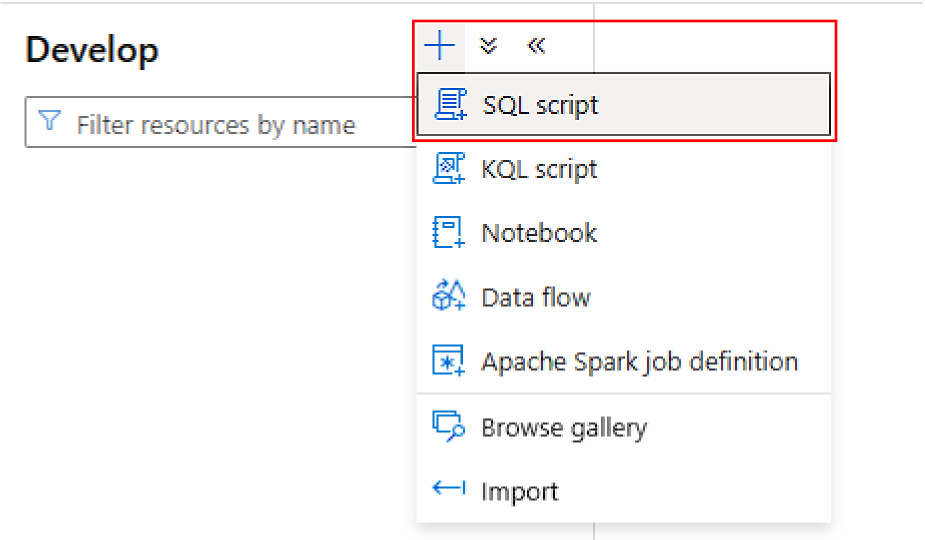
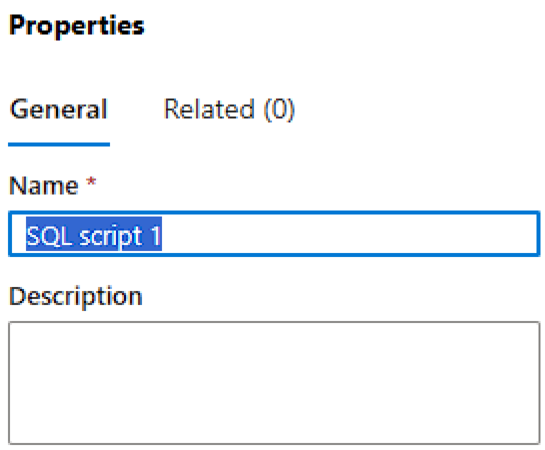
😊 Using External Tables for CSV

1. An external table can be used to read or write data in Hadoop, Azure Blob Storage, or Azure Data Lake Storage. External tables are possible in both your serverless SQL pool and your dedicated SQL pool.
2. Now what we had seen earlier on when it came to reading data from a CSV file in Azure Data Lake storage, we looked at the OPENROWSET function that allows us to view the data. But with the help of external tables, you can now define the structure of a table like you would do in a normal relational database. The table can point to the data that's stored in the Data Lake Gen2 Storage account.
3. For using external tables, there are three core commands that we need to work with apart from other commands as well. One is to create an external data source. This is used to specify the external storage that needs to be referenced. Next is to create an external file format. This is the external file format that we are working with. For example, we could be working with a CSV file a Parquet-based file, etcetera. And then finally, we use the create external table to create the table definition.
4. Now in your Azure portal go to your Synapse Workspace and there you need to navigate to the Develop section.
5. Now in the develop section click on the plus icon and then click on SQL script.



6. Now in your SQL script you can either give it a name or you can stick with the default one.
7. After that we are going to run a set of commands in our SQL Script.



Properties

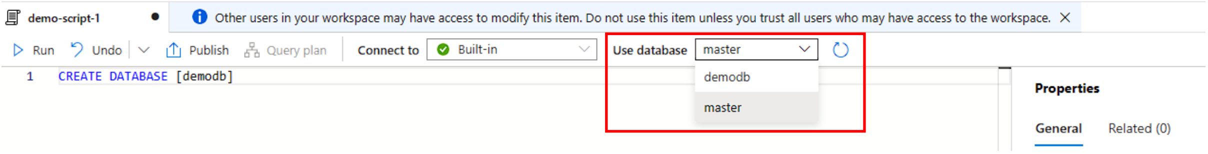
General Related (0)

Name *

SQL script 1

Description

8. Currently we are connected to our built-in serverless SQL pool and we are connected to the master database. Now normally the master database in a Microsoft SQL server-based engine contains system base tables. If you want to have your tables defined within a user-defined database we can first issue the create database command to create a database itself.
9. Now we will issue a command to create a database.
10. Once you have issued the command to create a database then you have to hit the refresh near the use database option. Then you can change your database.



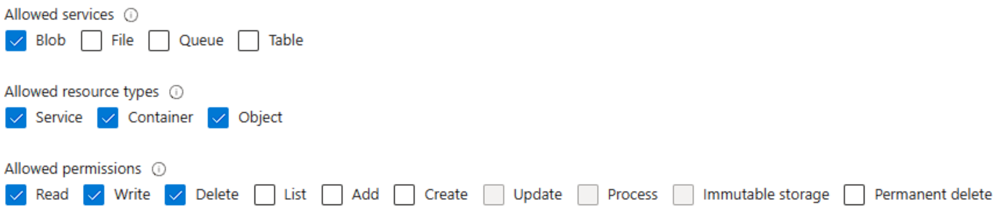
Other users in your workspace may have access to modify this item. Do not use this item unless you trust all users who may have access to the workspace.

Connect to: Built-in

Use database: master (demodb, master)

```
CREATE DATABASE [demodb]
```

11. Now while executing the command, you will need the Shared Access Signature of your Storage account. So, you have to generate those.
12. Below is the snapshot from which you can select what you need to give access for.



Allowed services

☑ Blob □ File □ Queue □ Table

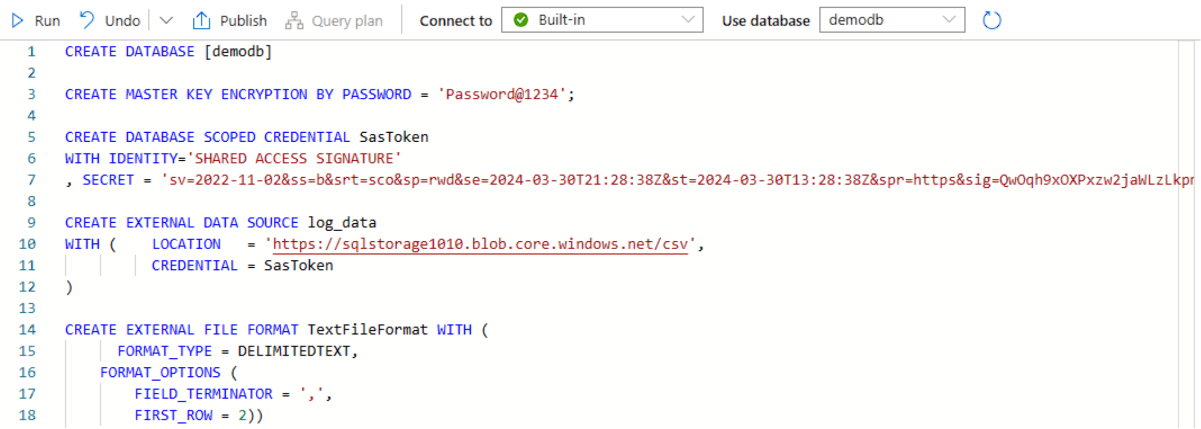
Allowed resource types

☑ Service ☑ Container ☑ Object

Allowed permissions

☑ Read ☑ Write ☑ Delete □ List □ Add □ Create □ Update □ Process □ Immutable storage □ Permanent delete

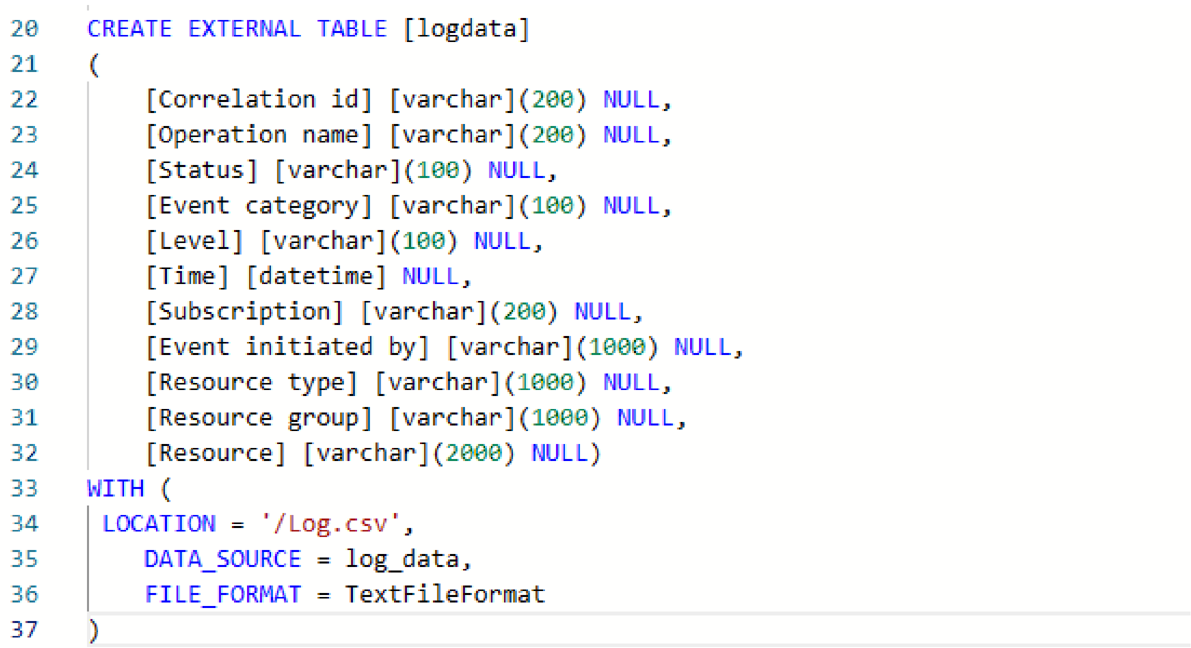
13. Below I'll be mentioning only the snapshots of the commands which have been executed.
14. An important note you can get this whole code file from GitHub.
15. Now you have to execute these commands one by one.



Connect to Built-in

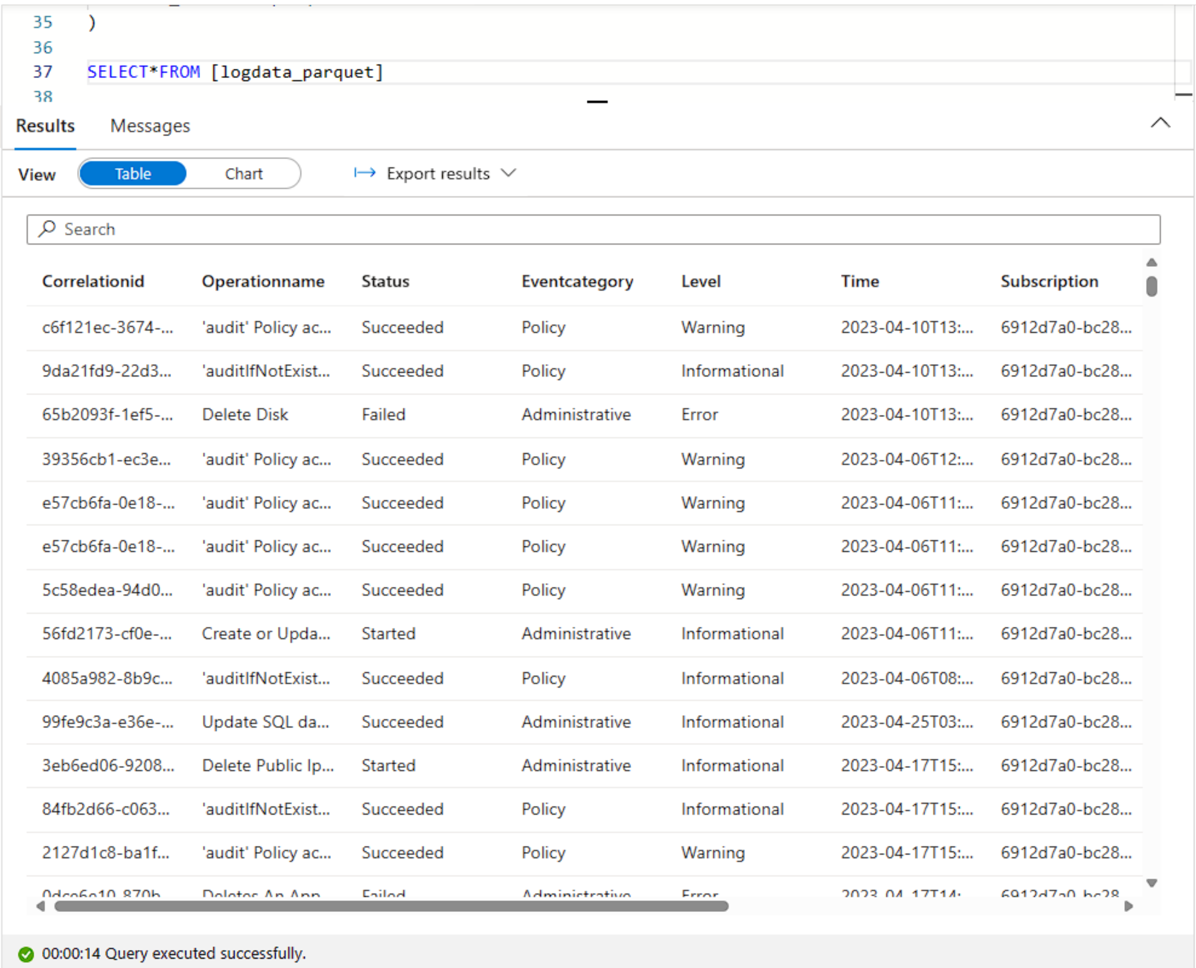
Use database demodb

```
CREATE DATABASE [demodb]

CREATE MASTER KEY ENCRYPTION BY PASSWORD = 'Password@1234';

CREATE DATABASE SCOPED CREDENTIAL SasToken
WITH IDENTITY='SHARED ACCESS SIGNATURE'
, SECRET = 'sv=2022-11-02&ss=b&srt=sco&sp=rwd&se=2024-03-30T21:28:38Z&st=2024-03-30T13:28:38Z&spr=https&sig=QwOqh9xOXPxzw2jaWLzLkpr

CREATE EXTERNAL DATA SOURCE log_data
WITH (    LOCATION   = 'https://sqlstorage1010.blob.core.windows.net/csv',
          CREDENTIAL = SasToken
)

CREATE EXTERNAL FILE FORMAT TextFileFormat WITH (
      FORMAT_TYPE = DELIMITEDTEXT,
    FORMAT_OPTIONS (
        FIELD_TERMINATOR = ',',
        FIRST_ROW = 2))
```



```
CREATE EXTERNAL TABLE [logdata]
(
    [Correlation id] [varchar](200) NULL,
    [Operation name] [varchar](200) NULL,
    [Status] [varchar](100) NULL,
    [Event category] [varchar](100) NULL,
    [Level] [varchar](100) NULL,
    [Time] [datetime] NULL,
    [Subscription] [varchar](200) NULL,
    [Event initiated by] [varchar](1000) NULL,
    [Resource type] [varchar](1000) NULL,
    [Resource group] [varchar](1000) NULL,
    [Resource] [varchar](2000) NULL)
WITH (
 LOCATION = '/Log.csv',
    DATA_SOURCE = log_data,
    FILE_FORMAT = TextFileFormat
)
```

16. Once you have executed all the commands then you can use the Select command to view your data in tabular form.
17. Below you can see your data from the Log.CSV file.



```
)

SELECT*FROM [logdata_parquet]
```

Correlationid	Operationname	Status	Eventcategory	Level	Time	Subscription
c6f121ec-3674-...	'audit' Policy ac...	Succeeded	Policy	Warning	2023-04-10T13:...	6912d7a0-bc28...
9da21fd9-22d3...	'auditIfNotExist...	Succeeded	Policy	Informational	2023-04-10T13:...	6912d7a0-bc28...
65b2093f-1ef5-...	Delete Disk	Failed	Administrative	Error	2023-04-10T13:...	6912d7a0-bc28...
39356cb1-ec3e...	'audit' Policy ac...	Succeeded	Policy	Warning	2023-04-06T12:...	6912d7a0-bc28...
e57cb6fa-0e18-...	'audit' Policy ac...	Succeeded	Policy	Warning	2023-04-06T11:...	6912d7a0-bc28...
e57cb6fa-0e18-...	'audit' Policy ac...	Succeeded	Policy	Warning	2023-04-06T11:...	6912d7a0-bc28...
5c58edea-94d0...	'audit' Policy ac...	Succeeded	Policy	Warning	2023-04-06T11:...	6912d7a0-bc28...
56fd2173-cf0e-...	Create or Upda...	Started	Administrative	Informational	2023-04-06T11:...	6912d7a0-bc28...
4085a982-8b9c...	'auditIfNotExist...	Succeeded	Policy	Informational	2023-04-06T08:...	6912d7a0-bc28...
99fe9c3a-e36e-...	Update SQL da...	Succeeded	Administrative	Informational	2023-04-25T03:...	6912d7a0-bc28...
3eb6ed06-9208...	Delete Public Ip...	Started	Administrative	Informational	2023-04-17T15:...	6912d7a0-bc28...
84fb2d66-c063...	'auditIfNotExist...	Succeeded	Policy	Informational	2023-04-17T15:...	6912d7a0-bc28...
2127d1c8-ba1f...	'audit' Policy ac...	Succeeded	Policy	Warning	2023-04-17T15:...	6912d7a0-bc28...
0dca6e10-870b...	Deletes An App...	Failed	Administrative	Error	2023-04-17T14:...	6912d7a0-bc28...

00:00:14 Query executed successfully.