

Title: ITMD526_Assignment_03

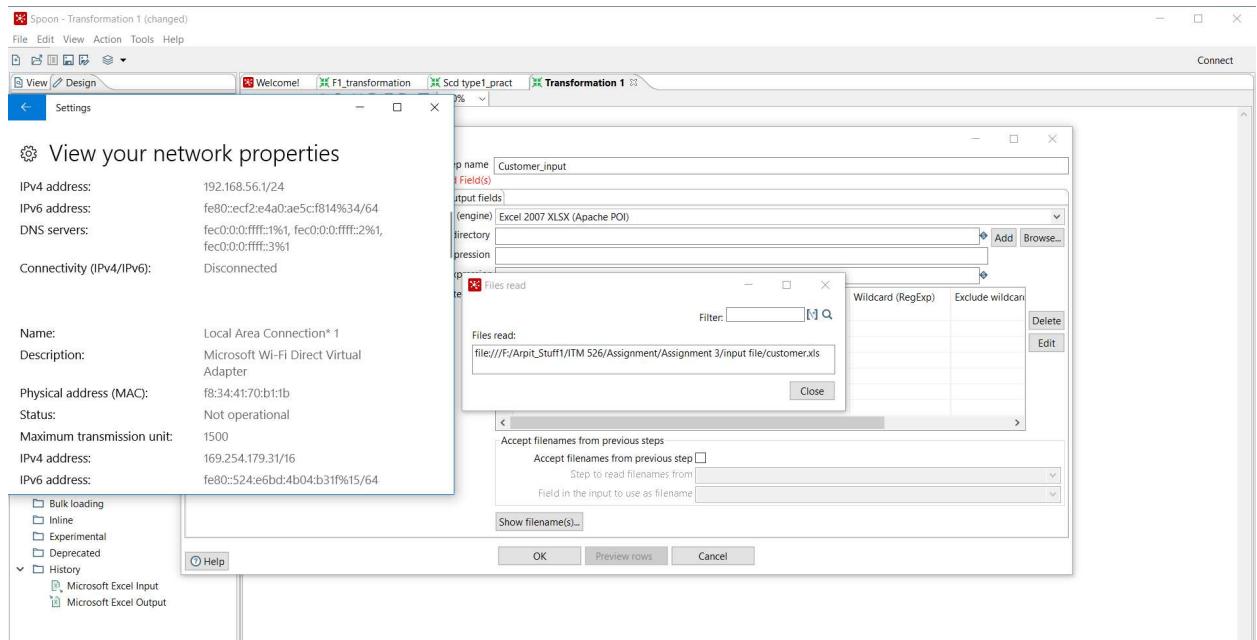
First Name	Last Name	CWID
Arpit	Khandekar	A20409171

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1. Slowly Changing Dimension Type |(Update) Transformation

1. First, we need to take Microsoft Excel input as an input in our transformation.
2. Then in Pentaho tool I have drag and drop Microsoft excel as an input named as 'Customer_input'



3. I have browse a xlsx file from the directory and uploaded in Excel input.
4. Preview of 1000 rows from the excel.

The screenshot shows the Pentaho Spoon interface. On the left, there is a transformation step named 'Transformation 1 (changed)' with a preview window displaying a table of customer data. On the right, a 'Settings' dialog box is open, titled 'View your network properties'. This dialog lists various network configuration details such as IP addresses, MAC address, and connectivity status.

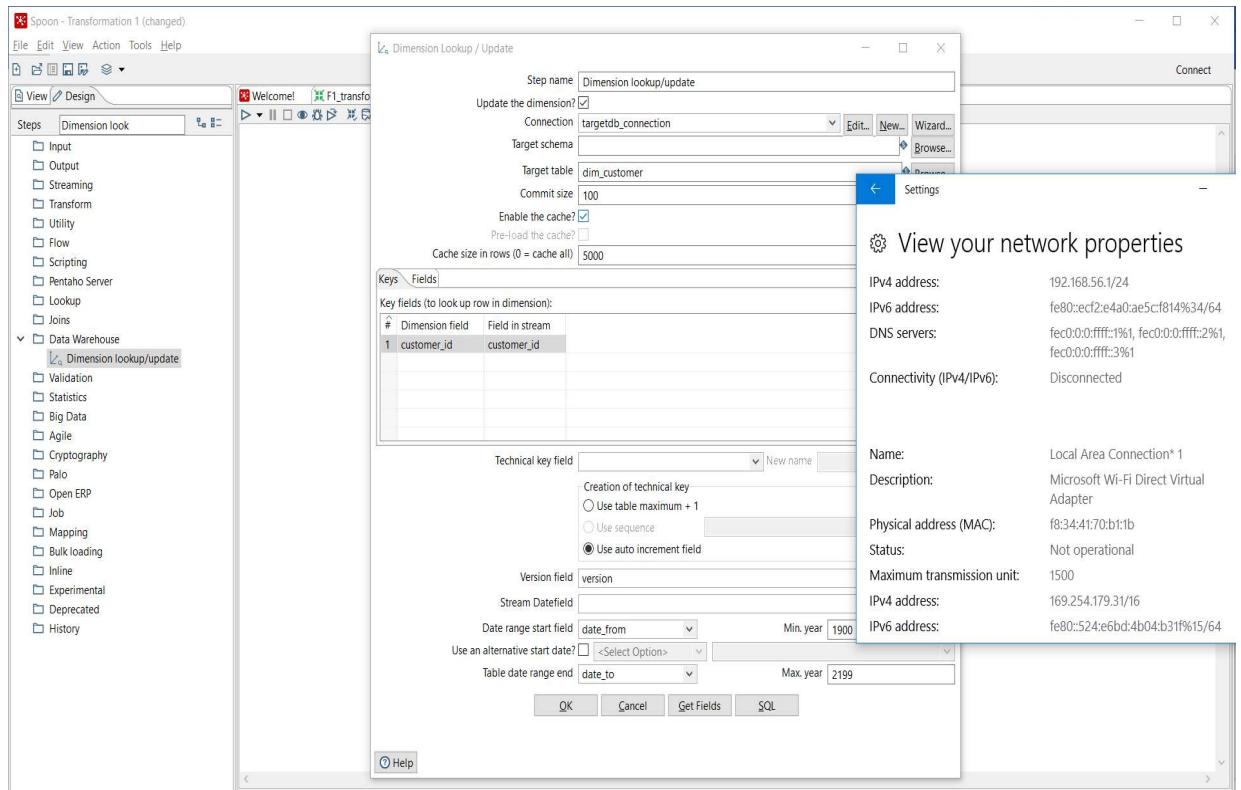
#	customer_id	first_name	last_name	date_of_birth	city	state	date_updated
1	C1050	BethAnn	Cox	1993/01/03 00:00:00.000	New York	New York	2015/01/01 00:00:00.000
2	C1197	Panpan	Bressler	1992/01/30 00:00:00.000	PHILADELPHIA	Pennsylvania	2015/01/01 00:00:00.000
3	C16400	Tairan	Adelson	1993/06/30 00:00:00.000	Pittsburgh	Pennsylvania	2015/01/01 00:00:00.000
4	C16474	Marco	Hussie	1971/01/29 00:00:00.000	Pittsburgh	Pennsylvania	2015/01/01 00:00:00.000
5	C1050	BethAnn	Cox	1993/01/03 00:00:00.000	Chicago	Illinois	2016/03/05 00:00:00.000
6	C1050	BethAnn	Cox	1993/03/01 00:00:00.000	Chicago	Illinois	2016/09/04 00:00:00.000
7	C1050	BethAnn	Benson	1993/03/01 00:00:00.000	Chicago	Illinois	2017/09/04 00:00:00.000

5. Selected Spread Sheet type(engine) as Excel 2007 XLSX (Apache POI), so that pentaho should know the type of input file.
6. In the field tab we can get the header row of xlsx input file.

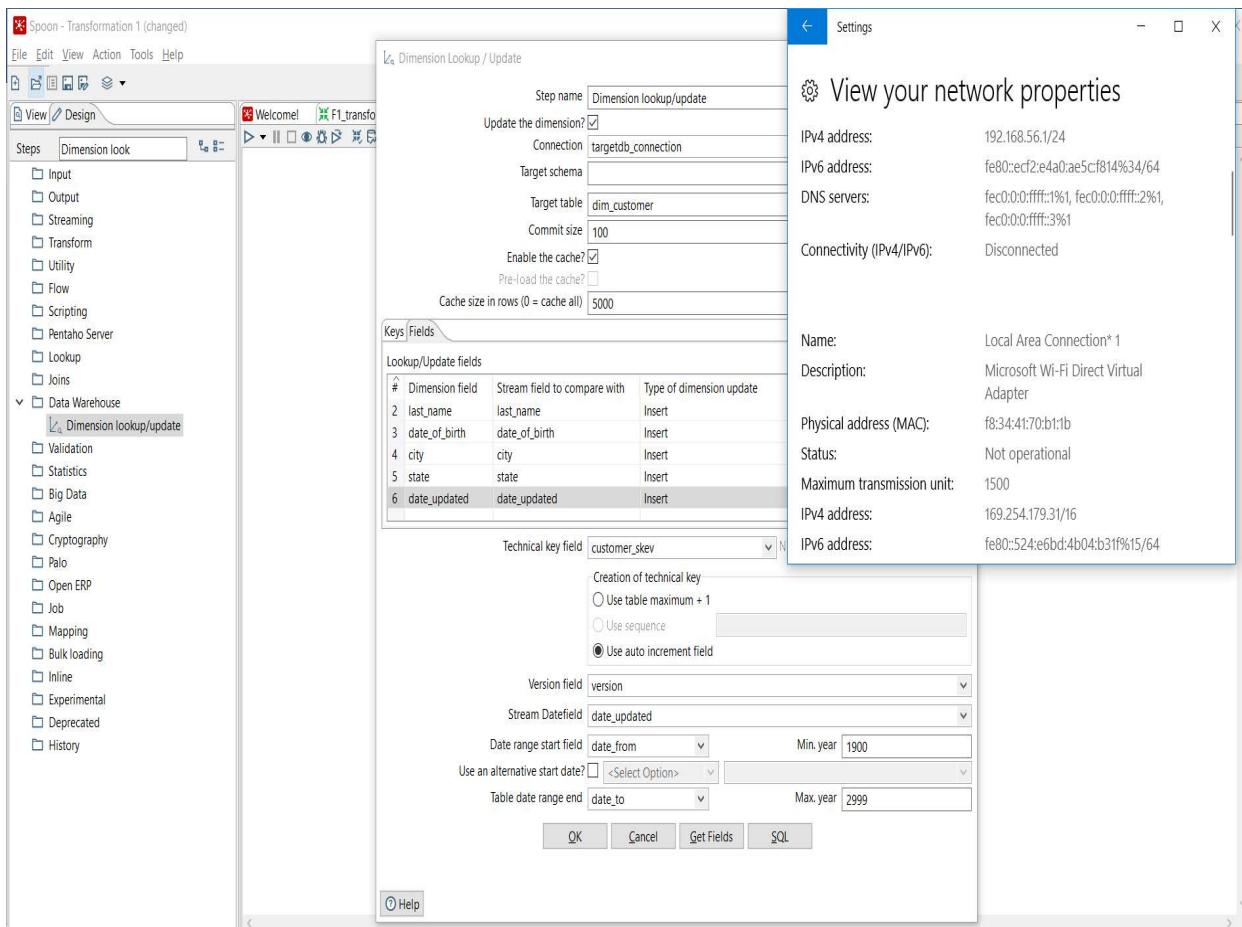
The screenshot shows a Microsoft Excel spreadsheet titled 'customer - Compatibility Mode - Saved'. The spreadsheet contains the same customer data as the previous screenshot. A 'Settings' dialog box is overlaid on the right side of the screen, titled 'View your network properties', displaying network configuration details.

#	customer_id	first_name	last_name	date_of_birth	city	state	date_updated
1	C1050	BethAnn	Cox	1/3/1993	New York	New York	1/1/2015
2	C1197	Panpan	Bressler	1/30/1992	PHILADELPHIA	Pennsylvania	1/1/2015
3	C16400	Tairan	Adelson	6/30/1993	Pittsburgh	Pennsylvania	1/1/2015
4	C16474	Marco	Hussie	1/29/1971	Pittsburgh	Pennsylvania	1/1/2015

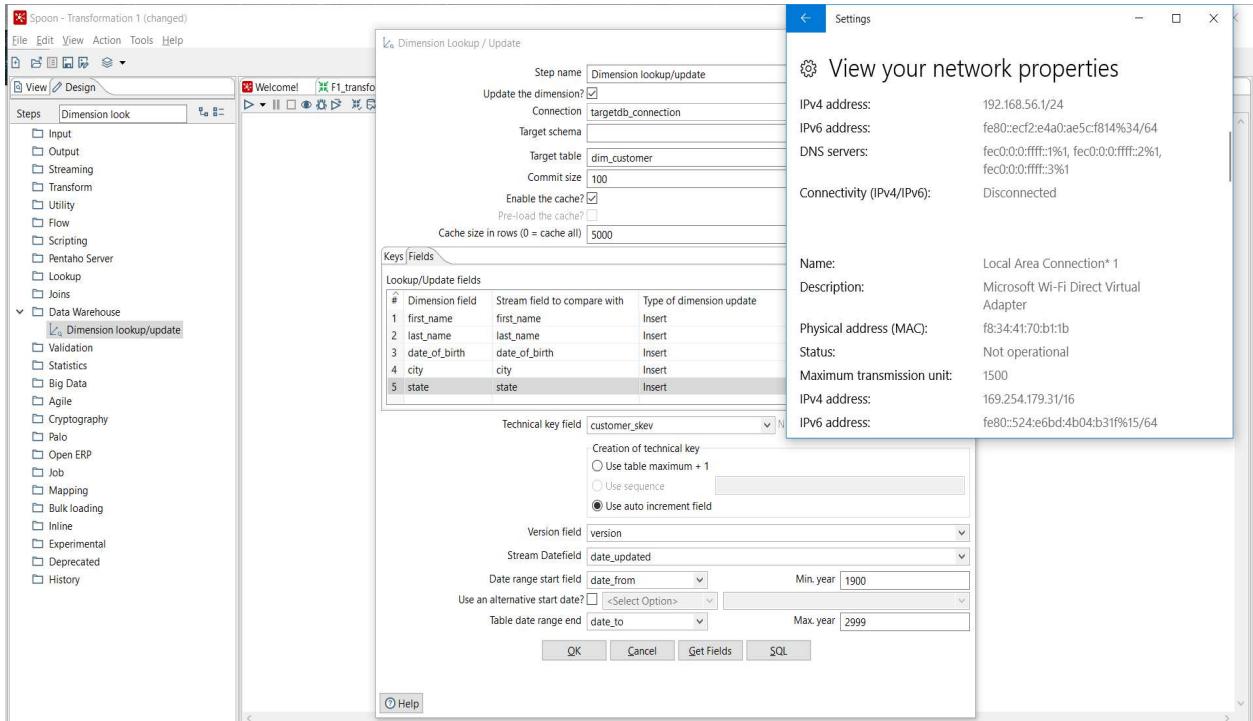
7. Now I have taken Dimension lookup/update output in the transformation.
8. It is connected with my DB “target_db” and target_table as “dim_customer”.
9. Customer_di is identified as a natural key therefore I have put this field in keys section of Pentaho.



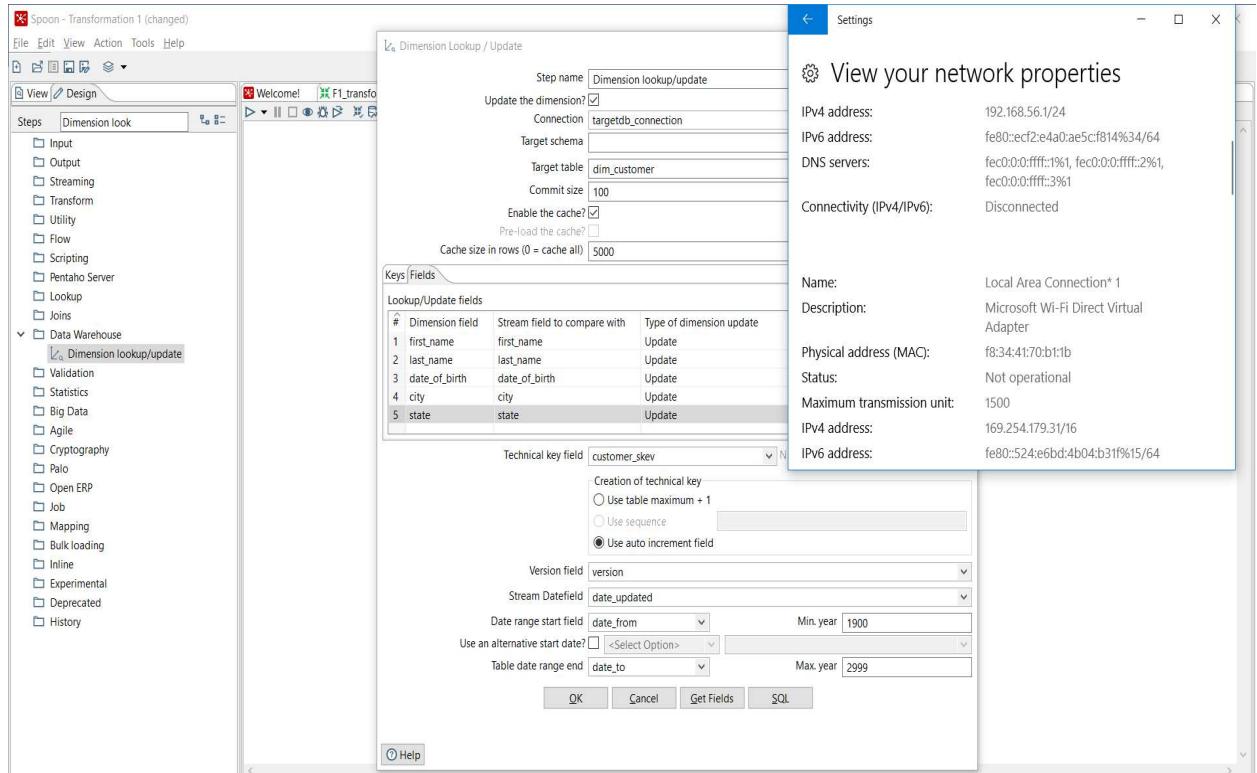
10. To define surrogate key we have defined surrogate key in Technical key field “**customer_skew**” and used auto increment field.
11. We have changed date range start field from year **1900** and table date range end date to **2999**, furthermore I have set Stream Datefield as **date_updated**.
12. We will select get fields to get all the fields in lookup/update fields.



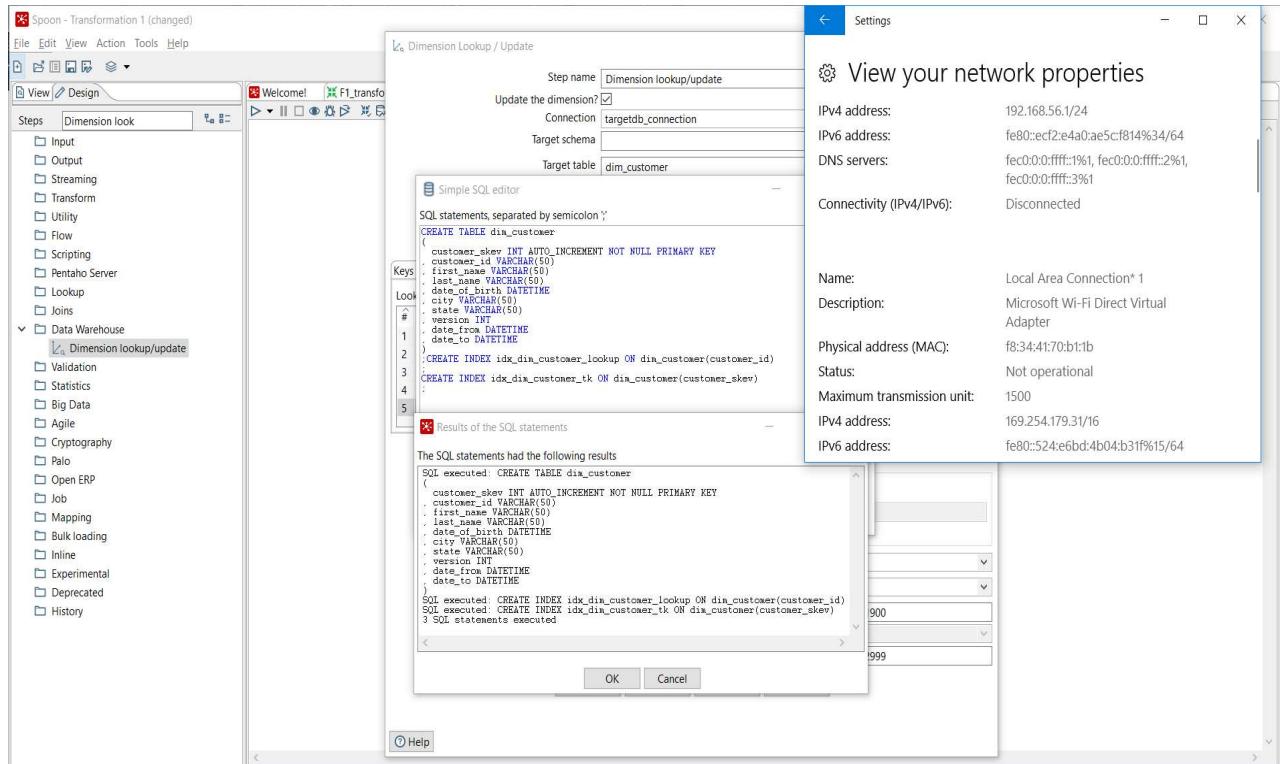
- Now, I have **deleted** the last column **date_updated** from the lookup/update fields, as I have already defined that as Stream **Datefield** (unique field).



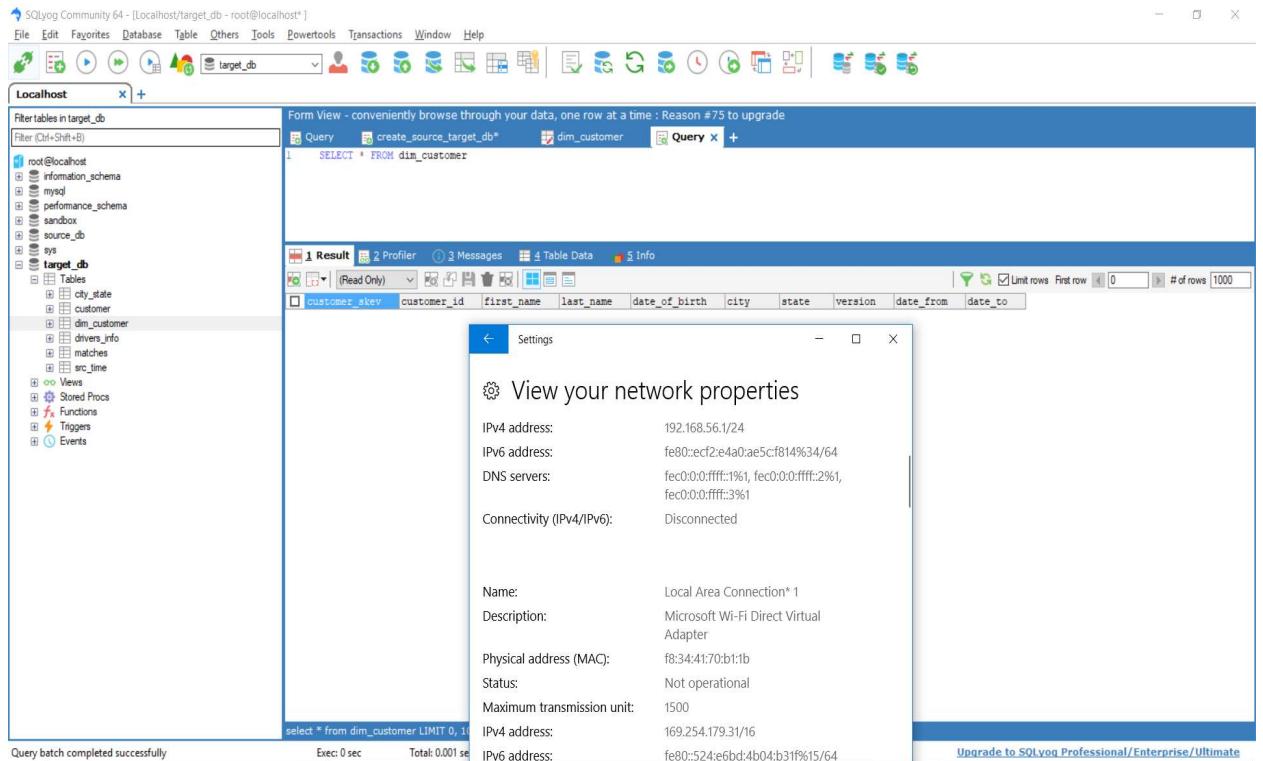
14. I have defined all the columns as type |(Update).



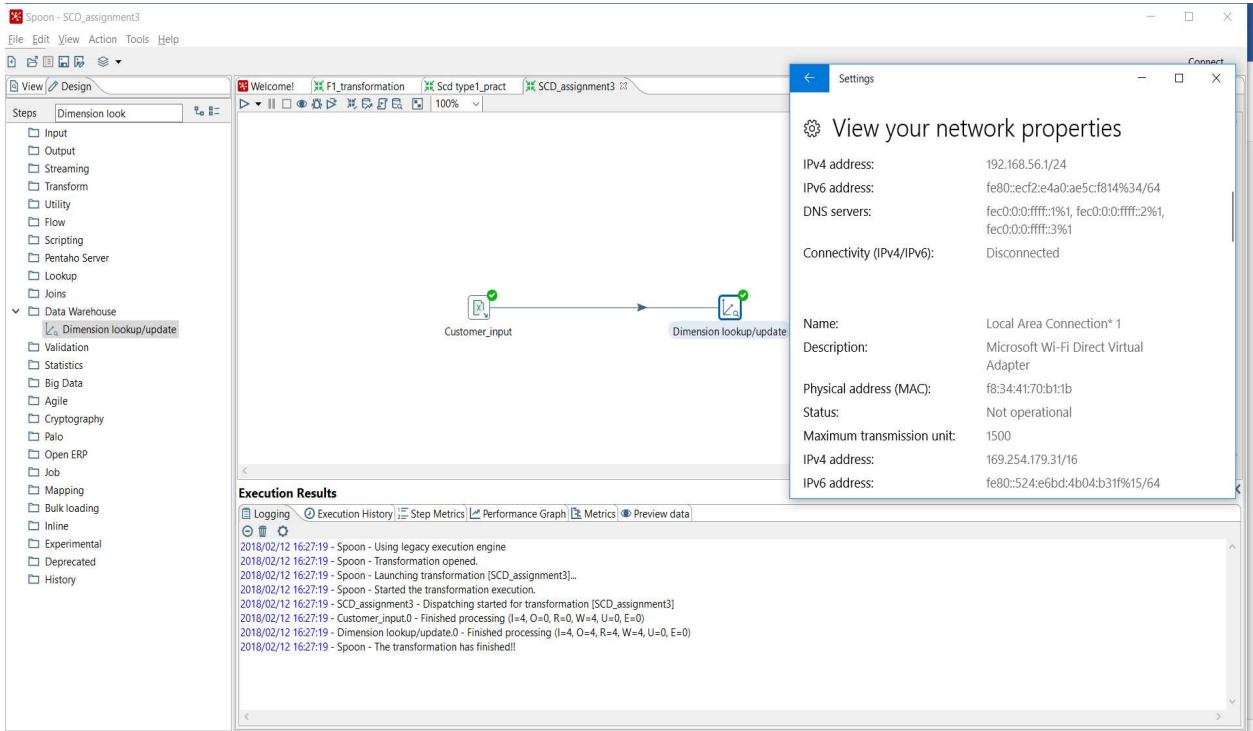
15. Now I have created DDL creation of dimensional table by clicking SQL button and automatically we have DDL scripts.



16. I checked the table created in our database, hence I can check this through SQLYOG.



17. Now, I have run the transformation, it has run successfully.



18. We can check in MYSQL DB by selecting all rows of the table, hence we found all rows are fetched by the below screenshot, hence the transformation is done successfully.

SQLyog Community 64 - [localhost/target_db - root@localhost*]

File Edit Favorites Database Table Others Tools Powertools Transactions Window Help

localhost target_db

Print your database schema using Visual Schema Designer : Reason #9 to upgrade

Query create_source_target_db* dim_customer Query x +

```
1 SELECT * FROM dim_customer
```

1 Result Profiler Messages Table Data Info

customer_skey customer_id first_name last_name date_of_birth city state version date_from date_to

	1 (NULL)	(NULL)	(NULL)	(NULL)	(NULL)	1 (NULL)	(NULL)	
	2 C1050	BethAnn	Cox	1993-01-03 00:00:00	New York	New York	1 1900-01-01 00:00:00	3000-01-01 00:00:00
	3 C1197	Panpan	Bressler	1992-01-30 00:00:00	PHILADELPHIA	Pennsylvania	1 1900-01-01 00:00:00	3000-01-01 00:00:00
	4 C16400	Tairan	Adelson	1993-06-30 00:00:00	Pittsburgh	Pennsylvania	1 1900-01-01 00:00:00	3000-01-01 00:00:00
	5 C16474	Marco	Hussie	1971-01-29 00:00:00	Pittsburgh	Pennsylvania	1 1900-01-01 00:00:00	3000-01-01 00:00:00

← Settings

View your network properties

IPv4 address: 192.168.56.1/24
 IPv6 address: fe80::ecf2:e4a0:ae5cf814%34/64
 DNS servers: fec0:0:ffff::1961, fec0:0:ffff::2%1, fec0:0:ffff::3%1
 Connectivity (IPv4/IPv6): Disconnected

Name: Local Area Connection* 1
 Description: Microsoft Wi-Fi Direct Virtual Adapter
 Physical address (MAC): fb:34:41:70:b1:1b
 Status: Not operational

http://www.webyog.com Exec: 0 sec Upgrade to SQLyog Professional/Enterprise/Ultimate

19. Now, we have updated records from the excel sheet, for eg we have updated date_of_birth and date_updated.

customer - Compatibility Mode - Saved

Arpit Khandekar Share

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

Font Alignment Number Styles Cells Editing

G6 : fx 7/6/2015

	A	B	C	D	E	F	G
1	customer_id	first_name	last_name	date_of_birth	city	state	date_updated
2	C1050	BethAnn	Cox	1/3/1993	New York	New York	1/1/2015
3	C1197	Panpan	Bressler	1/30/1992	PHILADELPHIA	Pennsylvania	1/1/2015
4	C16400	Tairan	Adelson	6/30/1993	Pittsburgh	Pennsylvania	1/1/2015
5	C16474	Marco	Hussie	1/29/1971	Pittsburgh	Pennsylvania	1/1/2015
6	C1050	BethAnn	Cox	7/3/1996	New York	New York	7/6/2015
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← Settings

View your network properties

IPv4 address: 192.168.56.1/24
 IPv6 address: fe80::ecf2:e4a0:ae5cf814%34/64
 DNS servers: fec0:0:ffff::1961, fec0:0:ffff::2%1, fec0:0:ffff::3%1
 Connectivity (IPv4/IPv6): Disconnected

Name: Local Area Connection* 1
 Description: Microsoft Wi-Fi Direct Virtual Adapter
 Physical address (MAC): fb:34:41:70:b1:1b
 Status: Not operational
 Maximum transmission unit: 1500
 IPv4 address: 169.254.179.31/16
 IPv6 address: fe80::524:e6bd:4b04:b31f%15/64

20. Before running transformation, we have truncated the table.

The screenshot shows the SQLyog Community 64 interface. On the left, the 'Tables' pane displays the schema of the 'target_db'. A query window in the center shows the execution of a truncate and select statement:

```
1 TRUNCATE TABLE dim_customer
2 SELECT * FROM dim_customer
```

The results pane shows the truncated table with one row of sample data:

customer_skv	customer_id	first_name	last_name	date_of_birth	city	state	version	date_from	date_to
customer_1	customer_1	John	Doe	1980-01-01	New York	NY	1	1980-01-01	2023-12-31

Below the results, a message indicates the query batch completed successfully. At the bottom, network properties are displayed:

Name:	Local Area Connection* 1
Description:	Microsoft Wi-Fi Direct Virtual Adapter
Physical address (MAC):	f8:34:41:70:b1:1b
Status:	Not operational
Maximum transmission unit:	1500
IPv4 address:	192.168.56.1/24
IPv6 address:	fe80::ecf2:e4a0:ae5cf814%34/64
DNS servers:	fec0:0:ffff:1%1, fec0:0:ffff:2%1, fec0:0:ffff:3%1
Connectivity (IPv4/IPv6):	Disconnected

21. Now again I will run the transformation.

The screenshot shows the Pentaho Data Integration (PDI) Spoon interface. On the left, the 'Steps' palette lists various transformation components. In the center, a transformation flow is shown with a 'Customer_input' step connected to a 'Dimension lookup/update' step. The right side of the screen displays the same network properties window as the previous screenshot, showing the same configuration and connectivity status.

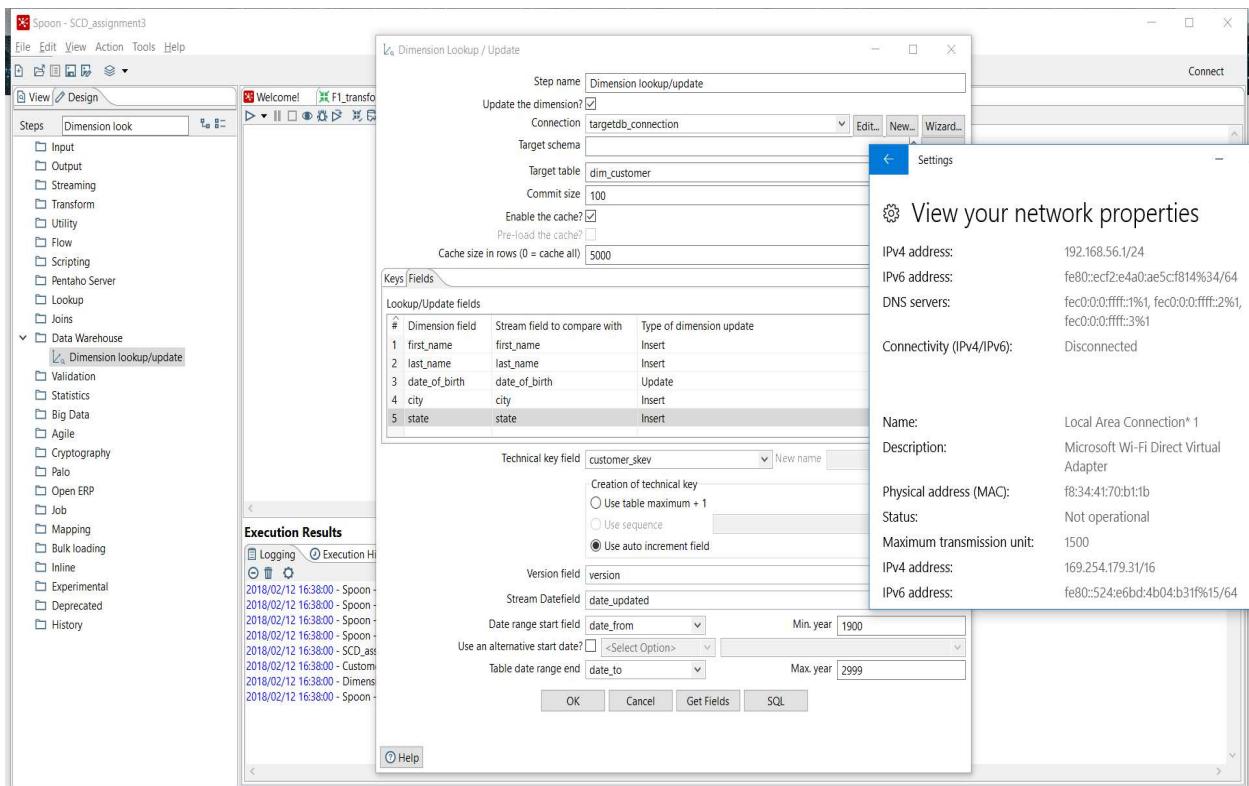
22. Transformation ran successfully, and now I check the entries in the database, I found that the birthdate column has been updated.

The screenshot shows the SQLyog Community 64 interface. On the left, the database structure for 'target_db' is visible, including the 'Tables' section which lists 'customer_skew', 'customer_id', 'first_name', 'last_name', 'date_of_birth', 'city', 'state', 'version', 'date_from', and 'date_to'. A query window on the right displays the following data:

customer_skew	customer_id	first_name	last_name	date_of_birth	city	state	version	date_from	date_to
1	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	1	(NULL)	(NULL)
2	C1050	BethAnn	Cox	1996-07-03 00:00:00	New York	New York	1	1900-01-01 00:00:00	3000-01-01 00:00:00
3	C1197	Panpan	Bressler	1992-01-30 00:00:00	PHILADELPHIA	Pennsylvania	1	1900-01-01 00:00:00	3000-01-01 00:00:00
4	C16400	Tairan	Adelson	1993-06-30 00:00:00	Pittsburgh	Pennsylvania	1	1900-01-01 00:00:00	3000-01-01 00:00:00
5	C16474	Marco	Hussie	1971-01-29 00:00:00	Pittsburgh	Pennsylvania	1	1900-01-01 00:00:00	3000-01-01 00:00:00

2. Slowly Changing Dimension Type ||(Insert) Transformation

- For Type || Transformation, we will change the type of dimension update as **Update**. So we will change the type of dimension for all the fields except **date_of_birth**.



2. In the excel sheet I have insert one row for same customer 'BethAnn' with same customerID 'C1050'

	A	B	C	D	E	F	G	H	I
1	customer_id	first_name	last_name	date_of_birth	city	state	date_updated		
2	C1050	BethAnn	Cox	1/3/1993	New York	New York	1/1/2015		
3	C1197	Panpan	Bressler	1/30/1992	PHILADELPHI	Pennsylvania	1/1/2015		
4	C16400	Tairan	Adelson	6/30/1993	Pittsburgh	Pennsylvania	1/1/2015		
5	C16474	Marco	Hussie	1/29/1971	Pittsburgh	Pennsylvania	1/1/2015		
6	C1050	BethAnn	Cox	7/3/1996	New York	New York	7/6/2015		
7	C1050	BethAnn	Benson	3/5/1993	New York	New York	12/3/2016		
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3. Before running transformation, we have truncated the table.

The screenshot shows the SQLyog interface. On the left, the database structure for 'target_db' is displayed, including tables like city_state, customer, dim_customer, drivers_info, matches, and src_time. In the center, a query window titled 'Query' shows the following code:

```

1 TRUNCATE TABLE dim_customer
2 SELECT * FROM dim_customer

```

Below the code, the results pane shows a table with columns: customer_skew, customer_id, first_name, last_name, date_of_birth, city, state, version, date_from, and date_to. A message at the bottom states 'Query batch completed successfully'.

At the bottom right, a network properties window is open, showing the following details:

IPv4 address:	192.168.56.1/24
IPv6 address:	fe80::ecf2:e4a0:ae5c:f814%3/64
DNS servers:	fec0:0:ffff::1%, fec0:0:ffff::2%, fec0:0:ffff::3%
Connectivity (IPv4/IPv6):	Disconnected
Name:	Local Area Connection* 1
Description:	Microsoft Wi-Fi Direct Virtual Adapter
Physical address (MAC):	f8:34:41:70:b1:1b
Status:	Not operational
Maximum transmission unit:	1500
IPv4 address:	169.254.179.31/16
IPv6 address:	fe80::524:e6bd:4b04:b31f%15/64

4. We will run the transformation again, we found that it has ran successfully.

The screenshot shows the Pentaho Spoon interface. On the left, the 'Steps' tab of the 'Dimension look' transformation is visible, listing various step types such as Input, Output, Transform, Utility, Flow, Scripting, Pentaho Server, Lookup, Joins, Data Warehouse, Dimension lookup/update, Validation, Statistics, Big Data, Agile, Cryptography, Palo, Open ERP, Job, Mapping, Bulk loading, Inline, Experimental, Deprecated, and History.

In the center, the transformation flow is shown with a 'Customer_input' step connected to a 'Dimension lookup/update' step.

At the bottom, the 'Execution Results' pane displays the following log entries:

```

2018/02/12 16:53:21 - Spoon - Using legacy execution engine
2018/02/12 16:53:21 - Spoon - Transformation opened.
2018/02/12 16:53:21 - Spoon - Launching transformation [SCD_assignment3]...
2018/02/12 16:53:21 - Spoon - Started the transformation execution.
2018/02/12 16:53:21 - SCD_assignment3 - Dispatching started for transformation [SCD_assignment3]
2018/02/12 16:53:21 - Customer_input.0 - Finished processing (I=6, O=0, R=0, W=6, U=0, E=0)
2018/02/12 16:53:21 - Dimension lookup/update.0 - Finished processing (I=4, O=1, R=6, W=6, U=2, E=0)
2018/02/12 16:53:21 - Spoon - The transformation has finished!

```

On the right, a network properties window is open, showing the same details as the previous screenshot:

IPv4 address:	192.168.56.1/24
IPv6 address:	fe80::ecf2:e4a0:ae5c:f814%3/64
DNS servers:	fec0:0:ffff::1%, fec0:0:ffff::2%, fec0:0:ffff::3%
Connectivity (IPv4/IPv6):	Disconnected
Name:	Local Area Connection* 1
Description:	Microsoft Wi-Fi Direct Virtual Adapter
Physical address (MAC):	f8:34:41:70:b1:1b
Status:	Not operational
Maximum transmission unit:	1500
IPv4 address:	169.254.179.31/16
IPv6 address:	fe80::524:e6bd:4b04:b31f%15/64

5. We can check the new record inserted in database through SQLYOG, hence we see that record is inserted successfully, also version is incremented by 1 and customer_skey(surrogate key) is incremented by 1. Hence, we can say that BethAnn lastname **Cox** will be upto 2016-12-03 and thereafter it changes to **Benson**.

The screenshot shows the SQLyog interface with the following details:

- File Bar:** File, Edit, Favorites, Database, Table, Others, Tools, PowerTools, Transactions, Window, Help.
- Toolbar:** Includes icons for New Connection, Open Connection, Save, Print, Copy, Paste, Find, Replace, Refresh, Undo, Redo, etc.
- Database Tree:** Localhost > target_db. The tree shows various schemas like information_schema, performance_schema, sys, target_db, and its tables: city_state, customer, dim_customer, drivers_info, matches, and user_time.
- Query Editor:** Shows a query to truncate the dim_customer table and then select all from it. The results show the following data:

customer_skey	customer_id	first_name	last_name	date_of_birth	city	state	version	date_from	date_to
1	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	1	(NULL)	(NULL)
6 C1050	BethAnn	Benson	1993-03-05 00:00:00	New York	New York		2	2016-12-03 00:00:00	3000-01-01 00:00:00
2 C1050	BethAnn	Cox	1996-07-03 00:00:00	New York	New York		1	1900-01-01 00:00:00	2016-12-03 00:00:00
3 C1197	Panpan	Bressler	1992-01-30 00:00:00	PHILADELPHIA	Pennsylvania		1	1900-01-01 00:00:00	3000-01-01 00:00:00
4 C16400	Tairan	Adelson	1993-06-30 00:00:00	Pittsburgh	Pennsylvania		1	1900-01-01 00:00:00	3000-01-01 00:00:00
5 C16474	Marco	Hussie	1971-01-29 00:00:00	Pittsburgh	Pennsylvania		1	1900-01-01 00:00:00	3000-01-01 00:00:00

6. Now, we have updated BethAnn address to Chicago Illinois from particular date in excel sheet, hence we will run the transformation and lets check.

The screenshot shows a Microsoft Excel spreadsheet titled "customer - Compatibility Mode - Saved". The "Customer" sheet contains a table with columns: A (customer_id), B (first_name), C (last_name), D (date_of_birth), E (city), F (state), and G (date_updated). Rows 9 through 26 are empty. A separate window titled "Settings" displays network properties, including an IPv4 address of 192.168.56.1/24 and a MAC address of f8:34:41:70:b1:1b.

7. Before running transformation, we have truncated the table.

The screenshot shows the SQLyog Community 64 interface. In the left sidebar, the "target_db" schema is selected. In the main pane, a query is run:

```

1: TRUNCATE TABLE dim_customer
2: SELECT * FROM dim_customer

```

The results show the truncated data:

customer_sk	customer_id	first_name	last_name	date_of_birth	city	state	version	date_from	date_to

A separate window titled "Settings" displays network properties, identical to the one in the previous screenshot.

8. Hence, we see that address of customer BethAnn is updated from '2015-11-05' We can see from the below screenshot.

The screenshot shows the SQLyog interface with the following details:

- File Edit Favorites Database Table Others Tools Powertools Transactions Window Help**
- localhost** - Selected database
- target_db** - Connected database
- Query** tab: Contains the following SQL code:


```
1 TRUNCATE TABLE dim_customer
2 SELECT * FROM dim_customer
```
- 1 Result** tab: Shows the results of the query. The table has columns: customer_skew, customer_id, first_name, last_name, date_of_birth, city, state, version, date_from, date_to. The data includes rows for customers like BethAnn Benson, Cox, Bressler, Tairan Adelson, and Marco Hussie across various cities and states from 1993 to 2017.
- Network Properties** window: Shows network configuration details:

IPv4 address:	192.168.56.1/24
IPv6 address:	fe80::ecf2:e4a0:ae5cf814%3/64
DNS servers:	fec0:0:ffff::1961, fec0:0:ffff:2%1, fec0:0:ffff:3%1
Connectivity (IPv4/IPv6):	Disconnected
Name:	Local Area Connection* 1
Description:	Microsoft Wi-Fi Direct Virtual Adapter
Physical address (MAC):	f8:34:41:70:b1:1b
Status:	Not operational
Maximum transmission unit:	1500
- Toolbar:** Includes icons for file operations, database management, and connectivity.

Thus, it successfully shows slowly changing **dimensional model type | |**.

3. Slowly Changing Dimension Type | (Push Through) Transformation

1. We will take excel input and dimension lookup/update.

The screenshot shows a Microsoft Excel spreadsheet titled "customer - Compatibility Mode - Saved". The table has columns: A (customer_id), B (first_name), C (last_name), D (date_of_birth), E (city), F (state), and G (date_updated). The data includes rows for customers C1050, C1197, C16400, and C16474. A network properties window is overlaid on the right, showing details for "Local Area Connection* 1".

	A	B	C	D	E	F	G
1	customer_id	first_name	last_name	date_of_birth	city	state	date_updated
2	C1050	BethAnn	Cox	1/3/1993	New York	New York	1/1/2015
3	C1197	Panpan	Bressler	1/30/1992	PHILADELPHIA	Pennsylvania	1/1/2015
4	C16400	Tairan	Adelson	6/30/1993	Pittsburgh	Pennsylvania	1/1/2015
5	C16474	Marco	Hussie	1/29/1971	Pittsburgh	Pennsylvania	1/1/2015
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2. Before running transformation, we have dropped the table from the database.

The screenshot shows the SQLyog interface connected to "localhost/target_db". A query window contains the following SQL code:

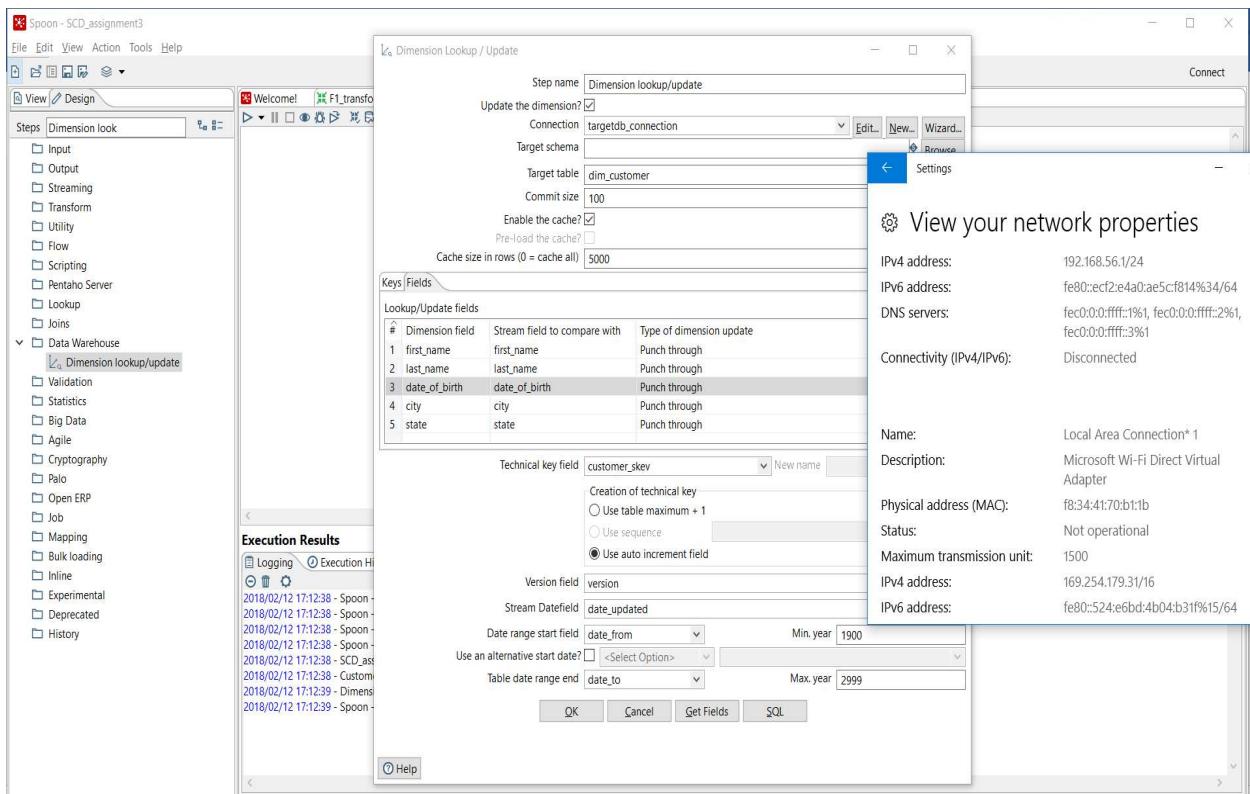
```

DROP TABLE dim_customer
SELECT * FROM dim_customer

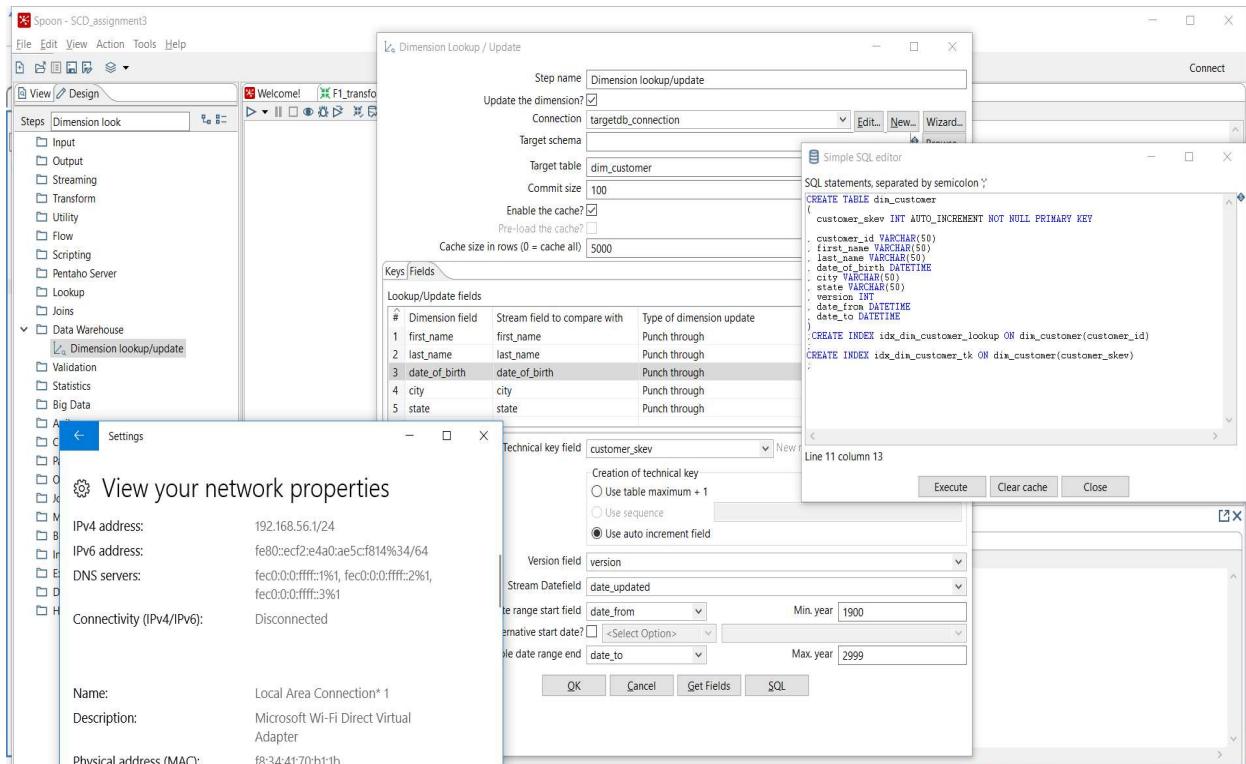
```

The results show 1 query executed, 0 success, 1 errors, 0 warnings. The error message is: "Table 'target_db.dim_customer' doesn't exist". A network properties window is overlaid on the right, showing details for "Local Area Connection* 1".

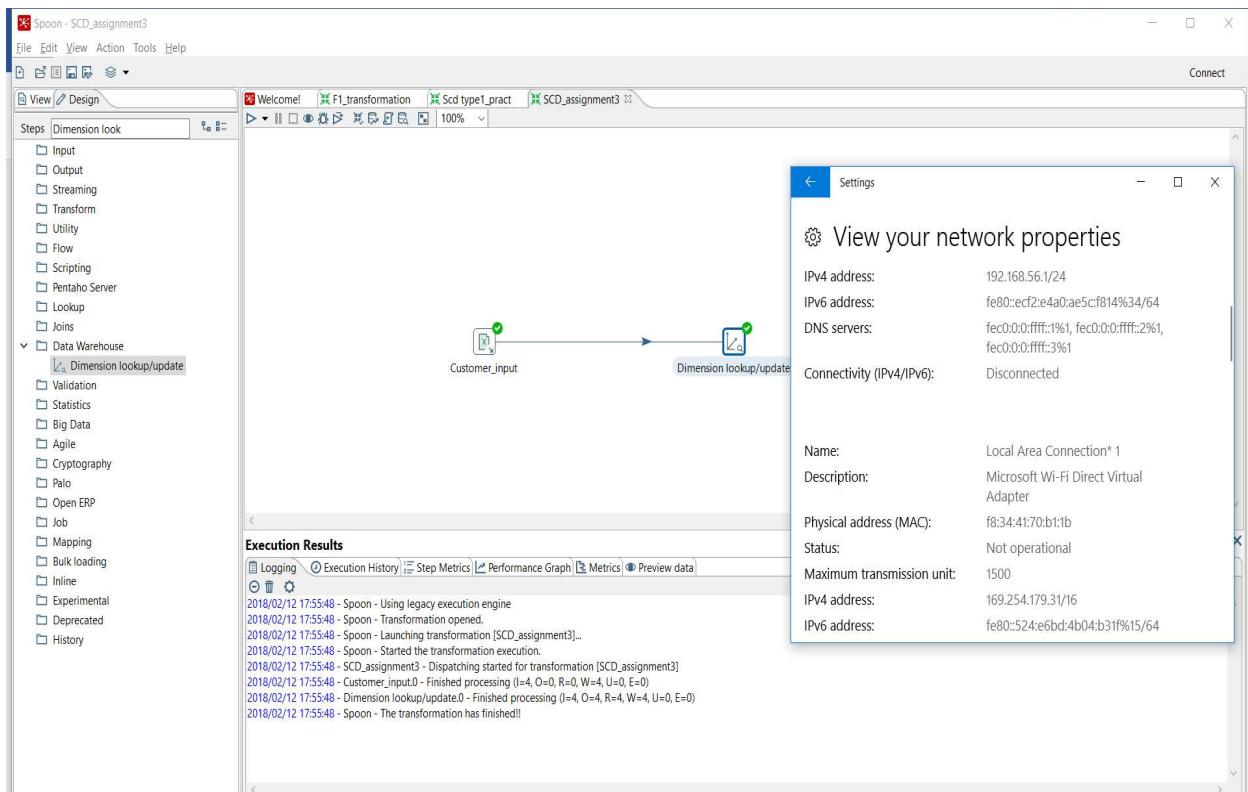
3. Now we change the type of dimension update field to 'Punch through'.



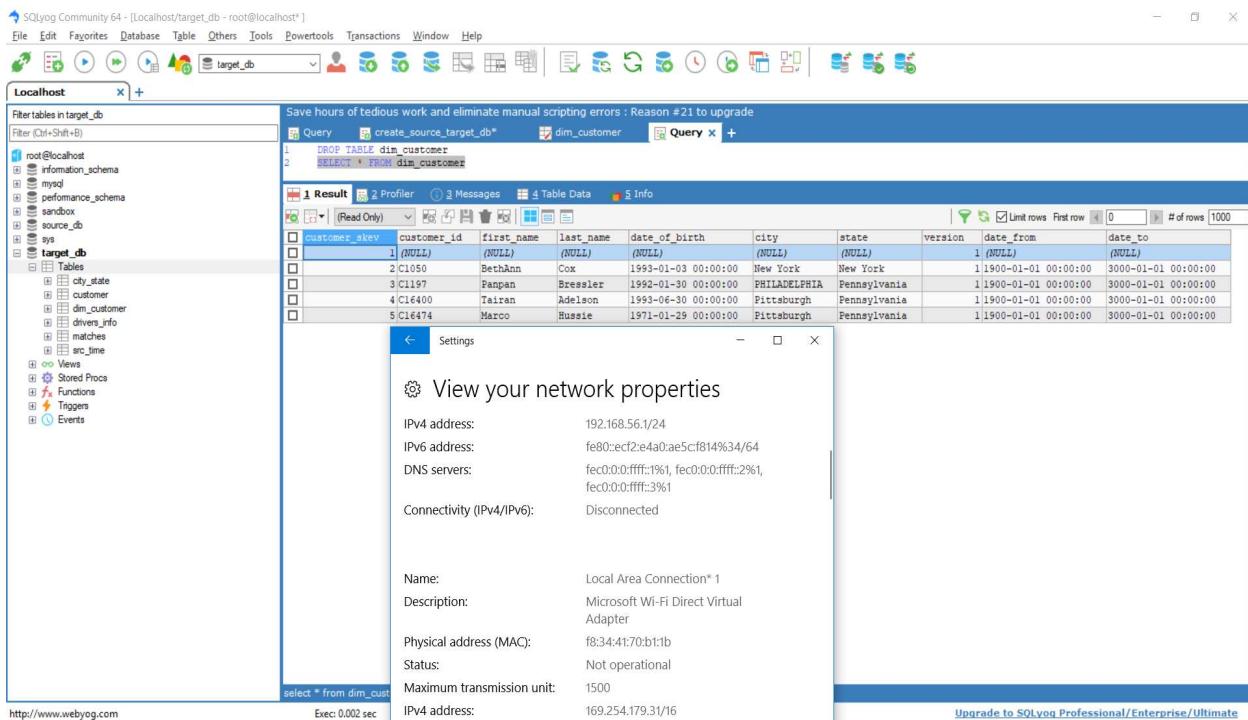
4. Create SQL query to create a table.



5. Run the transformation, it has run successfully.



6. Now we can see the changes in database mysql, hence from below screenshot we can see that all the records are inserted successfully.



7. Now, if I update any record then it can be updated and can be seen in the database. For example if we want to update Customer last_name for Macro to Ben.

	A	B	C	D	E	F	G
1	customer_id	first_name	last_name	date_of_birth	city	state	date_updated
2	C1050	BethAnn	Cox	1/3/1993	New York	New York	1/1/2015
3	C1197	Panpan	Bressler	1/30/1992	PHILADELPHIA	Pennsylvania	1/1/2015
4	C16400	Tairan	Adelson	6/30/1993	Pittsburgh	Pennsylvania	1/1/2015
5	C16474	Marco	Hussie	1/29/1971	Pittsburgh	Pennsylvania	1/1/2015
6	C16474	Marco	Ben	1/29/1971	Pittsburgh	Pennsylvania	1/3/2016
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24							

Settings

View your network properties

IPv4 address:	192.168.56.1/24
IPv6 address:	fe80::ecf2:e4a0:ae5cf814%34/64
DNS servers:	fec0:0:ffff::1%1, fec0:0:ffff::2%1, fec0:0:ffff::3%1
Connectivity (IPv4/IPv6):	Disconnected
Name:	Local Area Connection* 1
Description:	Microsoft Wi-Fi Direct Virtual Adapter
Physical address (MAC):	f8:34:41:70:b1:1b
Status:	Not operational
Maximum transmission unit:	1500
IPv4 address:	169.254.179.31/16
IPv6 address:	fe80::524:e6bd:4b04:b31f%15/64

8 Now we will run the transformation.

Spoon - SCD_assignment3

Steps: Dimension look

- Input
- Output
- Streaming
- Transform
- Utility
- Flow
- Scripting
- Pentaho Server
- Lookup
- Joins
- Data Warehouse
 - Dimension lookup/update
- Validation
- Statistics
- Big Data
- Agile
- Cryptography
- Palo
- Open ERP
- Job
- Mapping
- Bulk loading
- Inline
- Experimental
- Deprecated
- History

Customer.input → Dimension lookup/update

Execution Results

```

2018/02/12 18:07:20 - Spoon - Using legacy execution engine
2018/02/12 18:07:20 - Spoon - Transformation opened.
2018/02/12 18:07:20 - Spoon - Launching transformation [SCD_assignment3]...
2018/02/12 18:07:20 - Spoon - Started the transformation execution.
2018/02/12 18:07:20 - SCD_assignment3 - Dispatching started for transformation [SCD_assignment3]
2018/02/12 18:07:20 - Customer.input0 - Finished processing (I=5, O=0, R=0, W=5, U=0, E=0)
2018/02/12 18:07:20 - Dimension lookup/update0 - Finished processing (I=4, O=0, R=5, W=5, U=2, E=0)
2018/02/12 18:07:20 - Spoon - The transformation has finished!
  
```

Settings

View your network properties

IPv4 address:	192.168.56.1/24
IPv6 address:	fe80::ecf2:e4a0:ae5cf814%34/64
DNS servers:	fec0:0:ffff::1%1, fec0:0:ffff::2%1, fec0:0:ffff::3%1
Connectivity (IPv4/IPv6):	Disconnected
Name:	Local Area Connection* 1
Description:	Microsoft Wi-Fi Direct Virtual Adapter
Physical address (MAC):	f8:34:41:70:b1:1b
Status:	Not operational
Maximum transmission unit:	1500
IPv4 address:	169.254.179.31/16
IPv6 address:	fe80::524:e6bd:4b04:b31f%15/64

9 We can see that transformation has run successfully, hence changes will be reflected in Database Mysql.

The screenshot shows the SQLyog Community 64 interface. On the left, the database structure of 'target_db' is visible, including tables like 'city_state', 'customer', 'dim_customer', 'drivers_info', 'matches', 'src_time', 'Views', 'Stored Procs', 'Functions', 'Triggers', and 'Events'. In the main pane, a query window displays the results of a SELECT statement on the 'dim_customer' table. The results show five rows of data with columns: customer_skv, customer_id, first_name, last_name, date_of_birth, city, state, version, date_from, and date_to. The data includes entries for BethAnn Cox, Panpan Bressler, Tairan Adelson, and Marco Ben. Below the results, a 'Settings' dialog box is open, showing network properties such as IPv4 and IPv6 addresses, DNS servers, and connectivity status. At the bottom, a message indicates the query was completed successfully.

customer_skv	customer_id	first_name	last_name	date_of_birth	city	state	version	date_from	date_to
1	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	1	(NULL)	(NULL)
2	C1050	BethAnn	Cox	1993-01-03 00:00:00	New York	New York	1	1900-01-01 00:00:00	3000-01-01 00:00:00
3	C1197	Panpan	Bressler	1992-01-30 00:00:00	PHILADELPHIA	Pennsylvania	1	1900-01-01 00:00:00	3000-01-01 00:00:00
4	C16400	Tairan	Adelson	1993-06-30 00:00:00	Pittsburgh	Pennsylvania	1	1900-01-01 00:00:00	3000-01-01 00:00:00
5	C16474	Marco	Ben	1971-01-29 00:00:00	Pittsburgh	Pennsylvania	1	1900-01-01 00:00:00	3000-01-01 00:00:00

select * from dim_customer

Query batch completed successfully

Exec: 0 sec

Up to SQLyog Professional/Enterprise/Ultimate

Hence, we saw that Macro last name has changed to **Ben**. Thus, we have performed punch through operations successfully in Pentaho.