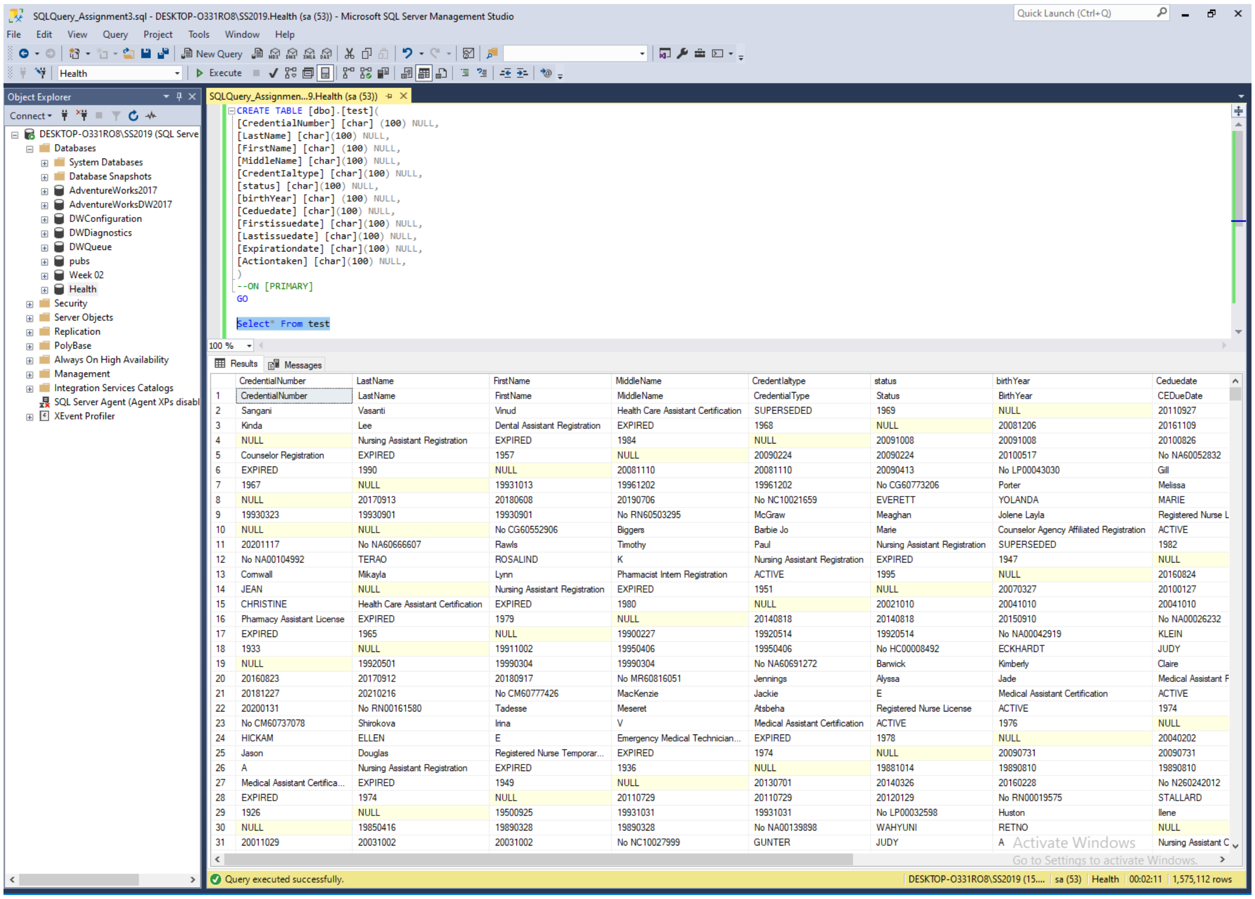
Data Warehousing Exercises

BULK- In:

- It is one of the methods using which the data can be imported in SSMS. We have to use command prompt here.
- We have imported data from Health_Care_Provider_Credential_Data.csv to Health database in SSMS.
- First, we define the path and the source followed by the Data types of the columns. After assigning the correct character length, the rows gets transferred to the Health database in SSMS.



```
CREATE TABLE [dbo].[test](
[CredentialNumber] [char] (100) NULL,
[LastName] [char](100) NULL,
[FirstName] [char] (100) NULL,
[MiddleName] [char](100) NULL,
[CredentIaltype] [char](100) NULL,
[status] [char](100) NULL,
[birthYear] [char] (100) NULL,
[Ceduedate] [char](100) NULL,
[Firstissuedate] [char](100) NULL,
[Lastissuedate] [char](100) NULL,
[Expirationdate] [char](100) NULL,
[Actiontaken] [char](100) NULL,
)
--ON [PRIMARY]
GO

Select* From test
```

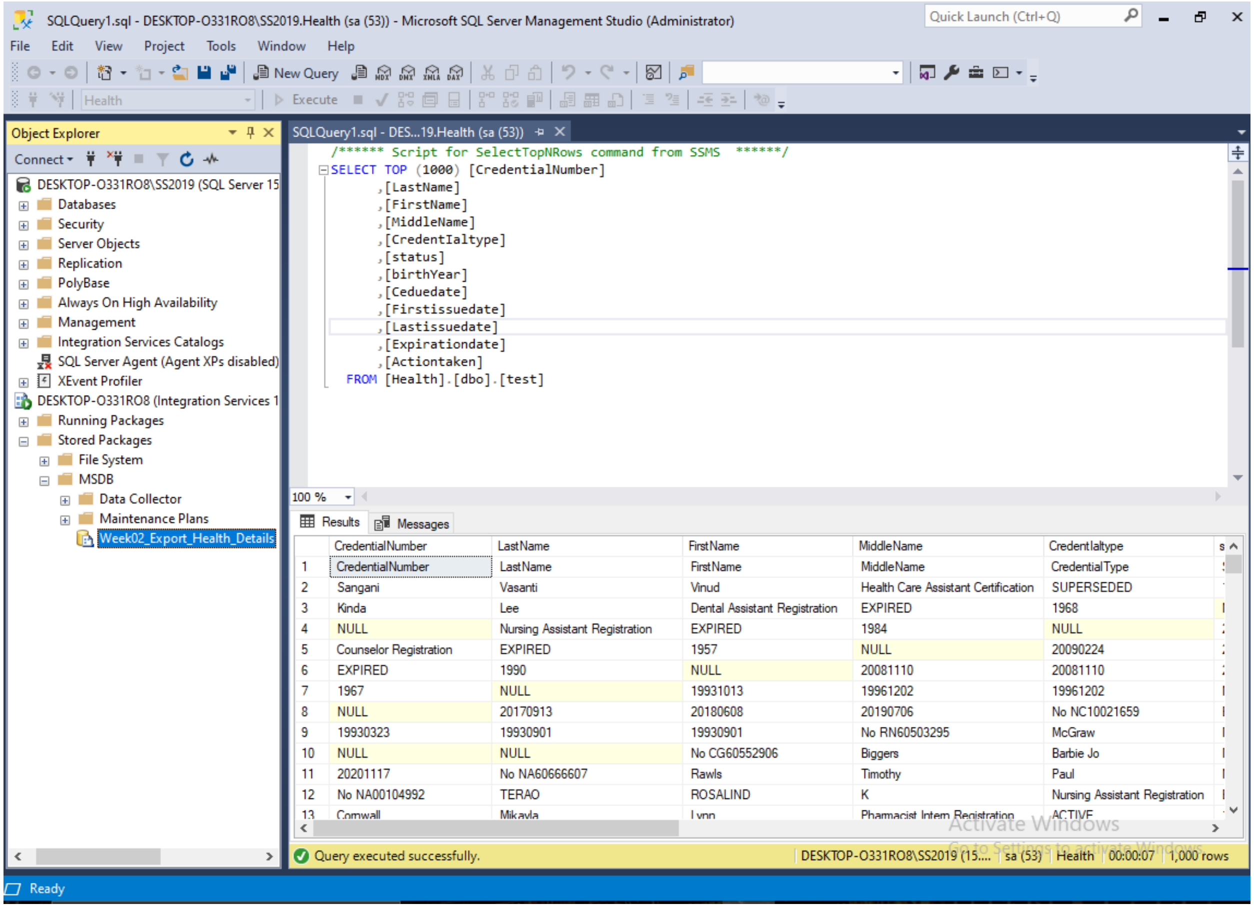
	CredentialNumber	LastName	FirstName	MiddleName	CredentIaltype	status	birthYear	Ceduedate
1	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate
2	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	1969	NULL	20110927
3	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968	NULL	20081206	20161109
4	NULL	Nursing Assistant Registration	EXPIRED	1984	NULL	20091008	20091008	20100826
5	Counselor Registration	EXPIRED	1957	NULL	20090224	20090224	20100517	No NA60052832
6	EXPIRED	1990	NULL	20081110	20081110	20090413	No LP00043030	Gill
7	1967	NULL	19931013	19961202	19961202	No CG60773206	Porter	Melissa
8	NULL	20170913	20180608	20190706	No NC10021659	EVERETT	YOLANDA	MARIE
9	19930323	19930901	19930901	No RN60503295	McGraw	Meaghan	Jolene Layla	Registered Nurse L
10	NULL	NULL	No CG60552906	Biggers	Barbie Jo	Marie	Counselor Agency Affiliated Registration	ACTIVE
11	20201117	No NA60666607	Rawls	Timothy	Paul	Nursing Assistant Registration	SUPERSEDED	1982
12	No NA00104992	TERAO	ROSALIND	K	Nursing Assistant Registration	EXPIRED	1947	NULL
13	Comwall	Mikayla	Lynn	Pharmacist Intem Registration	ACTIVE	1995	NULL	20160824
14	JEAN	NULL	Nursing Assistant Registration	EXPIRED	1951	NULL	20070327	20100127
15	CHRISTINE	Health Care Assistant Certification	EXPIRED	1980	NULL	20021010	20041010	20041010
16	Pharmacy Assistant License	EXPIRED	1979	NULL	20140818	20140818	20150910	No NA00026232
17	EXPIRED	1965	NULL	19900227	19920514	19920514	No NA00042919	KLEIN
18	1933	NULL	19911002	19950406	19950406	No HC00008492	ECKHARDT	JUDY
19	NULL	19920501	19990304	19990304	No NA60691272	Barwick	Kimberly	Claire
20	20160823	20170912	20180917	No MR60816051	Jennings	Alyssa	Jade	Medical Assistant F
21	20181227	20210216	No CM60777426	MacKenzie	Jackie	E	Medical Assistant Certification	ACTIVE
22	20200131	No RN00161580	Tadesse	Meseret	Atsbeha	Registered Nurse License	ACTIVE	1974
23	No CM60737078	Shirokova	Irina	V	Medical Assistant Certification	ACTIVE	1976	NULL
24	HICKAM	ELLEN	E	Emergency Medical Technician...	EXPIRED	1978	NULL	20040202
25	Jason	Douglas	Registered Nurse Temporar...	EXPIRED	1974	NULL	20090731	20090731
26	A	Nursing Assistant Registration	EXPIRED	1936	NULL	19881014	19890810	19890810
27	Medical Assistant Certifica...	EXPIRED	1949	NULL	20130701	20140326	20160228	No N260242012
28	EXPIRED	1974	NULL	20110729	20110729	20120129	No RN00019575	STALLARD
29	1926	NULL	19500925	19931031	19931031	No LP00032598	Huston	Ilene
30	NULL	19850416	19890328	19890328	No NA00139898	WAHYUNI	RETNO	NULL
31	20011029	20031002	20031002	No NC10027999	GUNTER	JUDY	A	Nursing Assistant C

```
Query executed successfully.    DESKTOP-O331RO8\SS2019 (15.... | sa (53) | Health | 00:02:11 | 1,575,112 rows
```

As we can see 1,575,112 rows are copied in Health Database’s test table.

Making SSIS Package:

- Another way of importing database to SSMS is to import a database as a package.



SQLQuery1.sql - DESKTOP-O331RO8\SS2019.Health (sa (53)) - Microsoft SQL Server Management Studio (Administrator)
Quick Launch (Ctrl+Q)
File
Edit
View
Project
Tools
Window
Help
New Query
Health
Execute
Object Explorer
Connect
DESKTOP-O331RO8\SS2019 (SQL Server 15
Databases
Security
Server Objects
Replication
PolyBase
Always On High Availability
Management
Integration Services Catalogs
SQL Server Agent (Agent XPs disabled)
XEvent Profiler
DESKTOP-O331RO8 (Integration Services 1
Running Packages
Stored Packages
File System
MSDB
Data Collector
Maintenance Plans
Week02_Export_Health_Details
SQLQuery1.sql - DES...19.Health (sa (53))
100 %
Results
Messages
Activate Windows
Go to Settings to activate Windows.
Ready

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [CredentialNumber]
      ,[LastName]
      ,[FirstName]
      ,[MiddleName]
      ,[CredentIaltype]
      ,[status]
      ,[birthYear]
      ,[Ceduedate]
      ,[Firstissuedate]
      ,[Lastissuedate]
      ,[Expirationdate]
      ,[Actiontaken]
  FROM [Health].[dbo].[test]
```

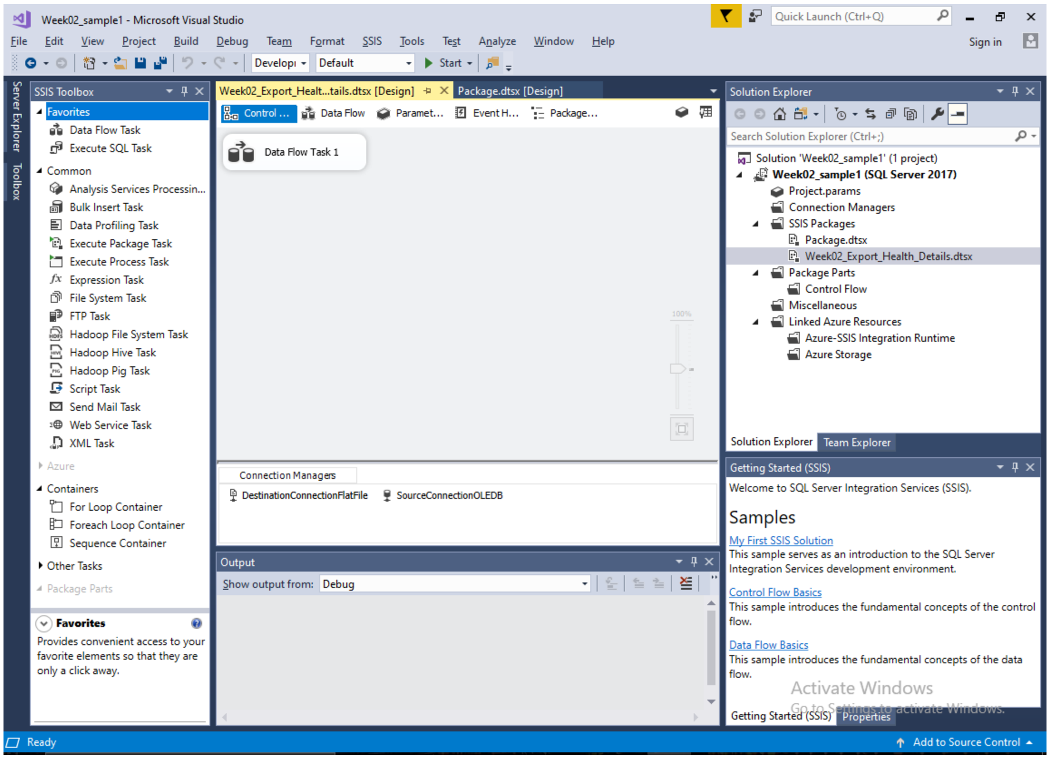
	CredentialNumber	LastName	FirstName	MiddleName	Credentlaltype	s
1	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	
2	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	
3	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968	
4	NULL	Nursing Assistant Registration	EXPIRED	1984	NULL	
5	Counselor Registration	EXPIRED	1957	NULL	20090224	
6	EXPIRED	1990	NULL	20081110	20081110	
7	1967	NULL	19931013	19961202	19961202	
8	NULL	20170913	20180608	20190706	No NC10021659	
9	19930323	19930901	19930901	No RN60503295	McGraw	
10	NULL	NULL	No CG60552906	Biggers	Barbie Jo	
11	20201117	No NA60666607	Rawls	Timothy	Paul	
12	No NA00104992	TERAO	ROSALIND	K	Nursing Assistant Registration	
13	Cornwall	Mikayla	Lynn	Pharmacist Intern Registration	ACTIVE	

Query executed successfully. DESKTOP-O331RO8\SS2019 (15.... sa (53) Health 00:00:07 1,000 rows

- In this screenshot, we can see the same database file is uploaded in the SSMS.
- Directly, importing the flat file source in the SSMS makes the work way easier than Command Prompt.

Creating Staging Table in SSDT:

- Creating the staging table is one of the important step in DW.
- Staging is a temporary table in which you import the database from different environment for stability of the data.
- .dtsx package is imported in SSDT and created a data flow task for the same.
- Now this data will transfer as follows:
  .dtsx file (Flat file Source)→ OLEDB Source → OLEDB Destination



Favorites

Provides convenient access to your favorite elements so that they are only a click away.

Welcome to SQL Server Integration Services (SSIS).

Samples

My First SSIS Solution

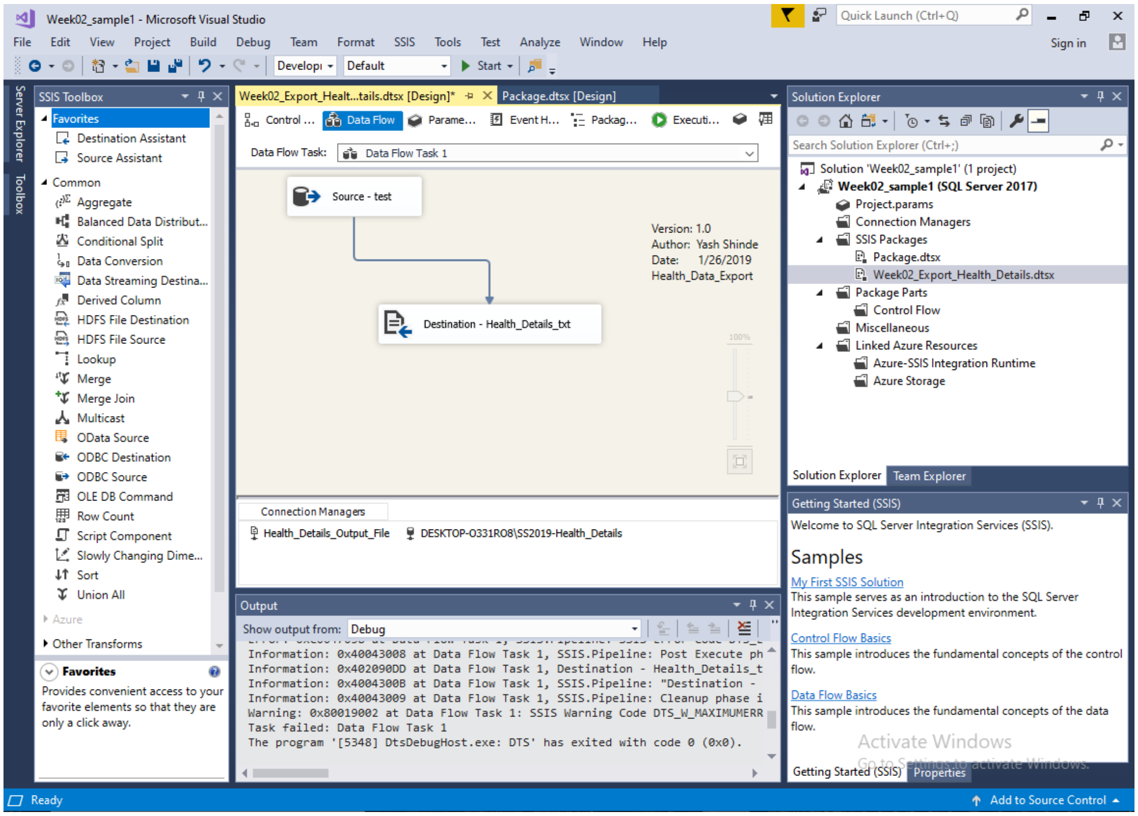
This sample serves as an introduction to the SQL Server Integration Services development environment.

Control Flow Basics

This sample introduces the fundamental concepts of the control flow.

Data Flow Basics

This sample introduces the fundamental concepts of the data flow.



Provides convenient access to your favorite elements so that they are only a click away.

Version: 1.0
Author: Yash Shinde
Date: 1/26/2019
Health_Data_Export

```
Information: 0x40043008 at Data Flow Task 1, SSIS.Pipeline: Post Execute ph
Information: 0x402090DD at Data Flow Task 1, Destination - Health_Details_t
Information: 0x4004300B at Data Flow Task 1, SSIS.Pipeline: "Destination -
Information: 0x40043009 at Data Flow Task 1, SSIS.Pipeline: Cleanup phase i
Warning: 0x80019002 at Data Flow Task 1: SSIS Warning Code DTS_W_MAXIMUMERR
Task failed: Data Flow Task 1
The program '[5348] DtsDebugHost.exe: DTS' has exited with code 0 (0x0).
```

Welcome to SQL Server Integration Services (SSIS).

This sample serves as an introduction to the SQL Server Integration Services development environment.

This sample introduces the fundamental concepts of the control flow.

This sample introduces the fundamental concepts of the data flow.

- Further this data in the staging table can be use for LOOKUP tables.

Data Profiling:

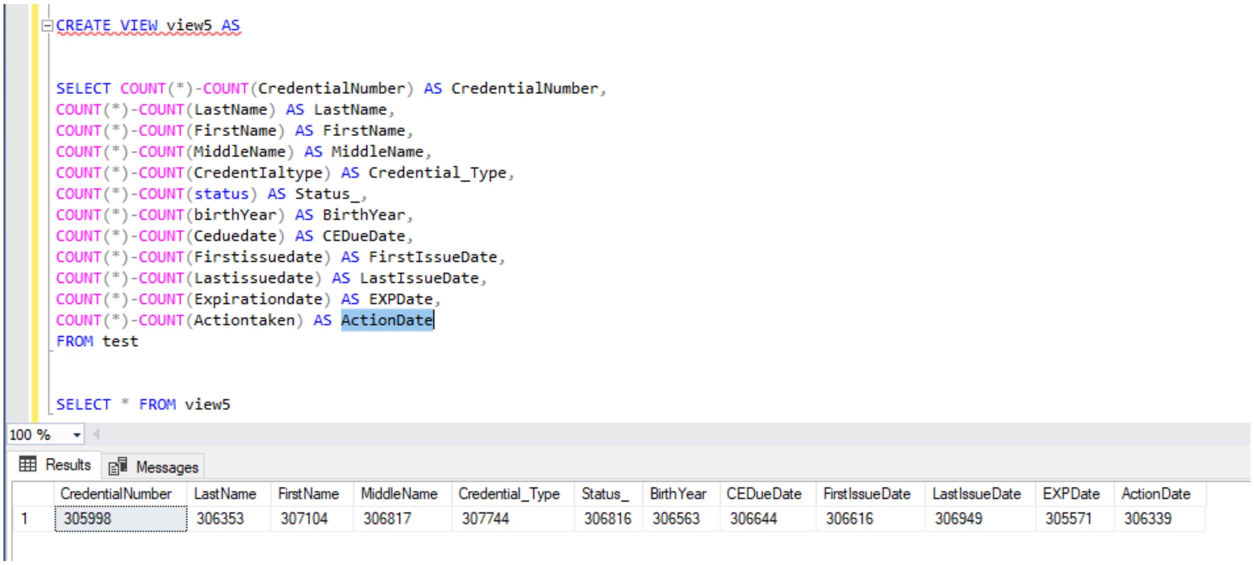
A. Using SSMS

B. Using Talend

A. Using SSMS:

- In this activity, we are learning about 2 methods to learn data profiling and later figure out which one works the best.

1. There are plenty of NULL Values in the health data set in every column:

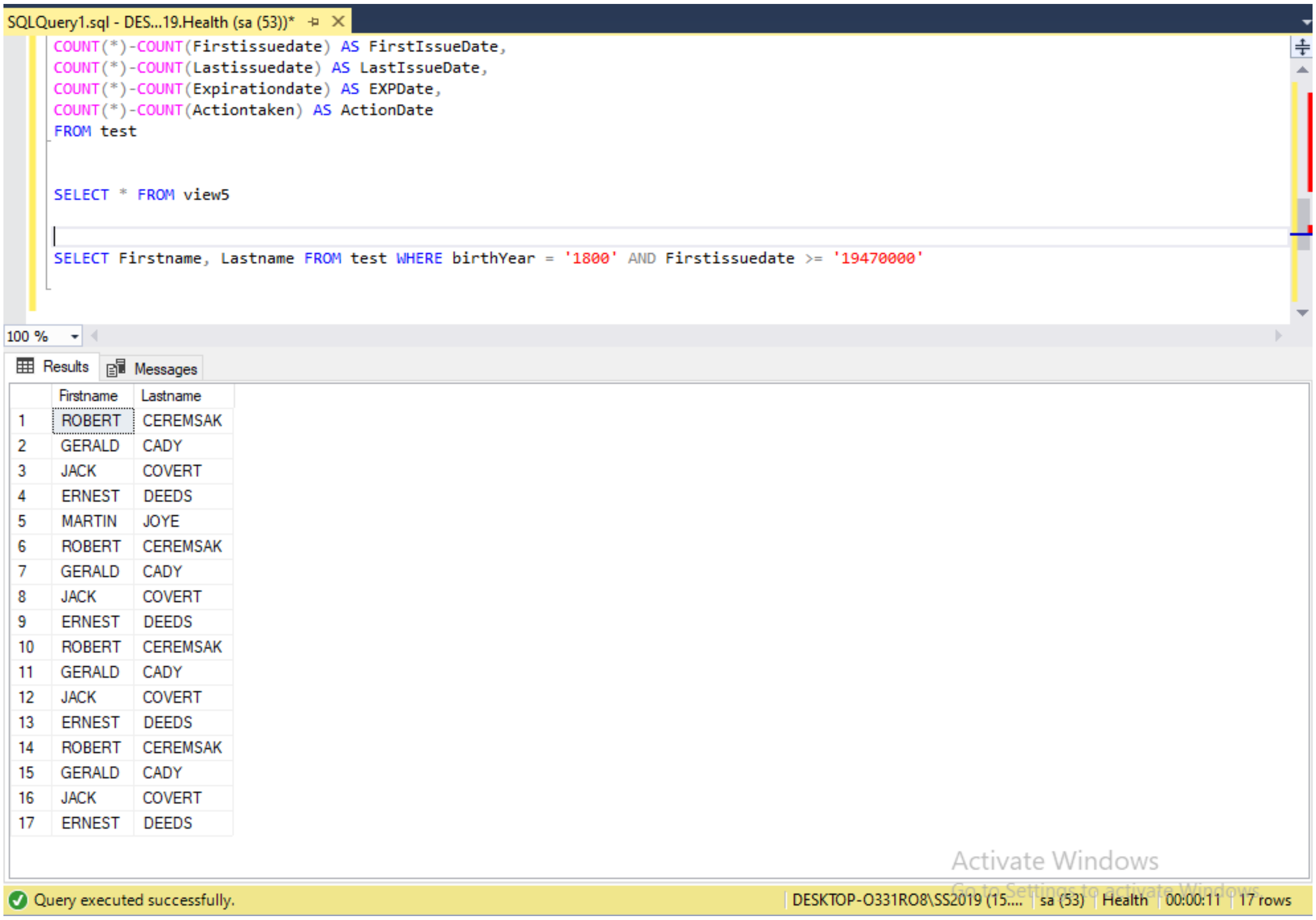


```
CREATE VIEW view5 AS


SELECT COUNT(*)-COUNT(CredentialNumber) AS CredentialNumber,
COUNT(*)-COUNT(LastName) AS LastName,
COUNT(*)-COUNT(FirstName) AS FirstName,
COUNT(*)-COUNT(MiddleName) AS MiddleName,
COUNT(*)-COUNT(CredentIaltype) AS Credential_Type,
COUNT(*)-COUNT(status) AS Status_,
COUNT(*)-COUNT(birthYear) AS BirthYear,
COUNT(*)-COUNT(Ceduedate) AS CEDueDate,
COUNT(*)-COUNT(Firstissuedate) AS FirstIssueDate,
COUNT(*)-COUNT(Lastissuedate) AS LastIssueDate,
COUNT(*)-COUNT(Expirationdate) AS EXPDate,
COUNT(*)-COUNT(Actiontaken) AS ActionDate
FROM test


SELECT * FROM view5
```

	CredentialNumber	LastName	FirstName	MiddleName	Credential_Type	Status_	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	EXPDate	ActionDate
1	305998	306353	307104	306817	307744	306816	306563	306644	306616	306949	305571	306339

If these NULL Values were omitted the data set would have been more structured and smaller in size.

2. Some entries have birth year 1800 and FirstIssueDate more than 19470000 which makes no sense.

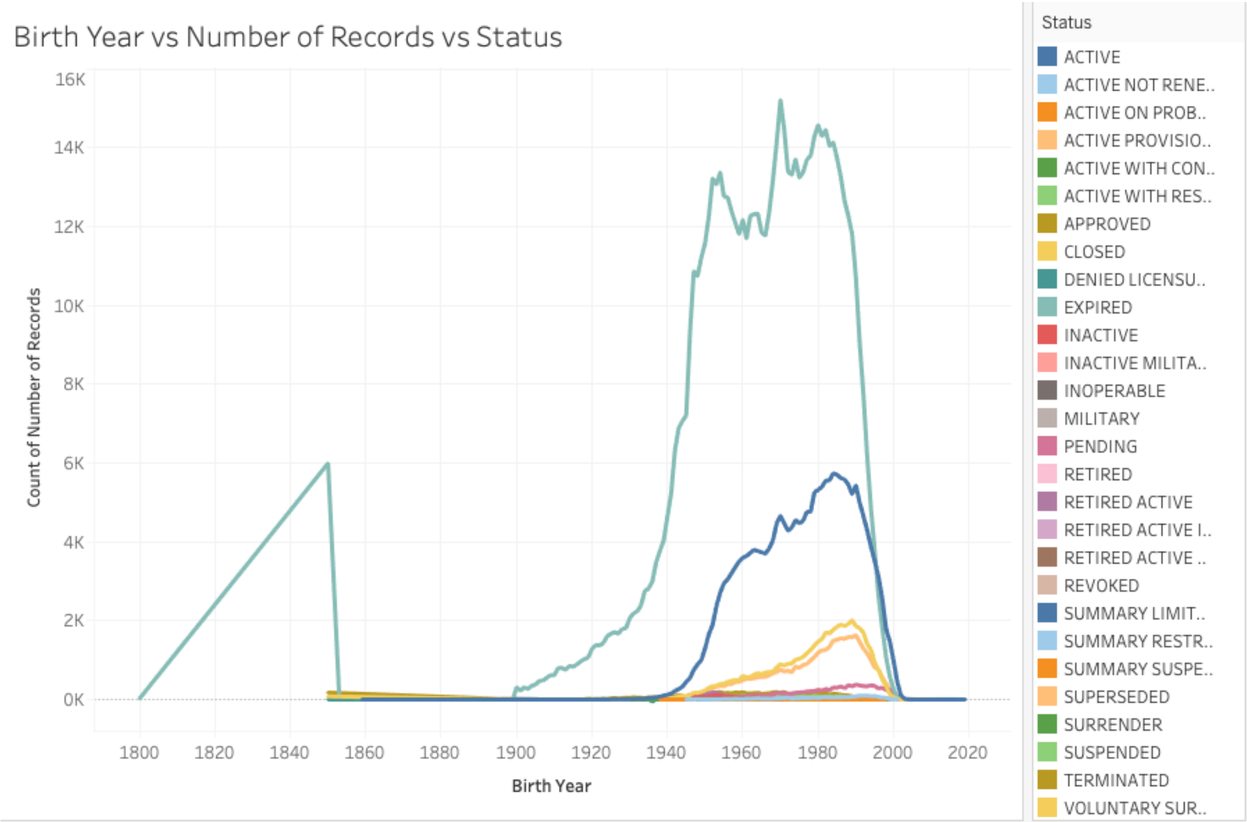


```
COUNT(*)-COUNT(Firstissuedate) AS FirstIssueDate,
COUNT(*)-COUNT(Lastissuedate) AS LastIssueDate,
COUNT(*)-COUNT(Expirationdate) AS EXPDate,
COUNT(*)-COUNT(Actiontaken) AS ActionDate
FROM test


SELECT * FROM view5


SELECT Firstname, Lastname FROM test WHERE birthYear = '1800' AND Firstissuedate >= '19470000'
```

	Firstname	Lastname
1	ROBERT	CEREMSAK
2	GERALD	CADY
3	JACK	COVERT
4	ERNEST	DEEDS
5	MARTIN	JOYE
6	ROBERT	CEREMSAK
7	GERALD	CADY
8	JACK	COVERT
9	ERNEST	DEEDS
10	ROBERT	CEREMSAK
11	GERALD	CADY
12	JACK	COVERT
13	ERNEST	DEEDS
14	ROBERT	CEREMSAK
15	GERALD	CADY
16	JACK	COVERT
17	ERNEST	DEEDS

Query executed successfully. DESKTOP-O331RO8\SS2019 (15.... | sa (53) | Health | 00:00:11 | 17 rows

3. Between year 1860 to 1900 number of records reached lowest possible value

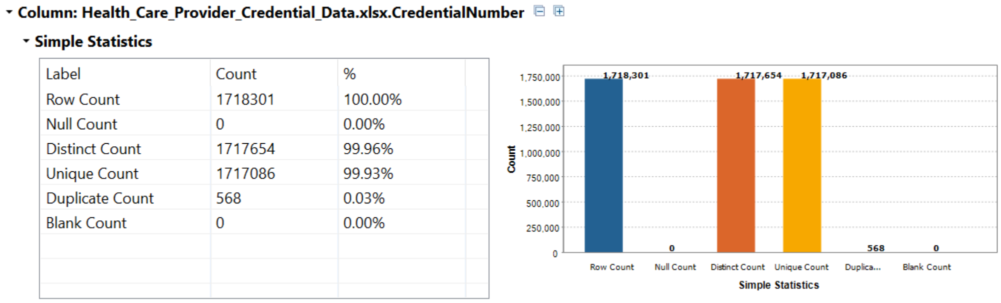


And raised exponentially after year 1900.

3. Dates in the database are recorded in YYYYMMDD format, if it was in default SQL format it would have been better to analyze data.

B. Using Talend:

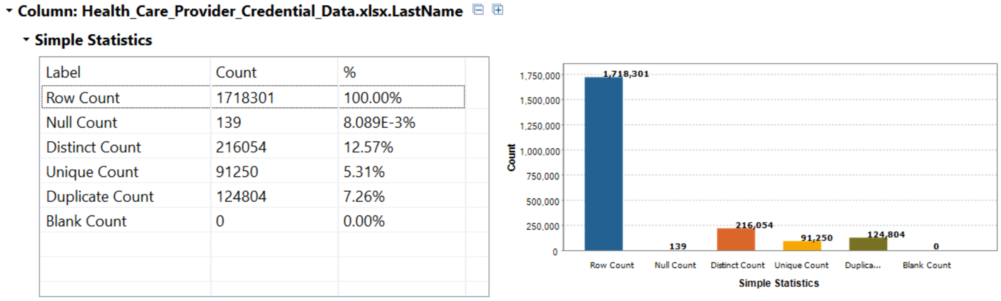
1. Following is the simple statistical analysis performed over data on Talend. In which as we can see, all the types of counts such as Row, Null, Distinct, Unique, Duplicate, and Blank are obtained on a easy click. Unlike while performing the profiling using SSDT where there would be lengthy commands and highly prone to errors with long time to process data, Talend uses certain commands to get quick results.



Column: Health_Care_Provider_Credential_Data.xlsx.CredentialNumber

Simple Statistics

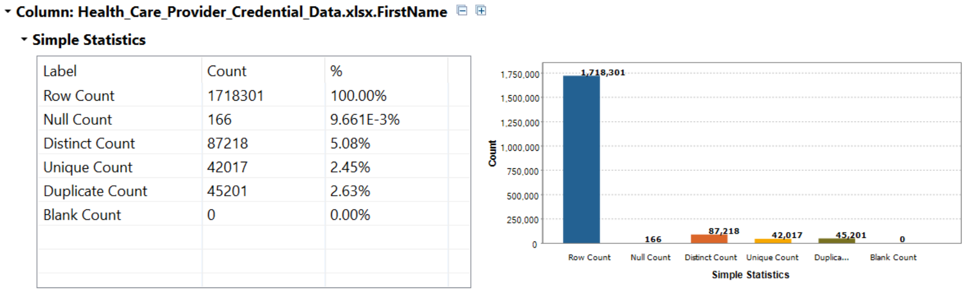
Label	Count	%
Row Count	1718301	100.00%
Null Count	0	0.00%
Distinct Count	1717654	99.96%
Unique Count	1717086	99.93%
Duplicate Count	568	0.03%
Blank Count	0	0.00%



Column: Health_Care_Provider_Credential_Data.xlsx.LastName

Simple Statistics

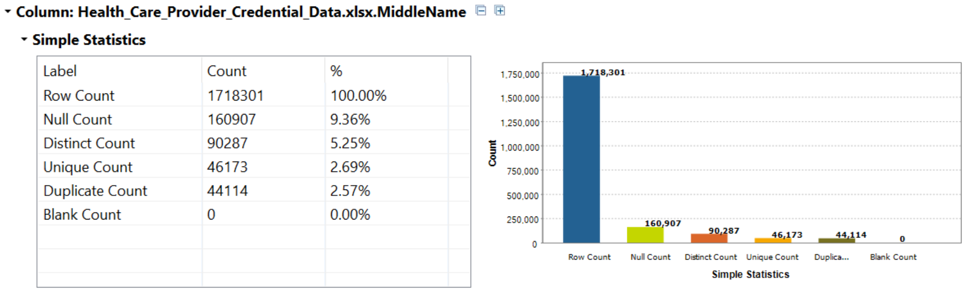
Label	Count	%
Row Count	1718301	100.00%
Null Count	139	8.089E-3%
Distinct Count	216054	12.57%
Unique Count	91250	5.31%
Duplicate Count	124804	7.26%
Blank Count	0	0.00%



Column: Health_Care_Provider_Credential_Data.xlsx.FirstName

Simple Statistics

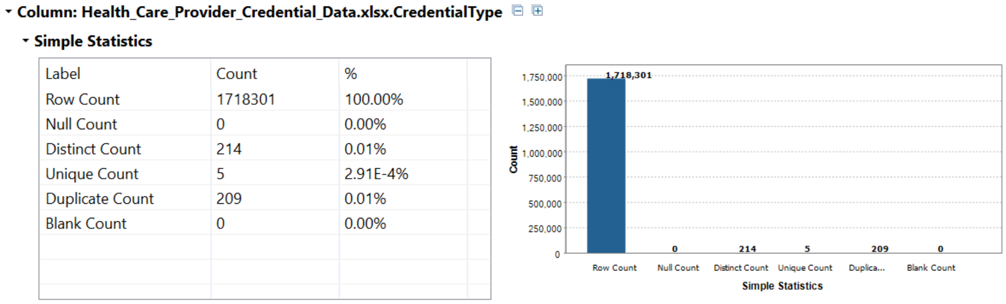
Label	Count	%
Row Count	1718301	100.00%
Null Count	166	9.661E-3%
Distinct Count	87218	5.08%
Unique Count	42017	2.45%
Duplicate Count	45201	2.63%
Blank Count	0	0.00%



Column: Health_Care_Provider_Credential_Data.xlsx.MiddleName

Simple Statistics

Label	Count	%
Row Count	1718301	100.00%
Null Count	160907	9.36%
Distinct Count	90287	5.25%
Unique Count	46173	2.69%
Duplicate Count	44114	2.57%
Blank Count	0	0.00%

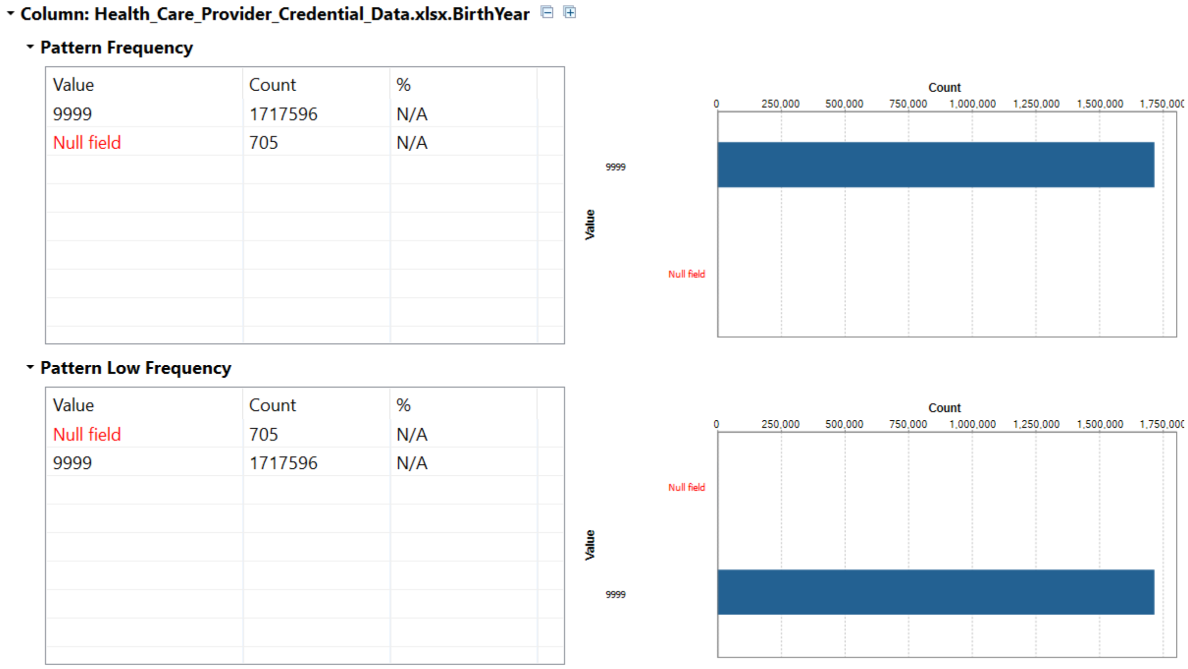


Column: Health_Care_Provider_Credential_Data.xlsx.CredentialType

Simple Statistics

Label	Count	%
Row Count	1718301	100.00%
Null Count	0	0.00%
Distinct Count	214	0.01%
Unique Count	5	2.91E-4%
Duplicate Count	209	0.01%
Blank Count	0	0.00%

2. In this second analysis, I have made an effort to replicate one of the findings from my HW6 where I concluded there were very less No. of records between year 1860 to 1900 using Tableau. Clearly, in the following analysis, it hasn't come out very precise.



Column: Health_Care_Provider_Credential_Data.xlsx.BirthYear

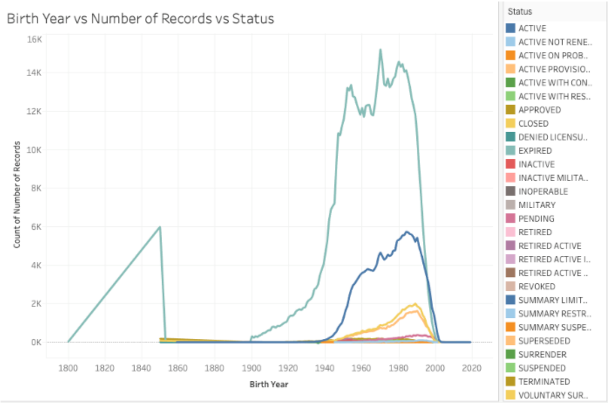
Pattern Frequency

Value	Count	%
9999	1717596	N/A
Null field	705	N/A

Pattern Low Frequency

Value	Count	%
Null field	705	N/A
9999	1717596	N/A

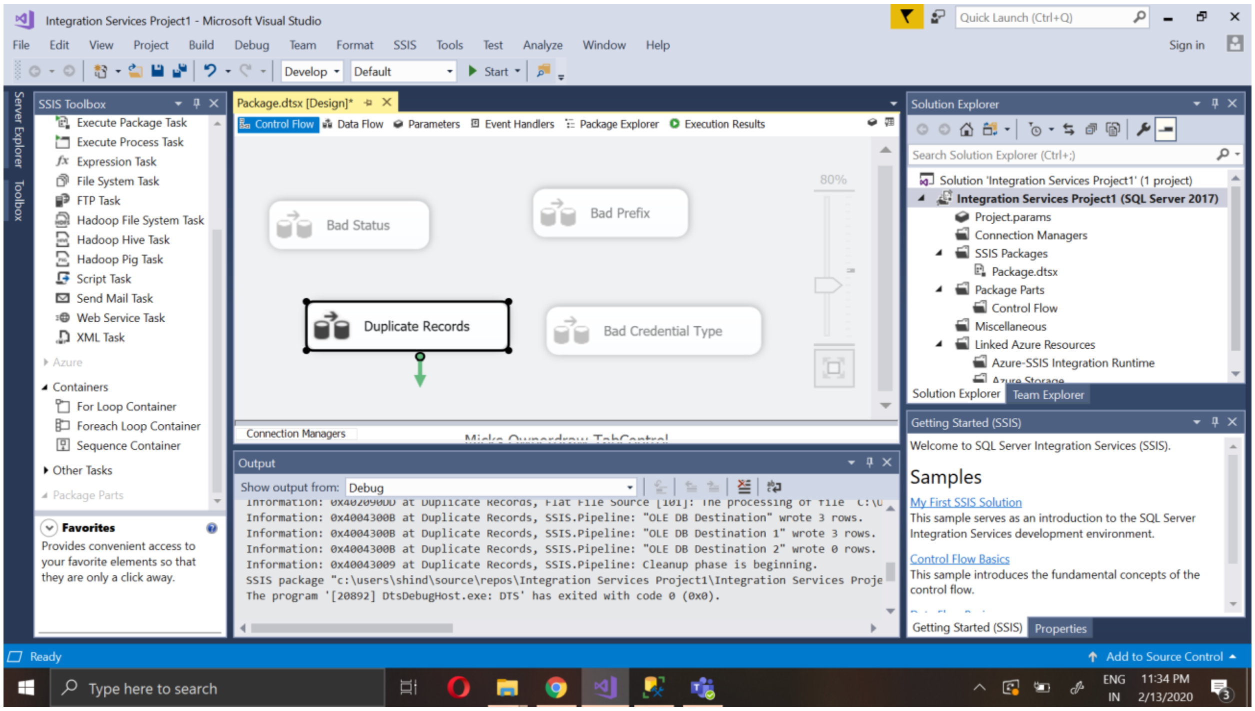
Below is the tableau representation of the same matter.



ERROR Handling:

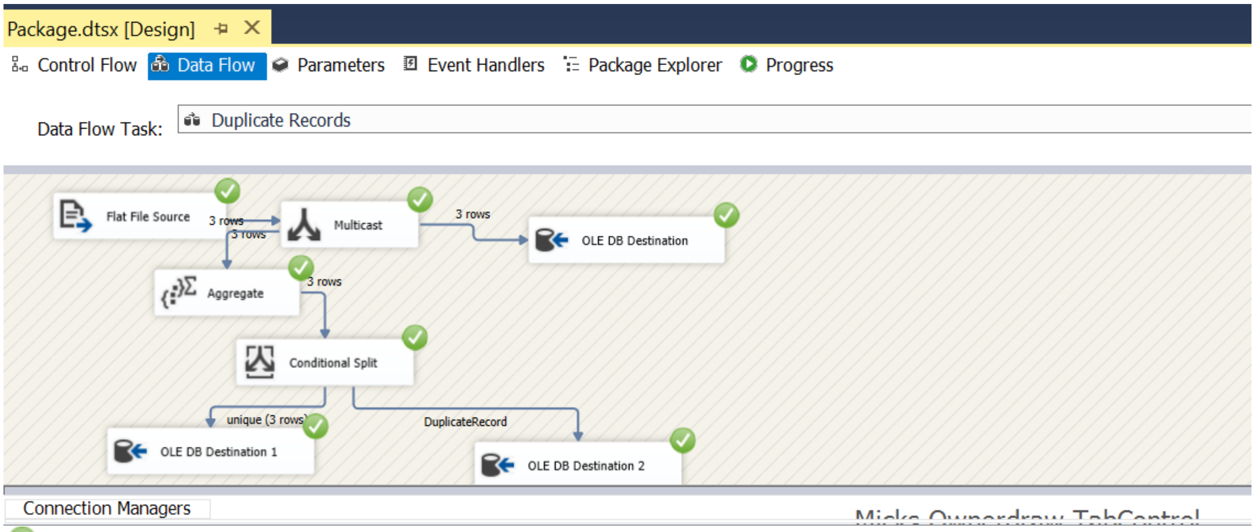
- In this activity, we will be learning to handle errors in the dataset.
- Duplicate records, bad status, bad credential type are sorted using LOOKUP tables and further put into destination table and error table.

- 1. Duplicate Records

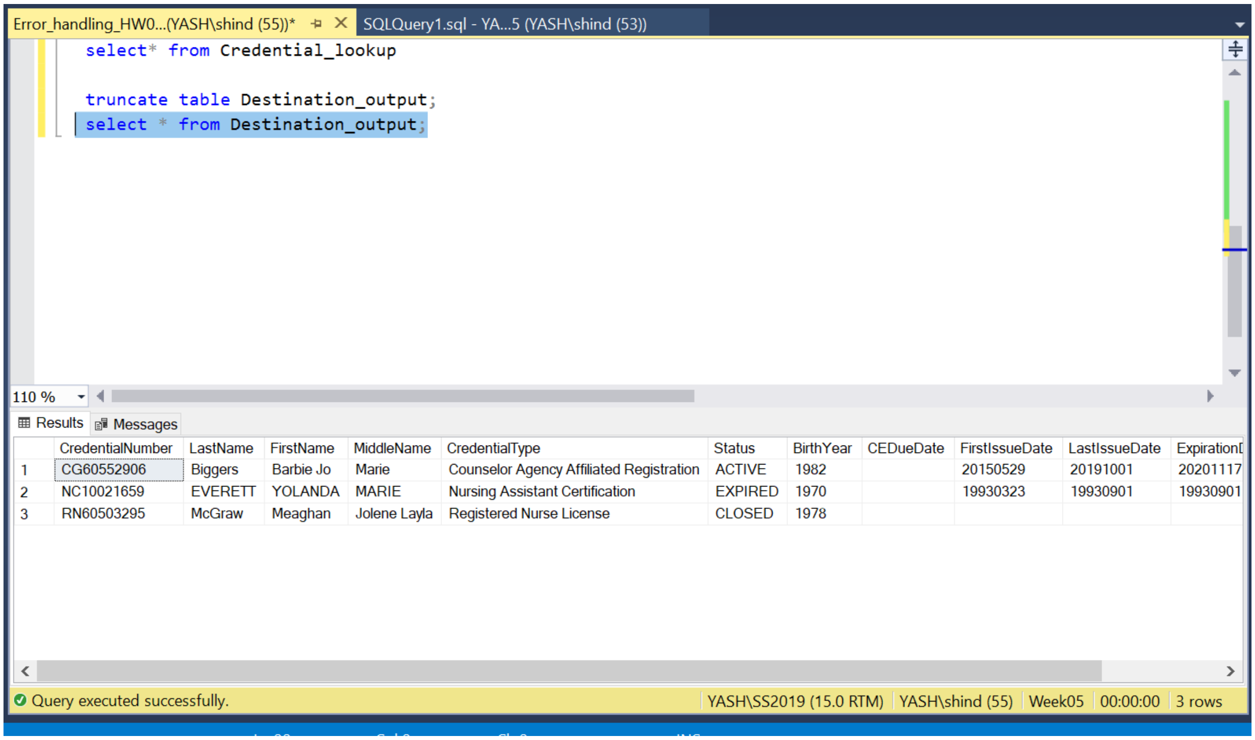


```
Information: 0x402090DD at Duplicate Records, Flat File Source [101]: The processing of file  C:\U
Information: 0x4004300B at Duplicate Records, SSIS.Pipeline: "OLE DB Destination" wrote 3 rows.
Information: 0x4004300B at Duplicate Records, SSIS.Pipeline: "OLE DB Destination 1" wrote 3 rows.
Information: 0x4004300B at Duplicate Records, SSIS.Pipeline: "OLE DB Destination 2" wrote 0 rows.
Information: 0x40043009 at Duplicate Records, SSIS.Pipeline: Cleanup phase is beginning.
SSIS package "c:\users\shind\source\repos\Integration Services Project1\Integration Services Proje
The program '[20892] DtsDebugHost.exe: DTS' has exited with code 0 (0x0).
```

-



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

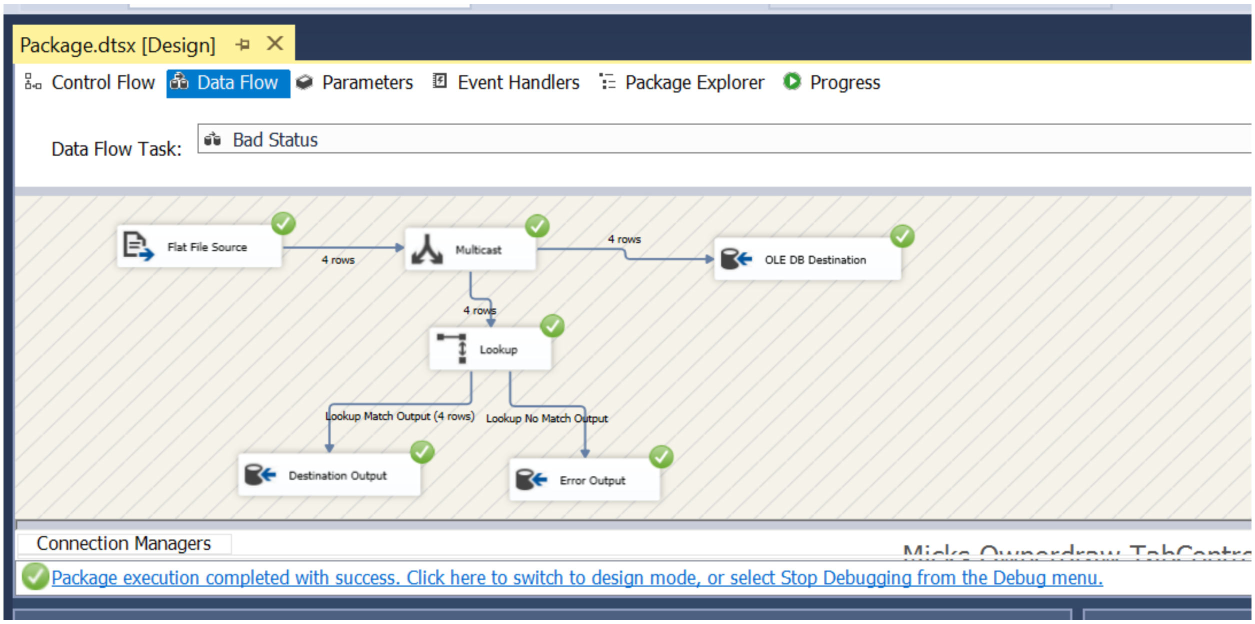

Error_handling_HW0...(YASH\shind (55))*
SQLQuery1.sql - YA...5 (YASH\shind (53))
110 %
Results
Messages

```sql
select* from Credential_lookup

truncate table Destination_output;
select * from Destination_output;
```

	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	Expiration
1	CG60552906	Biggers	Barbie Jo	Marie	Counselor Agency Affiliated Registration	ACTIVE	1982		20150529	20191001	20201117
2	NC10021659	EVERETT	YOLANDA	MARIE	Nursing Assistant Certification	EXPIRED	1970		19930323	19930901	19930901
3	RN60503295	McGraw	Meaghan	Jolene Layla	Registered Nurse License	CLOSED	1978				

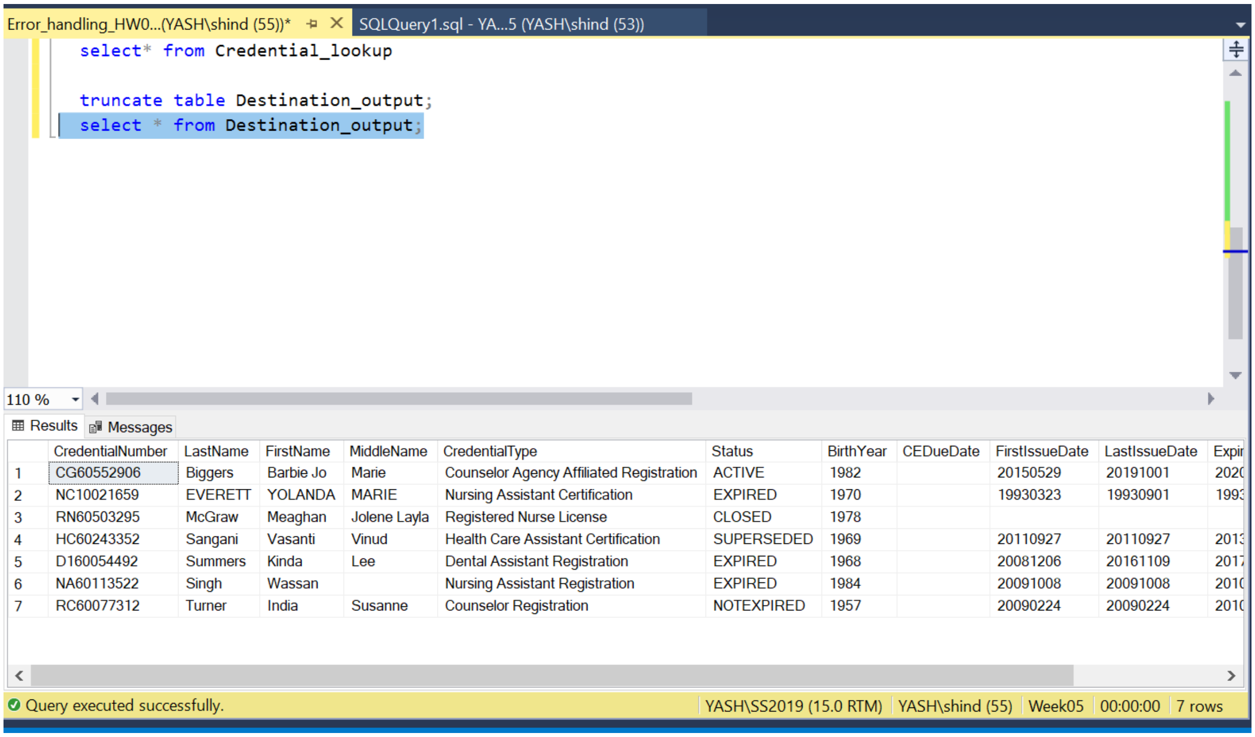
Query executed successfully. YASH\SS2019 (15.0 RTM) YASH\shind (55) Week05 00:00:00 3 rows

-
- 2. Bad Status
-



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

-



Error_handling_HW0...(YASH\shind (55))*
SQLQuery1.sql - YA...5 (YASH\shind (53))

```
select* from Credential_lookup

truncate table Destination_output;
select * from Destination_output;
```

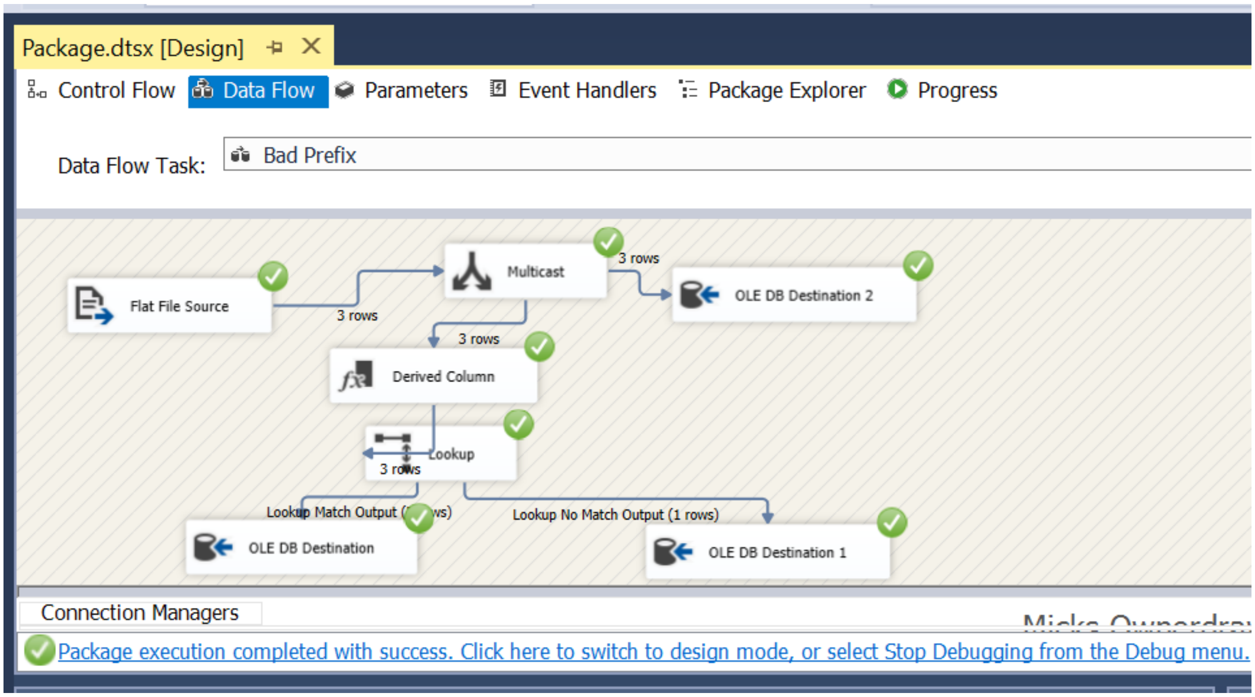
110 %

Results | Messages

	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	Expir
1	CG60552906	Biggers	Barbie Jo	Marie	Counselor Agency Affiliated Registration	ACTIVE	1982		20150529	20191001	202
2	NC10021659	EVERETT	YOLANDA	MARIE	Nursing Assistant Certification	EXPIRED	1970		19930323	19930901	199
3	RN60503295	McGraw	Meaghan	Jolene Layla	Registered Nurse License	CLOSED	1978				
4	HC60243352	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	1969		20110927	20110927	201
5	D160054492	Summers	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968		20081206	20161109	201
6	NA60113522	Singh	Wassan		Nursing Assistant Registration	EXPIRED	1984		20091008	20091008	201
7	RC60077312	Turner	India	Susanne	Counselor Registration	NOTEXPIRED	1957		20090224	20090224	201

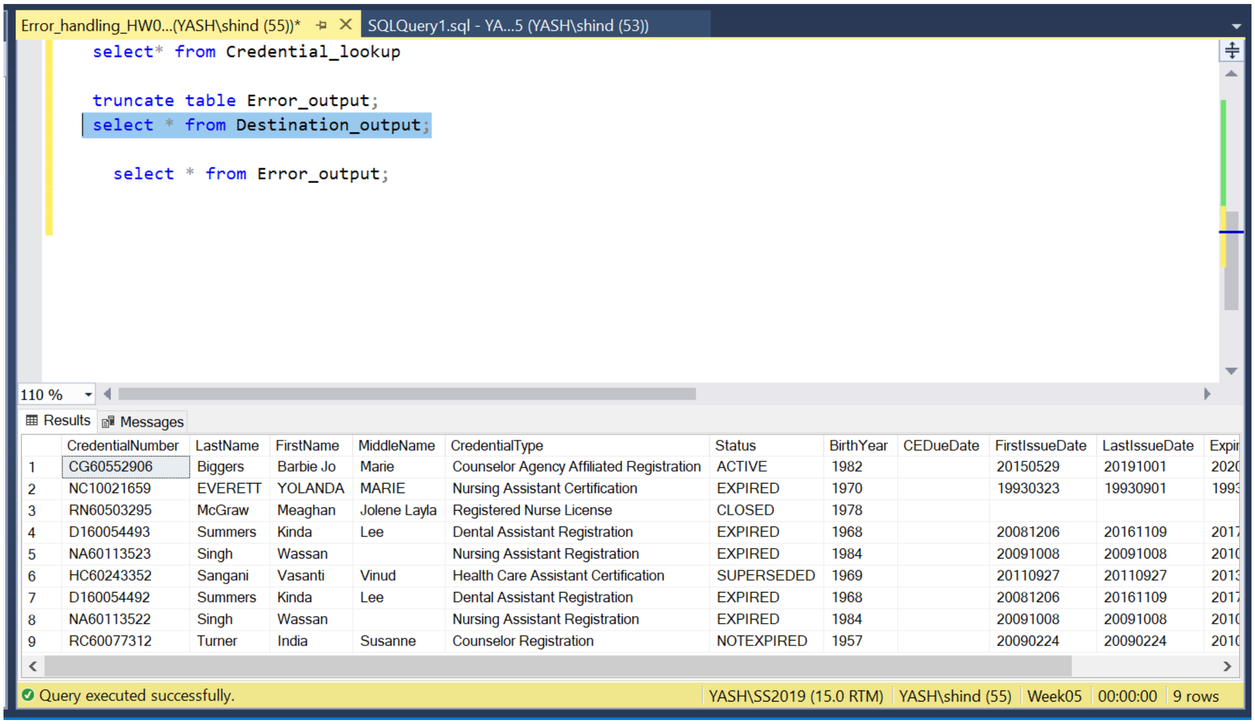
Query executed successfully. | YASH\SS2019 (15.0 RTM) | YASH\shind (55) | Week05 | 00:00:00 | 7 rows

- 3. Bad Prefix



Data Flow Task: Bad Prefix

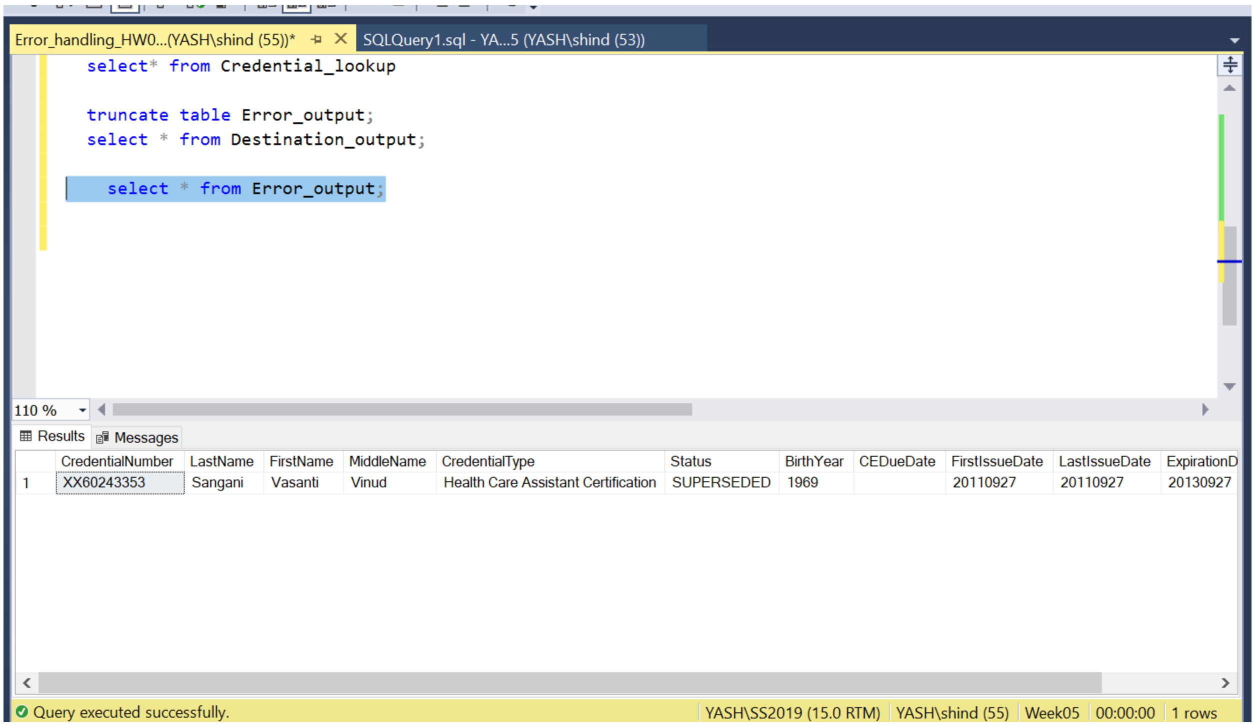
Package execution completed with success. Click here to switch to design mode, or select Stop Debugging from the Debug menu.


Error_handling_HW0...(YASH\shind (55))*
SQLQuery1.sql - YA...5 (YASH\shind (53))
110 %
Results
Messages

```
select* from Credential_lookup

truncate table Error_output;
select * from Destination_output;

  select * from Error_output;
```

	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	Expir
1	CG60552906	Biggers	Barbie Jo	Marie	Counselor Agency Affiliated Registration	ACTIVE	1982		20150529	20191001	202
2	NC10021659	EVERETT	YOLANDA	MARIE	Nursing Assistant Certification	EXPIRED	1970		19930323	19930901	199
3	RN60503295	McGraw	Meaghan	Jolene Layla	Registered Nurse License	CLOSED	1978				
4	D160054493	Summers	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968		20081206	20161109	201
5	NA60113523	Singh	Wassan		Nursing Assistant Registration	EXPIRED	1984		20091008	20091008	201
6	HC60243352	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	1969		20110927	20110927	201
7	D160054492	Summers	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968		20081206	20161109	201
8	NA60113522	Singh	Wassan		Nursing Assistant Registration	EXPIRED	1984		20091008	20091008	201
9	RC60077312	Turner	India	Susanne	Counselor Registration	NOTEXPIRED	1957		20090224	20090224	201

Query executed successfully. | YASH\SS2019 (15.0 RTM) | YASH\shind (55) | Week05 | 00:00:00 | 9 rows

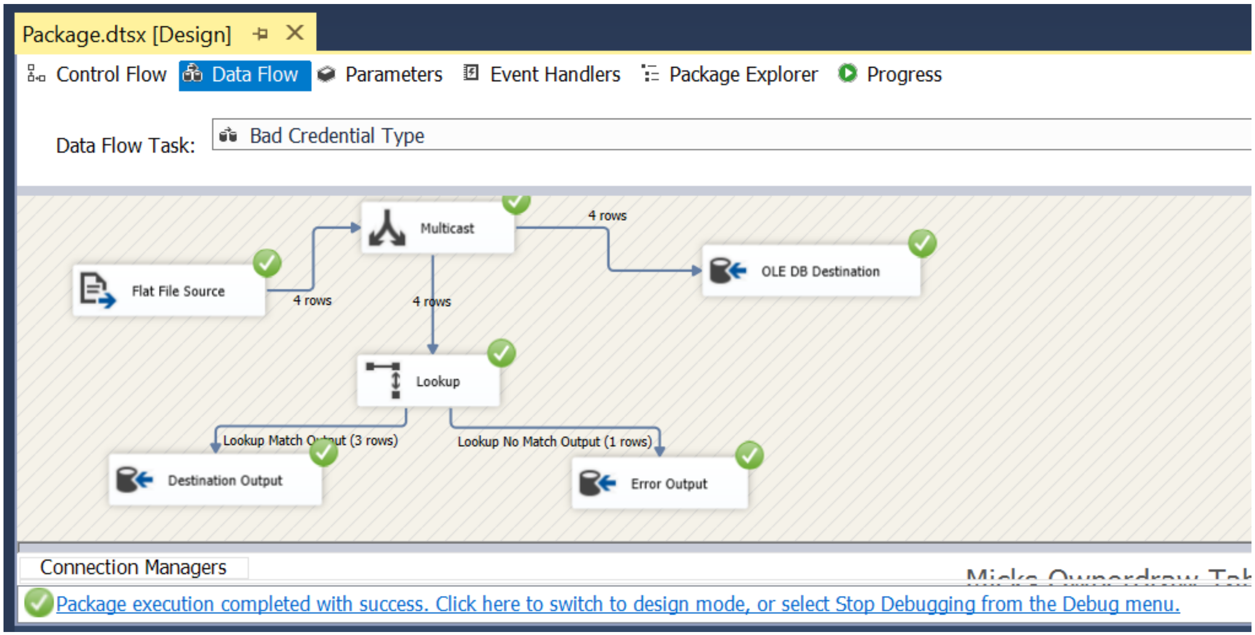

Error_handling_HW0...(YASH\shind (55))*
SQLQuery1.sql - YA...5 (YASH\shind (53))
110 %
Results
Messages

```
select* from Credential_lookup

truncate table Error_output;
select * from Destination_output;

  select * from Error_output;
```

	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	ExpirationD
1	XX60243353	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	1969		20110927	20110927	20130927

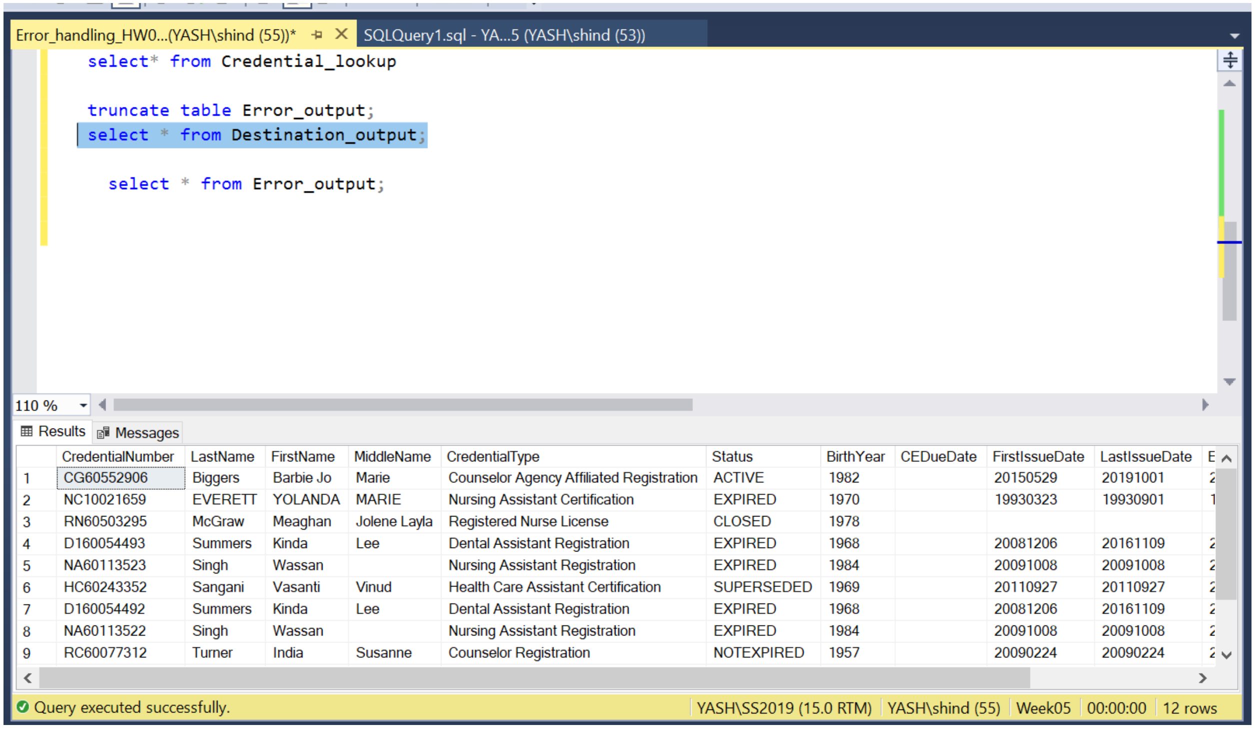
Query executed successfully. | YASH\SS2019 (15.0 RTM) | YASH\shind (55) | Week05 | 00:00:00 | 1 rows

- 4. Bad Credential Type



Data Flow Task: Bad Credential Type

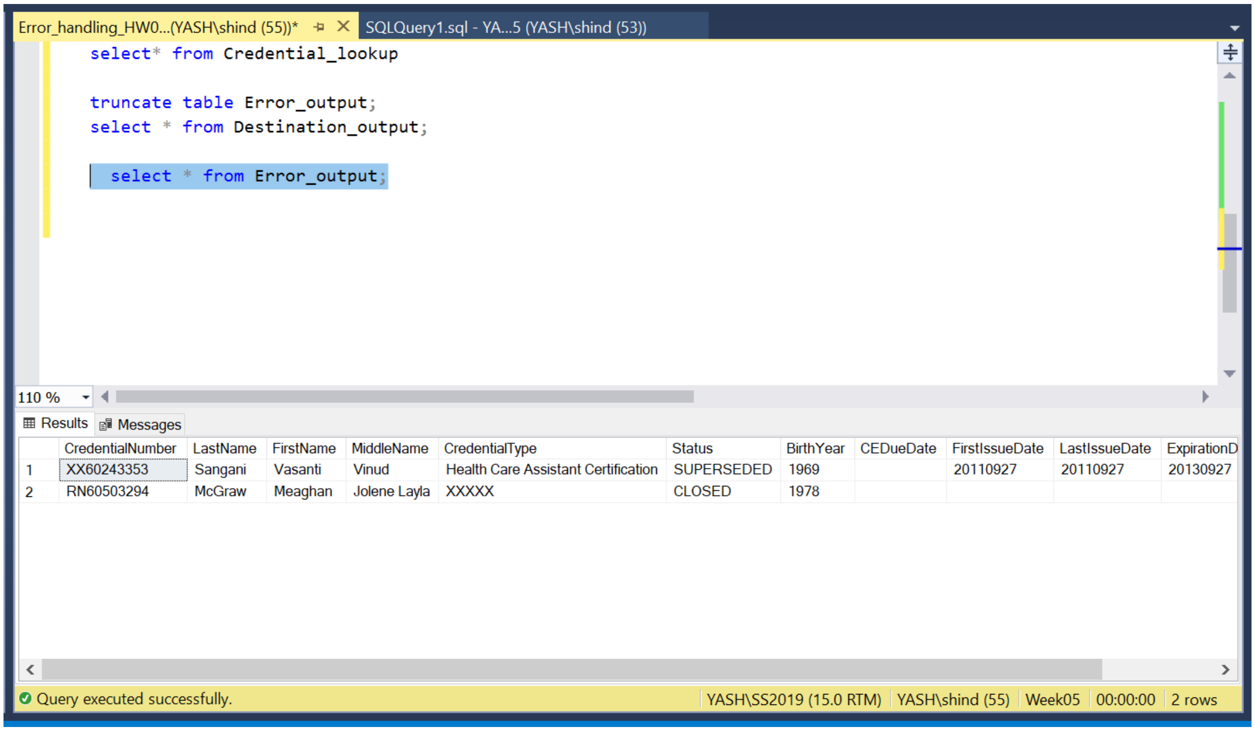
Package execution completed with success. Click here to switch to design mode, or select Stop Debugging from the Debug menu.


Error_handling_HW0...(YASH\shind (55))*
SQLQuery1.sql - YA...5 (YASH\shind (53))
110 %
Results
Messages

```
select* from Credential_lookup

truncate table Error_output;
select * from Destination_output;

  select * from Error_output;
```

	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	E
1	CG60552906	Biggers	Barbie Jo	Marie	Counselor Agency Affiliated Registration	ACTIVE	1982		20150529	20191001	2
2	NC10021659	EVERETT	YOLANDA	MARIE	Nursing Assistant Certification	EXPIRED	1970		19930323	19930901	1
3	RN60503295	McGraw	Meaghan	Jolene Layla	Registered Nurse License	CLOSED	1978				
4	D160054493	Summers	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968		20081206	20161109	2
5	NA60113523	Singh	Wassan		Nursing Assistant Registration	EXPIRED	1984		20091008	20091008	2
6	HC60243352	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	1969		20110927	20110927	2
7	D160054492	Summers	Kinda	Lee	Dental Assistant Registration	EXPIRED	1968		20081206	20161109	2
8	NA60113522	Singh	Wassan		Nursing Assistant Registration	EXPIRED	1984		20091008	20091008	2
9	RC60077312	Turner	India	Susanne	Counselor Registration	NOTEXPIRED	1957		20090224	20090224	2

Query executed successfully. YASH\SS2019 (15.0 RTM) YASH\shind (55) Week05 00:00:00 12 rows

- 

Error_handling_HW0...(YASH\shind (55))*
SQLQuery1.sql - YA...5 (YASH\shind (53))
110 %
Results
Messages

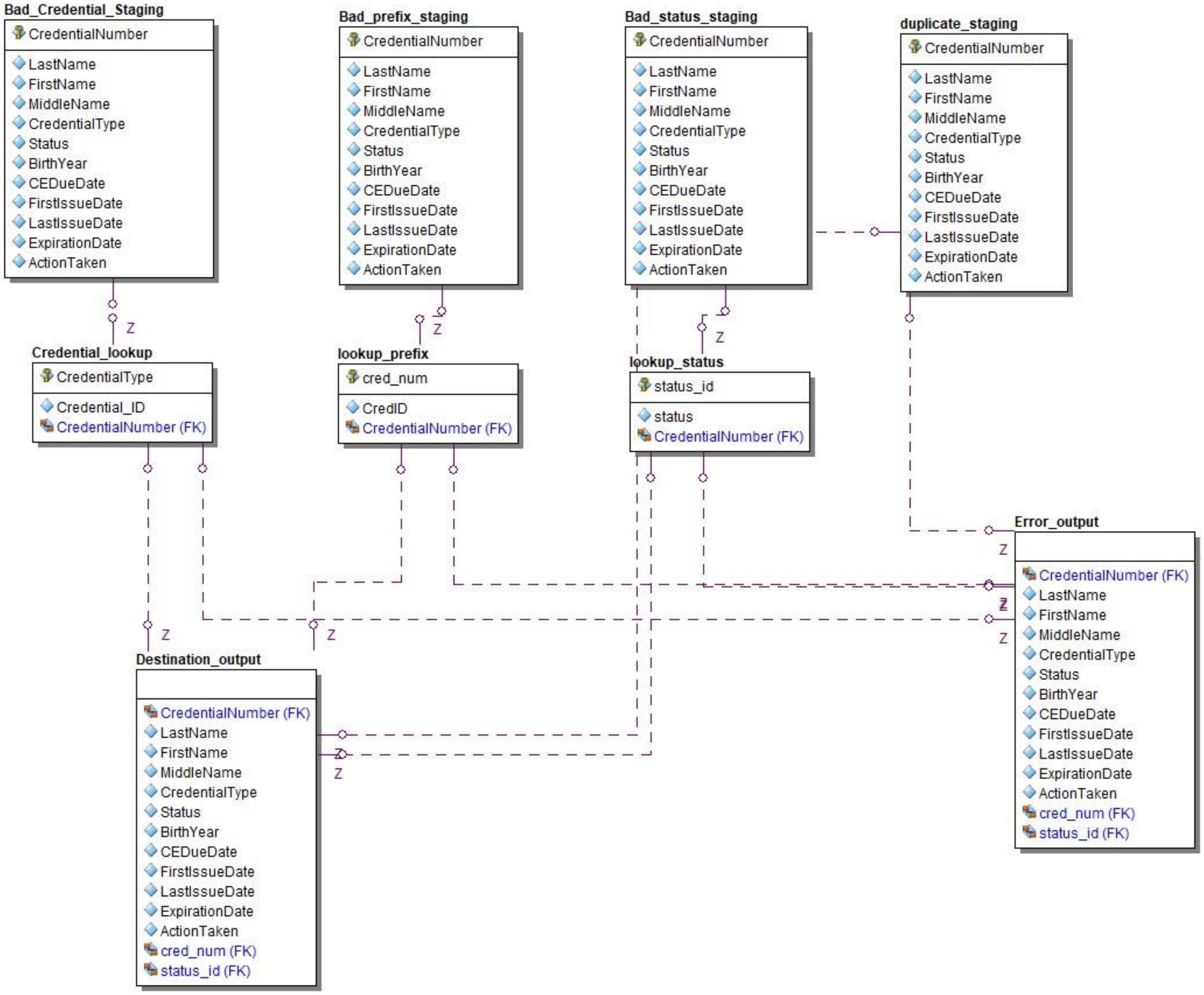
```
select* from Credential_lookup

truncate table Error_output;
select * from Destination_output;

select * from Error_output;
```

	CredentialNumber	LastName	FirstName	MiddleName	CredentialType	Status	BirthYear	CEDueDate	FirstIssueDate	LastIssueDate	ExpirationD
1	XX60243353	Sangani	Vasanti	Vinud	Health Care Assistant Certification	SUPERSEDED	1969		20110927	20110927	20130927
2	RN60503294	McGraw	Meaghan	Jolene Layla	XXXXX	CLOSED	1978				

Query executed successfully.

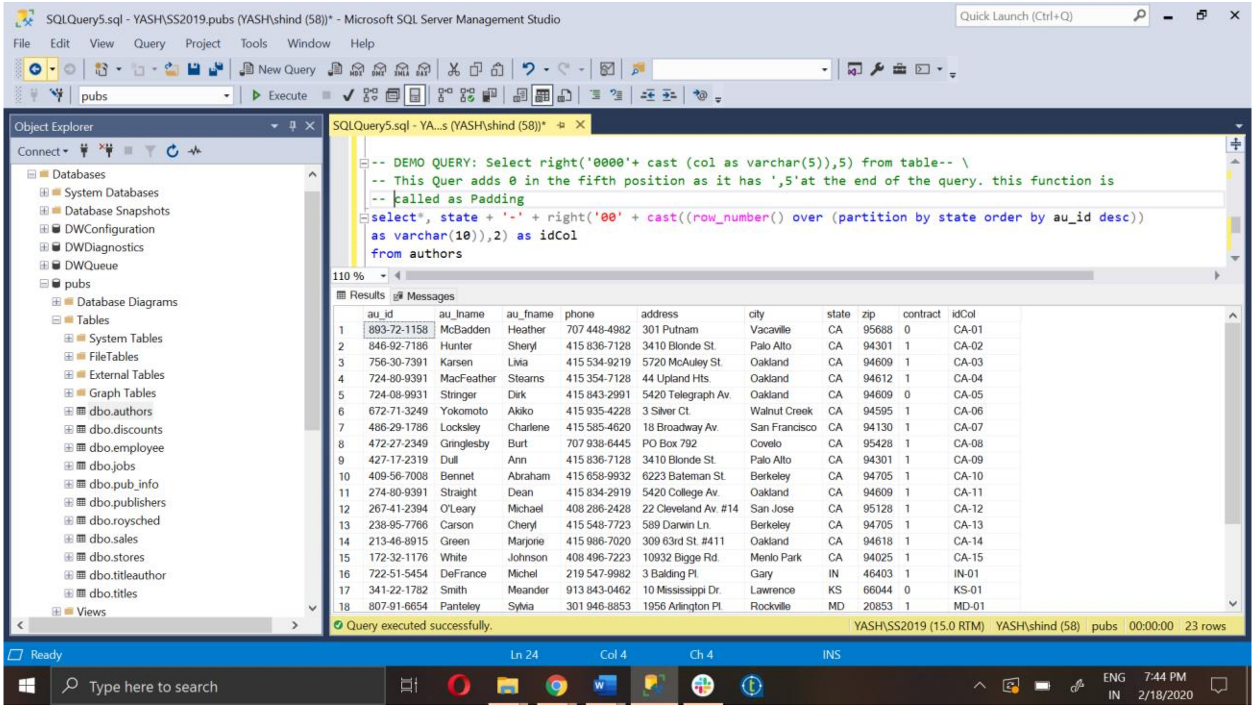
ER Studio:

- This activity taught us to export the staging tables into ER Studio.
- We use ER Studio Data Architect to manage physical model naming standards (especially in sensitive and sometimes ambiguous shorthand.
- The tables are created and the relationship is maintained showing primary keys, Foreign keys and ERROR and DESTINATION Table.



SQL KEY GENERATOR:

- It’s the process of adding prefix to the attribute in column.
- We have used right function to put prefix before the string, this process is called Padding.



SQLQuery5.sql - YASH\SS2019.pubs (YASH\shind (58))* - Microsoft SQL Server Management Studio

```
-- DEMO QUERY: Select right('0000'+ cast (col as varchar(5)),5) from table-- \
-- This Quer adds 0 in the fifth position as it has ',5'at the end of the query. this function is
-- called as Padding
select*, state + '-' + right('00' + cast((row_number() over (partition by state order by au_id desc))
as varchar(10)),2) as idCol
from authors
```

	au_id	au_lname	au_fname	phone	address	city	state	zip	contract	idCol
1	893-72-1158	McBadden	Heather	707 448-4982	301 Putnam	Vacaville	CA	95688	0	CA-01
2	846-92-7186	Hunter	Sheryl	415 836-7128	3410 Blonde St.	Palo Alto	CA	94301	1	CA-02
3	756-30-7391	Karsen	Livia	415 534-9219	5720 McAuley St.	Oakland	CA	94609	1	CA-03
4	724-80-9391	MacFeather	Stearns	415 354-7128	44 Upland Hts.	Oakland	CA	94612	1	CA-04
5	724-08-9931	Stringer	Dirk	415 843-2991	5420 Telegraph Av.	Oakland	CA	94609	0	CA-05
6	672-71-3249	Yokomoto	Akiko	415 935-4228	3 Silver Ct.	Walnut Creek	CA	94595	1	CA-06
7	486-29-1786	Locksley	Charlene	415 585-4620	18 Broadway Av.	San Francisco	CA	94130	1	CA-07
8	472-27-2349	Gringlesby	Burt	707 938-6445	PO Box 792	Covelo	CA	95428	1	CA-08
9	427-17-2319	Dull	Ann	415 836-7128	3410 Blonde St.	Palo Alto	CA	94301	1	CA-09
10	409-56-7008	Bennet	Abraham	415 658-9932	6223 Bateman St.	Berkeley	CA	94705	1	CA-10
11	274-80-9391	Straight	Dean	415 834-2919	5420 College Av.	Oakland	CA	94609	1	CA-11
12	267-41-2394	O'Leary	Michael	408 286-2428	22 Cleveland Av. #14	San Jose	CA	95128	1	CA-12
13	238-95-7766	Carson	Cheryl	415 548-7723	589 Darwin Ln.	Berkeley	CA	94705	1	CA-13
14	213-46-8915	Green	Marjorie	415 986-7020	309 63rd St. #411	Oakland	CA	94618	1	CA-14
15	172-32-1176	White	Johnson	408 496-7223	10932 Bigge Rd.	Menlo Park	CA	94025	1	CA-15
16	722-51-5454	DeFrance	Michel	219 547-9982	3 Balding Pl.	Gary	IN	46403	1	IN-01
17	341-22-1782	Smith	Meander	913 843-0462	10 Mississippi Dr.	Lawrence	KS	66044	0	KS-01
18	807-91-6654	Panteley	Sylvia	301 946-8853	1956 Arlington Pl.	Rockville	MD	20853	1	MD-01

Query executed successfully. YASH\SS2019 (15.0 RTM) YASH\shind (58) pubs 00:00:00 23 rows