Lab report #3

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GitHub: https://github.com/sdveronika/DataMola22

Task 1 - Creating new database for HR department

```
CREATE DATABASE HumanResources;
```

75 %

Messages

```
Commands completed successfully.

Completion time: 2022-08-28T10:40:27.9323570+03:00
```

```
CREATE TABLE dbo.EmployeesExternal
(EmployeeID INT PRIMARY KEY,
 FirstName NVARCHAR(50) NOT NULL,
 LastName NVARCHAR(50) NOT NULL,
 JobTitle NVARCHAR(50) NOT NULL,
 EmailAddress NVARCHAR(50) NULL,
 City NVARCHAR(50) NOT NULL,
 StateProvinceName NVARCHAR(50) NOT NULL,
 CountryRegionName NVARCHAR(50) NOT NULL);
```

75 %

Messages

```
Commands completed successfully.

Completion time: 2022-08-28T10:41:26.0253509+03:00
```

```
CREATE TABLE dbo.EmployeesAW
(BusinessEntityID INT PRIMARY KEY,
 FirstName NVARCHAR(50) NOT NULL,
 LastName NVARCHAR(50) NOT NULL,
 JobTitle NVARCHAR(50) NULL);
```

75 %

Messages

```
Commands completed successfully.

Completion time: 2022-08-28T10:41:42.8346055+03:00
```

```
CREATE TABLE dbo.EmailAddressesAW
(EmailAddressId INT PRIMARY KEY,
 BusinessEntityID INT NOT NULL,
 EmailAddress NVARCHAR(50) NOT NULL);
```

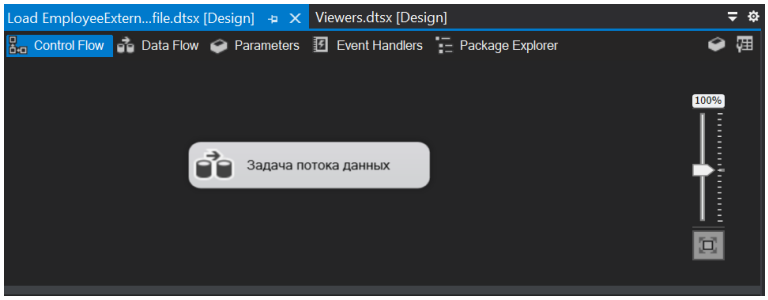
75 %

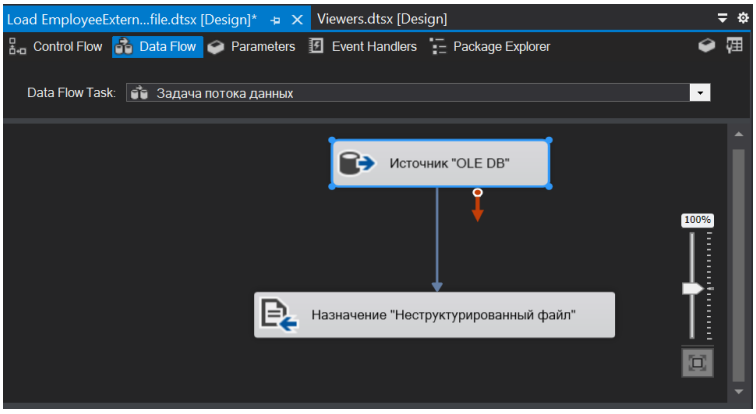
Messages

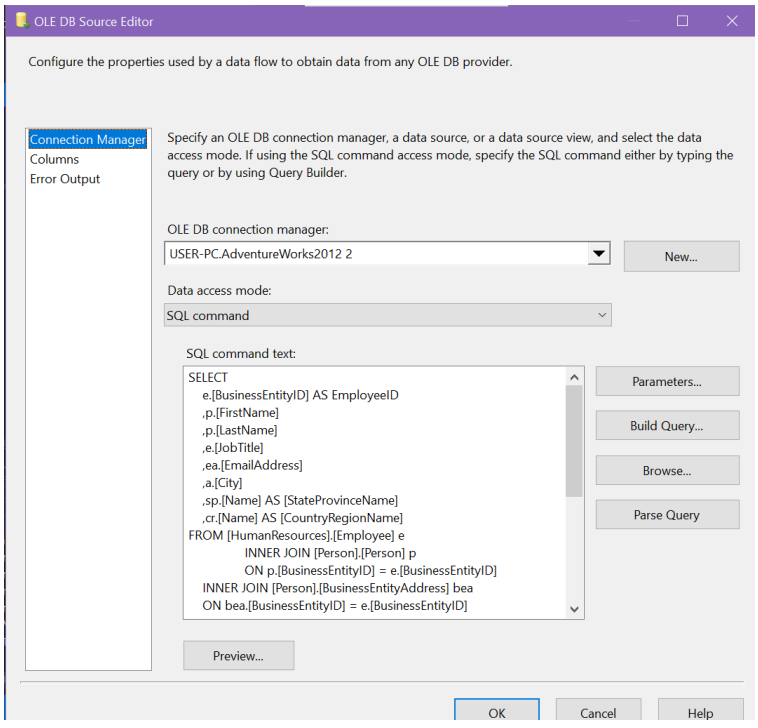
```
Commands completed successfully.

Completion time: 2022-08-28T10:42:12.7338037+03:00
```

Task 2 - Creating ETL solution to import employees from different sources

Note: To perform the following tasks, we need files that store information for the dbo.HumanResources table. Since no data files were included with the lab, I created a package that loads all the necessary information into a file using tables from the AdwentureWorks2012 database. Next, I manually created test files, into which I copied part of the data from the generated file and pasted it into new ones, after deleting the copied information from the original file, since the primary key constraint was imposed on the EmployeeID column in the dbo.HumanResources table. Thus, the necessary list of files was obtained.

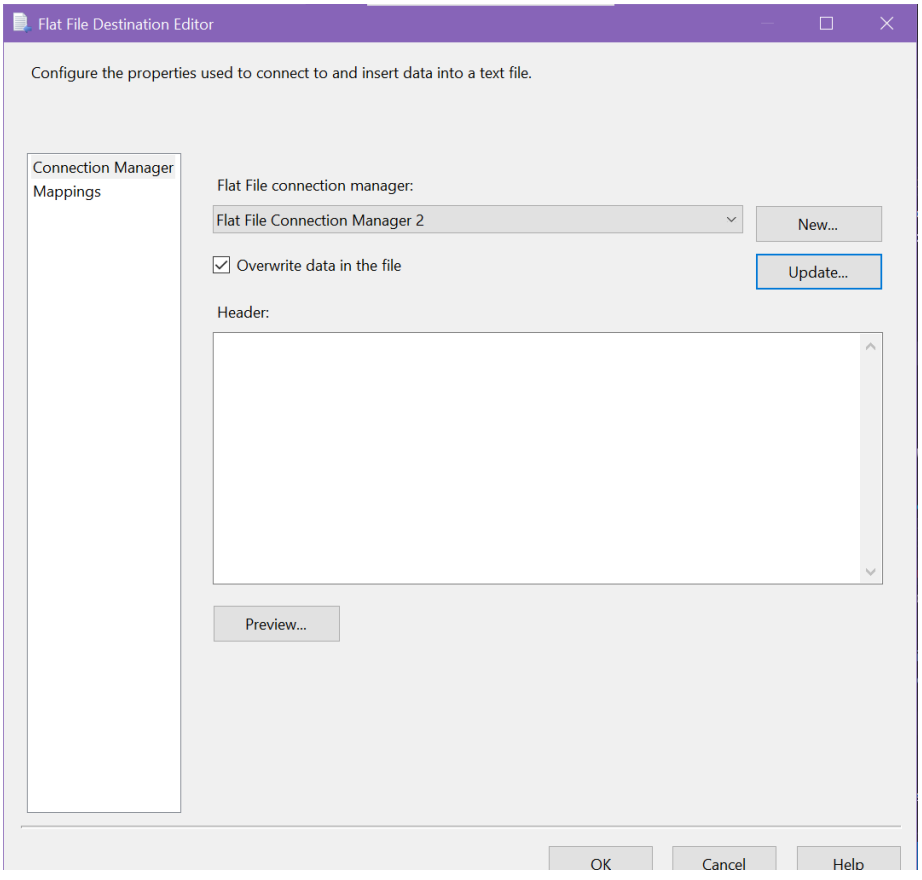


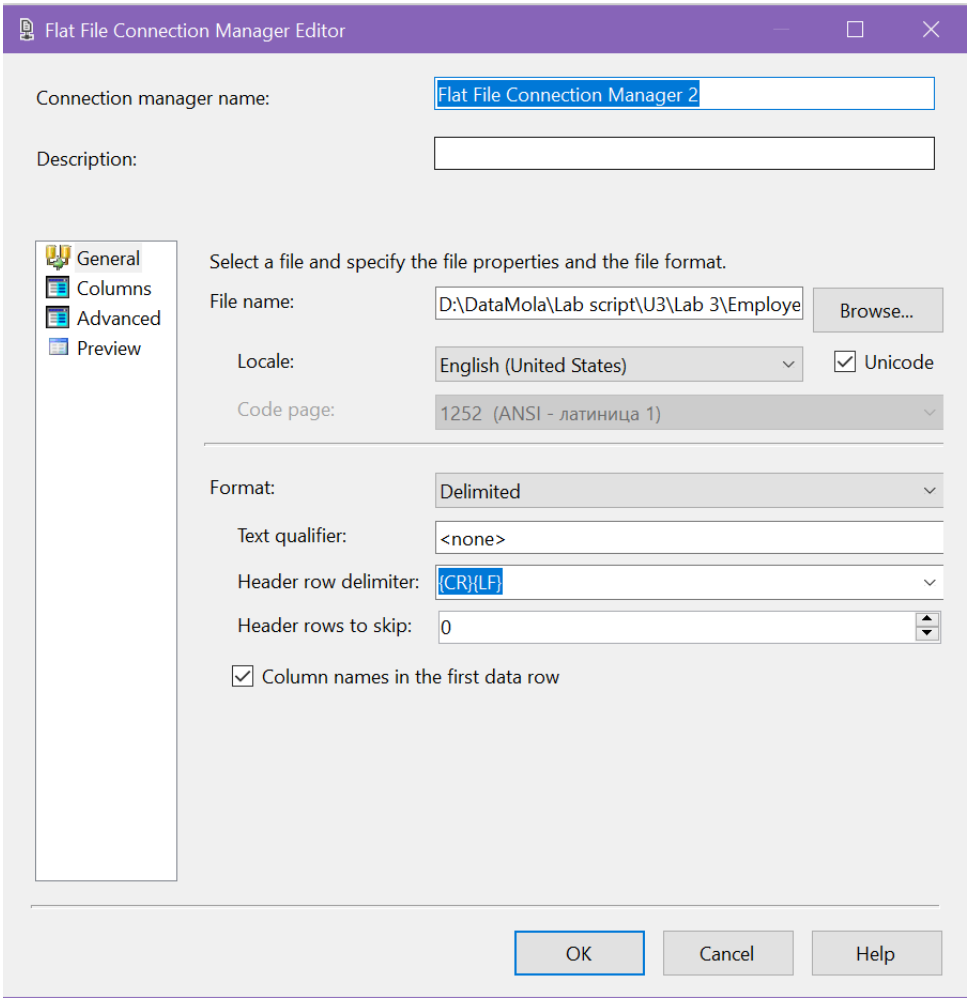


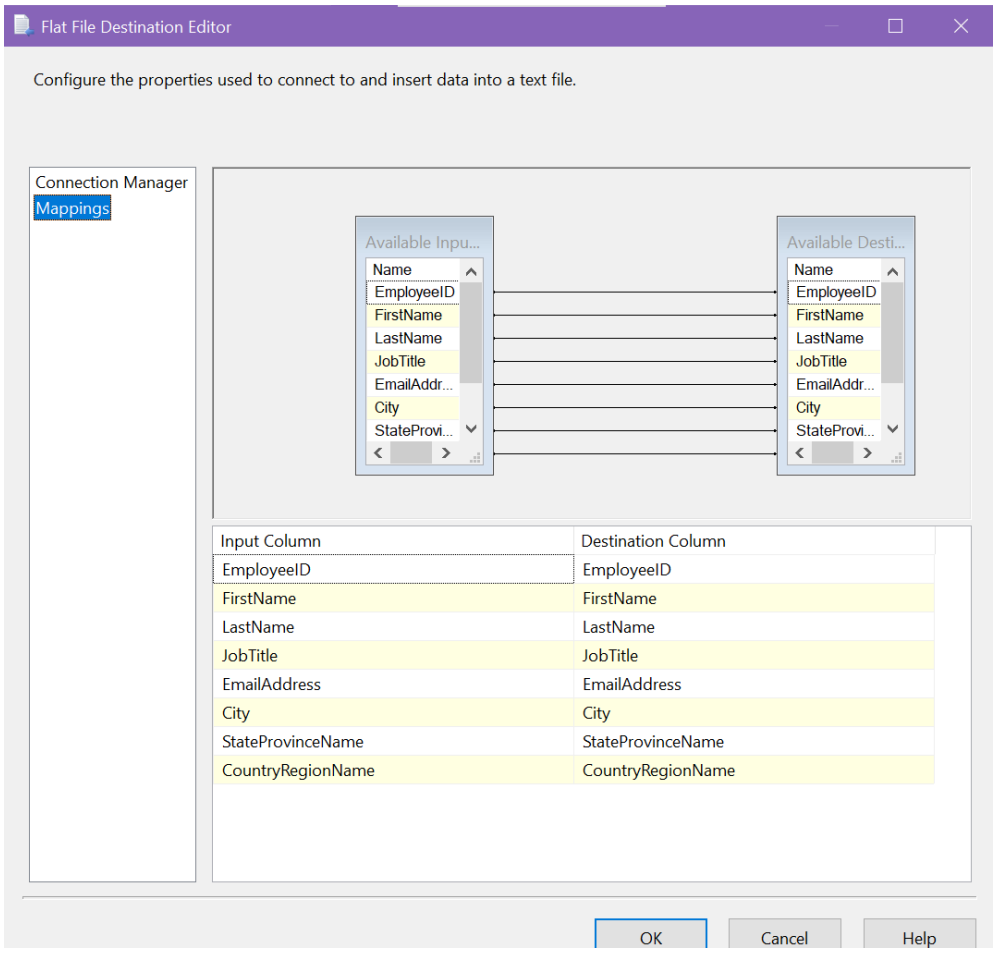


Sql command text to select all necessary employee info to load dbo.HumanResources table:

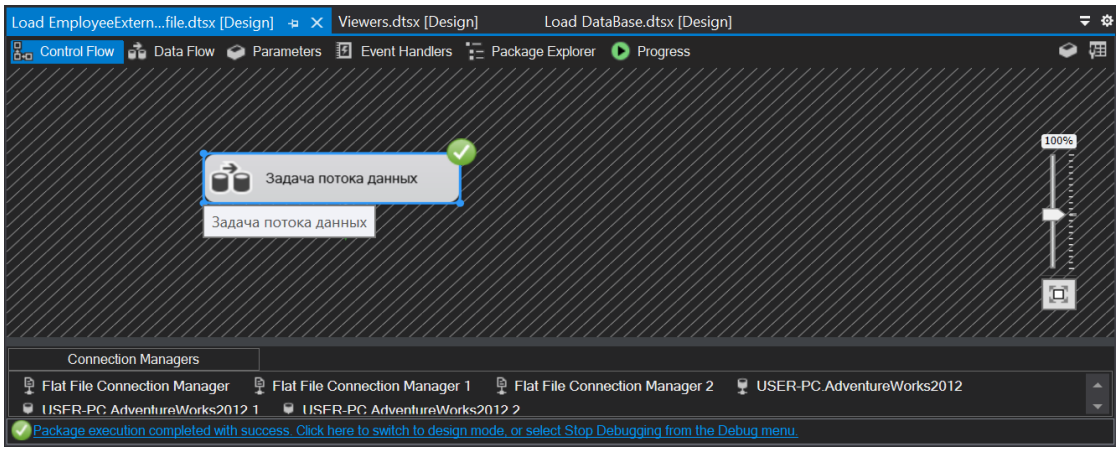
```
SELECT
   e.[BusinessEntityID] AS EmployeeID
   ,p.[FirstName]
   ,p.[LastName]
   ,e.[JobTitle]
   ,ea.[EmailAddress]
   ,a.[City]
   ,sp.[Name] AS [StateProvinceName]
   ,cr.[Name] AS [CountryRegionName]
FROM [HumanResources].[Employee] e
         INNER JOIN [Person].[Person] p
         ON p.[BusinessEntityID] = e.[BusinessEntityID]
   INNER JOIN [Person].[BusinessEntityAddress] bea
   ON bea.[BusinessEntityID] = e.[BusinessEntityID]
   INNER JOIN [Person].[Address] a
   ON a.[AddressID] = bea.[AddressID]
   INNER JOIN [Person].[StateProvince] sp
   ON sp.[StateProvinceID] = a.[StateProvinceID]
   INNER JOIN [Person].[CountryRegion] cr
   ON cr.[CountryRegionCode] = sp.[CountryRegionCode]
   LEFT OUTER JOIN [Person].[PersonPhone] pp
   ON pp.BusinessEntityID = p.[BusinessEntityID]
   LEFT OUTER JOIN [Person].[PhoneNumberType] pnt
   ON pp.[PhoneNumberTypeID] = pnt.[PhoneNumberTypeID]
   LEFT OUTER JOIN [Person].[EmailAddress] ea
   ON p.[BusinessEntityID] = ea.[BusinessEntityID]
   ORDER BY p.[BusinessEntityID];
```



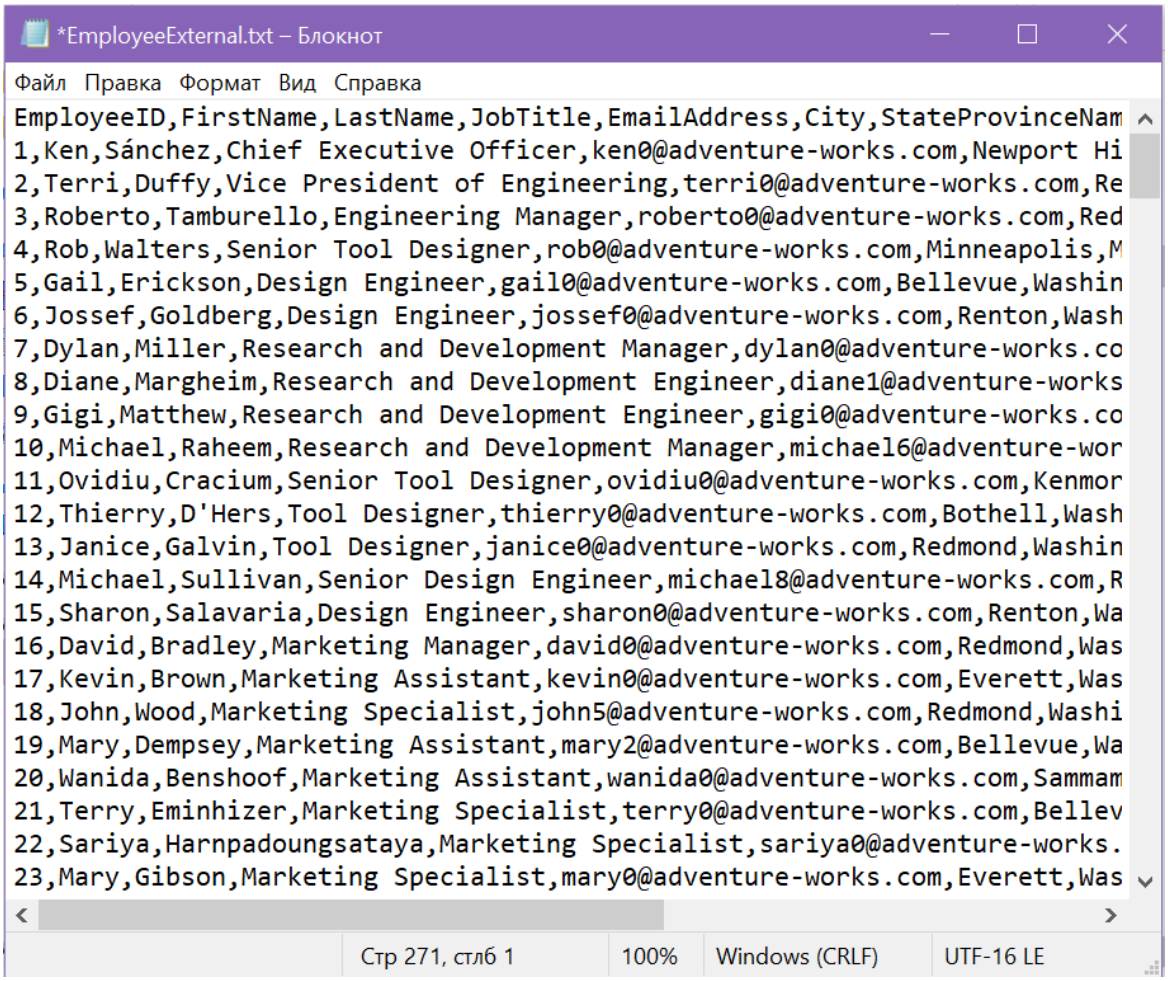

Flat File Connection Manager Editor
Connection manager name:
Flat File Connection Manager 2
Description:
General
Columns
Advanced
Preview
Select a file and specify the file properties and the file format.
File name:
D:\DataMola\Lab script\U3\Lab 3\Employe
Browse...
Locale:
English (United States)
Unicode
Code page:
1252 (ANSI - латиница 1)
Format:
Delimited
Text qualifier:
<none>
Header row delimiter:
{CR}{LF}
Header rows to skip:
0
Column names in the first data row
OK
Cancel
Help


Flat File Destination Editor
Configure the properties used to connect to and insert data into a text file.
Connection Manager
Mappings
Available Inpu...
Name
EmployeeID
FirstName
LastName
JobTitle
EmailAddr...
City
StateProvi...
Available Desti...
Name
EmployeeID
FirstName
LastName
JobTitle
EmailAddr...
City
StateProvi...
Input Column
Destination Column
EmployeeID
EmployeeID
FirstName
FirstName
LastName
LastName
JobTitle
JobTitle
EmailAddress
EmailAddress
City
City
StateProvinceName
StateProvinceName
CountryRegionName
CountryRegionName
OK
Cancel
Help

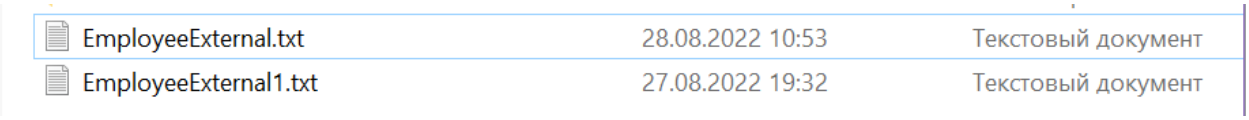
Run package to load EmployeeExternal text file:



Package execution result:

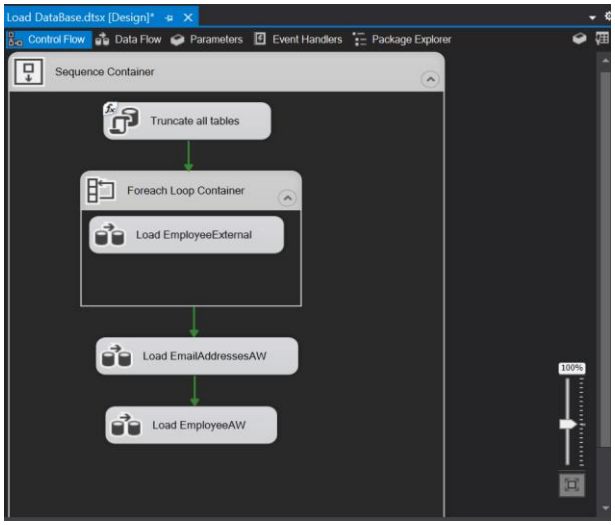


List of manually created files for task 2:

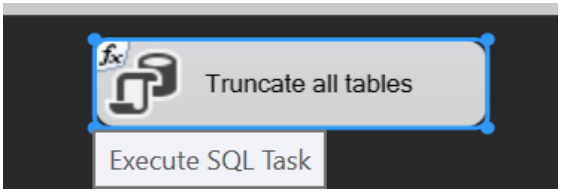


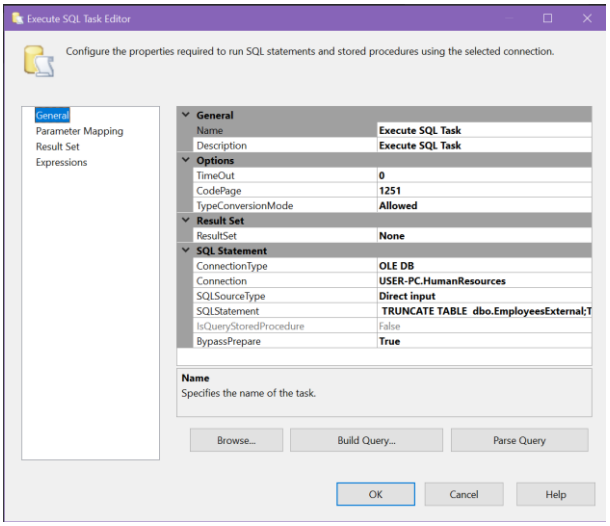
Completing task 2:

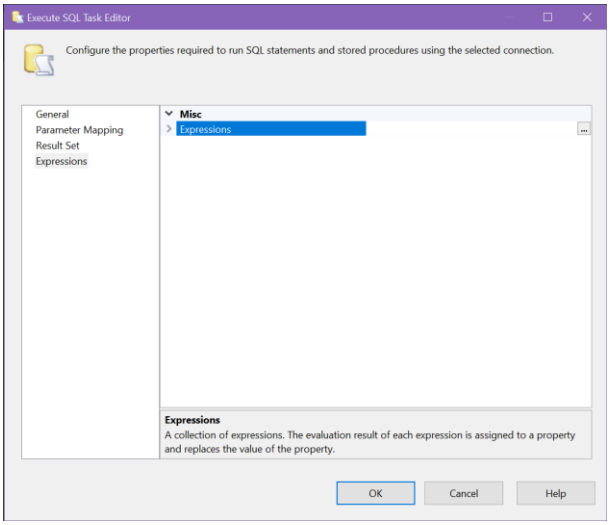
Control flow for load tables:

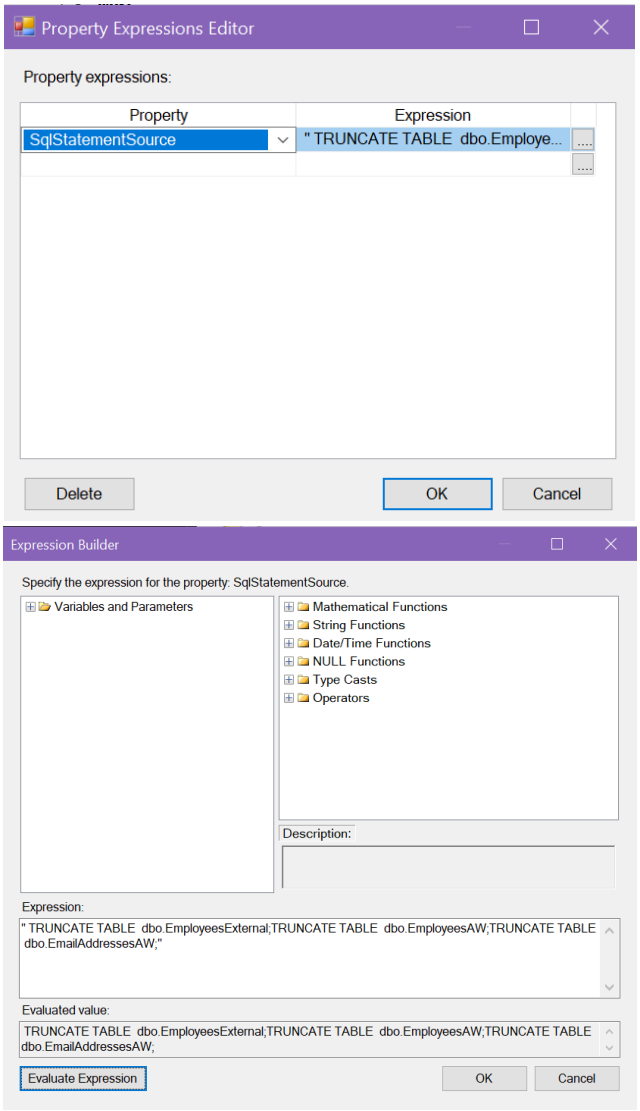


Execute SQL task configuration for truncate all tables before loading data:



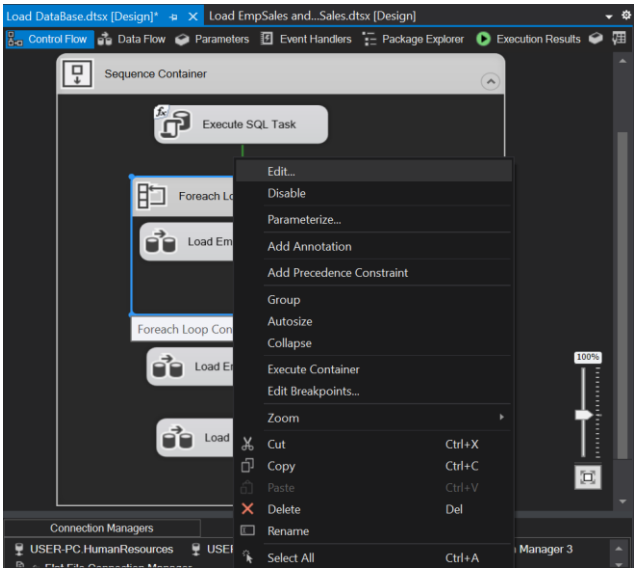


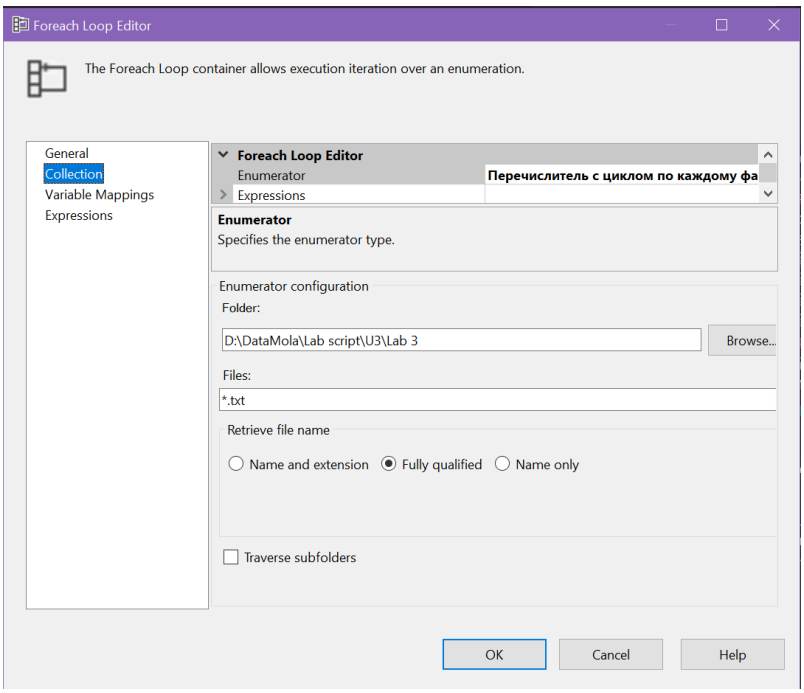


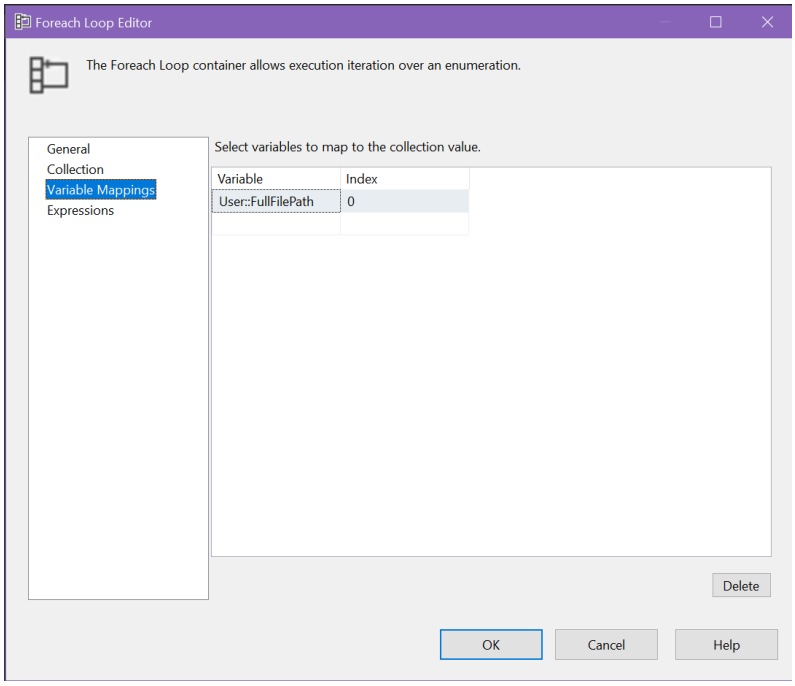


Add FullFilePath variable for using ForEach Loop container:

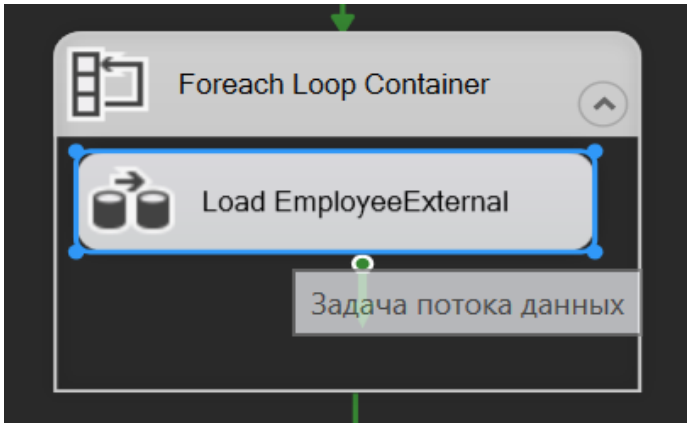
ForEach Loop container configuration to go through all files that store information about employees:

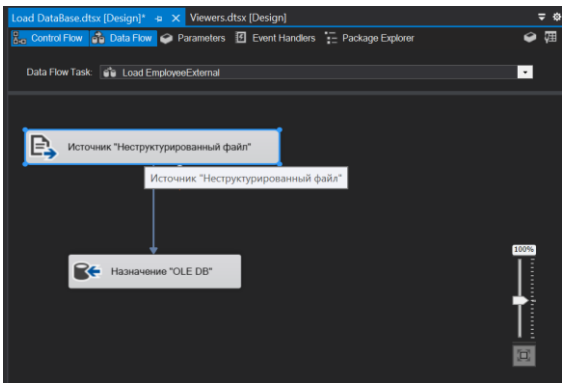




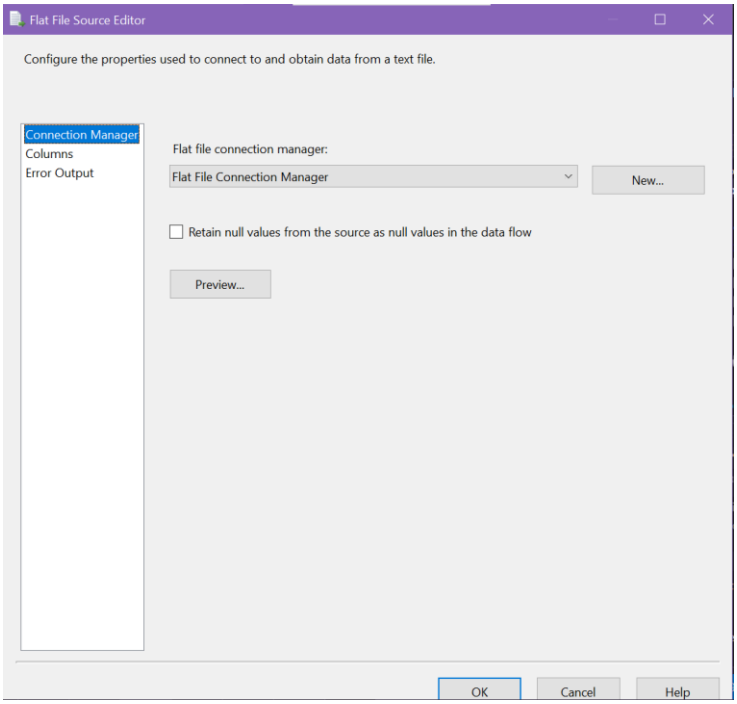


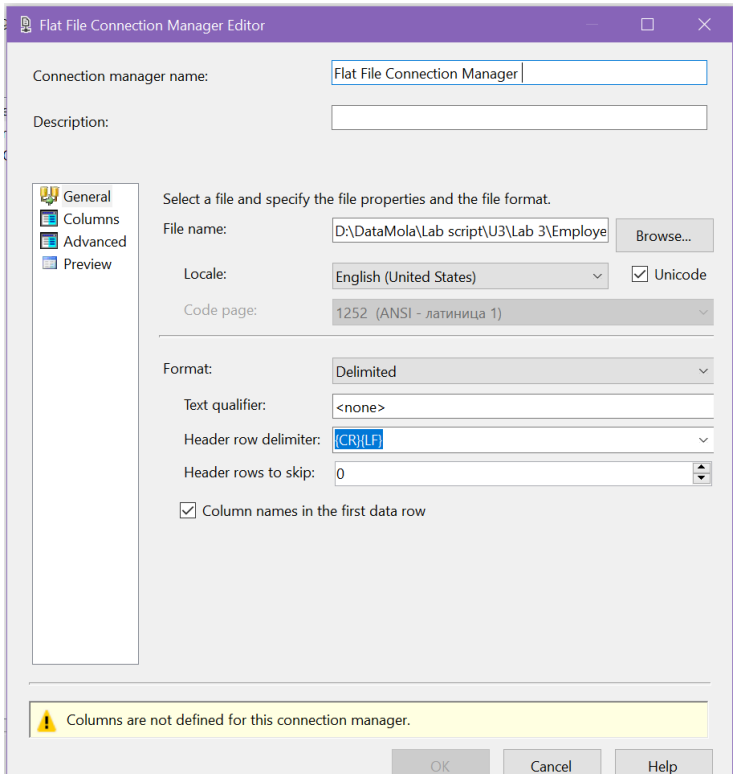
Load EmployeeExternal Data Flow:



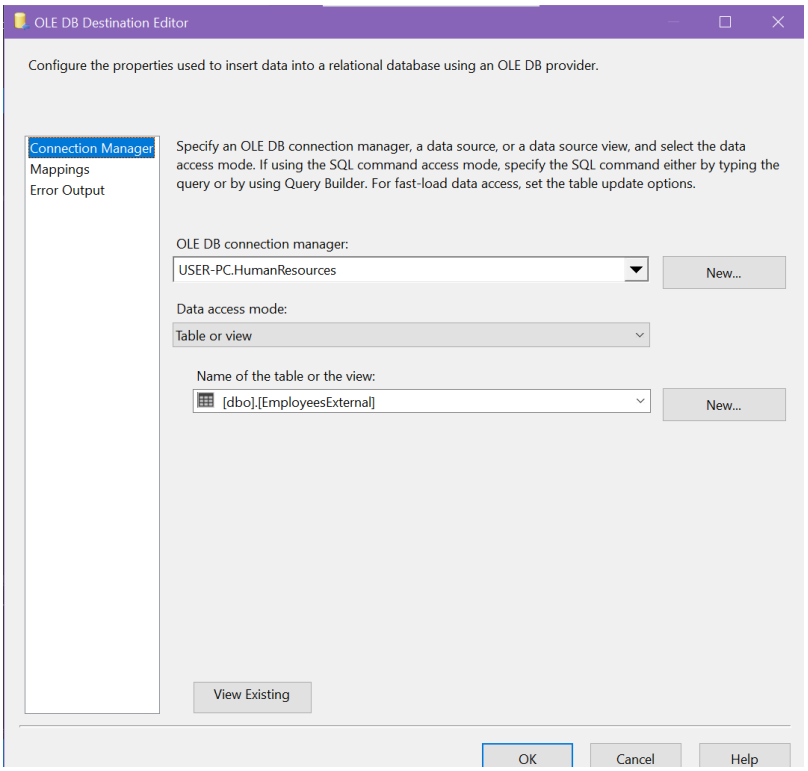


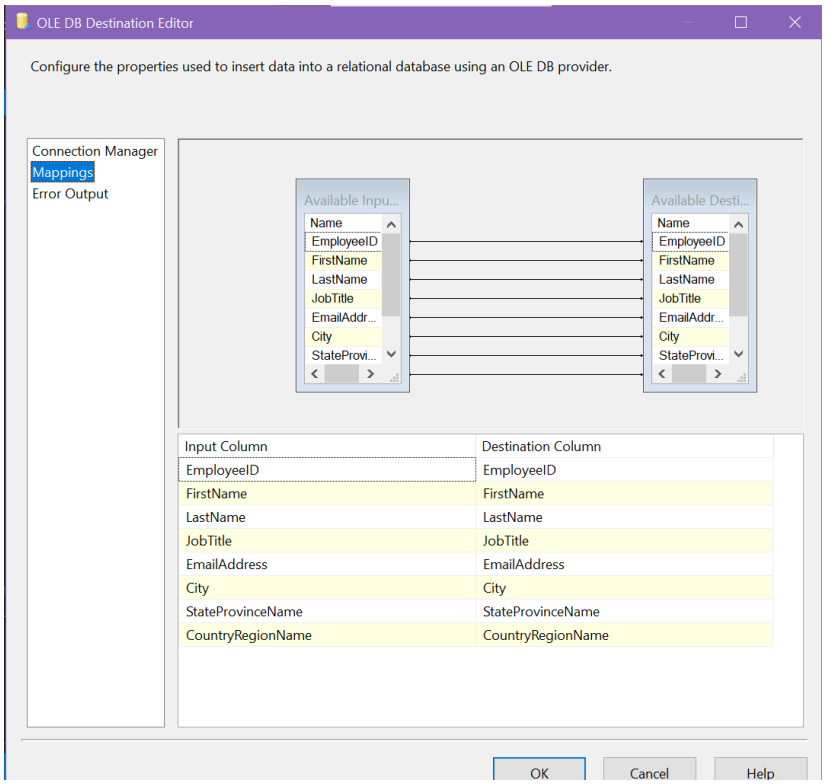
FlatFile Source configuration:



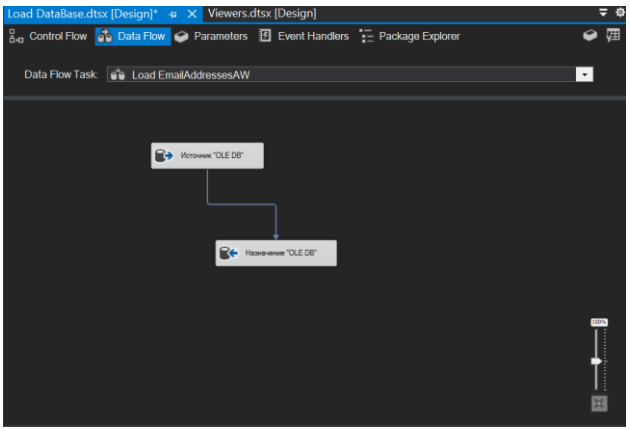


OLE DB destination configuration:

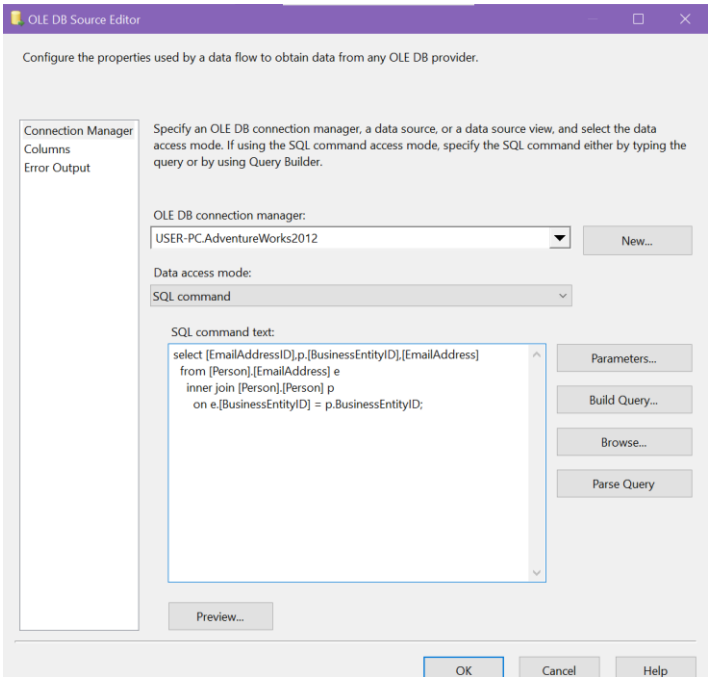




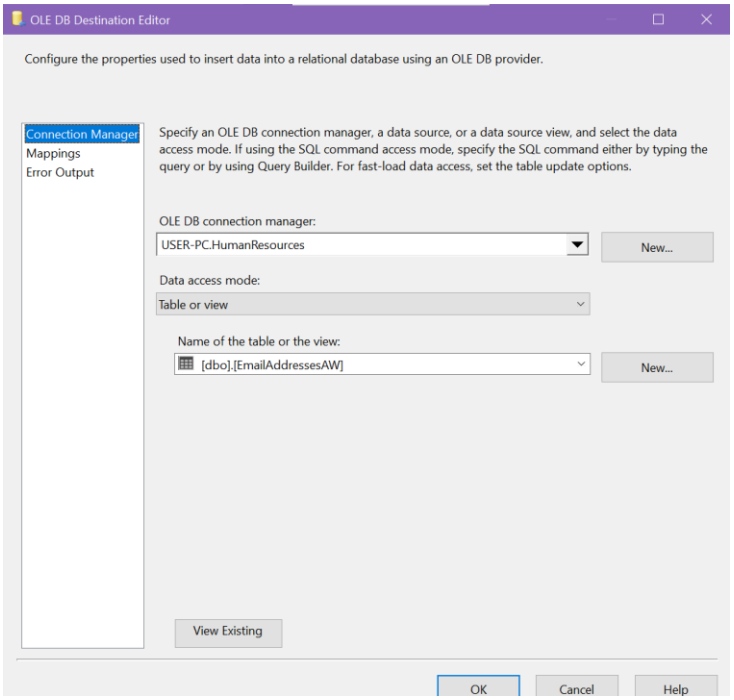
Load EmailAddressesAW configuration:

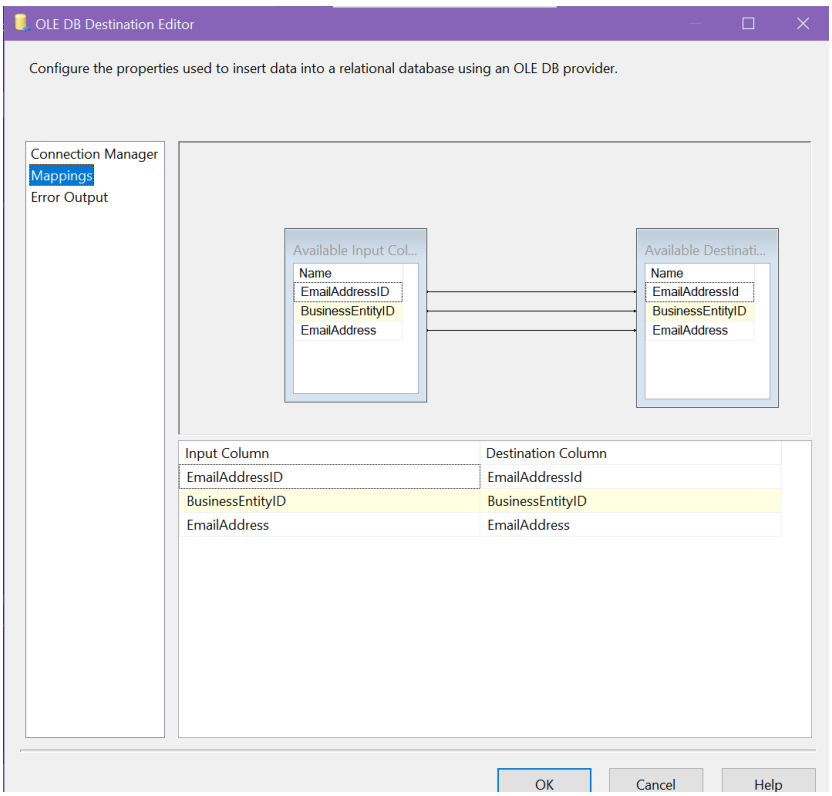


OLE DB source configuration:

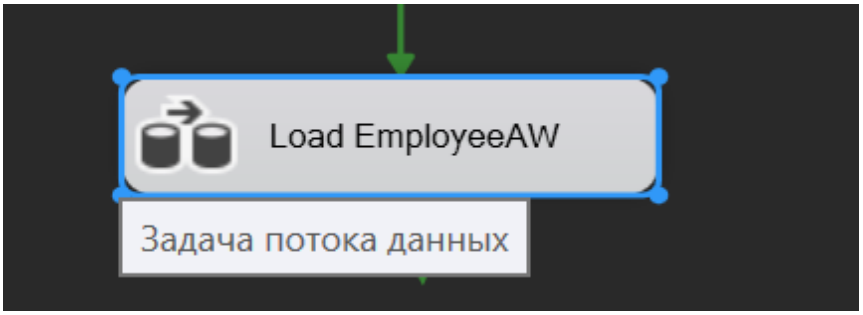


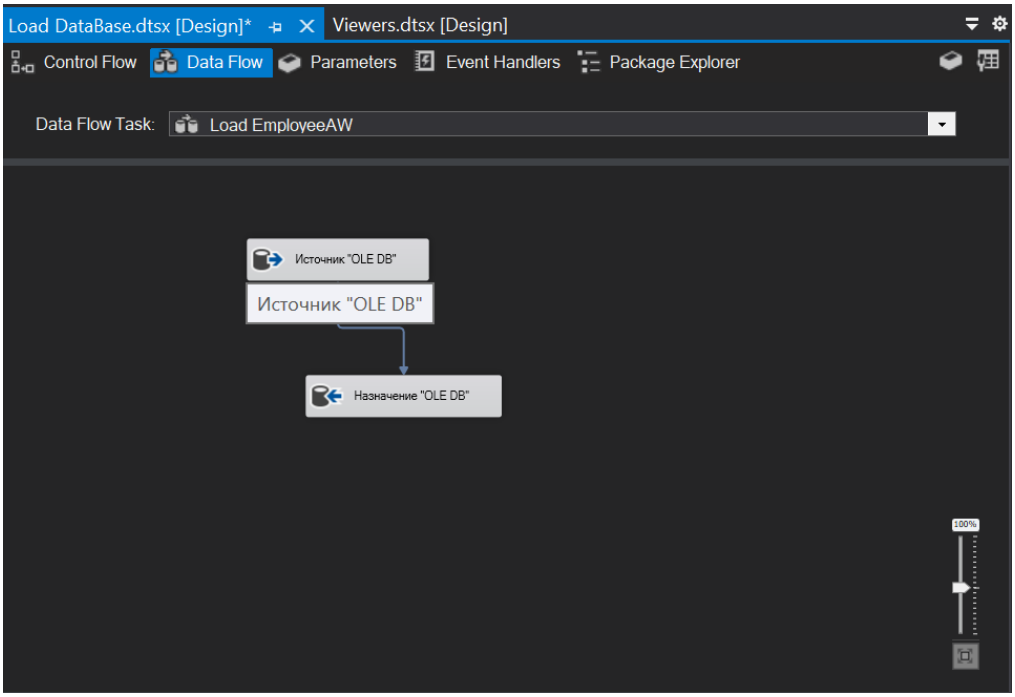
OLE DB destination configuration:



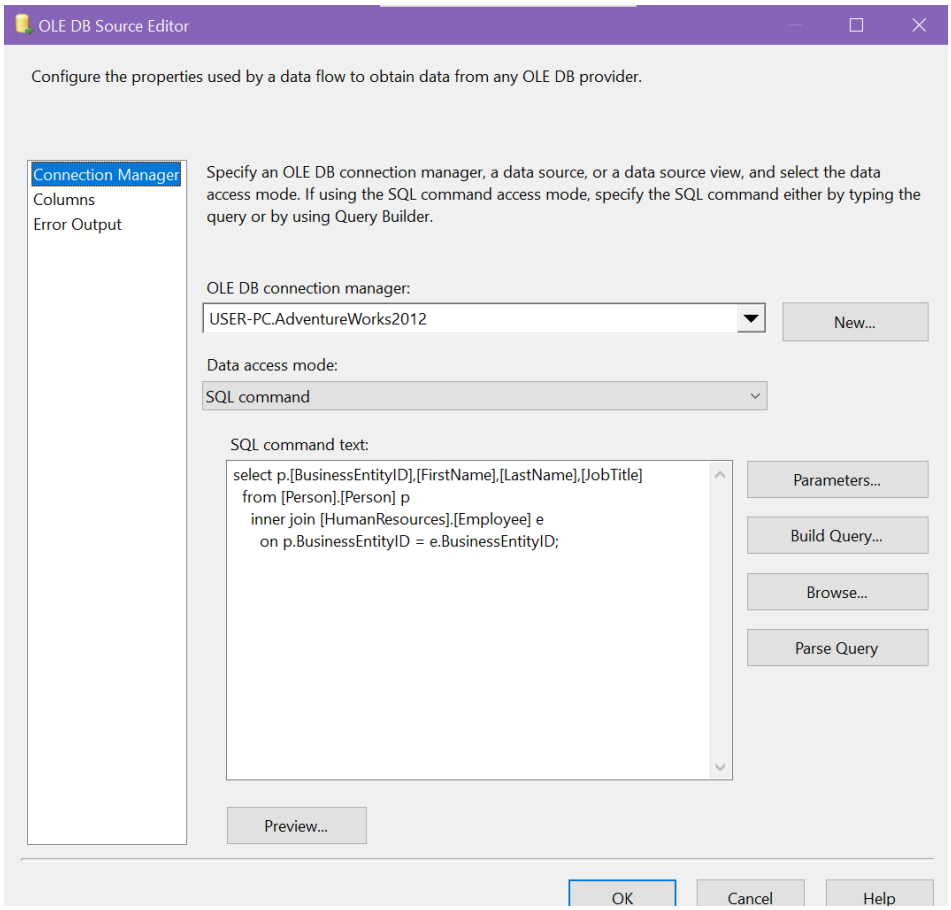


Load EmployeeAW data flow:

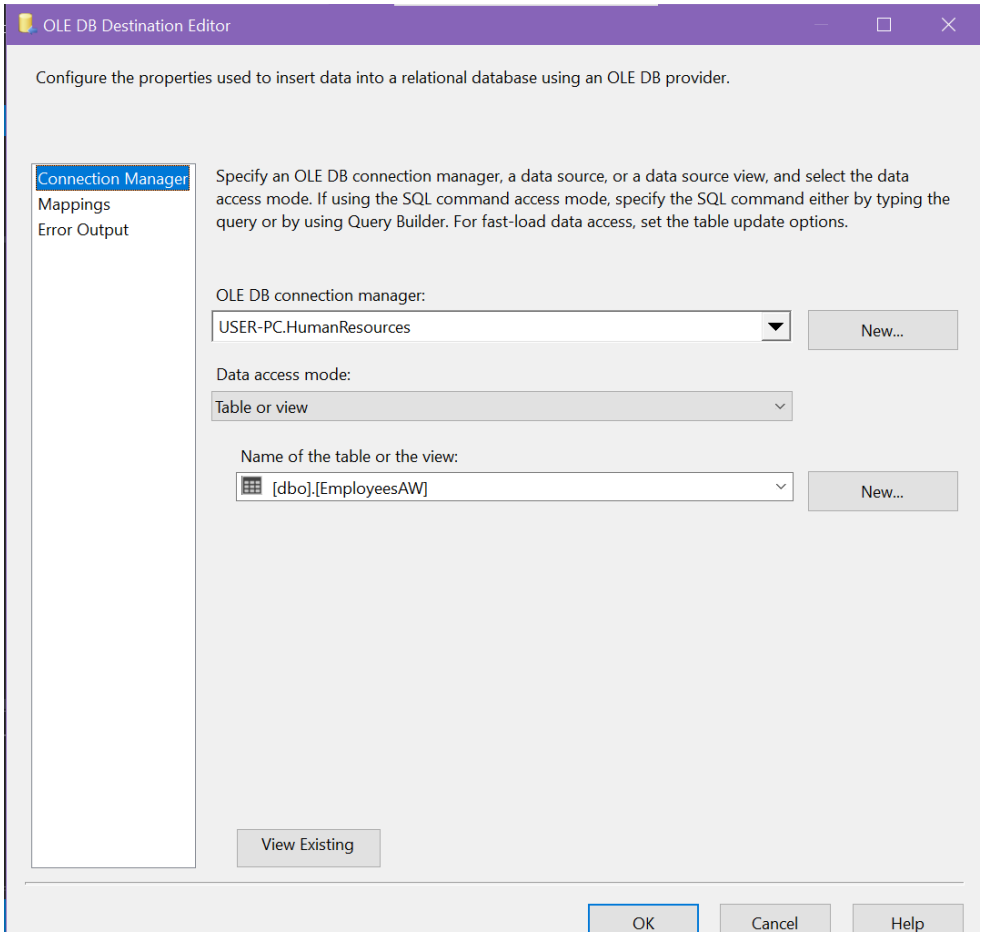


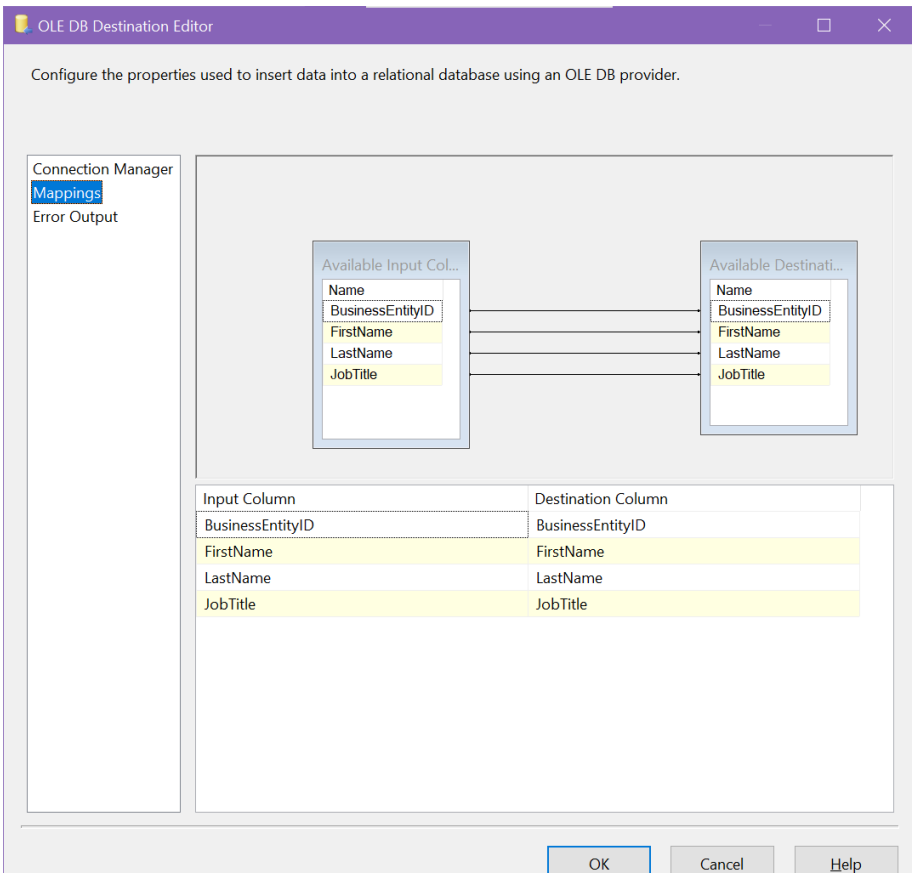


OLE DB source configuration:

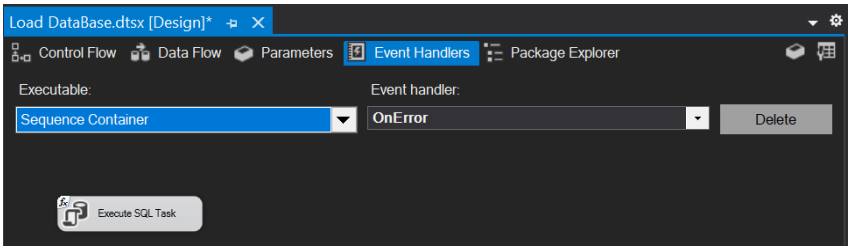


OLE DB destination configuration:

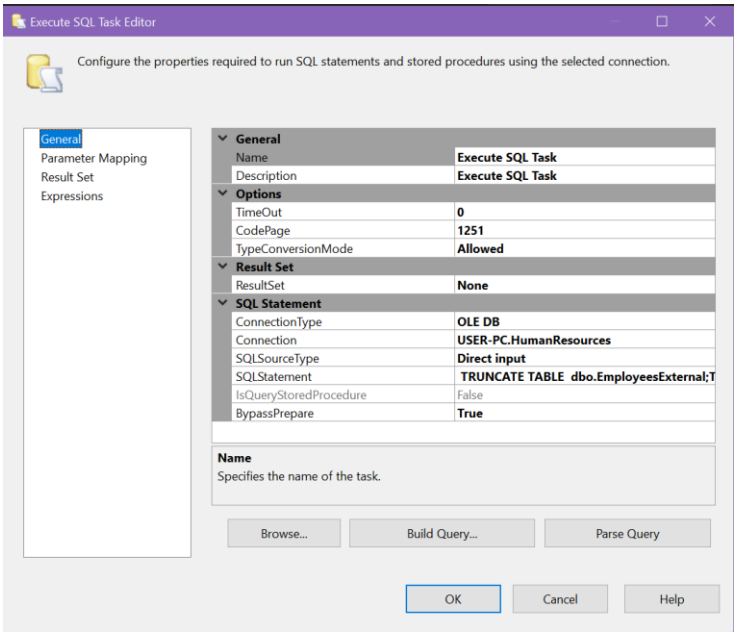


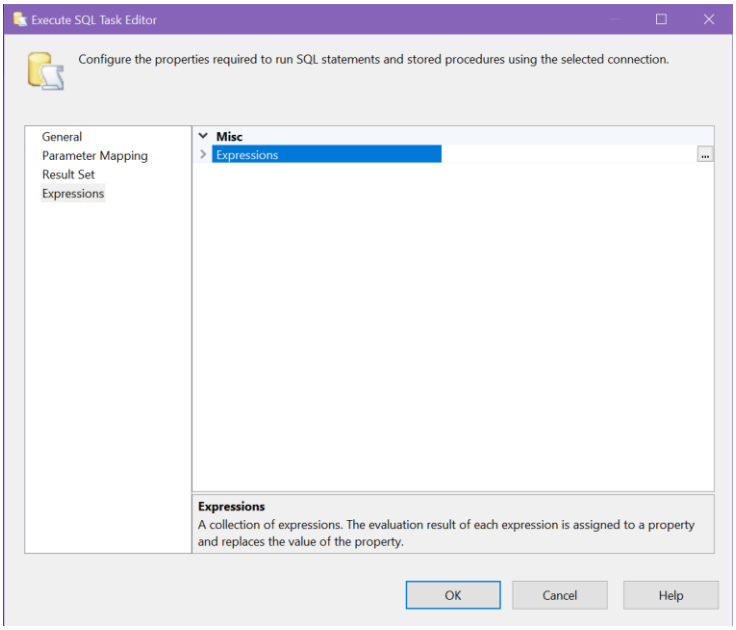


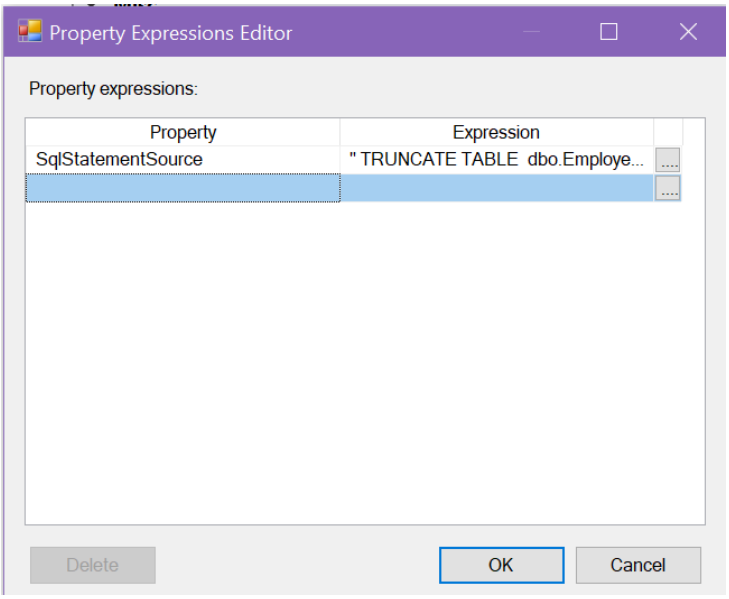
Clearing all tables that have managed to load in case of an error during code execution:

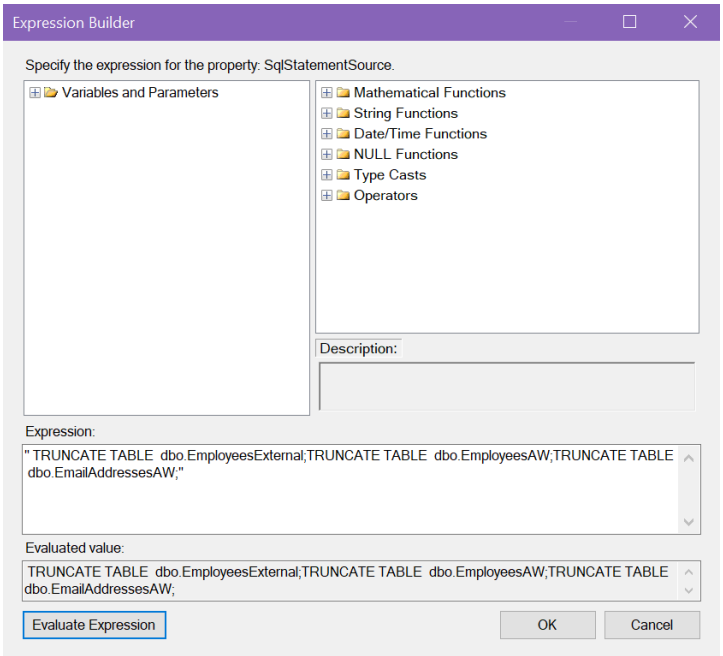


Execute SQL Task configuration:

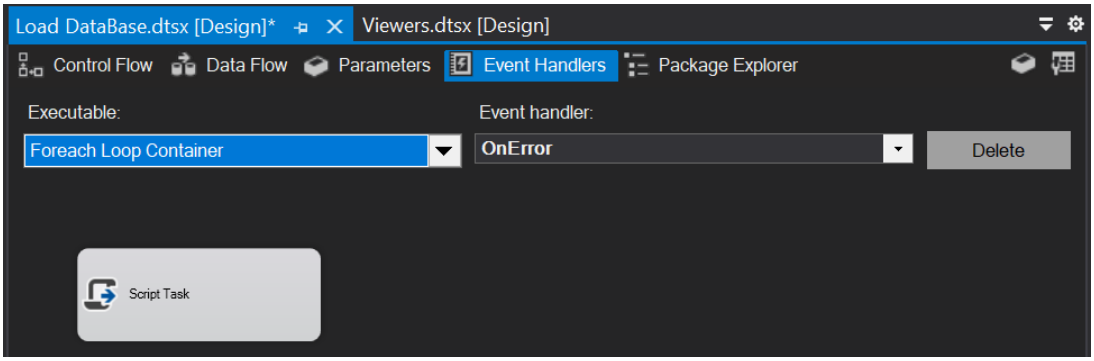



Execute SQL Task Editor
Configure the properties required to run SQL statements and stored procedures using the selected connection.
General
Parameter Mapping
Result Set
Expressions
Misc
Expressions
Expressions
A collection of expressions. The evaluation result of each expression is assigned to a property and replaces the value of the property.
OK
Cancel
Help

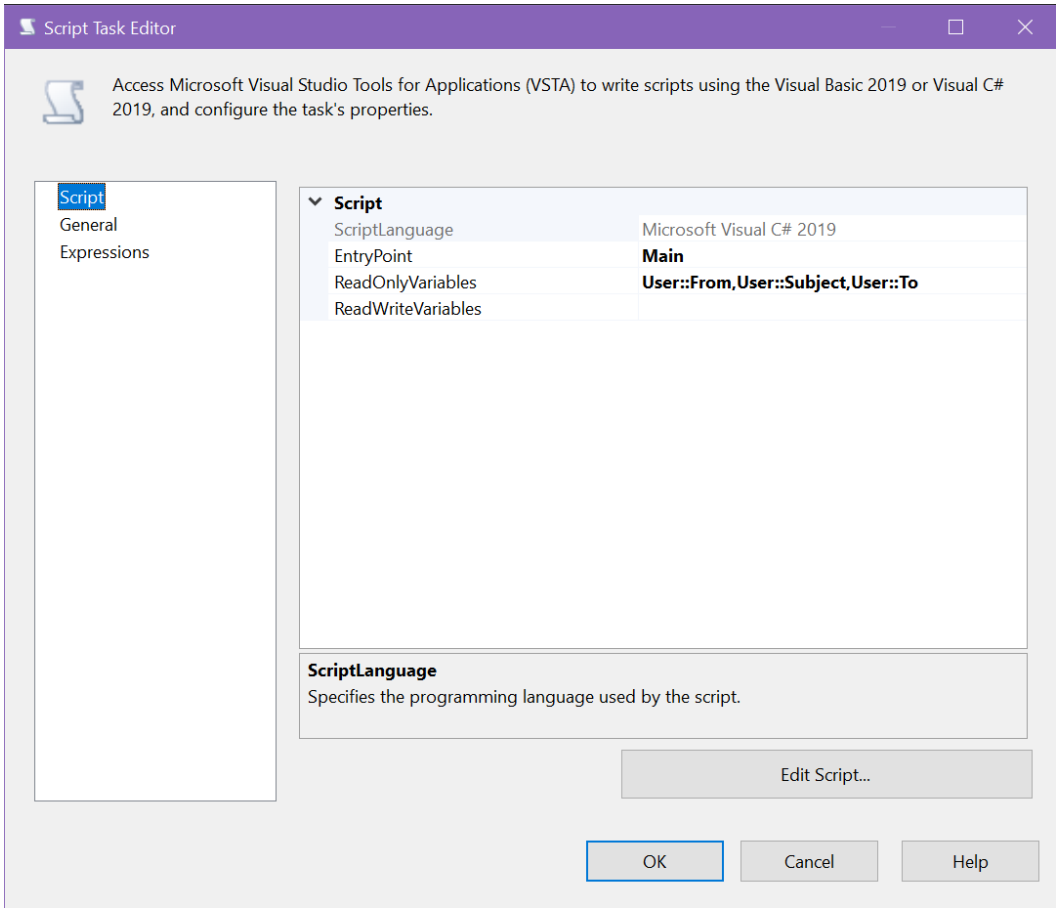

Property Expressions Editor
Property expressions:
Property
Expression
SqlStatementSource
" TRUNCATE TABLE dbo.Employe...
Delete
OK
Cancel


Expression Builder
Specify the expression for the property: SqlStatementSource.
Variables and Parameters
Mathematical Functions
String Functions
Date/Time Functions
NULL Functions
Type Casts
Operators
Description:
Expression:
" TRUNCATE TABLE dbo.EmployeesExternal;TRUNCATE TABLE dbo.EmployeesAW;TRUNCATE TABLE dbo.EmailAddressesAW;"
Evaluated value:
TRUNCATE TABLE dbo.EmployeesExternal;TRUNCATE TABLE dbo.EmployeesAW;TRUNCATE TABLE dbo.EmailAddressesAW;
Evaluate Expression
OK
Cancel

Sending an email in case of an error while loading the EmployeeExternal table:



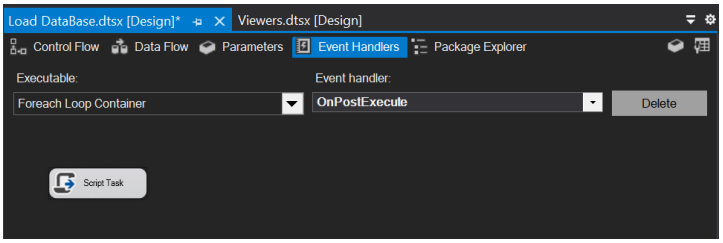
Script Task configuration:



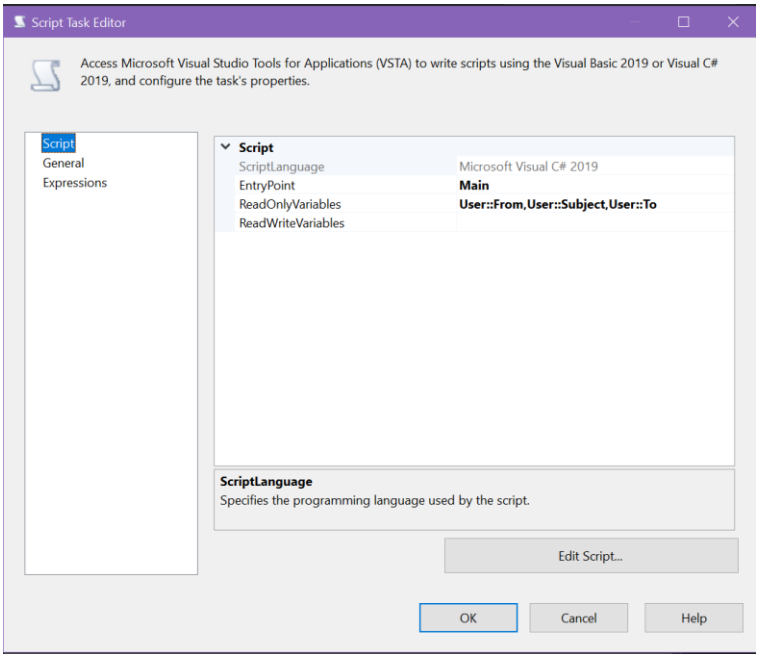

```
#region Namespaces
using System;
using System.Data;
using Microsoft.SqlServer.Dts.Runtime;
using System.Windows.Forms;
using System.Net;
using System.Net.Mail;
#endregion
```

```
public void Main()
{
    String SendMailFrom = Dts.Variables["From"].Value.ToString();
    String SendMailTo = Dts.Variables["To"].Value.ToString();
    String SendMailSubject = Dts.Variables["Subject"].Value.ToString(
    String SendMailBody = "Error loading employees";

    try
    {
        MailMessage email = new MailMessage();
        SmtpClient SmtpServer = new SmtpClient("smtp.gmail.com");
        // START
        email.From = new MailAddress(SendMailFrom);
        email.To.Add(SendMailTo);
        email.Subject = SendMailSubject;
        email.Body = SendMailBody;
        //END

        SmtpServer.Port = 587;
        SmtpServer.Credentials = new System.Net.NetworkCredential(Ser
        SmtpServer.EnableSsl = true;

        SmtpServer.Send(email);
        MessageBox.Show("Email was Successfully Sent ");
    }
    catch (Exception ex)
    {
        MessageBox.Show(ex.ToString());
    }
    catch (Exception ex)
    {
        MessageBox.Show(ex.ToString());
    }
    Dts.TaskResult = (int)ScriptResults.Success;
}
```

Sending an email in case of successful upload of the EmployeeExternal table:



Script Task configuration:

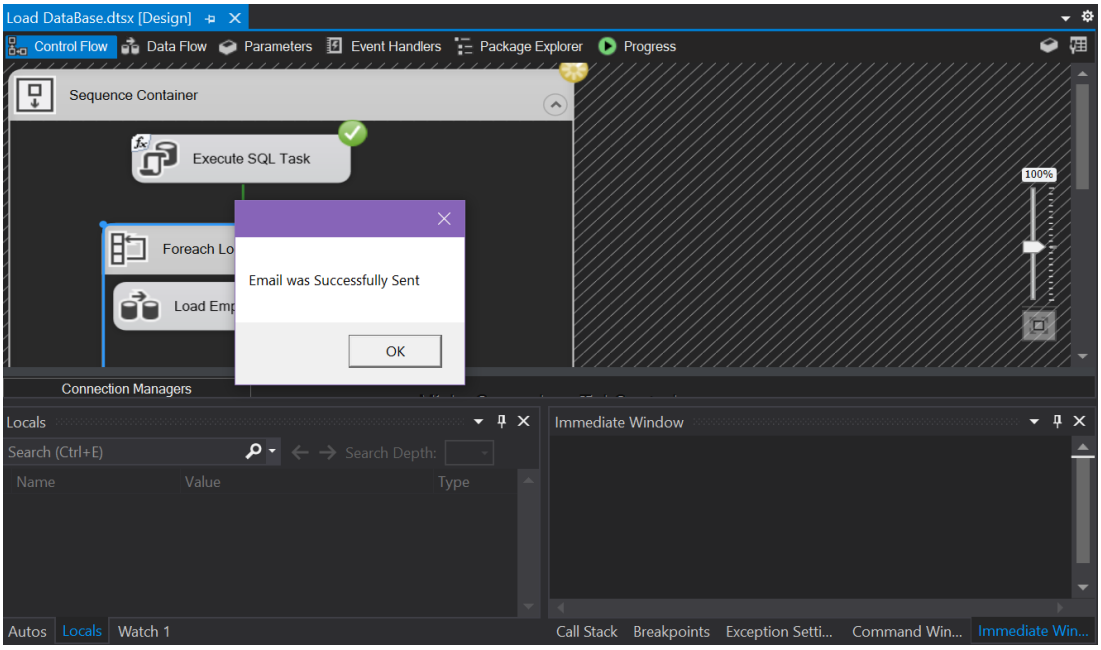


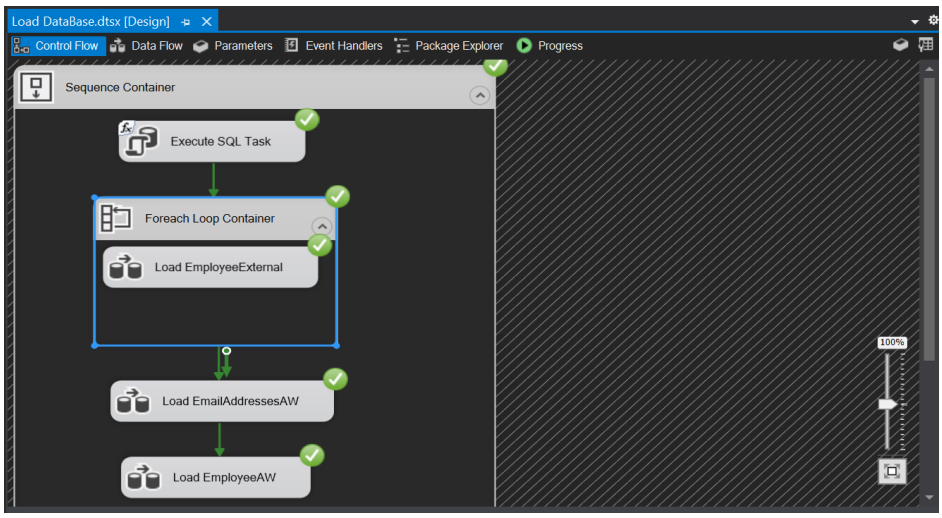
```
#region Namespaces
using System;
using System.Data;
using Microsoft.SqlServer.Dts.Runtime;
using System.Windows.Forms;
using System.Net;
using System.Net.Mail;
#endregion
```

```
public void Main()
{
    String SendMailFrom = Dts.Variables["From"].Value.ToString();
    String SendMailTo = Dts.Variables["To"].Value.ToString();
    String SendMailSubject = Dts.Variables["Subject"].Value.ToString();
    String SendMailBody = "Employees have been imported successfully";

    try
    {
        MailMessage email = new MailMessage();
        SmtpClient SmtpServer = new SmtpClient("smtp.gmail.com");
        // START
        email.From = new MailAddress(SendMailFrom);
        email.To.Add(SendMailTo);
        email.Subject = SendMailSubject;
        email.Body = SendMailBody;
        //END

        SmtpServer.Port = 587;
        SmtpServer.Credentials = new System.Net.NetworkCredential(SendMailFr
        SmtpServer.EnableSsl = true;

        SmtpServer.Send(email);
        MessageBox.Show("Email was Successfully Sent ");
    }
```

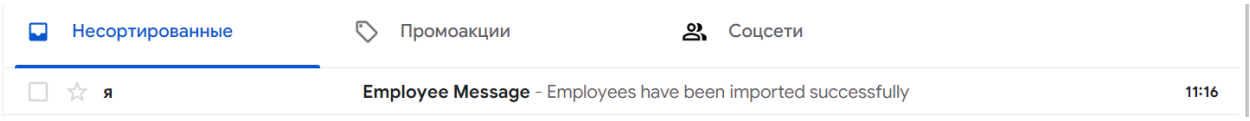
```
        catch (Exception ex)
        {
            MessageBox.Show(ex.ToString());
        }
        Dts.TaskResult = (int)ScriptResults.Success;
    }
```

Run package:





Result of email send:



Select from dbo.EmployeeExternal:

```
SELECT * FROM dbo.EmployeesExternal;
```

75 %

Results | Messages

	EmployeeID	FirstName	LastName	JobTitle	EmailAddress	City	StateProvinceName	CountryRegionName
1	1	Ken	Sánchez	Chief Executive Officer	ken0@adventure-works.com	Newport Hills	Washington	United States
2	2	Terri	Duffy	Vice President of Engineering	terri0@adventure-works.com	Renton	Washington	United States
3	3	Roberto	Tambur...	Engineering Manager	roberto0@adventure-work...	Redmond	Washington	United States
4	4	Rob	Walters	Senior Tool Designer	rob0@adventure-works.com	Minneapolis	Minnesota	United States
5	5	Gail	Erickson	Design Engineer	gail0@adventure-works.com	Bellevue	Washington	United States
6	6	Jossef	Goldberg	Design Engineer	jossef0@adventure-works....	Renton	Washington	United States
7	7	Dylan	Miller	Research and Development...	dylan0@adventure-works.c...	Kenmore	Washington	United States
8	8	Diane	Margheim	Research and Development...	diane1@adventure-works....	Everett	Washington	United States
9	9	Gigi	Matthew	Research and Development...	gigi0@adventure-works.com	Bellevue	Washington	United States
10	10	Michael	Raheem	Research and Development...	michael6@adventure-work...	San Franci...	California	United States
11	11	Ovidiu	Cracium	Senior Tool Designer	ovidiu0@adventure-works....	Kenmore	Washington	United States
12	12	Thierry	D'Hers	Tool Designer	thierry0@adventure-works....	Bothell	Washington	United States
13	13	Janice	Galvin	Tool Designer	janice0@adventure-works....	Redmond	Washington	United States
14	14	Michael	Sullivan	Senior Design Engineer	michael8@adventure-work...	Renton	Washington	United States
15	15	Sharon	Salavaria	Design Engineer	sharon0@adventure-works...	Renton	Washington	United States
16	16	David	Bradley	Marketing Manager	david0@adventure-works.c...	Redmond	Washington	United States
17	17	Kevin	Brown	Marketing Assistant	kevin0@adventure-works.c...	Everett	Washington	United States
18	18	John	Wood	Marketing Specialist	john5@adventure-works.c...	Redmond	Washington	United States
19	19	Mary	Dempsey	Marketing Assistant	mary2@adventure-works.c...	Bellevue	Washington	United States
20	20	Wanida	Benshoof	Marketing Assistant	wanida0@adventure-works...	Sammamish	Washington	United States

Select from dbo.EmployeesAW:

```
SELECT * FROM dbo.EmployeesAW;
```

75 %

Results | Messages

	BusinessEntityID	FirstName	LastName	JobTitle
1	1	Ken	Sánchez	Chief Executive Officer
2	2	Terri	Duffy	Vice President of Engineering
3	3	Roberto	Tamburello	Engineering Manager
4	4	Rob	Walters	Senior Tool Designer
5	5	Gail	Erickson	Design Engineer
6	6	Jossef	Goldberg	Design Engineer
7	7	Dylan	Miller	Research and Development Manager
8	8	Diane	Margheim	Research and Development Engineer
9	9	Gigi	Matthew	Research and Development Engineer
10	10	Michael	Raheem	Research and Development Manager
11	11	Ovidiu	Cracium	Senior Tool Designer
12	12	Thierry	D'Hers	Tool Designer
13	13	Janice	Galvin	Tool Designer
14	14	Michael	Sullivan	Senior Design Engineer
15	15	Sharon	Salavaria	Design Engineer
16	16	David	Bradley	Marketing Manager
17	17	Kevin	Brown	Marketing Assistant
18	18	John	Wood	Marketing Specialist
19	19	Mary	Dempsey	Marketing Assistant
20	20	Wanida	Benshoof	Marketing Assistant

Select from dbp.EmailAddressesAW:

```
SELECT * FROM dbo.EmailAddressesAW;
```

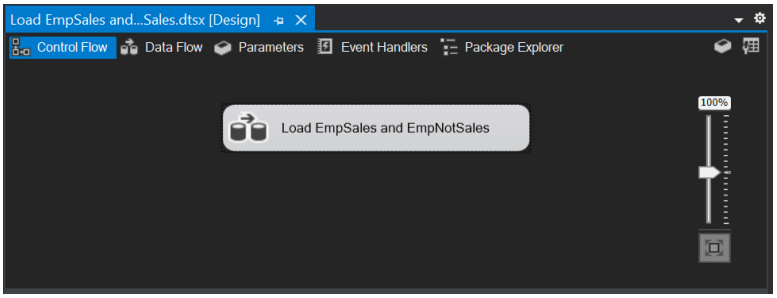
75 %

Results | Messages

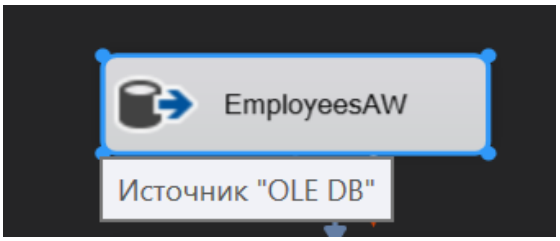
	EmailAddressId	BusinessEntityID	EmailAddress
1	1	1	ken0@adventure-works.com
2	2	2	terri0@adventure-works.com
3	3	3	roberto0@adventure-works.com
4	4	4	rob0@adventure-works.com
5	5	5	gail0@adventure-works.com
6	6	6	jossef0@adventure-works.com
7	7	7	dylan0@adventure-works.com
8	8	8	diane1@adventure-works.com
9	9	9	gigi0@adventure-works.com
10	10	10	michael6@adventure-works.com
11	11	11	ovidiu0@adventure-works.com
12	12	12	thierry0@adventure-works.com
13	13	13	janice0@adventure-works.com
14	14	14	michael8@adventure-works.com
15	15	15	sharon0@adventure-works.com
16	16	16	david0@adventure-works.com
17	17	17	kevin0@adventure-works.com
18	18	18	john5@adventure-works.com
19	19	19	mary2@adventure-works.com
20	20	20	wanida0@adventure-works.com

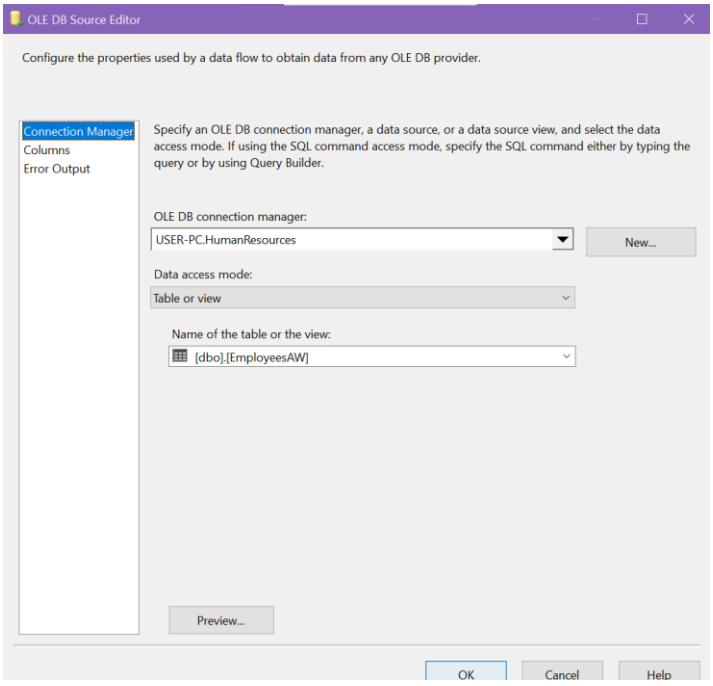
Task 3 - Creating ETL solution to export the data from HumanResourcesdb

Load EmpSales and EmpNotSales data flow:

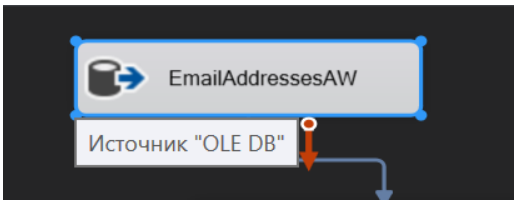


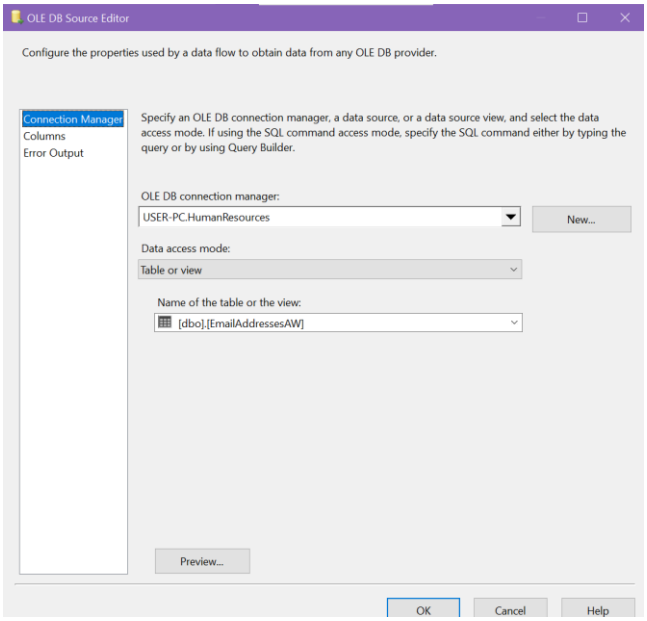
EmployeesAW configuration:



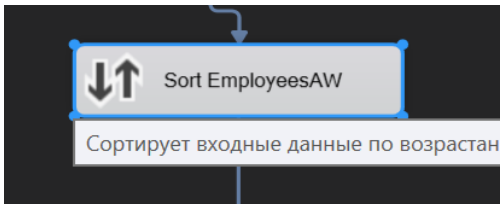


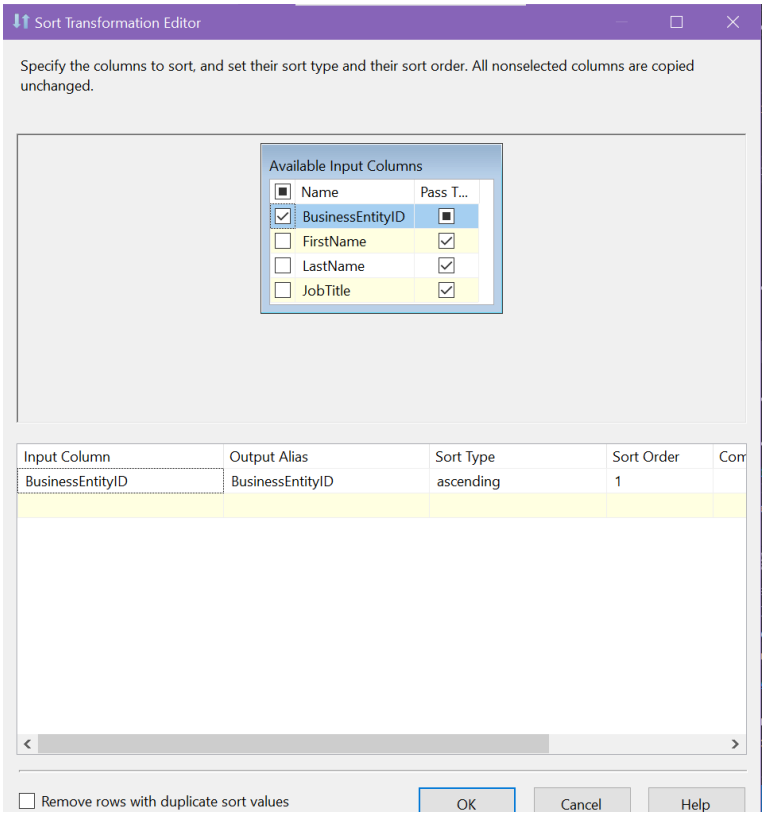
EmailAdressesAW configuration:



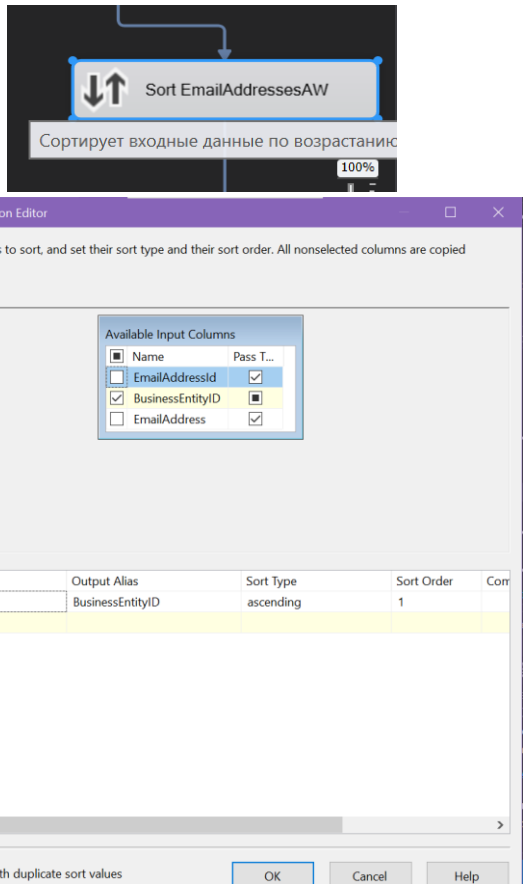


Sort EmployeesAW configuration:

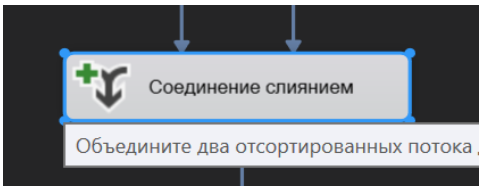




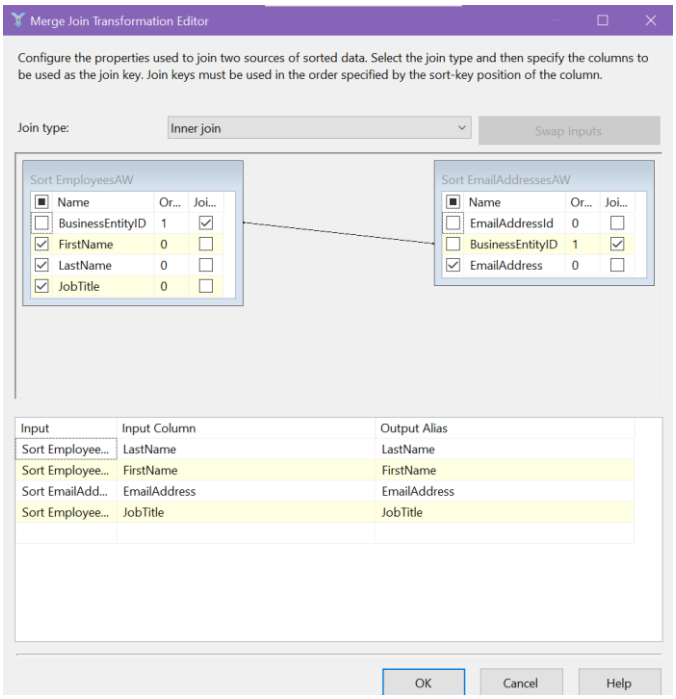
Sort EmailAddressesAW configuration:



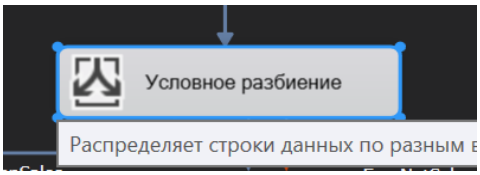
Merge Join configuration:

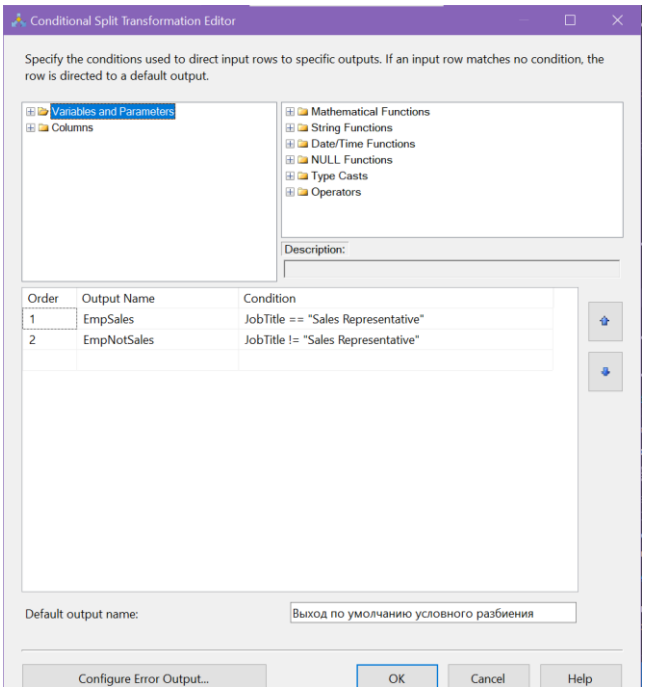


Add necessary columns:

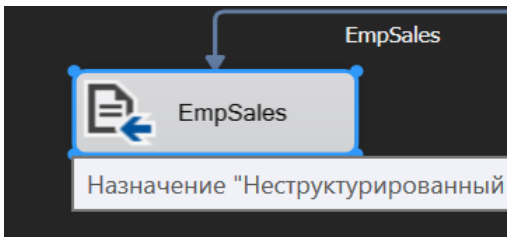


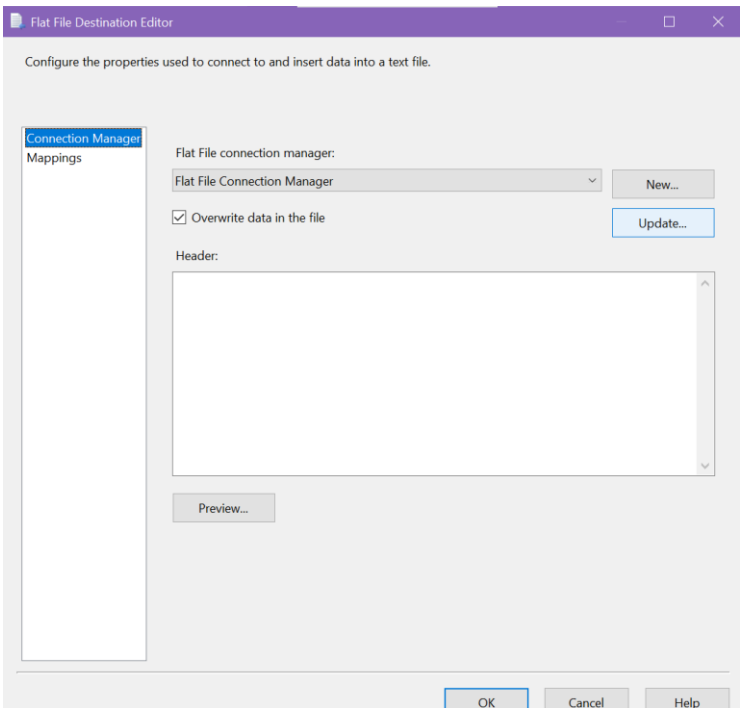
Conditional Split configuration:

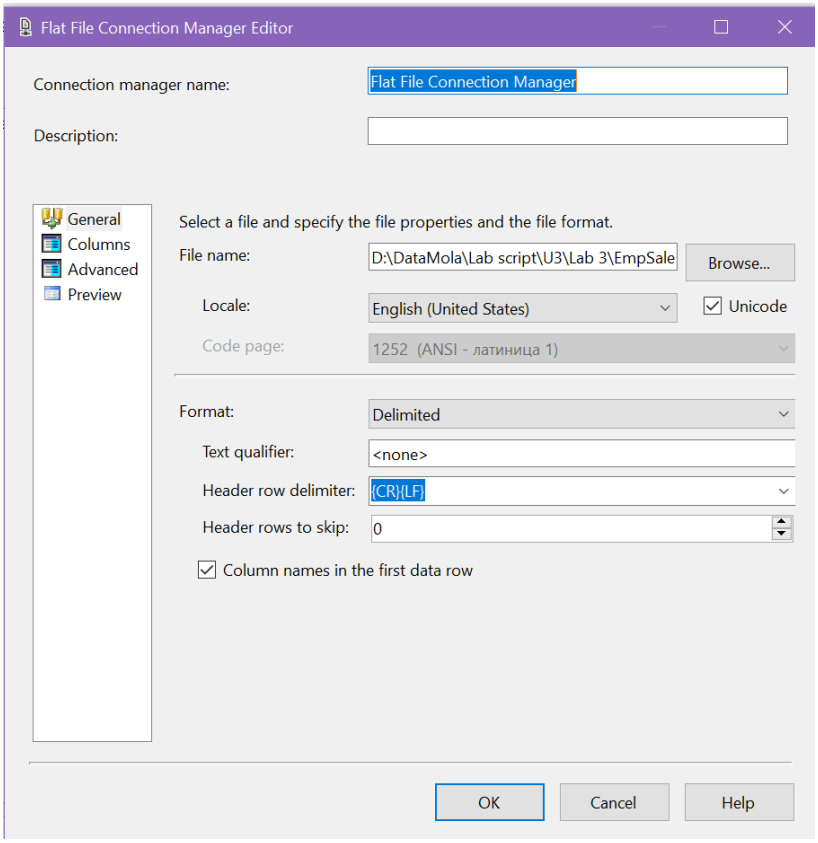




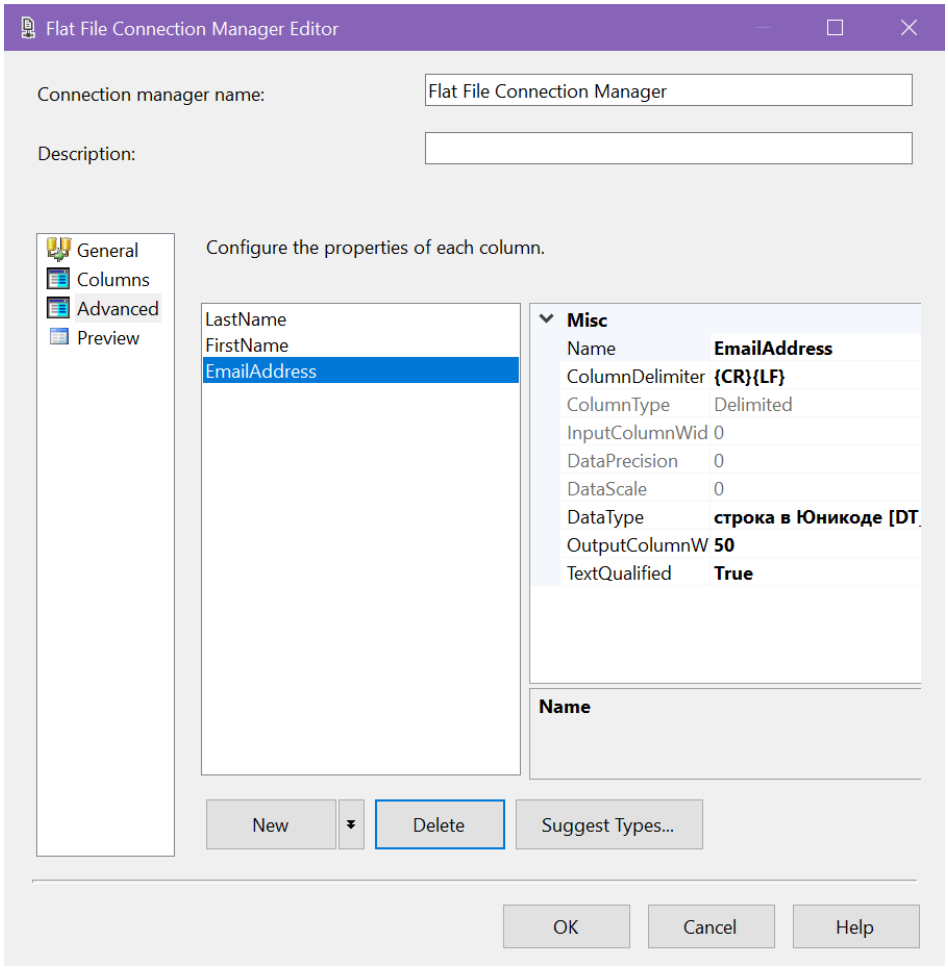
EmpSales configuration:



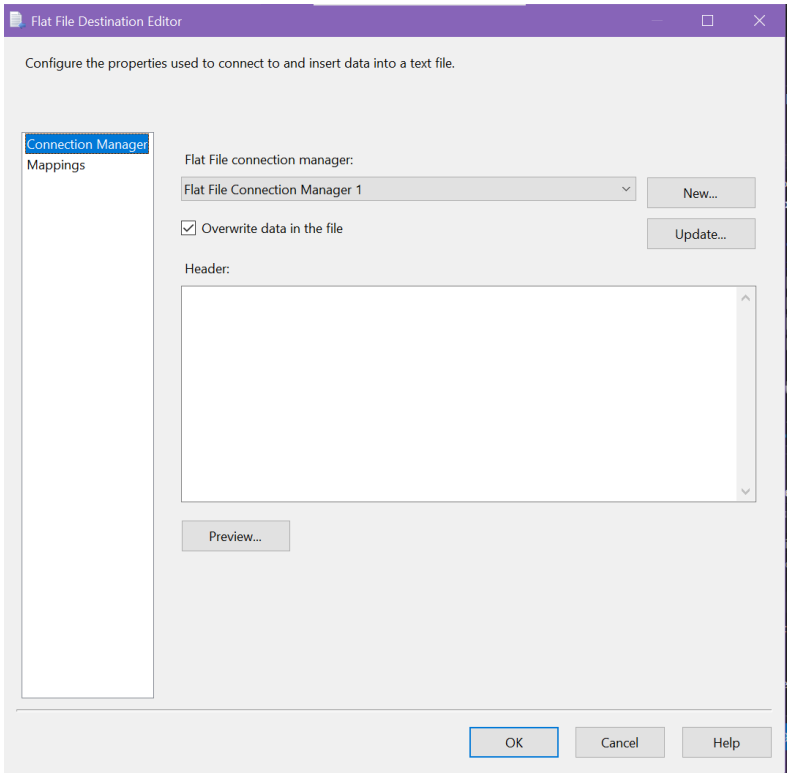


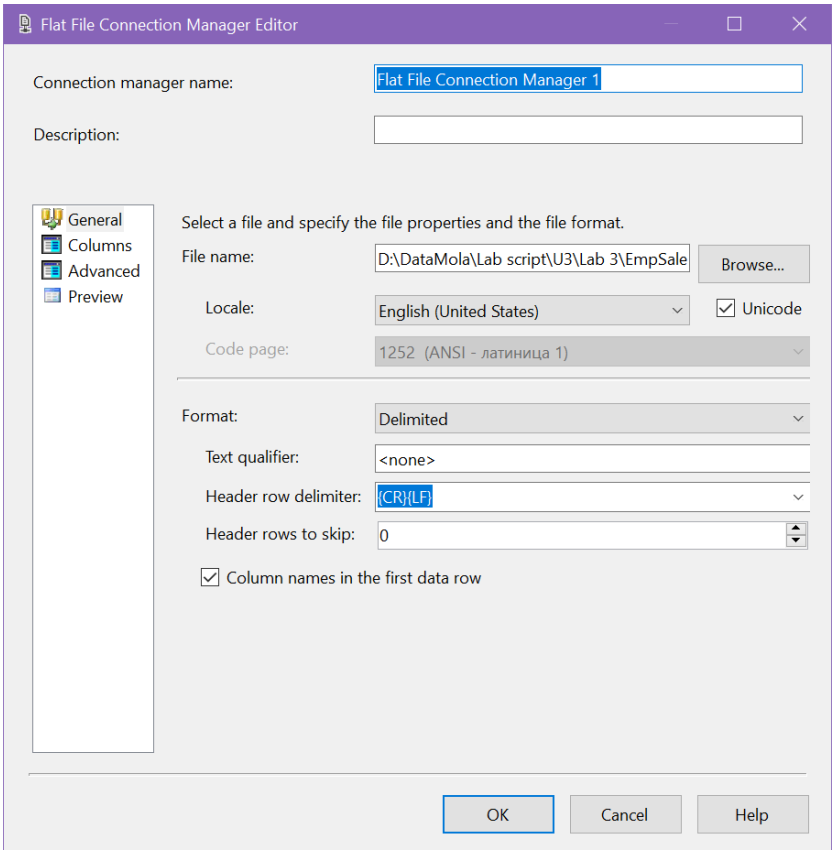


Delete JobTitle column from result set:

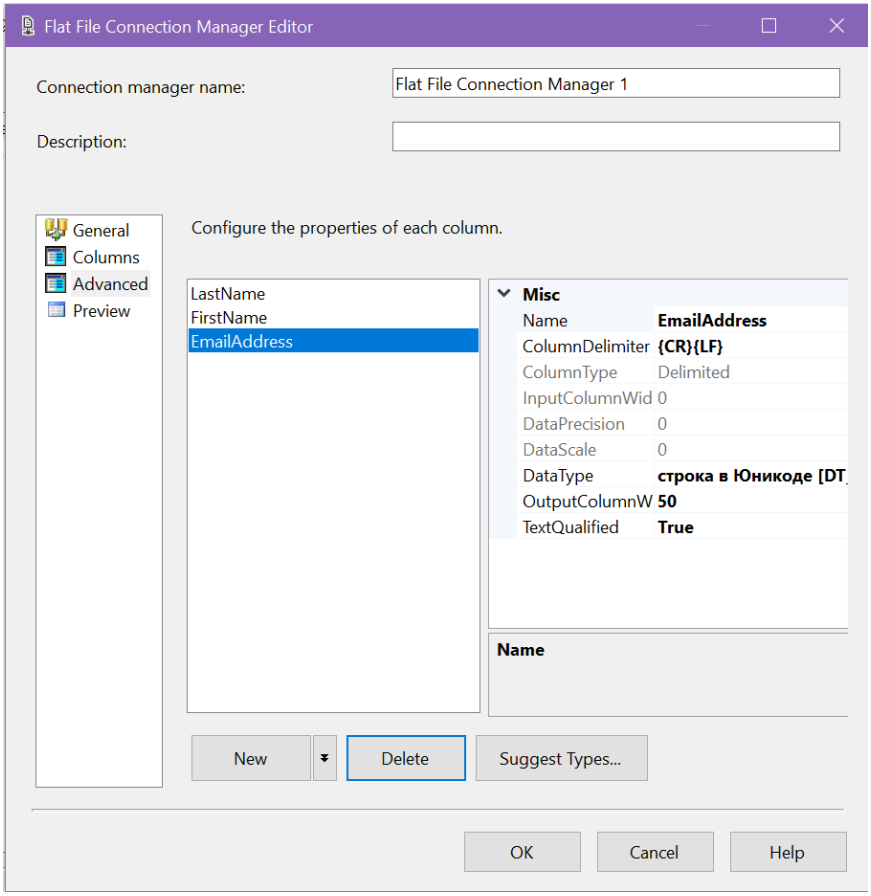


EmpNotSales confiduration:

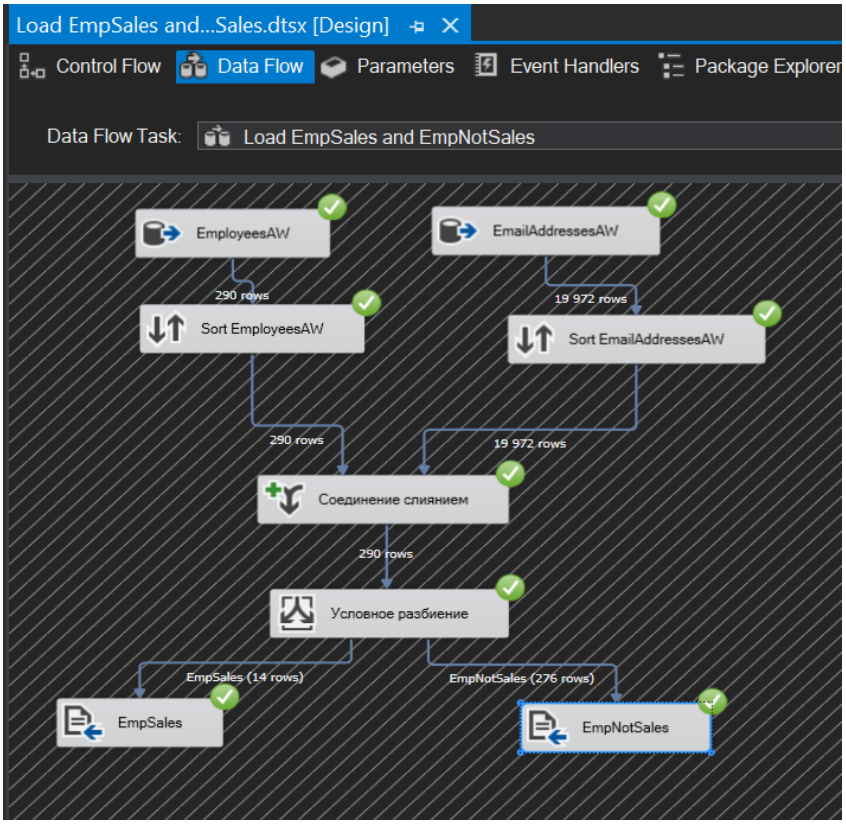




Delete JobTitle column from result set:



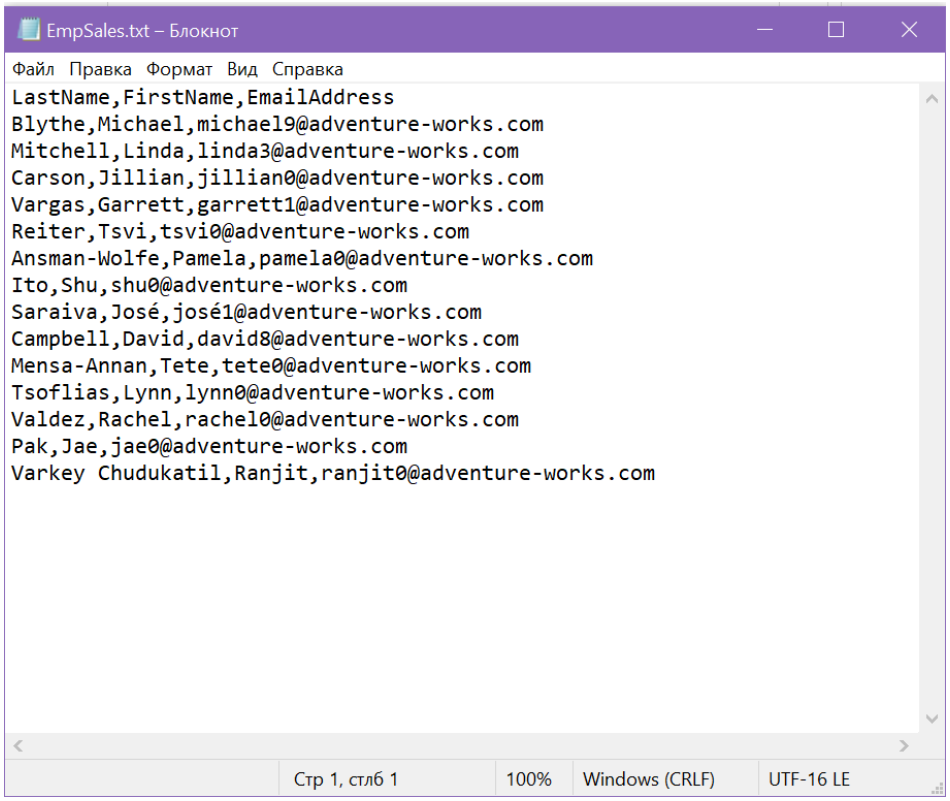
Run package:



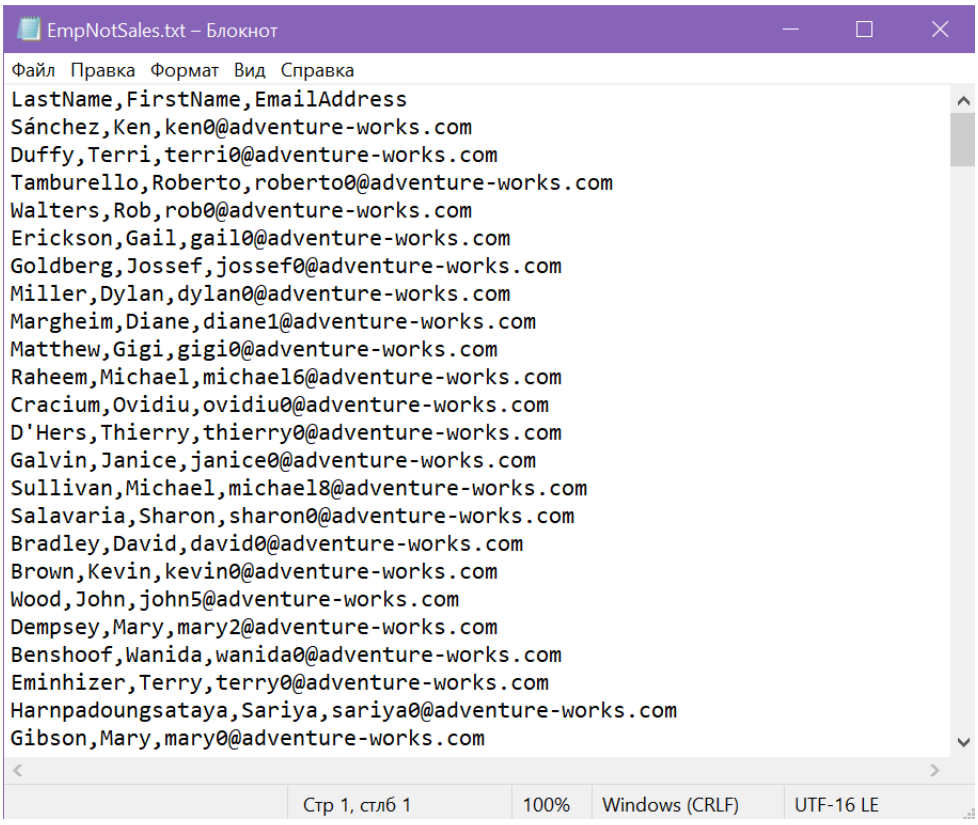
Set of files:

EmpNotSales.txt	28.08.2022 11:35	Текстовый документ
EmpSales.txt	28.08.2022 11:35	Текстовый документ

Result of loading EmpSales file:



Result of loading EmpNotSales file:



Task 4 – Using Data Viewers

SSIS supports several types of data viewers. The one most commonly used is the grid data viewer, which displays the data in tabular format. However, you can also create data viewers that display histograms, scatter plot charts, or column charts.

For an example of how the viewer works, I'm using a package that loads data from HumanResources database tables into the EmpSales and EmpNotSales files.

I will create a view between Merge Join and Conditional Split to see what data is obtained after Merge Join: