

# Essentials Lab 10

## Exercise 1

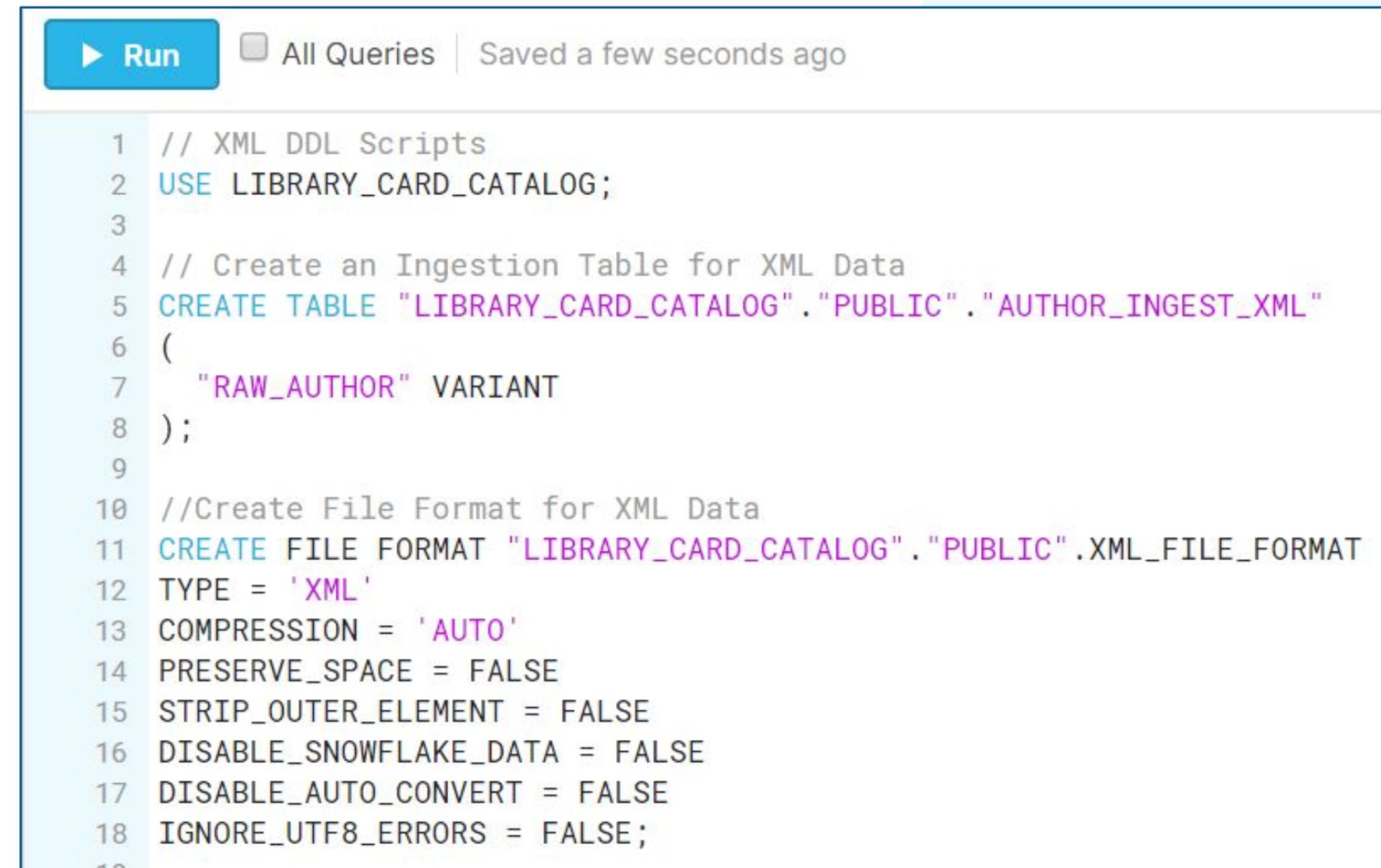
- 1) Download and unzip the files for this lab.

[https://www.snowflakeuniversity.com/EL10/downloads/Essentials Lesson 10 Files.zip](https://www.snowflakeuniversity.com/EL10/downloads/Essentials%20Lesson%2010%20Files.zip)

- 2) Load the script named **Lesson\_10\_XML\_DDL.txt** into a new worksheet.
- 3) Run the statements one at a time or all together, based on your own preference.

**NOTE:** This file called “DDL” which is short for “Data Definition Language.” In this first step we are defining two new data objects. One is a table and the other is a file format.

SQL commands that are meant to DEFINE objects are in a category called DDL.



The screenshot shows a Snowflake SQL worksheet interface. At the top, there is a blue button labeled "Run" with a white play icon, followed by the text "All Queries" and "Saved a few seconds ago". Below this, the SQL code is displayed in a monospaced font:

```
1 // XML DDL Scripts
2 USE LIBRARY_CARD_CATALOG;
3
4 // Create an Ingestion Table for XML Data
5 CREATE TABLE "LIBRARY_CARD_CATALOG"."PUBLIC"."AUTHOR_INGEST_XML"
6 (
7     "RAW_AUTHOR" VARIANT
8 );
9
10 //Create File Format for XML Data
11 CREATE FILE FORMAT "LIBRARY_CARD_CATALOG"."PUBLIC".XML_FILE_FORMAT
12 TYPE = 'XML'
13 COMPRESSION = 'AUTO'
14 PRESERVE_SPACE = FALSE
15 STRIP_OUTER_ELEMENT = FALSE
16 DISABLE_SNOWFLAKE_DATA = FALSE
17 DISABLE_AUTO_CONVERT = FALSE
18 IGNORE_UTF8_ERRORS = FALSE;
```

# Essentials Lab 10

## Exercise 2

- 1) Click **[Databases]** in the **Navigation Ribbon**.
- 2) Click **LIBRARY\_CARD\_CATALOG** to drill into that database.
- 3) Click the **AUTHOR\_INGEST\_XML** hyperlink, to drill into the table.
- 4) Click **[Load Table]**.

**NOTE:** You are going to be repeatedly loading this table, so in future exercises these four steps will be referred to as **“Launch the [Load Table] Wizard”** with a reference to the table, as in, **“from the AUTHOR\_INGEST\_XML table.”**

Databases > LIBRARY\_CARD\_CATALOG 2

Table Name	Schema	Creation Time	Owner
AUTHOR_INGEST_XML	PUBLIC	8/14/19 5:44:29 PM	ACCOUNTADMIN
BOOK_TO_AUTHOR	PUBLIC	8/13/19 12:36:16 PM	ACCOUNTADMIN

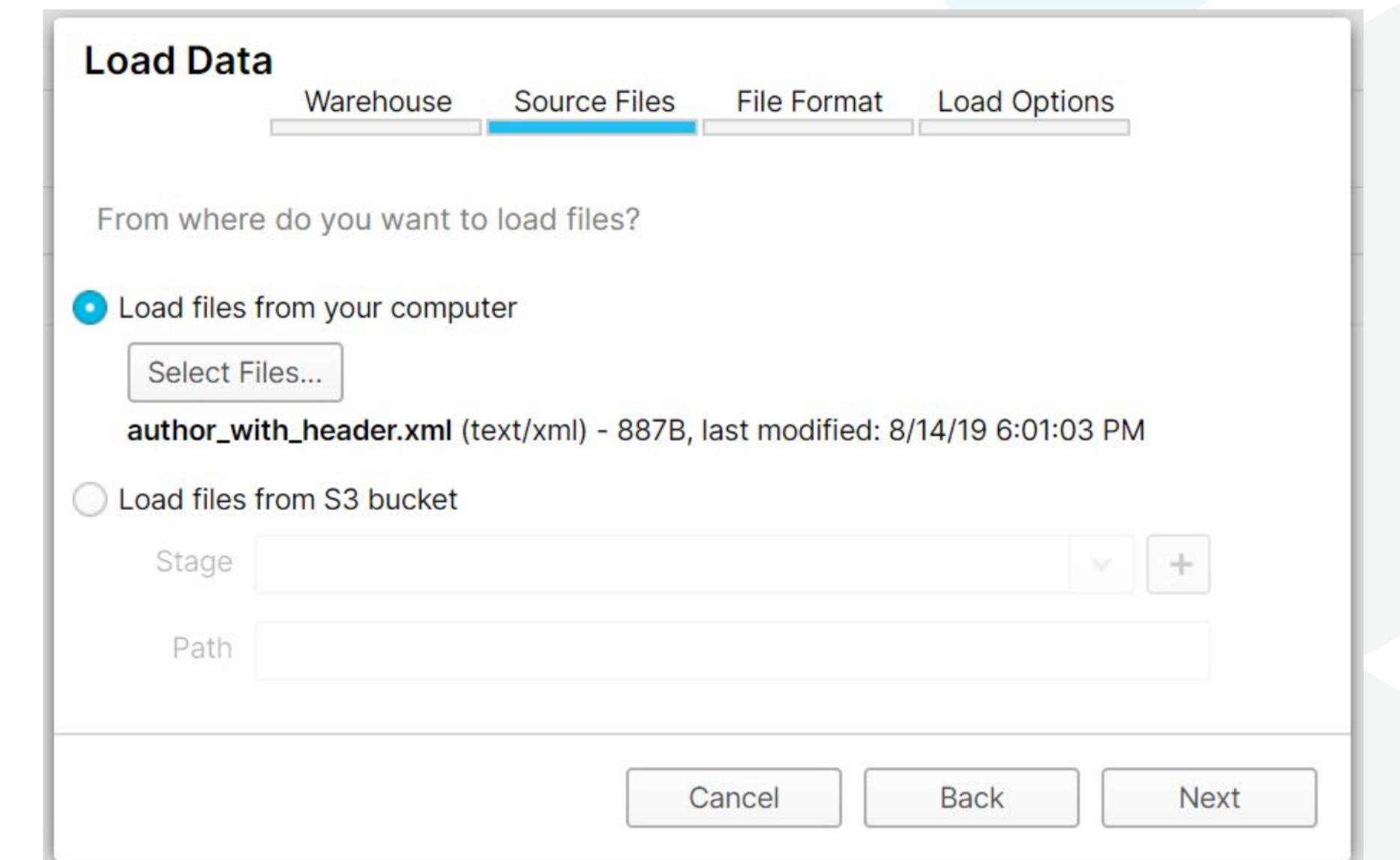
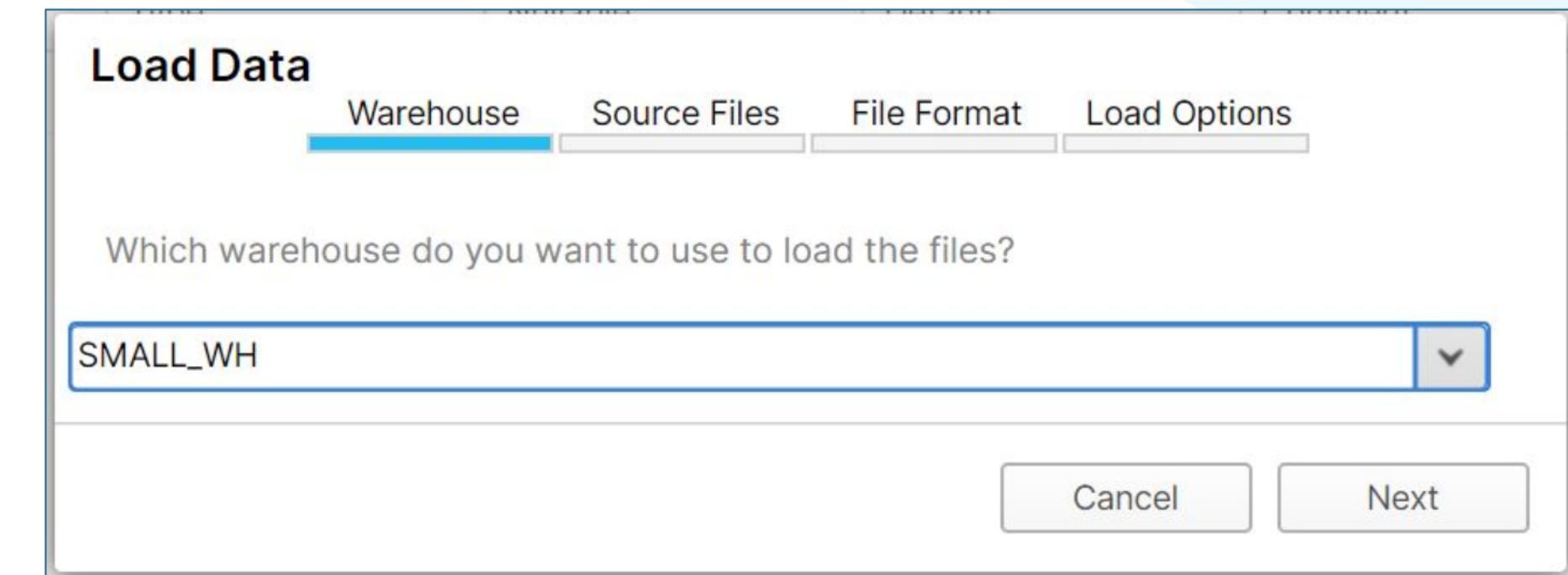
Databases > LIBRARY\_CARD\_CATALOG > AUTHOR\_INGEST\_XML (PUBLIC)

Column Name	Ordinal ▲	Type	Nullable
RAW_AUTHOR	1	VARIANT	true

# Essentials Lab 10

## Exercise 3

- 1) In **[Warehouse]** step of the wizard, choose your smallest warehouse, since this file is small and doesn't need much power.
- 2) Click **[Next]**.
- 3) In the **[Source Files]** step of the wizard, locate the file named, ***author\_with\_header.xml*** and select it.
- 4) Click **[Next]**.



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## Exercise 4

- 1) In **[File Format]** step of the wizard, choose **XML\_FILE\_FORMAT**.
- 2) Click **[Load]**.
- 3) Wait for confirmation of the load.
- 4) A **[Load Results]** dialog appears showing that a single row was loaded.

**NOTE:** We have a file that contains 6 records. Why did it only load 1 row? Is all the data there? If so, why is it all loaded into the same row instead of 6 separate rows?

The image shows two screenshots of the Snowflake UI. The top screenshot is the 'Load Data' dialog, specifically the 'File Format' step. It has tabs for 'Warehouse', 'Source Files', 'File Format' (which is selected and highlighted in blue), and 'Load Options'. A dropdown menu shows 'XML\_FILE\_FORMAT' with a minus sign (-) and a plus sign (+) button. Below the dropdown are buttons for 'Show SQL', 'Cancel', 'Back', 'Next', and a large blue 'Load' button. The bottom screenshot is the 'Load Results' dialog, which displays a table with one row. The table has columns: 'Loaded' (with a green checkmark icon), 'File' (containing 'author\_with\_header.xml'), 'Rows Parsed' (containing '1'), and 'Rows Loaded' (containing '1'). At the bottom right of the 'Load Results' dialog is a blue 'OK' button.

Loaded	File	Rows Parsed	Rows Loaded
✓	author_with_header.xml	1	1

OK



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## Exercise 5

- 1) Click **[Worksheets]** in the **Navigation Ribbon**.
- 2) Use the **Navigation Tree** to preview data loaded into the **AUTHOR\_INGEST\_XML table**.
- 3) Click the blue text anywhere in Row 1.
- 4) View the data in the row using the **[Details]** pop-up dialog.
- 5) Scroll through the data to see that all six author records have been loaded into a single row.

Results Data Preview

Table: LIBRARY\_CARD\_CATALOG.PUBLIC.AUTHOR\_INGEST\_XML

Filter result...

Row	RAW_AUTHOR
1	<dataset> <AUTHOR AUTHOR_UID="1"> <FIRST_NAME>Fiona</FIRST_NAME> <MIDDLE_NAME>Gian</MIDDLE_NAME> <LAST_NAME>Macdonald</LAST_NAME> </AUTHOR> <AUTHOR AUTHOR_UID="2"> <FIRST_NAME>Paolo</FIRST_NAME> <MIDDLE_NAME>Faleschini</MIDDLE_NAME> <LAST_NAME>Laura</LAST_NAME> </AUTHOR> <AUTHOR AUTHOR_UID="3"> <FIRST_NAME>Laura</FIRST_NAME>

Details

```
truncete table author_ingest_xml;
drop table author_ingest_xml;
-- //f
sel fro , 1
ts D
LIBR result
Row
```

Done

1 <dataset> <AUTHOR AUTHOR\_UID="1"> <FIRST\_NAME>Fiona</FIRST\_NAME> <MIDDLE\_NAME>Gian</MIDDLE\_NAME> <LAST\_NAME>Macdonald</LAST\_NAME> </AUTHOR> <AUTHOR AUTHOR\_UID="2"> <FIRST\_NAME>Paolo</FIRST\_NAME> <MIDDLE\_NAME>Faleschini</MIDDLE\_NAME> <LAST\_NAME>Laura</LAST\_NAME> </AUTHOR> <AUTHOR AUTHOR\_UID="3"> <FIRST\_NAME>Laura</FIRST\_NAME>



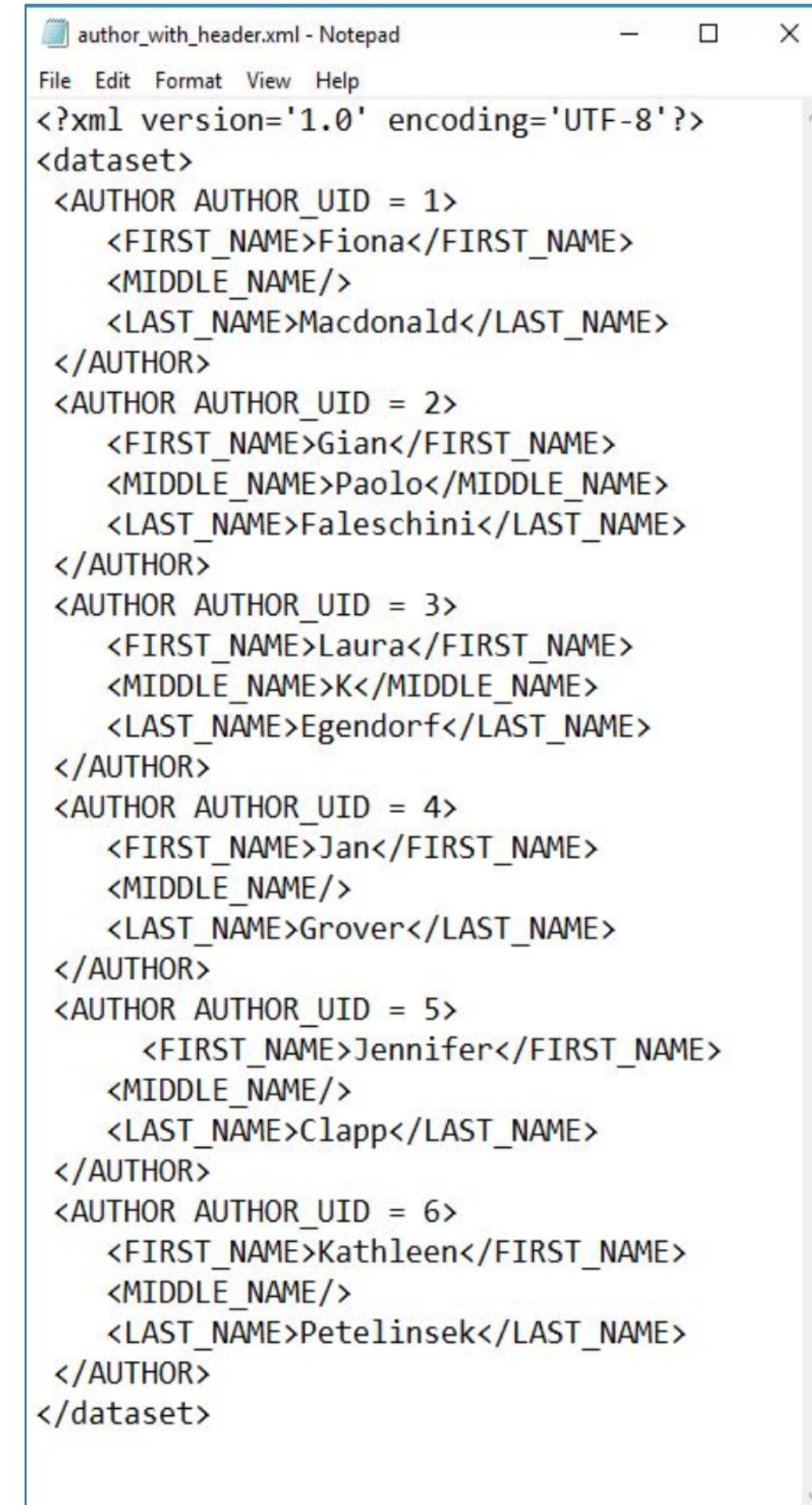
# Essentials Lab 10

## Exercise 6

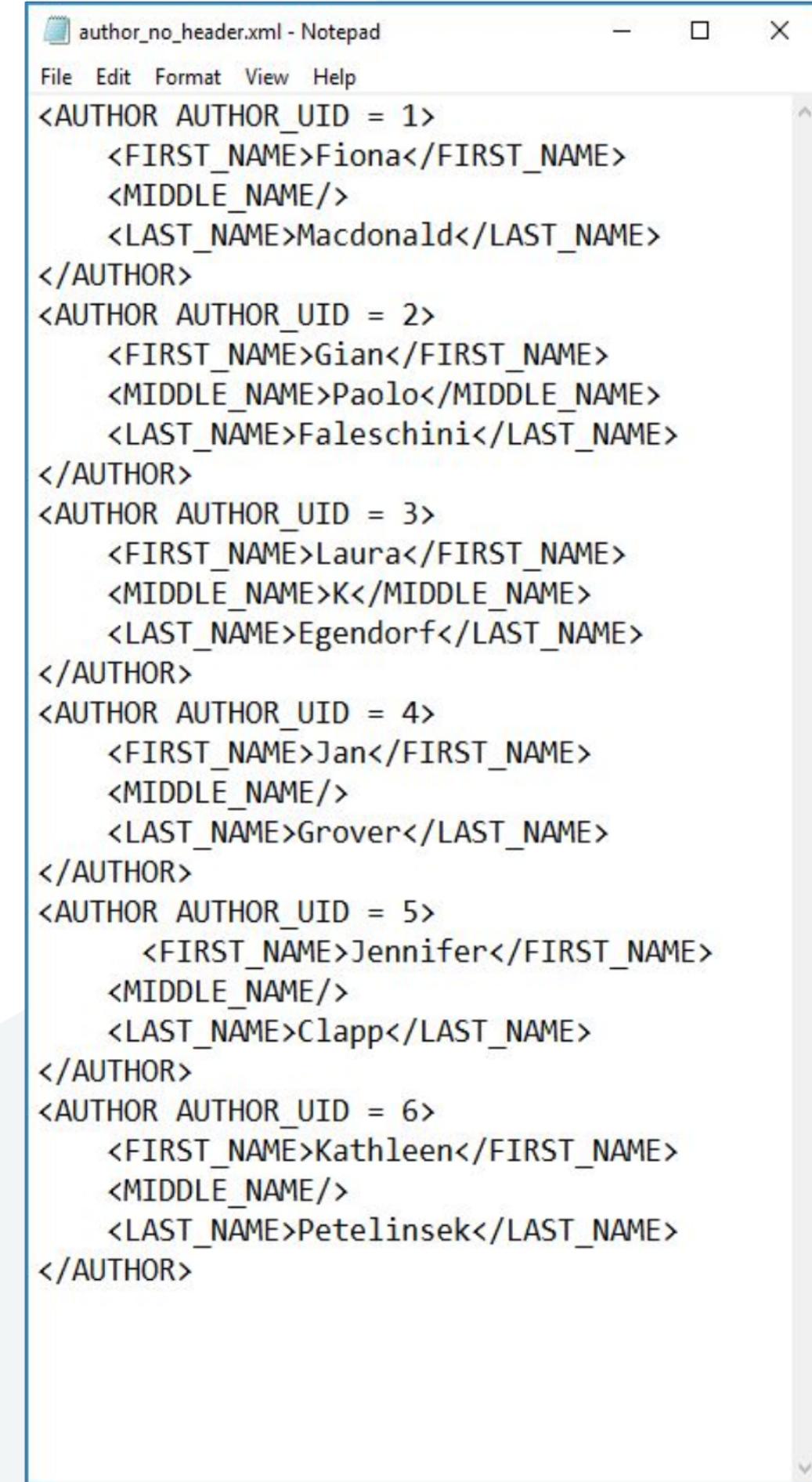
- 1) Use a text editing application like Notepad or Notepad++ to view the files named **author\_with\_header.xml** and **author\_no\_header.xml**.
- 2) Notice that the “no\_header” file has had the first line `<?xml...` and the `<dataset>` tags removed.

**NOTE:** Snowflake loaded the data as if you have a single entity named **dataset** instead of six entities named **AUTHOR**.

If you load the file named **author\_no\_header.xml**, will the results be different?



```
author_with_header.xml - Notepad
File Edit Format View Help
<?xml version='1.0' encoding='UTF-8'?>
<dataset>
  <AUTHOR AUTHOR_UID = 1>
    <FIRST_NAME>Fiona</FIRST_NAME>
    <MIDDLE_NAME/>
    <LAST_NAME>Macdonald</LAST_NAME>
  </AUTHOR>
  <AUTHOR AUTHOR_UID = 2>
    <FIRST_NAME>Gian</FIRST_NAME>
    <MIDDLE_NAME>Paolo</MIDDLE_NAME>
    <LAST_NAME>Faleschini</LAST_NAME>
  </AUTHOR>
  <AUTHOR AUTHOR_UID = 3>
    <FIRST_NAME>Laura</FIRST_NAME>
    <MIDDLE_NAME>K</MIDDLE_NAME>
    <LAST_NAME>Egendorf</LAST_NAME>
  </AUTHOR>
  <AUTHOR AUTHOR_UID = 4>
    <FIRST_NAME>Jan</FIRST_NAME>
    <MIDDLE_NAME/>
    <LAST_NAME>Grover</LAST_NAME>
  </AUTHOR>
  <AUTHOR AUTHOR_UID = 5>
    <FIRST_NAME>Jennifer</FIRST_NAME>
    <MIDDLE_NAME/>
    <LAST_NAME>Clapp</LAST_NAME>
  </AUTHOR>
  <AUTHOR AUTHOR_UID = 6>
    <FIRST_NAME>Kathleen</FIRST_NAME>
    <MIDDLE_NAME/>
    <LAST_NAME>Petelinsek</LAST_NAME>
  </AUTHOR>
</dataset>
```



```
author_no_header.xml - Notepad
File Edit Format View Help
<AUTHOR AUTHOR_UID = 1>
  <FIRST_NAME>Fiona</FIRST_NAME>
  <MIDDLE_NAME/>
  <LAST_NAME>Macdonald</LAST_NAME>
</AUTHOR>
<AUTHOR AUTHOR_UID = 2>
  <FIRST_NAME>Gian</FIRST_NAME>
  <MIDDLE_NAME>Paolo</MIDDLE_NAME>
  <LAST_NAME>Faleschini</LAST_NAME>
</AUTHOR>
<AUTHOR AUTHOR_UID = 3>
  <FIRST_NAME>Laura</FIRST_NAME>
  <MIDDLE_NAME>K</MIDDLE_NAME>
  <LAST_NAME>Egendorf</LAST_NAME>
</AUTHOR>
<AUTHOR AUTHOR_UID = 4>
  <FIRST_NAME>Jan</FIRST_NAME>
  <MIDDLE_NAME/>
  <LAST_NAME>Grover</LAST_NAME>
</AUTHOR>
<AUTHOR AUTHOR_UID = 5>
  <FIRST_NAME>Jennifer</FIRST_NAME>
  <MIDDLE_NAME/>
  <LAST_NAME>Clapp</LAST_NAME>
</AUTHOR>
<AUTHOR AUTHOR_UID = 6>
  <FIRST_NAME>Kathleen</FIRST_NAME>
  <MIDDLE_NAME/>
  <LAST_NAME>Petelinsek</LAST_NAME>
</AUTHOR>
```

# Essentials Lab 10

## Exercise 7

- 1) Launch the **[Load Table]** Wizard from the **AUTHOR\_INGEST\_XML** table.
- 2) Select your smallest warehouse and click **[Next]**.
- 3) Locate the **author\_no\_header.xml** file, select it and click **[Next]**.
- 4) In **[File Format]** step of the wizard, choose **XML\_FILE\_FORMAT**.
- 5) Click **[Finish]**.
- 6) When the confirmation message appears, notice that the number of rows loaded (without the `<?xml...` header and the `<dataset>` tag), is 6 rows.

The screenshot shows the Snowflake Load Data Wizard interface across five panels:

- Warehouse Step:** Shows "SMALL\_WH" selected in the dropdown.
- Source Files Step:** Shows "author\_no\_header.xml" selected under "Load files from your computer".
- File Format Step:** Shows "XML\_FILE\_FORMAT" selected.
- Load Options Step:** (partially visible)
- Load Results Step:** Shows the summary table:

Loaded	File	Rows Parsed	Rows Loaded
✓	author_no_header.xml	6	6



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## Exercise 8

- 1) Click **[Worksheets]** in the **Navigation Ribbon**.
- 2) Use the **Navigation Tree** to preview data loaded into the **AUTHOR\_INGEST\_XML** table.
- 3) Click the blue text anywhere in Rows 2-7.
- 4) View the data in the row using the **[Details]** pop-up dialog.
- 5) Scroll through the data to see that rows 2 through 7, which were loaded from the “no-header” row each have the data of a single author.

Results **Data Preview**

Table: LIBRARY\_CARD\_CATALOG.PUBLIC.AUTHOR\_INGEST\_XML

Data Details

Filter result...

Row	RAW_AUTHOR
1	<dataset> <AUTHOR AUTHOR_UID="1"> <FIRST_NAME>Fiona</FIRST_NAME> <MIDDLE_NAME>Macdonald</MIDDLE_NAME> <LAST_NAME>Fiona Macdonald</LAST_NAME>
2	<AUTHOR AUTHOR_UID="1"> <FIRST_NAME>Fiona</FIRST_NAME> <MIDDLE_NAME></MIDDLE_NAME> <LAST_NAME>Fiona Macdonald</LAST_NAME>
3	<AUTHOR AUTHOR_UID="2"> <FIRST_NAME>Gian</FIRST_NAME> <MIDDLE_NAME>Paolo</MIDDLE_NAME> <LAST_NAME>Gian Paolo</LAST_NAME>
4	<AUTHOR AUTHOR_UID="3"> <FIRST_NAME>Laura</FIRST_NAME> <MIDDLE_NAME>Kathleen</MIDDLE_NAME> <LAST_NAME>Laura Kathleen</LAST_NAME>
5	<AUTHOR AUTHOR_UID="4"> <FIRST_NAME>John</FIRST_NAME> <MIDDLE_NAME>Paul</MIDDLE_NAME> <LAST_NAME>John Paul</LAST_NAME>
6	<AUTHOR AUTHOR_UID="5"> <FIRST_NAME>Sarah</FIRST_NAME> <MIDDLE_NAME>Jane</MIDDLE_NAME> <LAST_NAME>Sarah Jane</LAST_NAME>
7	<AUTHOR AUTHOR_UID="6"> <FIRST_NAME>David</FIRST_NAME> <MIDDLE_NAME>Matthew</MIDDLE_NAME> <LAST_NAME>David Matthew</LAST_NAME>

**Details**

```
1 <AUTHOR AUTHOR_UID="1">
2   <FIRST_NAME>Fiona</FIRST_NAME>
3   <MIDDLE_NAME></MIDDLE_NAME>
4   <LAST_NAME>Macdonald</LAST_NAME>
5 </AUTHOR>
```

Done



# Essentials Lab 10

## Exercise 9

**NOTE:** Instead of manually removing the headers in a file so that the date is parsed and loaded into different rows, we can instead modify our **XML\_FILE\_FORMAT** so that it removes the header for us.

- 1) Click **[Databases]** in the **Navigation Ribbon**.
- 2) Click to drill into the **LIBRARY\_CARD\_CATALOG** database.
- 3) Click the **[File Formats]** tab.
- 4) Click to select the **XML\_FILE\_FORMAT** row.
- 5) Click **[Edit]**.

The screenshot shows the Snowflake web interface. At the top, there's a navigation bar with icons for Databases (highlighted with a purple circle labeled 1), Shares, Warehouses, and Worksheets. Below the navigation bar, the path 'Databases > LIBRARY\_CARD\_CATALOG' is shown, with 'LIBRARY\_CARD\_CATALOG' highlighted with a purple circle labeled 2. Underneath, there are tabs for Tables, Views, Schemas, Stages, File Formats (which is the active tab, highlighted with a blue underline and a purple circle labeled 3), and Sequences. A toolbar below these tabs includes buttons for Create..., Clone..., Edit... (highlighted with a purple circle labeled 4), Drop..., and Transfer Ownership. The main area displays a table with one row, where the 'Edit...' button is also highlighted with a purple circle labeled 5. The table columns are: File Format, Schema, Type, and Creation Time. The row contains: XML\_FILE\_FORMAT (highlighted with a purple circle labeled 4), PUBLIC, XML, and 8/14/19 1:03:26 PM.

File Format	Schema	Type	Creation Time
XML_FILE_FORMAT (highlighted with a purple circle labeled 4)	PUBLIC	XML	8/14/19 1:03:26 PM

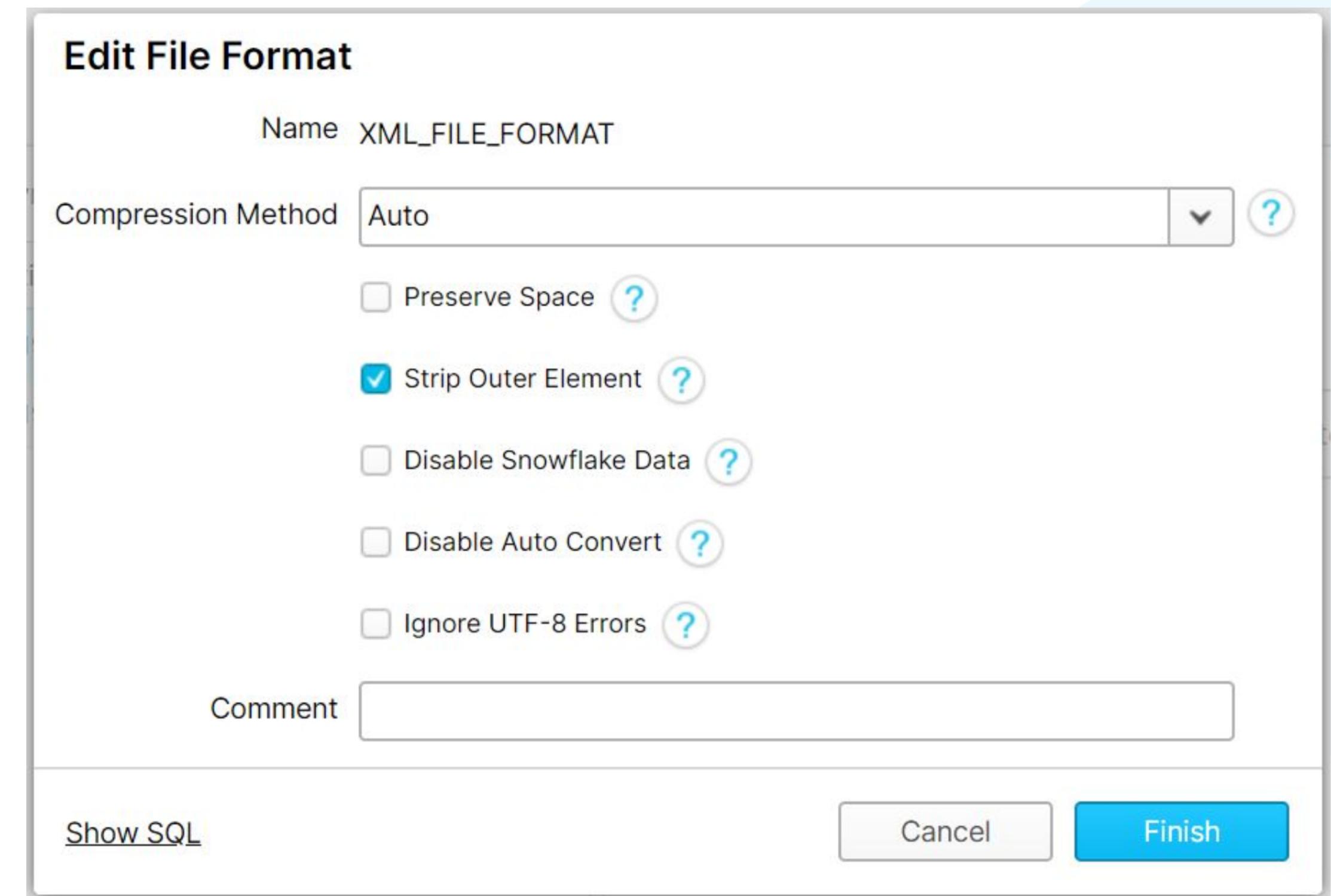
# Essentials Lab 10

## Exercise 10

- 1) Check the **[Strip Outer Element]** box.

**NOTE:** In our XML file, the <dataset> is the outer element. By checking this box, we can load the ***xml\_with\_header.xml*** file and it will automatically parse the data into six separate rows.

- 2) Click **[Finish]**.



# Essentials Lab 10

## Exercise 11

**NOTE:** To make the same change to a file format using the SQL code instead of the check box you can set the value:

**STRIP\_OUTER\_ELEMENT = TRUE**

Now that you have changed the file format, you can try loading the file that contains the header, and see if Snowflake successfully parses the file into six rows instead of one.

```
1 // XML DDL Scripts
2 USE LIBRARY_CARD_CATALOG;
3
4 // Create an Ingestion Table for XML Data
5 CREATE TABLE "LIBRARY_CARD_CATALOG"."PUBLIC"."AUTHOR_INGEST_XML"
6 (
7     "RAW_AUTHOR" VARIANT
8 );
9
10 //Create File Format for XML Data
11 CREATE FILE FORMAT "LIBRARY_CARD_CATALOG"."PUBLIC".XML_FILE_FORMAT
12 TYPE = 'XML'
13 COMPRESSION = 'AUTO'
14 PRESERVE_SPACE = FALSE
15 STRIP_OUTER_ELEMENT = FALSE
16 DISABLE_SNOWFLAKE_DATA = FALSE
17 DISABLE_AUTO_CONVERT = FALSE
18 IGNORE_UTF8_ERRORS = FALSE;
19
```

```
ALTER FILE FORMAT "LIBRARY_CARD_CATALOG"."PUBLIC".XML_FILE_FORMAT
SET STRIP_OUTER_ELEMENT = TRUE;
```



# Essentials Lab 10

## Exercise 12

- 1) Launch the **[Load Table]** Wizard from the **AUTHOR\_INGEST\_XML** table.
- 2) Select your smallest warehouse and click **[Next]**.
- 3) Locate the **author\_with\_header.xml** file, select it and click **[Next]**.
- 4) In **[File Format]** step of the wizard, choose **XML\_FILE\_FORMAT**.
- 5) Click **[Finish]**.
- 6) When the confirmation message appears, notice that the number of rows loaded is 6 rows.

The screenshot shows the Snowflake Load Data Wizard interface across six panels:

- Warehouse Step:** Shows "SMALL\_WH" selected in a dropdown menu.
- Source Files Step:** Shows the option "Load files from your computer" selected, with a "Select Files..." button and a file entry for "author\_with\_header.xml".
- File Format Step:** Shows "XML\_FILE\_FORMAT" selected in a dropdown menu.
- Load Options Step:** This step is partially visible at the top of the next panel.
- Load Results Step:** Displays a table with one row:

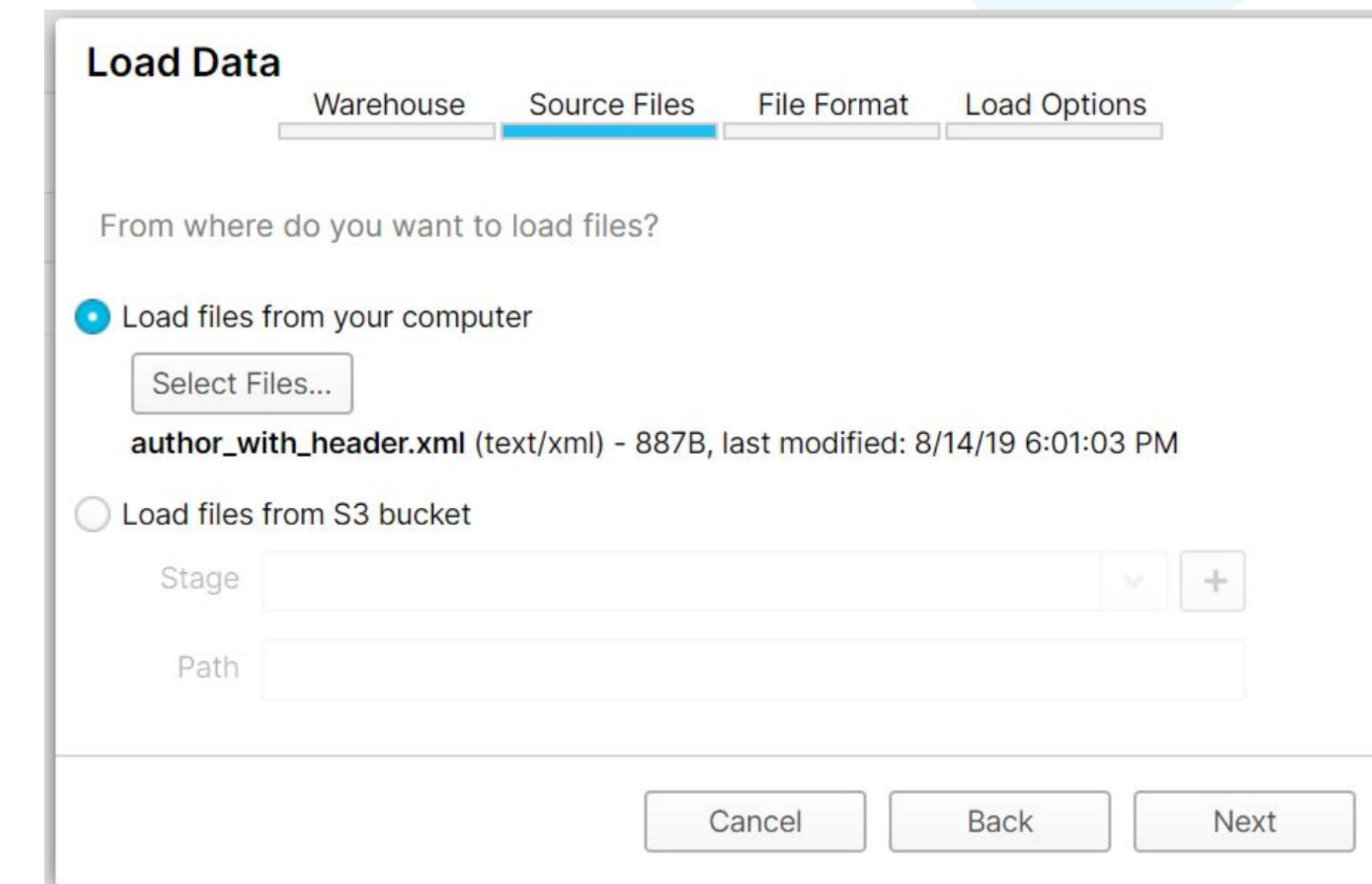
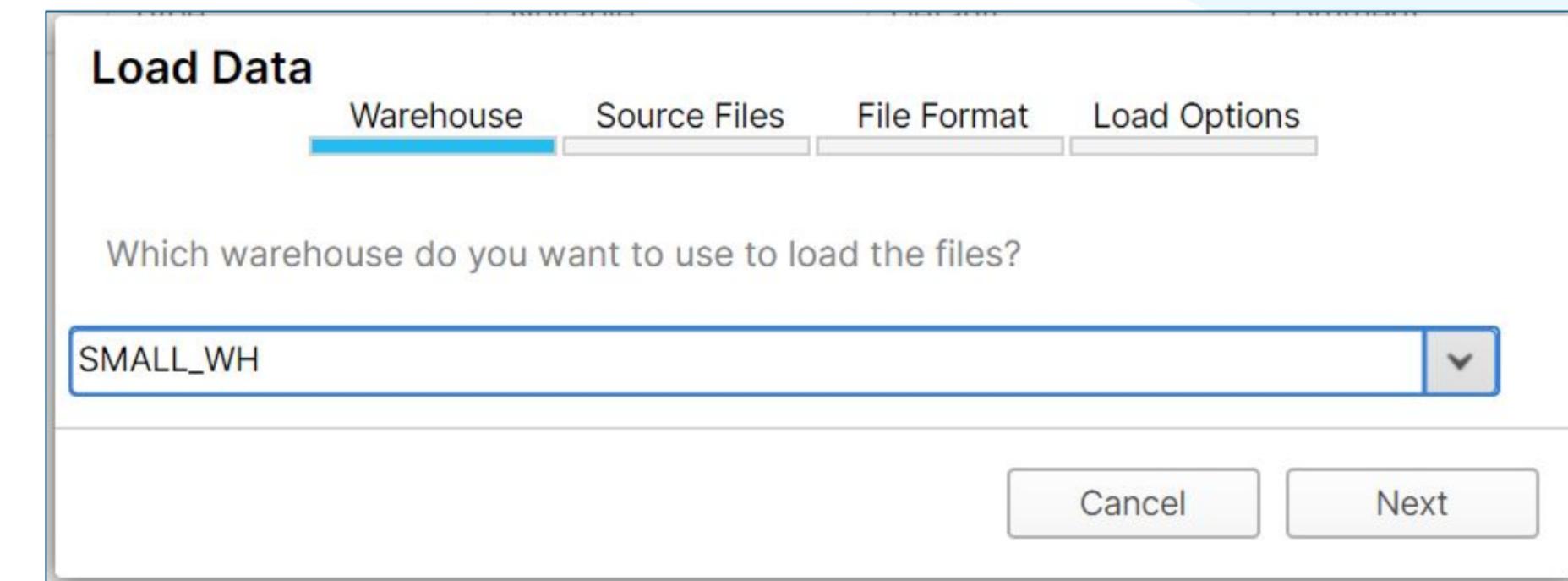
Loaded	File	Rows Parsed	Rows Loaded
✓	author_with_header.xml	6	6
- Confirmation Dialog:** A modal window titled "Load Data" with tabs for "Warehouse", "Source Files", "File Format", and "Load Options". It displays the message "Success! 6 rows were loaded." and includes "Cancel", "Back", "Next", and "Load" buttons.



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## Exercise 13

- 1) In **[Warehouse]** step of the wizard, choose your smallest warehouse, since this file is small and doesn't need much power.
- 2) Click **[Next]**.
- 3) In the **[Source Files]** step of the wizard, locate the file named, ***author\_with\_header.xml*** and select it.
- 4) Click **[Next]**.



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## Exercise 14

**NOTE:** Remember that you now have 13 rows of data in the table. The first row has all six author records, rows 2-7 have a set of author records and rows 8-13 have a set of duplicate author records.

- 1) Load the file **Lesson\_10\_XML\_DML.txt** into a new worksheet.
- 2) Run each statement separately to see how changes to the various SELECT statements return different results.

**NOTE:** “DML” stands for “Data Manipulation Language.” When you run DML statements like SELECT statements, INSERT, UPDATE, or DELETE, you are manipulating the data.

```
▶ Run All Queries | Saved 2 hours ago

1 // XML DML Scripts
2 USE LIBRARY_CARD_CATALOG;
3
4 //Returns entire record
5 SELECT raw_author
6 FROM author_ingest_xml;
7
8 // Presents a kind of meta-data view of the data
9 SELECT raw_author:"$"
10 FROM author_ingest_xml;
11
12 //shows the root or top-level object name of each row
13 SELECT raw_author:"@"
14 FROM author_ingest_xml;
15
16 //returns AUTHOR_UID value from top-level object's attribute
17 SELECT raw_author:"@AUTHOR_UID"
18 FROM author_ingest_xml;
19
20 //returns value of NESTED OBJECT called FIRST_NAME
21 SELECT XMLGET(raw_author, 'FIRST_NAME'):"$"
22 FROM author_ingest_xml;
23
24 //returns the data in a way that makes it look like a normalized table
25 SELECT
26 raw_author:"@AUTHOR_UID" as AUTHOR_ID
27 ,XMLGET(raw_author, 'FIRST_NAME'):"$" as FIRST_NAME
28 ,XMLGET(raw_author, 'MIDDLE_NAME'):"$" as MIDDLE_NAME
```



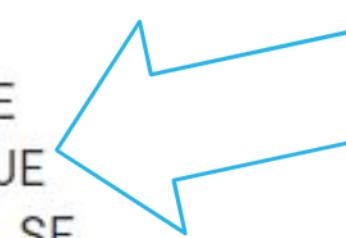
# Essentials Lab 10

## Exercise 15

We'll now carry out a similar load process of JSON data. Begin by creating a table and file format for the JSON.

- 1) Load the file **Lesson\_10\_JSON\_DDL.txt** into a new worksheet.
- 2) Run the statements one at a time or all together, based on your own preference.

**NOTE:** We have already set the File Format STRIP\_OUTER\_ARRAY value to TRUE (see arrow) so that we don't have to remove the header from the file we plan to load.



```
▶ Run All Queries | Saved a few seconds ago

1 // JSON DDL Scripts
2 USE LIBRARY_CARD_CATALOG;
3
4 // Create an Ingestion Table for JSON Data
5 CREATE TABLE "LIBRARY_CARD_CATALOG"."PUBLIC"."AUTHOR_INGEST_JSON"
6 (
7     "RAW_AUTHOR" VARIANT
8 );
9
10 //Create File Format for JSON Data
11 CREATE FILE FORMAT "LIBRARY_CARD_CATALOG"."PUBLIC".JSON_FILE_FORMAT
12 TYPE = 'JSON'
13 COMPRESSION = 'AUTO'
14 ENABLE_OCTAL = FALSE
15 ALLOW_DUPLICATE = FALSE
16 STRIP_OUTER_ARRAY = TRUE
17 STRIP_NULL_VALUES = FALSE
18 IGNORE_UTF8_ERRORS = FALSE;
```



# Essentials Lab 10

## Exercise 16

- 1) Launch the **[Load Table]** Wizard from the **AUTHOR\_INGEST\_JSON** table.
- 2) Use the following settings:
  - a) Choose your smallest warehouse.
  - b) Select the **author\_with\_header.json** file.
  - c) Use the **JSON FILE FORMAT** as the file format.
- 3) When the load completes, navigate to the table in the **[Worksheets]** area and preview the loaded data.

### Load Results

Loaded	File	Rows Parsed	Rows Loaded
✓	author_with_header.json	6	6

### Data Preview

Table: LIBRARY\_CARD\_CATALOG.PUBLIC.AUTHOR\_INGEST\_JSON

Filter result...

Row	RAW_AUTHOR
1	{ "AUTHOR_UID": 1, "FIRST_NAME": "Fiona", "LAST_NAME": "Macdonald", "MIDDLE_NAME": null }
2	{ "AUTHOR_UID": 2, "FIRST_NAME": "Gian", "LAST_NAME": "Faleschini", "MIDDLE_NAME": "Paulo" }
3	{ "AUTHOR_UID": 3, "FIRST_NAME": "Laura", "LAST_NAME": "Egendorf", "MIDDLE_NAME": "K" }
4	{ "AUTHOR_UID": 4, "FIRST_NAME": "Jan", "LAST_NAME": "Grover", "MIDDLE_NAME": null }
5	{ "AUTHOR_UID": 5, "FIRST_NAME": "Jennifer", "LAST_NAME": "Clapp", "MIDDLE_NAME": null }
6	{ "AUTHOR_UID": 6, "FIRST_NAME": "Kathleen", "LAST_NAME": "Petelinsek", "MIDDLE_NAME": null }



# Essentials Lab 10

## Exercise 17

- 1) Load the file

**Lesson\_10\_JSON\_DML.txt**  
into a new worksheet.

- 2) Run each statement  
separately and observe  
how the data changes as  
your **SELECT** statement  
changes.

```
▶ Run All Queries | Saved 7 minutes ago

1 // JSON DML Scripts
2 USE LIBRARY_CARD_CATALOG;
3
4 //returns entire record
5 select raw_author
6 from author_ingest_json;
7
8 //returns AUTHOR_UID value from top-level object's attribute
9 select raw_author:AUTHOR_UID
10 from author_ingest_json;
11
12 //returns the data in a way that makes it look like a normalized table
13 SELECT
14   raw_author:AUTHOR_UID
15 , raw_author:FIRST_NAME::STRING as FIRST_NAME
16 , raw_author:MIDDLE_NAME::STRING as MIDDLE_NAME
17 , raw_author:LAST_NAME::STRING as LAST_NAME
18 FROM AUTHOR_INGEST_JSON;
19
```



