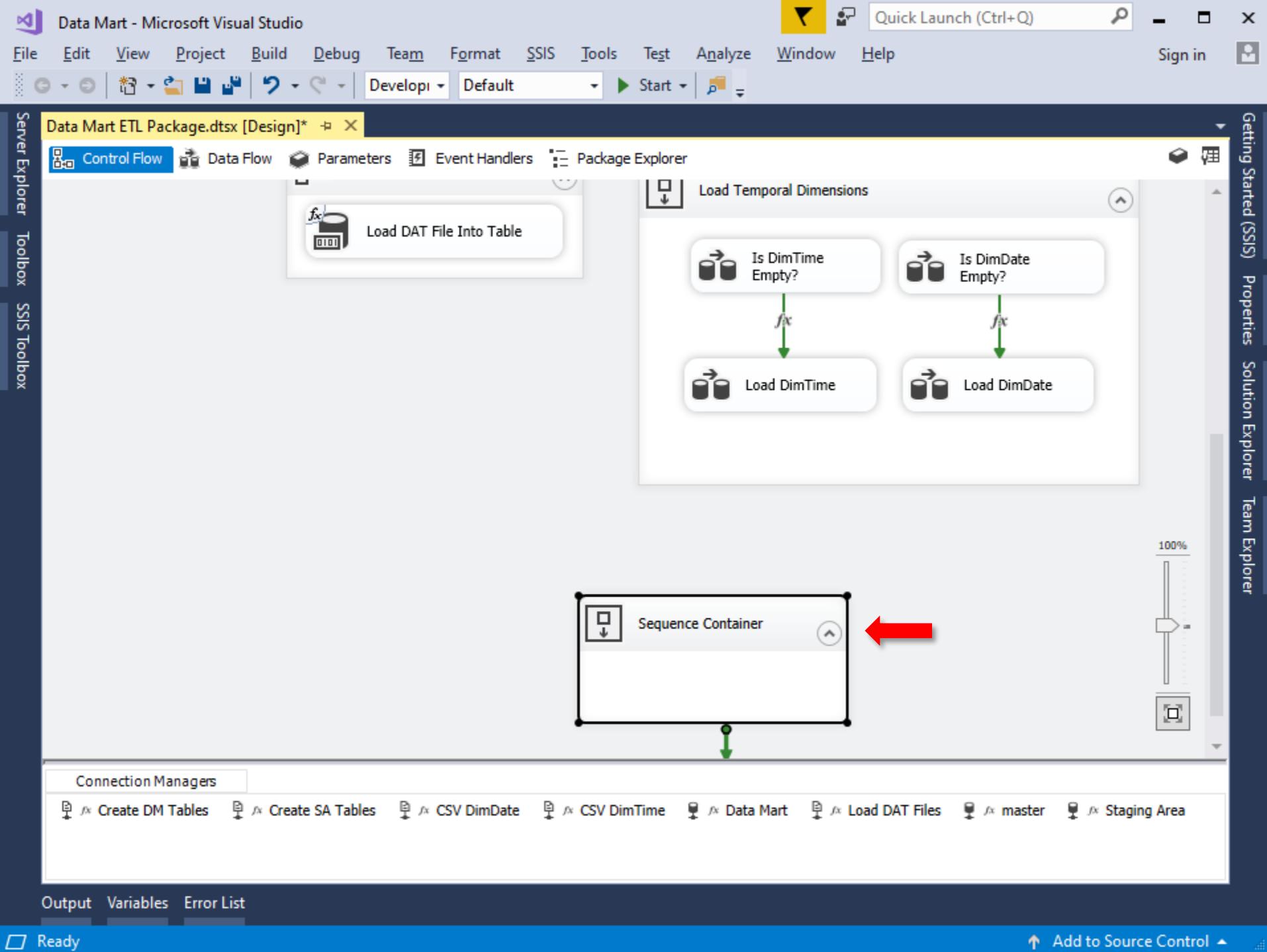
ARMDD

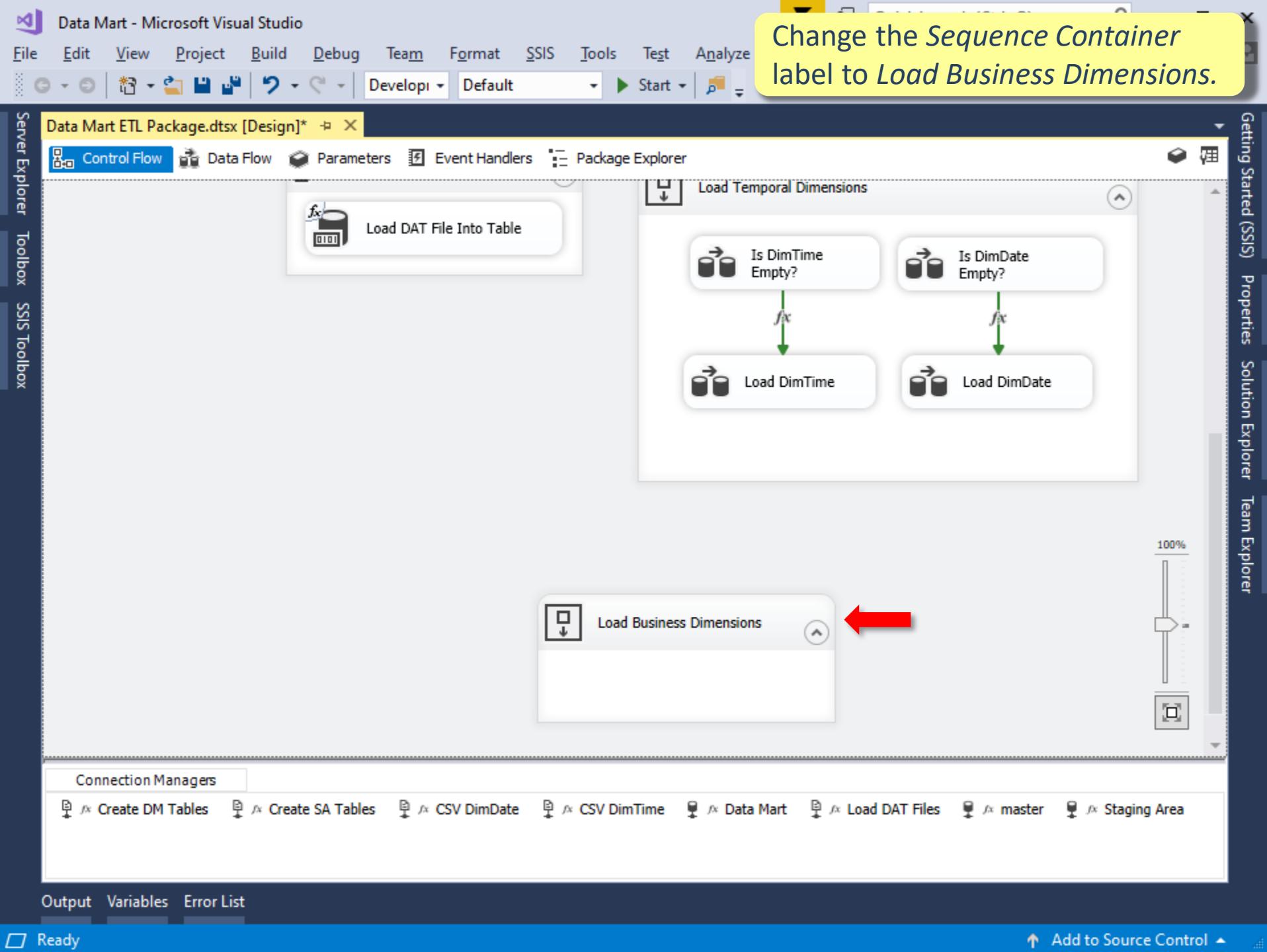
EXERCISE 4 TUTORIAL

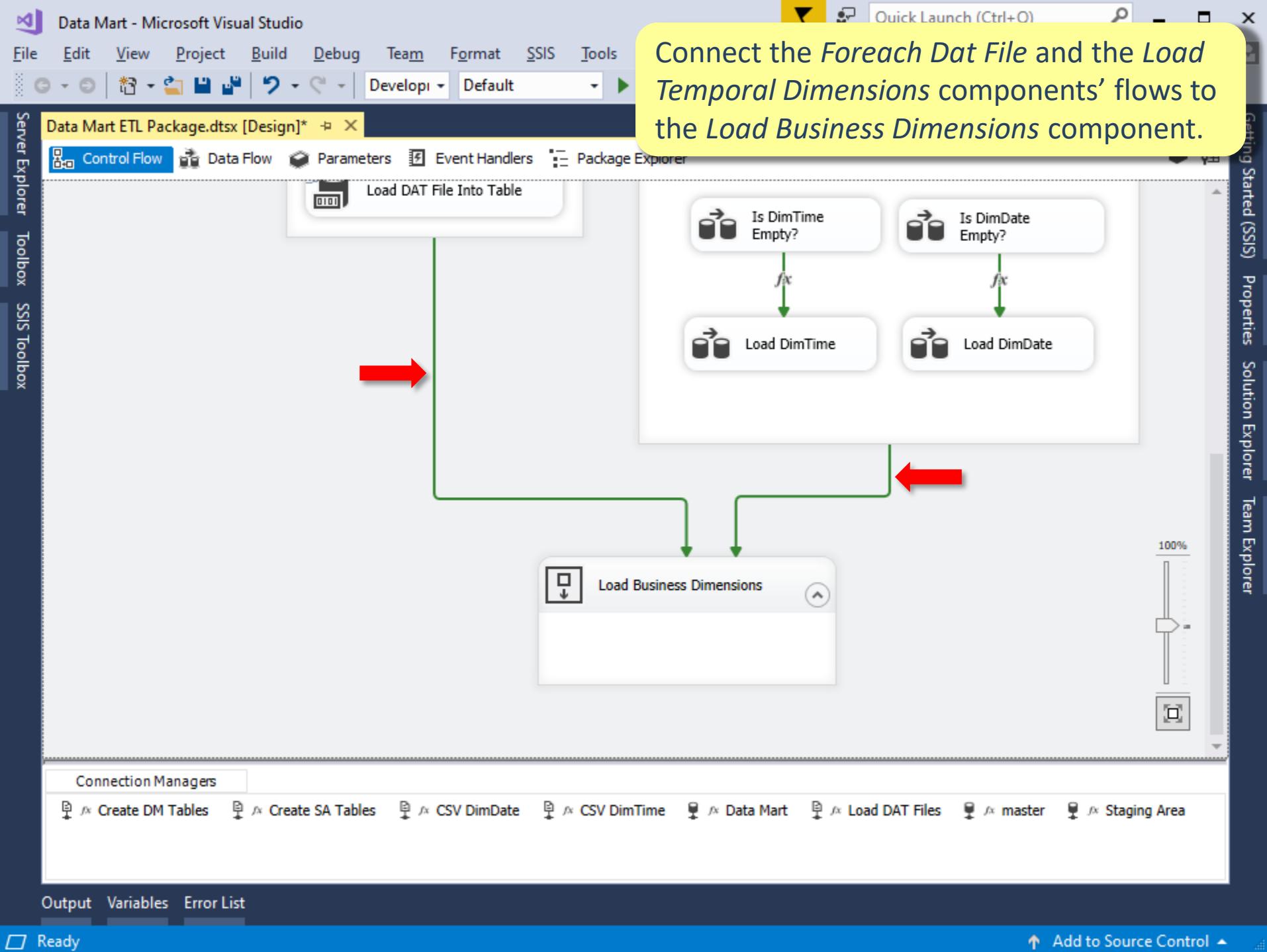
Paulo Oliveira
DEI-ISEP

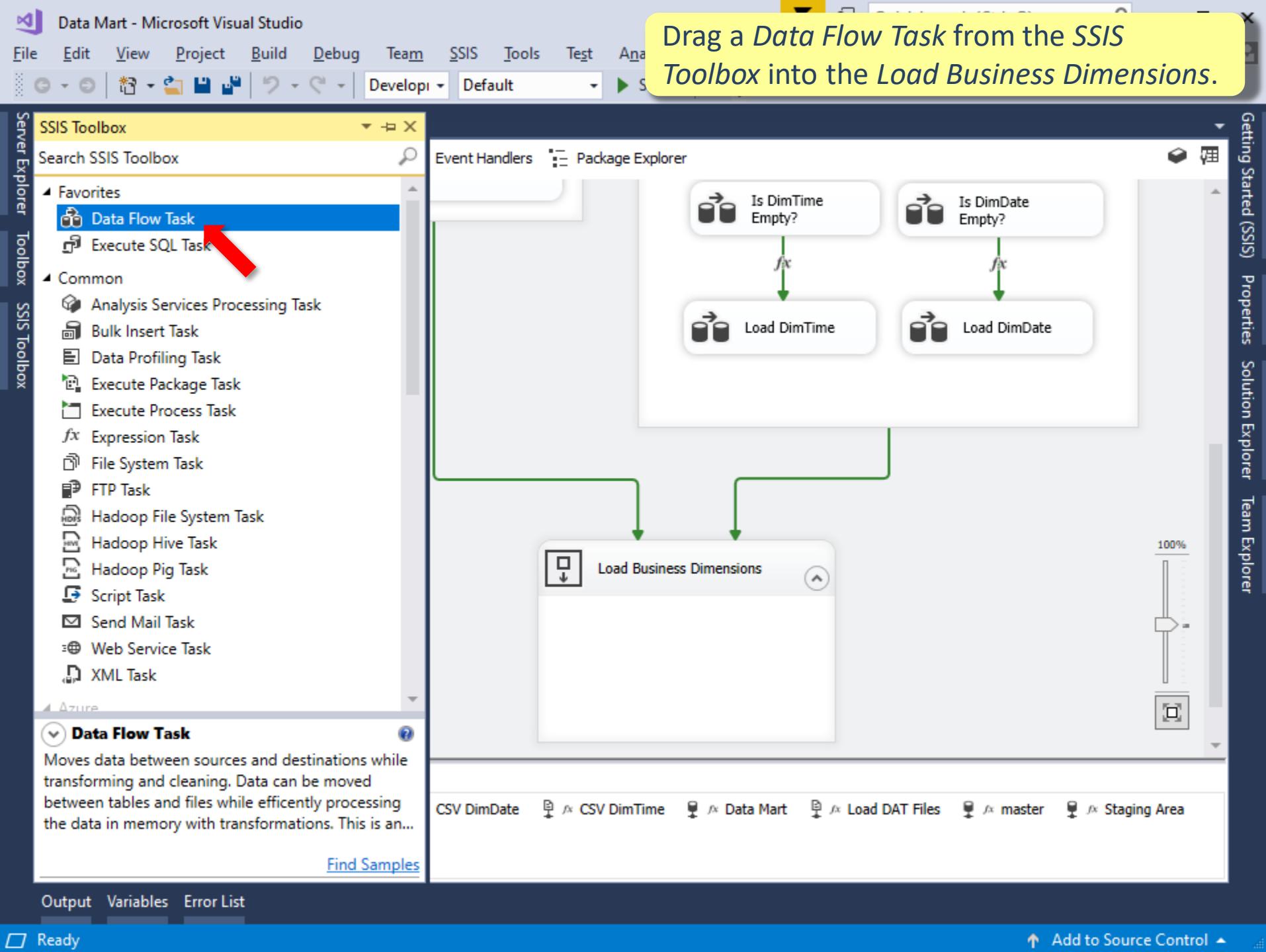


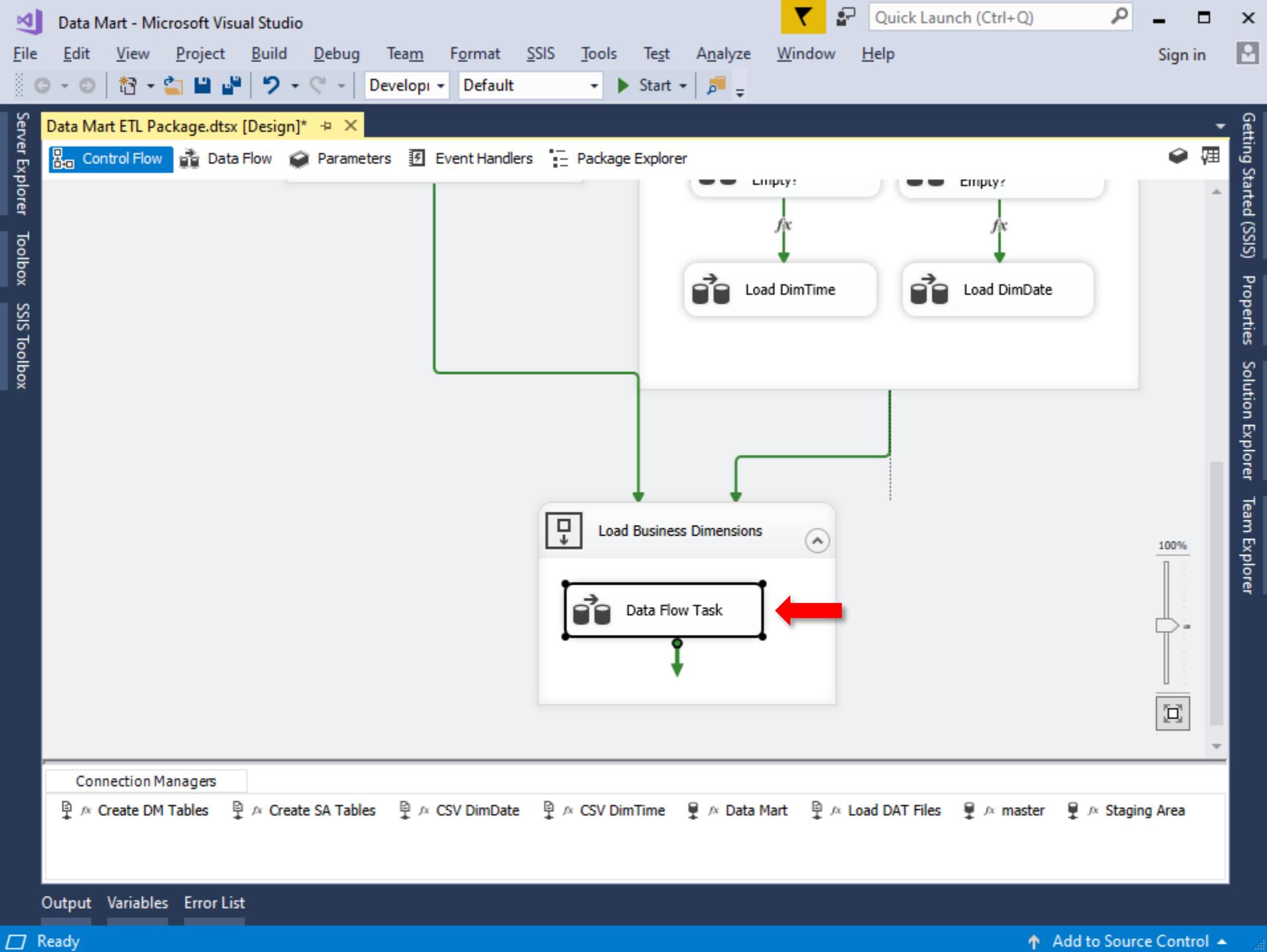


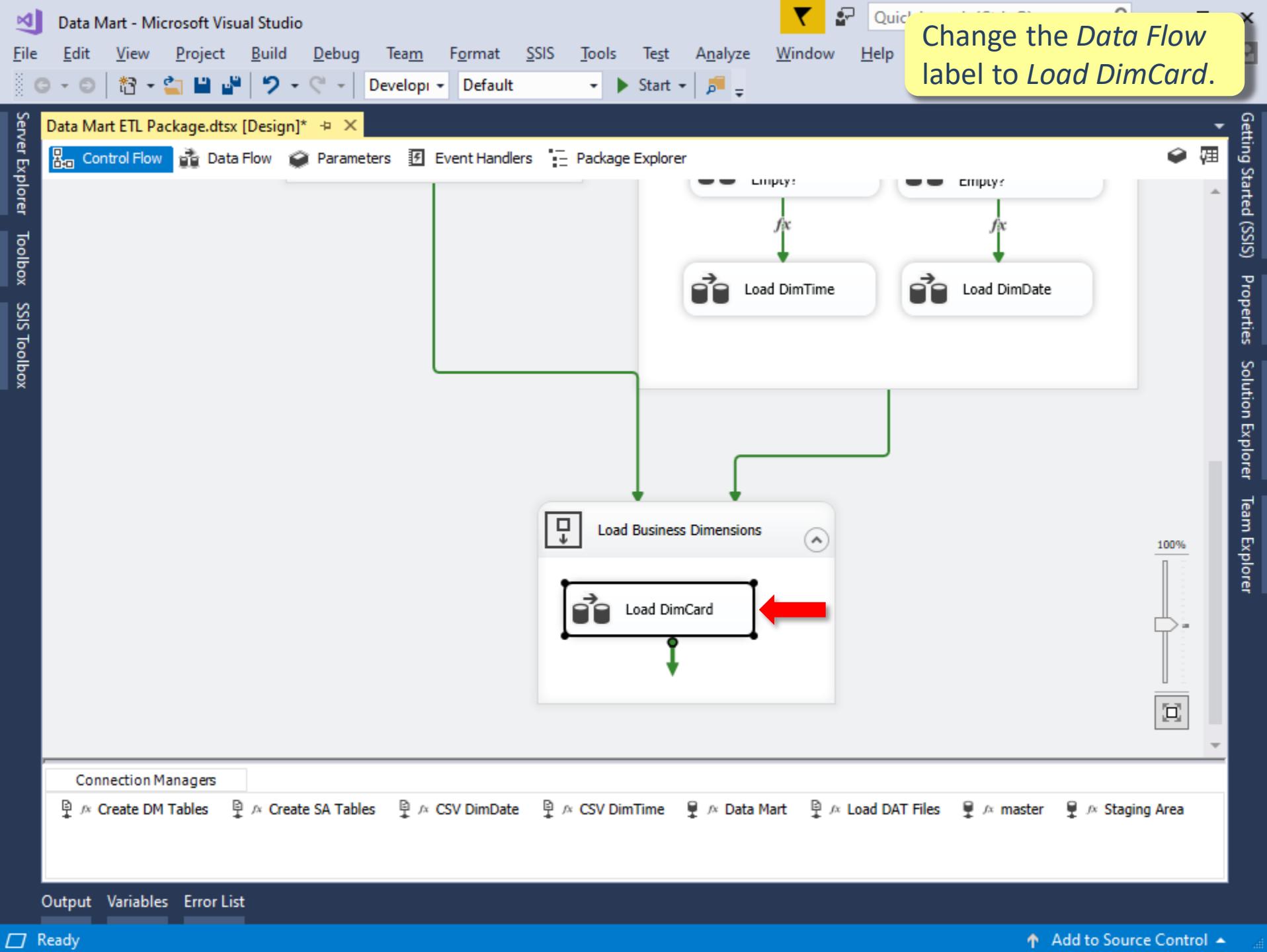


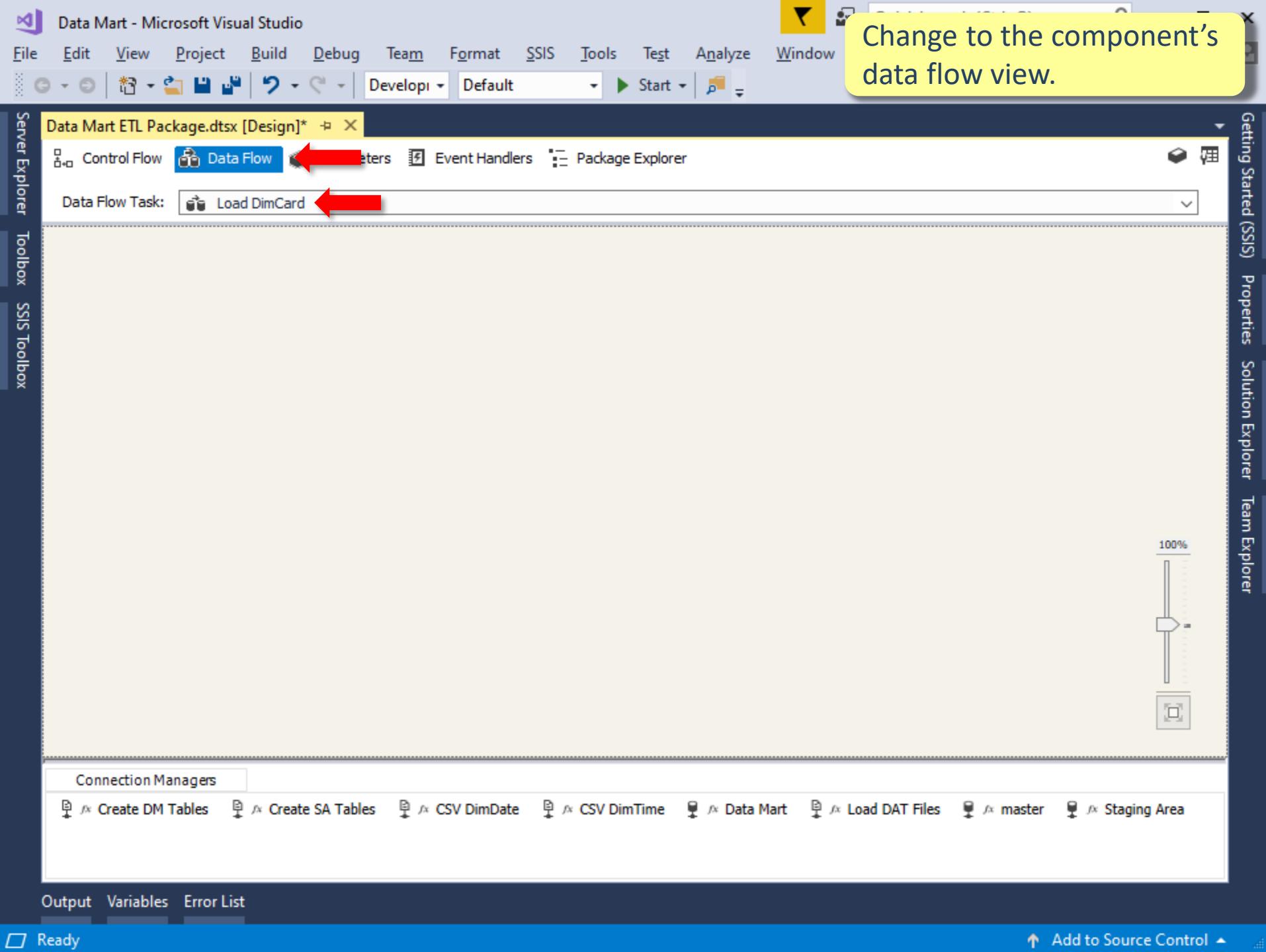












Change to the component's data flow view.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools Test Analyze Window

Develop Default Start

SSIS Toolbox

Search SSIS Toolbox

Event Handlers Package Explorer

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Server Explorer Toolbox SSIS Toolbox

Sort Union All

Azure

Other Transforms

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
- Data Mining Model Training
- DataReader Destination
- Dimension Processing
- Excel Destination
- Flat File 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

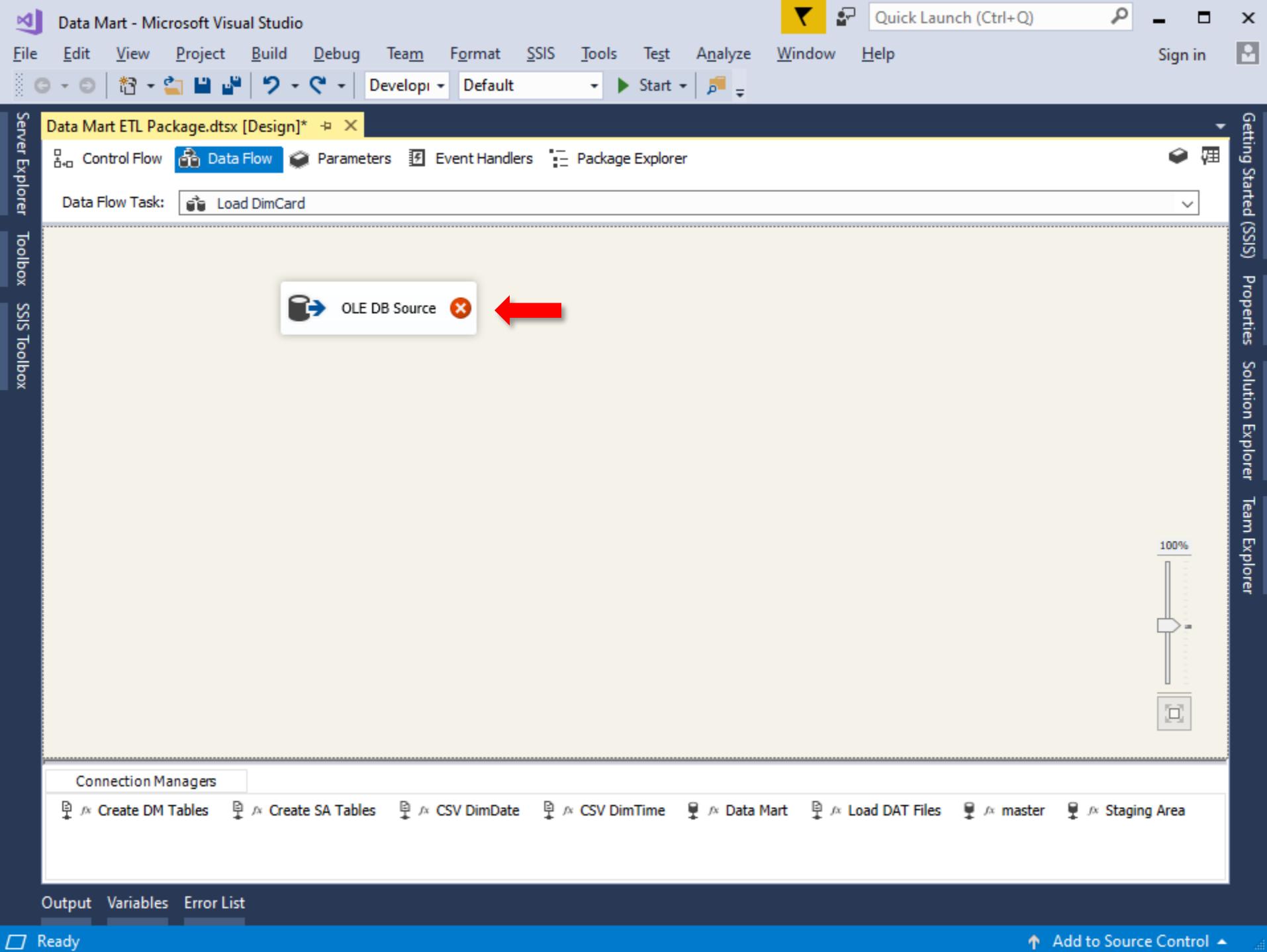
CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

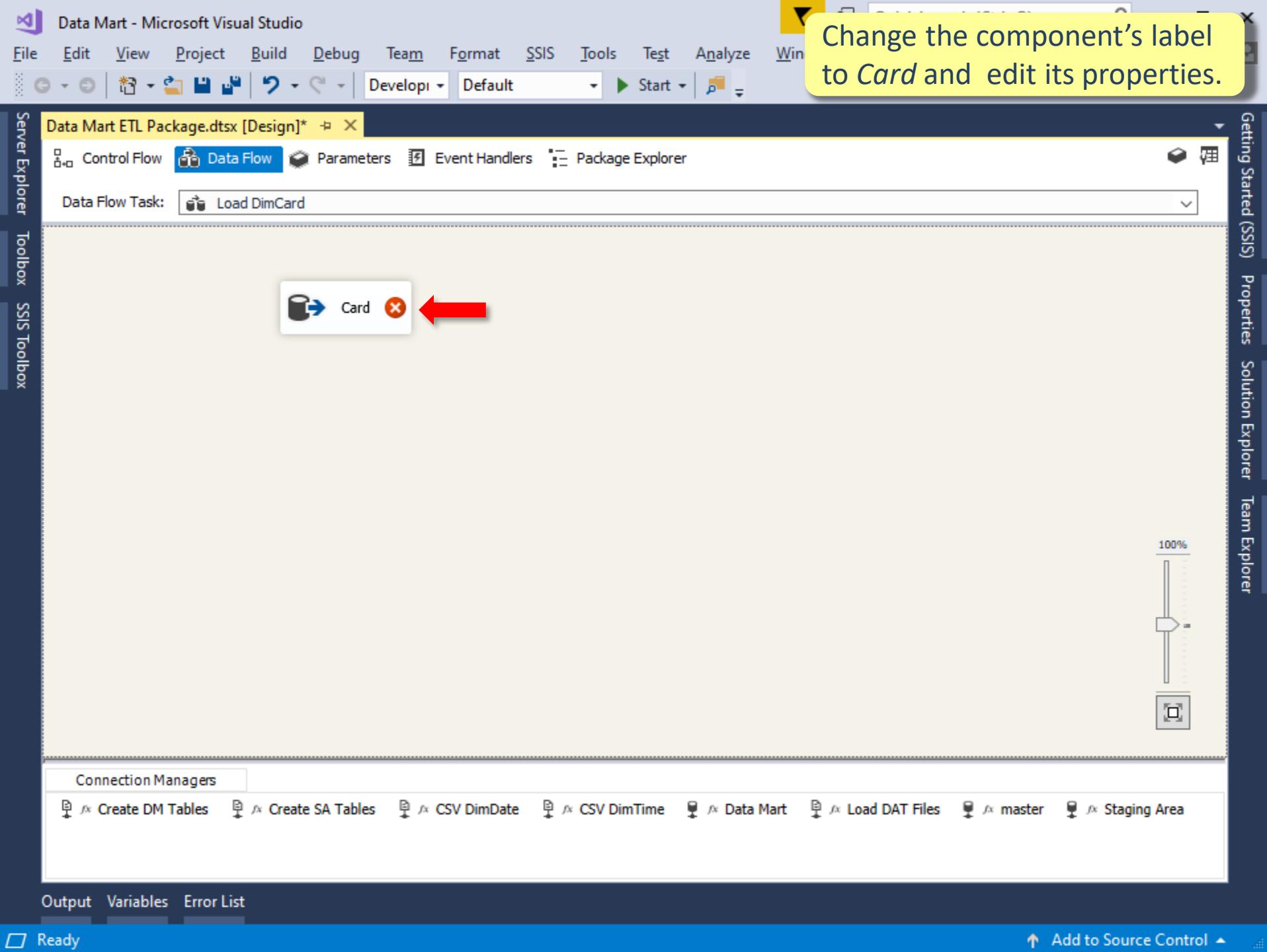
Output Variables Error List

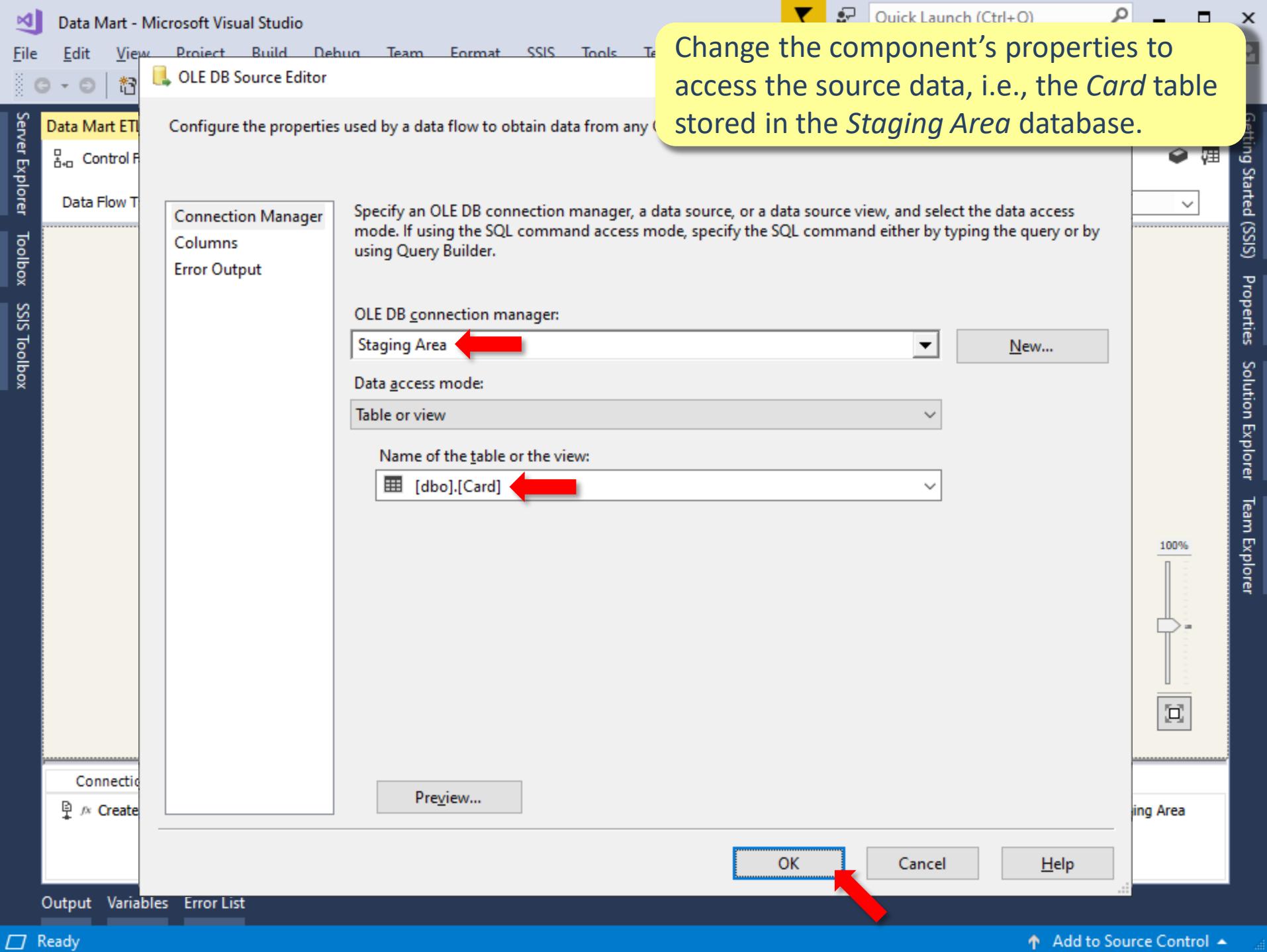
Ready Add to Source Control

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

The screenshot shows the Microsoft Visual Studio interface for an SSIS package named 'Data Mart'. The top menu bar includes 'File', 'Edit', 'View', 'Project', 'Build', 'Debug', 'Team', 'SSIS', 'Tools', 'Test', 'Analyze', and 'Window'. Below the menu is a toolbar with icons for back, forward, search, and file operations. The 'SSIS Toolbox' tab is selected in the left sidebar. A yellow callout bubble in the top right corner instructs to 'Drag an OLE DB Source from the SSIS Toolbox onto the Data Flow area.' The 'SSIS Toolbox' window contains a tree view of components under 'Other Sources': ADO NET Source, CDC Source, Excel Source, Flat File Source, OLE DB Source (which is highlighted with a blue selection bar and has a red arrow pointing to it), Raw File Source, and XML Source. Below this is another tree view for 'Other Destinations' with items like ADO NET Destination, Data Mining Model Training, etc. At the bottom of the toolbox, there's a detailed description of the selected 'OLE DB Source' component, which extracts data from an OLE DB-compliant relational database using SQL commands. The main workspace shows a blank Data Flow area with a single data flow path icon. The status bar at the bottom indicates 'Ready' and 'Add to Source Control'.







Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools Test Analyze V

SSIS Toolbox

Search SSIS Toolbox

Favorites

- Destination Assistant
- Source Assistant

Common

- Aggregate
- Balanced Data Distributor
- Conditional Split
- Data Conversion
- Data Streaming Destination
- Derived Column** (highlighted with a red arrow)
- HDFS File Destination
- HDFS File Source
- Lookup
- Merge
- Merge Join
- Multicast
- OData Source
- ODBC Destination
- ODBC Source
- OLE DB Command

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

Output Variables Error List

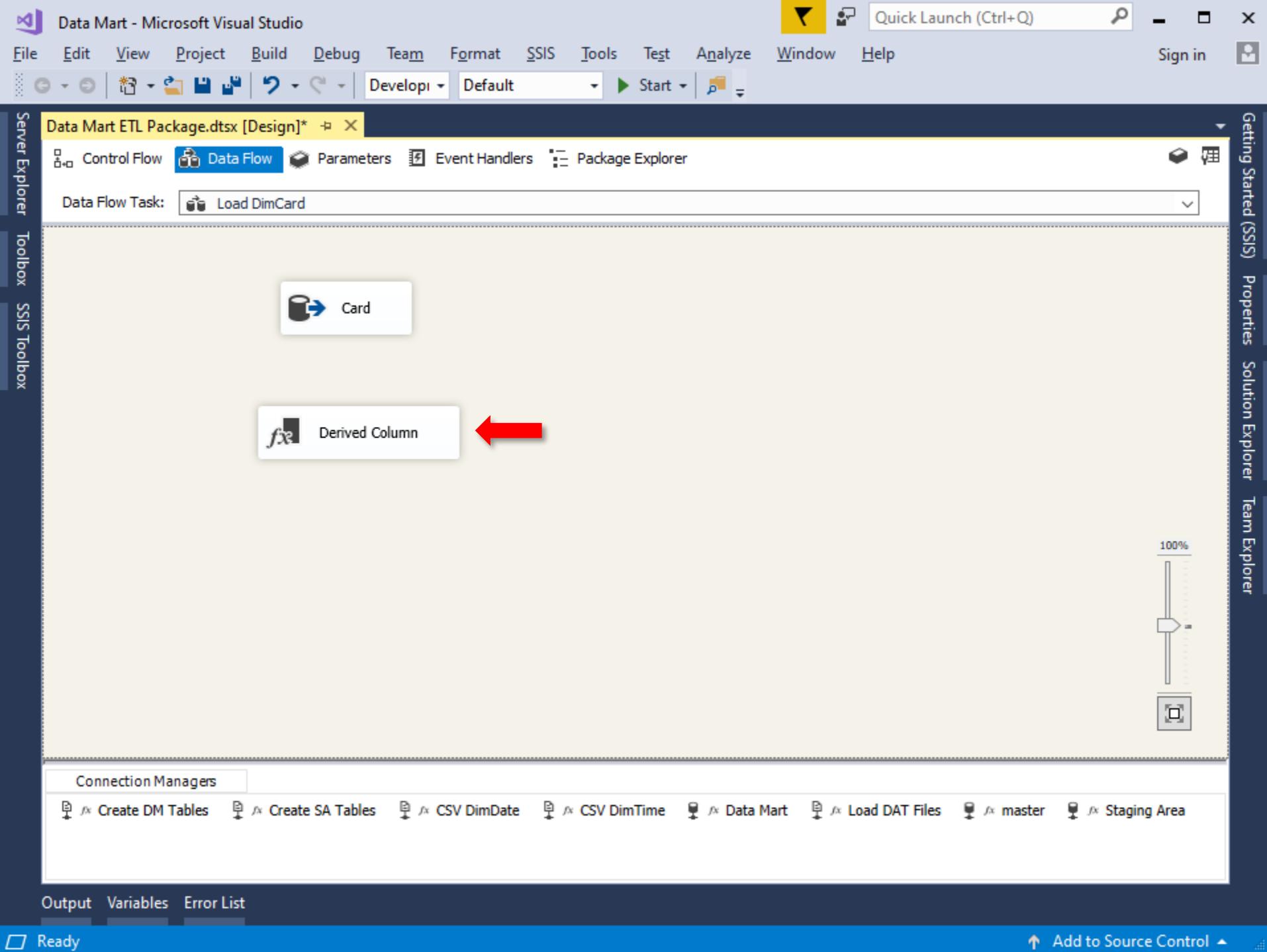
Event Handlers Package Explorer

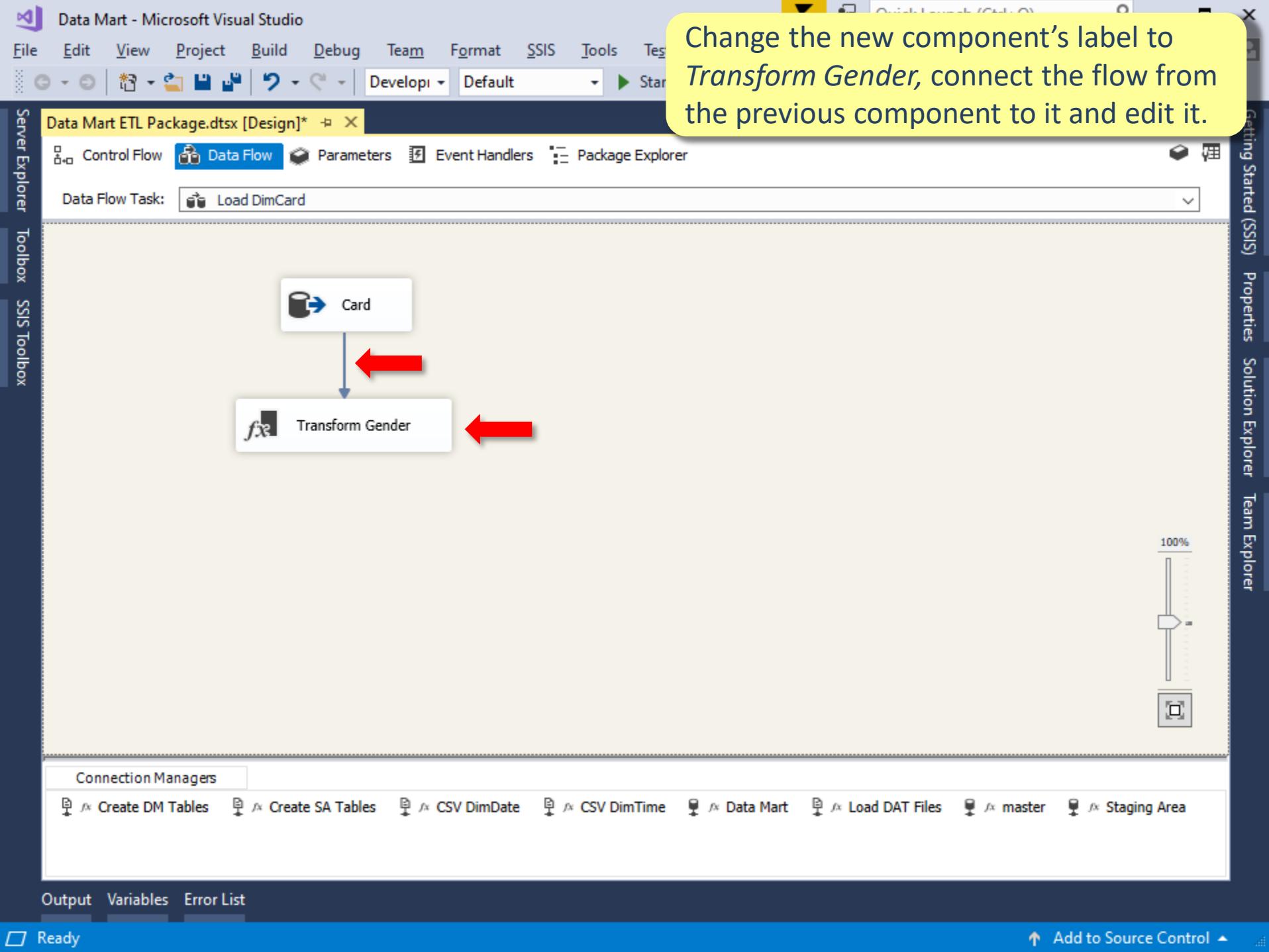
Getting Started (SSIS) Properties Solution Explorer Team Explorer

CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Ready Add to Source Control

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





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools

Derived Column Transformation Editor

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

Columns

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

Operators

- > (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

Output Variables Error List

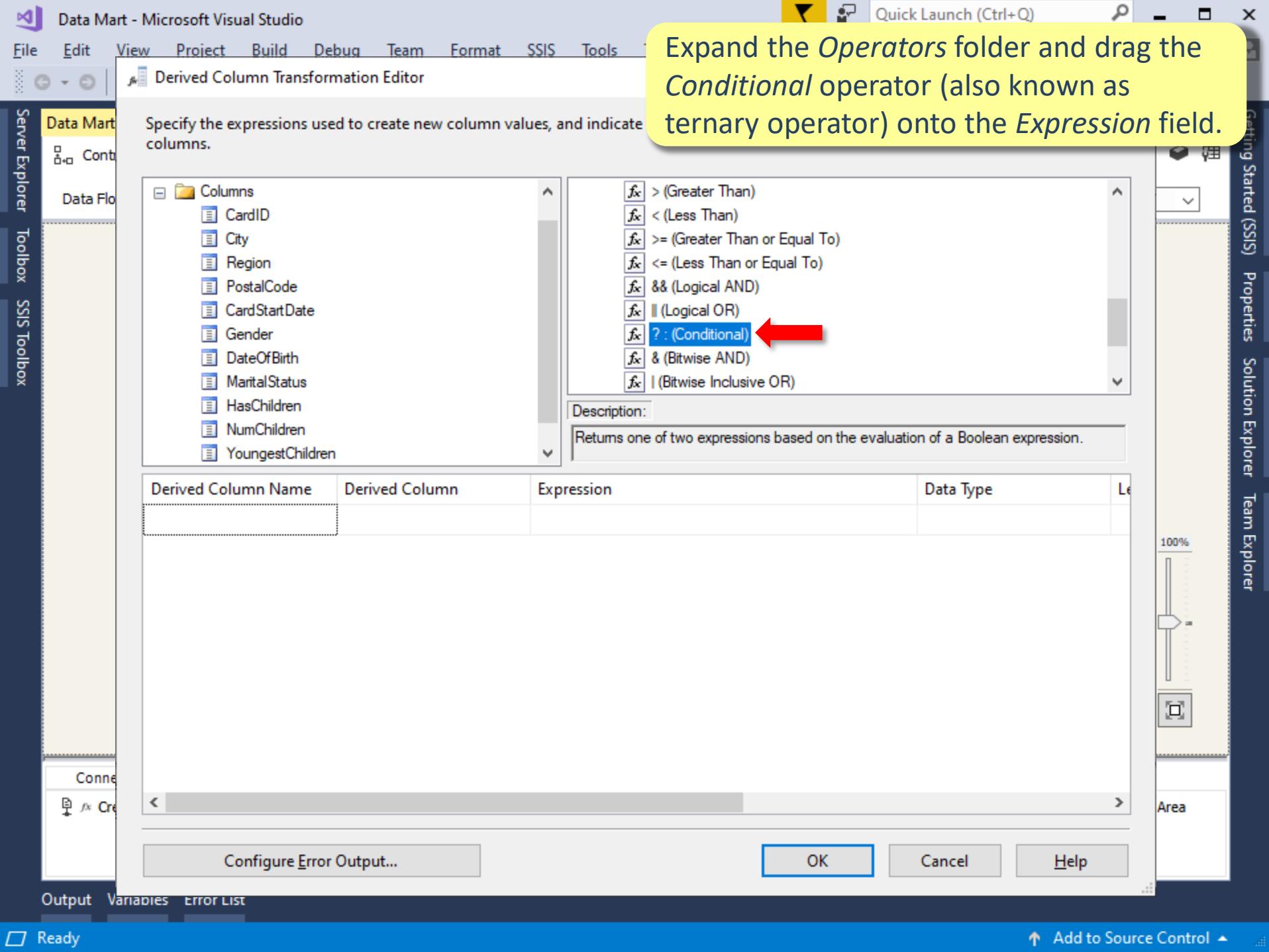
Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

100%

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



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help

Quick Launch (Ctrl+Q)

Sign in

Server Explorer Toolbox SSIS Toolbox

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	Length
Derived Column 1	<add as new column>	«boolean_expression» ? «when_true» : «when_false»		

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window

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

Boolean Expressions:

- > (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
Derived Column 1	<add as new column>	<code><boolean_expression> ? <when_true> : <when_false></code>		

Configure Error Output...

OK Cancel Help

Output Variables Error List

Add to Source Control

Drag the *Gender* column onto the *Boolean_expression*.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help

Quick Launch (Ctrl+Q)

Sign in

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	Length
Derived Column 1	<add as new column>	[Gender] ? «when_true» : «when_false»		

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

100%

Ready

The screenshot shows the 'Derived Column Transformation Editor' window in Microsoft Visual Studio. On the left, there's a tree view under 'Columns' containing fields like CardID, City, Region, etc. On the right, a list of comparison operators is shown. Below that is a 'Description' box. The main area has a table with columns: 'Derived Column Name', 'Derived Column', 'Expression', 'Data Type', and 'Length'. A row is selected for 'Derived Column 1' with the expression '[Gender] ? «when_true» : «when_false»'. A red arrow points to this expression field. At the bottom, there are buttons for 'Configure Error Output...', 'OK', 'Cancel', and 'Help'. The status bar at the bottom shows 'Output Variables Error List' and 'Ready'.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Quick Launch (Ctrl+Q)

Derived Column Transformation Editor

Complete the expression condition with:
== "F"

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)

Derived Column Name Derived Column Expression Data Type Length

Derived Column 1	<add as new column>	[Gender] == "F" ? «when_true» : «when_false»	
------------------	---------------------	----------------------------------------------	--

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+Q)

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)

Derived Column Name Derived Column Expression Data Type Length

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

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

100%

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+Q)

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" : "Male"	Unicode string [DT_WSTR]	7

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Win

Quick Launch (Ctrl+Q)

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)

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

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Change the Derived Column Name to Gender_Transformed.

A red arrow points to the OK button at the bottom right of the dialog.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help Sign in

Quick Launch (Ctrl+Q)

Server Explorer Toolbox SSIS Toolbox

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

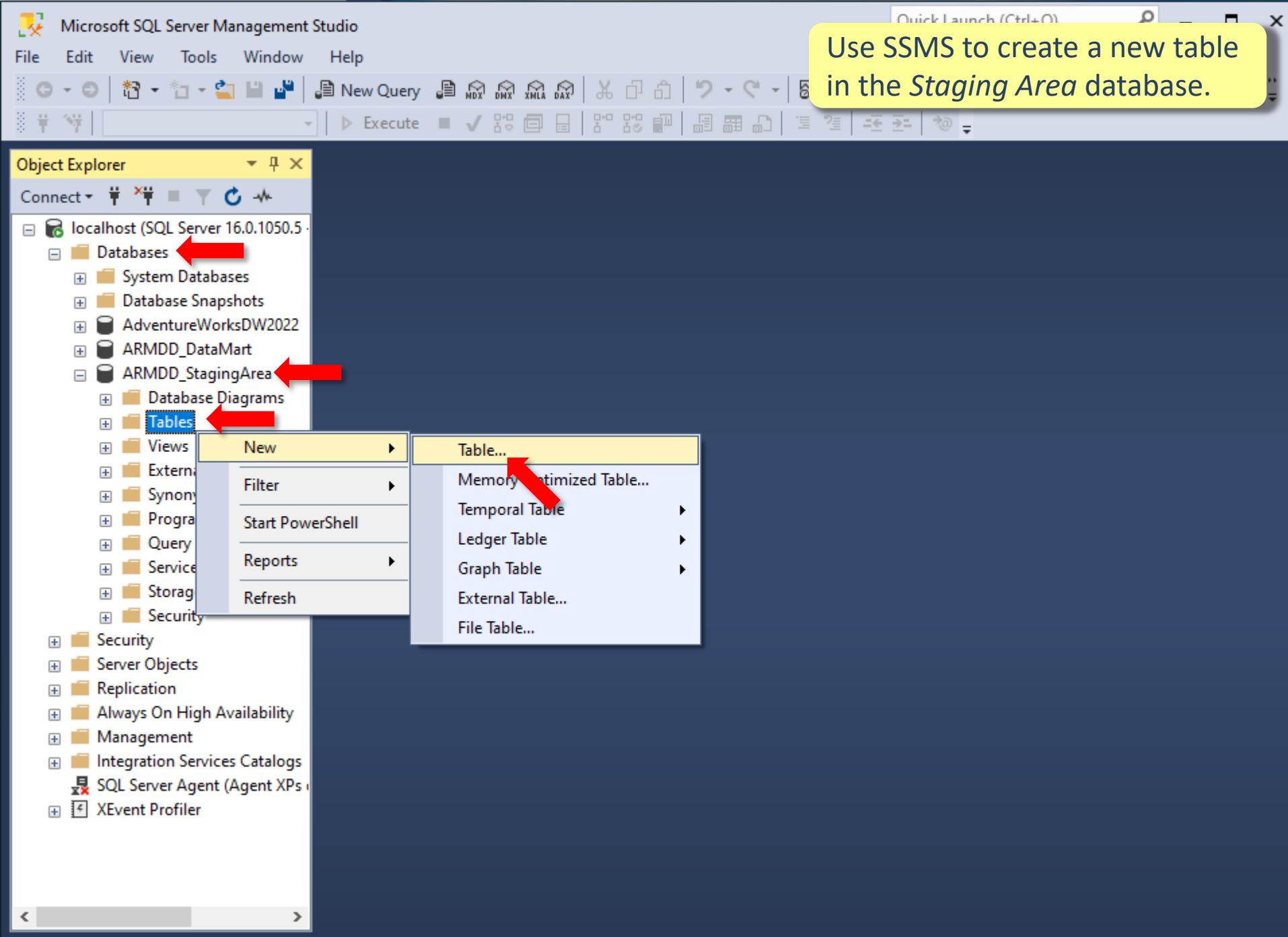
Connection Managers

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

Output Variables Error List

Ready Add to Source Control

The screenshot shows the Microsoft Visual Studio interface for an SSIS package named "Data Mart ETL Package.dtsx". The main workspace displays a "Data Flow" task with two components: a "Card" source and a "Transform Gender" component. A blue arrow indicates the flow from the Card source to the Transform Gender component. The "Data Flow" tab is selected in the ribbon. The bottom pane shows a "Connection Managers" list with entries like "Create DM Tables", "Create SA Tables", "CSV DimDate", etc. The status bar at the bottom left shows "Ready".



DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.Table_1* - Microsoft SQL Server Management Studio

File Edit View Project Table Designer Tools Window Help

New Query MDX DMX XMLA DAX

Execute

Object Explorer

Connect localhost (SQL Server 16.0.1050.5) Databases System Databases Database Snapshots AdventureWorksDW2022 ARMDD_DataMart ARMDD_StagingArea Database Diagrams Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security Security Server Objects Replication Always On High Availability Management Integration Services Catalogs SQL Server Agent (Agent XPs) XEvent Profiler

DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.Table_1*

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

Column Properties

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

Ready

DESKTOP-ACEDDKF.ARMD_StagingArea - dbo.Table_1* - Microsoft SQL Server Management Studio

File Edit View Project Table Designer Tools Window Help

New Query MDX DMX XMLA DAX

Add another attribute, its corresponding data type and save the table.

Object Explorer

localhost (SQL Server 16.0.1050.5)

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorksDW2022
 - ARMDD_DataMart
 - ARMDD_StagingArea
 - Database Diagrams
 - Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Storage
 - Security
 - Security
 - Server Objects
 - Replication
 - Always On High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs)
 - XEvent Profiler

Column Name Data Type Allow Nulls

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

Column Properties

Name	Value
(Name)	MaritalStatusDescription
Allow Nulls	No
Data Type	nvarchar
Default Value or Binding	
Length	10

Ready

DESKTOP-ACEDDKF.ARMD_StagingArea - dbo.Table_1* - Microsoft SQL Server Management Studio

File Edit View Project Table Designer Tools Window Help

New Query MDX DMX XMLA DAX

Execute

Object Explorer

localhost (SQL Server 16.0.1050.5)

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorksDW2022
 - ARMDD_DataMart
 - ARMDD_StagingArea
 - Database Diagrams
 - Tables
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Storage
 - Security
 - Security
 - Server Objects
 - Replication
 - Always On High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs)
 - XEvent Profiler

DESKTOP-ACEDDKF.A...rea - dbo.Table_1*

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

Choose Name

Enter a name for the table:

MaritalStatusDescription_Lookup

OK Cancel

Column Properties

(General)

(Name)	MaritalStatusDescription
Allow Nulls	No
Data Type	nvarchar
Default Value or Binding	
Length	10

Ready

Name the table as *MaritalStatusDescription_Lookup*

DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.Table_1DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.MaritalStatusDescription_Lookup

File Edit View Project Table Designer Tools Window Help

New Query MDX DMX XMLA DAX Execute

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

Object Explorer

localhost (SQL Server 16.0.1050.5.)

Databases

System Databases

Database Snapshots

AdventureWorksDW2022

ARMDD_DataMart

ARMDD_StagingArea

Database Diagrams

Tables

Views

External Resources

Synonyms

Programmability

Query Store

Service Broker

Storage

Security

Server Objects

Replication

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs)

XEvent Profiler

Refresh (F5)

Column Name Data Type Allow Nulls

MaritalStatus char(1)

MaritalStatusDescription nvarchar(10)

Column Properties

(General)

Name: MaritalStatusDescription
Allow Nulls: No
Data Type: nvarchar
Default Value or Binding:
Length: 10

(General)

DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Project Table Designer Tools Window Help

New Query MDX DMX XMLA DAX Execute

Object Explorer

Connect ARMDD_StagingArea Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Brand dbo.Card dbo.Category dbo.Item dbo.MaritalStatusDescription_Lookup dbo.SubCategory dbo.Transaction dbo.Transaction_Item Dropped Ledger Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security Security Server Objects Replication Always On High Availability

Let's edit the new table to enter the lookup data.

Column Name Data Type Allow Nulls

MaritalStatus char(1)

MaritalStatusDescription nvarchar(10)

New Table... Design Select Top 1000 Rows Edit Top 200 Rows **Edit Top 200 Rows** Script Table as View Dependencies Memory Optimization Advisor Encrypt Columns... Full-Text index Storage Policies Facets Start PowerShell Reports Rename Delete

MaritalStatusDescription
No
nvarchar
10

Ready

DESKTOP-ACEDDKF.ARMD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Project Query Designer Tools Window Help

New Query MDX DMX XMLA DAX Execute

Object Explorer

Connect ARMDD_StagingArea Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Brand dbo.Card dbo.Category dbo.Item dbo.MaritalStatusDescription_Lookup dbo.SubCategory dbo.Transaction dbo.Transaction_Item Dropped Ledger Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security Security Server Objects Replication Always On High Availability

DESKTOP-ACEDDKF....escription_Lookup DESKTOP-ACEDDKF....escription_Lookup

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.

Cell is Modified.

DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Project Query Designer Tools Window Help

New Query MDX DAX XMLA DAX Execute

Object Explorer

Connect ARMDD_StagingArea Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Brand dbo.Card dbo.Category dbo.Item dbo.MaritalStatusDescription_Lookup dbo.SubCategory dbo.Transaction dbo.Transaction_Item Dropped Ledger Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security Security Server Objects Replication Always On High Availability

DESKTOP-ACEDDKF....escription_Lookup DESKTOP-ACEDDKF....escription_Lookup

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

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

DESKTOP-ACEDDKF.ARMD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Project Query Designer Tools Window Help

New Query MDX DMX XMLA DAX

Execute

Object Explorer

Connect ARMDD_StagingArea Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Brand dbo.Card dbo.Category dbo.Item dbo.MaritalStatusDescription_Lookup dbo.SubCategory dbo.Transaction dbo.Transaction_Item Dropped Ledger Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security Security Server Objects Replication Always On High Availability

DESKTOP-ACEDDKF....escription_Lookup

DESKTOP-ACEDDKF....escription_Lookup

MaritalStatus MaritalStatusD...

NULL	Unknown
S	Single
M	Married
D	Divorced
W	Widowed
NULL	NULL

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

DESKTOP-ACEDDKF.ARMDDB_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio Quick Launch (Ctrl+O)

File Edit View Project Table Designer Tools Window Help

New Query MDX DMX XMLA DAX Execute

Object Explorer Connect ARMDD_StagingArea

Database Diagrams Tables System Tables FileTables External Table Graph Tables dbo.Brand dbo.Card dbo.Category dbo.Item dbo.MaritalStatus dbo.SubCategory dbo.Transaction dbo.Transaction Dropped Ledger Views External Resources Synonyms Programmability Query Store Service Broker Storage Security Security Server Objects Replication Always On High Availability

MaritalStatus

Column Name Data Type Allow Nulls

char(1)

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 UTP Migration Checklists Extract Data-tier Application... Deploy Database to Microsoft Azure SQL Database... Export Data-tier Application... Register as Data-tier Application... Upgrade Data-tier Application... Delete Data-tier Application... Import Flat File... Import Data... Export Data... Copy Database...

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

DESKTOP-ACEDDKF.ARPAD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Generate Scripts

Introduction

Introduction

Choose Objects

Set Scripting Options

Summary

Save Scripts

AR

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.

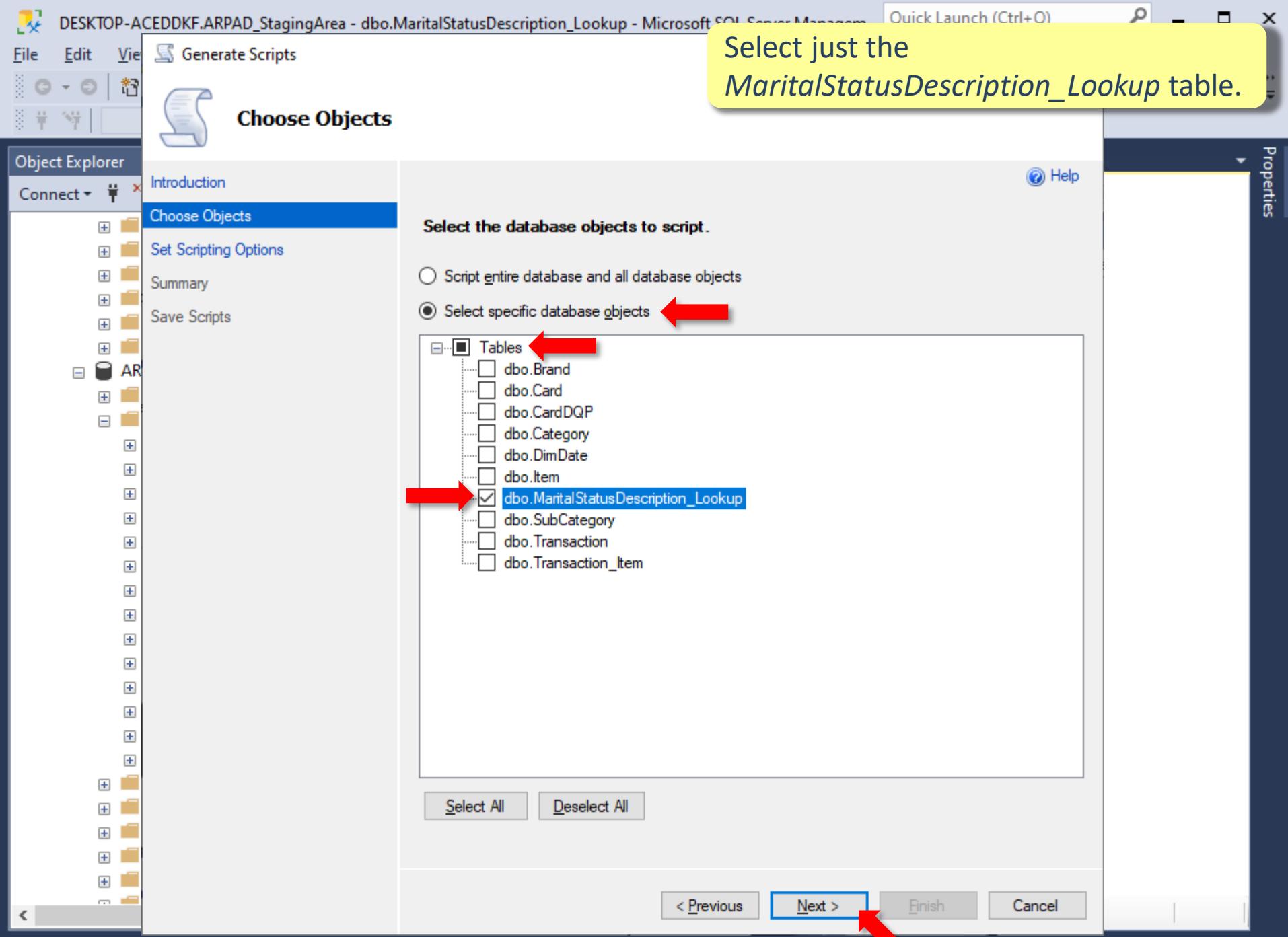


To begin the script generation process, click Next.

Do not show this page again.

< Previous Next > Finish Cancel

Ready



DESKTOP-ACEDDKF.ARPAD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Generate Scripts

Set Scripting Options

Introduction Choose Objects Set Scripting Options Summary Save Scripts AR

Specify how scripts should be saved.

Save as notebook Advanced

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

Save as script file

Files to generate: Single script file
 One script file per object

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

Overwrite existing file

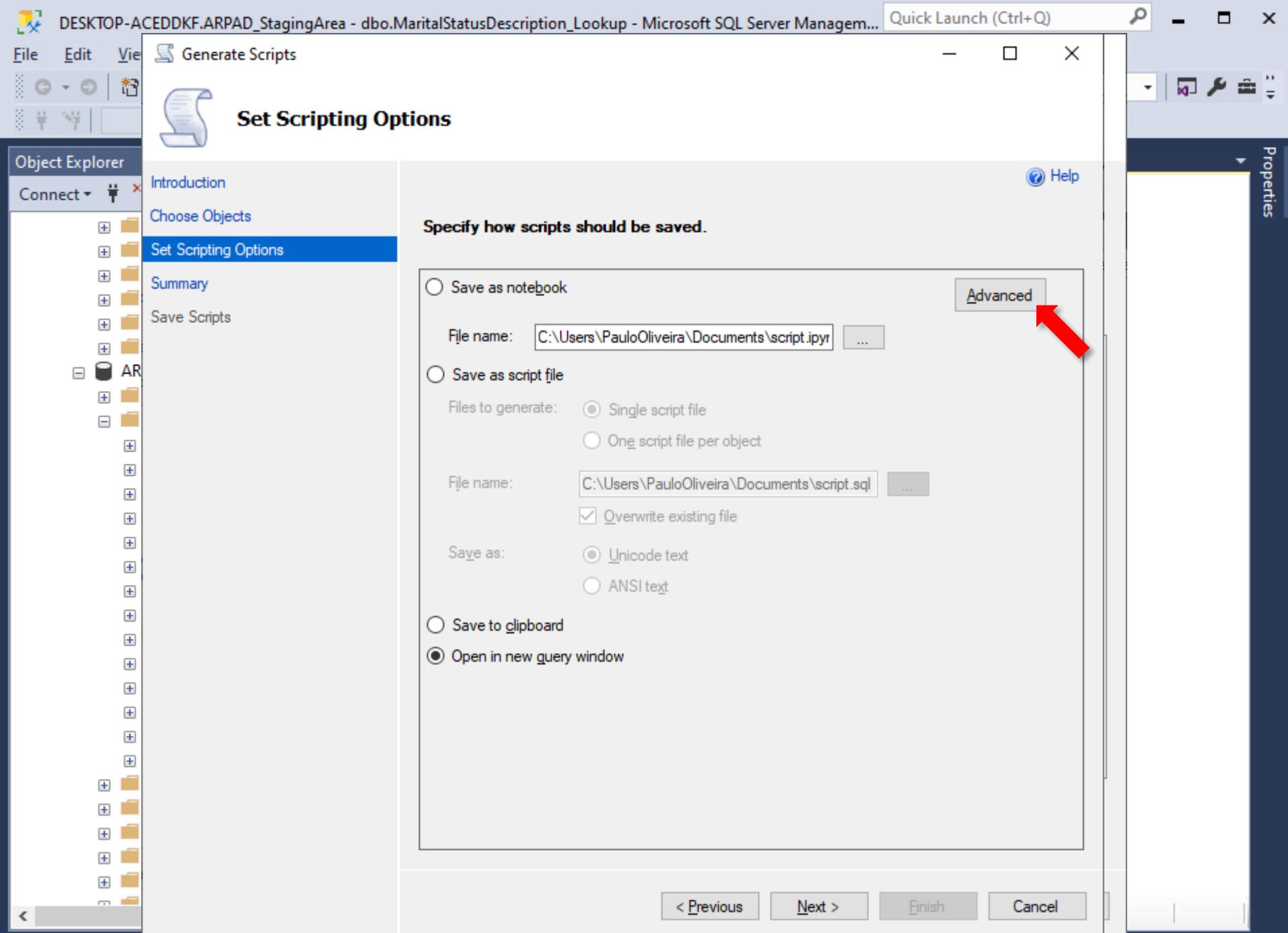
Save as: Unicode text
 ANSI text

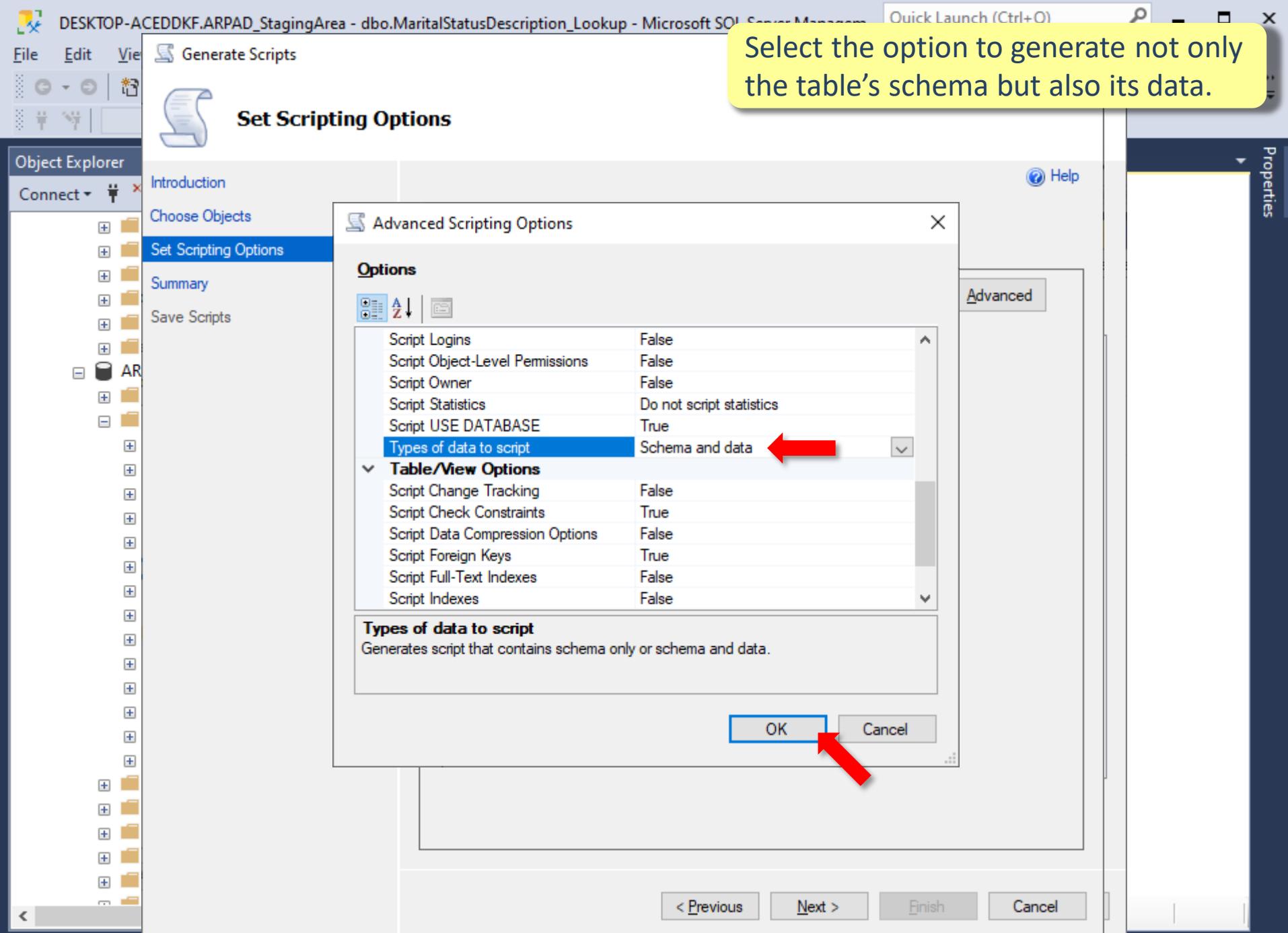
Save to clipboard

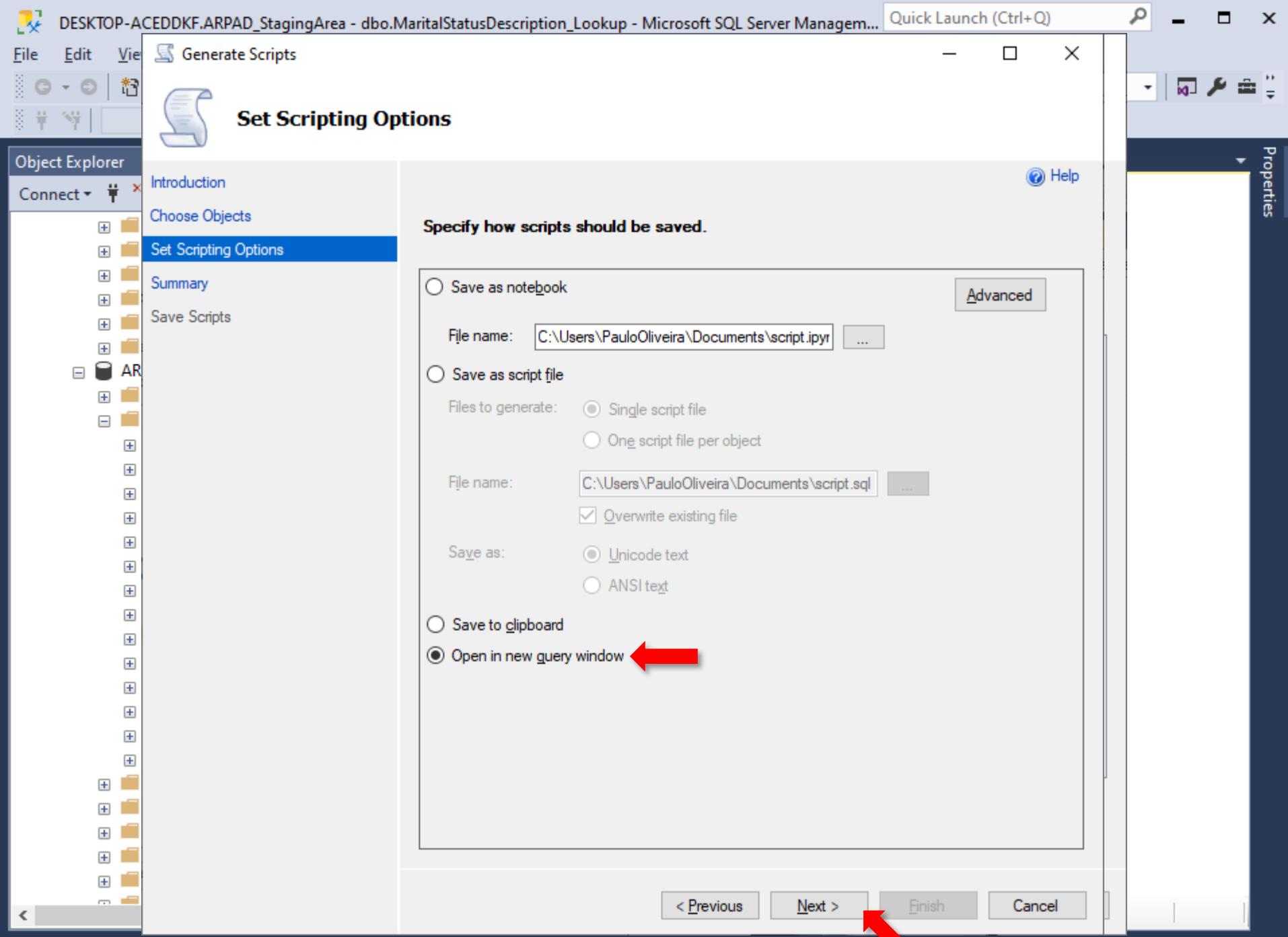
Open in new query window

< Previous Next > Finish Cancel

Properties







DESKTOP-ACEDDKF.ARPAD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View Generate Scripts

Summary

Introduction Choose Objects Set Scripting Options Summary Save Scripts

AR

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 > Finish Cancel

Properties

Ready

DESKTOP-ACEDDKF.ARPAD_StagingArea - dbo.MaritalStatusDescription_Lookup - Microsoft SQL Server Management Studio

File Edit View 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

Properties

Ready

SQLQuery1.sql - localhost.master (AzureAD\PauloOliveira (54)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

master Execute

Object Explorer

Connect ARMDD_StagingArea Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.Brand dbo.Card dbo.Category dbo.Item dbo.MaritalStatusDescription_Lookup dbo.SubCategory dbo.Transaction dbo.Transaction_Item Dropped Ledger Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security

SQLQuery1.sql - loc...\\PauloOliveira (54) DESKTOP-ACEDDKF...escription_Lookup

```
USE [ARMDD_StagingArea]
GO
***** Object: Table [dbo].[MaritalStatusDescription_Lookup] Script Date:
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[MaritalStatusDescription_Lookup](
    [MaritalStatus] [char](1) NULL,
    [MaritalStatusDescription] [nvarchar](10) NOT NULL
) ON [PRIMARY]
GO
INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription])
GO
|
```

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

Ready Ln 23 Col 1 Ch 1 INS

The image shows the script after removing all the unnecessary code.

```
CREATE TABLE [dbo].[MaritalStatusDescription_Lookup] (
    [MaritalStatus] [char](1) NULL,
    [MaritalStatusDescription] [nvarchar](10) NOT NULL
) ON [PRIMARY]

INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescription])
```

SQLQuery1.sql - localhost.master (AzureAD\PauloOliveira (54))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

master

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

```
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) NOT NULL
    ) ON [PRIMARY]

    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescript
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescript
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescript
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescript
    INSERT [dbo].[MaritalStatusDescription_Lookup] ([MaritalStatus], [MaritalStatusDescript

END
```

Object Explorer

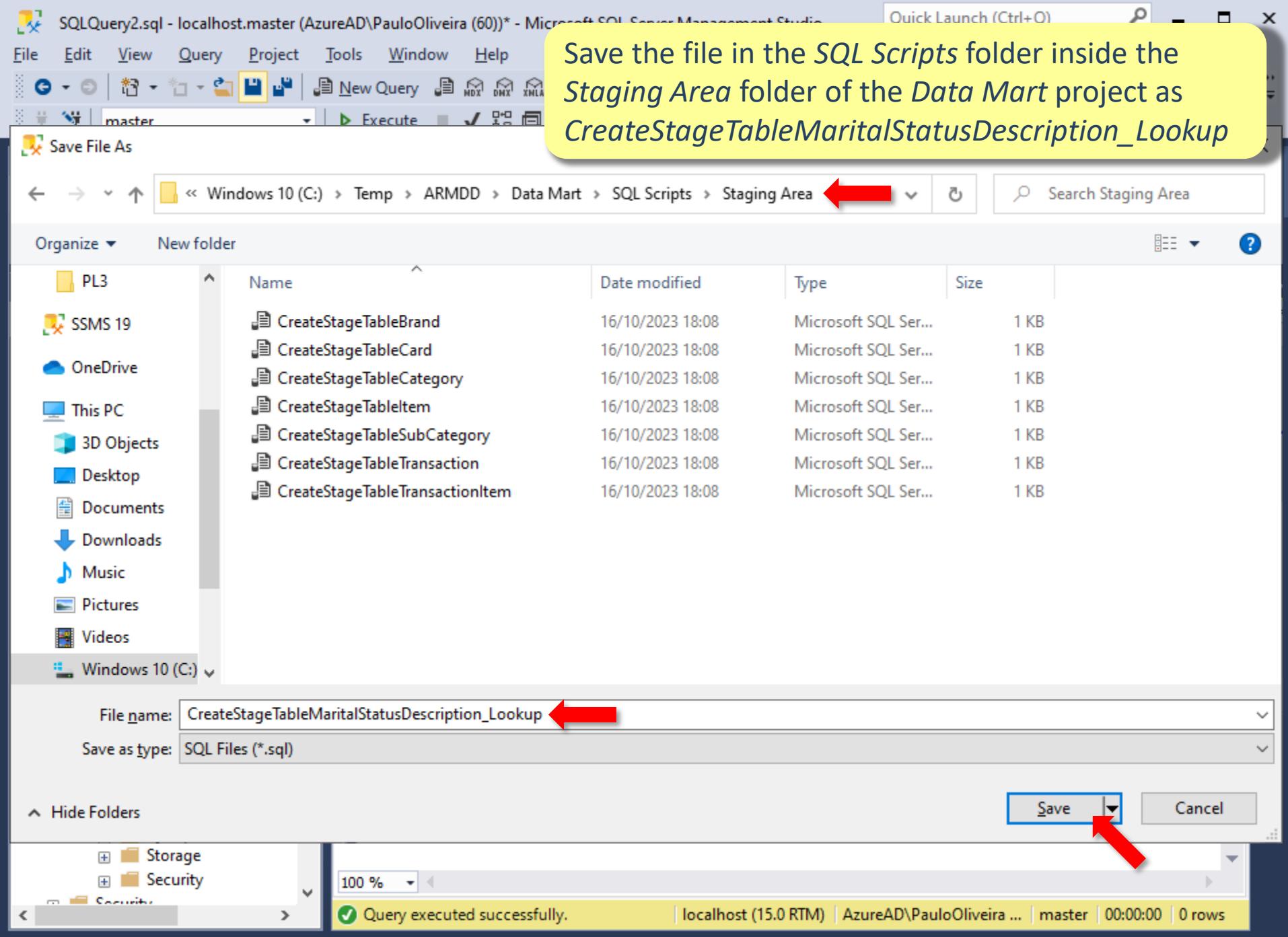
Connect ▾

- ARMDD_StagingArea
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Brand
 - dbo.Card
 - dbo.Category
 - dbo.Item
 - dbo.MaritalStatusDes
 - dbo.SubCategory
 - dbo.Transaction
 - dbo.Transaction_Item
 - Dropped Ledger Tabl
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Storage
 - Security
- Security
- Server Objects
- Replication
- Always On High Availability

100 %

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

Matches: BEGIN Ln 5 Col 5 Ch 2 INS



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools Test

Developer Default

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

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

Output Variables Error List

Event Handlers Package Explorer

CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Quick Launch (Ctrl+O)

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

Ready Add to Source Control

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help Sign in

Quick Launch (Ctrl+Q)

Server Explorer Toolbox SSIS Toolbox Getting Started (SSIS) Properties Solution Explorer Team Explorer

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card → Transform Gender

Transform Gender

Lookup

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design] X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card → Transform Gender → Lookup MaritalStatusDescription

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

Server Explorer Toolbox SSIS Toolbox Getting Started (SSIS) Properties Solution Explorer Team Explorer

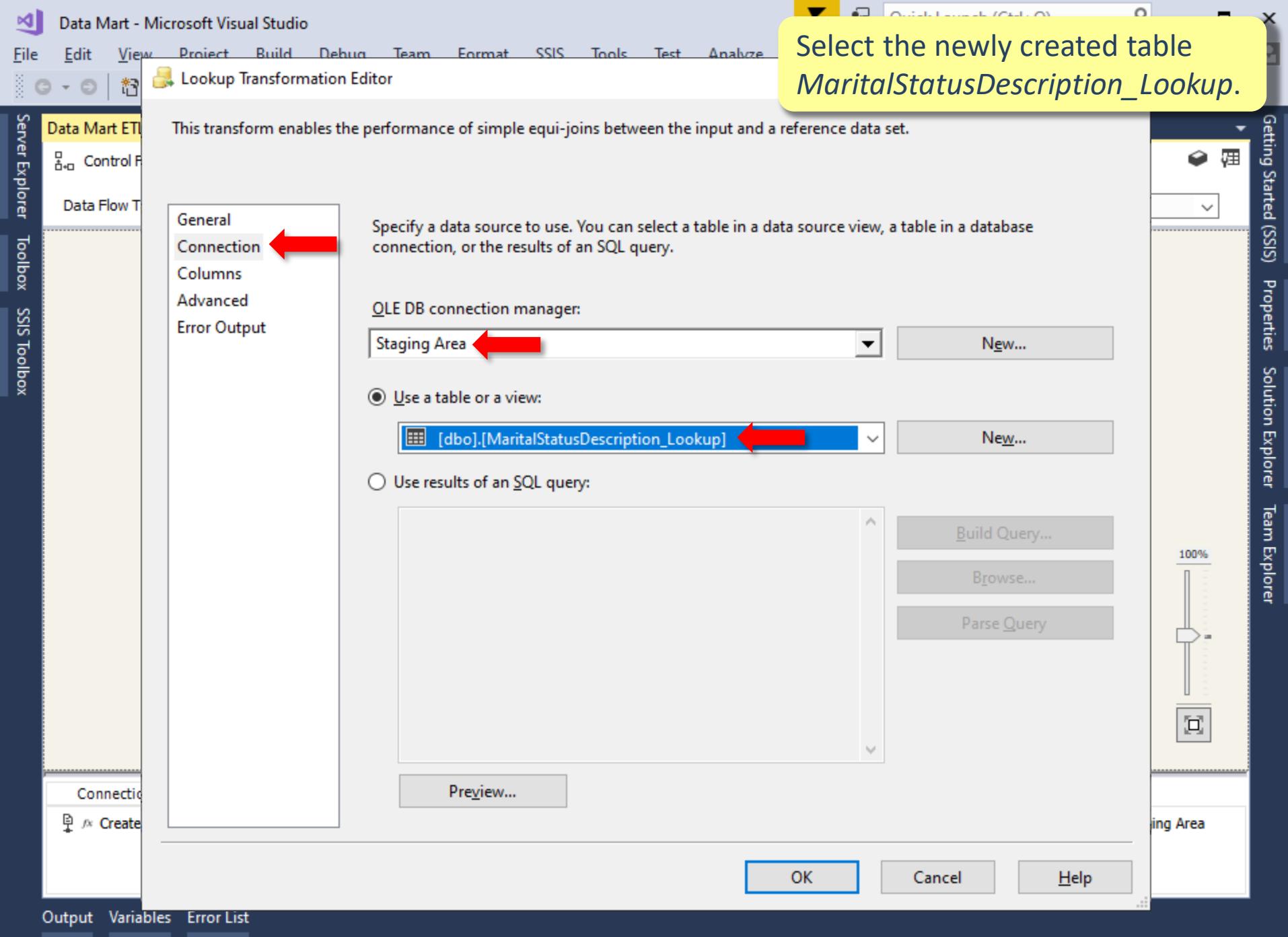
Connection Managers

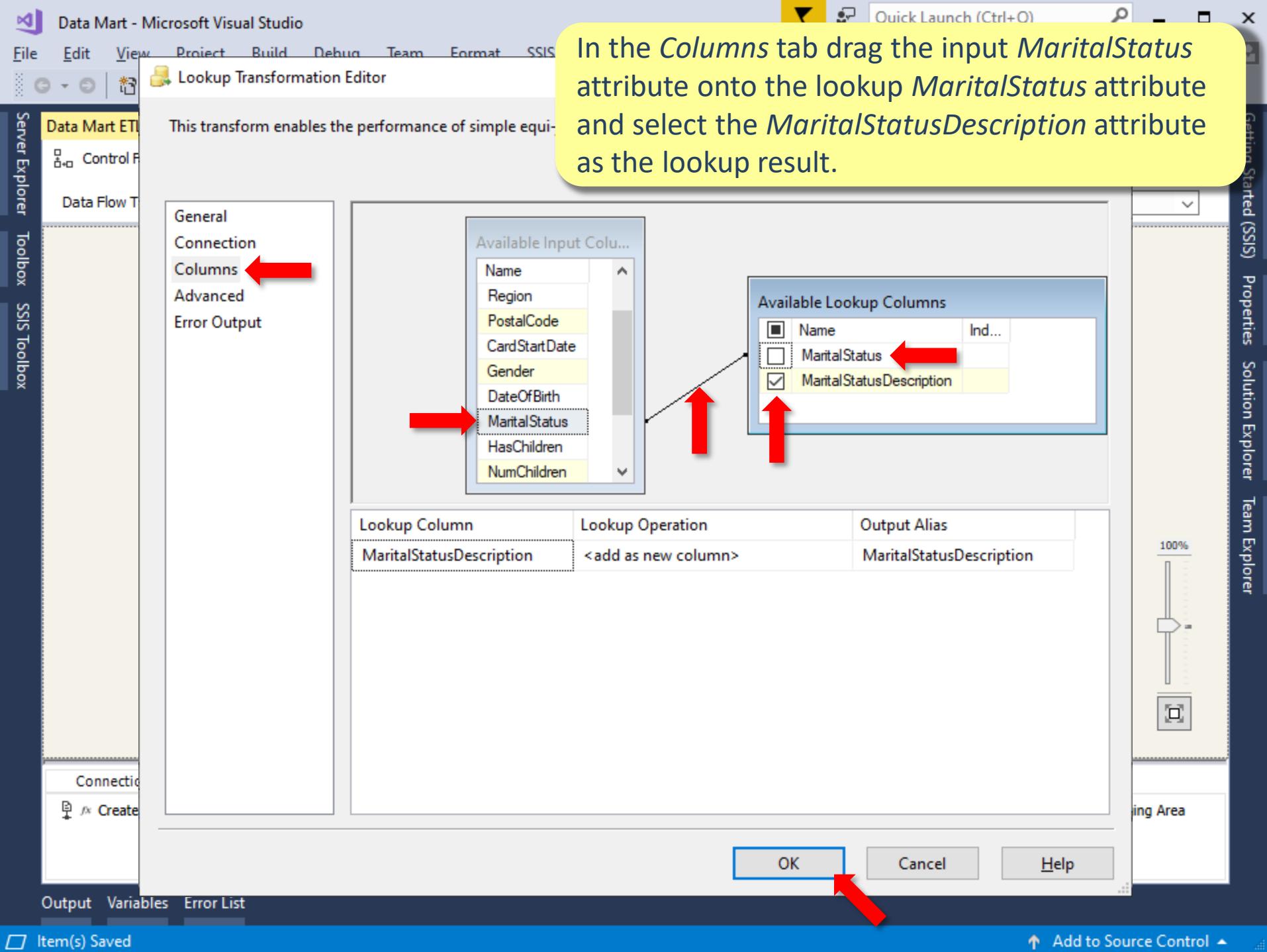
Create DM Tables Create SA Tables CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Output Variables Error List

Item(s) Saved Add to Source Control

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





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help Sign in

Quick Launch (Ctrl+Q)

Server Explorer Toolbox SSIS Toolbox

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools Test Analyze

Developer Default

SSIS Toolbox

Search SSIS Toolbox

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

Lookup

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

[Find Samples](#)

Event Handlers Package Explorer

CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Output Variables Error List

Ready Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Drag a *Lookup* component onto the *Data Flow* area underneath the previous lookup.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test A

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Lookup CardStartDateKey

Rename the new component as *Lookup CardStartDateKey* and connect the previous component to it.

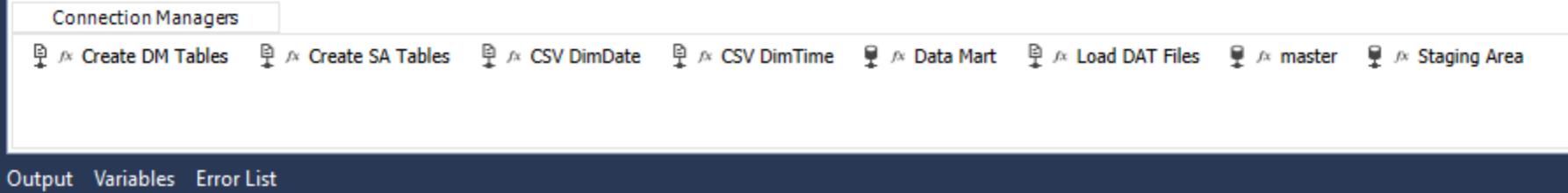
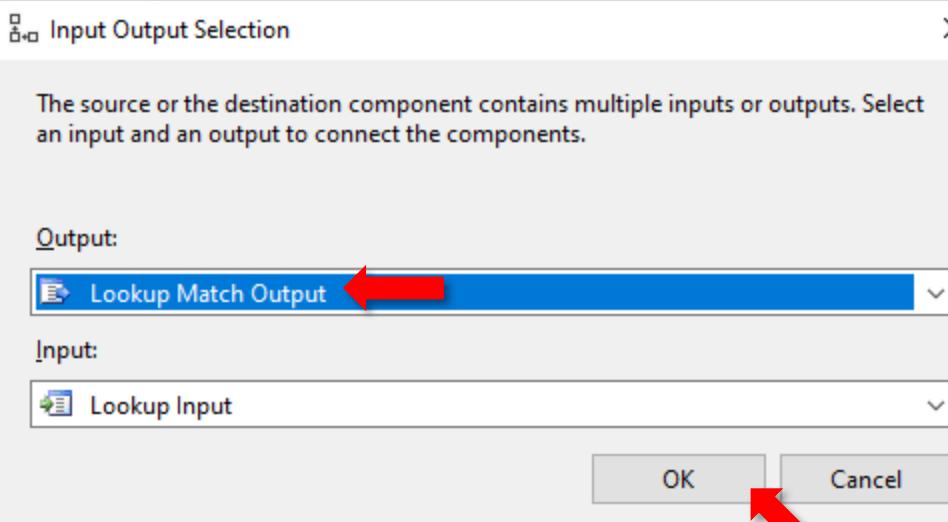
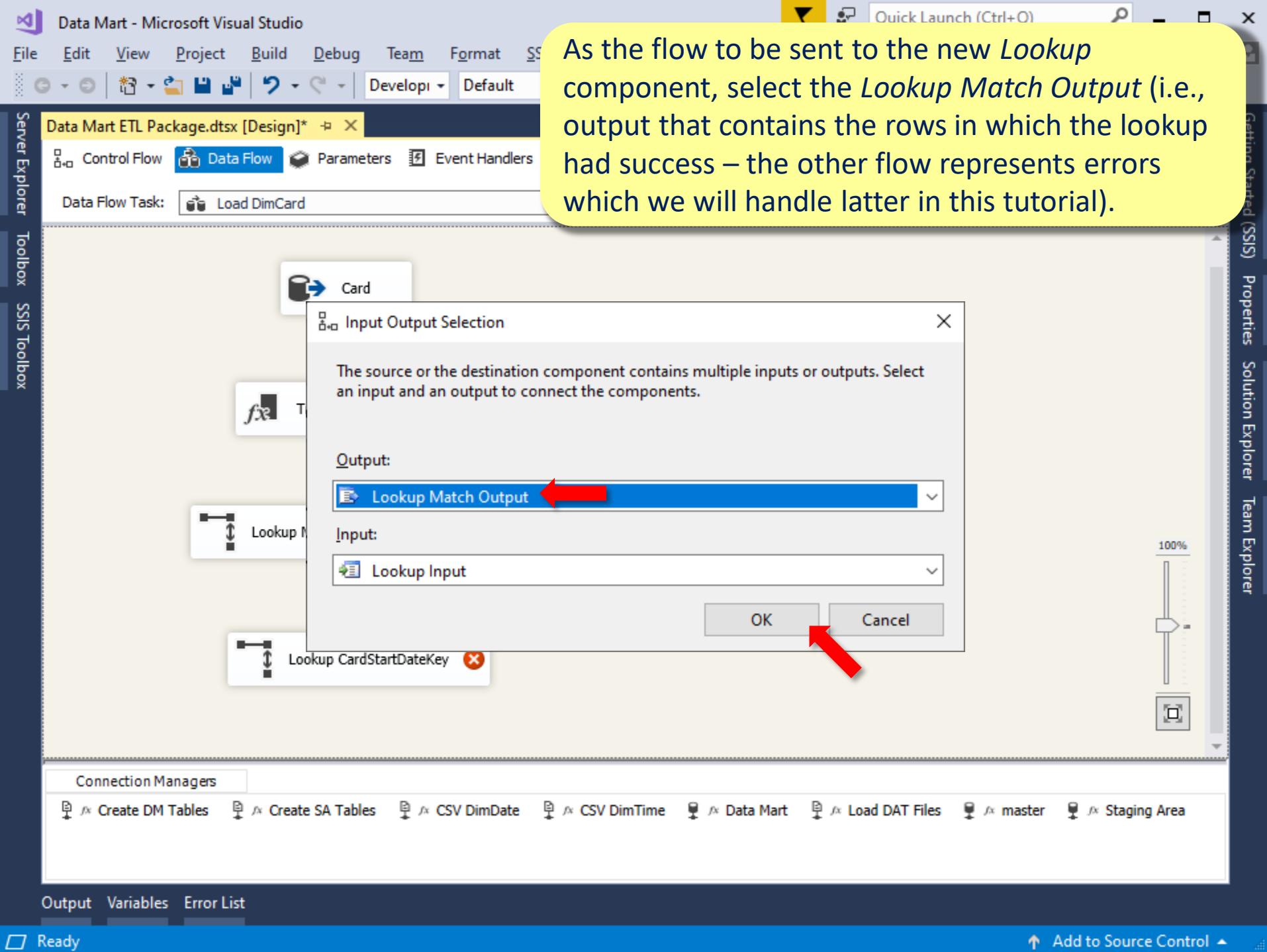
Connection Managers

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

Output Variables Error List

Ready Add to Source Control

```
graph TD; Card[Card] --> Transform[Transform Gender]; Transform --> Lookup1[Lookup MaritalStatusDescription]; Lookup1 --> Lookup2[Lookup CardStartDateKey]
```



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+O)

Edit the new *Lookup* component.

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Lookup Match Output

Lookup CardStartDateKey

Connection Managers

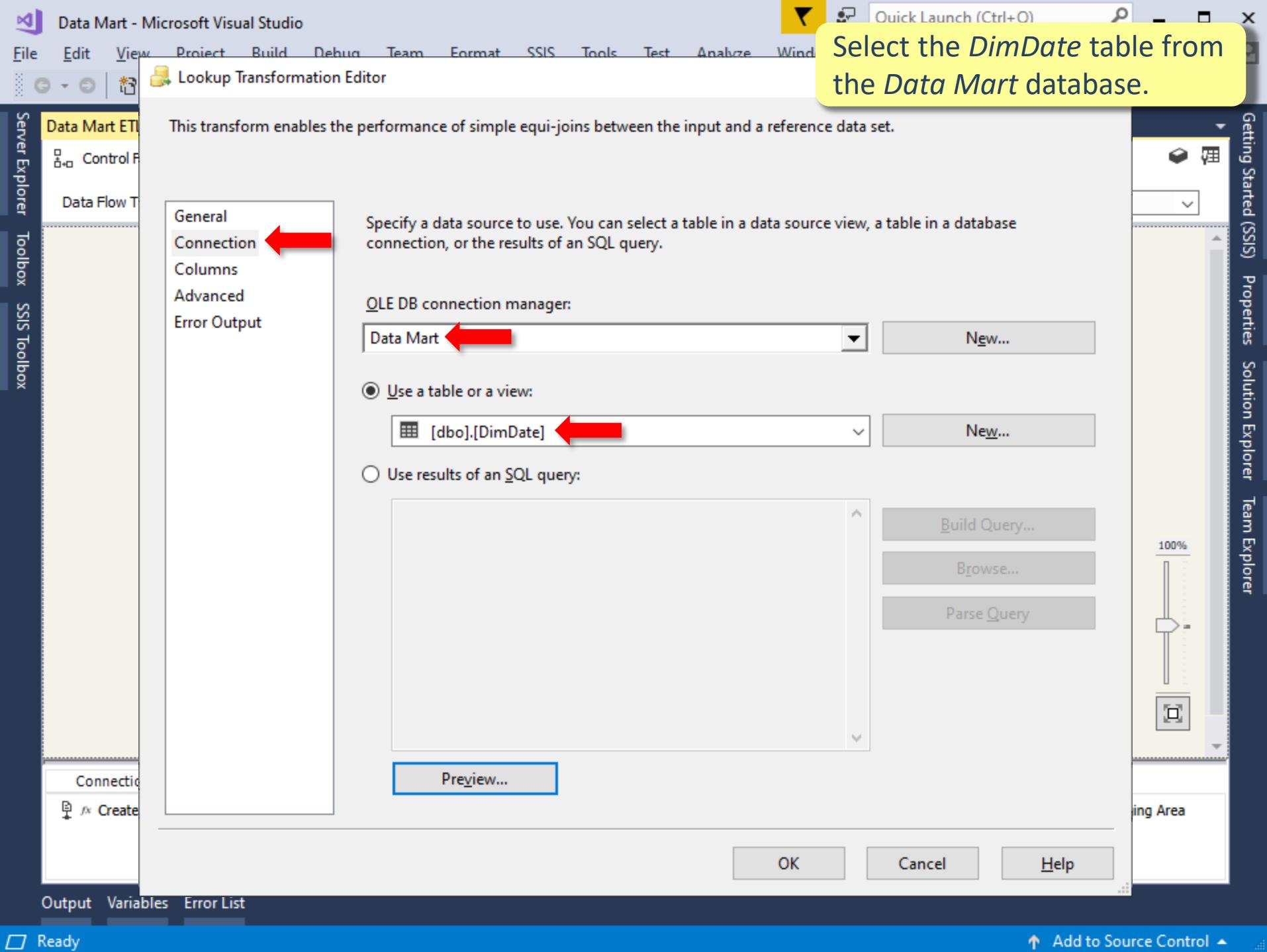
Create DM Tables Create SA Tables CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

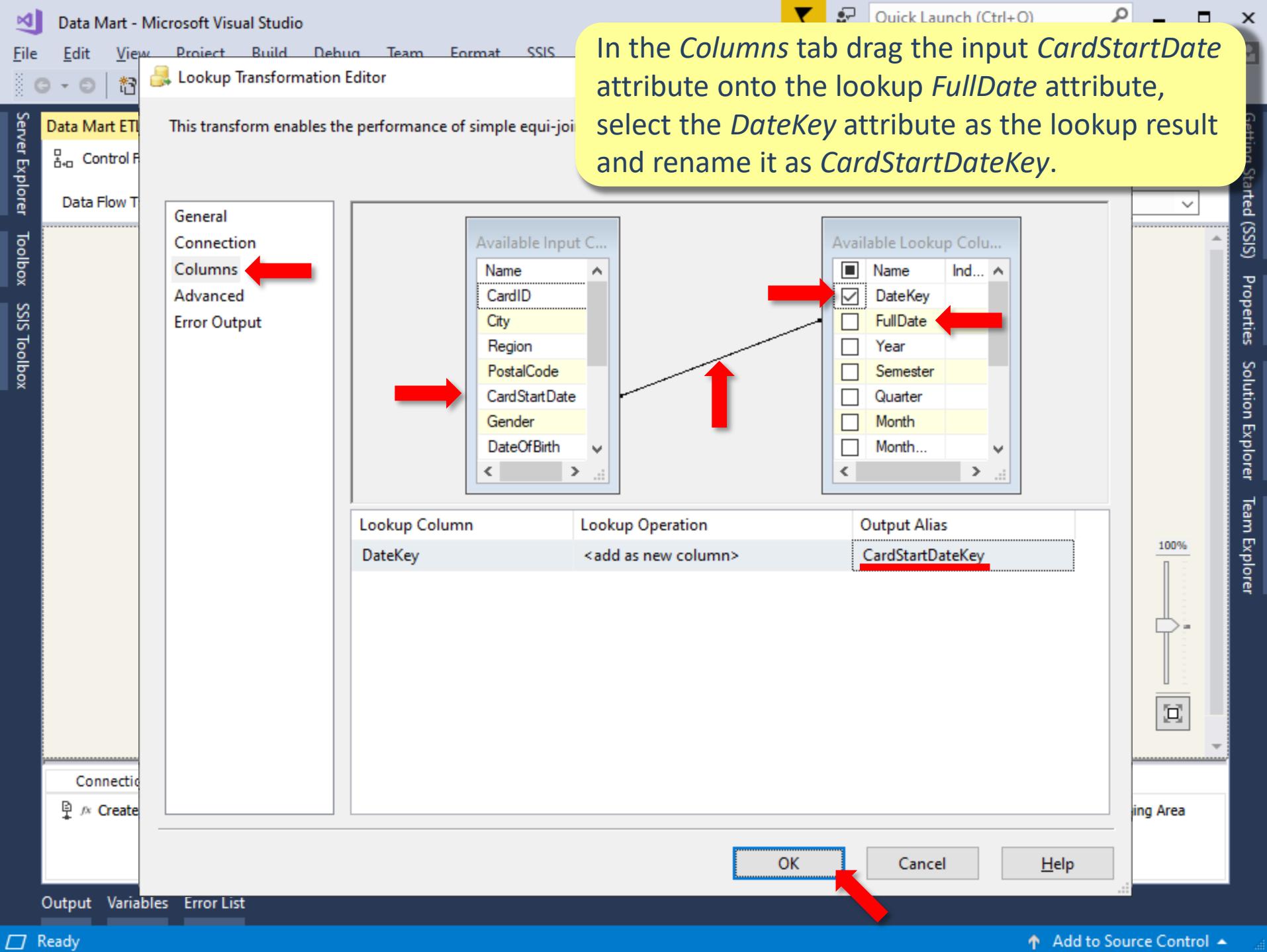
Output Variables Error List

Add to Source Control

Server Explorer Toolbox SSIS Toolbox Getting Started (SSIS) Properties Solution Explorer Team Explorer

```
graph TD; Card[Card] --> Transform[Transform Gender]; Transform --> Lookup1[Lookup MaritalStatusDescription]; Lookup1 --> Match[Lookup Match Output]; Match --> Lookup2[Lookup CardStartDateKey]
```





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help Sign in

Quick Launch (Ctrl+Q)

Server Explorer Toolbox SSIS Toolbox

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Lookup Match Output

Lookup CardStartDateKey

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

```
graph TD; Card[Card] --> Transform[Transform Gender]; Transform --> Lookup1[Lookup MaritalStatusDescription]; Lookup1 --> Match[Match Output]; Match --> Lookup2[Lookup CardStartDateKey]
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools Test Analyze Window

SSIS Toolbox

Search SSIS Toolbox

- 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

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](#)

Output Variables Error List

Event Handlers Package Explorer

CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Ready Add to Source Control

Drag another *Lookup* component onto the data flow area underneath the previous component.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Transform Gender

Lookup MaritalStatusDescription

Lookup Match Output

Lookup CardStartDateKey

Lookup DateOfBirthKey

Connection Managers

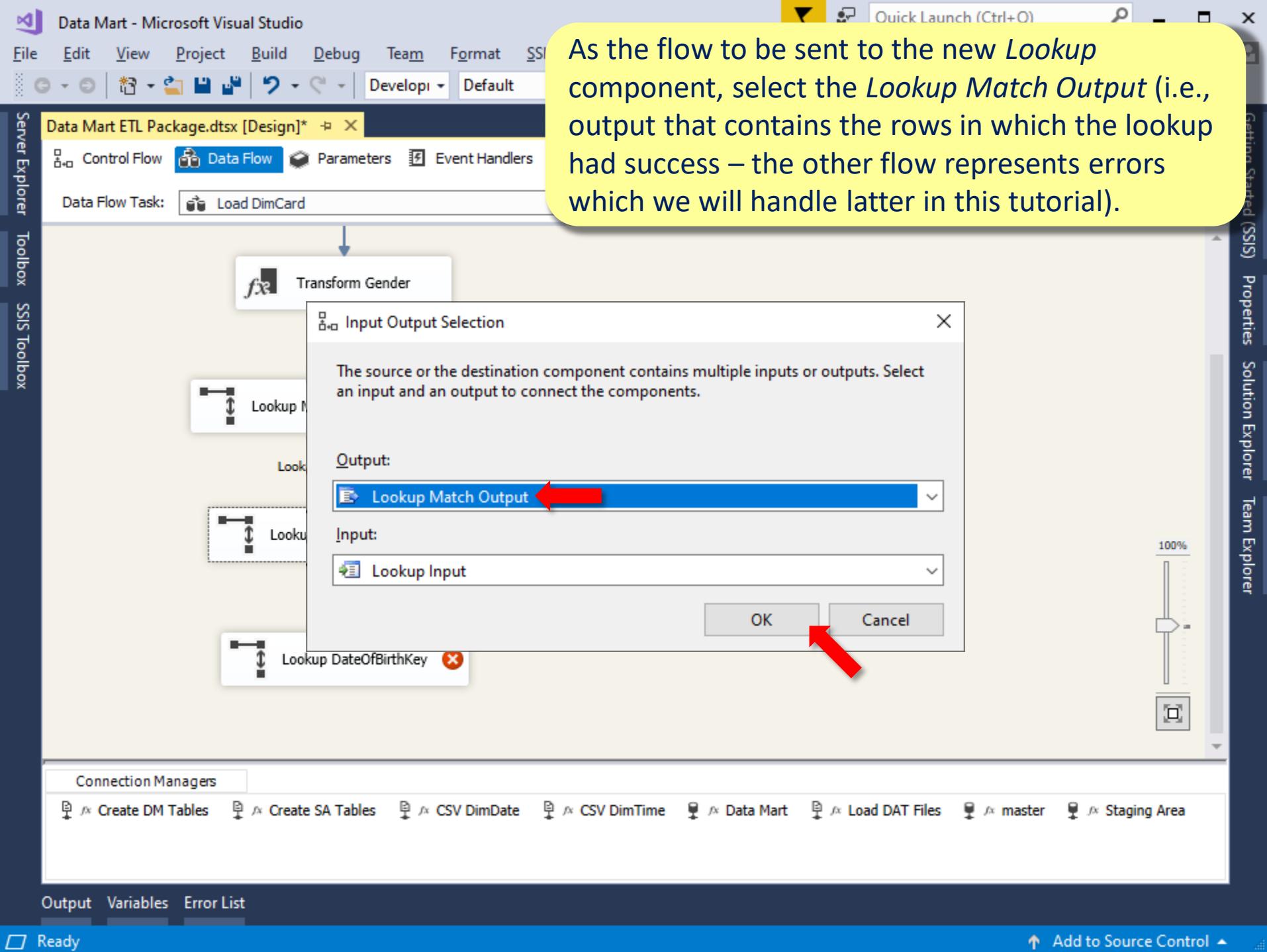
Create DM Tables Create SA Tables CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

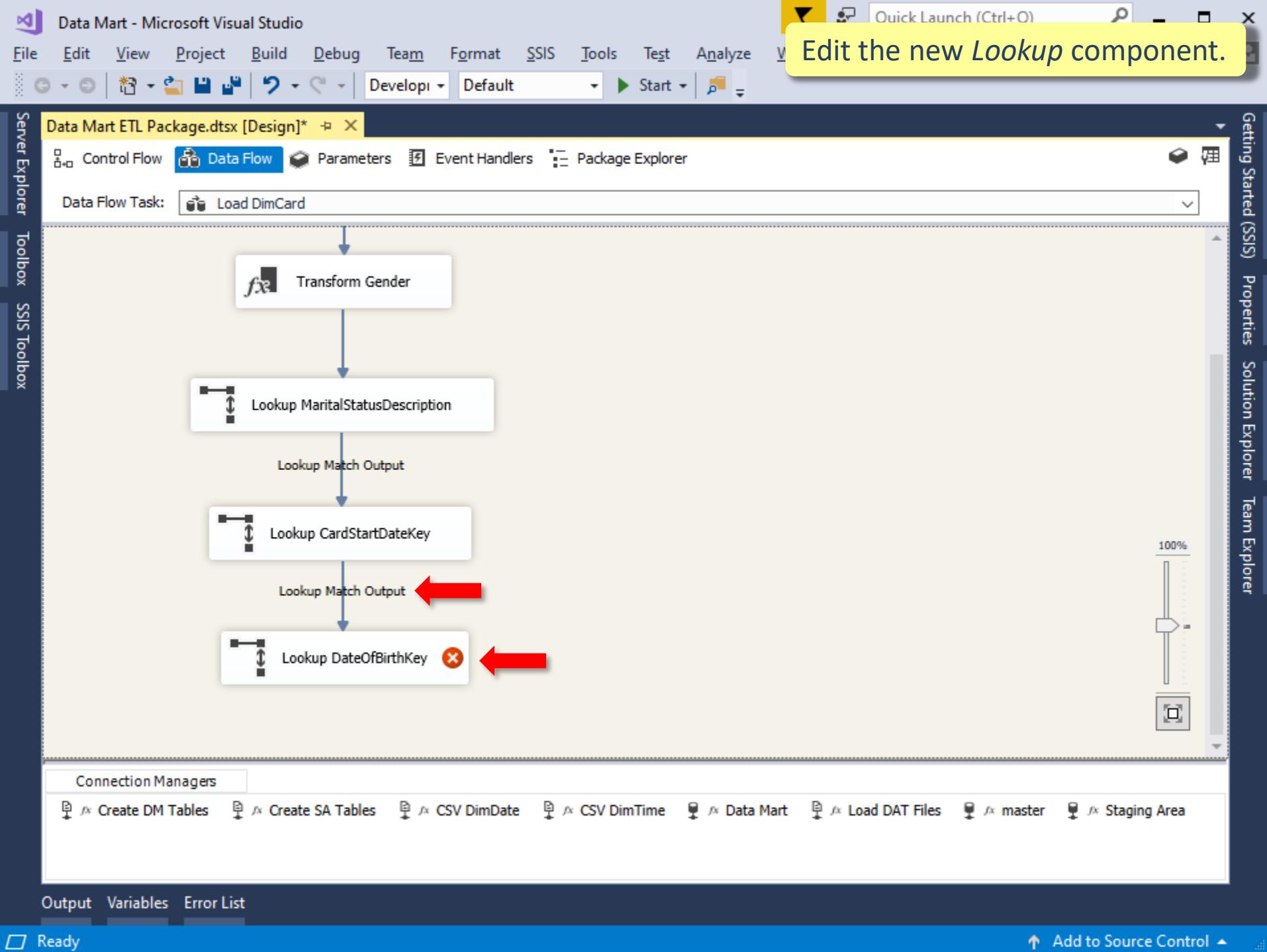
Output Variables Error List

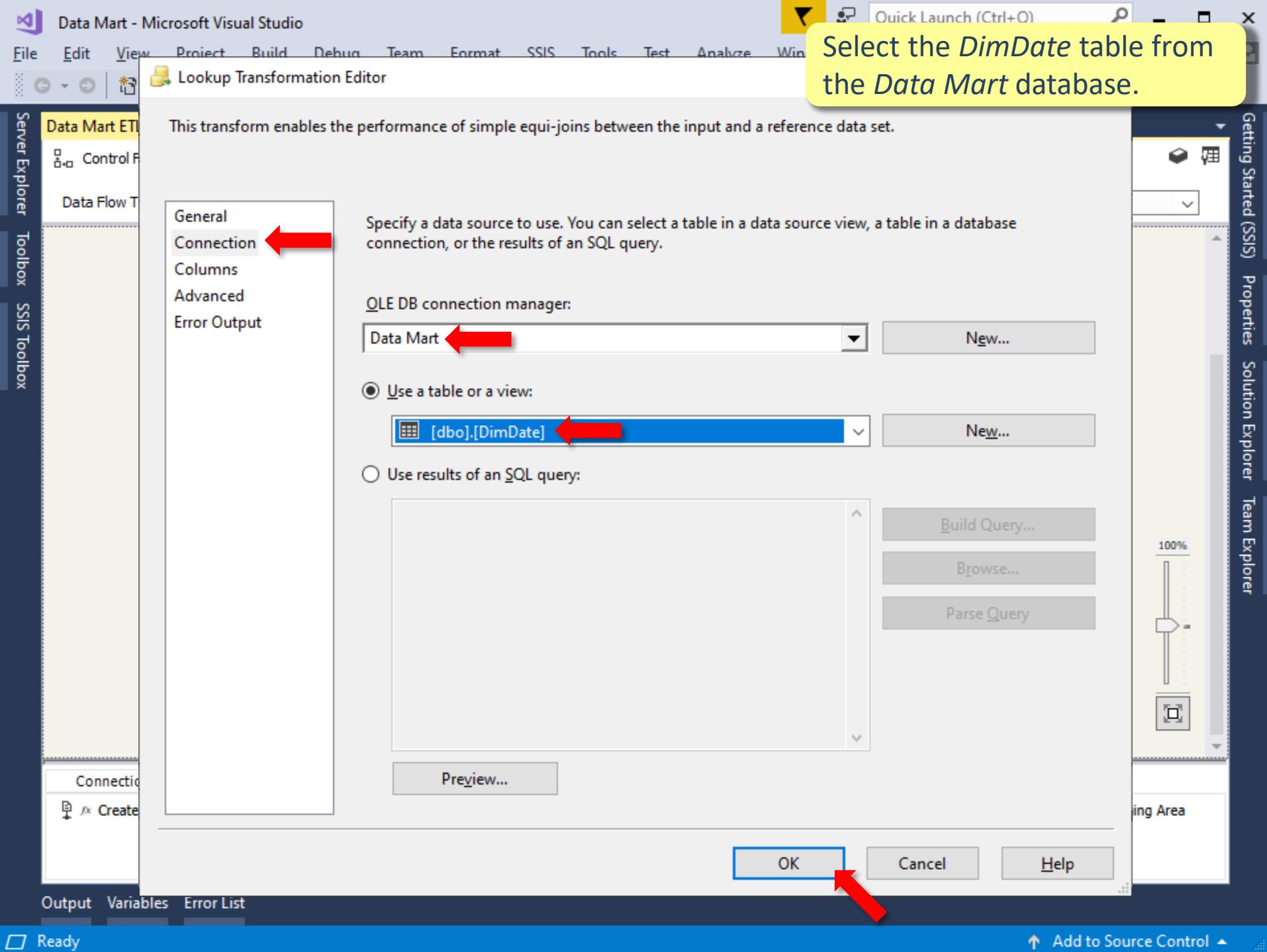
Add to Source Control

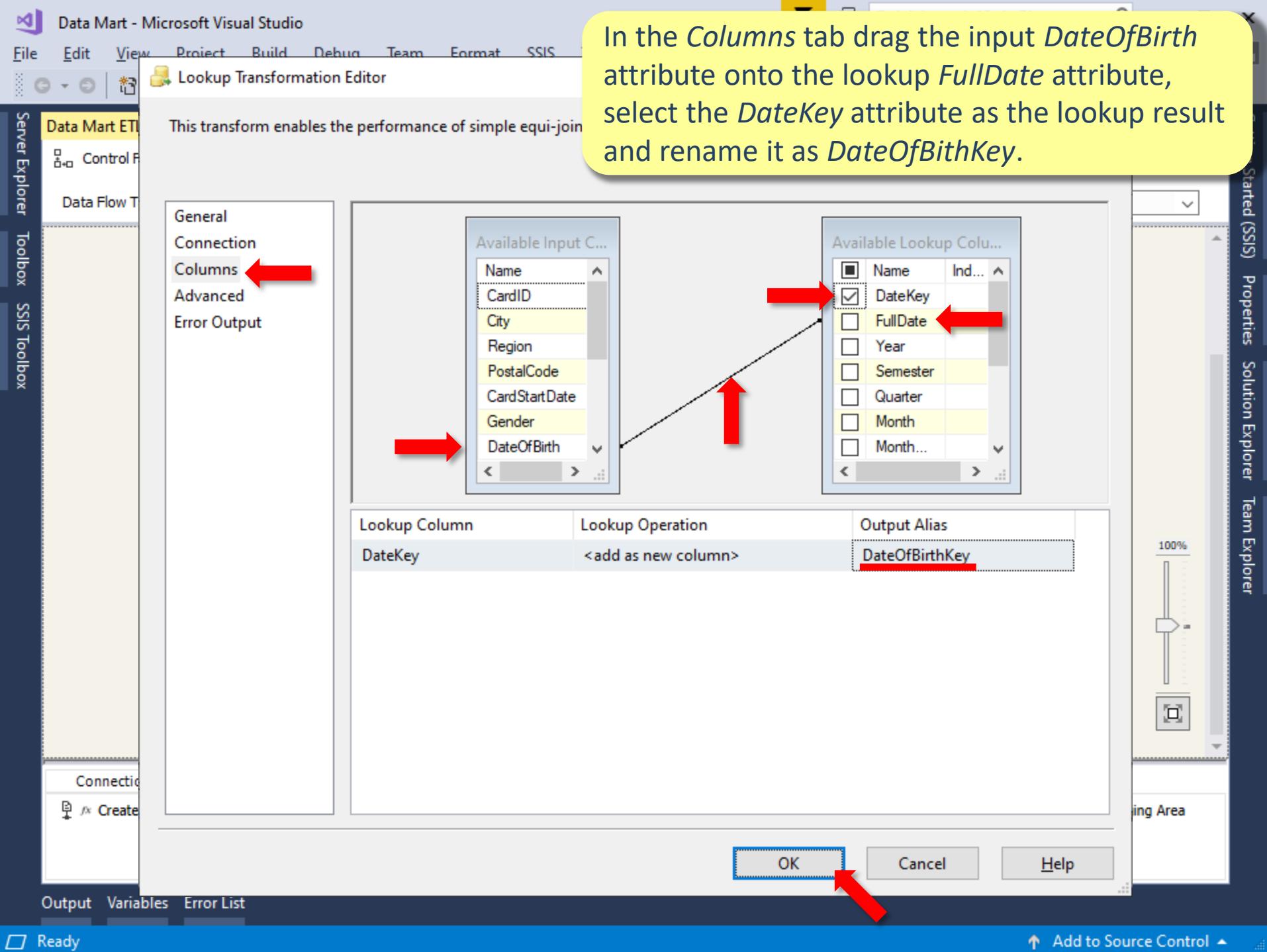
Rename the component as *Lookup DateOfBirthKey* and connect the previous component to it.

```
graph TD; TransformGender[Transform Gender] --> MaritalStatusDescription[Lookup MaritalStatusDescription]; MaritalStatusDescription --> MatchOutput[Lookup Match Output]; MatchOutput --> CardStartDateKey[Lookup CardStartDateKey]; CardStartDateKey --> DateOfBirthKey[Lookup DateOfBirthKey]
```









Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools

Quick Launch (Ctrl+O)

Server Explorer Toolbox SSIS Toolbox

Search SSIS Toolbox

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

Azure
Other Transforms
Other Sources
ADO NET Source
CDC Source

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

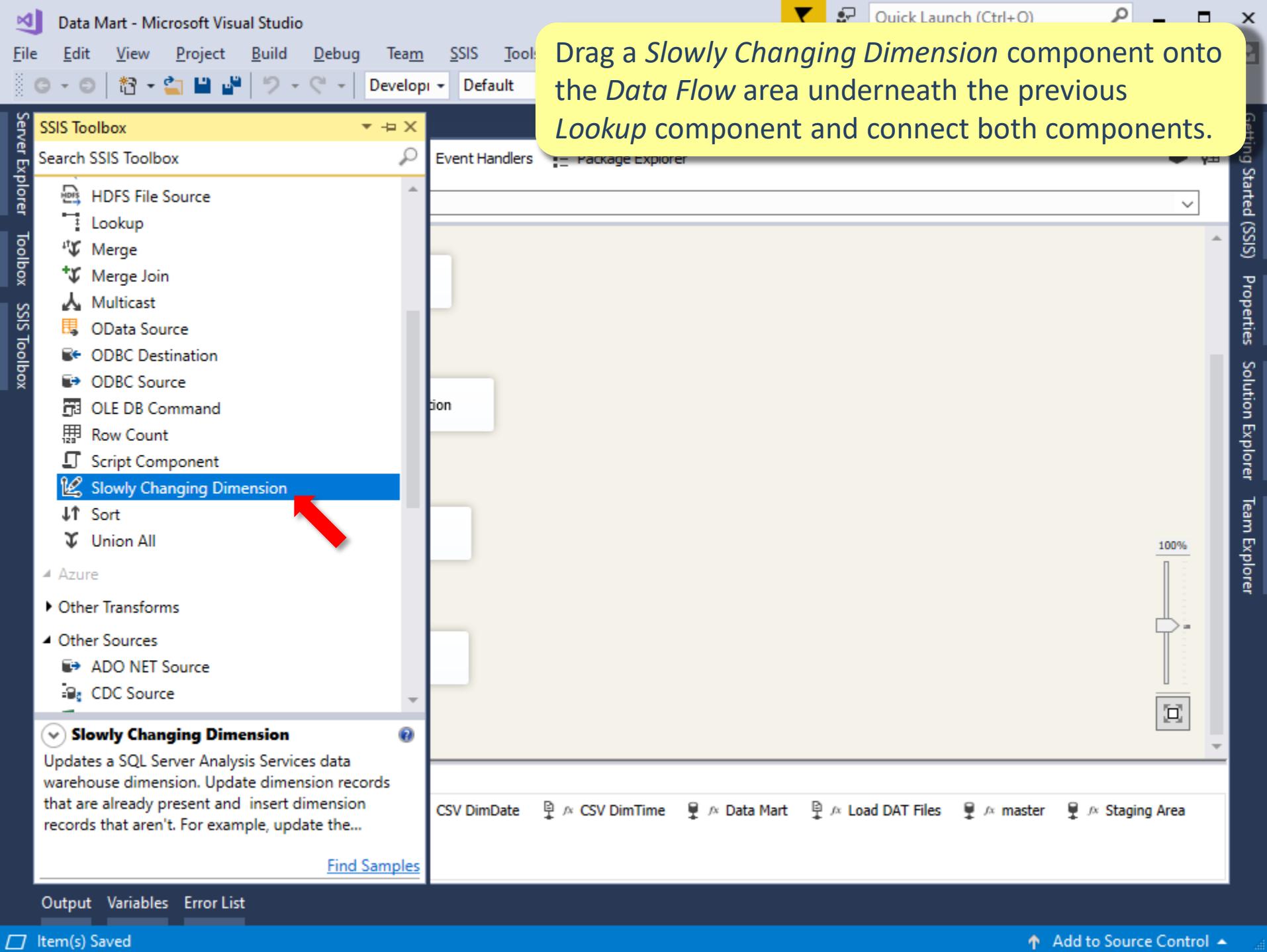
Output Variables Error List

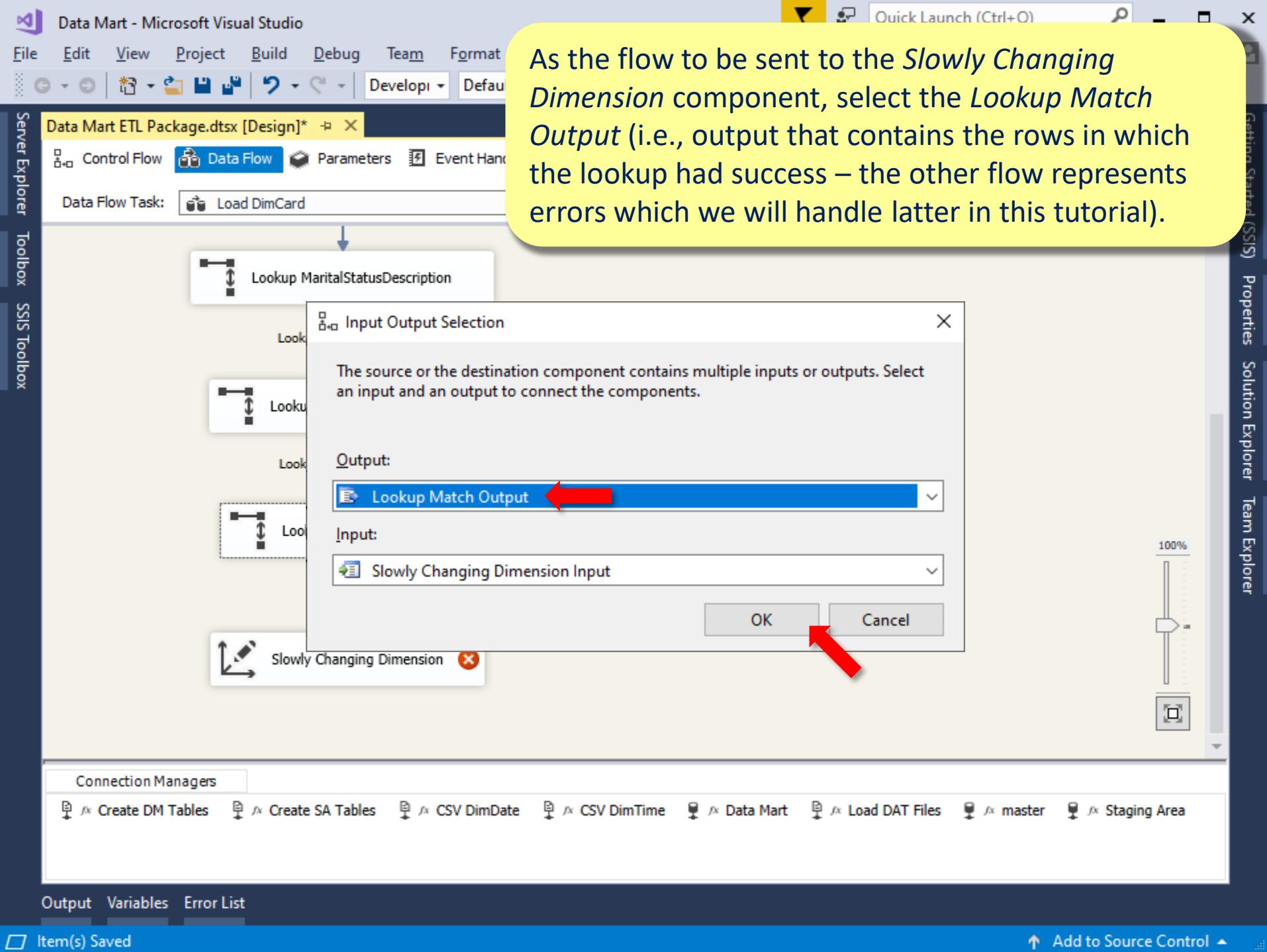
Item(s) Saved Add to Source Control

Event Handlers Package Explorer

Getting Started (SSIS) Properties Solution Explorer Team Explorer

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





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Lookup MaritalStatusDescription
↓
Lookup Match Output
↓
Lookup CardStartDateKey
↓
Lookup Match Output
↓
Lookup DateOfBirthKey
↓
Lookup Match Output
↓
Slowly Changing Dimension

Double click to configure the *Slowly Changing Dimension* component.

Server Explorer Toolbox SSIS Toolbox

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Connection Managers

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

Output Variables Error List

Item(s) Saved Add to Source Control

```
graph TD; A[Lookup MaritalStatusDescription] --> B[Lookup Match Output]; B --> C[Lookup CardStartDateKey]; C --> D[Lookup Match Output]; D --> E[Lookup DateOfBirthKey]; E --> F[Lookup Match Output]; F --> G[Slowly Changing Dimension]
```

The component's configuration is done through a wizard.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Win

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load Dim

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 CSV DimTime Data Mart Load DAT Files master Staging Area

Output Variables Error List

Item(s) Saved Add to Source Control

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

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: DataMart

Table or view: [dbo].[DimCard]

Input Columns	Dimension Columns	Key Type
CardID	CardID	Not a key column
CardStartDateKey	CardStartDateKey	Not a key column
City	City	Not a key column
DateOfBirthKey	DateOfBirthKey	Not a key column
	EffectiveDate	
	ExpiredDate	

At least one business key needs to be selected.

Help Back Next > Finish >> Cancel

Output Variables Error List

Add to Source Control

Server Explorer Toolbox SSIS Toolbox

Getting Started (SSIS) Properties Solution Explorer Team Explorer

master Staging Area

Item(s) Saved

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

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: DataMart [New...](#)

Table or view: [dbo].[DimCard]

Input Columns	Dimension Columns	Key Type
CardID	CardID	Business key 
CardStartDateKey	CardStartDateKey	Not a key column
City	City	Not a key column
DateOfBirthKey	DateOfBirthKey	Not a key column
	EffectiveDate	
	ExpiredDate	

Output Variables Error List

Item(s) Saved Add to Source Control

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS

Server Explorer Toolbox SSIS Toolbox

Quick Launch (Ctrl+O)

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Output Variables Error List

Item(s) Saved Add to Source Control

Slowly Changing Dimension Wizard

Select a Dimension Table and I

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

Connection manager: DataMart New...

Table or view: [dbo].[DimCard]

Input Columns Dimension Columns Key Type

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

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.

The screenshot shows the 'Slowly Changing Dimension Wizard' dialog box within the Microsoft Visual Studio interface. The status bar at the bottom right of the dialog box contains the text: 'Change the highlighted mappings between the source (Card table) and destination table (DimCard table). The other mappings were automatically established between both tables.' A yellow callout box surrounds this text. Two red arrows point from the left side of the image towards the 'Gender_Transformed' and 'MaritalStatusDescription' rows in the 'Input Columns' and 'Dimension Columns' mapping grid. A third red arrow points from the bottom left towards the 'Next >' button at the bottom of the dialog box.

Input Columns	Dimension Columns	Key Type
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

Data Mart - Microsoft Visual Studio

File Edit View Project Bu... Quick Launch (Ctrl+O)

Server Explorer

Toolbox SSIS Toolbox

Data Mart ETL Package.dtsx [De... Control Flow Data Flow

Data Flow Task: Load Dir...

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Output Variables Error List

Slowly Changing Dimension Wizard

Slowly Changing Dimension Column

Manage the changes to column data in your dimension table 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
CardStartDateKey	Changing attribute
DateOfBirthKey	Changing attribute
Gender	Changing attribute

Remove

Help < Back Next > Finish >> Cancel

master Staging Area

Add to Source Control

A yellow callout bubble points to the "Change Type" dropdown menu in the "Historical Attribute" section, which contains three entries: "CardStartDateKey", "DateOfBirthKey", and "Gender". The "Gender" entry is highlighted with a red box.

Data Mart - Microsoft Visual Studio

File Edit View Project Bu

Server Explorer

Toolbox SSIS Toolbox

Data Mart ETL Package.dtsx [De]

Control Flow Data Flow

Data Flow Task: Load Di

Load

Changing

Historical

Diagram

Connection Managers

Create DM Tables

Output Variables Error List

Quick Launch (Ctrl+O)

Getting Started (SSIS) Properties Solution Explorer Team Explorer

100%

master Staging Area

Slowly Changing Dimension Wizard

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
CardStartDateKey	Changing attribute
DateOfBirthKey	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).

A red box highlights the "Historical attribute" row for "YoungestChildren". A red arrow points to the "Next >" button at the bottom of the wizard.

Data Mart - Microsoft Visual Studio

File Edit View Project Bu... Quick Launch (Ctrl+O)

Server Explorer Toolbox SSIS Toolbox

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Slowly Changing Dimension Wizard

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

Connection Managers

Create DM Tables

master Staging Area

Output Variables Error List

Add to Source Control

A yellow callout bubble points to the checkbox labeled "Change all the matching records, including outdated records, when changes are detected in a changing attribute".

Data Mart - Microsoft Visual Studio

File Edit View Project Build

Server Explorer

Toolbox SSIS Toolbox

Connection Managers

Create DM Tables

Output Variables Error List

Item(s) Saved Add to Source Control

Slowly Changing Dimension Wizard

Historical Attribute Options

You can record historical attributes using a single column or start and end dates.

Use a single column to show current and expired records

Column to indicate current record:

Value when current:

Expiration value:

Use start and end dates to identify current and expired records

Start date column: EffectiveDate

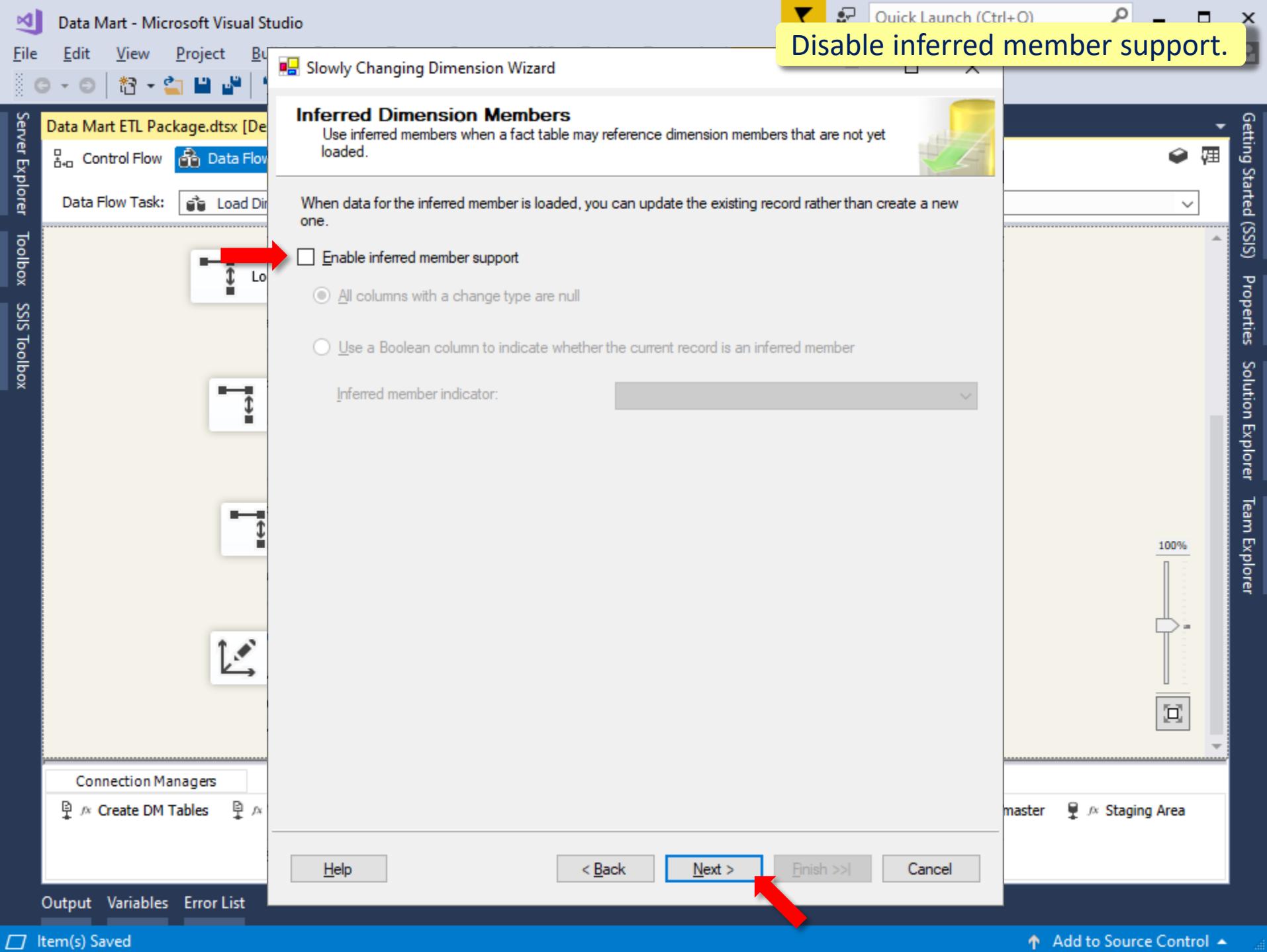
End date column: ExpiredDate

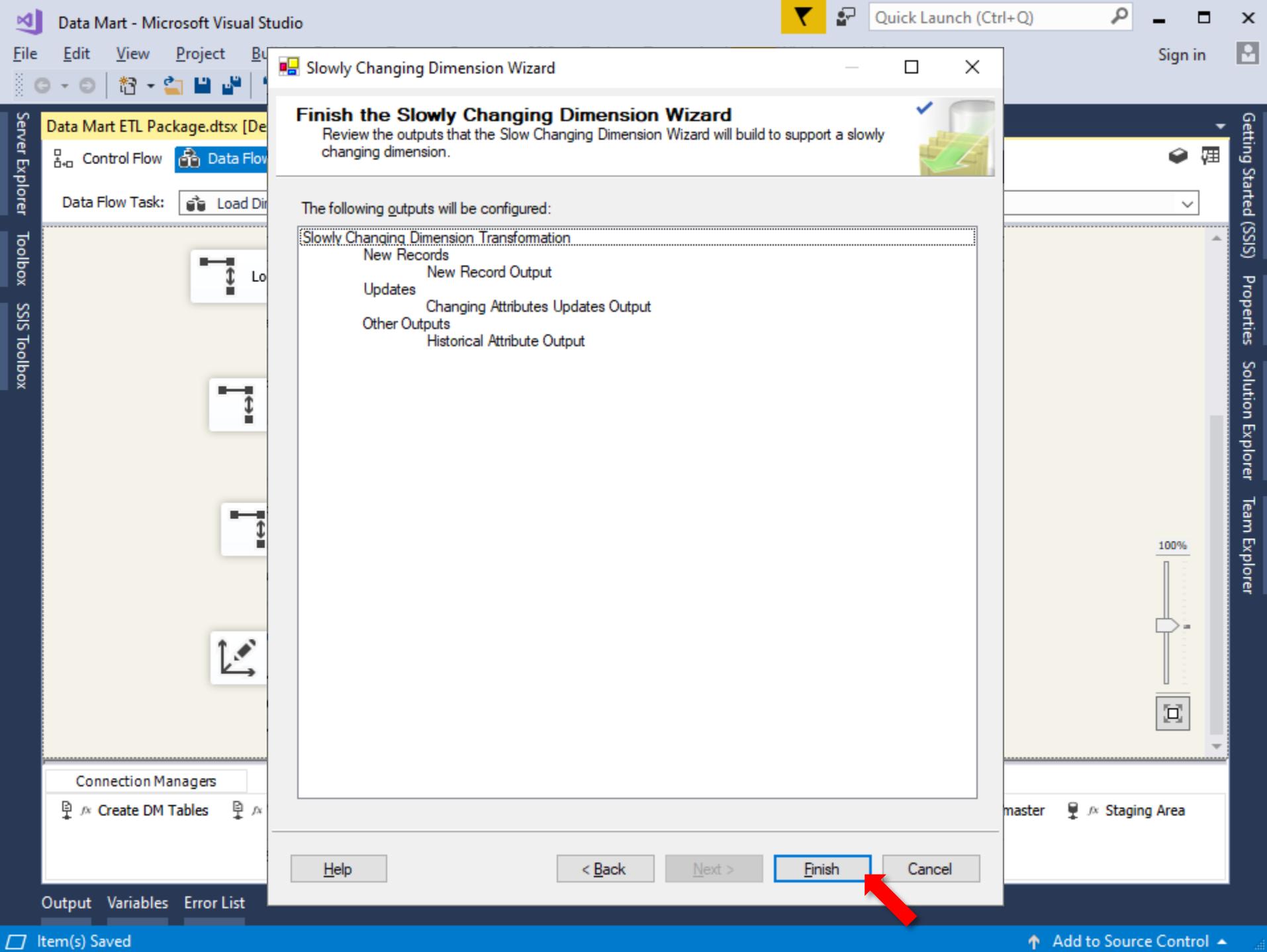
Variable to set date values: System::ContainerStartTime

Help < Back Next > Finish >> Cancel

Select the attributes that store the start date and end date of the records (for Type 2 SCD), and the system variable to use to update them.

Getting Started (SSIS) Properties Solution Explorer Team Explorer





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Develop Default Start

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Slowly Changing Dimension

Historical Attribute Inserts Output

Derived Column

OLE DB Command 1

New Output

OLE DB Command

Union All

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

The diagram illustrates a data flow task for a 'Slowly Changing Dimension'. It starts with a 'Slowly Changing Dimension' source component at the top. Two output paths emerge: 'Historical Attribute Inserts Output' leading to a 'Derived Column' component, and 'Changing Attribute Updates Output' leading to an 'OLE DB Command 1' component. The 'Derived Column' component has an arrow pointing down to an 'OLE DB Command' component. Both the 'OLE DB Command 1' and 'OLE DB Command' components have arrows pointing down to a 'Union All' component at the bottom. Red arrows highlight the connections from 'OLE DB Command 1', 'OLE DB Command', and the vertical connection to the 'Union All' component.

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+O)

...and yet two more components.

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

OLE DB Command

New Output

Union All

Derived Column 1

Insert Destination

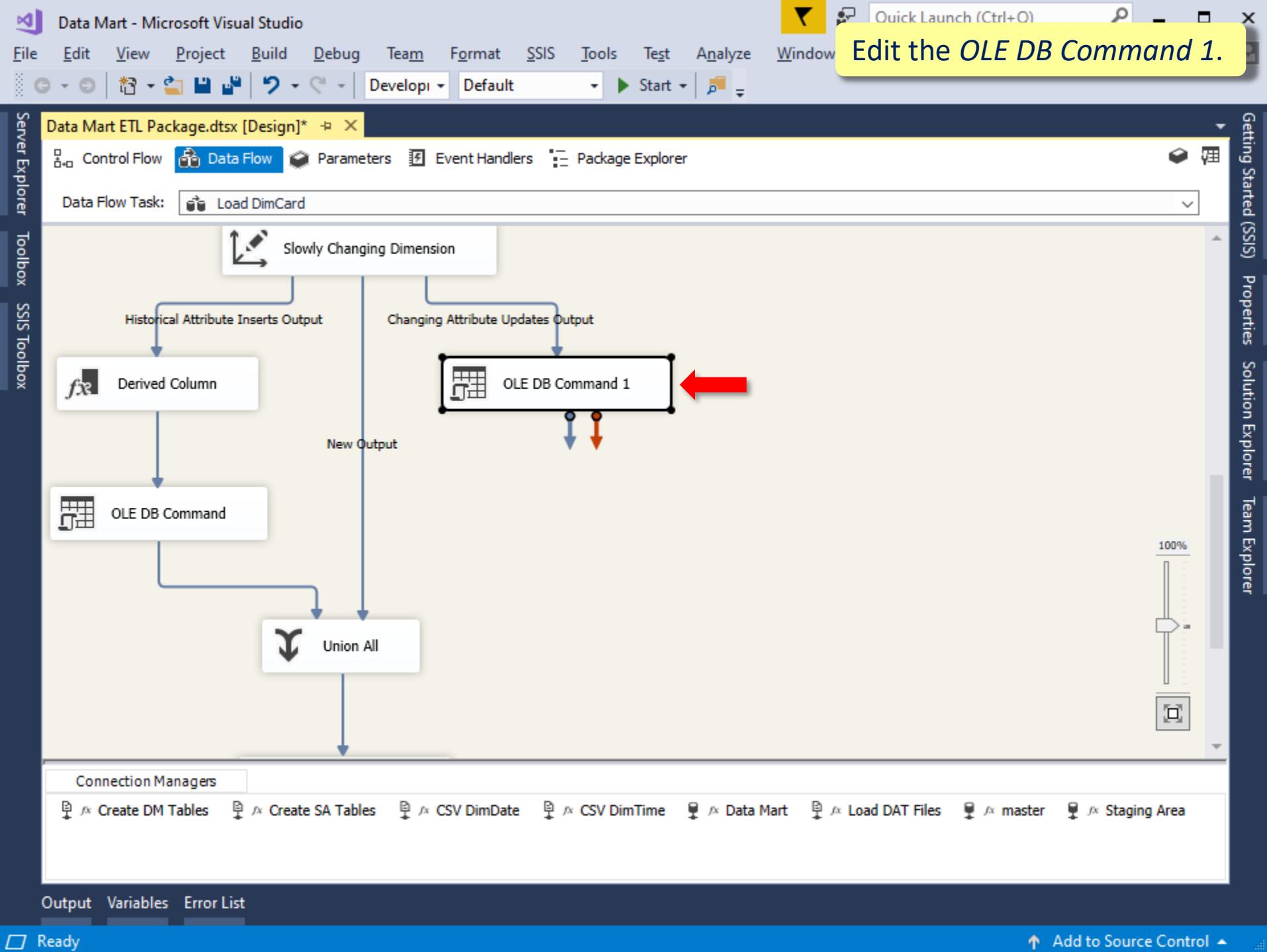
Connection Managers

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

Output Variables Error List

Ready Add to Source Control

```
graph TD; OLEDB[OLE DB Command] --> Union[Union All]; OLEDB -- New Output --> Union; Union --> DC[Derived Column 1]; DC --> ID[Insert Destination];
```



Data Mart - Microsoft Visual Studio

File Edit View

Advanced Editor for OLE DB Command 1

The advanced editor provides access to the low-level properties of data flow components. It 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 Server
Description	Runs an SQL statement for each row in a data flow. For example, it can be used to update a table based on values in other tables.
ID	374
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	DimCard] SET [CardStartDateKey] = ?,[DateOfBirthKey] = ?

SqlCommand
The SQL command to be executed.

Refresh OK Cancel Help

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

Getting Started (SSIS) Properties Solution Explorer Team Explorer

100%

Staging Area

Add to Source Control

Data Mart - Microsoft Visual Studio

File Edit View

Advanced Editor for OLE DB Command 1

The advanced editor provides access to the low-level properties that 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
- ContactInfo
- Description
- ID
- IdentificationString
- IsDefaultLocale
- LocaleID
- Name
- PipelineVersion
- UsesDispositions
- ValidateExternalMetadata
- Version

Custom Properties

- CommandTimeout
- DefaultCodePage
- SqlCommand

SqlCommand

The SQL command to be executed.

String Value Editor

String value:

```
UPDATE [dbo].[DimCard]
SET [CardStartDateKey] = ?,[DateOfBirthKey] = ?,[Gender] = ?
WHERE [CardID] = ?
```

OK Cancel

1252

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

Refresh OK Cancel Help

This SQL command is responsible for updating the **Type 1 SCD** attribute (e.g., Gender).

Getting Started (SSIS) Properties Solution Explorer Team Explorer

100%

Staging Area

Add to Source Control

Ready

```
UPDATE [dbo].[DimCard]
SET [CardStartDateKey] = ?,[DateOfBirthKey] = ?,[Gender] = ?
WHERE [CardID] = ?
```

Data Mart - Microsoft Visual Studio

File Edit View

Advanced Editor for OLE DB Command 1

The advanced editor provides access to the low-level properties of data flow components. Additionally, the advanced 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	{4AA3F603-2558-44FD-9CAD-F8005FB6A880}
ContactInfo	OLE DB Command;Microsoft Corporation; Microsoft SQL Se
Description	Runs an SQL statement for each row in a data flow. For exam
ID	361
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 [CardStartDateKey] = ?,[DateO

SqlCommand

The SQL command to be executed.

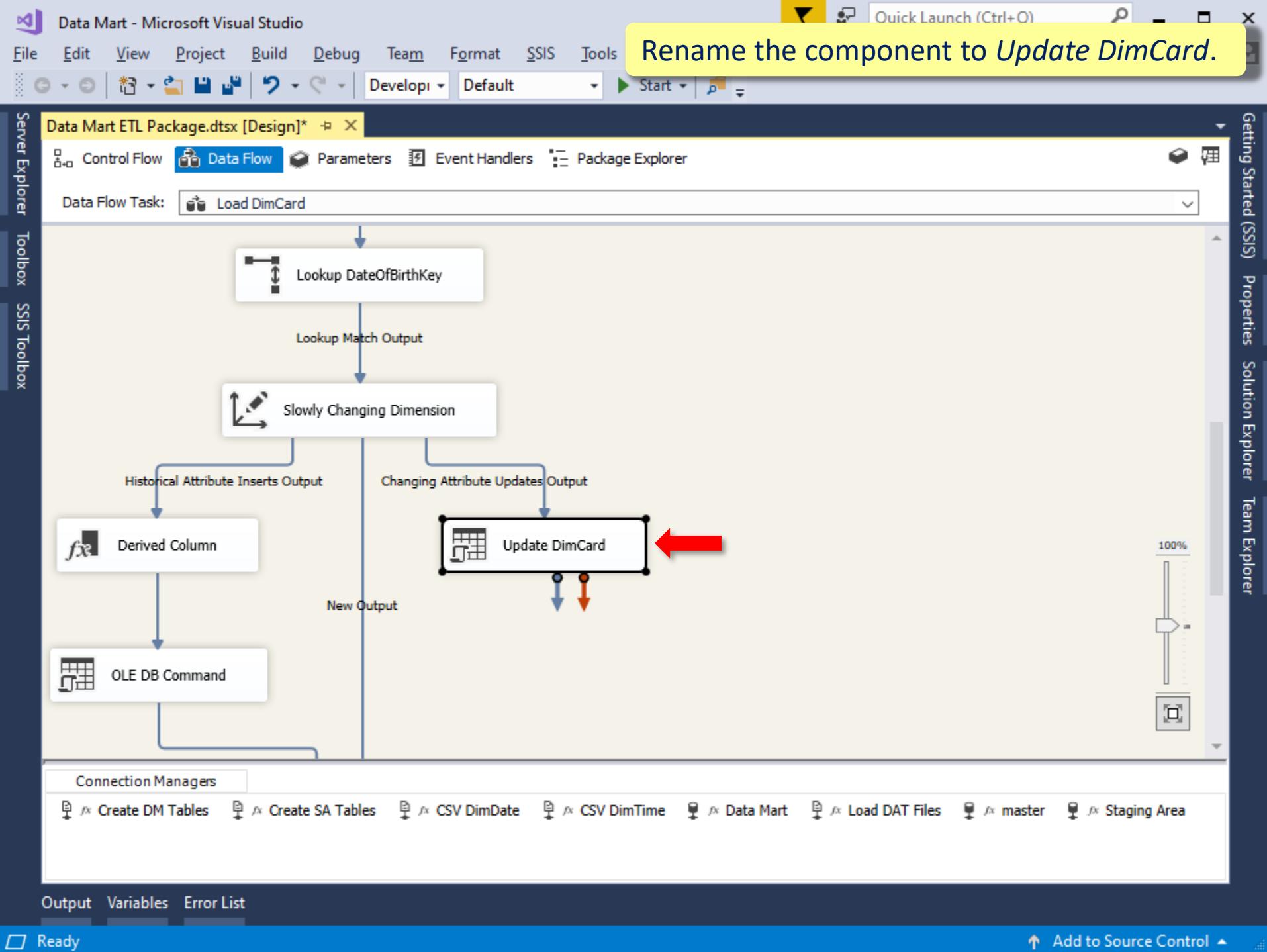
Refresh OK Cancel Help

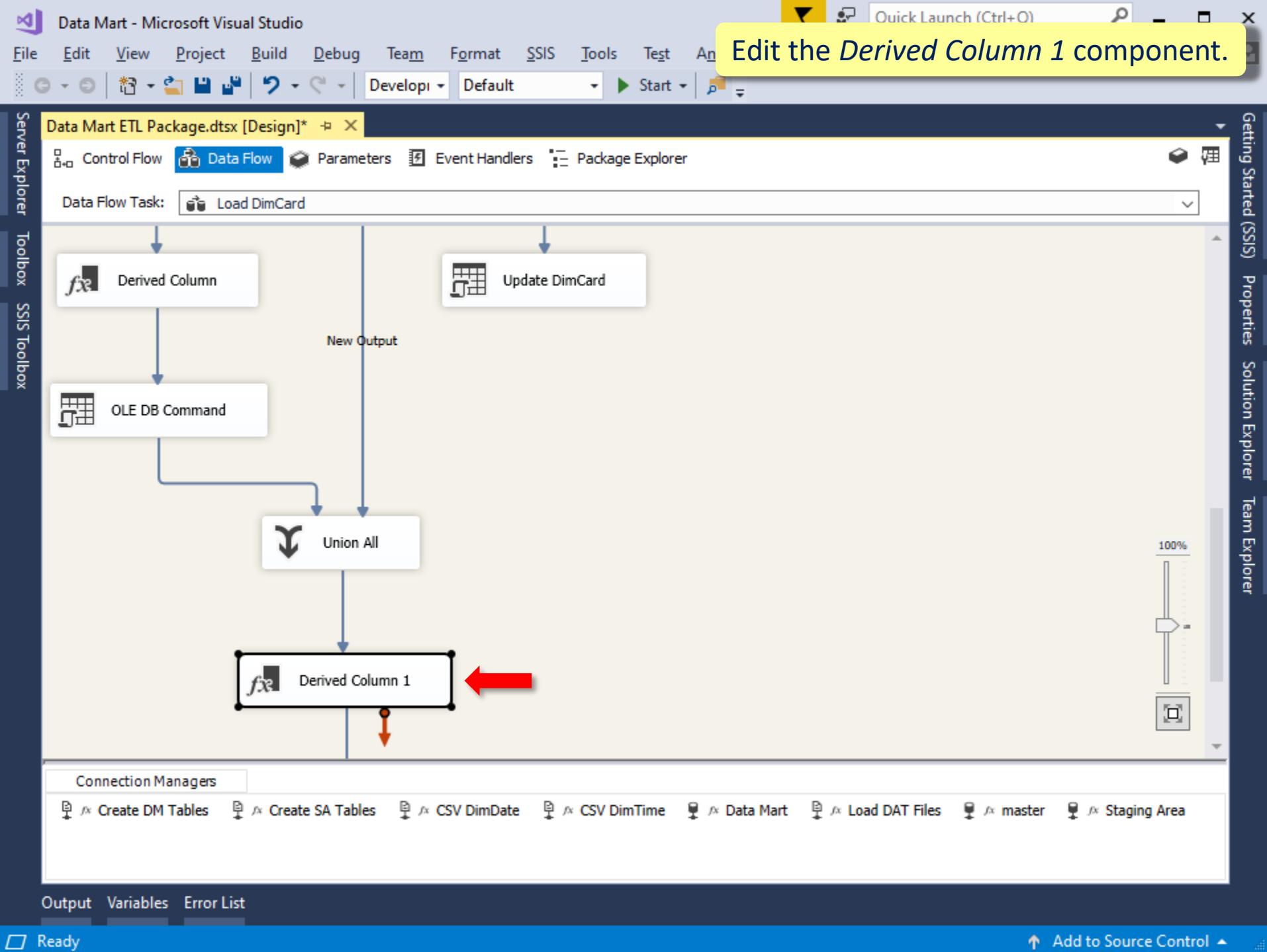
Getting Started (SSIS) Properties Solution Explorer Team Explorer

Add to Source Control

Ready

A red arrow points to the "Cancel" button at the bottom right of the dialog window.





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools

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.

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

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
EffectiveDate	<add as new column>	(DT_DBTIMESTAMP)(@[System::CreationDate])	database timestamp [D...]

Configure Error Output...

OK Cancel Help

Output Variables Error List

Add to Source Control

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Tools Format SSIS Tools Test

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
EffectiveDate	<add as new column>	(DT_DBTIMESTAMP)(@[System::CreationDate])	database timestamp [DT_DBTIMESTAMP]
IsCurrent	<add as new column>	"Yes"	Unicode string [DT_WSTR]

Configure Error Output... OK Cancel Help

Output Variables Error List

Add to Source Control

Let's also use it to initialize the *IsCurrent* attribute as presented in the picture.

The screenshot shows the 'Derived Column Transformation Editor' window within Microsoft Visual Studio. The 'IsCurrent' row in the table is highlighted with a red box, and a red arrow points to the 'OK' button at the bottom right of the dialog. A yellow callout bubble contains the text: 'Let's also use it to initialize the IsCurrent attribute as presented in the picture.'

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Win

Data Mart ETL Package.dtsx [Design] X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

OLE DB Command

New Output

Union All

Set New Record Effective Date

Insert Destination

Connection Managers

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

Output Variables Error List

Add to Source Control

Rename the component to Set New Record Effective Date.

```
graph TD; OLEDB[OLE DB Command] --> Union[Union All]; OLEDB --> Set[Set New Record Effective Date]; Union --> Set; Set --> Insert[Insert Destination]
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test A Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design] X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

OLE DB Command

New Output

Union All

Set New Record Effective Date

Insert Destination

Connection Managers

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

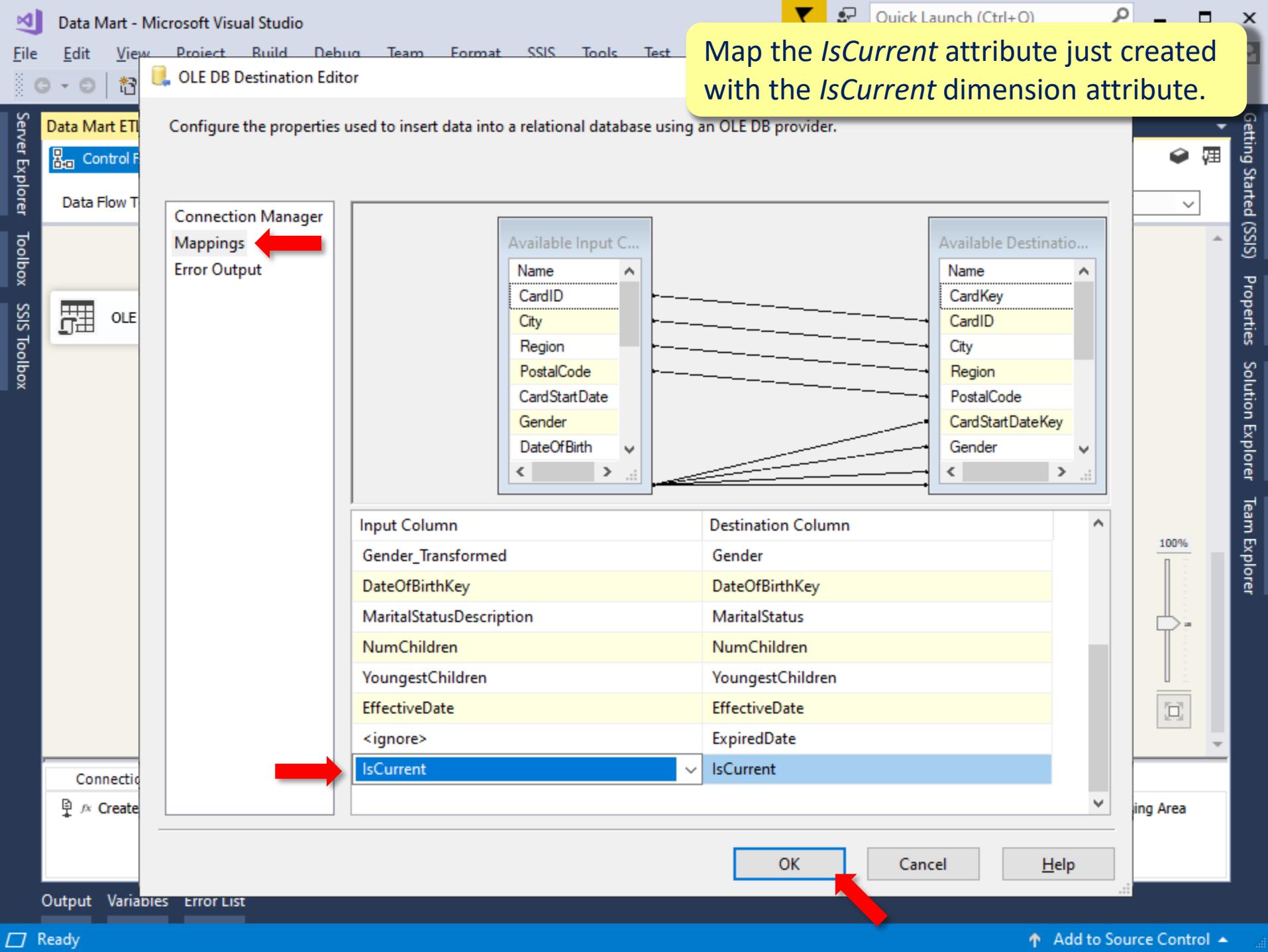
Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

A yellow callout bubble in the top right corner says "Edit the Insert Destination component." A red arrow points to the "Insert Destination" component in the Data Flow diagram.

```
graph TD; OLEDB[OLE DB Command] --> UnionAll[Union All]; OLEDB --> SetRecord[Set New Record Effective Date]; UnionAll --> InsertDest[Insert Destination]
```



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS To Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer Execution Results

Data Flow Task: Load DimCard

Expire Old Record

Union All

Set New Record Effective Date

Insert into DimCard

Connection Managers

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

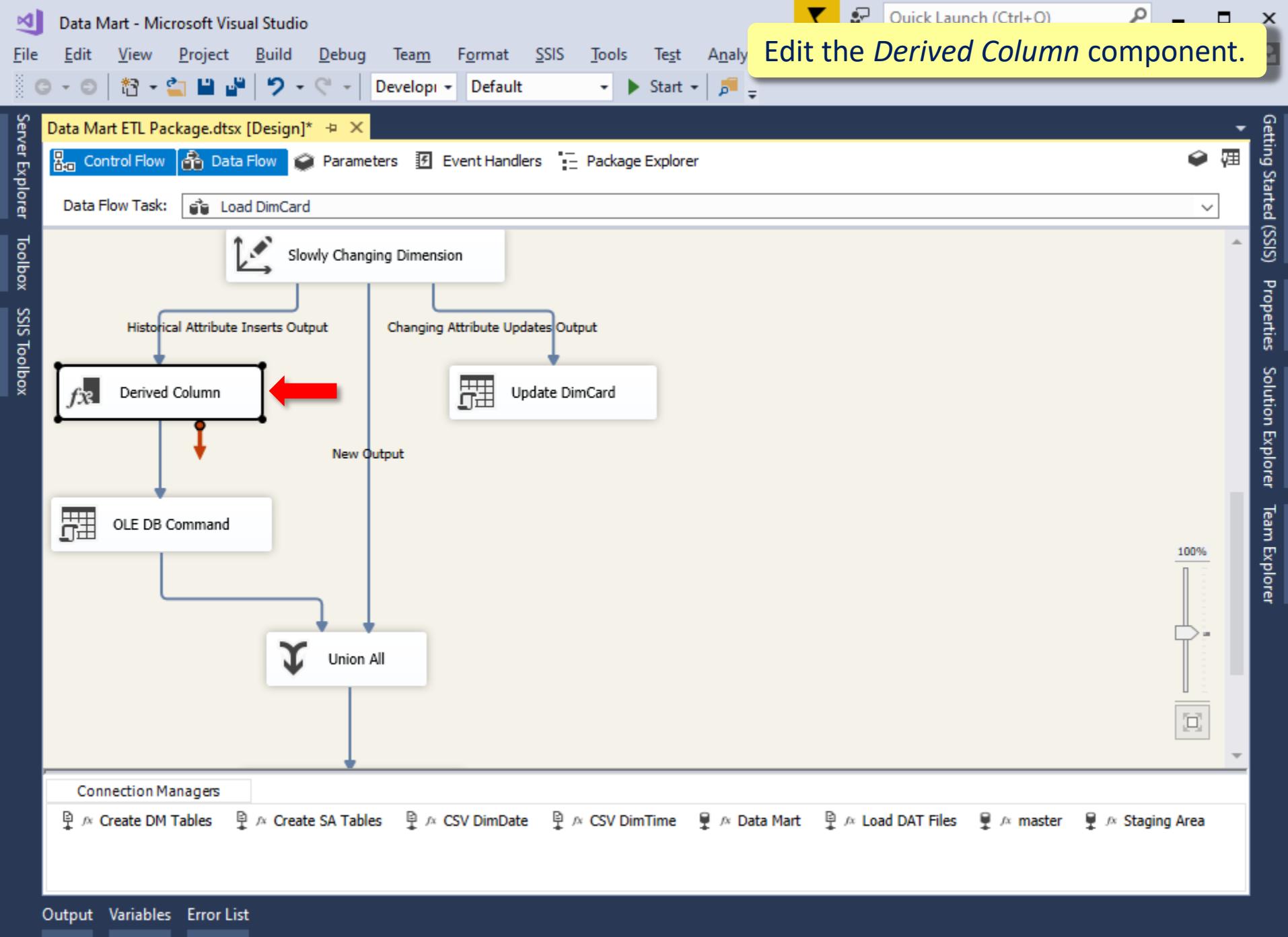
Output Variables Error List

Add to Source Control

Server Explorer Toolbox SSIS Toolbox Getting Started (SSIS) Properties Solution Explorer Team Explorer

Rename the component to *Insert into DimCard*.

```
graph TD; A[Expire Old Record] --> B[Union All]; B --> C[Set New Record Effective Date]; C --> D[Insert into DimCard]
```



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

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
ExpiredDate	<add as new column>	(DT_DBTIMESTAMP)(@[System::ContainerStartTime])	database timestamp [D...

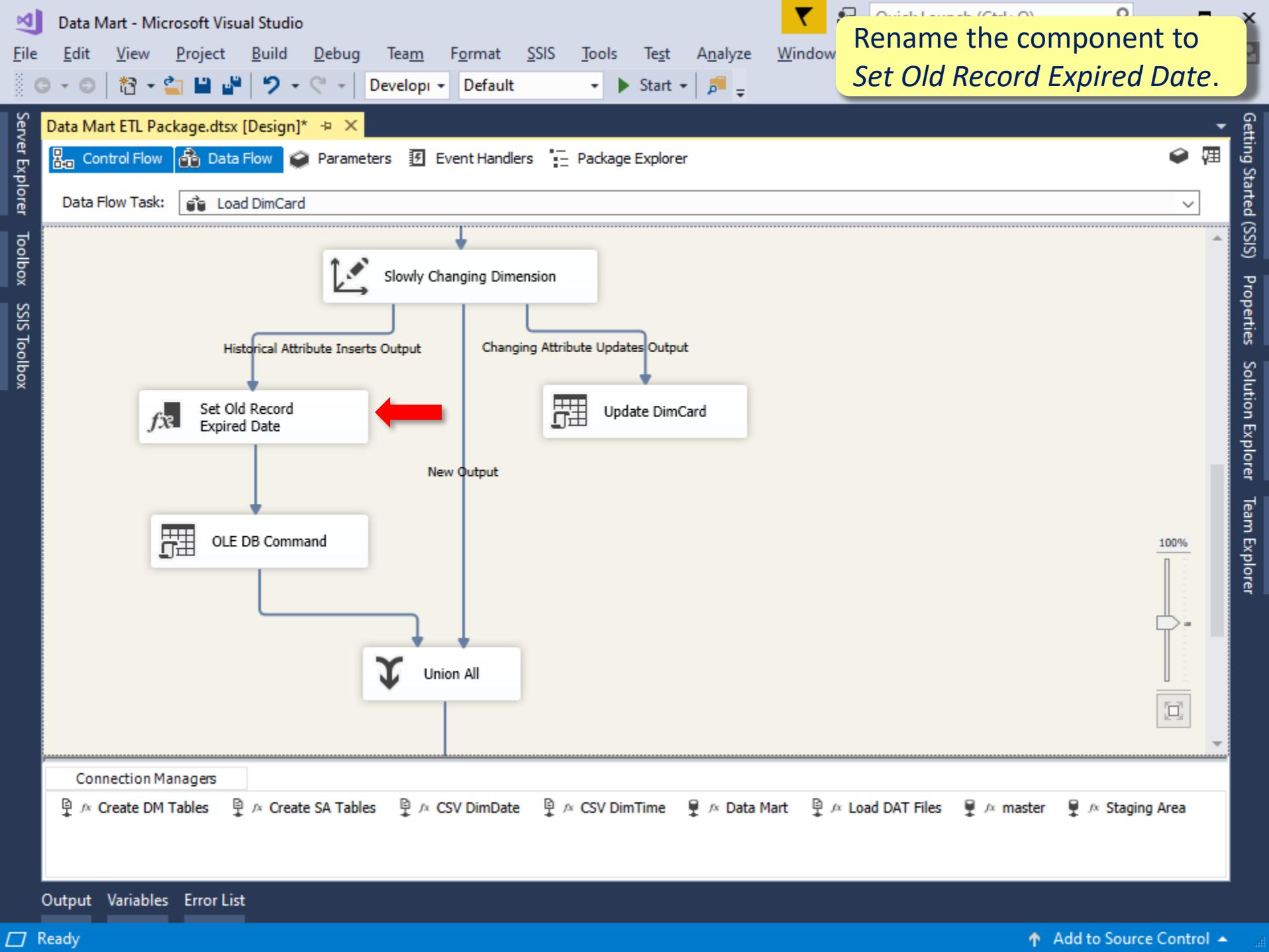
Configure Error Output... OK Cancel Help

Output Variables Error List

Ready Add to Source Control

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

The screenshot shows the 'Derived Column Transformation Editor' window in Microsoft Visual Studio. The main area displays a table with one row for the 'ExpiredDate' derived column. The 'Expression' column contains the expression '(DT_DBTIMESTAMP)(@[System::ContainerStartTime])'. The 'Data Type' column shows 'database timestamp [D...]' with a dropdown arrow. On the left, there's a tree view for 'Variables and Parameters' and 'Columns'. On the right, there's a list of built-in functions: Mathematical Functions, String Functions, Date/Time Functions, NULL Functions, Type Casts, and Operators. A 'Description:' text box is also present. At the bottom, there are buttons for 'Configure Error Output...', 'OK', 'Cancel' (which has a red arrow pointing to it), and 'Help'. The status bar at the bottom shows 'Output Variables Error List' and 'Ready Add to Source Control'.



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test A Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Edit the *OLE DB Command* component.

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Slowly Changing Dimension

Historical Attribute Inserts Output

Set Old Record Expired Date

Changing Attribute Updates Output

Update DimCard

New Output

OLE DB Command

Union All

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

The screenshot shows the Microsoft Visual Studio interface for an SSIS package named "Data Mart ETL Package.dtsx". The main window displays the "Data Flow" tab, with the task name "Load DimCard" selected. The data flow diagram consists of several components: a "Slowly Changing Dimension" source at the top, which branches into two paths: "Historical Attribute Inserts Output" leading to a "Set Old Record Expired Date" transformation, and "Changing Attribute Updates Output" leading to an "Update DimCard" transformation. Both of these paths converge into a single "New Output" path that leads to an "OLE DB Command" component. A red arrow points to the "OLE DB Command" component. Finally, the output of the "OLE DB Command" component flows into a "Union All" component. At the bottom of the screen, there is a "Connection Managers" pane listing various connection managers such as "Create DM Tables", "Create SA Tables", "CSV DimDate", etc. The status bar at the bottom indicates "Ready" and "Add to Source Control".

Data Mart - Microsoft Visual Studio

File Edit

Advanced Editor for OLE DB Command

The advanced editor provides access to the low-level properties of data flow 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

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

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Output Area

Ready Add to Source Control

Detailed description: This screenshot shows the 'Advanced Editor for OLE DB Command' in Microsoft Visual Studio. The 'Component Properties' tab is selected, indicated by a red arrow. Below it, the 'Mappings' tab is also highlighted with a red arrow. The main area displays a table of properties, with the 'SqlCommand' row selected and its value ('UPDATE [dbo].[DimCard] SET [ExpiredDate] = ? WHERE [CardID] = ?') highlighted with a red arrow. At the bottom, there's a 'SqlCommand' section with a description and a text input field containing the same SQL command. Standard Visual Studio buttons for Refresh, OK, Cancel, and Help are at the bottom.

Data Mart - Microsoft Visual Studio

File Edit

Advanced Editor for OLE DB Command

The advanced editor provides access to the low-level properties of 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

SqlCommand

The SQL command to be executed.

Refresh OK Cancel Help

This update statement is responsible for expiring the old record to keep the previous record value.

String Value Editor

String value:

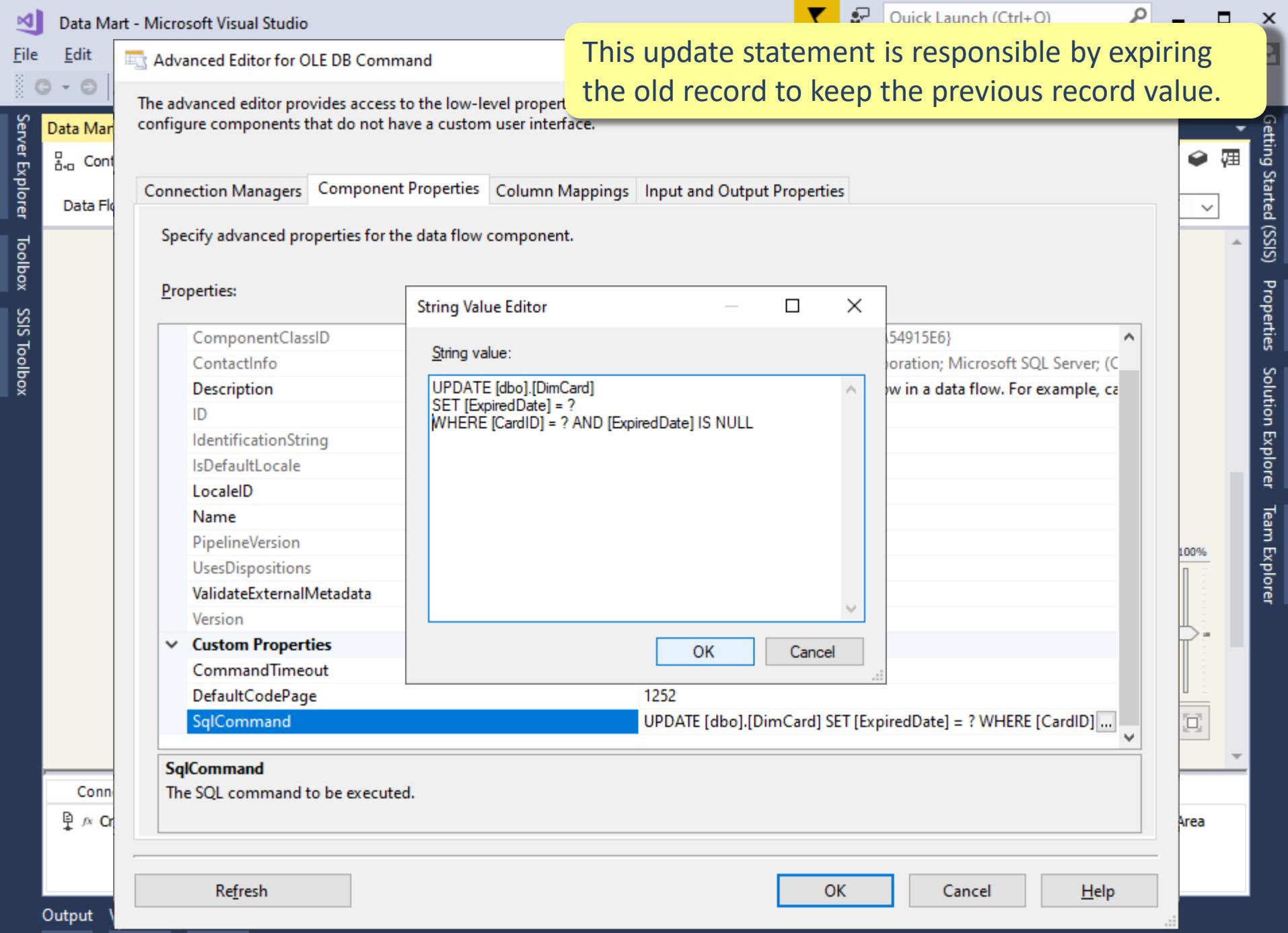
```
UPDATE [dbo].[DimCard]
SET [ExpiredDate] = ?
WHERE [CardID] = ? AND [ExpiredDate] IS NULL
```

OK Cancel

1252 UPDATE [dbo].[DimCard] SET [ExpiredDate] = ? WHERE [CardID] ...

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Add to Source Control



Data Mart - Microsoft Visual Studio

File Edit
Data Mart
Connection Managers Component Properties Column Mappings Inputs
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

SqlCommand

The SQL command to be executed.

Refresh OK Cancel Help

String Value Editor

String value:

```
UPDATE [dbo].[DimCard]
SET [ExpiredDate] = ?, IsCurrent = 'No'
WHERE [CardID] = ? AND [ExpiredDate] IS NULL
```

OK Cancel

Add the following to the SET clause in the SQL UPDATE command:
, *IsCurrent* = 'No'
The purpose is to set the *IsCurrent* attribute to No of the expired record.

54915E6} Corporation; Microsoft SQL Server; (C
ow in a data flow. For example, ca
100% Area

Ready Add to Source Control

```
UPDATE [dbo].[DimCard]
SET [ExpiredDate] = ?, IsCurrent = 'No'
WHERE [CardID] = ? AND [ExpiredDate] IS NULL
```

Data Mart - Microsoft Visual Studio

File Edit

Advanced Editor for OLE DB Command

The advanced editor provides access to the low-level properties of data flow components. Additionally, the advanced 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 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.

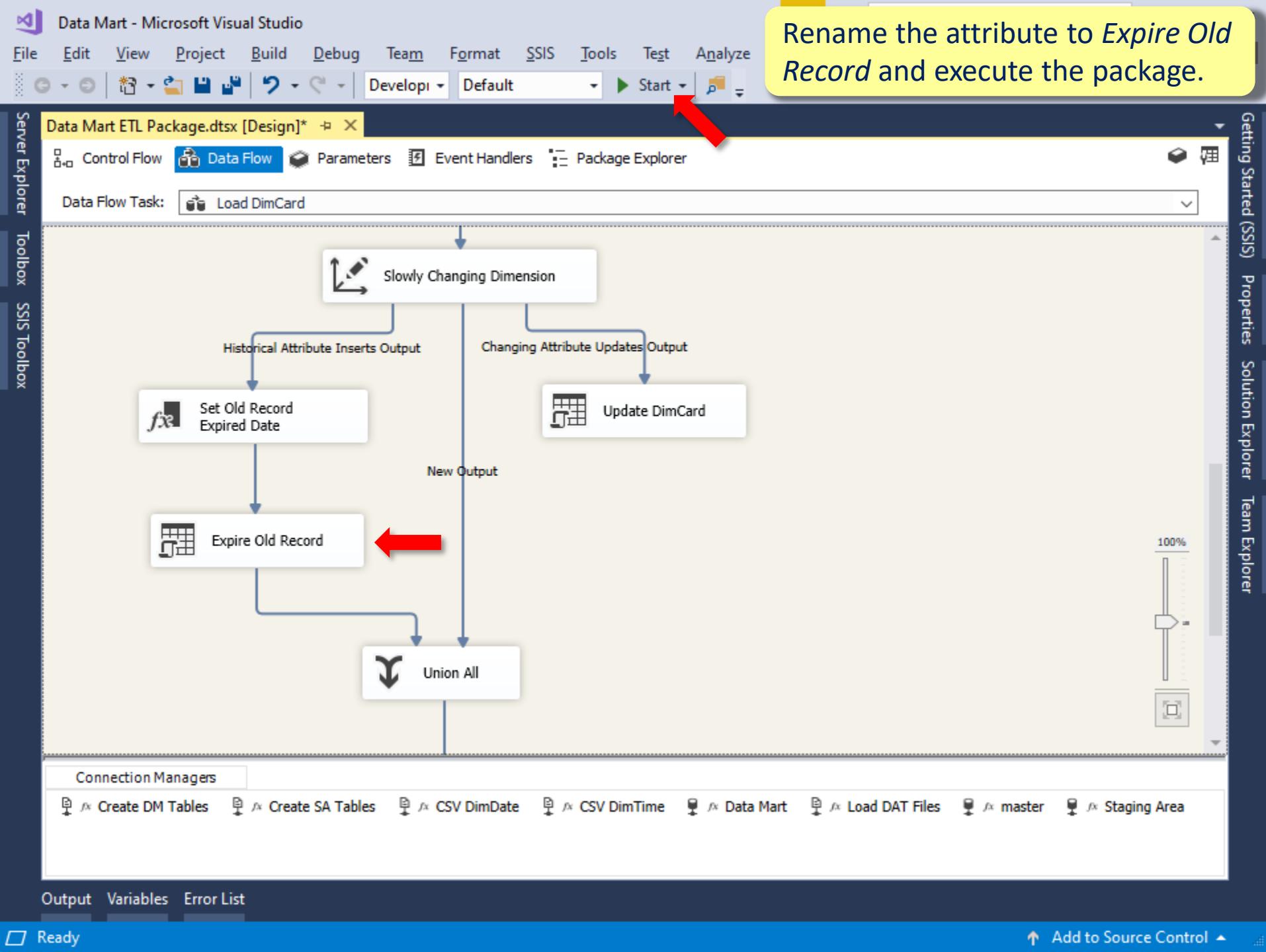
Refresh OK Cancel Help

Quick Launch (Ctrl+Q) Sign in

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area

Ready Add to Source Control



Data Mart (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Process: [9168] DtsDebugHost.exe Lifecycle Events Thread:

Quick Launch (Ctrl+O)

Control Flow Data Flow Parameters Event Handlers Package Explorer Progress

Data Flow Task: Load DimCard

Expire Old Record → Union All → Set New Record Effective Date → Insert into DimCard

Union All: 19 818 rows

Set New Record Effective Date: 19 818 rows

Insert into DimCard

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

Connection Managers

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

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

Ready Ln 1 Col 1 Ch 1 INS Add to Source Control

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.

The screenshot shows the Object Explorer on the left and the Script Results pane on the right. In the Object Explorer, red arrows point to the following nodes:

- Databases (under localhost)
- ARMDD_DataMart (under Databases)
- dbo.DimCard (under ARMDD_DataMart)
- Indexes (under dbo.DimCard)

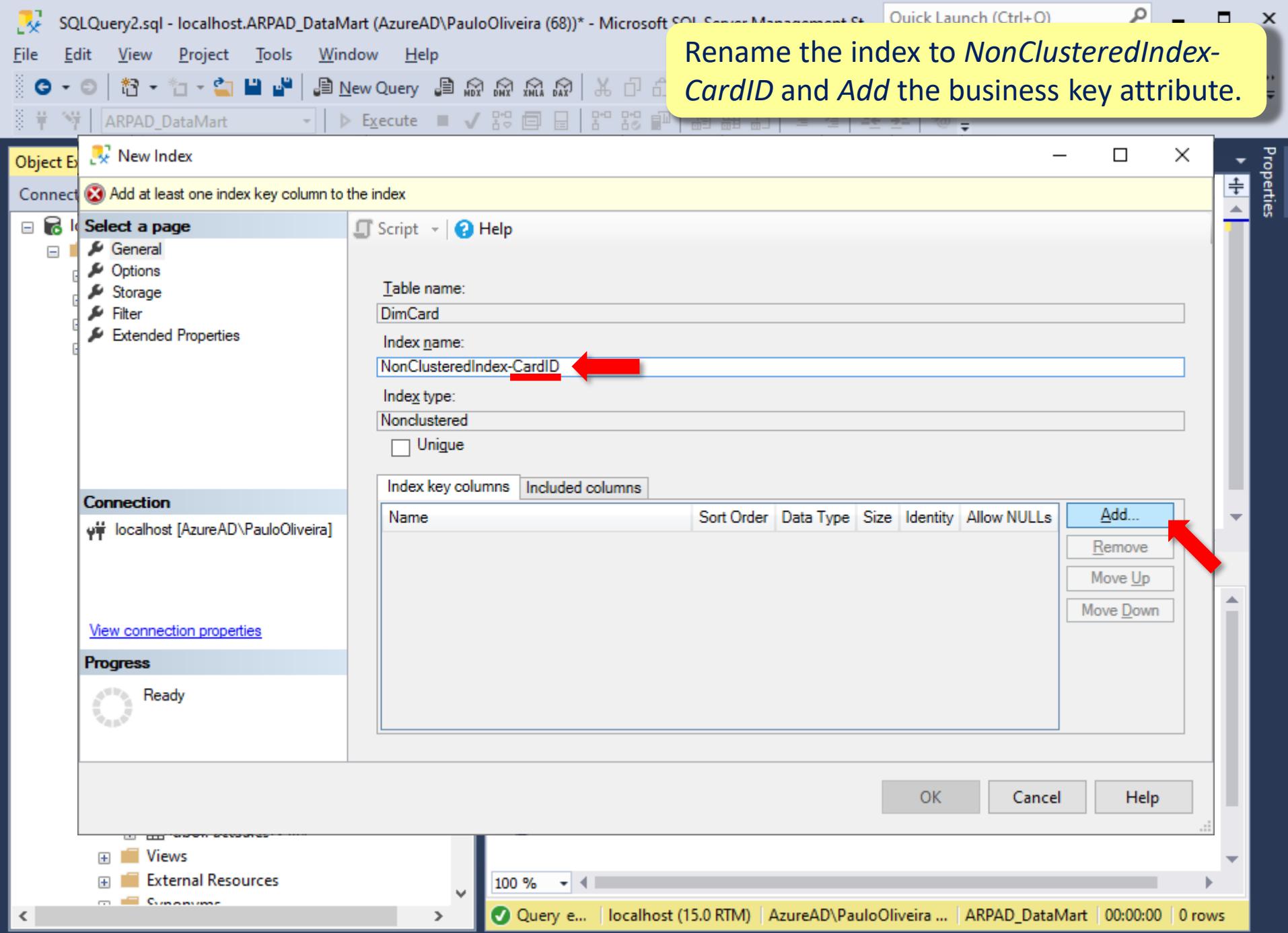
In the Script Results pane, a T-SQL script is displayed to create a stage table for marital status descriptions. Below the script, the message "Commands completed successfully." is shown. A red arrow points to the "Non-Clustered Index..." option in the context menu that appears when right-clicking the "Indexes" node in the Object Explorer. The context menu also includes options like "New Index", "Rebuild All", "Reorganize All", "Disable All", "Filter", "Start PowerShell", "Reports", and "Refresh".

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

Commands completed successfully.
Completion time: 2023-10-30T11:14:06.8133633+00:00

New Index
Clustered Index...
Non-Clustered Index...
Primary XML Index...
Secondary XML Index...
Spatial Index...
Clustered Columnstore Index...
Non-Clustered Columnstore Index...

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



SQLQuery2.sql - localhost.ARPAD_DataMart (AzureAD\PauloOliveira (68))* - Microsoft SQL Server Management Studio

File Edit View Project Tools Window Help

New Query MDX DMX XMLA DAX

ARPAD_DataMart Execute

Object Explorer

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]

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"/>	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"/>	CardStartDateKey	int	4	No	No
<input type="checkbox"/>	Gender	nvarchar(6)	12	No	No
<input type="checkbox"/>	DateOfBirthKey	int	4	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

Add... Remove Move Up Move Down

OK Cancel Help

Quick Launch (Ctrl+O)

Select the CardID attribute.

Views External Resources Schemas

100 %

Query e... | localhost (15.0 RTM) | AzureAD\PauloOliveira ... | ARPAD_DataMart | 00:00:00 | 0 rows

Ready

SQLQuery2.sql - localhost.ARPAD_DataMart (AzureAD\PauloOliveira (68))* - Microsoft SQL Server Management St... Quick Launch (Ctrl+Q)

File Edit View Project Tools Window Help

New Query MDX DMX XMLA DAX

ARPAD_DataMart Execute

Object Explorer New Index Connect

Select a page

General Options Storage Filter Extended Properties

Script ▾

New Query Editor Window Ctrl+Shift+N

File ... Ctrl+Shift+F

Clipboard Ctrl+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

Add... Remove Move Up Move Down

OK Cancel Help

Views External Resources Schemas

100 %

Query e... | localhost (15.0 RTM) | AzureAD\PauloOliveira ... | ARPAD_DataMart | 00:00:00 | 0 rows

Ready

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

SQLQuery2.sql - localhost.ARPAD_DataMart (AzureAD\PauloOliveira (68))* - Microsoft SQL Server Management Studio

File Edit View Project Tools Window Help

New Query MDX DMX XMLA DAX

ARPAD_DataMart Execute

New Index

Ready

Select a page

- General
- Options
- Storage
- Filter
- Extended Properties

Script Help

Table name: DimCard

Index name: NonClusteredIndex-CardID

Index type: Nonclustered

Unique

Connection

localhost [AzureAD\PauloOliveira]

[View connection properties](#)

Progress

Done

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

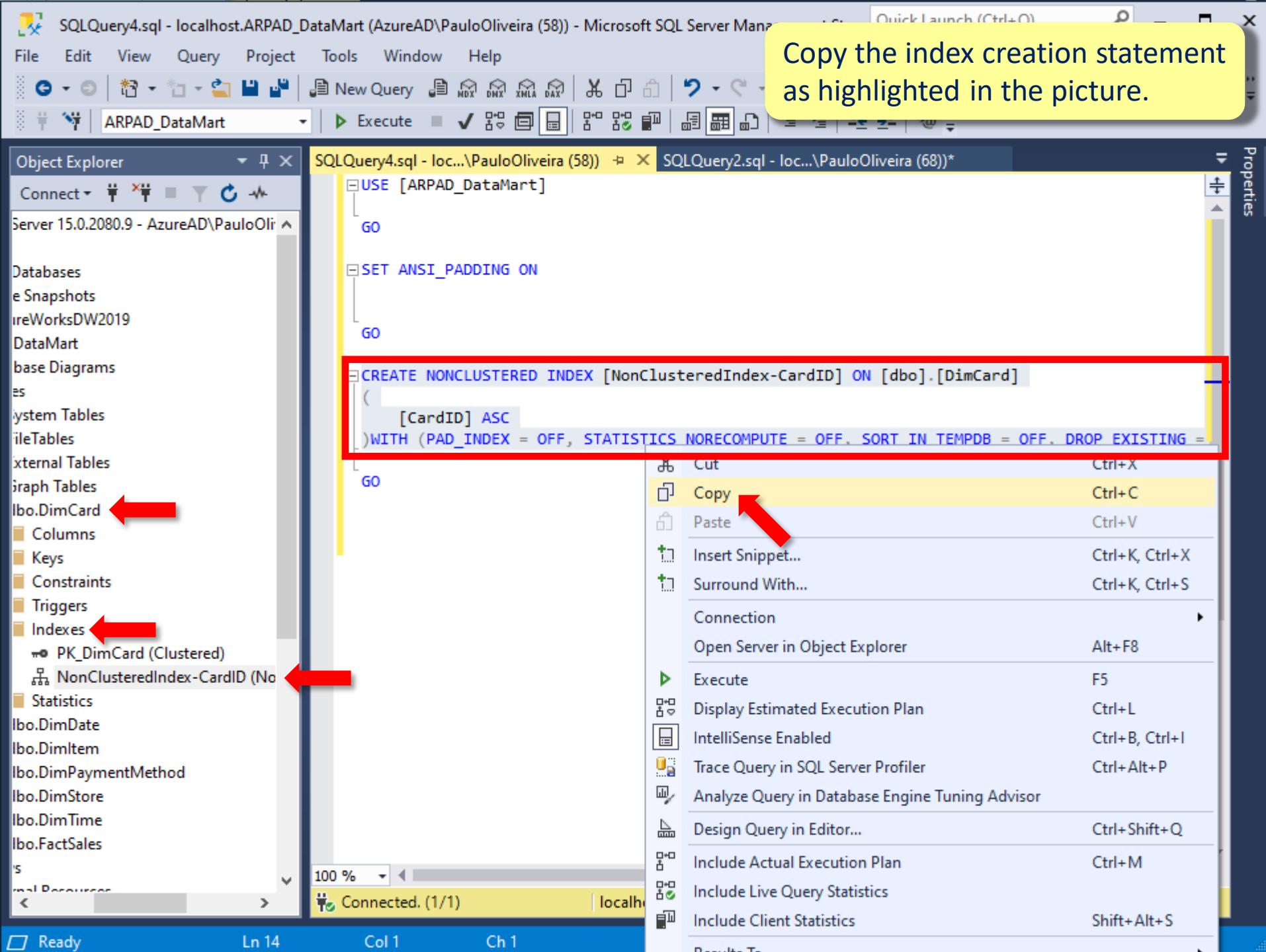
OK Cancel Help

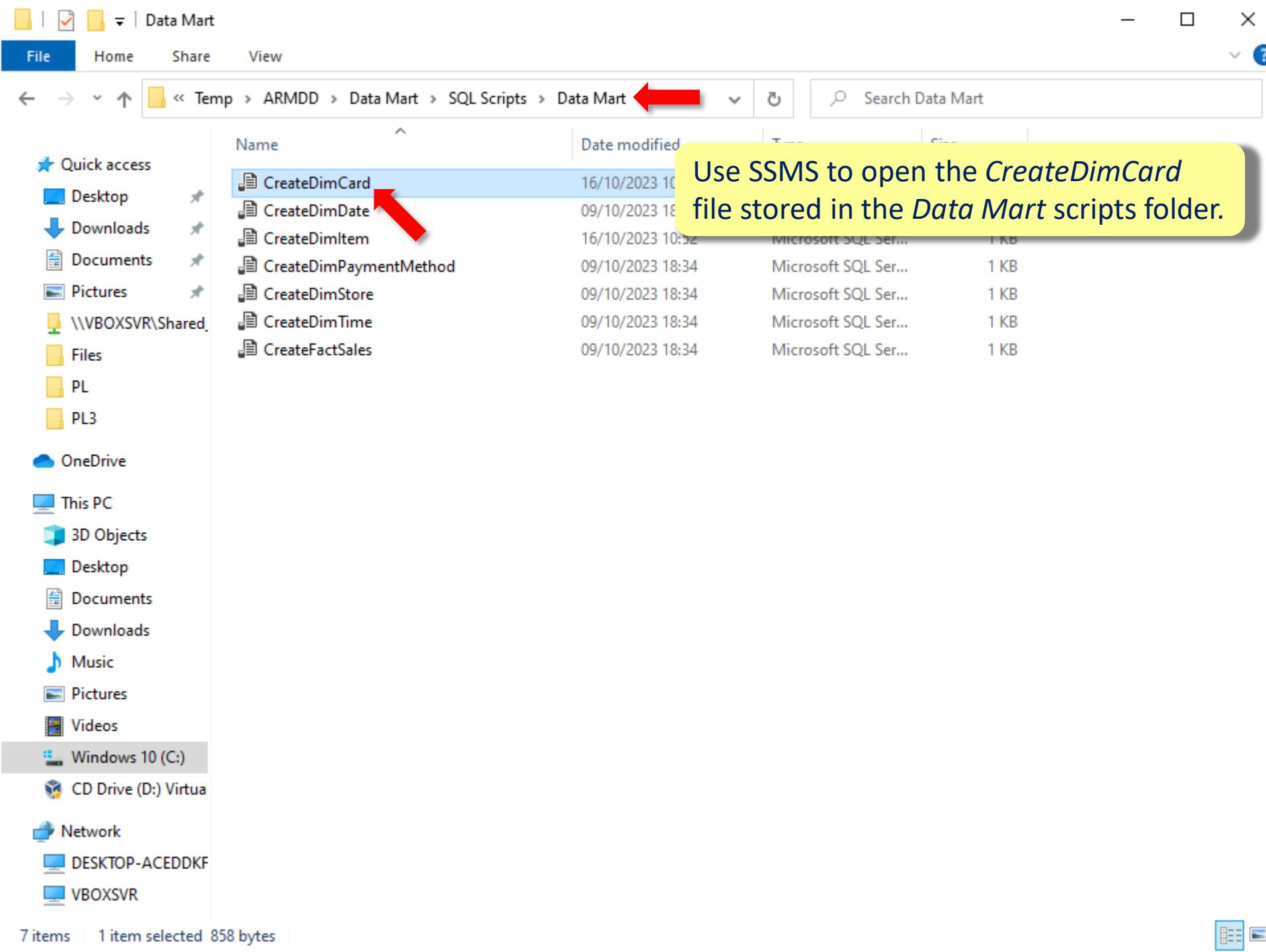
Views External Resources Schemas

100 %

Query e... | localhost (15.0 RTM) | AzureAD\PauloOliveira ... | ARPAD_DataMart | 00:00:00 | 0 rows

Ready





CreateDimCard.sql - localhost.ARMDDataMart (AzureAD\PauloOliveira (63)) - Microsoft SQL Server Management Studio

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

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX Execute

Object Explorer

localhost (SQL Server 16.0.1050.5 - AzureAD)

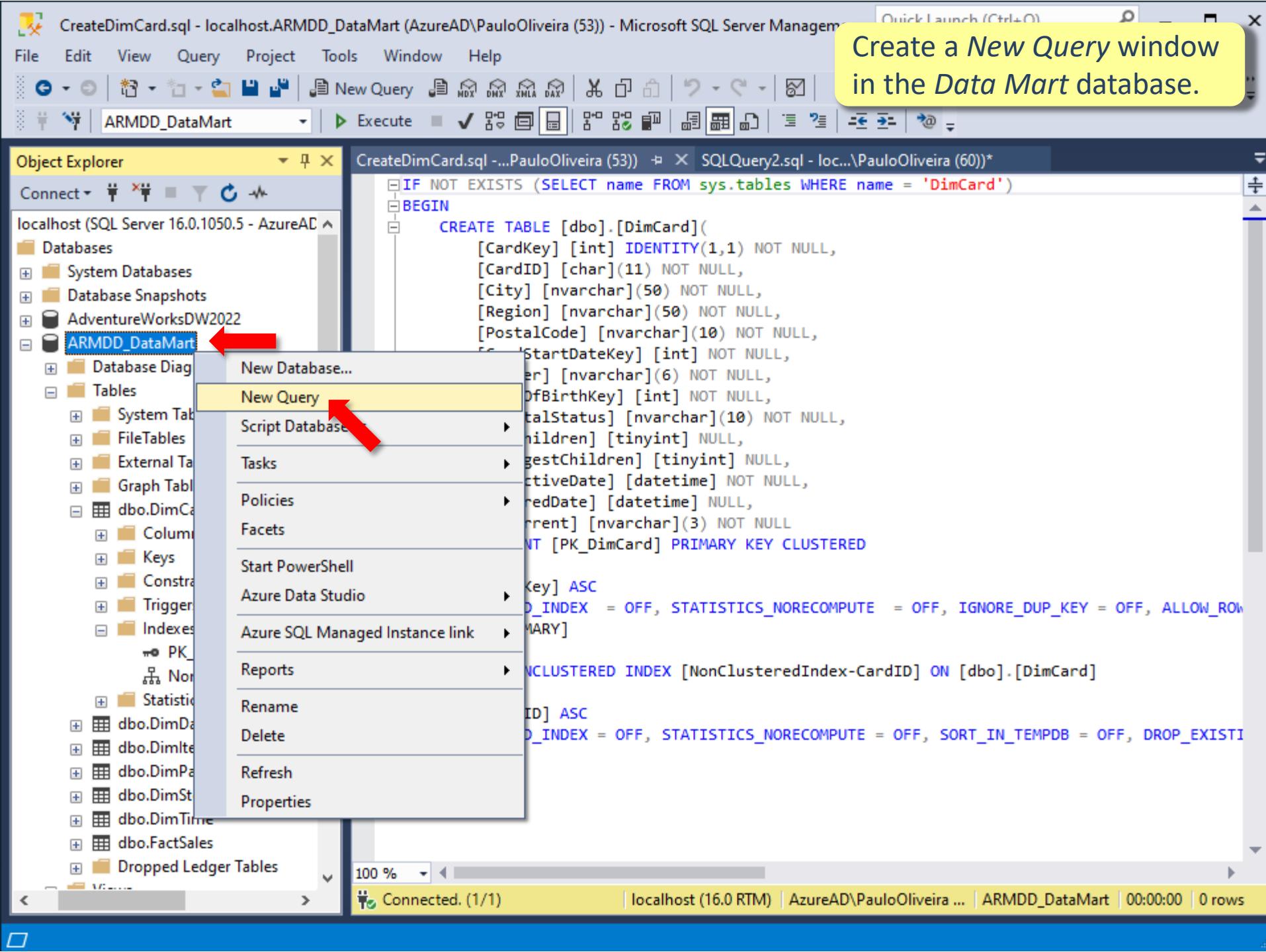
- Databases
 - System Databases
 - Database Snapshots
- AdventureWorksDW2022
- ARMDD_DataMart
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.DimCard
 - Columns
 - Keys
 - Constraints
 - Triggers
 - Indexes
 - PK_DimCard (Clustered)
 - NonClusteredIndex-C
 - Statistics
 - dbo.DimDate
 - dbo.DimItem
 - dbo.DimPaymentMethod
 - dbo.DimStore
 - dbo.DimTime
 - dbo.FactSales
 - Dropped Ledger Tables

LN 28 Col 4 Ch 4 INS

```
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,
        [CardStartDateKey] [int] NOT NULL,
        [Gender] [nvarchar](6) NOT NULL,
        [DateOfBirthKey] [int] NOT NULL,
        [MaritalStatus] [nvarchar](10) NOT NULL,
        [NumChildren] [tinyint] NULL,
        [YoungestChildren] [tinyint] NULL,
        [EffectiveDate] [datetime] NOT NULL,
        [ExpiredDate] [datetime] NULL,
        [IsCurrent] [nvarchar](3) NOT 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)
    ) 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)
END
```

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



SQLQuery3.sql - localhost.ARMDDataMart (AzureAD\PauloOliveira (67))* - Microsoft SQL Server

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

ARMDD_DataMart Execute

Object Explorer Connect

localhost (SQL Server 16.0.1050.5 - AzureAD)

Databases System Databases Database Snapshots AdventureWorksDW2022 ARMDD_DataMart Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.DimCard Columns Keys Constraints Triggers Indexes PK_DimCard (Clustered) NonClusteredIndex- C Statistics dbo.DimDate dbo.DimItem dbo.DimPaymentMethod dbo.DimStore dbo.DimTime dbo.FactSales Dropped Ledger Tables

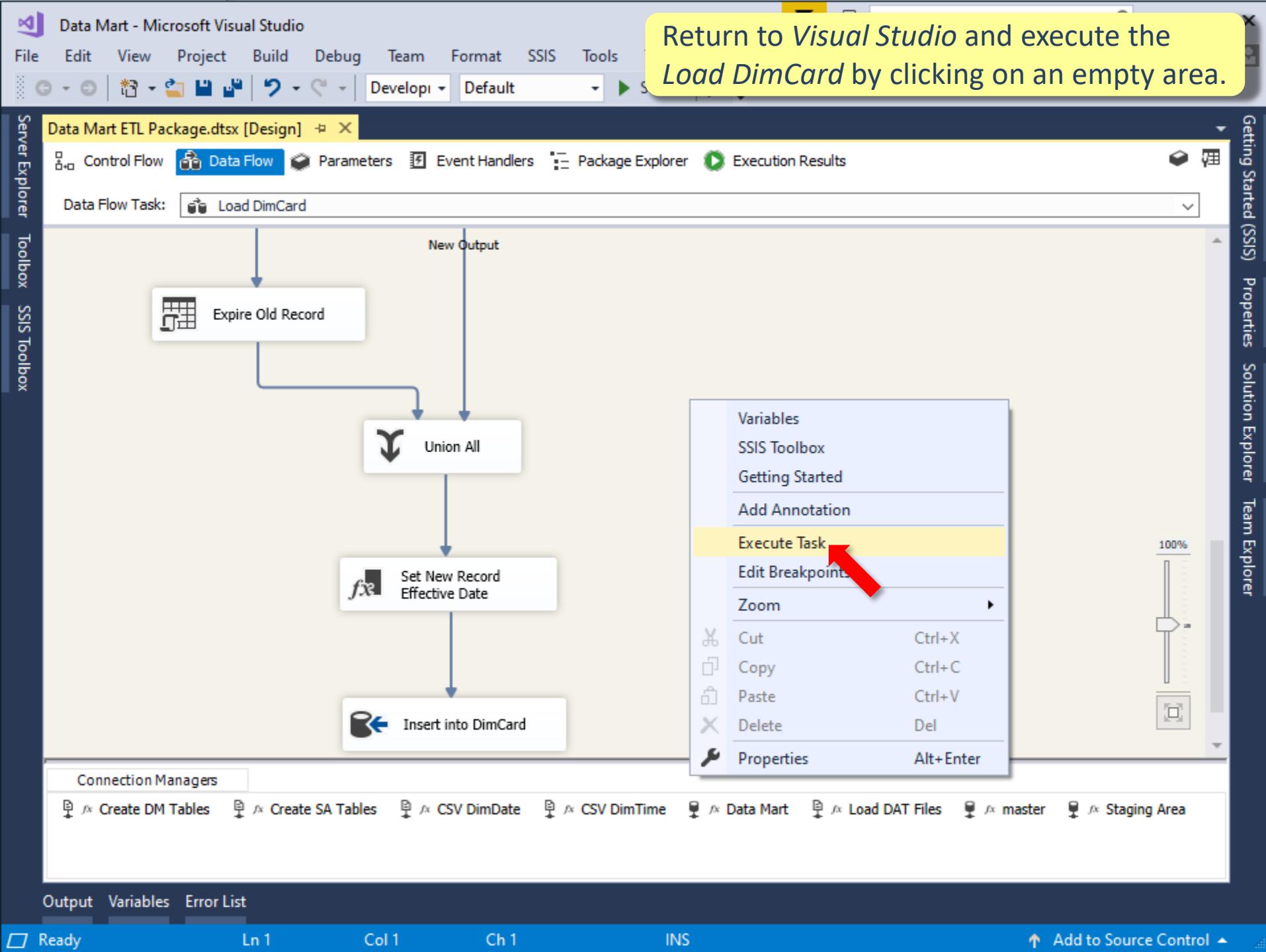
SQLQuery3.sql - loc... (PauloOliveira (67))* CreateDimCard.sql - ... (PauloOliveira (53))

TRUNCATE TABLE DimCard

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

Ln 1 Col 23 Ch 23 INS

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



Data Mart (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+O)

Process: [8320] DtsDebugHost.exe Lifecycle Events Thread:

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

Data Mart ETL Package.dtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Progress

Data Flow Task: Load DimCard

Expire Old Record → Union All → Set New Record Effective Date → Insert into DimCard

140 132 rows

140 132 rows

100%

Connection Managers

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

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

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

Ready Ln 1 Col 1 Ch 1 INS Add to Source Control

```
graph TD; ExpireOldRecord[Expire Old Record] --> UnionAll[Union All]; UnionAll -- "140 132 rows" --> SetEffectiveDate[Set New Record Effective Date]; SetEffectiveDate -- "140 132 rows" --> InsertDimCard[Insert into DimCard];
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test A

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer Execution Results

Data Flow Task: Load DimCard

Card → Transform Gender → Lookup MaritalStatusDescription → Lookup Match Output → Lookup CardStartDateKey → Lookup Match Output

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

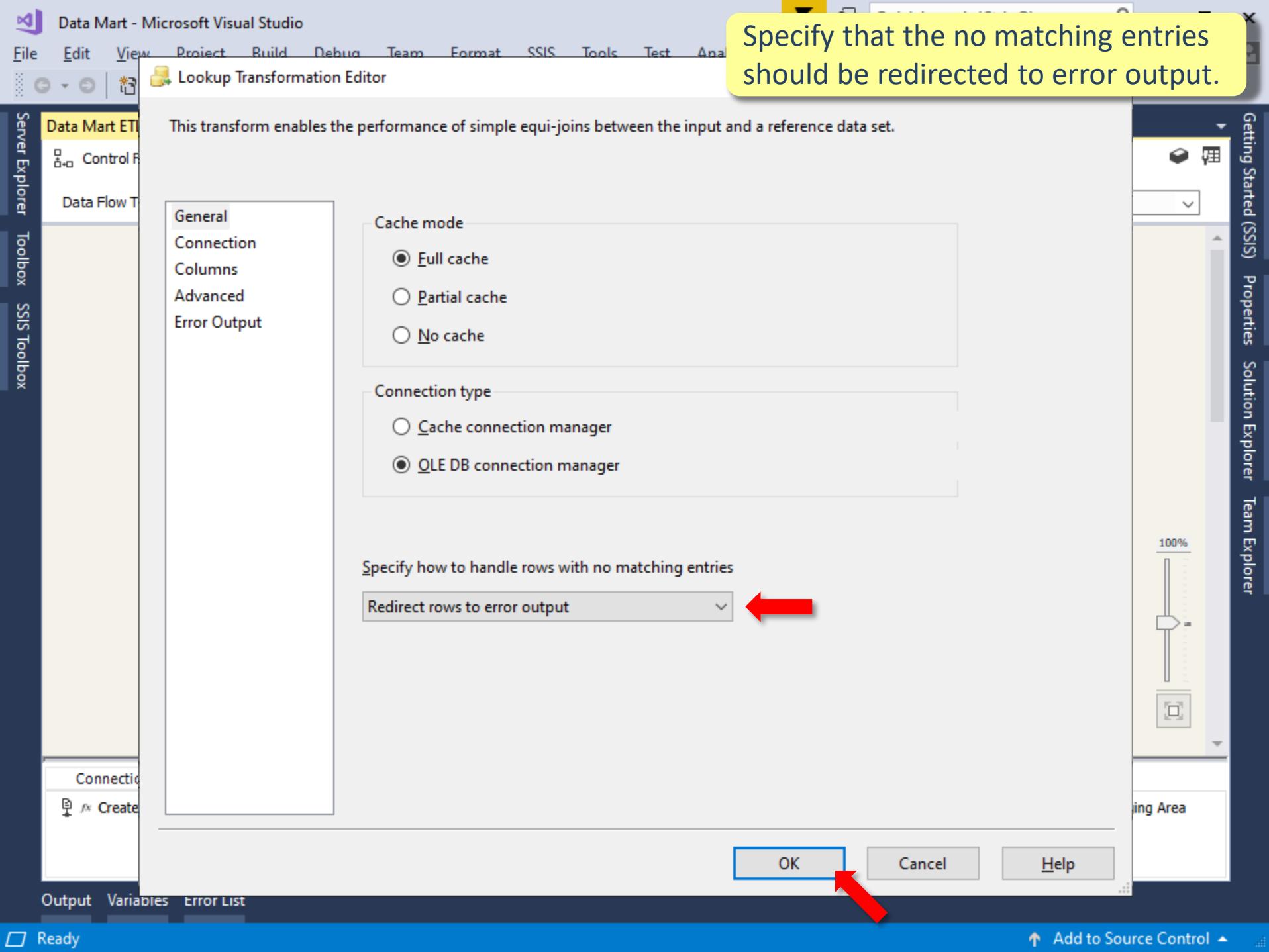
```
graph TD; Card[Card] --> Transform[Transform Gender]; Transform --> Lookup1[Lookup MaritalStatusDescription]; Lookup1 --> Match1[Match Output]; Match1 --> Lookup2[Lookup CardStartDateKey]; Lookup2 --> Match2[Match Output]
```

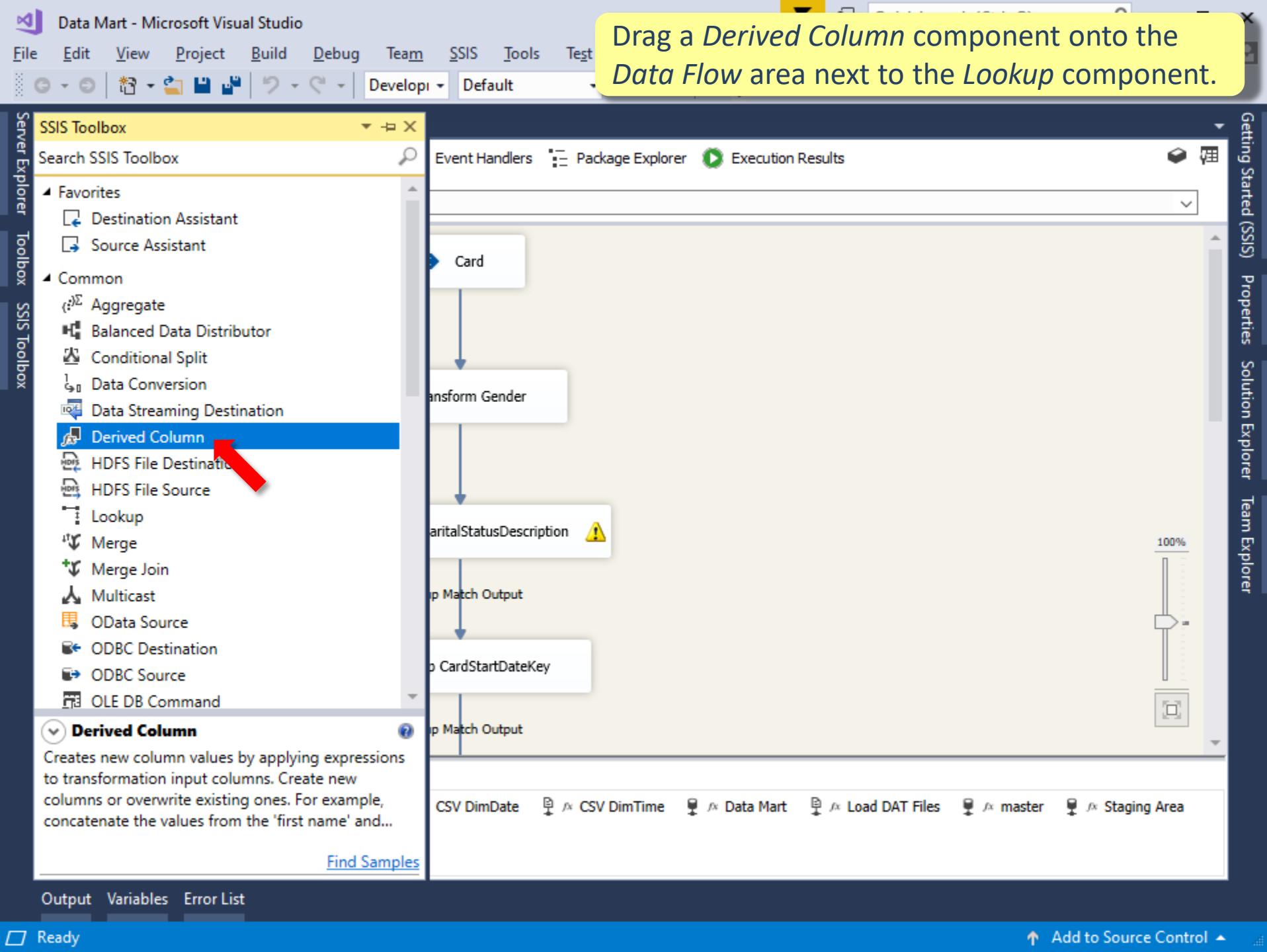
Connection Managers

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

Output Variables Error List

Ready Add to Source Control





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze Window Help Sign in

Quick Launch (Ctrl+Q)

Develop Default Start

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer Execution Results

Data Flow Task: Load DimCard

Card → Transform Gender → Lookup MaritalStatusDescription → Derived Column → Lookup CardStartDateKey

Connection Managers

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

Output Variables Error List

Add to Source Control

```
graph TD; Card[Card] --> TransformGender[Transform Gender]; TransformGender --> MaritalStatusDescription[Lookup MaritalStatusDescription]; MaritalStatusDescription --> CardStartDateKey[Lookup CardStartDateKey]; DerivedColumn[Derived Column] --> CardStartDateKey;
```

A red arrow points from the Derived Column component to the CardStartDateKey component.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools

Data Mart ETL Package.dtsx [Design] * Data Flow Parameters Event Handlers Package Explorer Execution Results

Data Flow Task: Load DimCard

Card → Transform Gender → Lookup MaritalStatusDescription → Add MaritalStatusDescription Lookup Failure DQP → Lookup CardStartDateKey

Connection Managers: Create DM Tables, Create SA Tables, CSV DimDate, CSV DimTime, Data Mart, Load DAT Files, master, Staging Area

Output Variables Error List

Add to Source Control

Rename the component as *Add MaritalStatusDescription Lookup Failure DQP* and drag the red flow from the *Lookup MaritalStatusDescription* to this new component.

```
graph TD; Card[Card] --> TransformGender[Transform Gender]; TransformGender --> LookupMSD[Lookup MaritalStatusDescription]; LookupMSD --> AddMSD[Add MaritalStatusDescription<br/>Lookup Failure DQP]; AddMSD --> LookupCSDK[Lookup CardStartDateKey];
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Developing Default Start

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

Data Mart ETL Pack

Control Flow

Data Flow Task:

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

Connection Manager

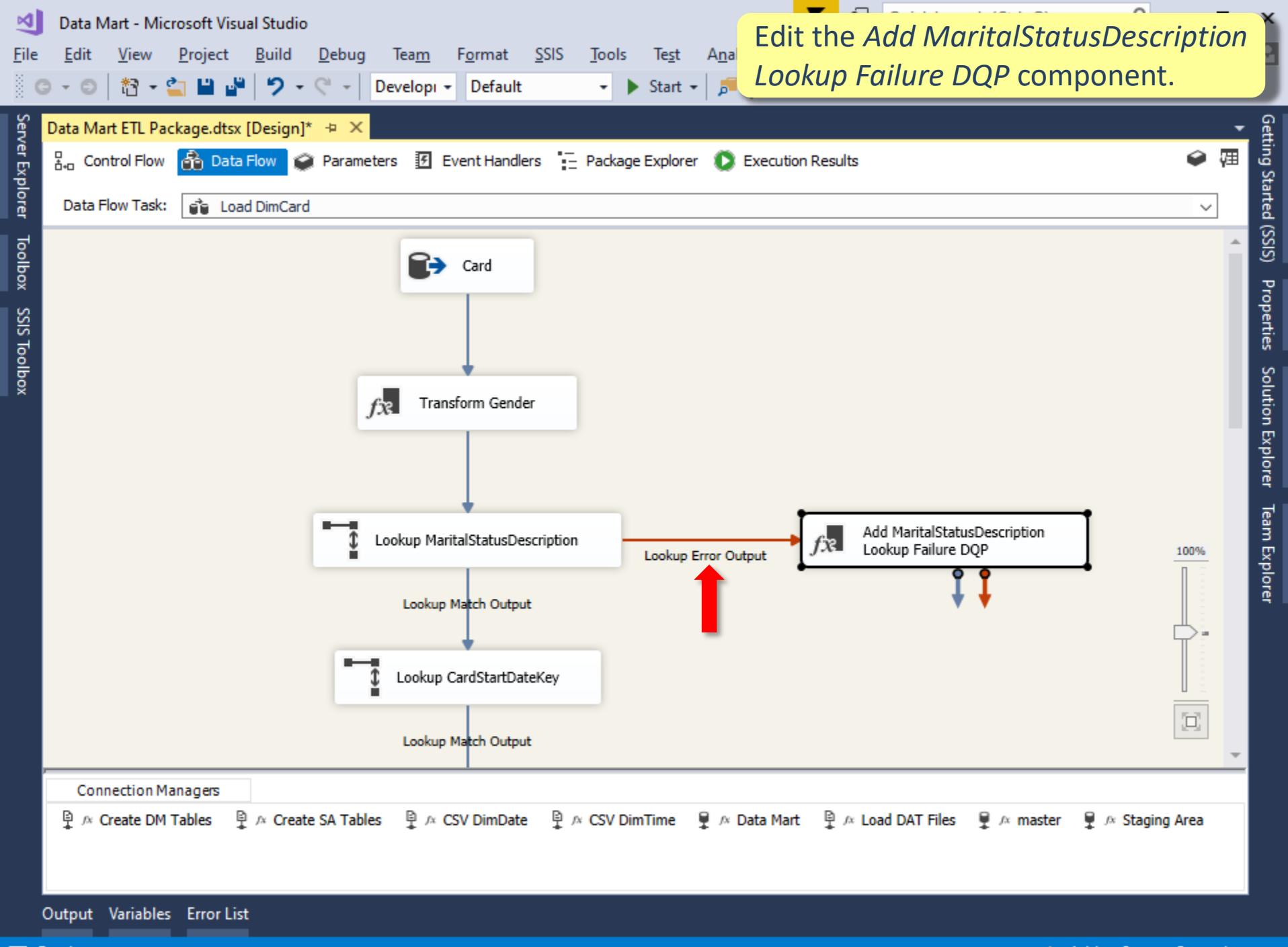
Create DM T

Staging Area

Output Variables Error List

Add to Source Control

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



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

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.

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

Variables and Parameters

Columns

Mathematical Functions

String Functions

Date/Time Functions

NULL Functions

Type Casts

Operators

Description:

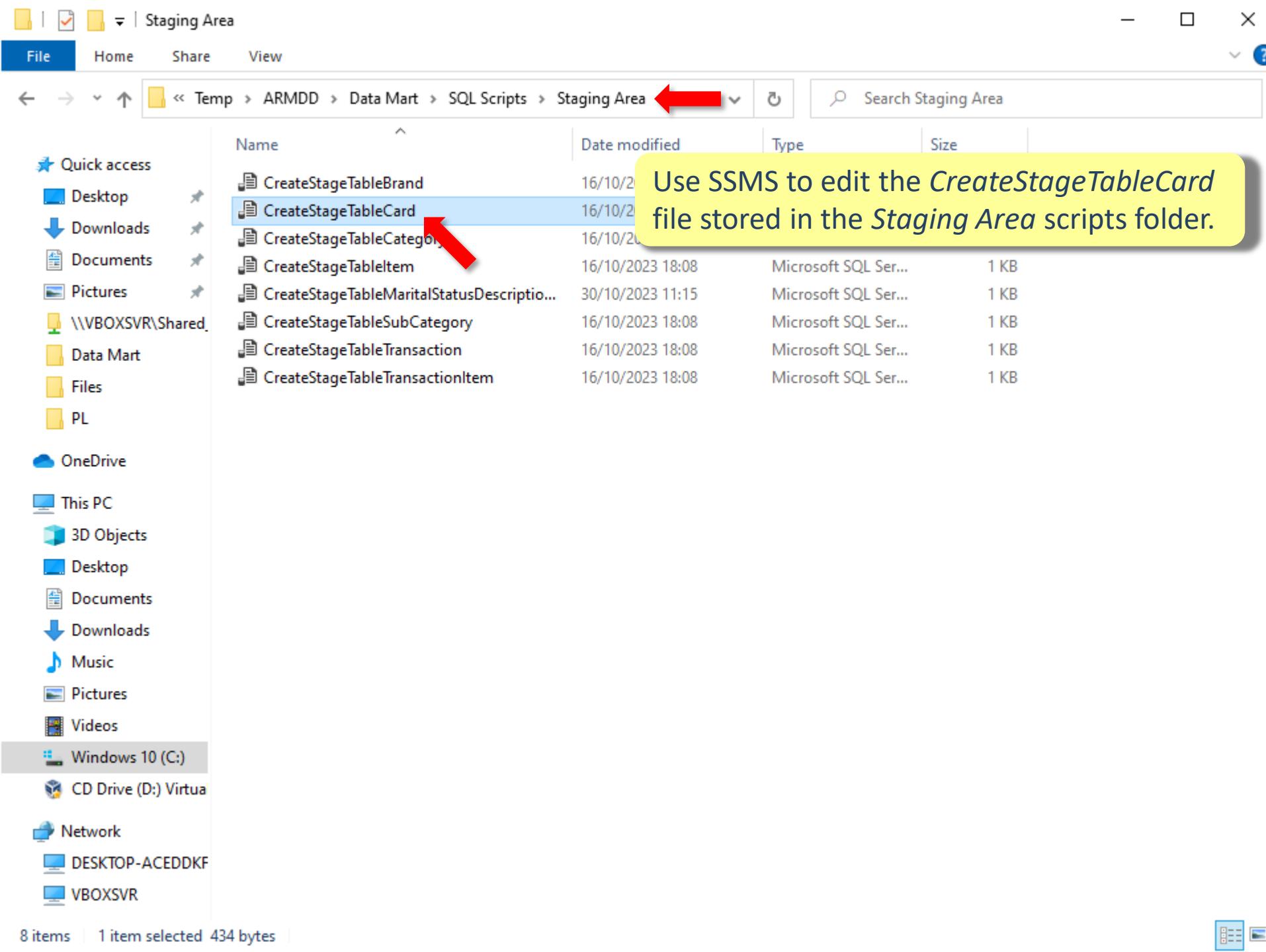
Derived Column Name	Derived Column	Expression	Data Type
DQP	<add as new column>	"Marital status description lookup failed on MaritalStatusDescription_Lookup table"	Unicode string [DT_U]

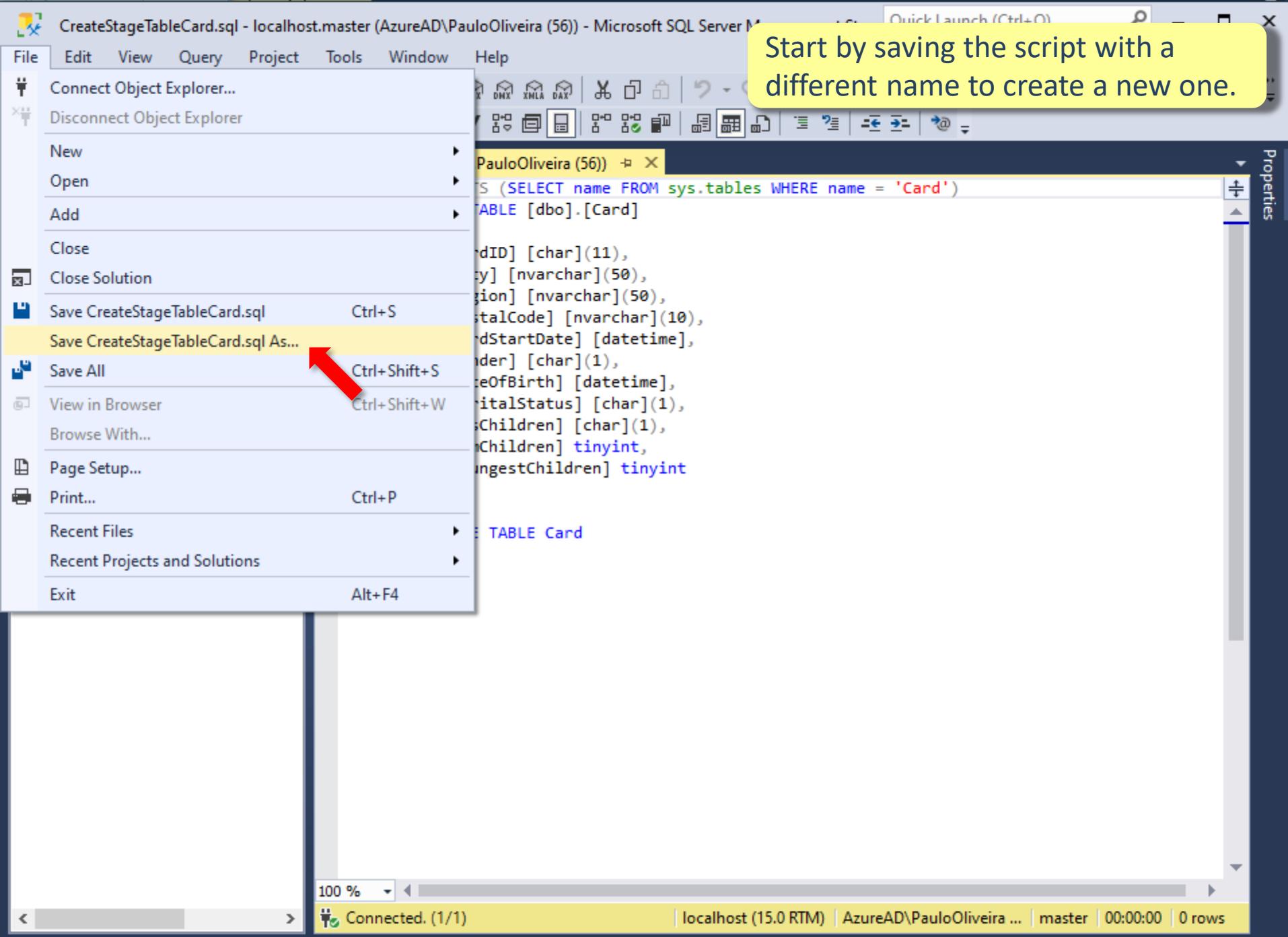
Configure Error Output...

OK Cancel Help

Output Variables Error List

Ready Add to Source Control





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

File Edit View Query Project Tools Window Help

Connect Object Explorer... Disconnect Object Explorer

Save File As

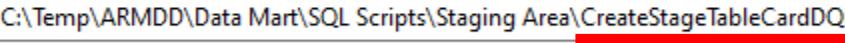
← → ↑ ↗ << Windows 10 (C:) >> Temp > ARMDD > Data Mart > SQL Scripts > Staging Area 

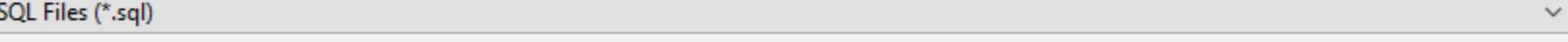
Search Staging Area

Organize New folder

Name	Date modified	Type	Size
CreateStageTableBrand	16/10/2023 18:08	Microsoft SQL Ser...	1 KB
CreateStageTableCard	16/10/2023 18:08	Microsoft SQL Ser...	1 KB
CreateStageTableCategory	16/10/2023 18:08	Microsoft SQL Ser...	1 KB
CreateStageTableItem	16/10/2023 18:08	Microsoft SQL Ser...	1 KB
CreateStageTableMaritalStatusDescriptio...	30/10/2023 11:15	Microsoft SQL Ser...	1 KB
CreateStageTableSubCategory	16/10/2023 18:08	Microsoft SQL Ser...	1 KB
CreateStageTableTransaction	16/10/2023 18:08	Microsoft SQL Ser...	1 KB
CreateStageTableTransactionItem	16/10/2023 18:08	Microsoft SQL Ser...	1 KB

SSMS 19 OneDrive This PC 3D Objects Desktop Documents Downloads Music Pictures Videos Windows 10 (C:)

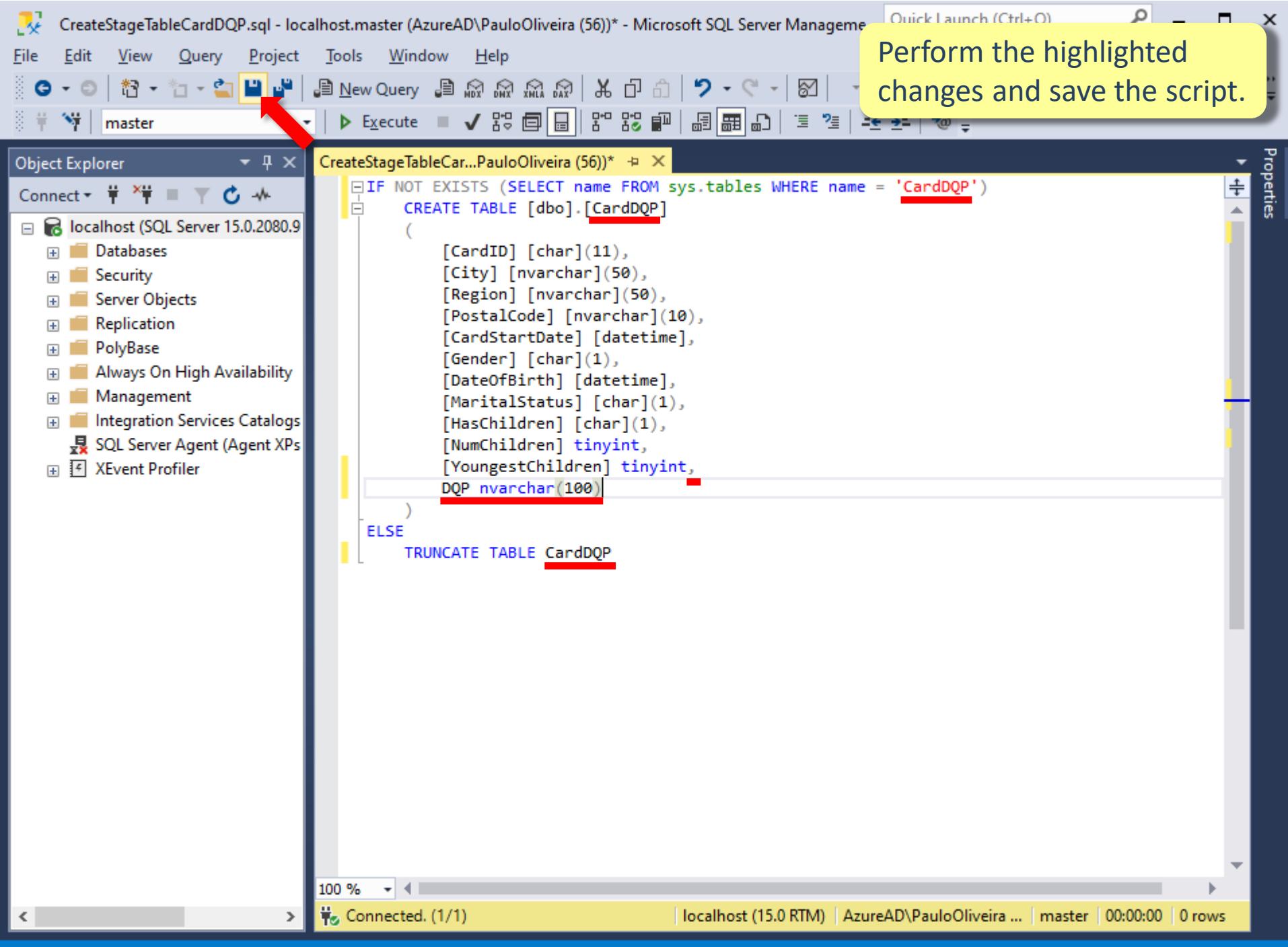
File name: C:\Temp\ARMDD\Data Mart\SQL Scripts\Staging Area\CreateStageTableCardDQP 

Save as type: SQL Files (*.sql) 

Save  Cancel

100 % Connected. (1/1) localhost (15.0 RTM) | AzureAD\PauloOliveira ... | master | 00:00:00 | 0 rows

Ready Ln 1 Col 1 Ch 1 INS



Perform the highlighted changes and save the script.

CreateStageTableCardDQP.sql - localhost.ARMDDB_StagingArea (AzureAD\PauloOliveira (55)) - Microsoft SQL Server

File Edit View Query Project Tools Window Help

ARMDD_StagingArea Execute

Object Explorer

localhost (SQL Server 16.0.1050.5 - AzureAD)

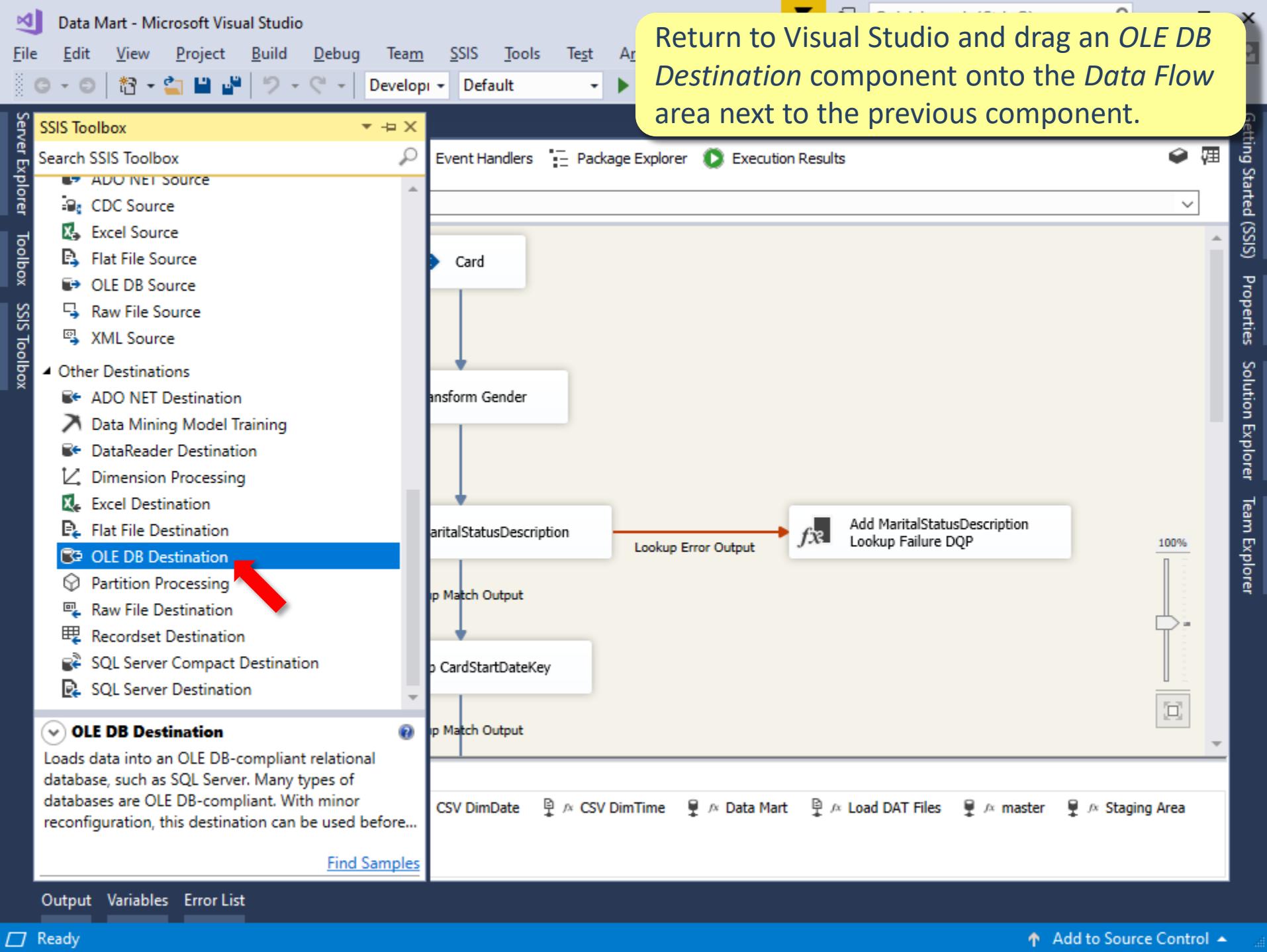
- Databases
 - System Databases
 - Database Snapshots
- AdventureWorksDW2022
- ARMDD_DataMart
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.DimCard
 - Columns
 - Keys
 - Constraints
 - Triggers
 - Indexes
 - PK_DimCard (Clustered)
 - NonClusteredIndex-C
 - Statistics
 - dbo.DimDate
 - dbo.DimItem
 - dbo.DimPaymentMethod
 - dbo.DimStore
 - dbo.DimTime
 - dbo.FactSales
 - Dropped Ledger Tables

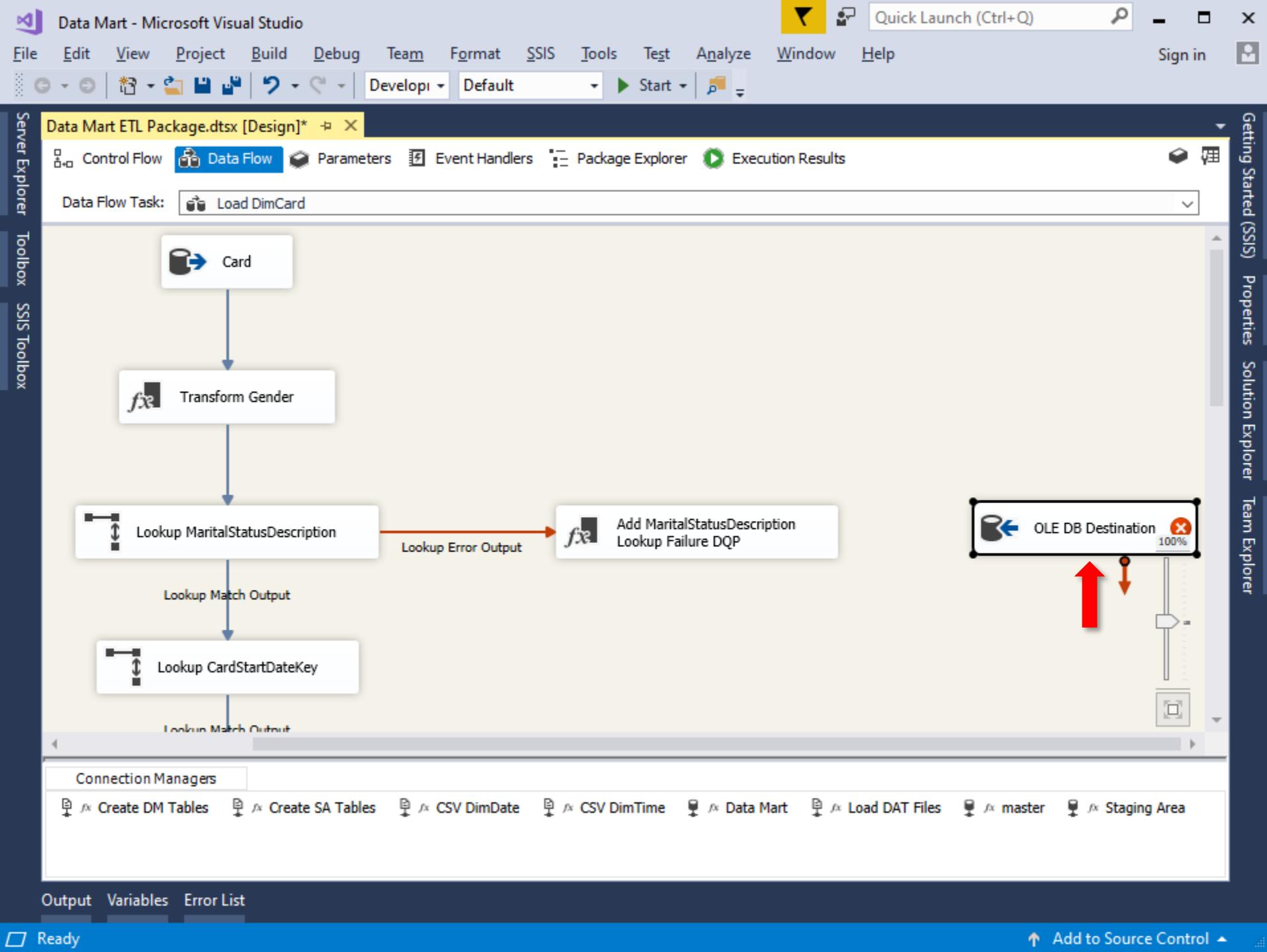
Execute the script in the *Staging Area* database to create the *CardDQP* table.

```
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
```

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

Ready Ln 1 Col 1 Ch 1 INS





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Help

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Execution Results

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Lookup Error Output

Add MaritalStatusDescription
Lookup Failure DQP

CardDQP 100%

Lookup Match Output

Lookup CardStartDateKey

Lookup Match Output

Drag the flow from the *Derived Column* to the *OLE DB Destination* component, rename it as *CardDQP* and edit it.

Connection Managers

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

Output Variables Error List

Item(s) Saved Add to Source Control

```
graph TD; Card[Card] --> TransformGender[Transform Gender]; TransformGender --> LookupMSD[Lookup MaritalStatusDescription]; TransformGender --> LookupCSDK[Lookup CardStartDateKey]; LookupMSD --> AddMSD[Add MaritalStatusDescription]; AddMSD --> CardDQP[CardDQP 100%]; AddMSD --> ErrorDQP[Add MaritalStatusDescription Lookup Failure DQP]; ErrorDQP --> CardDQP;
```

Data Mart - Microsoft Visual Studio

File Edit View

OLE DB Destination Editor

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

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

Data Mart ETL
Control Flow
Data Flow T

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 

Data access mode:
Table or view - fast load

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

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

Getting Started (SSIS) Properties Solution Explorer Team Explorer

DOP 100%

Add to Source Control

Item(s) Saved

The screenshot shows the 'OLE DB Destination Editor' dialog box in Microsoft Visual Studio. The 'Connection Manager' tab is selected. A red arrow points to the 'Connection Manager' dropdown, which contains the value 'Staging Area'. Another red arrow points to the 'Name of the table or the view:' dropdown, which also contains the value '[dbo].[CardDQP]'. The 'CardDQP' table is highlighted with a blue selection bar. The 'Mappings' tab is visible at the bottom of the dialog. A yellow callout bubble in the top right corner provides instructions: 'Select the CardDQP table from the Staging Area database.' The status bar at the bottom left shows 'Item(s) Saved'. The bottom right corner has a progress bar labeled 'DOP 100%' with a red circular icon containing a white exclamation mark.

Check if the *CardDQP* 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 (highlighted with a red arrow)

Error Output

Available Input Columns (left): CardID, City, Region, PostalCode, CardStartDate, Gender, DateOfBirth

Available Destination Columns (right): 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 (highlighted with a red arrow)

Cancel

Help

Getting Started (SSIS) Properties Solution Explorer Team Explorer

DQP 100%

Source Control

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools Test Analyze Wi...

Developer Default Start

Quick Launch (Ctrl+Q)

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

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

Output Variables Error List

Event Handlers Package Explorer

Add MaritalStatusDescription
Lookup Failure DQP

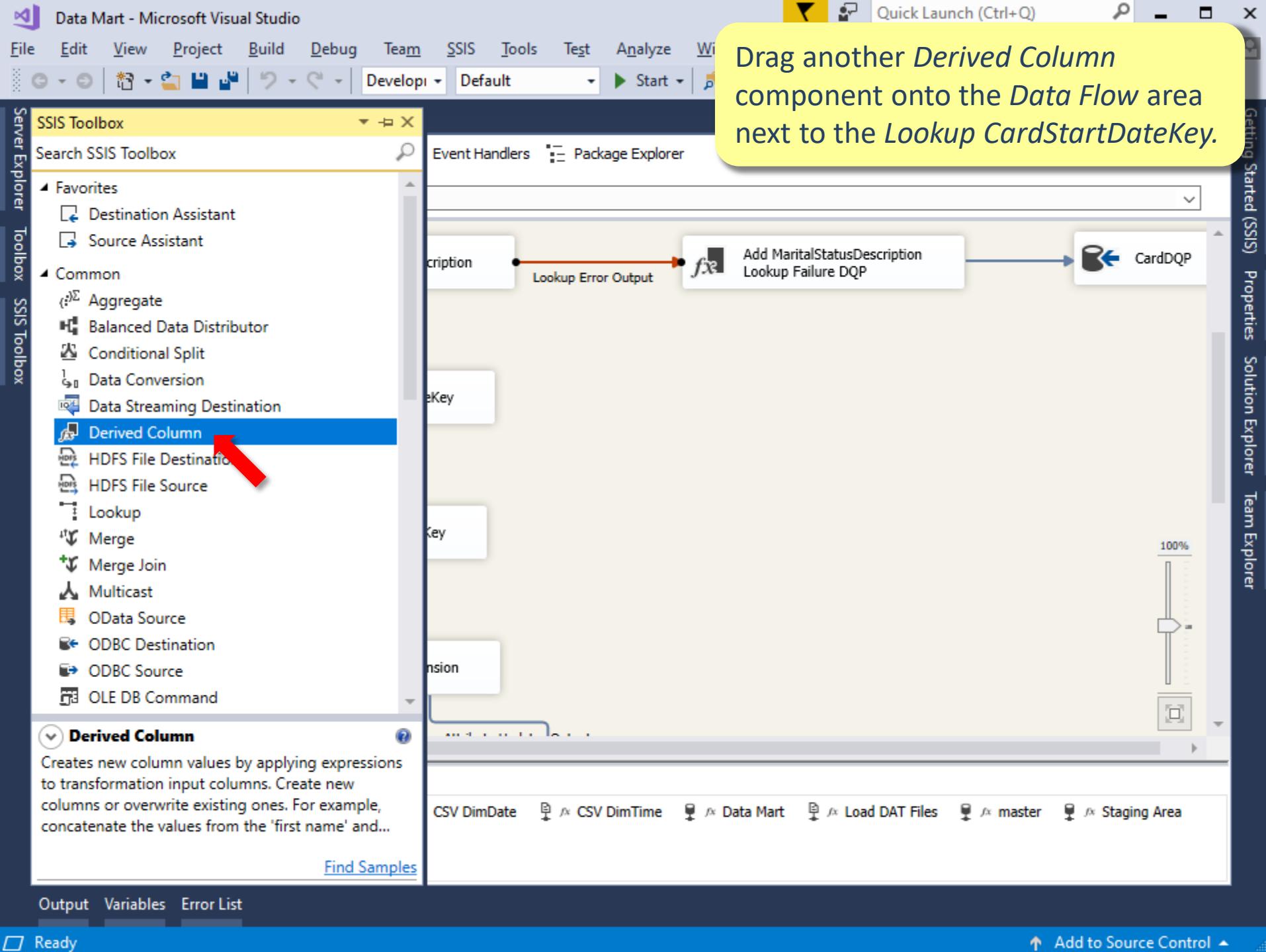
CardDQP

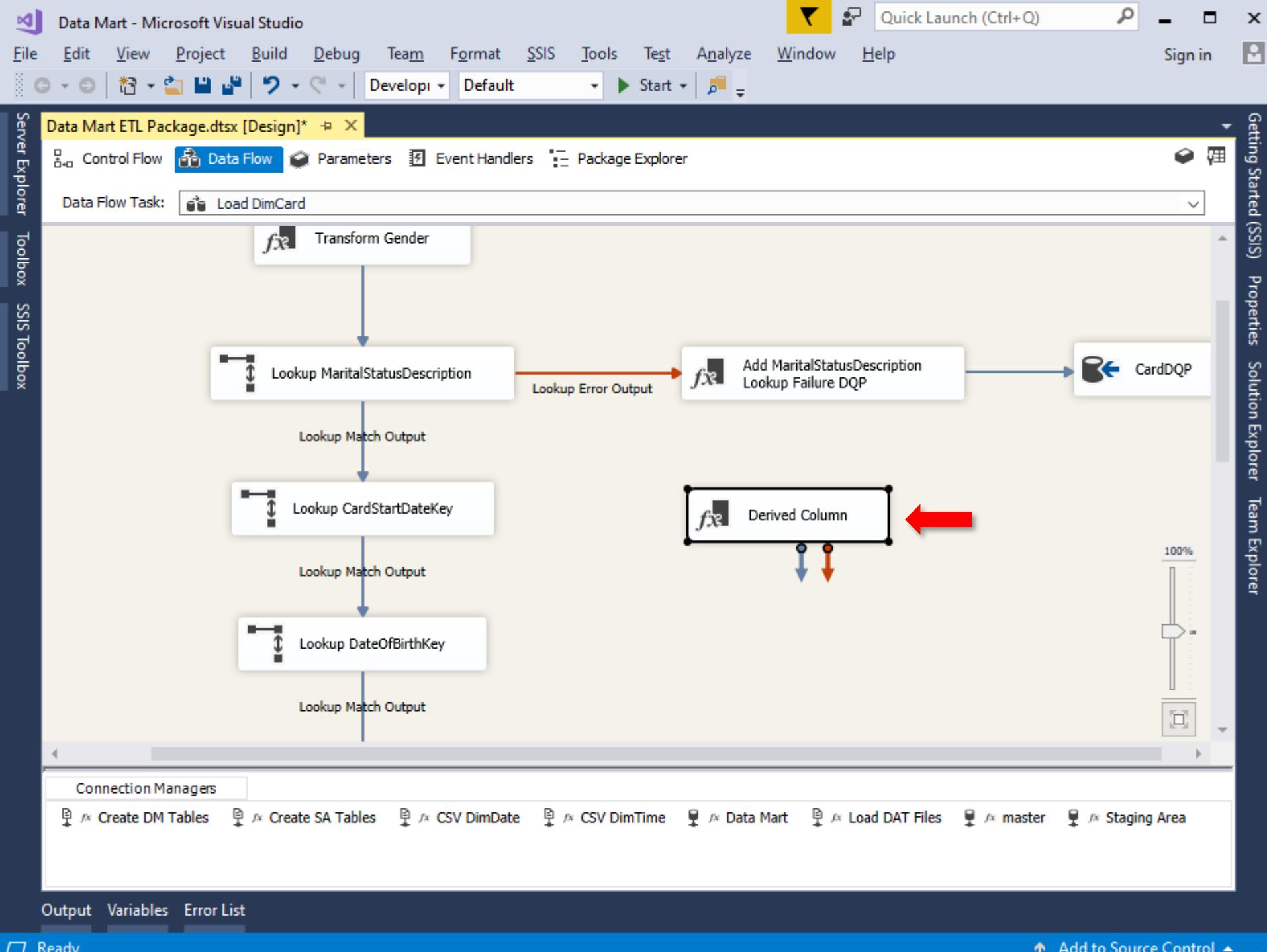
Drag another *Derived Column* component onto the *Data Flow* area next to the *Lookup CardStartDateKey*.

Getting Started (SSIS) Properties Solution Explorer Team Explorer

CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Ready Add to Source Control





Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test A

Developing Default Start

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Server Explorer Toolbox SSIS Toolbox

Rename the new component as Add CardStartDateKey Lookup Failure DQP.

The diagram illustrates a sequence of data flow tasks:

- A top-level task, "Load DimCard", has a downward arrow pointing to the first lookup component.
- The first lookup component is "Lookup MaritalStatusDescription". It has a "Lookup Match Output" arrow pointing down to the second lookup component, "Lookup CardStartDateKey".
- The second lookup component, "Lookup CardStartDateKey", has a "Lookup Match Output" arrow pointing down to the third lookup component, "Lookup DateOfBirthKey".
- The third lookup component, "Lookup DateOfBirthKey", has a "Lookup Match Output" arrow pointing down to the final destination, "Slowly Changing Dimension".
- An orange arrow labeled "Lookup Error Output" points from the "Lookup MaritalStatusDescription" component to the first failure component, "Add MaritalStatusDescription Lookup Failure DQP".
- A red arrow points from the second failure component, "Add CardStartDateKey Lookup Failure DQP", back towards the "Lookup CardStartDateKey" component.

Connection Managers:

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

Output Variables Error List

Add to Source Control

```
graph TD; LoadDimCard[Load DimCard] --> L1[Lookup MaritalStatusDescription]; L1 --> L2[Lookup CardStartDateKey]; L2 --> L3[Lookup DateOfBirthKey]; L3 --> SCD[Slowly Changing Dimension]; L1 -- "Lookup Error Output" --> F1[Add MaritalStatusDescription Lookup Failure DQP]; F1 --> L2;
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS

Developing Default

Server Explorer

Toolbox SSIS Toolbox

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...	CardStartDate...	Redirect row	Fail component	Lookup
				Copy Column

Set this value to selected cells: Fail component Apply

OK Cancel

Drag the red arrow from the *Lookup* component to the new *Derived Column* component and change the *Error* column to *Redirect Row*.

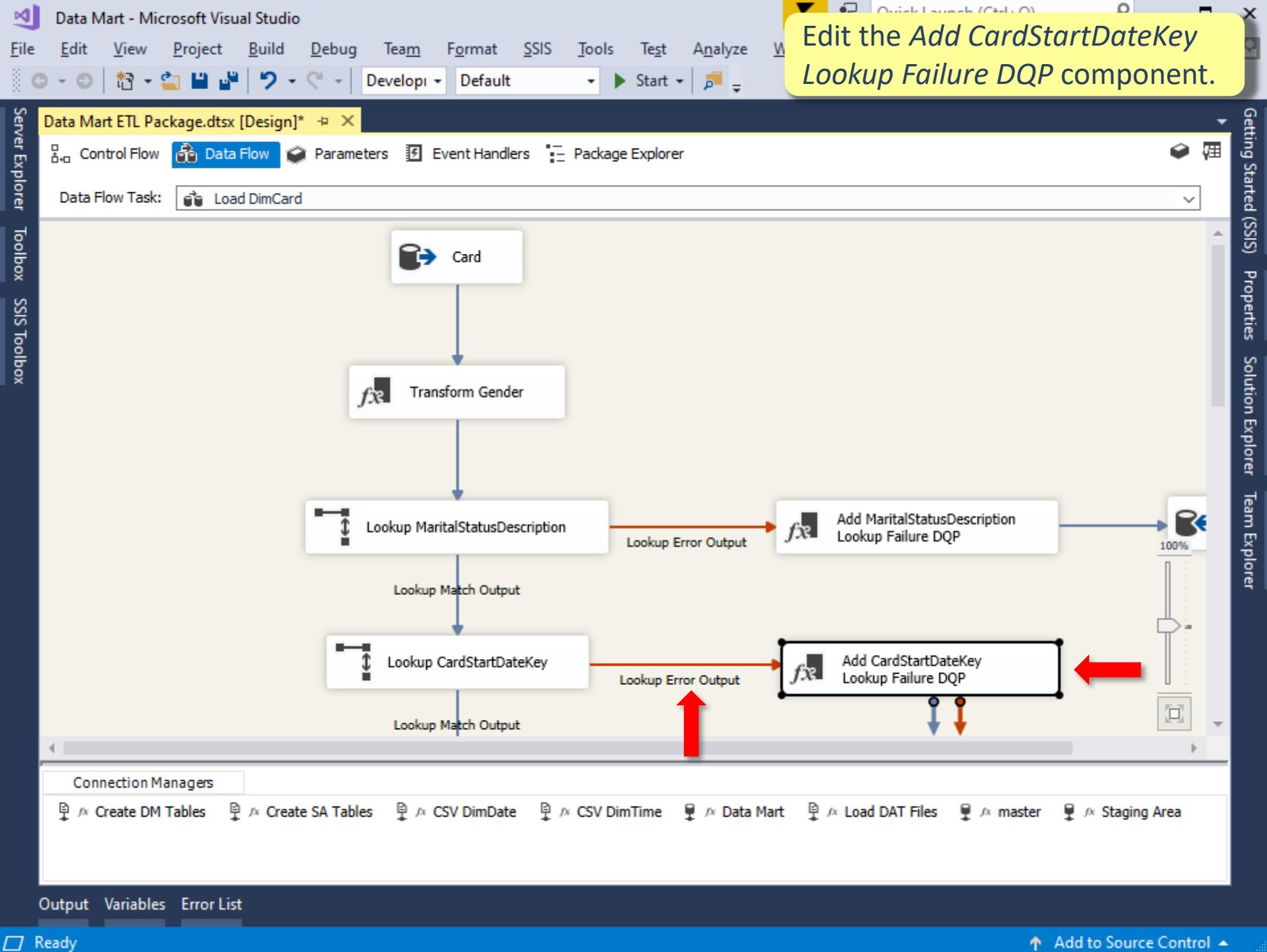
Getting Started (SSIS) Properties Solution Explorer Team Explorer

Staging Area

Output Variables Error List

Add to Source Control

The screenshot shows the Microsoft Visual Studio interface for an SSIS package named "Data Mart ETL Pack". The "Control Flow" tab is selected in the toolbox. A yellow callout bubble provides instructions: "Drag the red arrow from the *Lookup* component to the new *Derived Column* component and change the *Error* column to *Redirect Row*". Inside the "Configure Error Output" dialog, a red arrow points to the dropdown menu under the "Error" column for the "Lookup Match..." input, which is set to "Redirect row". Another red arrow points to the "OK" button at the bottom right of the dialog. The "SSIS Toolbox" on the left contains components like "Control Flow" and "Data Flow Task". The "Solution Explorer" and "Properties" tabs are visible on the right.



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Derived Column Transformation Editor

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

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>	"CardStartDateKey lookup failed on DimDate table"	Unicode string [DT_WSTR]	4000

Configure Error Output...

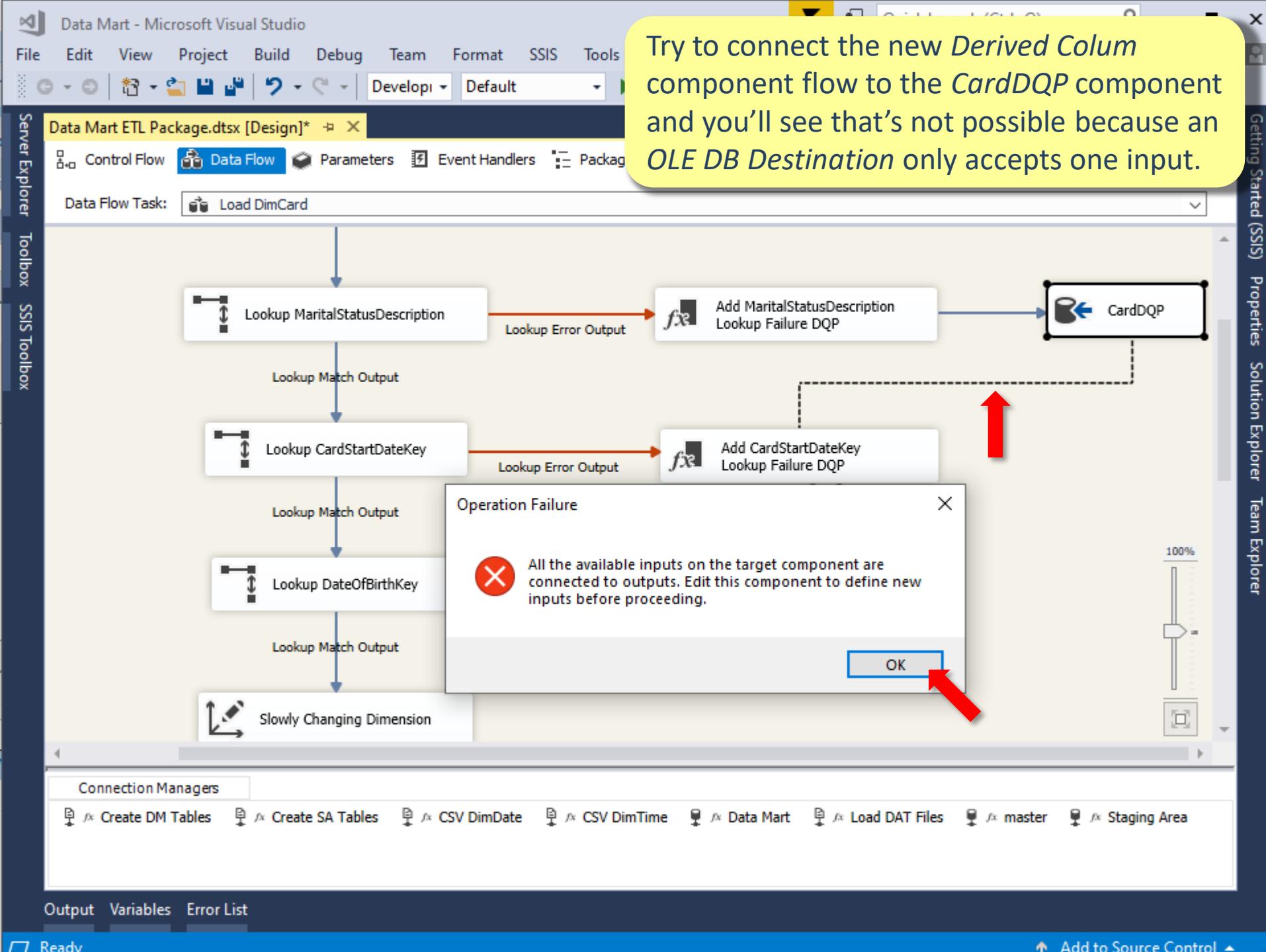
OK Cancel Help

Output Variables Error List

Add to Source Control

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team SSIS Tools T

SSIS Toolbox

Search SSIS Toolbox

- Lookup
- Merge
- Merge Join
- Multicast
- OData Source
- ODBC Destination
- ODBC Source
- OLE DB Command
- Row Count
- Script Component
- Slowly Changing Dimension
- Sort
- Union All**

Event Handlers

Add MaritalStatusDescription Lookup Failure DQP

Add CardStartDateKey Lookup Failure DQP

CardDQP

To solve the problem delete the flow between the *Add MaritalStatusDescription Lookup Failure DQP* and *CardDQP* components and drag a *Union All* component to the *Data Flow* area, next to the new *Derived Column* component.

Getting Started (SSIS) Properties Solution Explorer Team Explorer

CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Output Variables Error List

Ready Add to Source Control

```
graph LR; Start(( )) --> L1[Add MaritalStatusDescription]; L1 --> L1_Error[Lookup Error Output]; L1_Error --> DQPLookupFailure[DQP]; DQPLookupFailure --> CardDQP[CardDQP]; Start --> L2[Add CardStartDateKey]; L2 --> L2_Error[Lookup Error Output]; L2_Error --> DQPLookupFailure;
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Description

Add MaritalStatusDescription
Lookup Failure DQP

Output

DateKey

Add CardStartDateKey
Lookup Failure DQP

Output

BirthKey

Output

Dimension

Union All 1

CardDQP

100%

Connection Managers

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

Output Variables Error List

The component's label is *Union All 1* because there is already a *Union All* component.

```
graph LR; A[Add MaritalStatusDescription  
Lookup Failure DQP] --> C[Union All 1]; B[Add CardStartDateKey  
Lookup Failure DQP] --> C; C --> D[CardDQP]
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools T

Develop Default S

Data Mart ETL Package.dtsx [Design]* X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

ender

ssDescription

Output

CardStartDateKey

Output

BirthKey

Output

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

The screenshot shows the Microsoft Visual Studio interface for an SSIS package named "Data Mart ETL Package.dtsx". The "Data Flow" tab is selected in the ribbon. The Data Flow Task pane shows a task named "Load DimCard". The Data Flow designer view displays a data flow with three main components: "Add MaritalStatusDescription Lookup Failure DQP", "Add CardStartDateKey Lookup Failure DQP", and "Union All 1". The "Add MaritalStatusDescription Lookup Failure DQP" component has an output arrow labeled "Lookup Error Output" pointing to the "Union All 1" component. The "Add CardStartDateKey Lookup Failure DQP" component also has an output arrow labeled "Lookup Error Output" pointing to the "Union All 1" component. A red arrow points from the "Add MaritalStatusDescription Lookup Failure DQP" component towards the "Union All 1" component, indicating the path for configuration. The "Union All 1" component has a single outgoing arrow. On the right side of the screen, there is a status bar for "CardDQP" showing "100%" completion.

Start by connecting the flow from the *Add MaritalStatusDescription Lookup Failure DQP* component to the *Union All 1*, do the same for the other *Derived Column* and then edit the *Union All 1* component.

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Quick Launch (Ctrl+Q)

Server Explorer

Data Mart ETL

Control Flow

Data Flow Task

Script Task

Script Component

Script

Script

Description

Output

DateKey

Output

BirthKey

Output

Connection

Create

Output Variables Error List

Union All Transformation Editor

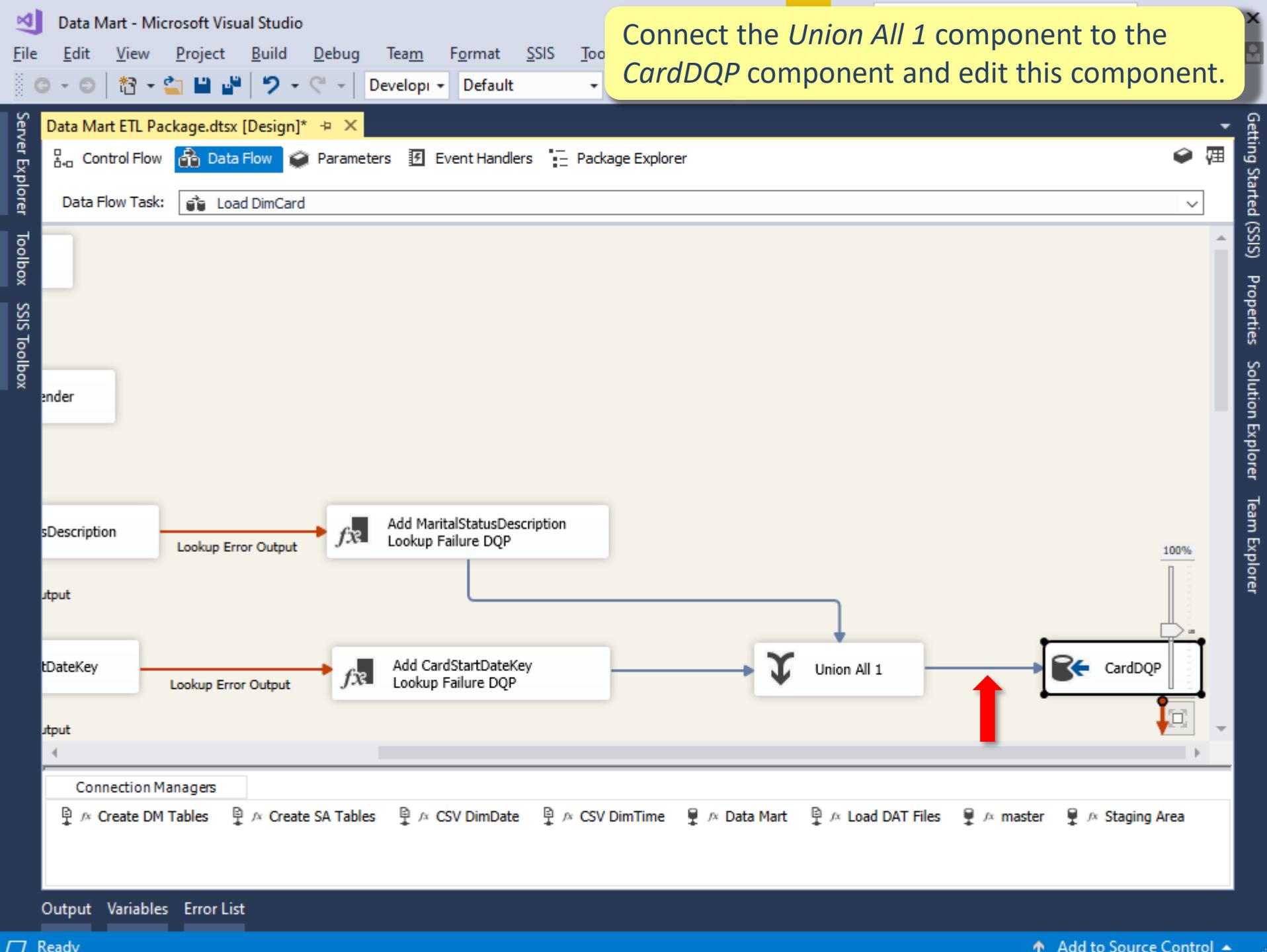
Configure the properties used to merge multiple inputs into one output by mapping columns from each input to the output.

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
Gender_Transformed	Gender_Transformed	Gender_Transformed
ErrorCode	ErrorCode	ErrorCode
ErrorColumn	ErrorColumn	ErrorColumn
DQP	DQP	DQP

OK Cancel Help

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

Add to Source Control



OLE DB Destination Editor

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

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

Connection Manager

Mappings (highlighted with a red arrow)

Error Output

Available Input Columns (Source):

- Name
- CardID
- City
- Region
- PostalCode
- CardStartDate
- Gender
- DateOfBirth

Available Destination Columns (Destination):

- 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 (highlighted with a red arrow)

Cancel

Help

Getting Started (SSIS) Properties Solution Explorer Team Explorer

100%

DQP

Flow Area

Ready

Source Control ▾

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test A

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Lookup MaritalStatusDescription → Add MaritalStatusDescription Lookup Failure DQP

Lookup Match Output

Lookup CardStartDateKey → Add CardStartDateKey Lookup Failure DQP

Lookup Match Output

Lookup DateOfBirthKey → Add DateOfBirthKey Lookup Failure DQP

Slowly Changing Dimension

Union All 1

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

Following the same approach, handle the errors that can occur in the *Lookup DateOfBirthKey* component.

```
graph TD; A[Load DimCard] --> B[Lookup MaritalStatusDescription]; B --> C[Add MaritalStatusDescription  
Lookup Failure DQP]; C --> D[Union All 1]; A --> E[Lookup CardStartDateKey]; E --> F[Add CardStartDateKey  
Lookup Failure DQP]; F --> D; A --> G[Lookup DateOfBirthKey]; G --> H[Add DateOfBirthKey  
Lookup Failure DQP]; H --> D;
```

SQLQuery4.sql - localhost.ARMDD_StagingArea (AzureAD\PauloOliveira (61)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

ARMDD_StagingArea Execute

Object Explorer

localhost (SQL Server 16.0.1050.5 - A)

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorksDW2022
 - ARMDD_DataMart
 - ARMDD_StagingArea
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Brand
 - dbo.Card
 - dbo.Category
 - dbo.Item
 - dbo.MaritalStatusDes
 - dbo.SubCategory
 - dbo.Transaction
 - dbo.Transaction_Item
 - Dropped Ledger Tabl
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Statistics

SQLQuery4.sql - loc...\\PauloOliveir

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

100 %

Results Messages

	CardStartDate	Gender	DateOfBirth	MaritalStatus	HasChildren	NumChildren	YoungestChildren
1	1998-01-16 00:00:00.000	M	1952-02-15 00:00:00.000	NULL	Y	255	18
2	1999-06-30 00:00:00.000	F	1966-04-28 00:00:00.000	NULL	Y	255	6
3	2000-11-19 00:00:00.000	F	1982-05-17 00:00:00.000	M	Y	255	0
4	1998-02-25 00:00:00.000	F	1964-05-07 00:00:00.000	M	Y	255	6

Query executed successfully. | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | ARMDD_StagingArea | 00:00:00 | 4 rows

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

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Developing Default Start

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Transform Gender

Lookup MaritalStatusDescription

Add MaritalStatusDescription
Lookup Failure DQP

Lookup Match Output

Connection Managers

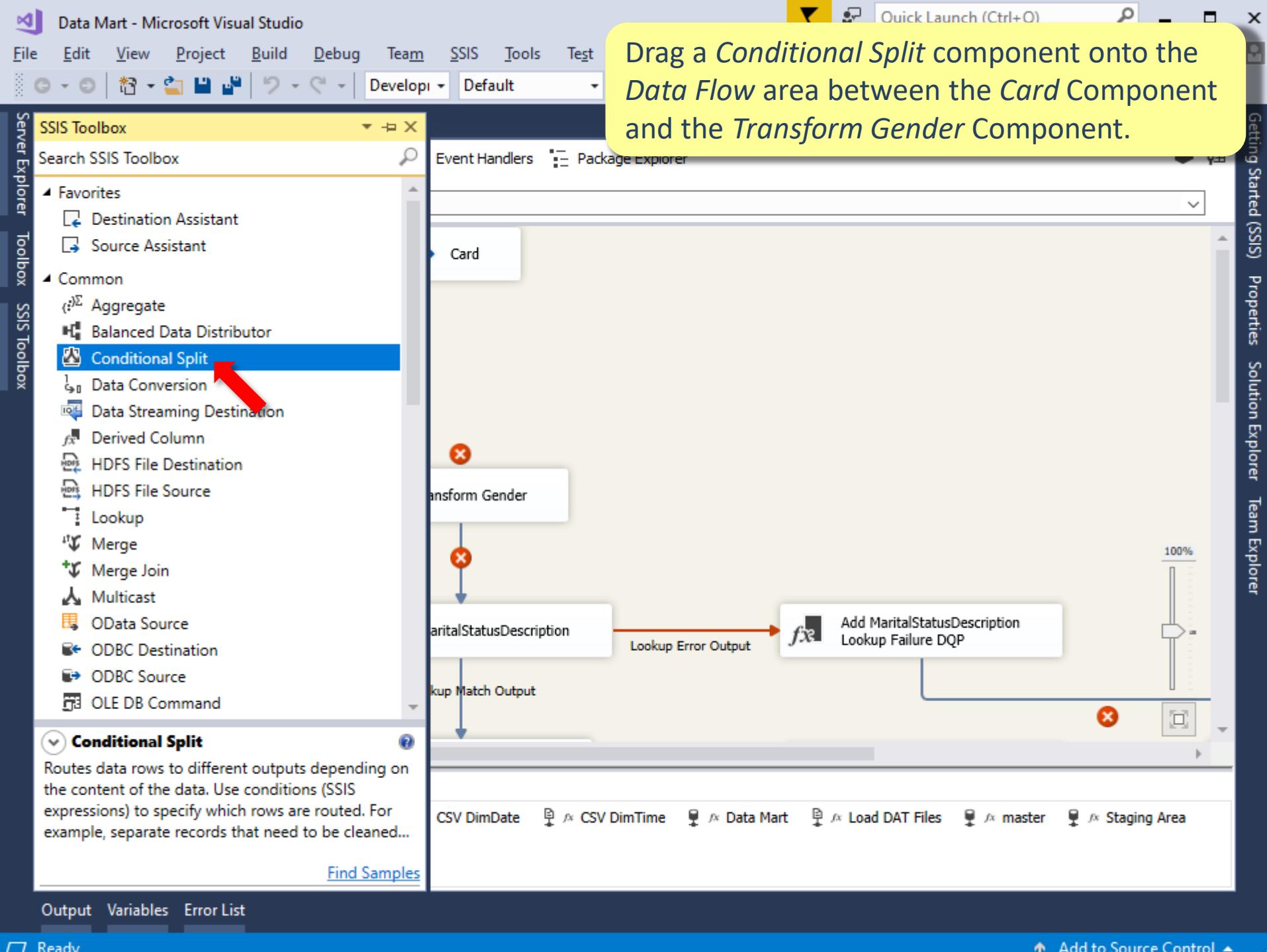
Create DM Tables Create SA Tables CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Output Variables Error List

Ready Add to Source Control

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

```
graph TD; Card[Card] --> TransformGender[Transform Gender]; TransformGender --> LookupMaritalStatusDescription[Lookup MaritalStatusDescription]; LookupMaritalStatusDescription --> AddMaritalStatusDescription[Add MaritalStatusDescription  
Lookup Failure DQP]; AddMaritalStatusDescription --> MatchOutput[Match Output];
```



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card

Conditional Split

Transform Gender

Lookup MaritalStatusDescription

Add MaritalStatusDescription
Lookup Failure DQP

Lookup Match Output

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

Rename the *Conditional Split* component to *Valid NumChildren?*

```
graph TD; Card[Card] --> CS[Conditional Split]; CS --> TG[Transform Gender]; TG --> LMD[Lookup MaritalStatusDescription]; LMD --> LM[Lookup Match Output]; LMD -- "Lookup Error Output" --> DQD[Add MaritalStatusDescription Lookup Failure DQP];
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Develop Default Start

Server Explorer Toolbox SSIS Toolbox

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Card

Valid NumChildren?

Transform Gender

Lookup MaritalStatusDescription

Add MaritalStatusDescription
Lookup Failure DQP

Creates new column values by applying expressions to transformation input columns. Create new column

Lookup Match Output

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

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

```
graph TD; Card[Card] --> Decision{Valid NumChildren?}; Decision --> Transform[Transform Gender]; Decision --> Lookup[Lookup MaritalStatusDescription]; Decision --> Output[Add MaritalStatusDescription  
Lookup Failure DQP]; Transform --> Match[Lookup Match Output];
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Conditional Split Transformation Editor

Specify the conditions used to direct input rows to specific outputs 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.

Getting Started (SSIS) Properties Solution Explorer Team Explorer

100%

columns. Create new column

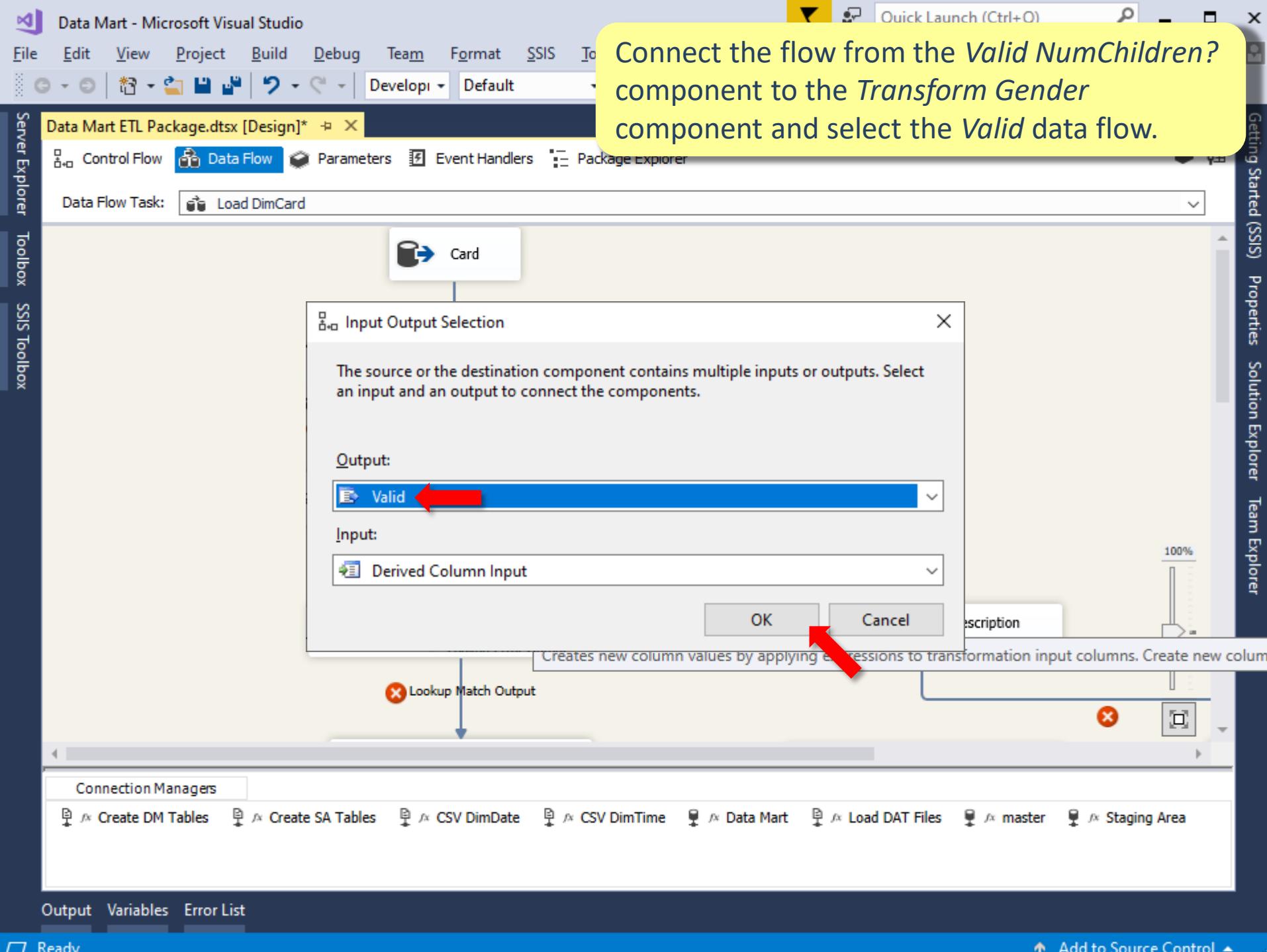
Staging Area

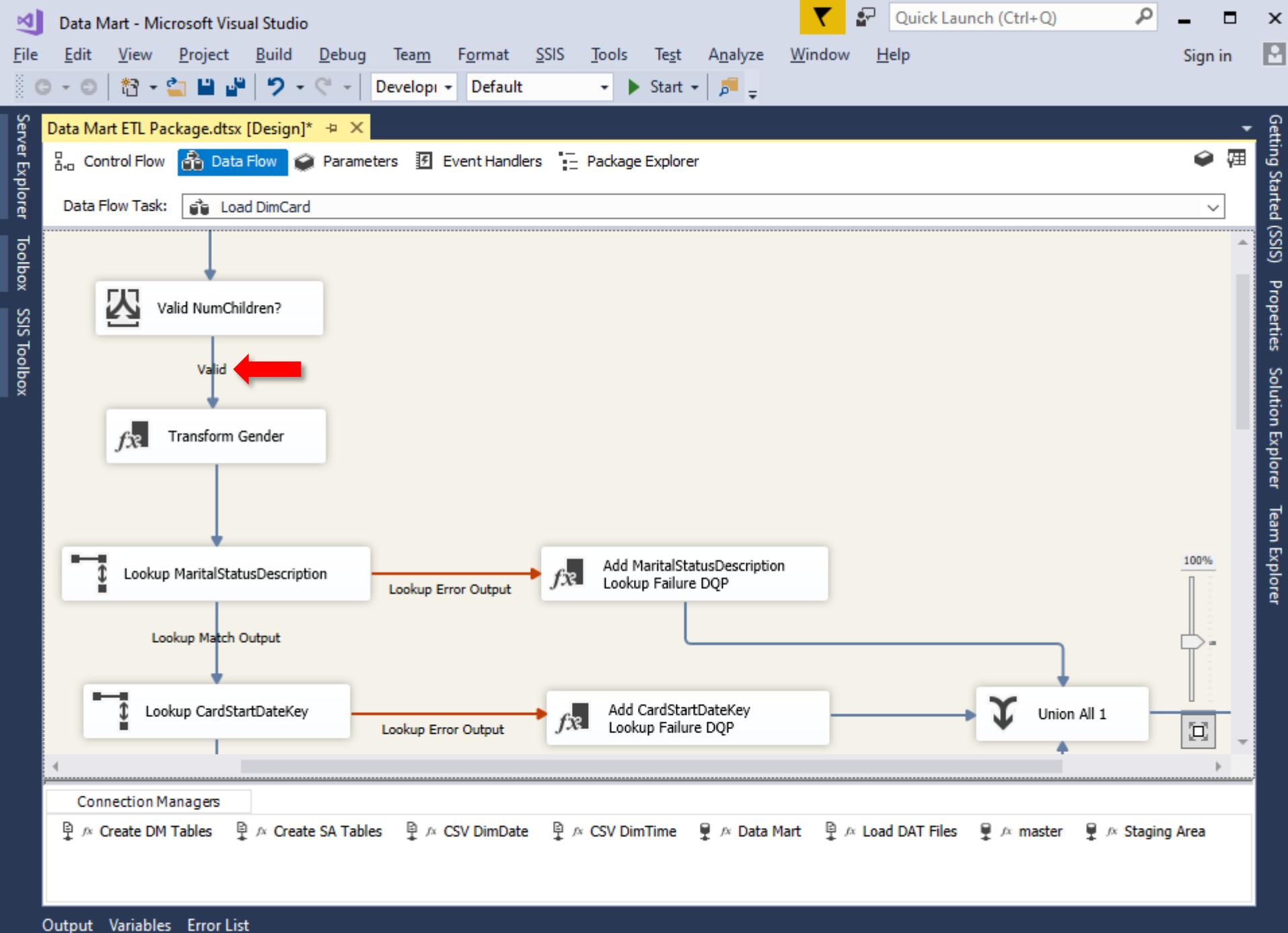
Connection Manager Create DM Table

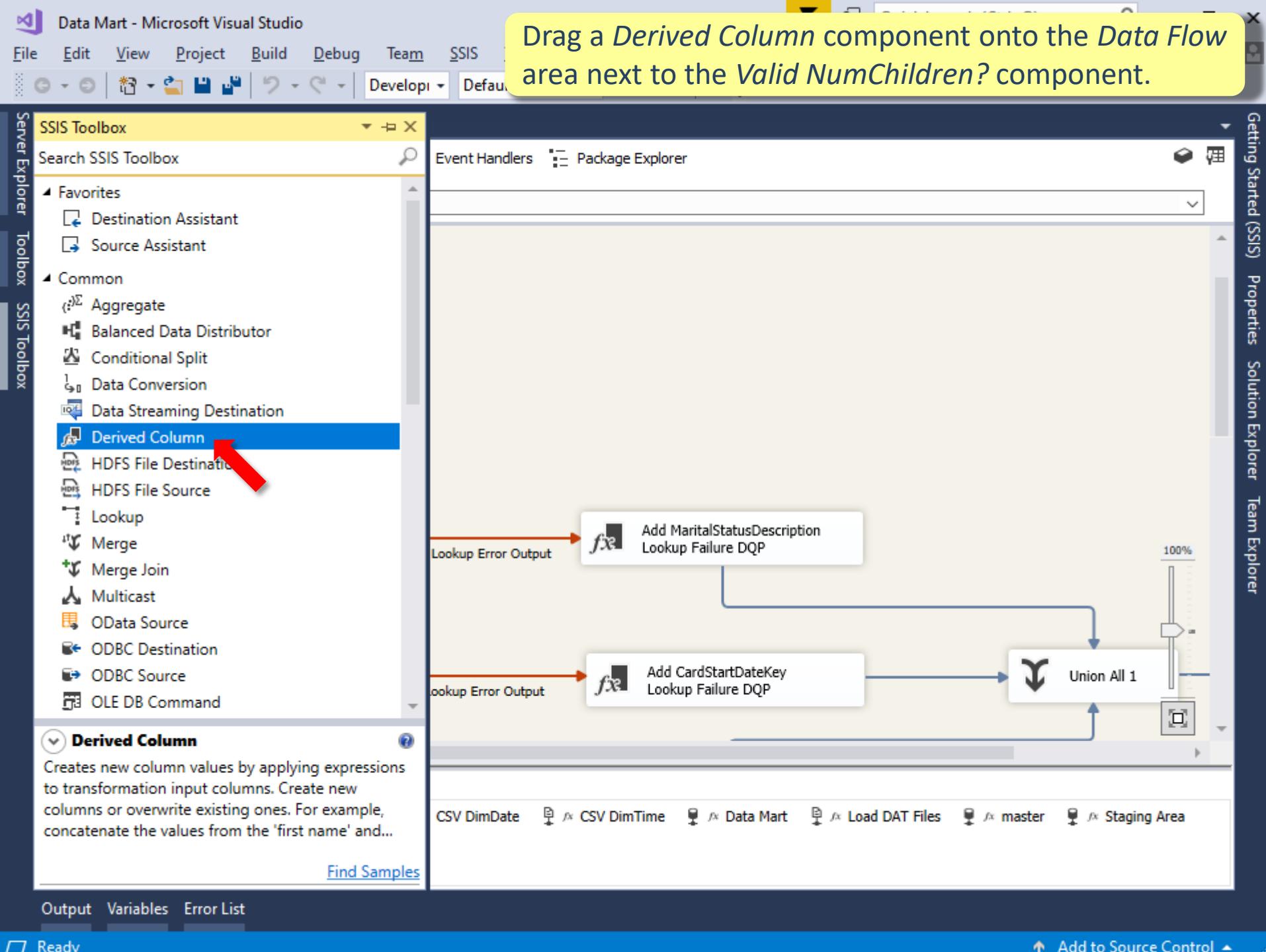
Output Variables Error List

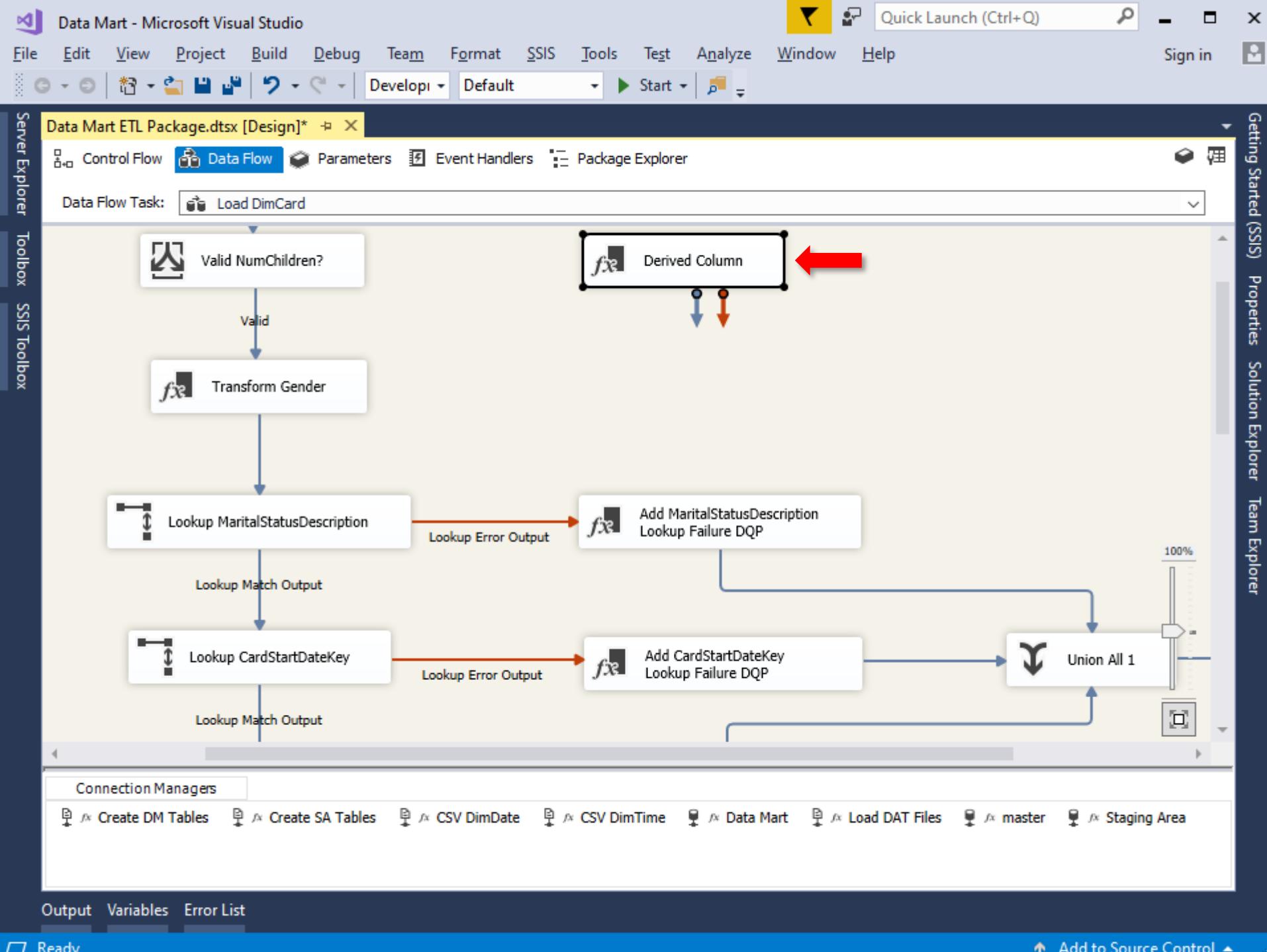
Add to Source Control

Ready









Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS

Develop Default

Data Mart ETL Package.dtsx [Design]*

Control Flow Data Flow Parameters Event Handlers

Data Flow Task: Load DimCard

Card

Valid NumChildren?

Transform Gender

Lookup MaritalStatusDescription

Add Invalid NumChildren DQP

Add MaritalStatusDescription Lookup Failure DQP

Invalid

Valid

Lookup Error Output

Lookup Match Output

Connection Managers

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

Output Variables Error List

Ready Add to Source Control

Rename the new component to *Add Invalid NumChildren DQP*, connect the (blue) flow from the *Valid NumChildren?* to it (which automatically selects the *Invalid* data flow) and edit it.

```
graph TD; Card[Card] --> VNC{Valid NumChildren?}; VNC -- Valid --> TG[Transform Gender]; TG --> LMSD[Lookup MaritalStatusDescription]; LMSD --> AINDQ[Add Invalid NumChildren DQP]; LMSD --> LMLF[Add MaritalStatusDescription Lookup Failure DQP]; LMSD --> LMO[Lookup Match Output]; AINDQ --> LMLF;
```

Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test

Derived Column Transformation Editor

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

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_WSTR]	3

Configure Error Output...

OK Cancel Help

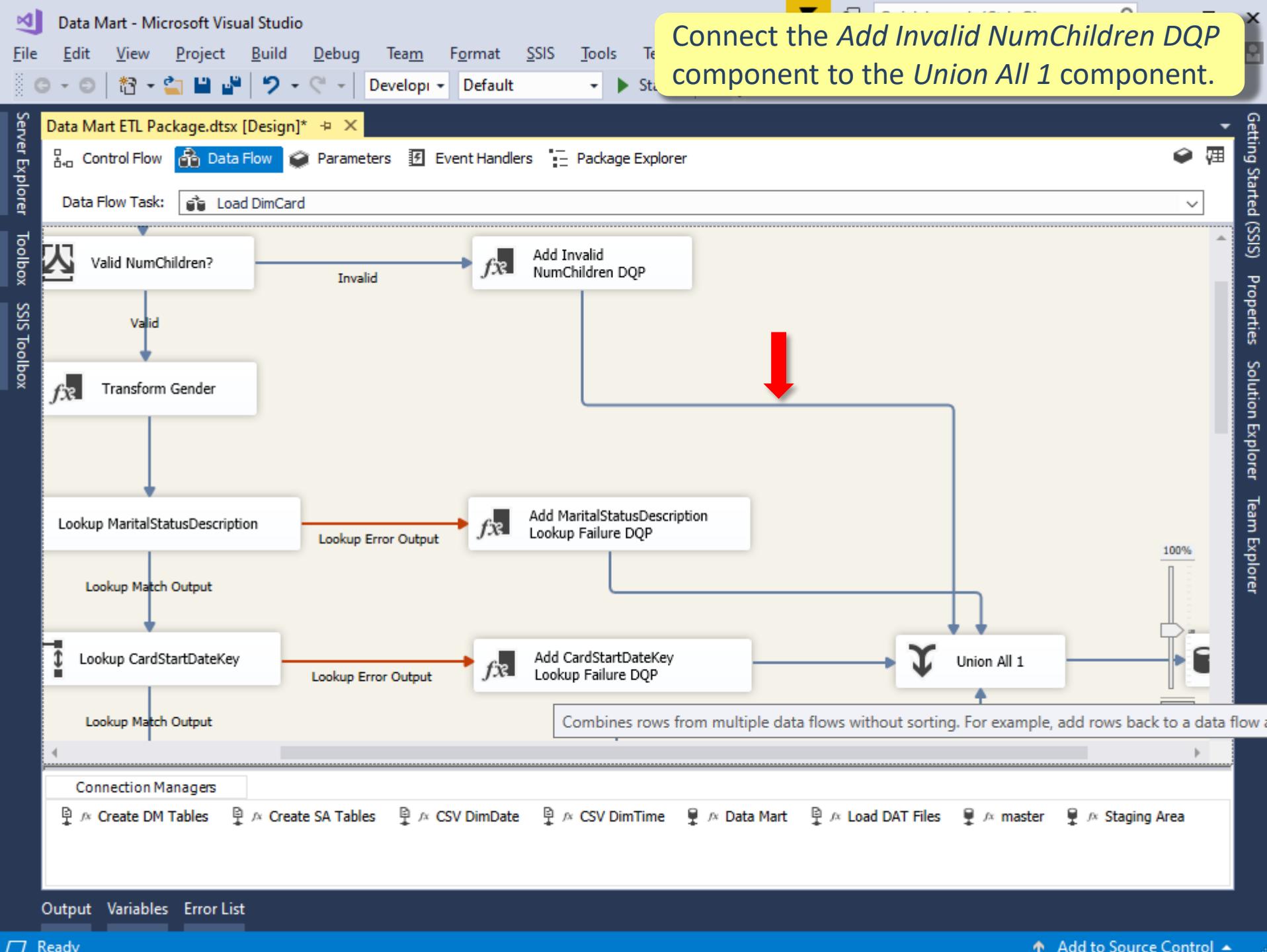
Output Variables Error List

Add to Source Control

Server Explorer Toolbox SSIS Toolbox

Getting Started (SSIS) Properties Solution Explorer Team Explorer

Area





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

Check if all the output columns are properly mapped with the new input columns.

Output Column Name	Union All Input 1	Union All Input 2	Union All Input 3	Union All Input 4
CardID	CardID	CardID	CardID	CardID
City	City	City	City	City
Region	Region	Region	Region	Region
PostalCode	PostalCode	PostalCode	PostalCode	PostalCode
CardStartDate	CardStartDate	CardStartDate	CardStartDate	CardStartDate
Gender	Gender	Gender	Gender	Gender
DateOfBirth	DateOfBirth	DateOfBirth	DateOfBirth	DateOfBirth
MaritalStatus	MaritalStatus	MaritalStatus	MaritalStatus	MaritalStatus
HasChildren	HasChildren	HasChildren	HasChildren	HasChildren
NumChildren	NumChildren	NumChildren	NumChildren	NumChildren
YoungestChildren	YoungestChildren	YoungestChildren	YoungestChildren	YoungestChildren
Gender_Transformed	Gender_Transformed	Gender_Transformed	Gender_Transformed	<ignore>
ErrorCode	ErrorCode	ErrorCode	ErrorCode	<ignore>
ErrorColumn	ErrorColumn	ErrorColumn	ErrorColumn	<ignore>
DQP	DQP	DQP	DQP	DQO

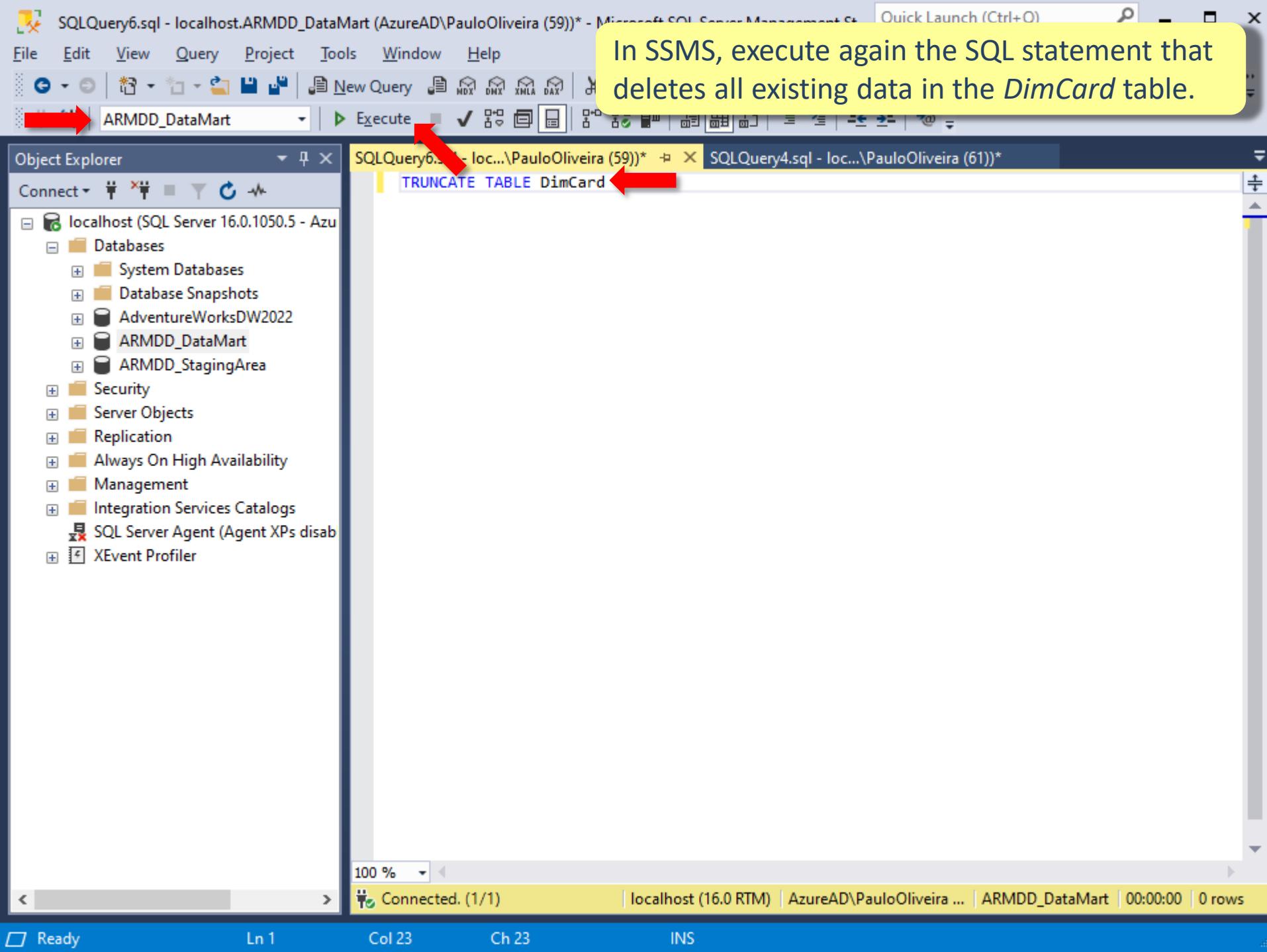


OK

Cancel

Help

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



Data Mart - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools Test Analyze

Quick Launch (Ctrl+O)

Data Mart ETL Package.dtsx [Design] * X

Control Flow Data Flow (highlighted) Parameters Event Handlers Package Explorer

Data Flow Task: Load DimCard

Card → Valid NumChildren? (Decision Task)
Valid → Transform Gender
Transform Gender → Lookup MaritalStatusDescription
Lookup MaritalStatusDescription → Add Invalid NumChildren DQP (Data Quality Process Task)
Invalid → Add MaritalStatusDescription Lookup Failure DQP (Data Quality Process Task)
Add MaritalStatusDescription Lookup Failure DQP → Error Output (highlighted with red arrow)

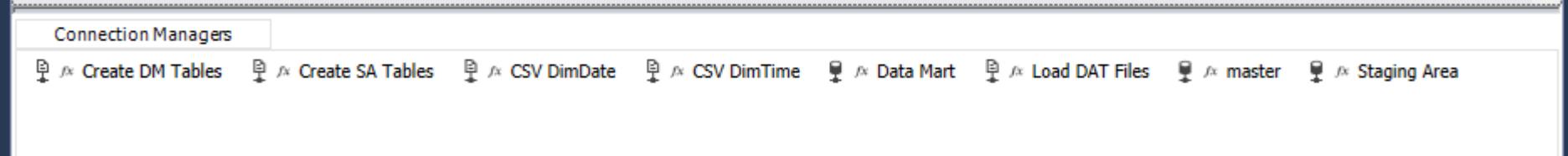
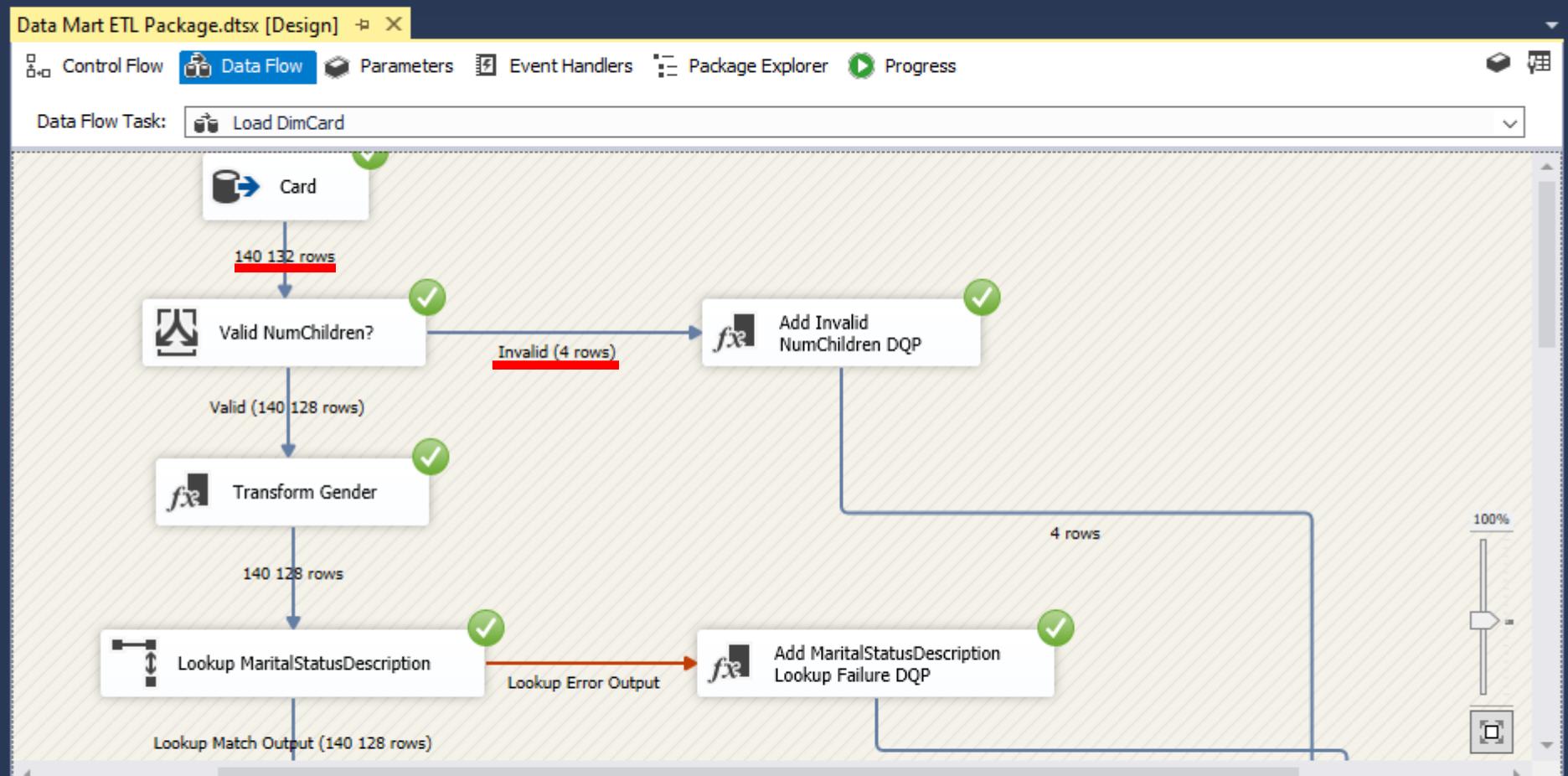
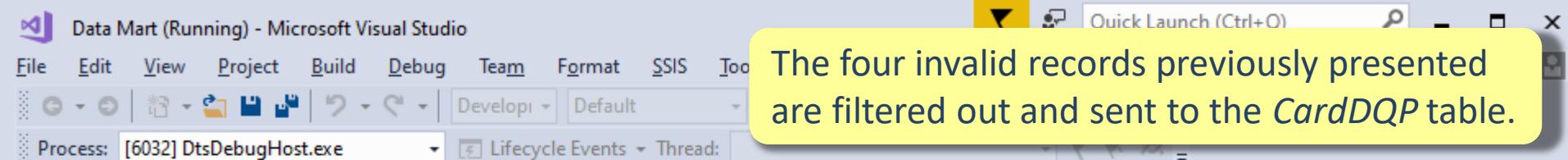
Variables SSIS Toolbox Getting Started Add Annotation Execute Task (highlighted with red arrow) Edit Breakpoints Zoom Cut Ctrl+X Copy Ctrl+C Paste Ctrl+V Delete Del Properties Alt+Enter

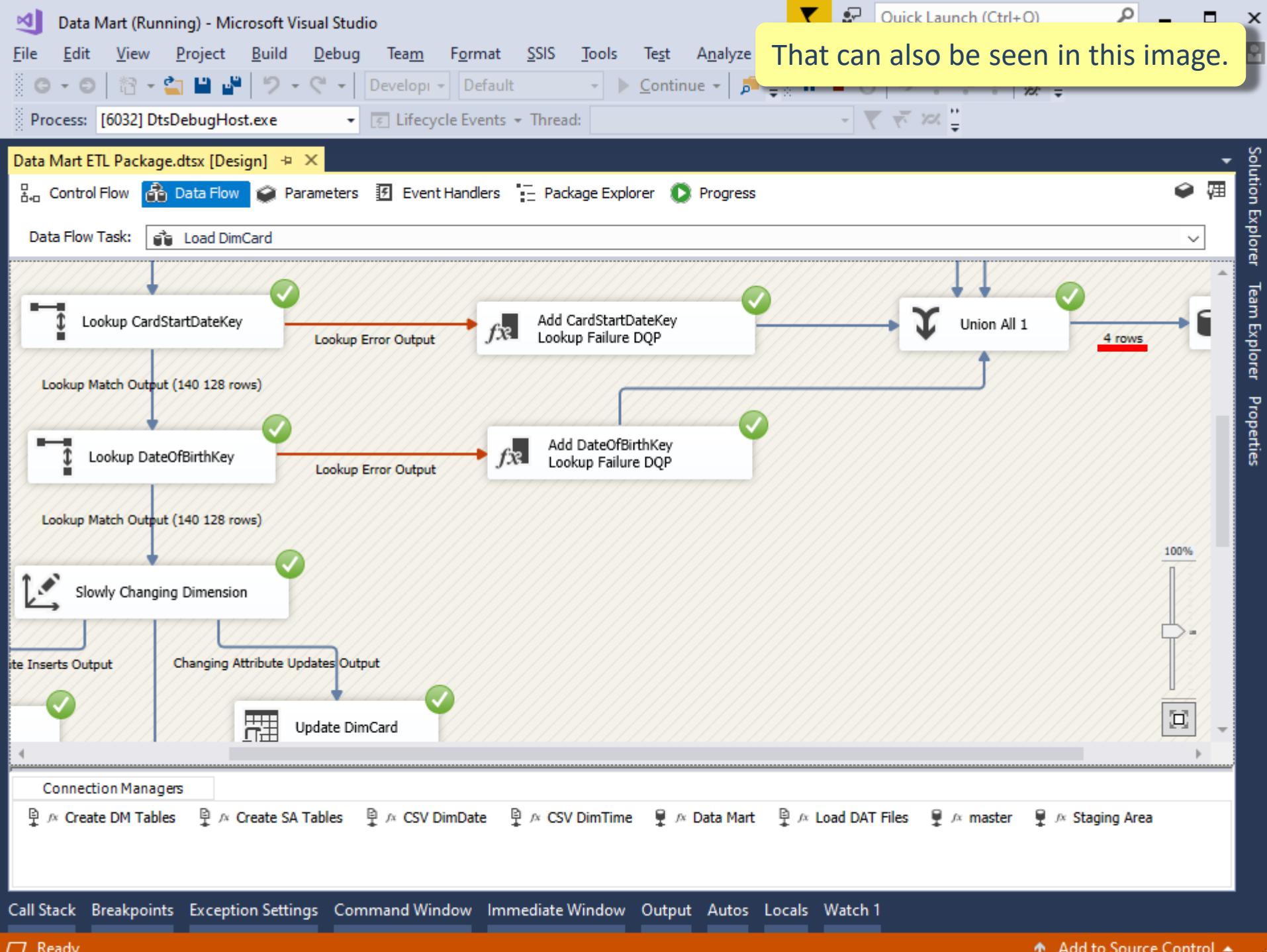
Connection Managers Create DM Tables Create SA Tables CSV DimDate CSV DimTime Data Mart Load DAT Files master Staging Area

Output Variables Error List

Ready Add to Source Control

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





Data Mart (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS Tools

Quick Launch (Ctrl+O)

Process: [6032] DtsDebugHost.exe Lifecycle Events Thread:

Data Mart ETL Package.dtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Progress

Data Flow Task: Load DimCard

Expire Old Record → Union All → Set New Record Effective Date → Insert into DimCard

140 128 rows

140 128 rows

100%

Connection Managers

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

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

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

Add to Source Control

The screenshot shows the Microsoft Visual Studio interface for an SSIS package named "Data Mart ETL Package.dtsx". The "Data Flow" tab is selected in the ribbon. The main area displays a "Data Flow Task" named "Load DimCard". The flow starts with an "Expire Old Record" component, followed by a "Union All" component. The output of the "Union All" component is labeled "140 128 rows". This is followed by a "Set New Record Effective Date" component, also with an output of "140 128 rows". Finally, the data flows into an "Insert into DimCard" component. A yellow callout bubble in the top right corner contains the text: "140128 are inserted into the DimCard table, i.e., differs in 4 rows/records less than the previous Load DimCard execution." The bottom status bar indicates "Package execution completed. Click here to switch to design mode, or select Stop Debugging from the Debug menu."

Using SSMS, Select the Top 1000 rows stored in the DimCard table.

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. In the Object Explorer on the left, under the database 'ARMDD_DataMart', the 'Tables' node is expanded, and the 'dbo.DimCard' table is selected. A context menu is open over the 'DimCard' table, with the 'Select Top 1000 Rows' option highlighted by a red arrow. The status bar at the bottom right indicates 'localhost (16.0 RTM) | AzureAD\PauloOliveira ... | ARMDD_DataMart | 00:00:00 | 0 rows'.

File Edit View Project Tools Window Help

New Query MDX DML XQLA DAX

ARMDD_DataMart Execute

Object Explorer

localhost (SQL Server 16.0.1050.5 - /)

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorksDW2022
 - ARMDD_DataMart** (highlighted with a red arrow)
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.DimCard** (highlighted with a red arrow)
 - dbo.DimDate
 - dbo.DimItem
 - dbo.DimPaym
 - dbo.DimStor
 - dbo.DimTime
 - dbo.FactSales
 - Dropped Ledg
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Query Store
 - Service Broker
 - Storage
 - Security

SQLQuery6.sql - localhost.ARMDD_DataMart (AzureAD\PauloOliveira (59))* - Microsoft SQL Server Management Studio

Quick Launch (Ctrl+O)

TRUNCATE TABLE DimCard

Select Top 1000 Rows (highlighted with a red arrow)

Access successfully.

3-10-30T16:27:11.0018863+00:00

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

Ready

SQLQuery8.sql - localhost.ARMDDataMart (AzureAD\PauloOliveira (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+O)

ARMDD_DataMart

Object Explorer

Connect

localhost (SQL Server 16.0.1050.5 - 55)
Databases
System Databases
Database Snapshots
AdventureWorksDW2022
ARMDD_DataMart
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.DimCard
dbo.DimDate
dbo.DimItem
dbo.DimPaymentMethod
dbo.DimStore
dbo.DimTime
dbo.FactSales
Dropped Ledger Tables
Views
External Resources
Synonyms
Programmability
Query Store
Service Broker
Storage
Security

SQLQuery8.sql - loc...\\PauloOliveira (55) SQLQuery6.sql - loc...\\PauloOliveira (59)*

```
SELECT TOP (1000) [CardKey]
      ,[CardID]
      ,[City]
      ,[Region]
      ,[PostalCode]
      ,[CardStartDateKey]
      ,[Gender]
      ,[DateOfBirthKey]
      ,[MaritalStatus]
      ,[NumChildren]
      ,[YoungestChildren]
      ,[EffectiveDate]
      ,[ExpiredDate]
      ,[IsCurrent]
  FROM [ARMDD_DataMart].[dbo].[DimCard]
```

100 %

Results Messages

	CardKey	CardID	City	Region	PostalCode	CardStartDateKey	Gender	DateOfBirthKey	MaritalStatus
1	1	C0103967350	Ravensville	Eastern	A074282	36431	Female	21637	Married
2	2	C0102378887	Catburg	Eastern	A074282	37208	Female	24557	Unknown
3	3	C0102589553	Princeton	Central	A074282	35916	Male	24829	Single
4	4	C0104955317	Queensbury	Central	A074282	36247	Male	16382	Single
5	5	C0104710149	Princeton	Central	A074282	36841	Male	21044	Single
6	6	C0102097884	Kingsville	Central	A074282	36560	Female	20925	Unknown
7	7	C0102250841	Ravensville	Eastern	A074282	37164	Male	30085	Married
8	8	C0104456133	Princeton	Central	A074282	37144	Male	20285	Unknown
9	9	C0100204012	Catburg	Eastern	A024394	35884	Female	23882	Married
10	10	C0100203416	Kingsville	Central	A024394	36784	Female	22387	Unknown

Query executed successful... | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | ARMDD_DataMart | 00:00:00 | 1 000 rows

Ready Ln 1 Col 1 Ch 1 INS

Scroll horizontally to the right.

SQLQuery8.sql - localhost.ARMDDataMart (AzureAD\PauloOliveira (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

ARMDD_DataMart Execute

Object Explorer

localhost (SQL Server 16.0.1050.5 -)

Databases

- System Databases
- Database Snapshots
- AdventureWorksDW2022
- ARMDD_DataMart
- Database Diagrams
- Tables
- System Tables
- FileTables
- External Tables
- Graph Tables
- dbo.DimCard
- dbo.DimDate
- dbo.DimItem
- dbo.DimPaymentMethod
- dbo.DimStore
- dbo.DimTime
- dbo.FactSales
- Dropped Ledger Tables

Views

External Resources

Synonyms

Programmability

Query Store

Service Broker

Storage

Security

ARMDD_Schema

SQLQuery8.sql - loc...\\PauloOliveira (55) | SQLQuery0.sql - loc...\\PauloOliveira (59)

SELECT TOP (1000) [CardKey],
[CardID],
[City],
[Region],
[PostalCode],
[CardStartDateKey],
[Gender],
[DateOfBirthKey],
[MaritalStatus],
[NumChildren],
[YoungestChildren],
[EffectiveDate],
[ExpiredDate],
[IsCurrent]
FROM [ARMDD_DataMart].[dbo].[DimCard]

Results Messages

CardKey	DateOfBirthKey	MaritalStatus	NumChildren	YoungestChildren	EffectiveDate	ExpiredDate	IsCurrent
1 ale	21637	Married	5	12	2023-10-30 16:27:31.000	NULL	Yes
2 ale	24557	Unknown	0	2	2023-10-30 16:27:31.000	NULL	Yes
3 ale	24829	Single	0	8	2023-10-30 16:27:31.000	NULL	Yes
4 ale	16382	Single	0	27	2023-10-30 16:27:31.000	NULL	Yes
5 ale	21044	Single	1	15	2023-10-30 16:27:31.000	NULL	Yes
6 ale	20925	Unknown	0	14	2023-10-30 16:27:31.000	NULL	Yes
7 ale	30085	Married	1	0	2023-10-30 16:27:31.000	NULL	Yes
8 ale	20285	Unknown	0	15	2023-10-30 16:27:31.000	NULL	Yes
9 ale	23882	Married	2	8	2023-10-30 16:27:31.000	NULL	Yes
10 ale	22387	Unknown	5	10	2023-10-30 16:27:31.000	NULL	Yes

Query executed successful... | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | ARMDD_DataMart | 00:00:00 | 1 000 rows

Ready Ln 1 Col 1 Ch 1 INS

As expected, it's possible to see that all records have an *EffectiveDate*, don't have an *ExpiredDate* and the *IsCurrent* flag is set to Yes.

SQLQuery8.sql - localhost.ARMDDataMart (AzureAD\PauloOliveira (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

ARMDD_DataMart Execute

Object Explorer

localhost (SQL Server 16.0.1050.5 - /) Databases System Databases Database Snapshots AdventureWorksDW2022 ARMDD_DataMart Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.DimCard dbo.DimDate dbo.DimItem dbo.DimPaymentMethod dbo.DimStore dbo.DimTime dbo.FactSales Dropped Ledger Tables Views External Resources Synonyms Programmability Query Store Service Broker Storage Security

SQLQuery8.sql - loc...\\PauloOliveira (55) SQLQuery0.sql - loc...\\PauloOliveira (59)

SELECT * FROM [ARMDD_DataMart].[dbo].[DimCard]

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

	CardKey	CardID	City	Region	PostalCode	CardStartDateKey	Gender	DateOfBirthKey	MaritalStatus
1	1	C0103967350	Ravensville	Eastern	A074282	36431	Female	21637	Married
2	2	C0102378887	Catburg	Eastern	A074282	37208	Female	24557	Unknown
3	3	C0102589553	Princeton	Central	A074282	35916	Male	24829	Single
4	4	C0104955317	Queensbury	Central	A074282	36247	Male	16382	Single
5	5	C0104710149	Princeton	Central	A074282	36841	Male	21044	Single
6	6	C0102097884	Kingsville	Central	A074282	36560	Female	20925	Unknown
7	7	C0102250841	Ravensville	Eastern	A074282	37164	Male	30085	Married
8	8	C0104456133	Princeton	Central	A074282	37144	Male	20285	Unknown
9	9	C0100204012	Catburg	Eastern	A024394	35884	Female	23882	Married
10	10	C0100203416	Kingsville	Central	A024394	36784	Female	22387	Unknown

100 % Results Messages

Query executed successfully | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | ARMDD_DataMart | 00:00:01 | 140 128 rows

Ready Ln 1 Col 9 Ch 9 INS

SQLQuery8.sql - localhost.ARMDDataMart (AzureAD\PauloOliveira (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

ARMDD_DataMart Execute

Object Explorer Connect

localhost (SQL Server 16.0.1050.5 -)

Databases System Databases Database Snapshots AdventureWorksDW2022 ARMDD_DataMart Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.DimCard dbo.DimDate dbo.DimItem dbo.DimPaymentMethod dbo.DimStore dbo.DimTime dbo.FactSales Dropped Ledger Table Views External Resources Synonyms Programmability Query Store Service Broker Storage Security

SQLQuery8.sql - loc...\\PauloOliveira (55)*

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

Results Messages

	CardKey	CardID	City	Region	PostalCode	CardStartDateKey	Gender	DateOfBirthKey	MaritalStatus
1	1	C0103967350	Ravensville	Eastern	A074282	36431	Female	21637	Married
2	2	C0102378887	Catburg	Eastern	A074282	37208	Female	24557	Unknown
3	3	C0102589553	Princeton	Central	A074282	35916	Male	24829	Single
4	4	C0104955317	Queensbury	Central	A074282	36247	Male	16382	Single
5	5	C0104710149	Princeton	Central	A074282	36841	Male	21044	Single
6	6	C0102097884	Kingsville	Central	A074282	36560	Female	20925	Unknown
7	7	C0102250841	Ravensville	Eastern	A074282	37164	Male	30085	Married
8	8	C0104456133	Princeton	Central	A074282	37144	Male	20285	Unknown
9	9	C0100204012	Catburg	Eastern	A024394	35884	Female	23882	Married
10	10	C0100203416	Kingsville	Central	A024394	36784	Female	22387	Unknown

Query executed successfully | localhost (16.0 RTM) | AzureAD\PauloOliveira ... | ARMDD_DataMart | 00:00:01 | 140 128 rows

You can try by yourself to change an historical attribute of a record in the Staging Area Card table and see the results in the Data Mart DimCard Table.

Data Mart (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Format SSIS

Process: [1536] DtsDebugHost.exe

Quick Launch (Ctrl + Q)

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

Data Mart ETL Package.dtsx [Design]

Control Flow Data Flow Parameters Event Handlers Package Explorer Progress

Data Flow Task: Load DimCard

Expire Old Record → Union All → Set New Record Effective Date → Insert into DimCard

Connection Managers

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

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

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

Add to Source Control

```
graph TD; A[Expire Old Record] --> B[Union All]; B --> C[Set New Record Effective Date]; C --> D[Insert into DimCard];
```