

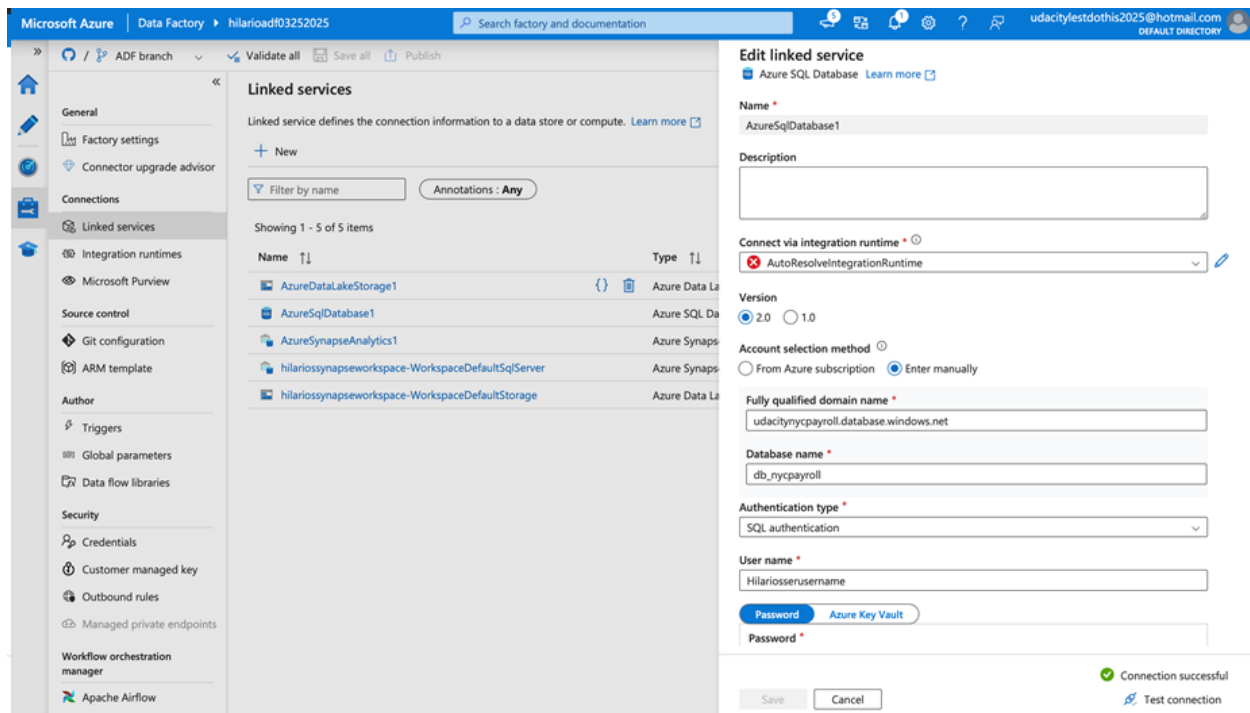
## Linked Services

| Criteria  | Submission Requirements   |
|---|---|
| The learner will be able to create a Linked Service to configure a connection to Azure Data Lake Gen2 containing master data and payroll data   | A Linked Service object is present in the data pipeline repository of type "AzureBlobFS" that configures a connection to Azure Data Lake Gen2 containing master data and payroll data.    |
| The learner will be able to create a Linked Service in Azure Data Factory from Azure SQL Database to configure a connection to Azure SQL Database containing master data and payroll data | A Linked Service object is present in the data pipeline repository of type "AzureSQLDatabase" that configures a connection to Azure SQL Database containing master data and payroll data. |

The screenshot shows the Microsoft Azure Data Factory console. The left sidebar contains navigation options: General (Factory settings, Connector upgrade advisor), Connections (Linked services, Integration runtimes, Microsoft Purview), Source control (Git configuration, ARM template), Author (Triggers, Global parameters, Data flow libraries), Security (Credentials, Customer managed key, Outbound rules, Managed private endpoints), and Workflow orchestration manager (Apache Airflow). The main pane displays the 'Linked services' section with a table listing five services:

| Name   | Type                         |
|--|------------------------------|
| AzureDataLakeStorage1                              | Azure Data Lake Storage Gen2 |
| AzureSqlDatabase1                                  | Azure SQL Database           |
| AzureSynapseAnalytics1                             | Azure Synapse Analytics      |
| hilariossynapseworkspace-WorkspaceDefaultSqlServer | Azure Synapse Analytics      |
| hilariossynapseworkspace-WorkspaceDefaultStorage   | Azure Data Lake Storage Gen2 |

The right pane shows the 'Edit linked service' configuration for 'Azure Data Lake Storage Gen2'. The 'Name' field is 'AzureDataLakeStorage1'. The 'Description' field is empty. The 'Connect via integration runtime' dropdown is set to 'AutoResolveIntegrationRuntime'. The 'Authentication type' is 'Account key'. The 'Account selection method' is 'Enter manually'. The 'URL' field contains 'https://udacitystorage3262025.dfs.core.windows.net/'. The 'Storage account key' field is masked with dots. The 'Test connection' section shows 'To linked service' selected. At the bottom right, a green checkmark indicates 'Connection successful' and a 'Test connection' button is visible.



## Datasets

| Criteria  | Submission Requirements  |
|---|--|
| The learner will be able to create datasets to provide views of master data and payroll data in Azure Data Lake Gen2.     | Multiple dataset objects are present in the data pipeline repository of type "AzureBlobFSLocation" with schemas from "AgencyMaster.csv", "TitleMaster.csv", "EmpMaster.csv", "nycpayroll_2020.csv" and "nycpayroll_2021.csv" to provide datasets for data views from Azure Data Lake Gen2. |
| The learner will be able to create a dataset to provide a view of master data and payroll data in the Azure SQL DB table. | Multiple dataset objects are present in the data pipeline repository of type "AzureSqlTable" with schemas from the NYC Payroll Data, Agency, Employee, Title SQL DB tables to provide a dataset for a data view.   |

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  - Access keys
  - Shared access signature
  - Encryption
  - Microsoft Defender for Cloud
- Data management
- Settings
  - Configuration

udacitystorage3262025

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- Blobs
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- File shares
- Queues
- Tables

+ Add Directory Upload Refresh Delete Copy Paste Rename Acquire lease Break lease

Blob containers > adlsnycpayroll-hilario-l

Authentication method: Microsoft Entra user account (Switch to Access key)

Search blobs by prefix (case-sensitive) Only show active objects

Showing all 3 items

|  | Name            | Last modified          | Access tier | Blob type | Size | Lease state |
|--|-----------------|------------------------|-------------|-----------|------|-------------|
|  | dirhistoryfiles | 3/26/2025, 12:15:01 PM |             |           |      |             |
|  | dirpayrollfiles | 3/26/2025, 12:14:49 PM |             |           |      |             |
|  | dirstaging      | 3/26/2025, 12:15:28 PM |             |           |      |             |

Microsoft Azure

Search resources, services, and docs (G+I)

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+ Add Directory

Upload

Refresh

Delete

Copy

Paste

Rename

Acquire lease

Break lease

...

Blob containers > adlsnycpayroll-hilario-1 > dirpayrollfiles

Authentication method: Microsoft Entra user account (Switch to Access key)

Search blobs by prefix (case-sensitive)

Only show active objects

Showing all 4 items

|  | Name                | Last modified          | Access tier    | Blob type  | Size      |
|--|---------------------|------------------------|----------------|------------|-----------|
|  | [.]                 |                        |                |            |           |
|  | AgencyMaster.csv    | 3/26/2025, 12:19:51 PM | Hot (Inferred) | Block blob | 4.9 KiB   |
|  | EmpMaster.csv       | 3/26/2025, 12:20:27 PM | Hot (Inferred) | Block blob | 23.04 KiB |
|  | TitleMaster.csv     | 3/26/2025, 12:20:39 PM | Hot (Inferred) | Block blob | 49.04 KiB |
|  | nycpayroll_2021.csv | 3/26/2025, 12:20:54 PM | Hot (Inferred) | Block blob | 16.45 KiB |

Microsoft Azure

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File shares

Queues

Tables

+ Add Directory

Upload

Refresh

Delete

Copy

Paste

Rename

Acquire lease

Break lease

...

Blob containers > adlsnycpayroll-hilario-1 > dirhistoryfiles

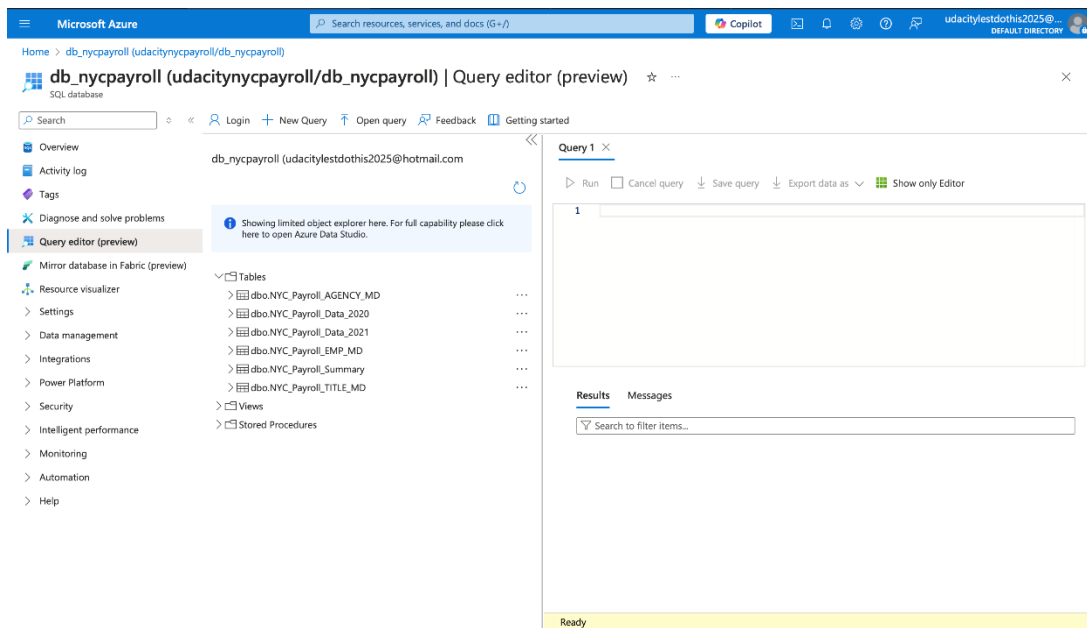
Authentication method: Microsoft Entra user account (Switch to Access key)

Search blobs by prefix (case-sensitive)

Only show active objects

Showing all 1 items

|  | Name                | Last modified          | Access tier    | Blob type  | Size      |
|--|---------------------|------------------------|----------------|------------|-----------|
|  | [.]                 |                        |                |            |           |
|  | nycpayroll_2020.csv | 3/26/2025, 12:21:16 PM | Hot (Inferred) | Block blob | 17.07 KiB |



## Data Flows

| Criteria  | Submission Requirements  |
|---|--|
| The learner will be able to create data flows to aggregate payroll data from Azure SQL DB and NYC Payroll history files o the SQL DB destination table and dirstaging Datalake Gen2 storage | A Dataflow object is present in the data pipeline repository of type "MappingDataFlow" with a union to create a derived aggregated column with the total amount paid to an employee (TotalPaid = RegularGrossPaid + TotalOTPaid + TotalOtherPay). The data sources for this aggregate column should be the data from Azure SQL DB tables |
| The learner should be able to create data flows to move data from one data storage system to another.   | Multiple Dataflow objects are present in the data pipeline repository of type "MappingDataFlow". Data flows should map data in datasets from Azure Data Lake Gen2 to Azure SQL DB. Data flows should map data from Azure SQL DB and Data Lake Gen2 to move it to the Data Lake staging directory and SQL DB destination table.           |

Microsoft Azure | Data Factory | hilarioadf03252025 | Search factory and documentation

>> Data Factory | Validate all | Publish all

**Factory Resources**

- Pipelines: 1
  - pipeline1
- Change Data Capture (preview): 0
- Datasets: 13
- Data flows: 6
  - data\_flow\_summary
  - dl\_to\_sql\_agency\_master
  - dl\_to\_sql\_emp\_master
  - dl\_to\_sql\_nyc\_2020
  - dl\_to\_sql\_nyc\_2021
  - dl\_to\_sql\_title**
- Power Query: 0
  - dl\_to\_sql\_title

**synapse\_payroll\_sum...** | **pipeline1** | **dl\_to\_sql\_title**

✓ Validate | Data flow debug

DItitleMaster | SqltitleMaster

Import data from dl\_title\_Master | Export data to sql\_nyc\_payroll\_title\_md

Add Source

Parameters | Settings

+ New

Microsoft Azure | Data Factory | hilarioadf03252025 | Search factory and documentation | udacitylestothis2025@hotmail.com | DEFAULT DIRECTORY

>> Data Factory | Validate all | Publish all | Preview experience | Off

**Factory Resources**

- Pipelines: 1
  - pipeline1
- Change Data Capture (preview): 0
- Datasets: 13
- Data flows: 6
  - data\_flow\_summary
  - dl\_to\_sql\_agency\_master
  - dl\_to\_sql\_emp\_master
  - dl\_to\_sql\_nyc\_2020
  - dl\_to\_sql\_nyc\_2021**
- Power Query: 0
  - dl\_to\_sql\_nyc\_2021

**synapse\_payroll\_sum...** | **pipeline1** | **dl\_to\_sql\_title** | **dl\_agency\_master** | **data\_flow\_summary** | **dl\_to\_sql\_nyc\_2021**

✓ Validate | Data flow debug

DIHnycPayroll2021 | SqlNycPayroll2021

Import data from dl\_nycpayroll\_2021 | Export data to sql\_payroll\_data\_2021

Add Source

Parameters | Settings

+ New

Microsoft Azure | Data Factory | hilaroadf03252025 | Search factory and documentation | udacitylestthis2025@hotmail.com | DEFAULT DIRECTORY

» Data Factory | Validate all | Publish all | Preview experience | Off

**Factory Resources**

- Filter resources by name
- Pipelines: 1
  - pipeline1
- Change Data Capture (preview): 0
- Datasets: 13
  - Data flows: 6
    - data\_flow\_summary
    - dl\_to\_sql\_agency\_master
    - dl\_to\_sql\_emp\_master
    - dl\_to\_sql\_nyc\_2020
    - dl\_to\_sql\_nyc\_2021
    - dl\_to\_sql\_title
- Power Query: 0

**pipeline1** | dl\_to\_sql\_title | dl\_agency\_master | data\_flow\_summary | dl\_to\_sql\_nyc\_2021 | dl\_to\_sql\_nyc\_2020 | dl\_to\_sql\_title

✓ Validate | Data flow debug

DIHnyPayrollpayroll2... | SqlPayrollNyc2020

Import data from dl\_nyccpayroll\_2020 | Export data to sql\_payroll\_data\_2020

Add Source

Parameters | Settings

+ New

Microsoft Azure | Data Factory | hilaroadf03252025 | Search factory and documentation | udacitylestthis2025@hotmail.com | DEFAULT DIRECTORY

» Data Factory | Validate all | Publish all | Preview experience | Off

**Factory Resources**

- Filter resources by name
- Pipelines: 1
  - pipeline1
- Change Data Capture (preview): 0
- Datasets: 13
  - Data flows: 6
    - data\_flow\_summary
    - dl\_to\_sql\_agency\_master
    - dl\_to\_sql\_emp\_master
    - dl\_to\_sql\_nyc\_2020
    - dl\_to\_sql\_nyc\_2021
    - dl\_to\_sql\_title
- Power Query: 0

**dl\_agency\_master** | data\_flow\_summary | dl\_to\_sql\_nyc\_2021 | dl\_to\_sql\_nyc\_2020 | dl\_to\_sql\_emp\_master | dl\_to\_sql\_agency\_ma...

✓ Validate | Data flow debug

DIEmpMaster | SqlEmpMaster

Import data from dl\_EmpMaster | Export data to sql\_nyc\_payroll\_emp\_md

Add Source

Parameters | Settings

+ New

Microsoft Azure | Data Factory | hilaroadf03252025 | Search factory and documentation | udacitylestthis2025@hotmail.com | DEFAULT DIRECTORY

» Data Factory | Validate all | Publish all | Preview experience | Off

**Factory Resources**

- Filter resources by name
- Pipelines: 1
  - pipeline1
- Change Data Capture (preview): 0
- Datasets: 13
  - Data flows: 6
    - data\_flow\_summary
    - dl\_to\_sql\_agency\_master
    - dl\_to\_sql\_agency\_master
    - dl\_to\_sql\_nyc\_2020
    - dl\_to\_sql\_nyc\_2021
    - dl\_to\_sql\_title
- Power Query: 0

**dl\_agency\_master** | data\_flow\_summary | dl\_to\_sql\_nyc\_2021 | dl\_to\_sql\_nyc\_2020 | dl\_to\_sql\_emp\_master | dl\_to\_sql\_agency\_m...

✓ Validate | Data flow debug

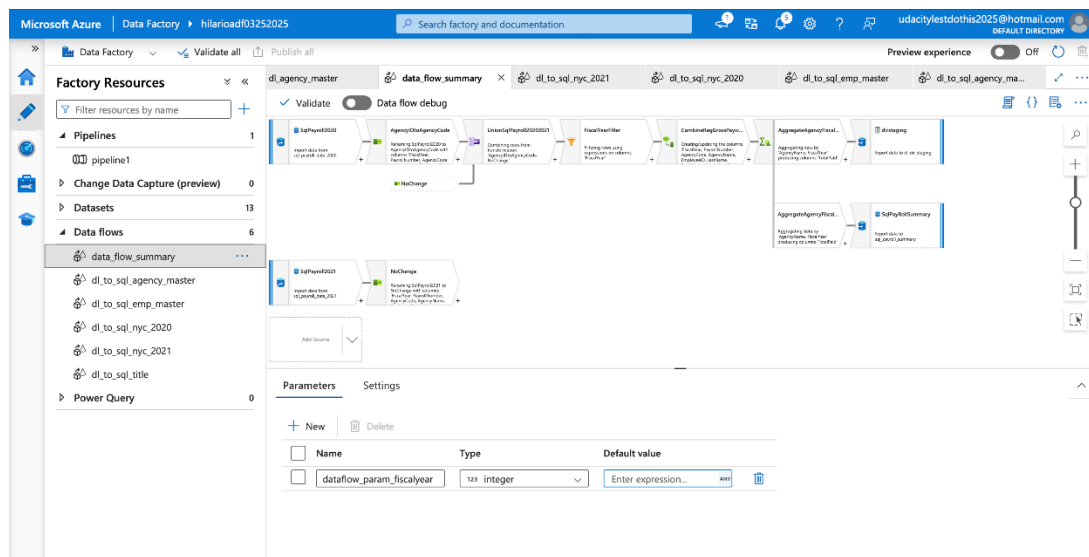
DIAgencyMaster | SqlAgencyMaster

Import data from dl\_agency\_master | Export data to sql\_nyc\_payroll\_agency

Add Source

Parameters | Settings

+ New



## Pipeline

| Criteria   | Submission Requirements   |
|--|---|
| The student will be able to create a data pipeline containing Dataflow activities. | Multiple pipeline objects are present in the data pipeline repository with activities of type "ExecuteDataFlow" in the pipeline directory which contain Dataflow objects. |
| The learner should be able to trigger a pipeline and execute the Dataflows in it.  | A screenshot is present showing a successful pipeline execution in Azure Data Factory   |

## Data Verification

| Criteria  | Submission Requirements  |
|---|--|
| The student will be able to verify the final data after pipeline run in Datalake Gen2 storage, SQL DB table and Synapse table | Screenshots are present to show the data is saved in Gen2 storage, and query on SQL DB table and Synapse external table returns results. |



Microsoft Azure | Data Factory | hilarioad03252025 | Search factory and documentation | udachylest0this2025@hotmail.com | DEFAULT DIRECTORY

Factory Resources | Filter resources by name | Pipelines | pipeline1 | Data flows | data\_flow\_summary, dl\_to\_sql\_agency\_master, dl\_to\_sql\_emp\_master, dl\_to\_sql\_nyc\_2020, dl\_to\_sql\_nyc\_2021, dl\_to\_sql\_title | Power Query

Activities | Search activities | Move and transform | Synapse | Azure Data Explorer | Azure Function | Batch Service | Databricks | Data Lake Analytics | General | HDInsight | Iteration & conditionals | Machine Learning | Power Query

pipeline1 | Validate | Debug | Add trigger | Data flow debug

Data flow | dl\_to\_sql\_agency\_master | Data flow | dl\_to\_sql\_emp\_master | Data flow | dl\_to\_sql\_nyc\_2020 | Data flow | dl\_to\_sql\_nyc\_2021 | Data flow | dl\_to\_sql\_title | Data flow | data\_flow\_summary

Parameters | Variables | Settings | Output

Pipeline run ID: 107989ae-8322-4cda-920c-a4ded5507908 | Pipeline status: Succeeded | View debug run consumption

All status | Showing 1 - 6 of 6 items

| Activity name           | Activity st... | Activit... | Run start            | Duration | Integration runtime           |
|-------------------------|----------------|------------|----------------------|----------|-------------------------------|
| data_flow_summary       | Succeeded      | Data flow  | 4/8/2025, 7:42:59 PM | 1m 24s   | AutoResolveIntegrationRuntime |
| dl_to_sql_nyc_2021      | Succeeded      | Data flow  | 4/8/2025, 7:42:33 PM | 25s      | AutoResolveIntegrationRuntime |
| dl_to_sql_nyc_2020      | Succeeded      | Data flow  | 4/8/2025, 7:42:33 PM | 20s      | AutoResolveIntegrationRuntime |
| dl_to_sql_emp_master    | Succeeded      | Data flow  | 4/8/2025, 7:39:13 PM | 3m 6s    | AutoResolveIntegrationRuntime |
| dl_to_sql_agency_master | Succeeded      | Data flow  | 4/8/2025, 7:39:13 PM | 3m 10s   | AutoResolveIntegrationRuntime |

## Data Verification

| Criteria  | Submission Requirements  |
|---|--|
| The student will be able to verify the final data after pipeline run in Datalake Gen2 storage, SQL DB table and Synapse table | Screenshots are present to show the data is saved in Gen2 storage, and query on SQL DB table and Synapse external table returns results. |

Microsoft Azure | db\_nycpayroll (udacitynycpayroll/db\_nycpayroll) | Query editor (preview)

SQL database

Search resources, services, and docs (G+/I)

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DEFAULT DIRECTORY: UDACITYL...

Home > db\_nycpayroll (udacitynycpayroll/db\_nycpayroll)

Overview, Activity log, Tags, Diagnose and solve problems, Query editor (preview), Mirror database in Fabric (preview), Resource visualizer, Settings, Data management, Integrations, Power Platform, Security, Intelligent performance, Monitoring, Automation, Help

db\_nycpayroll (udacitylestdothis2025@...)

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

Tables: dbo.NYC\_Payroll\_AGENCY\_MD, dbo.NYC\_Payroll\_Data\_2020, dbo.NYC\_Payroll\_Data\_2021, dbo.NYC\_Payroll\_EMP\_MD, **dbo.NYC\_Payroll\_Summary**, dbo.NYC\_Payroll\_TITLE\_MD, Views, Stored Procedures

Query 2

```
1 SELECT TOP (1000) * FROM [dbo].[NYC_Payroll_Summary]
```

Results

| FiscalYear | AgencyName                     | TotalPaid          |
|------------|--------------------------------|--------------------|
| 2021       | DEPT OF CITYWIDE ADMIN SVCS    | 11239322.339999998 |
| 2021       | DEPT OF ENVIRONMENT PROTECTION | 5152814.399999999  |
| 2021       | DEPT OF PARKS & RECREATION     | 1591468.9800000002 |
| 2021       | COMMUNITY COLLEGE (HOSTOS)     | 1596525.7799999998 |
| 2021       | OFFICE OF THE MAYOR            | 1708453.68         |
| 2021       | NYC HOUSING AUTHORITY          | 16062651.3         |

Microsoft Azure | Synapse Analytics | hiliariossynapseworkspace

Synapse live, Validate all, Publish all

Data

Workspace, Linked

Filter resources by name

SQL database

sqlpool\_00 (SQL)

Tables: dbo.NYC\_Payroll\_Summary\_Clean

External tables, External resources, Views, Programmability, Schemas, Security

SQL script 14

```
1 SELECT TOP (100) [AgencyName]
2 , [FiscalYear]
3 , [TotalPaid]
4 FROM [dbo].[NYC_Payroll_Summary_Clean]
```

Results

| AgencyName                   | FiscalYear | TotalPaid          |
|------------------------------|------------|--------------------|
| FIRE DEPARTMENT              | 2021       | 14257377.300000006 |
| BOARD OF ELECTION            | 2021       | 1633434.5400000003 |
| DEPARTMENT OF SANITATION     | 2021       | 18382479.720000006 |
| COMMUNITY COLLEGE (BRONX)    | 2021       | 1405230.85         |
| COMMUNITY COLLEGE (LAGUAR... | 2021       | 1681561.2          |
| DISTRICT ATTORNEY-MANHATT... | 2021       | 1372185.05         |
| NYC HOUSING AUTHORITY        | 2021       | 13385542.75        |
| DEPT OF ENVIRONMENT PROTE... | 2021       | 5152814.399999999  |
| DEPT OF CITYWIDE ADMIN SVCS  | 2021       | 11239322.339999998 |
| OFFICE OF THE MAYOR          | 2021       | 1708453.68         |
| DEPARTMENT OF CORRECTION     | 2021       | 15512712.899999999 |
| DEPARTMENT OF CORRECTION     | 2021       | 16414344.470000007 |

00:00:01 Query executed successfully.

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+ Add Directory

Upload

Refresh

Delete

Copy

Paste

Rename

Acquire lease

Break lease

Blob containers > adisnycpayroll-hilario-l > dirstaging

Authentication method: Microsoft Entra user account (Switch to Access key)

Search blobs by prefix (case-sensitive)

Only show active objects

Showing all 51 items

|  | Name           | Last modified        | Access tier    | Blob type  | Size | Lease state |
|--|----------------|----------------------|----------------|------------|------|-------------|
|  | [.]            |                      |                |            |      |             |
|  | ._SUCCESS      | 4/8/2025, 7:43:21 PM | Hot (Inferred) | Block blob | 0    | Available   |
|  | part-00000-... | 4/8/2025, 7:43:16 PM | Hot (Inferred) | Block blob | 32 B | Available   |
|  | part-00000-... | 4/7/2025, 9:02:55 PM | Hot (Inferred) | Block blob | 32 B | Available   |
|  | part-00005-... | 4/8/2025, 7:43:13 PM | Hot (Inferred) | Block blob | 86 B | Available   |
|  | part-00005-... | 4/7/2025, 9:02:52 PM | Hot (Inferred) | Block blob | 76 B | Available   |
|  | part-00011-... | 4/7/2025, 9:02:52 PM | Hot (Inferred) | Block blob | 89 B | Available   |
|  | part-00023-... | 4/8/2025, 7:43:13 PM | Hot (Inferred) | Block blob | 86 B | Available   |
|  | part-00023-... | 4/7/2025, 9:02:52 PM | Hot (Inferred) | Block blob | 86 B | Available   |
|  | part-00044-... | 4/8/2025, 7:43:13 PM | Hot (Inferred) | Block blob | 83 B | Available   |
|  | part-00044-... | 4/7/2025, 9:02:52 PM | Hot (Inferred) | Block blob | 83 B | Available   |
|  | part-00055-... | 4/8/2025, 7:43:13 PM | Hot (Inferred) | Block blob | 83 B | Available   |
|  | part-00055-... | 4/7/2025, 9:02:52 PM | Hot (Inferred) | Block blob | 75 B | Available   |
|  | part-00060-... | 4/7/2025, 9:02:52 PM | Hot (Inferred) | Block blob | 88 B | Available   |