

## ETL with SQL Server SSIS

### From transactional data to SQL Server DW:



ETL refers to three database functions that are combined into one tool to pull data out of one database and place it into another database.

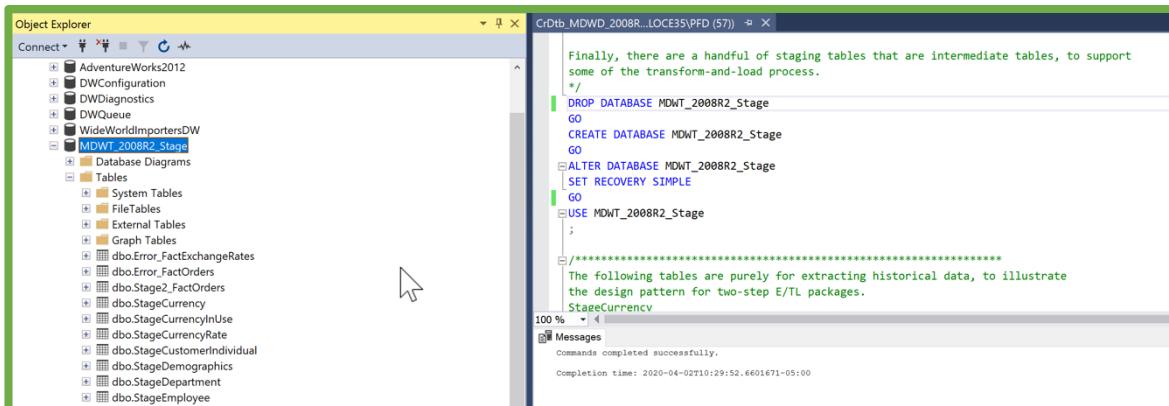
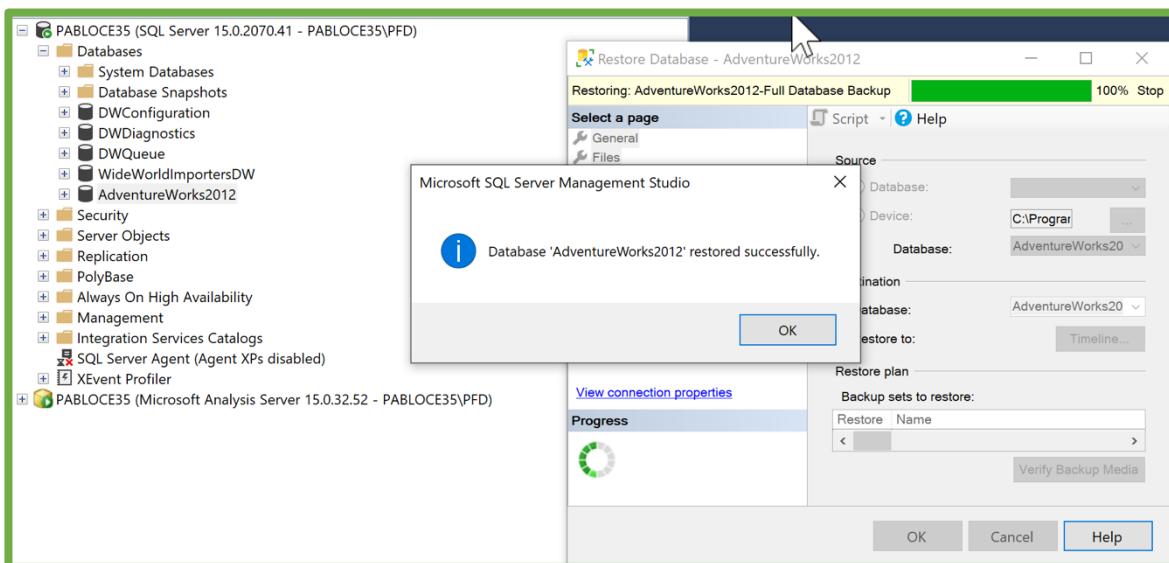
- **Extract** is the process of *reading data* from a database.
- **Transform** is the process of *converting the extracted data* from its previous form into the form it needs to be in so that it can be placed into another database.
- **Load** is the process of *writing the data* into the target database.

**SSIS** is a platform for data integration and workflow applications. It features a data warehousing tool used for data extraction, transformation, and loading (**ETL**).

#### Step 1: Creating all the connections and configuring the required databases

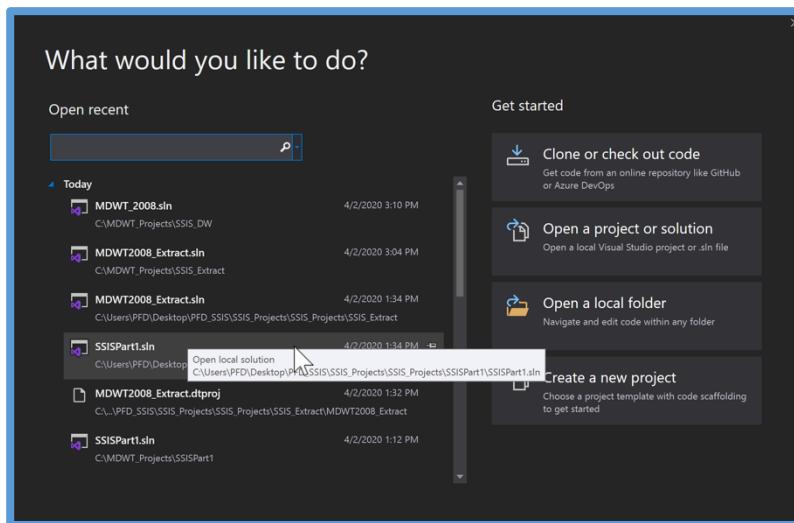
Before to start working on the ETL system we have to develop it's very important to create the required database engines (databases) and connections needed.

To perform properly this step, we would need to use different techniques like, restoring a database from a *backup* file or creating a new database from a SQL query. The following screenshot show all the databases created as a result of this processes:



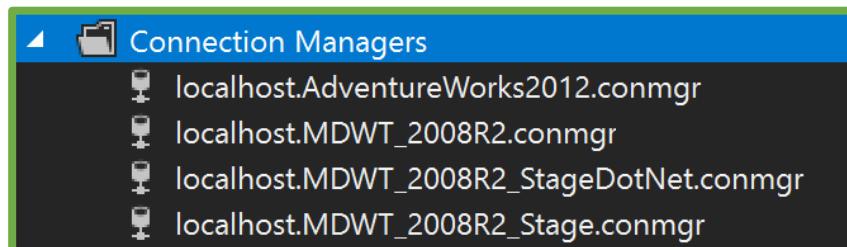
In this case, the MDWT\_2008R2 database is created and also the modification with the ALTER TABLE is performed.

Finally, when all the new databases are created on Microsoft SQL Server Management Studio 18, we can open Visual Studio and start working on the solutions required. For each part of the assignment, a new project would be created. All the data is going to be launched and retrieve over the initial databases, created on the previous stage, so the data flow would be ensured:



The final step, at this first stage, is to properly create all the connections required. In this project we are going to need 4 different connections:

Connection Name	Connection Type
AdventureWorks2012	Native OLE DB
MDWT_2008R2	.Net Provider
MDWT_2008R2_StagedotNet	.Net Provider
MDWT_2008R2_StagedotNet	Native OLE DB



## Step 2: Building the required packages

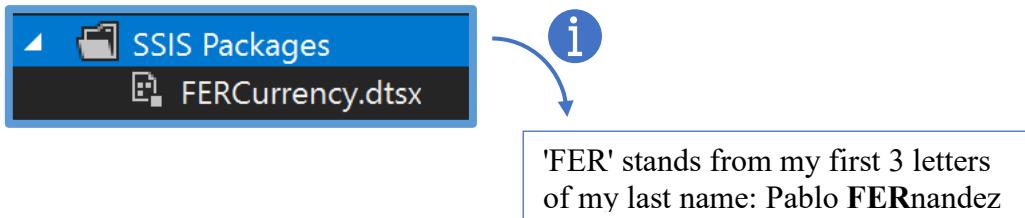
To properly complete this assignment is required to create 2 initial Packages to perform all the stages of the SSIS project:

### - Package Currency

### - Package Product

The process of creating these two packages is quite similar, so, on this report is only going to be shown the required steps for creating one of them. Also, at the end of all the intermediate steps, 2 final screenshots are going to be displayed to provided **both packages are properly running**.

So, the first step is to create a new Package with the proper name:

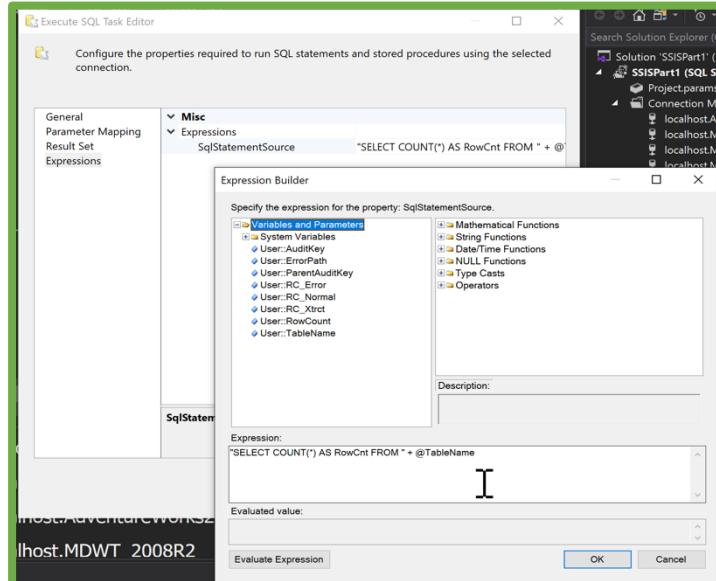


The next step is to create the required variables, including the **scope** (which must match with the previous package we created), the **data type** (depending on the variable we are using), and the **value** (which could be a numeric or string value, or for example, the path to an error file or the name of a table in our database):

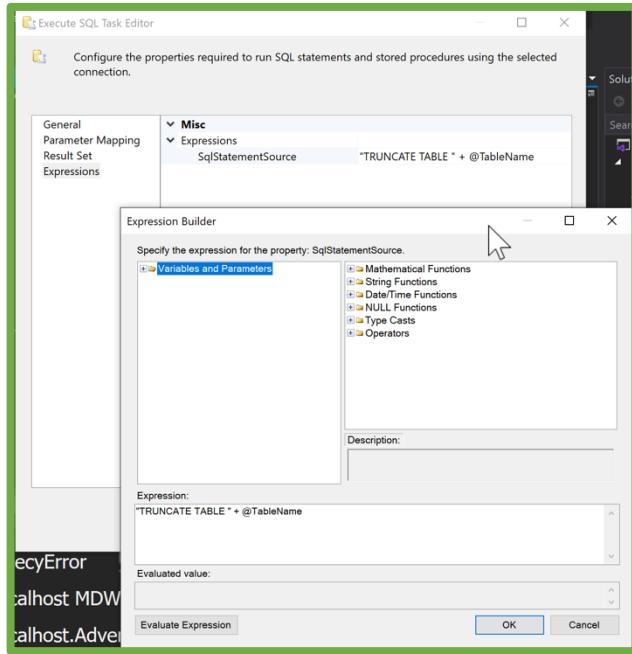
Name	Scope	Data type	Value	Expression
AuditKey	FERCurrency	Int32	0	
ErrorPath	FERCurrency	String	c:\SSIStemp\X_Currency.raw	
ParentAuditKey	FERCurrency	Int32	0	
RC_Error	FERCurrency	Int32	0	
RC_Normal	FERCurrency	Int32	0	
RC_Xtrct	FERCurrency	Int32	0	
RowCount	FERCurrency	Int32	0	
TableName	FERCurrency	String	StageCurrency	

Now, the variables are done, we can start creating the components of our package by creating new **Executable SQL Tasks**. During this example we are going to create:

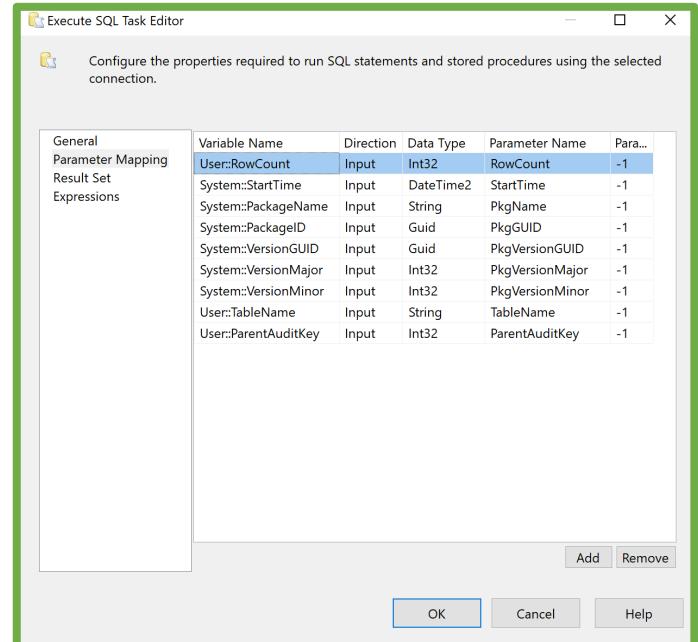
### Prior Count:



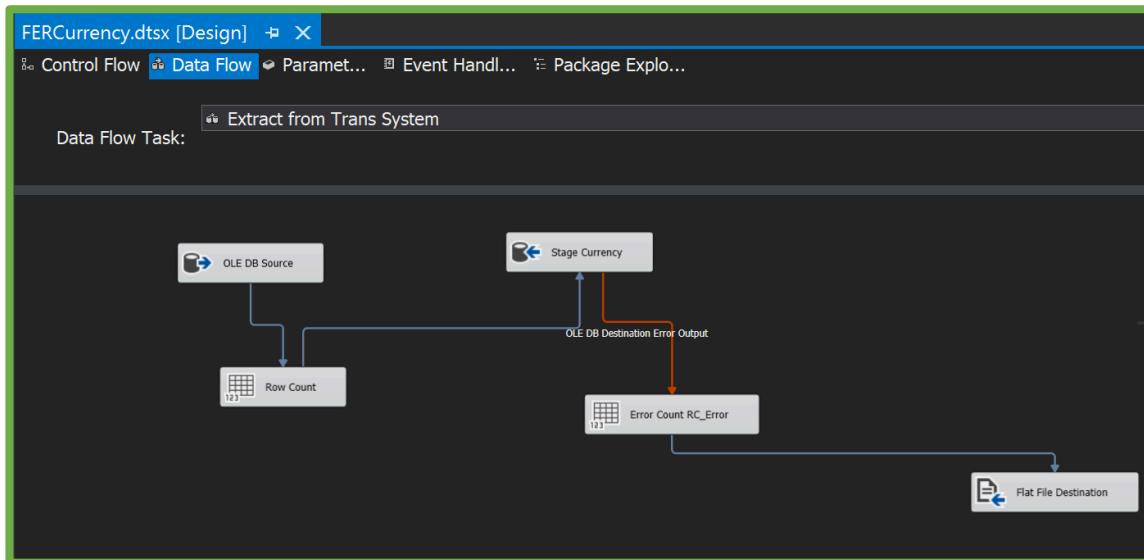
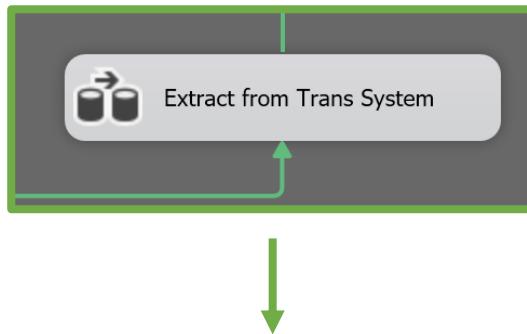
## Truncate Staging:



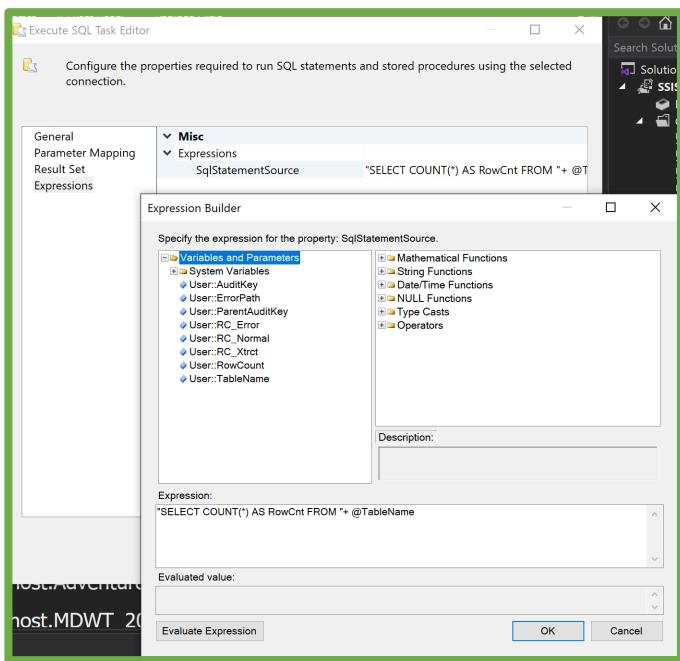
## Get Audit Key:



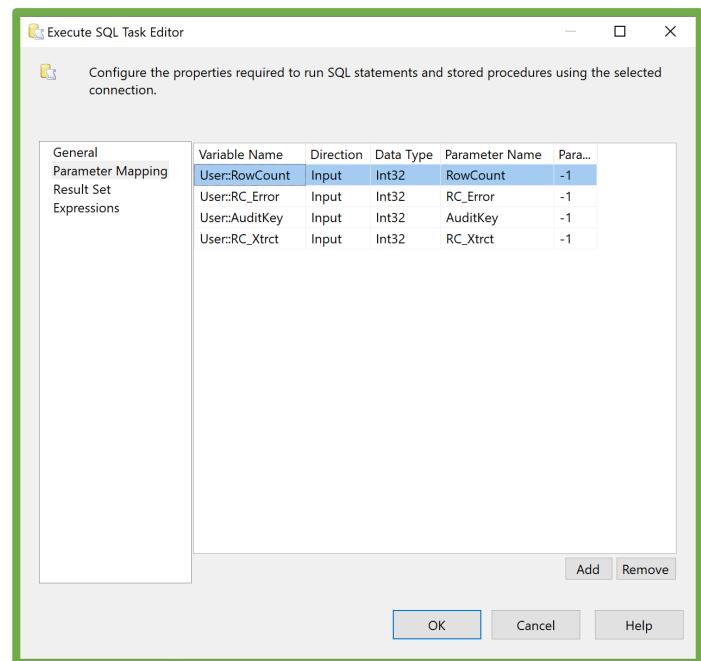
## Extract from Trans System:



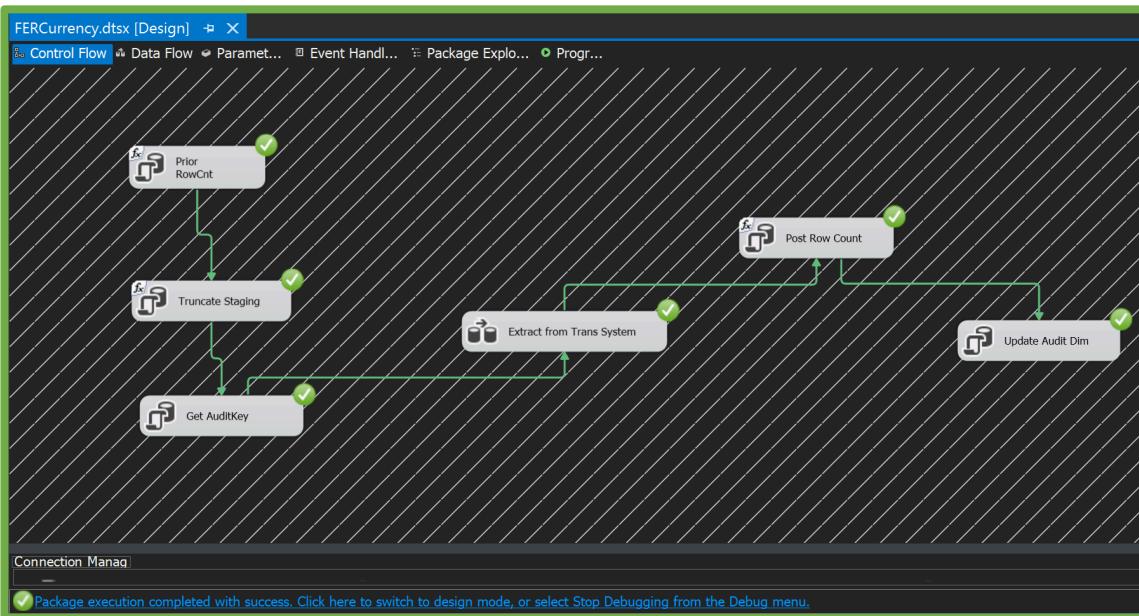
### Post Row Count:



### Update Audit Dim:

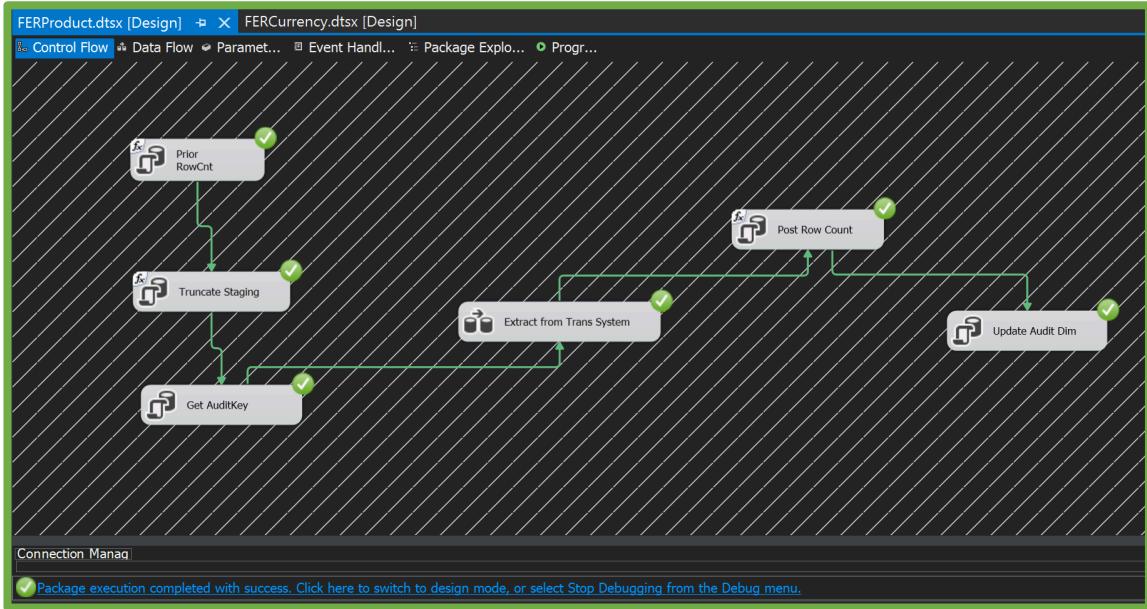


Once, all the SQL Tasks are created we can try to **execute the whole package** to properly ensure that **works fine and no errors occur**:

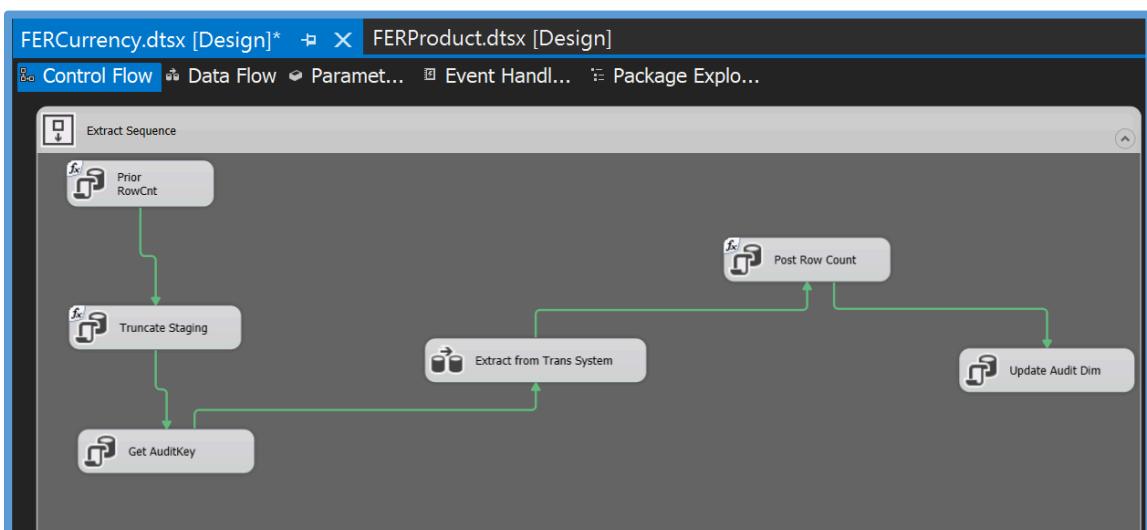
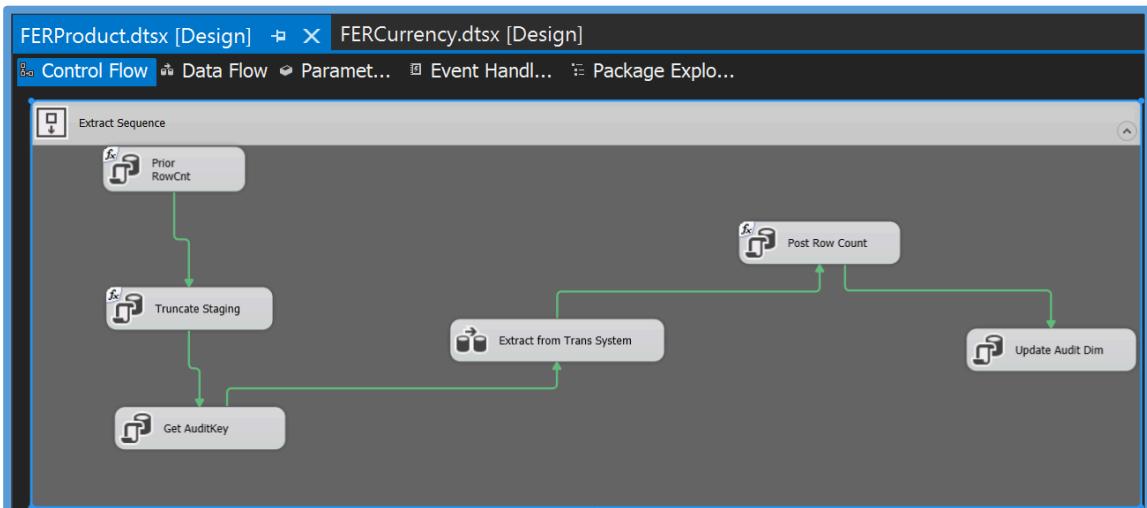


Once the first package has been created (FERCurrency.dtsx) it is necessary to create the second package, which in this case will be the one that connects all the necessary SQL tasks related to the **Product**.

To do this, a new package will be created on this project called **FERProduct.dtsx** containing all the necessary SQL tasks. Also, it is very important to note that the database table you are working with is now **different**, as well as its **attributes**. Therefore, it is important to emphasize that the whole process is not exactly the same. To summarize the report, a picture of the final package **running successfully and without any problem** is attached directly:



Also, the final packages can be included in a new **Sequence Container** as shown in the following screenshots:



### Step 3: Extracting to Stage

To perform the **extracting** phase of the ETL process we would need to create a new project on Visual Studio including all the packages required for the data extraction and then we would need to create a **Master Package** to recursively execute all the packages from the hierarchy.

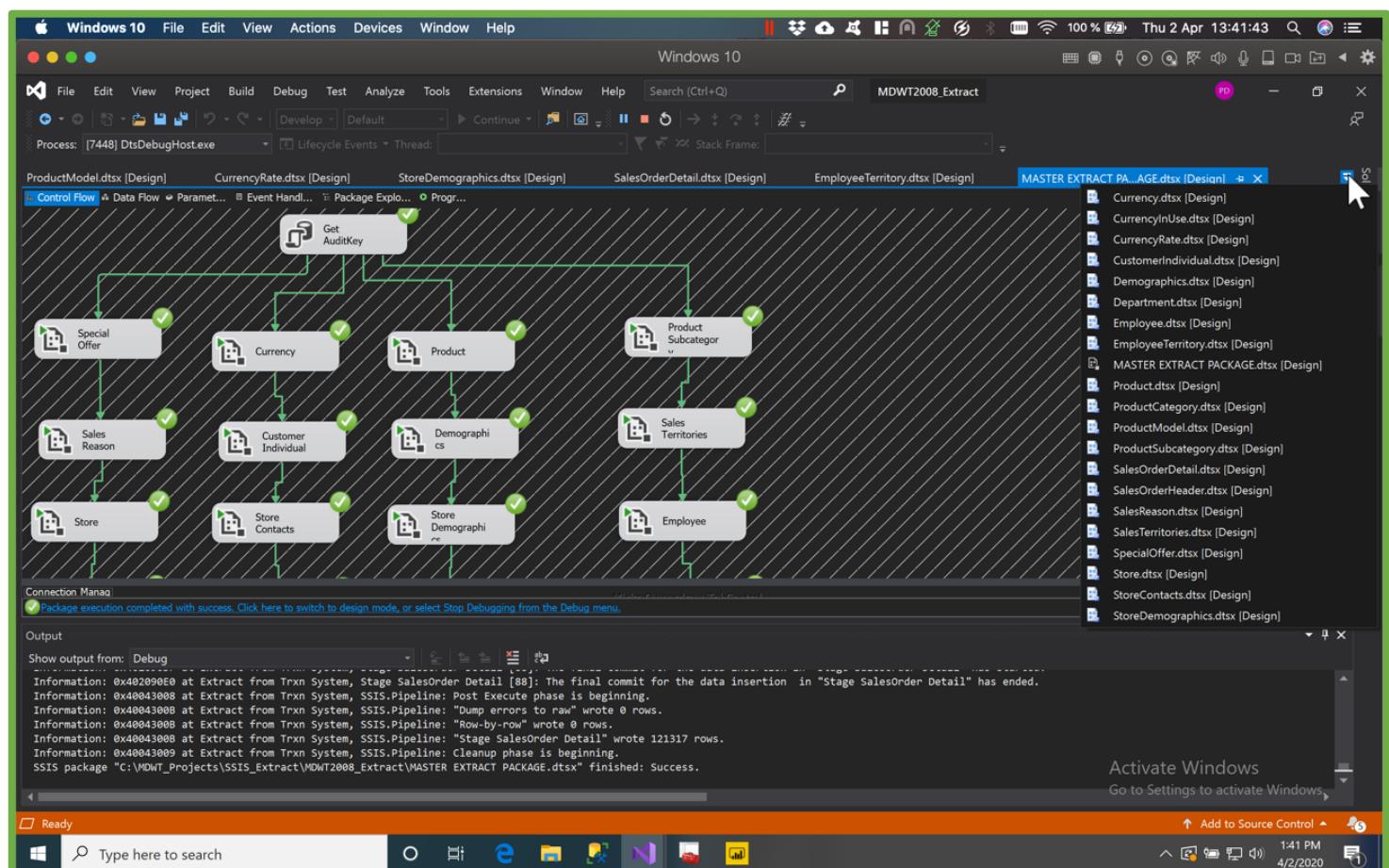
The solution provided contains multiple packages required to interact with the different sources, that would be enumerated below. All these packages are recursively call from a master package. All the items involved during these connections must be properly created and configurated:

Master Package			
Currency	Department	ProductModel	SalesTerritories
CurrencyInUse	Employee	ProductSubcategory	SpecialOffer
CurrencyRate	EmployeeTerritory	SalesOrderDetail	Store
CustomerIndividual	Product	SalesOrderHeader	StoreContacts
Demographics	ProductCategory	SalesReason	StoreDemographics

It's important to clarify some characteristics of the extraction phase during this project. The packages in this solution are extremely simple. The dimension tables are all structured the same, as recommended for ETL projects:

- A few tasks to set up the load and the audit dimension
- A few tasks to clean up and update the audit dimension
- A data flow task with no transformations in it, to copy data to the staging database

When all the packages and relations are properly created and configurated we can execute the **Master Extract Package** to appreciate it **runs properly with no errors**:



Moreover, once the package is **properly created and running**, we can take a look at the results and explore the solution. To perform this checking, we would need to open MS SQL Server Management Studio 2018 and execute a **SELECT** query to display the result from the Audit table using the query **SELECT \* FROM DimAudit**:

```
Object Explorer
Connect ▾
WideWorldImportersDW
MDWT_2008R2_Staged
MDWT_2008R2
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.DimAudit
dbo.DimCurrency
dbo.DimCustomer
dbo.DimDate
dbo.DimEmployee
dbo.DimInfo
dbo.DimProduct
dbo.DimPromotion
dbo.FactExchangeRate
dbo.FactOrders
Views
External Resources
Synonyms
Programmability
Service Broker
Storage
Security
Server Objects
Replication
Replicator
Always On High Availability
Management
Integration Services Catalogs
SQL Server Agent (Agent XPs disabled)
XEvent Profiler
< > [Query executed successfully.]
```

SQLQuery3.sql - P\_ABLOC35(PFD (58)) | MedDtb\_Mdw 200...LOCE35(PFD (58))

SELECT \* FROM [MDWT\_2008R2].[dbo].[DimAudit]

AuditKey	ParentAuditKey	TableName	PkgName	PkgGUID	PkgVersionGUID	PkgVersionMajor	PkgVersionMinor	ExecStartDT	
1	-1		None: Dummy row	NULL	NULL	NULL	NULL	1900-01-01 00:00:00	
2	0	None	Master Pkg, no parent	NULL	NULL	0	0	2020-04-02 10:49:17	
3	1	0	StageCurrency	FERCurrency	D0733EC4-25BF-442D-BB35-B6F516A3A5BD	FCEE90C1-04AD-407C-AFB-2279B0A9A8A4	1	0	2020-04-02 12:10:12
4	2	0	StageCurrency	FERProduct	53148640-9F20-43AB-9022-970F8A0DDE29	9287E1F-EBA7-42B-8D4-5EC1E2220A0E	1	0	2020-04-02 12:15:25
5	3	0	StageCurrency	FERProduct	53148640-F020-43AB-9022-970F8A0DDE29	C825FCF7-171-4190-A73D-F7CEB5035A8	1	0	2020-04-02 12:43:31
6	4	0	StageCurrency	FERProduct	53148640-F020-43AB-9022-970F8A0DDE29	BBF19138-2264-4C20-B655-F2885B151AA7	1	0	2020-04-02 12:45:51
7	5	0	StageCurrency	FERCurrency	D0733EC4-25BF-442D-BB35-B6F516A3A5BD	FCEE90C1-04AD-407C-AFB-2279B0A9A8A4	1	0	2020-04-02 12:51:50
8	6	0	StageProduct	FERProduct	53148640-F020-43AB-9022-970F8A0DDE29	68861C9-A0A4-4130-A987-891674B7A00D	1	0	2020-04-02 12:54:26
9	7	0	StageProduct	FERProduct	53148640-F020-43AB-9022-970F8A0DDE29	540BFCEC-045A-46B-89EA-CED3D9381C07	1	0	2020-04-02 13:08:22
10	8	0	StageCurrency	FERCurrency	D0733EC4-25BF-442D-BB35-B6F516A3A5BD	6F93D572-6AA1-4A99-88A4-FBE812B1BB92	1	0	2020-04-02 13:13:27
11	9	0	StageProduct	FERProduct	53148640-F020-43AB-9022-970F8A0DDE29	540BFCEC-045A-46B-89EA-CED3D9381C07	1	0	2020-04-02 13:13:42
12	10	0	Master Package	MASTER EXTRACT PACKAGE	5DF4DB25-97CC-4C8B-ABCD-8549307180D6	27347F51-ADBB-42CD-9042-561D25AE756	1	0	2020-04-02 13:28:33
13	11	0	Master Package	MASTER EXTRACT PACKAGE	5DF4DB25-97CC-4C8B-ABCD-8549307180D6	27347F51-ADBB-42CD-9042-561D25AE756	1	0	2020-04-02 13:29:41
14	12	0	StageCurrency	Currency	FFF4F625-97CC-4C8B-ABCD-8549307180D6	FBB44057-7754-4852-9057-1F2CE6453270	1	0	2020-04-02 13:35:16
15	13	0	Master Package	MASTER EXTRACT PACKAGE	5DF4DB25-97CC-4C8B-ABCD-8549307180D6	27347F51-ADBB-42CD-9042-561D25AE756	1	0	2020-04-02 13:35:35
16	14	0	Master Package	MASTER EXTRACT PACKAGE	5DF4DB25-97CC-4C8B-ABCD-8549307180D6	D50B5371-9F1B-4C18-91E9-A163C45F5C43	1	0	2020-04-02 13:36:26
17	15	14	StageCurrency	Currency	FFF4F625-5DCD-40DD-971E-461BC4F40396	2784251A-A5E-4B18-A861-1CCFD444613C	1	0	2020-04-02 13:36:25
18	16	0	Master Package	MASTER EXTRACT PACKAGE	5DF4DB25-97CC-4C8B-ABCD-8549307180D6	D50B5371-9F1B-4C18-91E9-A163C45F5C43	1	0	2020-04-02 13:36:52
19	17	16	StageCurrency	Currency	FFF4F625-5DCD-40DD-971E-461BC4F40396	2784251A-A5E-4B18-A861-1CCFD444613C	1	0	2020-04-02 13:36:54
20	18	0	Master Package	MASTER EXTRACT PACKAGE	5DF4DB25-97CC-4C8B-ABCD-8549307180D6	7A0685E-BDFD-48C7-BAF7-DCE07EE69E6	1	0	2020-04-02 13:40:07
21	19	18	StageCurrency	Currency	FFF4F625-5DCD-40DD-971E-461BC4F40396	2784251A-A5E-4B18-A861-1CCFD444613C	1	0	2020-04-02 13:40:11
22	20	18	StageProduct	Product	10188A9-E5F5-4A10-A2CF-AE8105C5B421	E4AF193A-CE3-4F53-9293-5B7939091DDE	1	0	2020-04-02 13:40:11
23	21	18	StageSpecialOffer	SpecialOffer	06B7912D-C61A-A2A2-938C-1A5756DEC5F	9274461D-106C-4134-9E6-C6-98F36FB33F1	1	0	2020-04-02 13:40:11
24	22	18	StageProductSubCategory	ProductSubCategory	3B06AE74-A3CA-4B2D-BB4E-9FB7CB824D	06121742-0448-47CA-9E8C-57C1D7630B5	1	0	2020-04-02 13:40:12
25	23	18	StageSalesReason	SalesReason	04897B5F-132A-4B04-BFBC-CC4D746E554	D8FBFC9C-6962-424B-B7AB-153D6F5AF5D	1	0	2020-04-02 13:40:20
26	24	18	StageSalesTerritories	SalesTerritories	CE85D44E-9EF9-4B72-90B2-F39C8239E1	2EDE89E-AE3C-407B-811B-6129E4F810C	1	0	2020-04-02 13:40:20
27	25	18	StageCustomerIndividual	CustomerIndividual	D256ED9C-F410-4D8-845B-F54F-11B1BF01	219BD2E1-20EE-4F47-87B8-10B8D9E6BDA2	1	0	2020-04-02 13:40:20
28	26	18	StageDemographics	Demographics	42072D94-ASC4-4110-4B8C-4C2A03991769	A0723394-027C-44D8-90E7-CF1B7E6E5874	1	0	2020-04-02 13:40:21
29	27	18	StageStore	Store	9956C56A-7B18-4F98-AE1C-SE65B77418D0	DC465D74-05CA-4D3A-FAA807B8B598B4	1	0	2020-04-02 13:40:26
30	28	18	StageEmployee	Employee	D643AA4E-1901-42BC-BE44-17CD639A0E03	2E7F0254-8E9E-428A-9272-7345F39B644F	1	0	2020-04-02 13:40:31
31	29	18	StageDepartment	Department	633FB92F-8660-47A8-BE57-FD8471BCB855	985FB79C-B359-43C2-B208-8897FA17F81	1	0	2020-04-02 13:40:33
32	30	18	StageSalesOrderHeader	SalesOrderHeader	98BEC464-9126-496C-BF93-916A769C939	1962882-E9B8-4B11-975C-F4E79E710CC6	1	0	2020-04-02 13:40:35
33	31	18	StageCurrencyInUse	CurrencyInUse	D2D2C2CEP-7D82-4BA7-B5F7-F444B85E10F4	34027E4A-2033-4D91-80A0-E72A422D9549	1	0	2020-04-02 13:40:35
34	32	18	StageProductCategory	ProductCategory	2B151B2-0B55-4D6-B2E-79FADE64E9	71E332DC-F2CE-45A3-98FC-23B08D36D89	1	0	2020-04-02 13:40:45
35	33	18	StageStoreContacts	StoreContacts	BDAC556B-89A6-4936-A51C-664095E0187F	2E7F054-E8B6-47AD-7C6F766F4923B77	1	0	2020-04-02 13:40:50

#### Step 4: Transform and Load the data

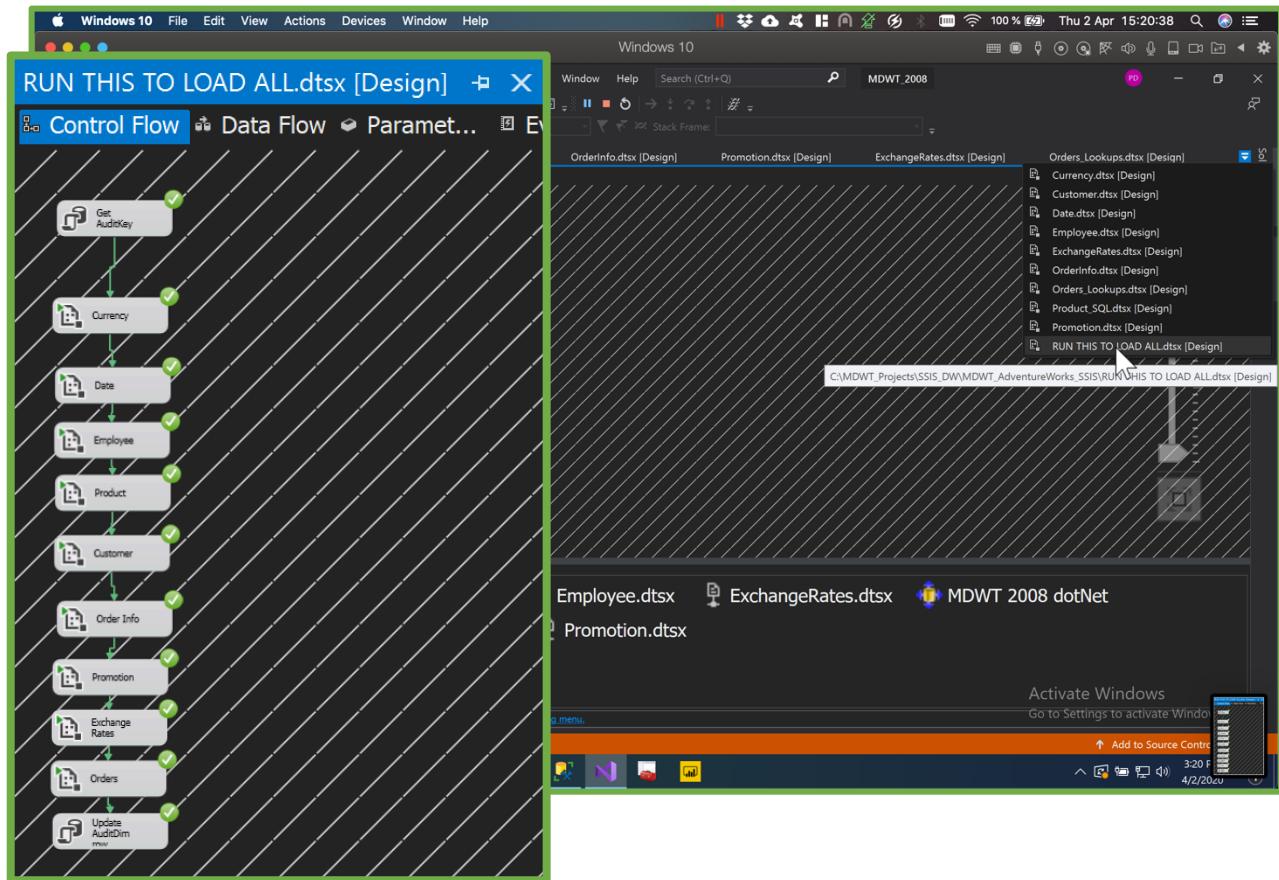
This last stage of the assignment requires to create all the packages and connections to transform the extracted data in the staging database and load it into the final DW dimension and fact tables.

To properly perform this step we would need to create a new project in Visual Studio, and as we did in the previous section we would be creating all the packages and connections between them and finally including all the parts required in the Transform and Load phases under a Master Package to recursively execute all the packages from the hierarchy.

The solution provided contains multiple packages required to interact with the different sources, that would be enumerated below. All these packages are recursively call from a master package. All the items involved during these connections must be properly created and configurated:

Master Package	
Date	Product SQL
Employee	Product SSIS
Currency	Orders Lookups
Customer	Orders SQL
OrderInfo	ExchangeRates

When all the packages and relations are properly created and configurated we can execute the **Master Extract Package** to appreciate it **runs properly with no errors**:



## Step 5: Displaying the final result

To properly check the **data flows works** and the ETL process if working fine we can execute some exploratory queries over the database to display the content of the **result tables**:

```
SELECT * FROM DimProduct;
```

ProductKey	ProductSKU	ProductName	ProductDescr	ProductModelID	Model	ProductSubCategoryID	ProductSubCategory	ProductCategoryID	ProductCategory	ProductLine	Color	Unk col
1	-1	Unk product	Unk product	-1	Unk product model	-1	Road Frames	2	Components	Road	Black	
2	296	680	HL Road Frame - Black, 58	58	HL Road Frame	14	Road Frames	2	Components	Road	Red	
3	297	706	HL Road Frame - Red, 58	58	HL Road Frame	14	Helmets	4	Accessories	Accessory	Red	
4	298	707	Sport-100 Helmet, Red	52	Sport-100	31	Socks	3	Clothing	Mountain	White	
5	299	708	Sport-100 Helmet, Black	53	Sport-100	31	Helmets	4	Accessories	Accessory	Black	
6	300	709	Mountain Bike Socks, M	18	Mountain Bike Socks	23	Socks	3	Clothing	Mountain	White	
7	301	710	Mountain Bike Socks, L	19	Mountain Bike Socks	23	Clothing	3	Mountain	White		
8	302	711	Sport-100 Helmet, Blue	53	Sport-100	31	Helmets	4	Accessories	Accessory	Blue	
9	303	712	AWC Logo Cap	2	Cycling Cap	19	Caps	3	Clothing	Accessory	Multi	
10	304	713	Long-Sleeve Logo Jersey, S	11	Long-Sleeve Logo Jersey	21	Jerseys	3	Clothing	Accessory	Multi	
11	305	714	Long-Sleeve Logo Jersey, M	11	Long-Sleeve Logo Jersey	21	Jerseys	3	Clothing	Accessory	Multi	
12	306	715	Long-Sleeve Logo Jersey, L	11	Long-Sleeve Logo Jersey	21	Jerseys	3	Clothing	Accessory	Multi	
13	307	716	Long-Sleeve Logo Jersey, XL	11	Long-Sleeve Logo Jersey	21	Jerseys	3	Clothing	Accessory	Multi	
14	308	717	HL Road Frame - Red, 62	62	HL Road Frame	14	Road Frames	2	Components	Road	Red	
15	309	718	HL Road Frame - Red, 44	44	HL Road Frame	14	Road Frames	2	Components	Road	Red	
16	310	719	HL Road Frame - Red, 48	48	HL Road Frame	14	Road Frames	2	Components	Road	Red	
17	311	720	HL Road Frame - Red, 52	52	HL Road Frame	14	Road Frames	2	Components	Road	Red	
18	312	721	HL Road Frame - Red, 56	56	HL Road Frame	14	Road Frames	2	Components	Road	Red	
19	313	722	LL Road Frame - Black, 58	58	LL Road Frame	14	Road Frames	2	Components	Road	Black	
20	314	723	LL Road Frame - Black, 60	60	LL Road Frame	14	Road Frames	2	Components	Road	Black	
21	315	724	LL Road Frame - Black, 62	62	LL Road Frame	14	Road Frames	2	Components	Road	Black	
22	316	725	LL Road Frame - Red, 44	44	LL Road Frame	14	Road Frames	2	Components	Road	Red	
23	317	726	LL Road Frame - Red, 48	48	LL Road Frame	14	Road Frames	2	Components	Road	Red	
24	318	727	LL Road Frame - Red, 52	52	LL Road Frame	14	Road Frames	2	Components	Road	Red	
25	319	728	LL Road Frame - Red, 56	56	LL Road Frame	14	Road Frames	2	Components	Road	Red	
26	320	729	LL Road Frame - Red, 60	60	LL Road Frame	14	Road Frames	2	Components	Road	Red	
27	321	730	LL Road Frame - Red, 62	62	LL Road Frame	14	Road Frames	2	Components	Road	Red	
28	322	731	ML Road Frame - Red, 44	44	ML Road Frame	14	Road Frames	2	Components	Road	Red	
29	323	732	ML Road Frame - Red, 48	48	ML Road Frame	14	Road Frames	2	Components	Road	Red	
30	324	733	ML Road Frame - Red, 52	52	ML Road Frame	14	Road Frames	2	Components	Road	Red	
31	325	734	ML Road Frame - Red, 56	56	ML Road Frame	14	Road Frames	2	Components	Road	Red	
32	326	735	ML Road Frame - Red, 60	60	ML Road Frame	14	Road Frames	2	Components	Road	Red	
33	327	736	LL Road Frame - Black, 44	44	LL Road Frame	14	Road Frames	2	Components	Road	Black	
34	328	737	LL Road Frame - Black, 48	48	LL Road Frame	14	Road Frames	2	Components	Road	Black	
35	329	738	LL Road Frame - Black, 52	52	LL Road Frame	14	Road Frames	2	Components	Road	Black	

**SELECT \* FROM DimCurrency;**

The screenshot shows the Object Explorer on the left with the database PABLOCE35 selected. In the center, a query window titled "SQLQuery3.sql - P...PABLOCE35\PF (58)\*" displays the results of the query "SELECT \* FROM [MDWT\_2008R2].[dbo].[DimCurrency]". The results grid shows 106 rows of currency information, including codes like UNK, ARS, AUD, BRL, CAD, CNY, DEM, EUR, FRF, GBP, MXN, SAR, USD, VEB, AED, AFN, AMD, AZN, BBD, BDT, BEF, BGN, BHD, BND, BOB, BSD, BTN, CHF, CLP, COP, and CRC, along with their names and audit keys.

CurrencyKey	BKCurrencyCode	Currency	IsCurrencyInUse	InsertAuditKey	UpdateAuditKey
1	-1	UNK	Y	-1	-1
2	316	ARS	Argentine Peso	Y	77
3	317	AUD	Australian Dollar	Y	77
4	318	BRL	Brazilian Real	Y	77
5	319	CAD	Canadian Dollar	Y	77
6	320	CNY	Yuan Renminbi	Y	77
7	321	DEM	Deutsche Mark	Y	77
8	322	EUR	Euro	Y	77
9	323	FRF	French Franc	Y	77
10	324	GBP	United Kingdom Pound	Y	77
11	325	JPY	Yen	Y	77
12	326	MXN	Mexican Peso	Y	77
13	327	SAR	Saudi Riyal	Y	77
14	328	USD	US Dollar	Y	77
15	329	VEB	Bolívar	Y	77
16	330	AED	Emirati Dirham	N	77
17	331	AFN	Afghani	N	77
18	332	AL	Lek	N	77
19	333	AMD	Armenian Dram	N	77
20	334	ANG	Netherlands Antillean Guilder	N	77
21	335	AOA	Kuwaiti Dinar	N	77
22	336	ATS	Shilling	N	77
23	337	AWG	Arabian Guilder	N	77
24	338	AZM	Azerbaijanian Manat	N	77
25	339	BBD	Barbados Dollar	N	77
26	340	BDT	Taka	N	77
27	341	BEF	Belgian Franc	N	77
28	342	BGN	Bulgarian Lev	N	77
29	343	BHD	Bahraini Dinar	N	77
30	344	BND	Brunese Dollar	N	77
31	345	BOB	Boliviano	N	77
32	346	BSD	Bahamian Dollar	N	77
33	347	BTN	Ngultrum	N	77
34	348	CHF	Swiss Franc	N	77
35	349	CLP	Chilean Peso	N	77
36	350	COP	Colombian Peso	N	77
37	351	CRC	Costa Rican Colon	N	77

**SELECT \* FROM DimEmployee;**

The screenshot shows the Object Explorer on the left with the database PABLOCE35 selected. In the center, a query window titled "SQLQuery3.sql - P...PABLOCE35\PF (58)\*" displays the results of the query "SELECT \* FROM [MDWT\_2008R2].[dbo].[DimEmployee]". The results grid shows 298 rows of employee information, including names like No salesperson, Unknown ID Num, Sanchez, Ken, Duffy, Terri, Tamburello, Roberto, Walters, Rob, Erickson, Gail, Goldberg, Josef, Miller, Dylan, Marghelein, Diane, Raheem, Michael, Ovidiu, Thierry, D'Her, B, and many others, along with their birth dates, marital statuses, and genders.

EmployeeKey	BKEmployeeID	NationalIDNumber	EmployeeName	EmployeeFullName	EmployeeFirstName	EmployeeLastName	EmployeeMiddleName	BirthDate	MaritalStatus	Gender	
1	-2	0	No salesperson	No salesperson	N/A	N/A	NULL	N/A	N/A	N/A	
2	-1	-1	Unknown ID Num	No Name	No Name	No Name	1899-12-31 00:00:00.000	Unknown	Unknown		
3	297	1	295847284	295847284; Sanchez, Ken	Sánchez	Ken	J	1969-01-29 00:00:00.000	Single	Male	
4	298	2	245797967	245797967; Duffy, Terri	Duffy	Terri	Lee	1971-08-01 00:00:00.000	Single	Female	
5	299	3	509647174	509647174; Tamburello, Roberto	Tamburello	Roberto	Roberto	1974-11-12 00:00:00.000	Married	Male	
6	300	4	112457891	112457891; Walters, Rob	Walters	Rob	Rob	1974-12-23 00:00:00.000	Single	Male	
7	301	4	112457891	112457891; Walters, Rob	Walters	Rob	Rob	1974-12-23 00:00:00.000	Single	Male	
8	302	5	695256908	695256908; Erickson, Gail	Erickson	Gail	Gail	1952-09-27 00:00:00.000	Married	Female	
9	303	6	998320992	998320992; Goldberg, Josef	Goldberg	Josef	Goldberg	H	1959-05-01 00:00:00.000	Married	Male
10	304	7	13498958	13498958; Miller, Dylan	Miller	Josef	Goldberg	1959-05-01 00:00:00.000	Married	Male	
11	305	8	8191894146	8191894146; Marghelein, Diane	Marghelein	Diane	Diane	1986-05-02 00:00:00.000	Single	Female	
12	306	8	659797903	659797903; Marghelein, Diane	Marghelein	Diane	Marghelein	1979-01-21 00:00:00.000	Married	Female	
13	307	10	879342154	879342154; Raheem, Michael	Raheem	Michael	Michael	1984-11-30 00:00:00.000	Married	Male	
14	308	11	974206903	974206903; Craciun, Ovidiu	Craciun	Ovidiu	Ovidiu	1978-01-17 00:00:00.000	Single	Male	
15	309	12	480168528	480168528; D'Her, Thierry	D'Her	Thierry	Thierry	1969-07-29 00:00:00.000	Married	Male	
16	310	13	486228782	486228782; Raheem, Michael	Raheem	Michael	Michael	1989-05-28 00:00:00.000	Married	Female	
17	311	14	42487730	42487730; Sullivan, Michael	Sullivan	Michael	Michael	1979-06-16 00:00:00.000	Single	Male	
18	312	15	56920285	56920285; Salavaria, Sharon	Salavaria	Sharon	Sharon	1961-05-02 00:00:00.000	Married	Female	
19	313	16	24756634	24756634; Bradley, David	Bradley	David	David	1975-03-19 00:00:00.000	Single	Male	
20	314	16	24756634	24756634; Bradley, David	Bradley	David	David	1975-03-19 00:00:00.000	Single	Male	
21	315	17	253022876	253022876; Brown, Kevin	Brown	Kevin	Kevin	1987-05-03 00:00:00.000	Single	Male	
22	316	18	222969461	222969461; Wood, John	Wood	John	John	1978-03-06 00:00:00.000	Single	Male	
23	317	19	52541318	52541318; Dempsey, Mary	Dempsey	Mary	Mary	1978-01-29 00:00:00.000	Single	Female	
24	318	20	323403273	323403273; Benschod, Wanida	Benschod	Wanida	Wanida	1975-03-17 00:00:00.000	Married	Female	
25	319	21	243322160	243322160; Eminhizer, Terry	Eminhizer	Terry	Terry	1986-02-04 00:00:00.000	Married	Male	
26	320	22	95958330	95958330; Hampadoungsataya, Sariya	Hampadoungsataya	Sariya	Sariya	1987-05-21 00:00:00.000	Single	Male	
27	321	23	76795365	76795365; Gibson, Mary	Gibson	Mary	Mary	1962-09-13 00:00:00.000	Married	Female	
28	322	24	72636981	72636981; Williams, Jill	Williams	Jill	Jill	1979-06-18 00:00:00.000	Married	Female	
29	323	25	51989904	51989904; Hamilton, James	Hamilton	James	James	1983-01-07 00:00:00.000	Single	Male	
30	324	26	277173473	277173473; Krebs, Peter	Krebs	Peter	Peter	1982-11-05 00:00:00.000	Married	Male	
31	325	27	446466105	446466105; Brown, Jo	Brown	Jo	Jo	1956-10-00 00:00:00.000	Single	Female	
32	326	28	14417807	14417807; Gilbert, Guy	Gilbert	Guy	Guy	1988-03-13 00:00:00.000	Married	Male	
33	327	29	948320468	948320468; McArthur, Mark	McArthur	Mark	Mark	1979-09-25 00:00:00.000	Single	Male	
34	328	30	410742000	410742000; Simon, Britta	Simon	Britta	Britta	1989-09-28 00:00:00.000	Married	Female	
35	329	31	750246141	750246141; Shoop, Margie	Shoop	Margie	Margie	1986-05-20 00:00:00.000	Married	Female	

**SELECT \* FROM DimProduct;**

DateKey	FullDate	DateName	DayOfWeek	DayNameOfWeek	DayOfMonth	DayOfYear	WeekdayWeekend	WeekOfYear	MonthName	MonthOfYear	IsLastDayOfMonth	CalendarQuarter	CalendarYear	Cals
1	1900-01-01	Unk	0	Unk	0	0	Unk	0	Unk	0	0	0	2005	Unk year
2	2005-01-01	2005-01-01	1	Saturday	1	1	Weekend	1	January	1	N	1	2005	2005-01
3	2005-01-02	2005-01-02	2	Sunday	2	2	Weekday	2	January	1	N	1	2005	2005-01
4	2005-01-03	2005-01-03	3	Monday	3	3	Weekday	2	January	1	N	1	2005	2005-01
5	2005-01-04	2005-01-04	4	Tuesday	4	4	Weekday	2	January	1	N	1	2005	2005-01
6	2005-01-05	2005-01-05	5	Wednesday	5	5	Weekday	2	January	1	N	1	2005	2005-01
7	2005-01-06	2005-01-06	6	Thursday	6	6	Weekday	2	January	1	N	1	2005	2005-01
8	2005-01-07	2005-01-07	7	Friday	7	7	Weekend	2	January	1	N	1	2005	2005-01
9	2005-01-08	2005-01-08	7	Saturday	8	8	Weekend	2	January	1	N	1	2005	2005-01
10	2005-01-09	2005-01-09	1	Sunday	9	9	Weekday	3	January	1	N	1	2005	2005-01
11	2005-01-10	2005-01-10	2	Monday	10	10	Weekday	3	January	1	N	1	2005	2005-01
12	2005-01-11	2005-01-11	3	Tuesday	11	11	Weekday	3	January	1	N	1	2005	2005-01
13	2005-01-12	2005-01-12	4	Wednesday	12	12	Weekday	3	January	1	N	1	2005	2005-01
14	2005-01-13	2005-01-13	5	Thursday	13	13	Weekday	3	January	1	N	1	2005	2005-01
15	2005-01-14	2005-01-14	6	Friday	14	14	Weekend	3	January	1	N	1	2005	2005-01
16	2005-01-15	2005-01-15	7	Saturday	15	15	Weekend	3	January	1	N	1	2005	2005-01
17	2005-01-16	2005-01-16	1	Sunday	16	16	Weekday	4	January	1	N	1	2005	2005-01
18	2005-01-17	2005-01-17	2	Monday	17	17	Weekday	4	January	1	N	1	2005	2005-01
19	2005-01-18	2005-01-18	3	Tuesday	18	18	Weekday	4	January	1	N	1	2005	2005-01
20	2005-01-19	2005-01-19	4	Wednesday	19	19	Weekday	4	January	1	N	1	2005	2005-01
21	2005-01-20	2005-01-20	5	Thursday	20	20	Weekday	4	January	1	N	1	2005	2005-01
22	2005-01-21	2005-01-21	6	Friday	21	21	Weekend	4	January	1	N	1	2005	2005-01
23	2005-01-22	2005-01-22	7	Saturday	22	22	Weekend	4	January	1	N	1	2005	2005-01
24	2005-01-23	2005-01-23	1	Sunday	23	23	Weekday	5	January	1	N	1	2005	2005-01
25	2005-01-24	2005-01-24	2	Monday	24	24	Weekday	5	January	1	N	1	2005	2005-01
26	2005-01-25	2005-01-25	3	Tuesday	25	25	Weekday	5	January	1	N	1	2005	2005-01
27	2005-01-26	2005-01-26	4	Wednesday	26	26	Weekday	5	January	1	N	1	2005	2005-01
28	2005-01-27	2005-01-27	5	Thursday	27	27	Weekday	5	January	1	N	1	2005	2005-01
29	2005-01-28	2005-01-28	6	Friday	28	28	Weekend	5	January	1	N	1	2005	2005-01
30	2005-01-29	2005-01-29	7	Saturday	29	29	Weekend	5	January	1	N	1	2005	2005-01
31	2005-01-30	2005-01-30	1	Sunday	30	30	Weekday	6	January	1	N	1	2005	2005-01
32	2005-01-31	2005-01-31	2	Monday	31	31	Weekday	6	January	1	Y	1	2005	2005-01
33	2005-02-01	2005-02-01	3	Tuesday	1	32	Weekday	6	February	2	N	1	2005	2005-02
34	2005-02-02	2005-02-02	4	Wednesday	2	33	Weekday	6	February	2	N	1	2005	2005-02
35	2005-02-03	2005-02-03	5	Thursday	3	34	Weekday	6	February	2	N	1	2005	2005-02

## Azure DevOps version control

All the code and process/development done during the assignment can be found at Azure DevOps under the following links:

[https://dev.azure.com/pfernandezdiaz/PFD\\_SSISPart1](https://dev.azure.com/pfernandezdiaz/PFD_SSISPart1)

[https://dev.azure.com/pfernandezdiaz/PFD\\_SSIS\\_Extract](https://dev.azure.com/pfernandezdiaz/PFD_SSIS_Extract)

[https://dev.azure.com/pfernandezdiaz/PFD\\_SSIS\\_DW](https://dev.azure.com/pfernandezdiaz/PFD_SSIS_DW)

Also, the project administrators are fixed to able the professor have all the permissions over the project:

### Project administrators

PD	Pablo Fernández Díaz pfernandezdiaz@hawk.iit.edu
RK	Raj Krishnan rkrish20@iit.edu
R	rajkrishnan@outlook.com rajkrishnan@outlook.com

And, at the commits section all the progress developed during the assignment can be followed with all the commits including comments about any change developed:

pfernandezdiaz / PFD\_SSIS\_Extract / Repos / Commits / PFD\_SSIS\_Extract

master

### Commits

Graph	Commit
	<b>MDWT2008_Extract Done</b> e2aec56f Pablo Fernández Díaz Today at 17:45
	<b>Added 29 files to /MDWT2008_Extract</b> 43c3e753 Pablo Fernández Díaz Today at 17:45
	<b>Added MDWT2008_Extract</b> 9ce3f346 Pablo Fernández Díaz Today at 17:45
	<b>Deleted</b> c93b6ab1 Pablo Fernández Díaz Today at 17:44
	<b>Added 21 files to /MDWT2008/MDWT_AdventureWorks_SSIS</b> c15e92e8 Pablo Fernández Díaz Today at 17:44
	<b>Added MDWT_AdventureWorks_SSIS</b> d6a295a1 Pablo Fernández Díaz Today at 17:43
	<b>Deleted</b> ee530316 Pablo Fernández Díaz Today at 17:43
	<b>Added 4 files to /MDWT2008</b> 89c5ac65 Pablo Fernández Díaz Today at 17:43
	<b>Added MDWT2008</b> cf65ab3a Pablo Fernández Díaz Today at 17:42
	<b>Backup done!</b> 1ef68e32 Pablo Fernández Díaz Today at 17:37
	<b>Added 27 files to /Backup/MDWT2008_Extract</b> 5c58ed45 Pablo Fernández Díaz Today at 17:37
	<b>All element added</b> 9ab81895 Pablo Fernández Díaz Today at 17:37
	<b>Backup updated</b> 5b1311f7 Pablo Fernández Díaz Today at 17:36
	<b>Added MDWT2008_Extract.sln to /Backup</b> b1f575ff Pablo Fernández Díaz Today at 17:36
	<b>Added Backup</b> db221dd1 Pablo Fernández Díaz Today at 17:36
	<b>Initial commit</b> 79c2b73c Pablo Fernández Díaz Today at 17:35
	<b>Added README.md</b> 722961ce Pablo Fernández Díaz Today at 17:34

pfernandezdiaz / PFD\_SSISPart1 / Repos / Commits / PFD\_SSISPart1

master

### Commits

Graph	Commit
	<b>Part 1: Packages update DONE!</b> 6d60a445 Pablo Fernández Díaz Today at 14:41
	<b>Part 1: Currency and Product Packages</b> 8f20399c Pablo Fernández Díaz Today at 14:40
	<b>Add project files.</b> aefc17fa Pablo Fernández Díaz Today at 12:29
	<b>Add .gitignore and .gitattributes.</b> 3063b89f Pablo Fernández Díaz Today at 12:29

pfernandezdiaz / PFD\_SSIS\_DW / Repos / Commits / PFD\_SSIS\_DW

master

### Commits

Graph	Commit
	<b>MDWT_AdventureWorks_SSIS DONE!</b> cf088980 Pablo Fernández Díaz Today at 17:48
	<b>Added 21 files to /MDWT_AdventureWorks_SSIS</b> ddf25cee Pablo Fernández Díaz Today at 17:47
	<b>Added MDWT_AdventureWorks_SSIS</b> 12bd215b Pablo Fernández Díaz Today at 17:47
	<b>Initial commit</b> ab4c59be Pablo Fernández Díaz Today at 17:47
	<b>Added README.md</b> 5b9ab1a7 Pablo Fernández Díaz Today at 17:46