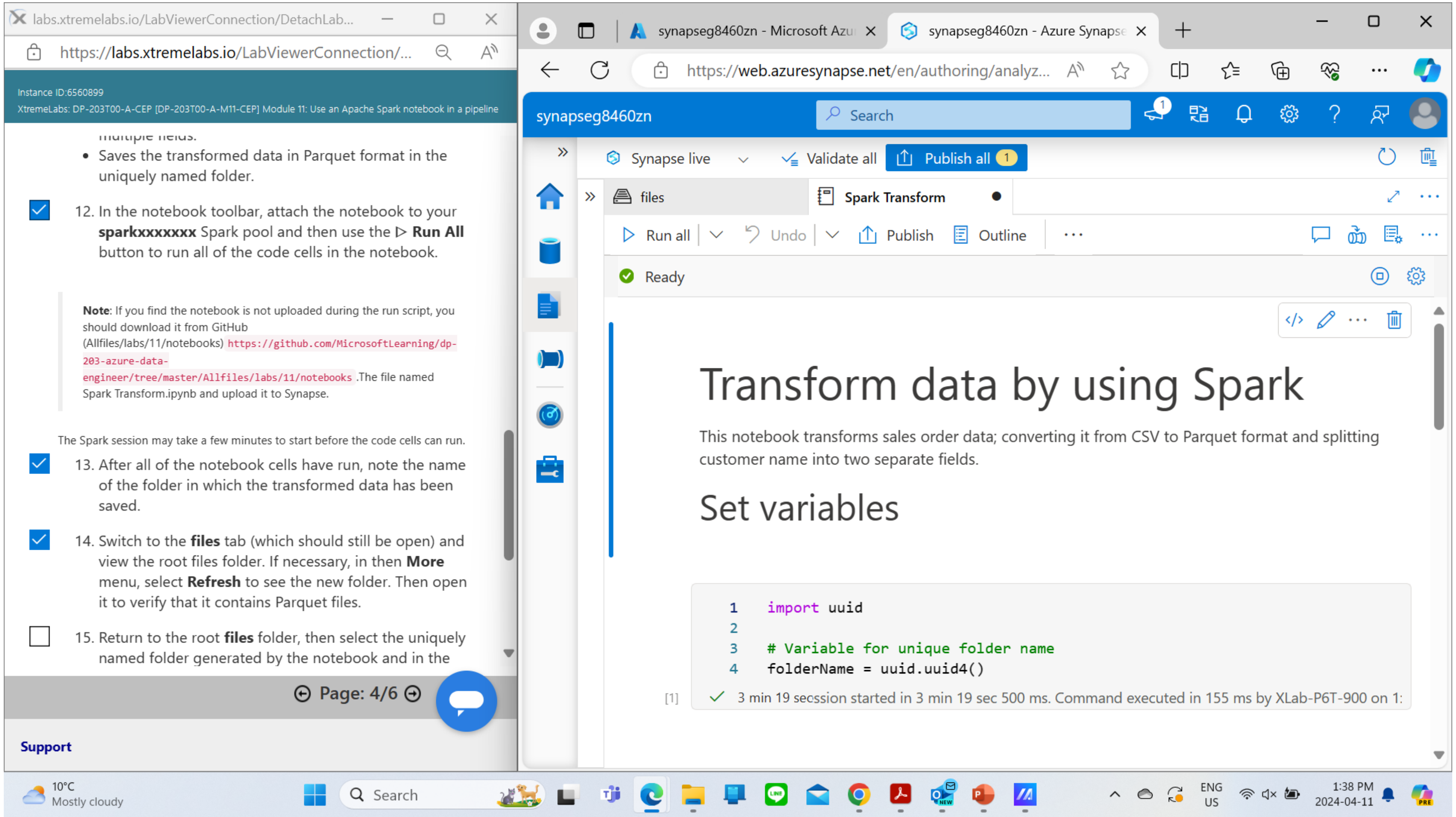
Lab 10 – Build a data pipeline in Azure Synapse Analytics

Run a Spark notebook interactively (1)


labs.xtremelabs.io/LabViewerConnection/DetachLab...
https://labs.xtremelabs.io/LabViewerConnection/...
synapseg8460zn - Microsoft Azu
synapseg8460zn - Azure Synapse
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Publish all 1
files
Spark Transform
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2024-04-11

Instance ID:6560899

XtremeLabs: DP-203T00-A-CEP [DP-203T00-A-M11-CEP] Module 11: Use an Apache Spark notebook in a pipeline

multiple fields.

- Saves the transformed data in Parquet format in the uniquely named folder.

☑ 12. In the notebook toolbar, attach the notebook to your **sparkxxxxxxx** Spark pool and then use the ▷ **Run All** button to run all of the code cells in the notebook.

> **Note**: If you find the notebook is not uploaded during the run script, you should download it from GitHub (Allfiles/labs/11/notebooks) `https://github.com/MicrosoftLearning/dp-203-azure-data-engineer/tree/master/Allfiles/labs/11/notebooks` .The file named Spark Transform.ipynb and upload it to Synapse.

The Spark session may take a few minutes to start before the code cells can run.

☑ 13. After all of the notebook cells have run, note the name of the folder in which the transformed data has been saved.

☑ 14. Switch to the **files** tab (which should still be open) and view the root files folder. If necessary, in then **More** menu, select **Refresh** to see the new folder. Then open it to verify that it contains Parquet files.

□ 15. Return to the root **files** folder, then select the uniquely named folder generated by the notebook and in the

Transform data by using Spark

This notebook transforms sales order data; converting it from CSV to Parquet format and splitting customer name into two separate fields.

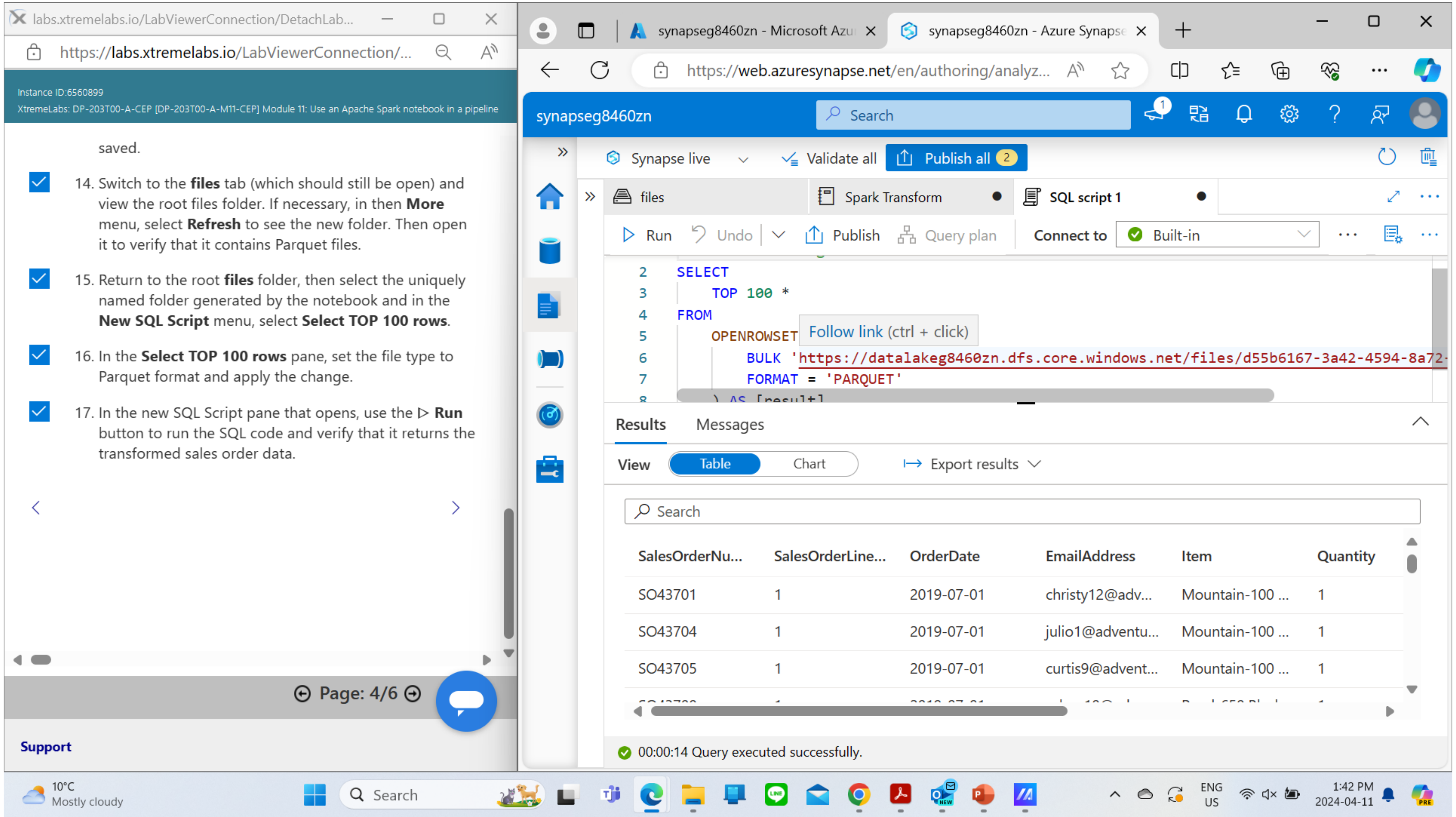
Set variables

```
import uuid

# Variable for unique folder name
folderName = uuid.uuid4()
```

[1] ✓ 3 min 19 session started in 3 min 19 sec 500 ms. Command executed in 155 ms by XLab-P6T-900 on 1:

Run a Spark notebook interactively (2)



Instance ID:6560899

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saved.

☑ 14. Switch to the **files** tab (which should still be open) and view the root files folder. If necessary, in then **More** menu, select **Refresh** to see the new folder. Then open it to verify that it contains Parquet files.

☑ 15. Return to the root **files** folder, then select the uniquely named folder generated by the notebook and in the **New SQL Script** menu, select **Select TOP 100 rows**.

☑ 16. In the **Select TOP 100 rows** pane, set the file type to Parquet format and apply the change.

☑ 17. In the new SQL Script pane that opens, use the ▷ **Run** button to run the SQL code and verify that it returns the transformed sales order data.

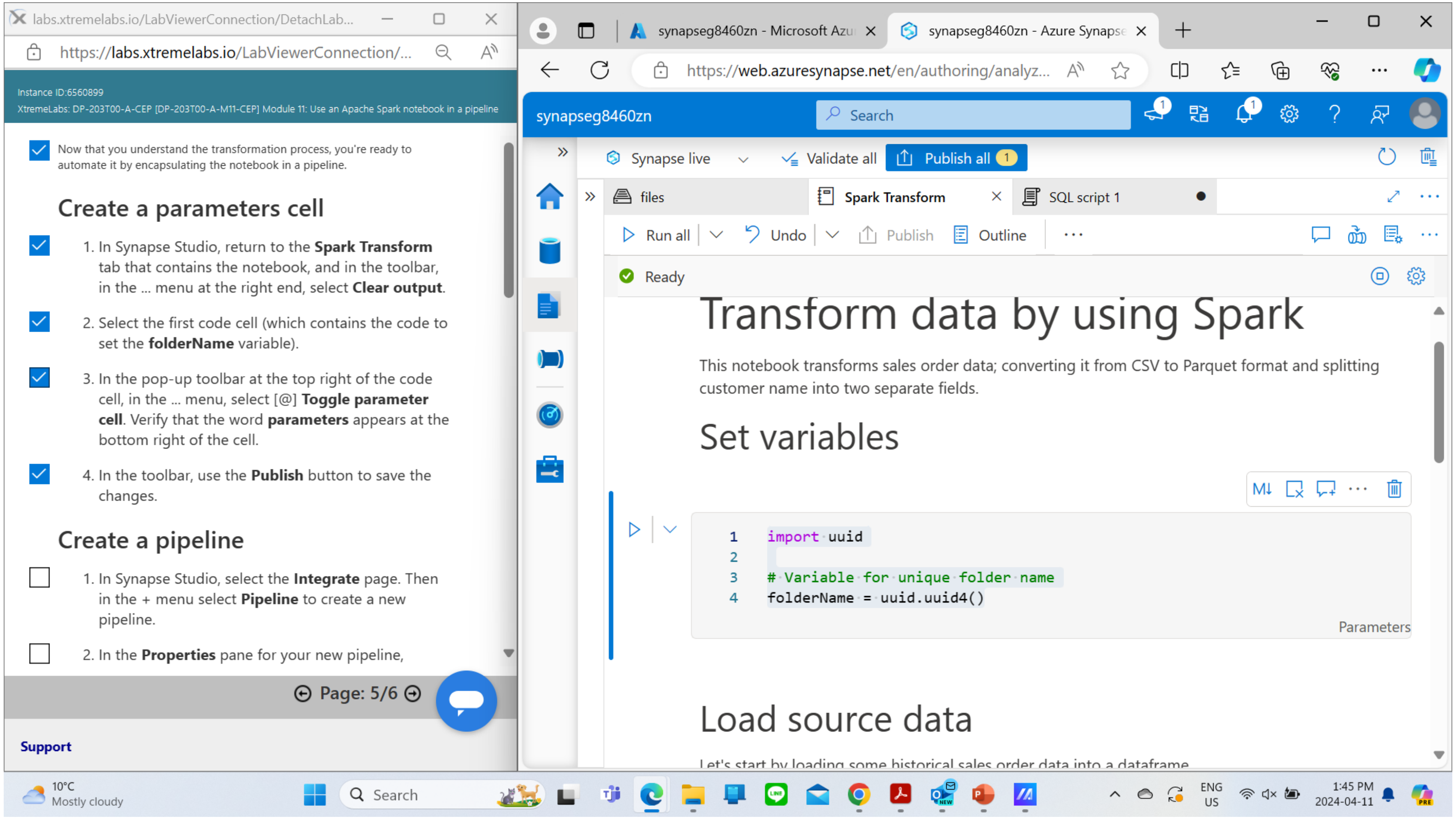
```sql
SELECT
    TOP 100 *
FROM
    OPENROWSET
        BULK 'https://datalakeg8460zn.dfs.core.windows.net/files/d55b6167-3a42-4594-8a72-
        FORMAT = 'PARQUET'
    ) AS [result]
```

SalesOrderNu...	SalesOrderLine...	OrderDate	EmailAddress	Item	Quantity
SO43701	1	2019-07-01	christy12@adv...	Mountain-100 ...	1
SO43704	1	2019-07-01	julio1@adventu...	Mountain-100 ...	1
SO43705	1	2019-07-01	curtis9@advent...	Mountain-100 ...	1

✓ 00:00:14 Query executed successfully.

Run the notebook in a pipeline

Create a parameters cell



labs.xtremelabs.io/LabViewerConnection/DetachLab...
https://labs.xtremelabs.io/LabViewerConnection/...
synapseg8460zn - Microsoft Azu
synapseg8460zn - Azure Synapse
https://web.azuresynapse.net/en/authoring/analyz...
synapseg8460zn
Search
Synapse live
Validate all
Publish all 1
files
Spark Transform
SQL script 1
Run all
Undo
Publish
Outline
Ready
Parameters
Page: 5/6
Support
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2024-04-11

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☑ Now that you understand the transformation process, you're ready to automate it by encapsulating the notebook in a pipeline.

Create a parameters cell

☑ 1. In Synapse Studio, return to the **Spark Transform** tab that contains the notebook, and in the toolbar, in the ... menu at the right end, select **Clear output**.

☑ 2. Select the first code cell (which contains the code to set the **folderName** variable).

☑ 3. In the pop-up toolbar at the top right of the code cell, in the ... menu, select [@] **Toggle parameter cell**. Verify that the word **parameters** appears at the bottom right of the cell.

☑ 4. In the toolbar, use the **Publish** button to save the changes.

Create a pipeline

□ 1. In Synapse Studio, select the **Integrate** page. Then in the + menu select **Pipeline** to create a new pipeline.

□ 2. In the **Properties** pane for your new pipeline,

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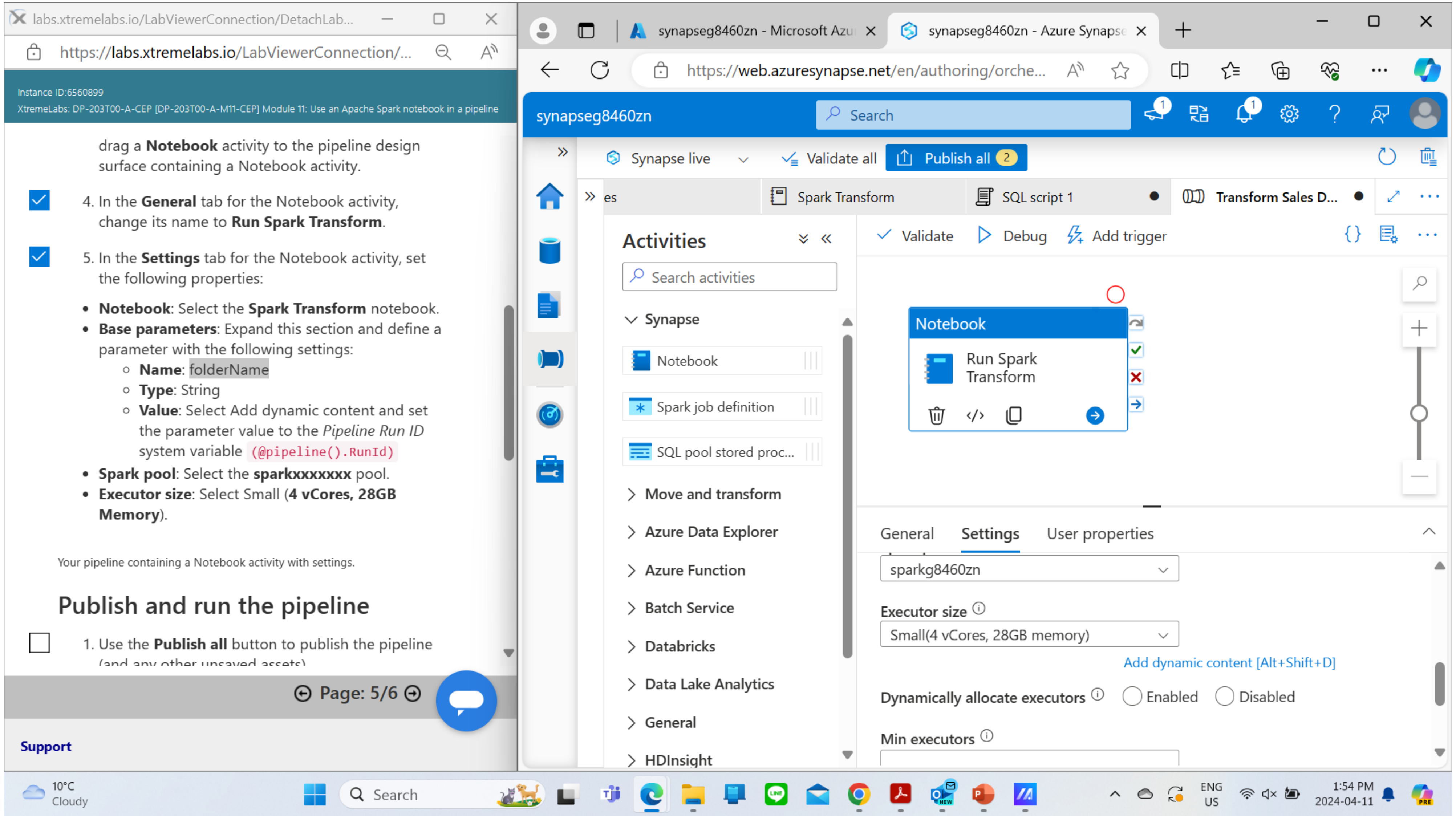
```

Load source data

Let's start by loading some historical sales order data into a dataframe

Create a pipeline



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drag a **Notebook** activity to the pipeline design surface containing a Notebook activity.

☑ 4. In the **General** tab for the Notebook activity, change its name to **Run Spark Transform**.

☑ 5. In the **Settings** tab for the Notebook activity, set the following properties:

- **Notebook**: Select the **Spark Transform** notebook.
- **Base parameters**: Expand this section and define a parameter with the following settings:
  - **Name**: folderName
  - **Type**: String
  - **Value**: Select Add dynamic content and set the parameter value to the *Pipeline Run ID* system variable `(@pipeline().RunId)`
- **Spark pool**: Select the **sparkxxxxxxx** pool.
- **Executor size**: Select Small (**4 vCores, 28GB Memory**).

Your pipeline containing a Notebook activity with settings.

Publish and run the pipeline

□ 1. Use the **Publish all** button to publish the pipeline (and any other unsaved assets)

Notebook: Run Spark Transform

sparkg8460zn

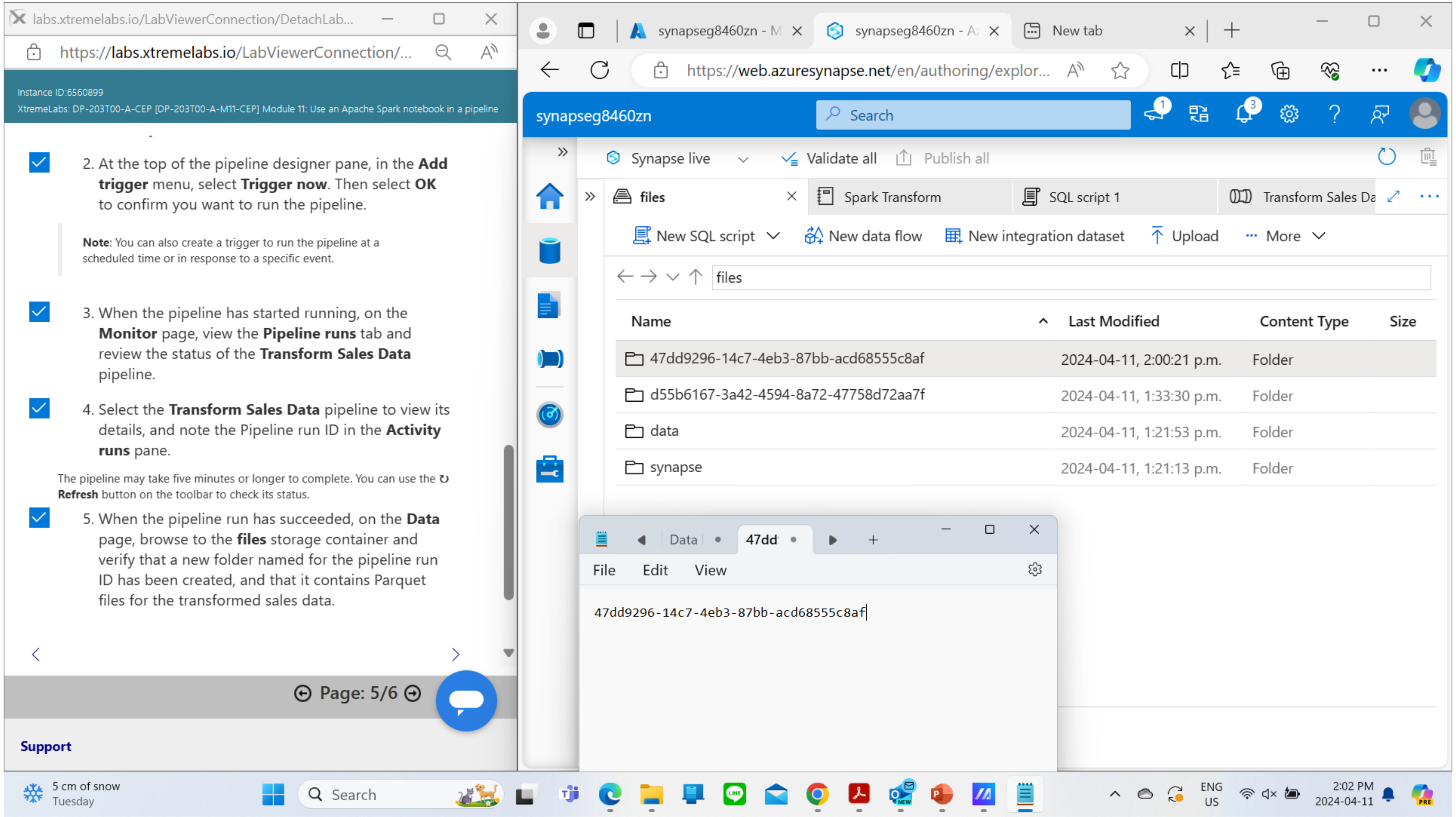
Executor size: Small(4 vCores, 28GB memory)

Add dynamic content [Alt+Shift+D]

Dynamically allocate executors ○ Enabled ○ Disabled

Min executors

Publish and run the pipeline



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☑ 2. At the top of the pipeline designer pane, in the **Add trigger** menu, select **Trigger now**. Then select **OK** to confirm you want to run the pipeline.

> **Note**: You can also create a trigger to run the pipeline at a scheduled time or in response to a specific event.

☑ 3. When the pipeline has started running, on the **Monitor** page, view the **Pipeline runs** tab and review the status of the **Transform Sales Data** pipeline.

☑ 4. Select the **Transform Sales Data** pipeline to view its details, and note the Pipeline run ID in the **Activity runs** pane.

The pipeline may take five minutes or longer to complete. You can use the ↻ **Refresh** button on the toolbar to check its status.

☑ 5. When the pipeline run has succeeded, on the **Data** page, browse to the **files** storage container and verify that a new folder named for the pipeline run ID has been created, and that it contains Parquet files for the transformed sales data.

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Support

files

Name	Last Modified	Content Type	Size
47dd9296-14c7-4eb3-87bb-acd68555c8af	2024-04-11, 2:00:21 p.m.	Folder	
d55b6167-3a42-4594-8a72-47758d72aa7f	2024-04-11, 1:33:30 p.m.	Folder	
data	2024-04-11, 1:21:53 p.m.	Folder	
synapse	2024-04-11, 1:21:13 p.m.	Folder	

```
47dd9296-14c7-4eb3-87bb-acd68555c8af
```