Previous Unit 6 of 7 Next

✓ 100 XP

Exercise: Upload, download, and query data in a non-relational data store

15 minutes

Sandbox activated! Time remaining: 3 hr 7 min

You have used 3 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In the sample scenario, suppose that you've created the following data stores:

- A Cosmos DB database for holding information about the products that Contoso manufactures.
- A blob container in Azure Storage for holding the images of products.

In this exercise, you'll run a script to upload data to these data stores. You'll perform queries against the data in the Cosmos DB database. Then, you'll download and view the images held in Azure Storage.

You'll perform this exercise using the Azure portal and the Azure Cloud Shell.

Setup

1. In the Cloud Shell window on the right, run the following command:

   Bash Copy

   ```bash
   git clone https://github.com/MicrosoftLearning/DP-900T00A-Azure-Data-Fundamentals dp-900
   ```

   This command copies the scripts and data required to set up the sample Cosmos DB database and Azure Storage account used by this exercise.

2. Move to the **dp-900/nosql** folder.

   Bash Copy

   ```bash
   cd dp-900/nosql
   ```

3. Run the following command.

   Bash Copy

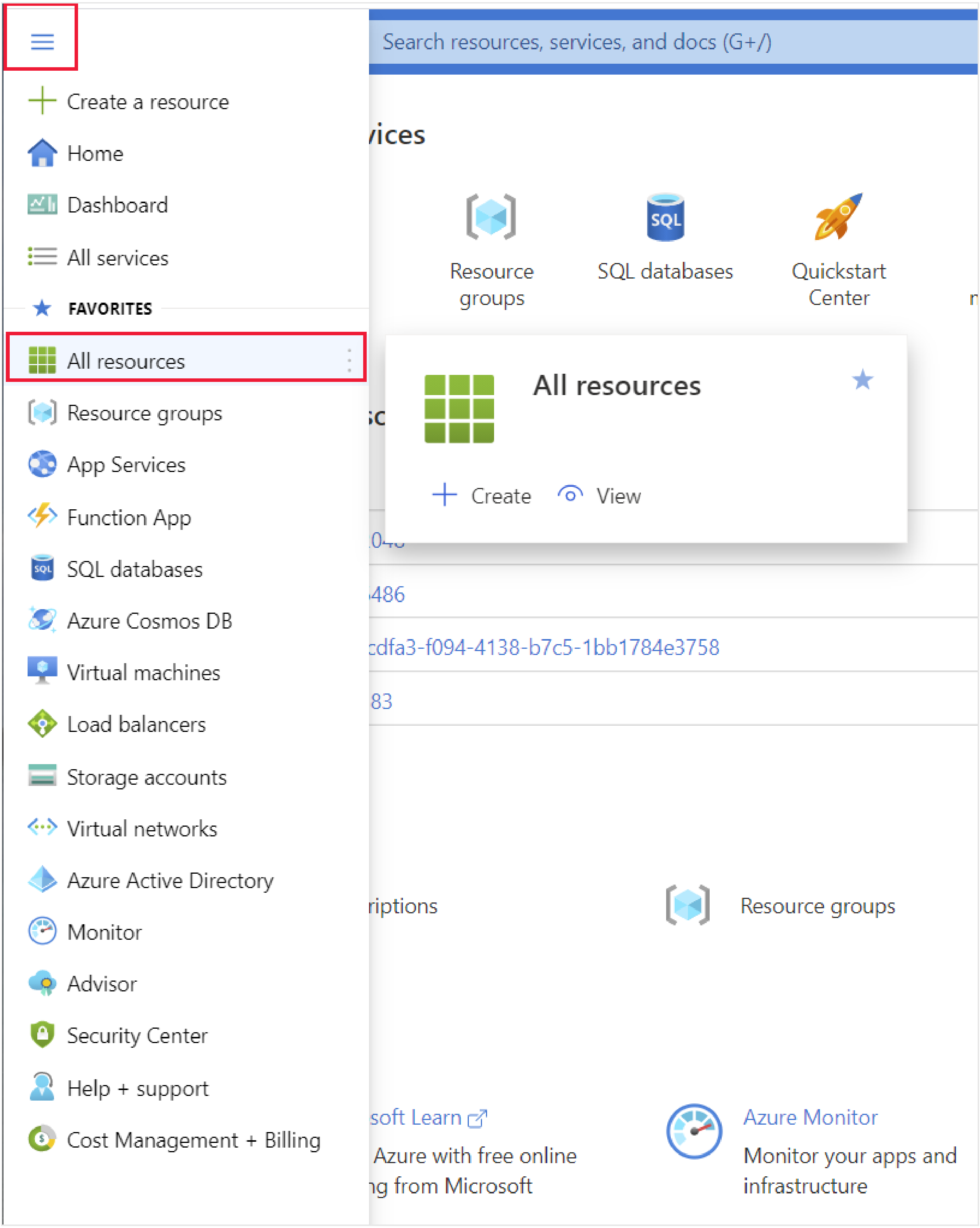
   ```bash
   bash setup.sh
   ```

   This command creates the Cosmos DB database and Azure Storage account and populates them with sample data. It takes as long as 10 minutes to run. When the script has finished, make a note of the values for the Cosmos DB account, database, container, and Storage account names.

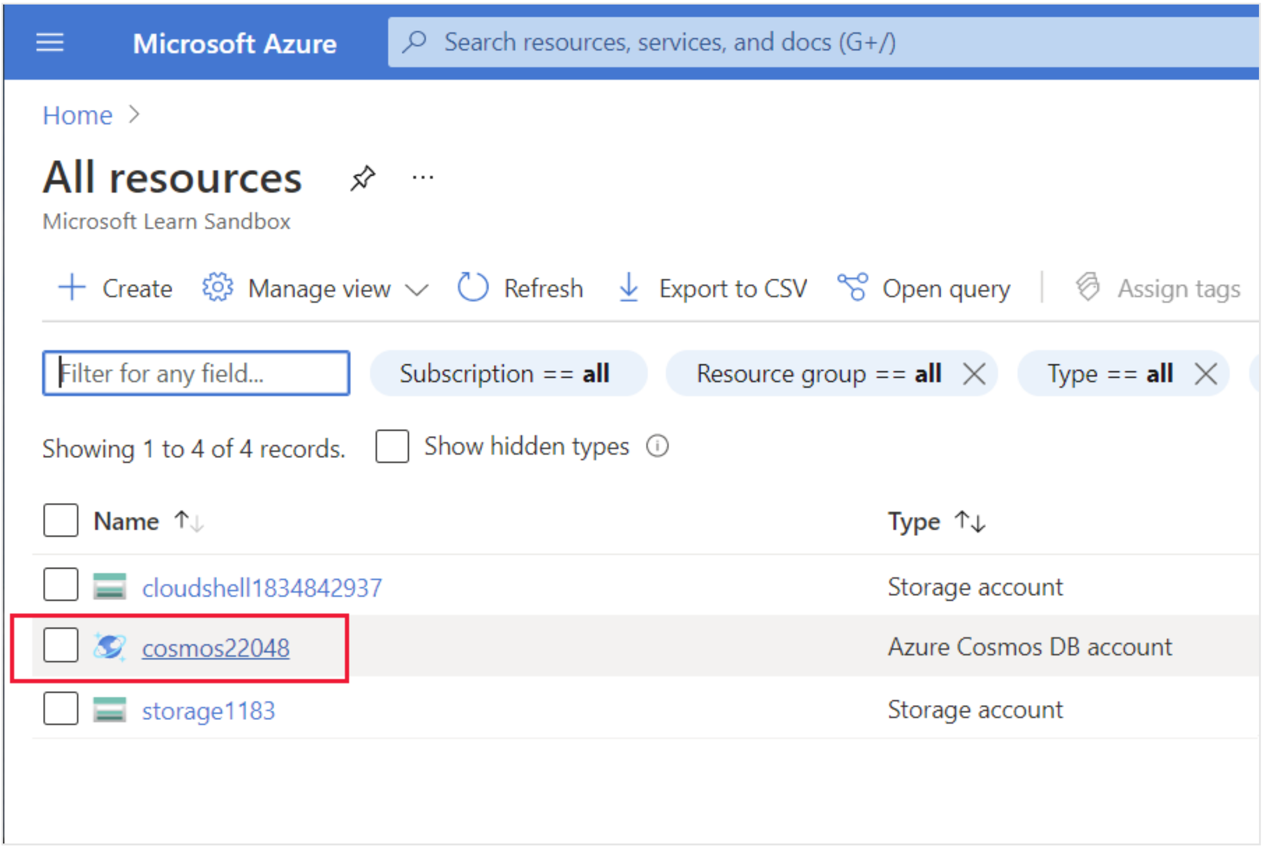
Query product data in Cosmos DB

1. Sign in to the Azure portal.

2. On the Azure Home page, select the drop-down menu at the top of the left-hand pane, and then select **All resources**.



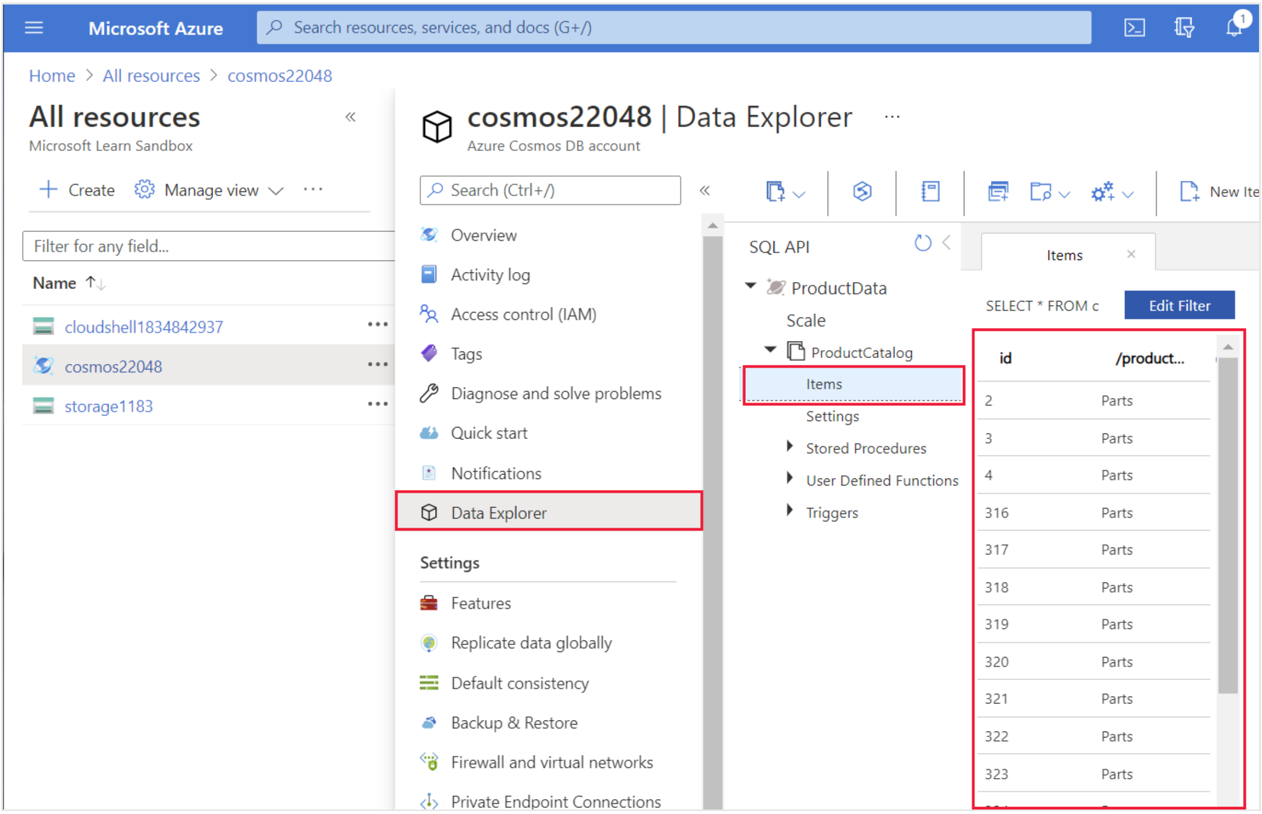
3. On the **All resources** page, select the Cosmos DB account that was created by the setup script. The account name will be *cosmos* followed by a random number:



Showing 1 to 4 of 4 records.

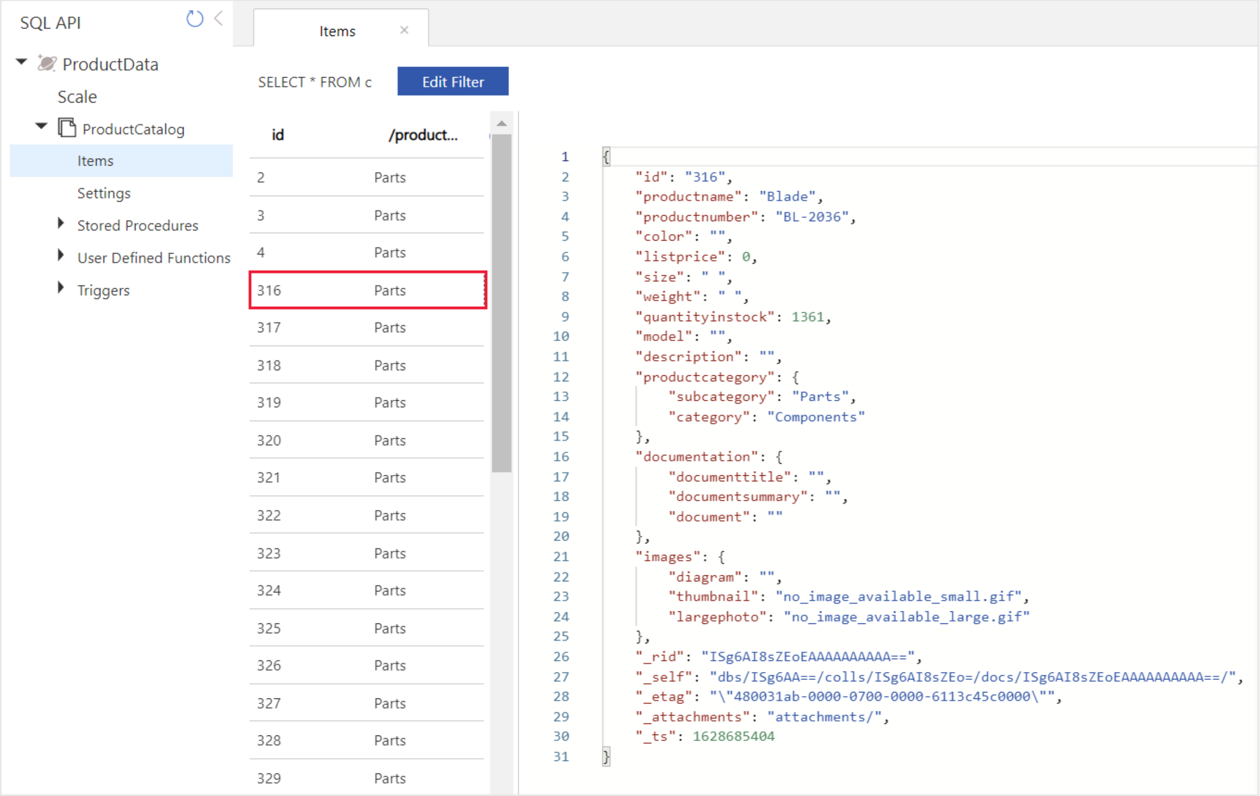
Name	Type
cloudshell1834842937	Storage account
cosmos22048	Azure Cosmos DB account
storage1183	Storage account

4. On the Cosmos DB account page, select **Data Explorer**. On the **Data Explorer** page, expand the **ProductData** database, expand the **ProductCatalog** container, and then select **Items**. Verify that the **Items** pane contains a list of products.



id	/product...
2	Parts
3	Parts
4	Parts
316	Parts
317	Parts
318	Parts
319	Parts
320	Parts
321	Parts
322	Parts
323	Parts

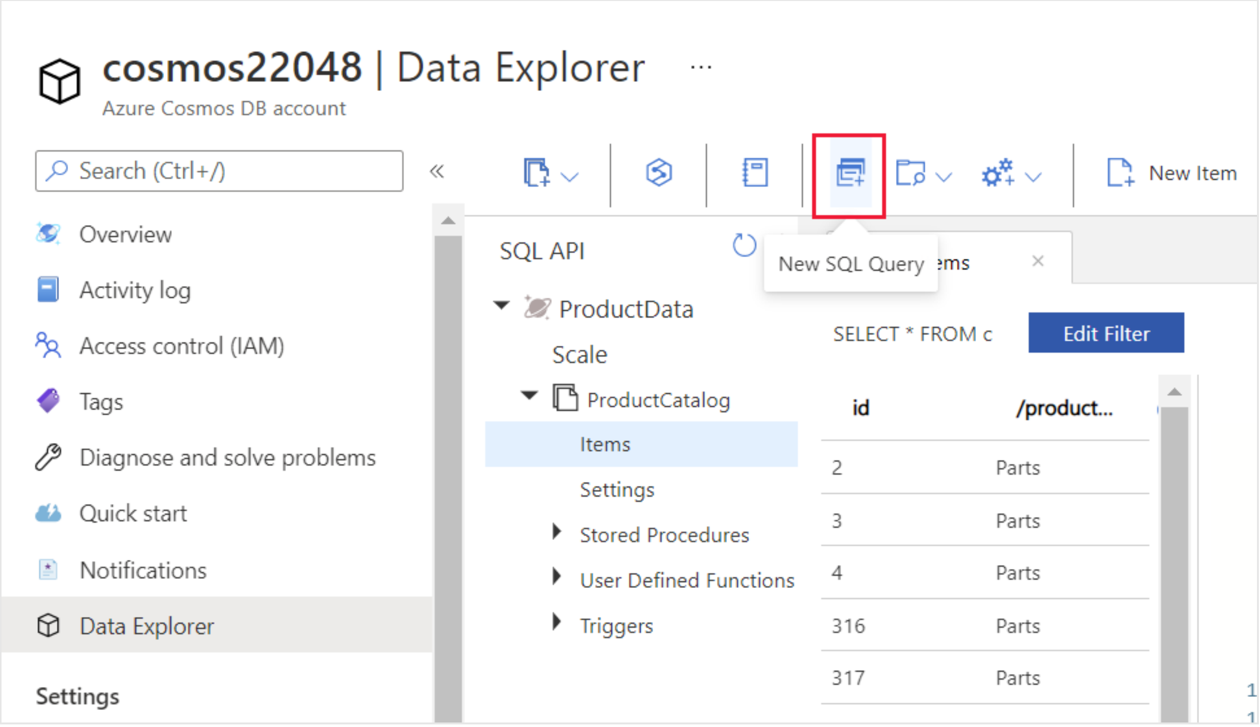
5. Select the item with ID 316. A JSON document containing the details for product 316 should appear in the right-hand pane.



id	/product...
2	Parts
3	Parts
4	Parts
316	Parts
317	Parts
318	Parts
319	Parts
320	Parts
321	Parts
322	Parts
323	Parts
324	Parts
325	Parts
326	Parts
327	Parts
328	Parts
329	Parts

```
{
    "id": "316",
    "productname": "Blade",
    "productnumber": "BL-2036",
    "color": "",
    "listprice": 0,
    "size": " ",
    "weight": " ",
    "quantityinstock": 1361,
    "model": "",
    "description": "",
    "productcategory": {
        "subcategory": "Parts",
        "category": "Components"
    },
    "documentation": {
        "documenttitle": "",
        "documentsummary": "",
        "document": ""
    },
    "images": {
        "diagram": "",
        "thumbnail": "no_image_available_small.gif",
        "largephoto": "no_image_available_large.gif"
    },
    "_rid": "ISg6AI8sZEoEAAAAAAAAAA==",
    "_self": "dbs/ISg6AA==/colls/ISg6AI8sZEo=/docs/ISg6AI8sZEoEAAAAAAAAAA==/",
    "_etag": "\"480031ab-0000-0700-0000-6113c45c0000\"",
    "_attachments": "attachments/",
    "_ts": 1628685404
}
```

6. In the toolbar, select **New SQL Query**.

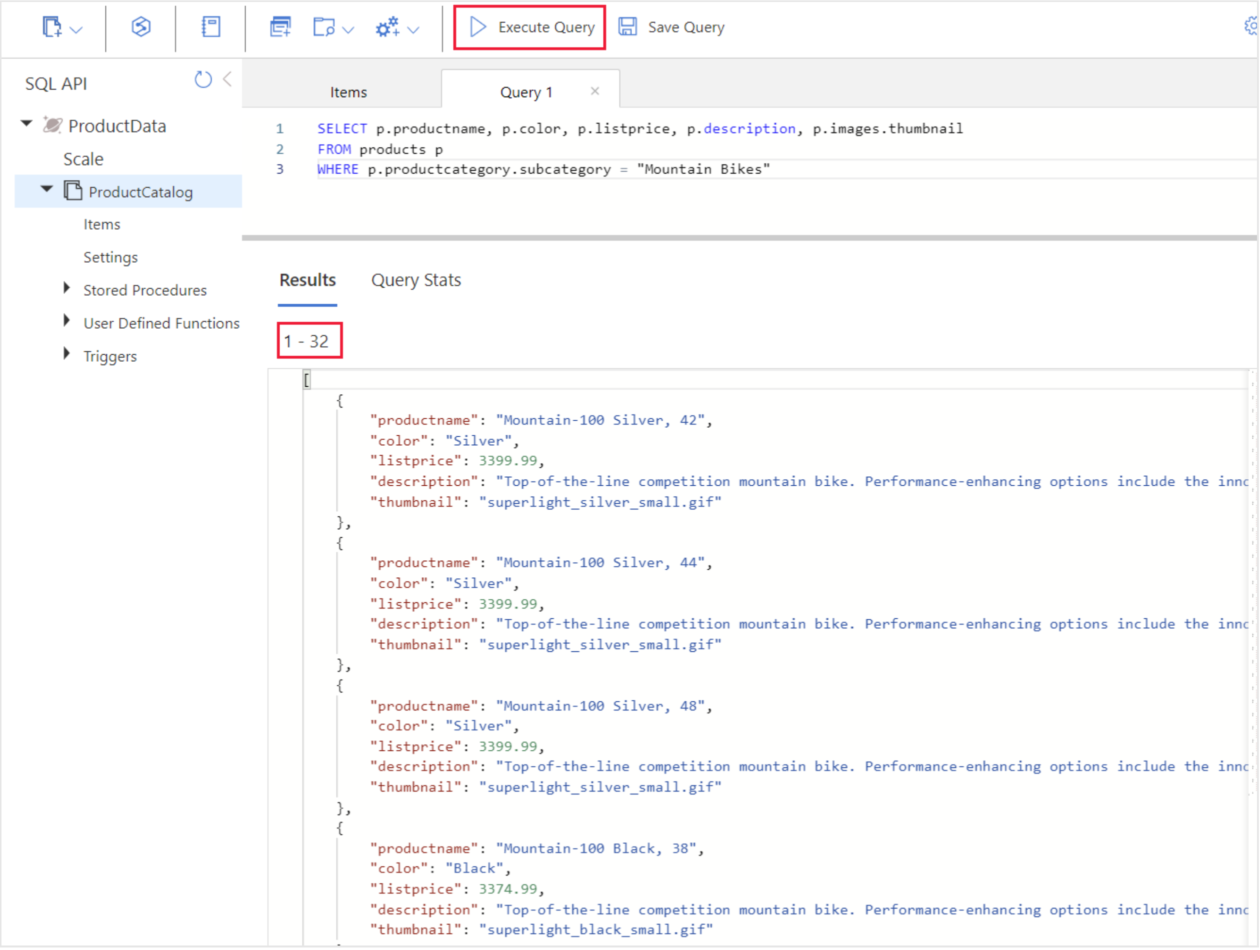


id	/product...
2	Parts
3	Parts
4	Parts
316	Parts
317	Parts

7. In the **Query 1** pane, enter the following query, and then select **Execute Query**. This query returns the name, color, listprice, description, and file name of the image for each model of mountain bike that Contoso make. The query should return 32 documents.

SQL Copy

```sql
SELECT p.productname, p.color, p.listprice, p.description, p.images.thumbnail
FROM products p
WHERE p.productcategory.subcategory = "Mountain Bikes"
```



```
SELECT p.productname, p.color, p.listprice, p.description, p.images.thumbnail
FROM products p
WHERE p.productcategory.subcategory = "Mountain Bikes"
```

```
[
    {
        "productname": "Mountain-100 Silver, 42",
        "color": "Silver",
        "listprice": 3399.99,
        "description": "Top-of-the-line competition mountain bike. Performance-enhancing options include the innc
        "thumbnail": "superlight_silver_small.gif"
    },
    {
        "productname": "Mountain-100 Silver, 44",
        "color": "Silver",
        "listprice": 3399.99,
        "description": "Top-of-the-line competition mountain bike. Performance-enhancing options include the innc
        "thumbnail": "superlight_silver_small.gif"
    },
    {
        "productname": "Mountain-100 Silver, 48",
        "color": "Silver",
        "listprice": 3399.99,
        "description": "Top-of-the-line competition mountain bike. Performance-enhancing options include the innc
        "thumbnail": "superlight_silver_small.gif"
    },
    {
        "productname": "Mountain-100 Black, 38",
        "color": "Black",
        "listprice": 3374.99,
        "description": "Top-of-the-line competition mountain bike. Performance-enhancing options include the innc
        "thumbnail": "superlight_black_small.gif"
```

8. Modify the query to return information about Road Bikes, and then click **Execute Query**.

SQL Copy

```sql
SELECT p.productname, p.color, p.listprice, p.description, p.images.thumbnail
FROM products p
WHERE p.productcategory.subcategory = "Road Bikes"
```

The query should return 43 documents.

9. Replace the query with the following text. This query counts the number of Touring Bikes.

SQL Copy

```sql
SELECT COUNT(p.productname)
FROM products p
WHERE p.productcategory.subcategory = "Touring Bikes"
```

The data is returned as a document with a field named "$1" that has the value 22.

text Copy

```
[
    {
        "$1": 22
    }
]
```

10. Modify the query, and add the **VALUE** keyword as shown below.

```SQL
SELECT VALUE COUNT(p.productname)
FROM products p
WHERE p.productcategory.subcategory = "Touring Bikes"
```

    This time the query just returns the value 22, and doesn't generate a field name.

```text
[
    22
]
```

11. Run the following query:

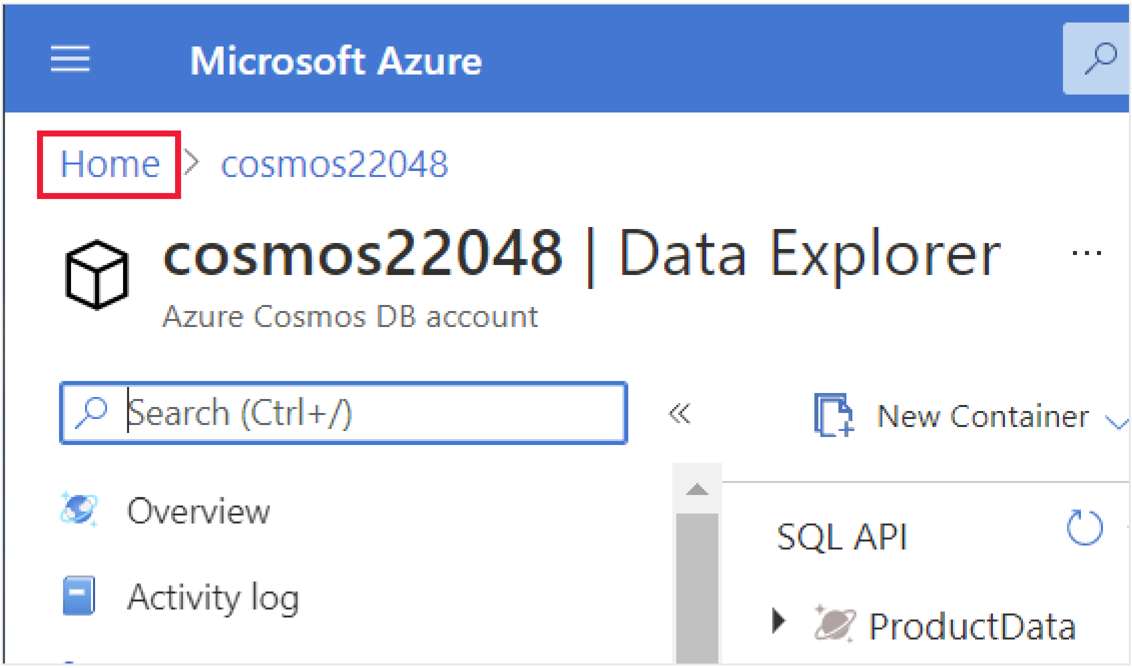
```SQL
SELECT VALUE SUM(p.quantityinstock)
FROM products p
WHERE p.productcategory.subcategory = "Touring Bikes"
```

    This query returns the total number of touring bikes currently in stock. It should return the value 3477.

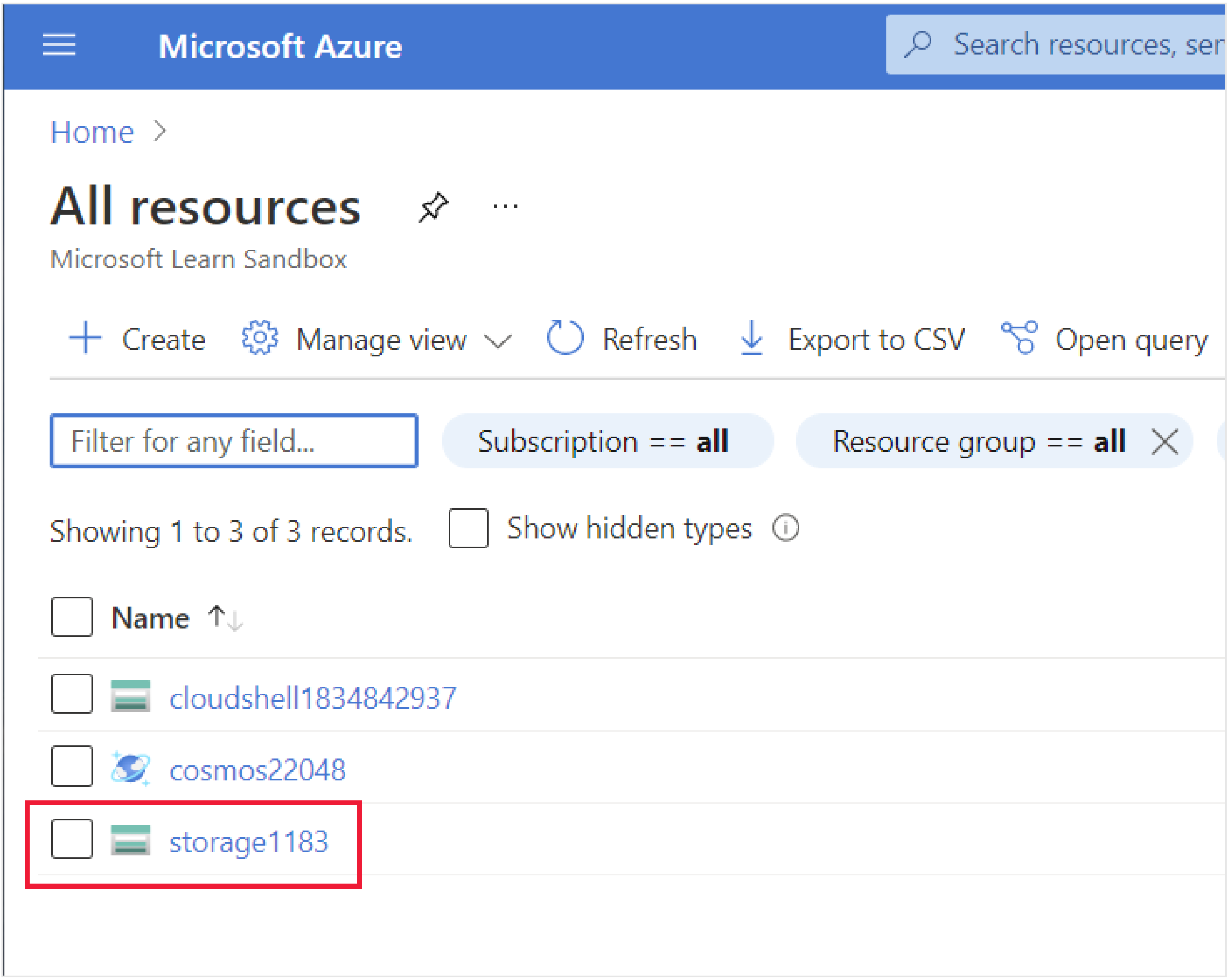
12. If you have time, experiment with some queries of your own.

View uploaded images in Azure Blob storage

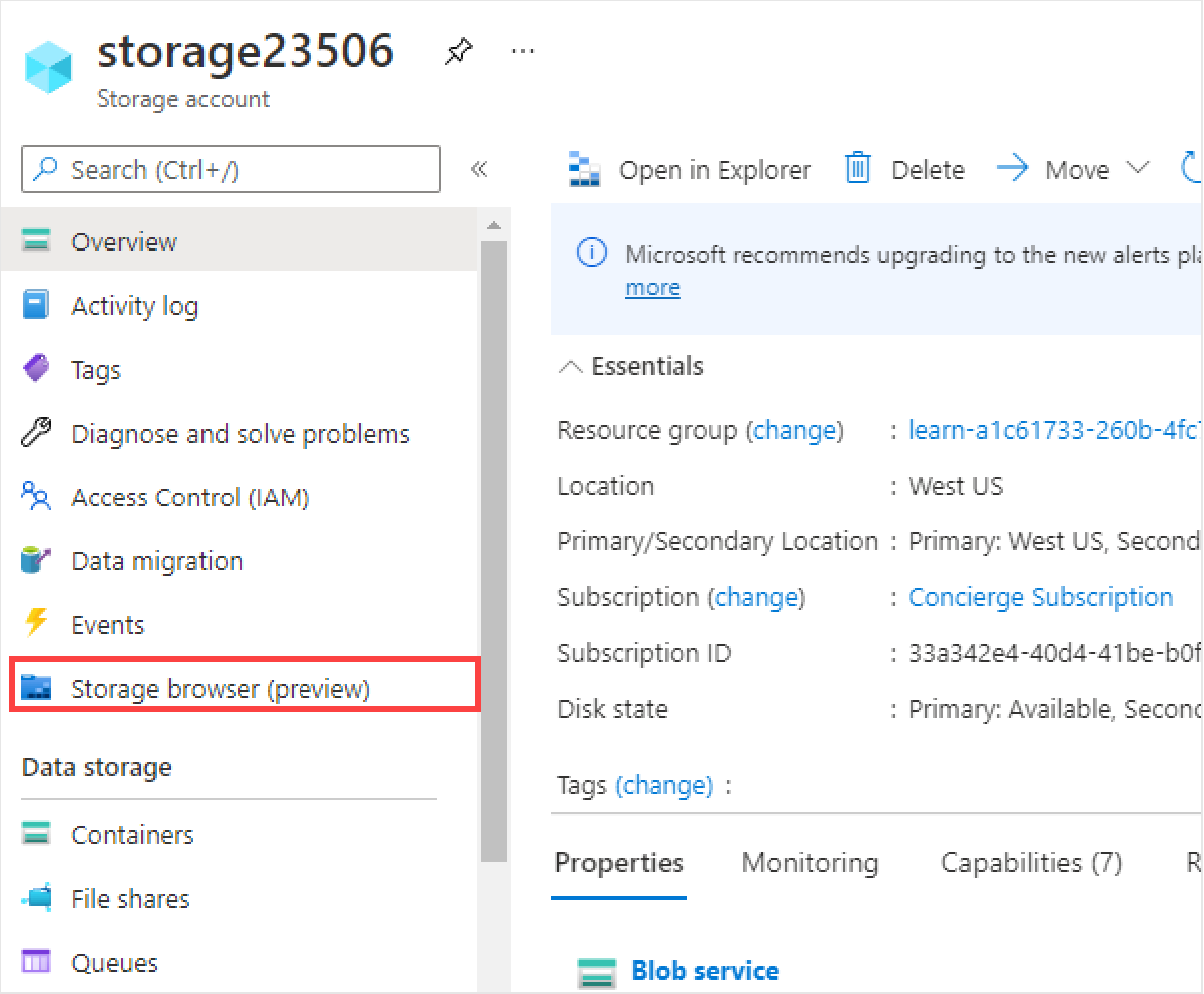
1. In the Azure portal, in the left-hand navigation menu, select **Home**



2. On the **Home** page, select **All resources**, and then select the storage account created by the setup script.



3. On the storage account page, select **Storage browser**.



storage23506

Storage account

Search (Ctrl+/)

Open in Explorer | Delete | Move

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser (preview)

Data storage

Containers

File shares

Queues

Microsoft recommends upgrading to the new alerts pl
more

Essentials

Resource group (change) : learn-a1c61733-260b-4fc

Location : West US

Primary/Secondary Location : Primary: West US, Second

Subscription (change) : Concierge Subscription

Subscription ID : 33a342e4-40d4-41be-b0f

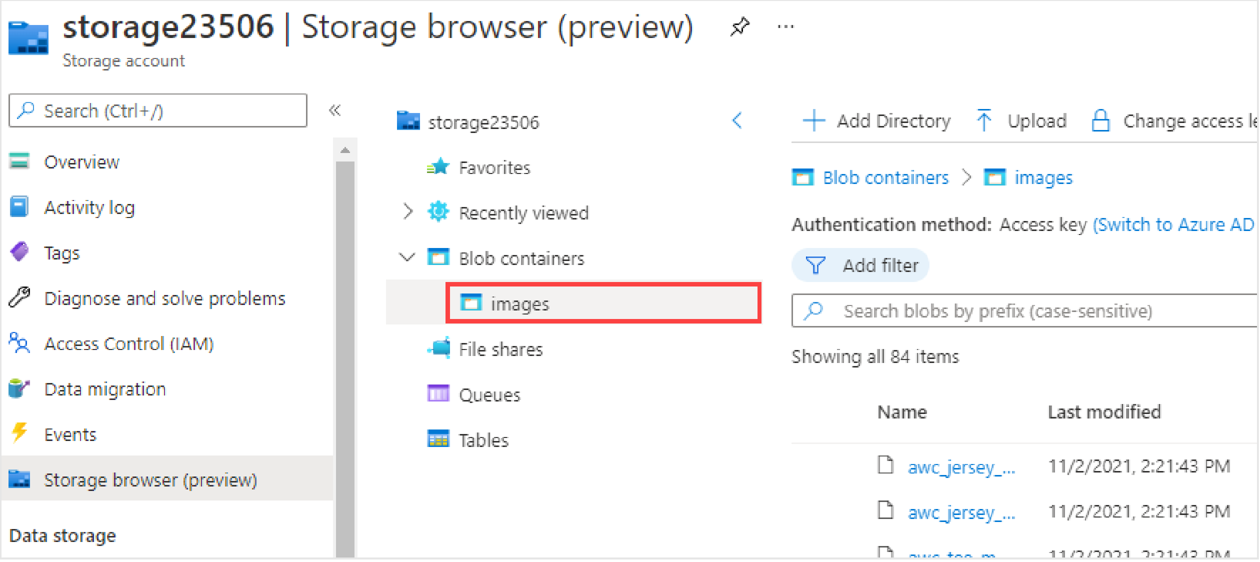
Disk state : Primary: Available, Second

Tags (change) :

Properties | Monitoring | Capabilities (7) | R

Blob service

4. In the Storage browser pane, expand **BLOB CONTAINERS** and then click **images**. The Images blob contains the image files uploaded by the setup script.



storage23506 | Storage browser (preview)

Storage account

Search (Ctrl+/)

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser (preview)

Data storage

storage23506

Favorites

Recently viewed

Blob containers

images

File shares

Queues

Tables

Add Directory | Upload | Change access le

Blob containers > images

Authentication method: Access key (Switch to Azure AD

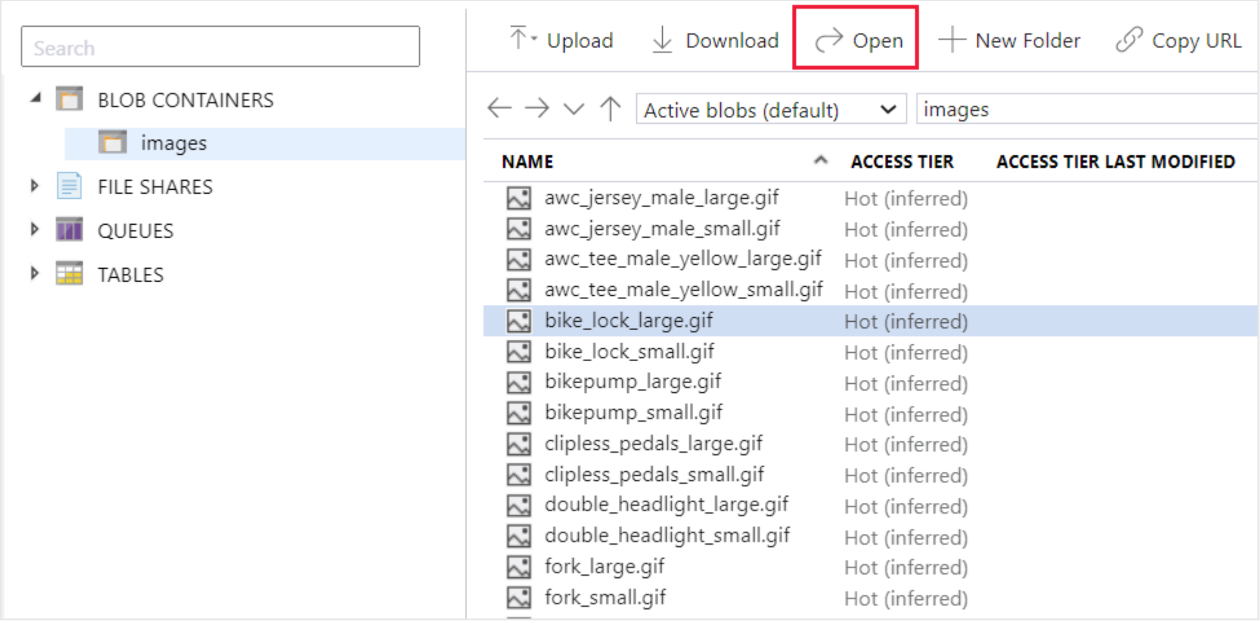
Add filter

Search blobs by prefix (case-sensitive)

Showing all 84 items

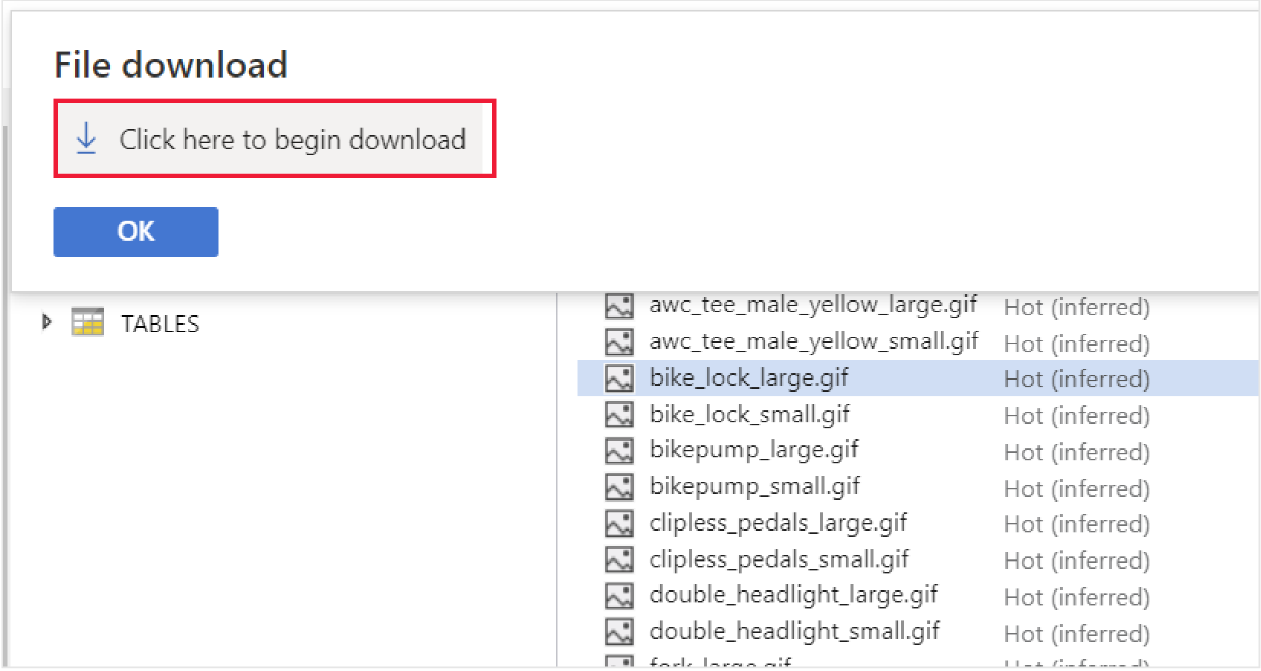
Name	Last modified
awc_jersey_...	11/2/2021, 2:21:43 PM
awc_jersey_...	11/2/2021, 2:21:43 PM

5. Select any image , and then select **Open** in the toolbar.



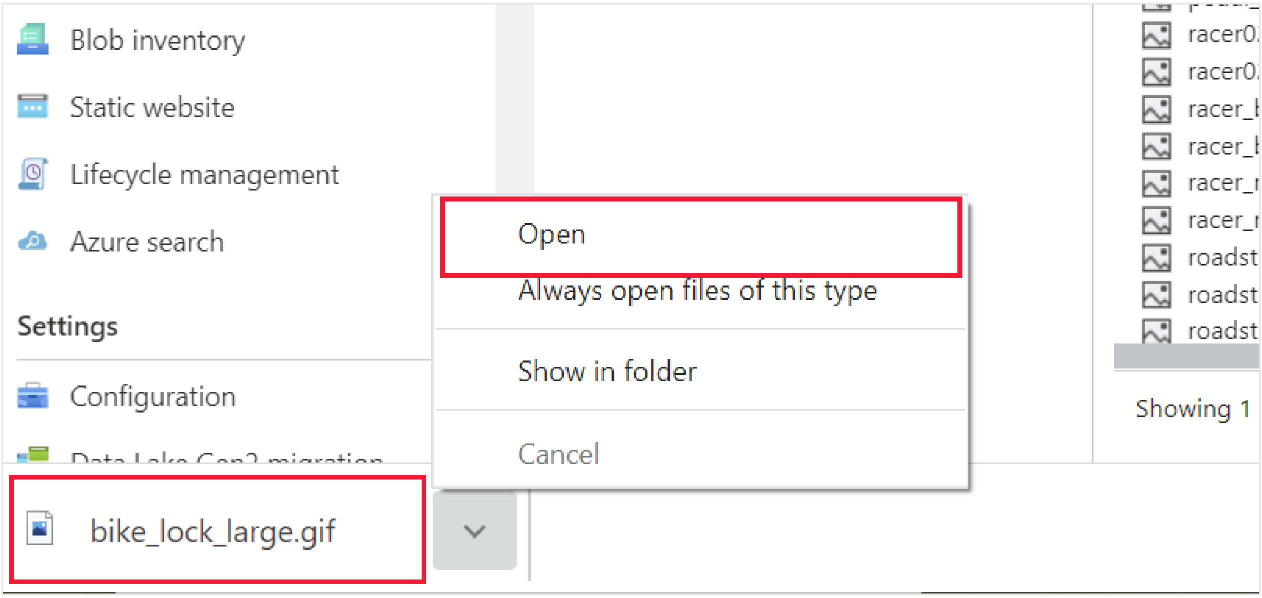
NAME	ACCESS TIER	ACCESS TIER LAST MODIFIED
awc_jersey_male_large.gif	Hot (inferred)	
awc_jersey_male_small.gif	Hot (inferred)	
awc_tee_male_yellow_large.gif	Hot (inferred)	
awc_tee_male_yellow_small.gif	Hot (inferred)	
bike_lock_large.gif	Hot (inferred)	
bike_lock_small.gif	Hot (inferred)	
bikepump_large.gif	Hot (inferred)	
bikepump_small.gif	Hot (inferred)	
clipless_pedals_large.gif	Hot (inferred)	
clipless_pedals_small.gif	Hot (inferred)	
double_headlight_large.gif	Hot (inferred)	
double_headlight_small.gif	Hot (inferred)	
fork_large.gif	Hot (inferred)	
fork_small.gif	Hot (inferred)	

6. In the **File download** window, select **Click here to begin download**.

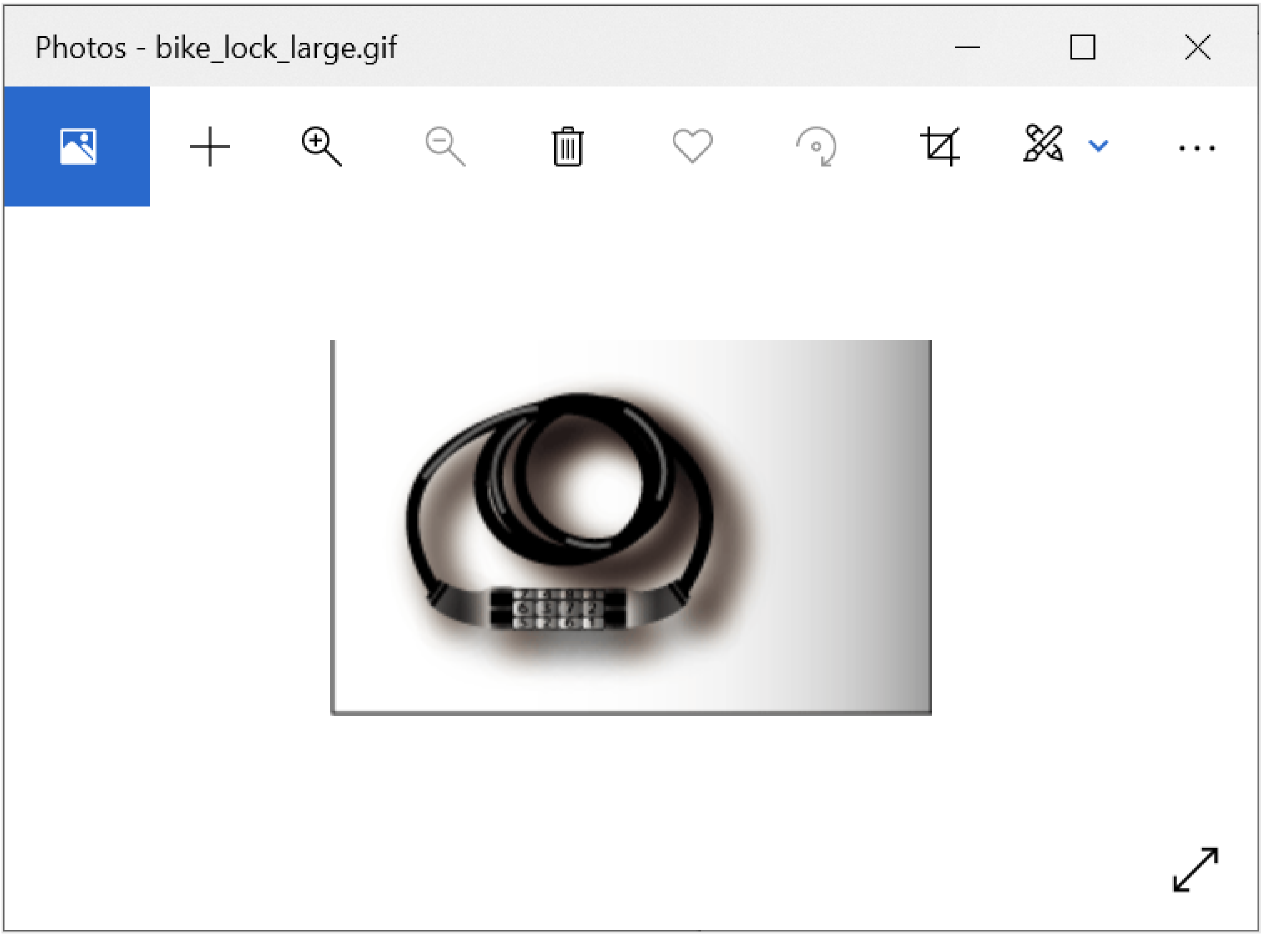


awc_tee_male_yellow_large.gif	Hot (inferred)
awc_tee_male_yellow_small.gif	Hot (inferred)
bike_lock_large.gif	Hot (inferred)
bike_lock_small.gif	Hot (inferred)
bikepump_large.gif	Hot (inferred)
bikepump_small.gif	Hot (inferred)
clipless_pedals_large.gif	Hot (inferred)
clipless_pedals_small.gif	Hot (inferred)
double_headlight_large.gif	Hot (inferred)
double_headlight_small.gif	Hot (inferred)

7. The file should be downloaded by the browser. Select the file and open it to display the contents.



8. The image should be displayed. By default, Windows will use the Photo Viewer app, but if you have a different configuration then an alternative application might be used.



9. If time allows, try downloading and displaying other images.

Summary

In this exercise, you investigated using Cosmos DB and Azure Storage to store and retrieve data. You ran a script that created a Cosmos DB database and a storage account, and uploaded sample data. You used Data Explorer in Cosmos DB to run simple queries against the data. You used Storage browser for the storage account to browse blob storage and download files.

Next unit: Summary

Continue >

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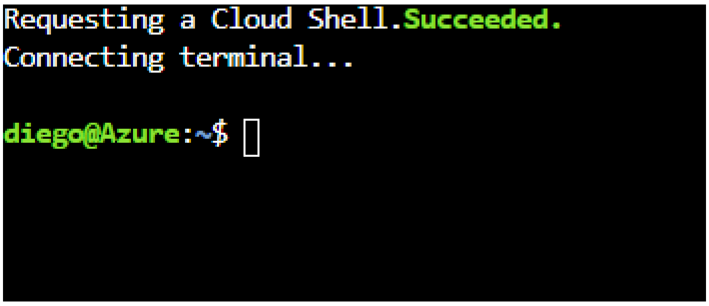
Azure Cloud Shell



```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

diego@Azure:~$ 
```