AZ-204

Developing solutions for Microsoft Azure

Lab 03

Retrieving Azure Storage resources and metadata by using the Azure Storage SDK for .NET

Table of Contents

1 Pre-requisites

1.1 Sign in to the lab virtual machine

Sign in to your Windows 10 virtual machine (VM) by using the following credentials:

- Username: **Admin**
- Password: **Pa55w.rd**

Note: Instructions to connect to the virtual lab environment will be provided by your instructor.

1.2 Review the installed applications

Find the taskbar on your Windows 10 desktop. The taskbar contains the icons for the applications that you’ll use in this lab:

- Microsoft Edge
- File Explorer
- Azure CLI
- Windows PowerShell

2 Exercise 1: Create Azure resources

2.1 Task 1: Open the Azure portal

1. On the taskbar, select the **Microsoft Edge** icon.
2. In the open browser window, go to the Azure portal (https://portal.azure.com).
3. Enter the email address for your Microsoft account, and then select **Next**.
4. Enter the password for your Microsoft account, and then select **Sign in**.

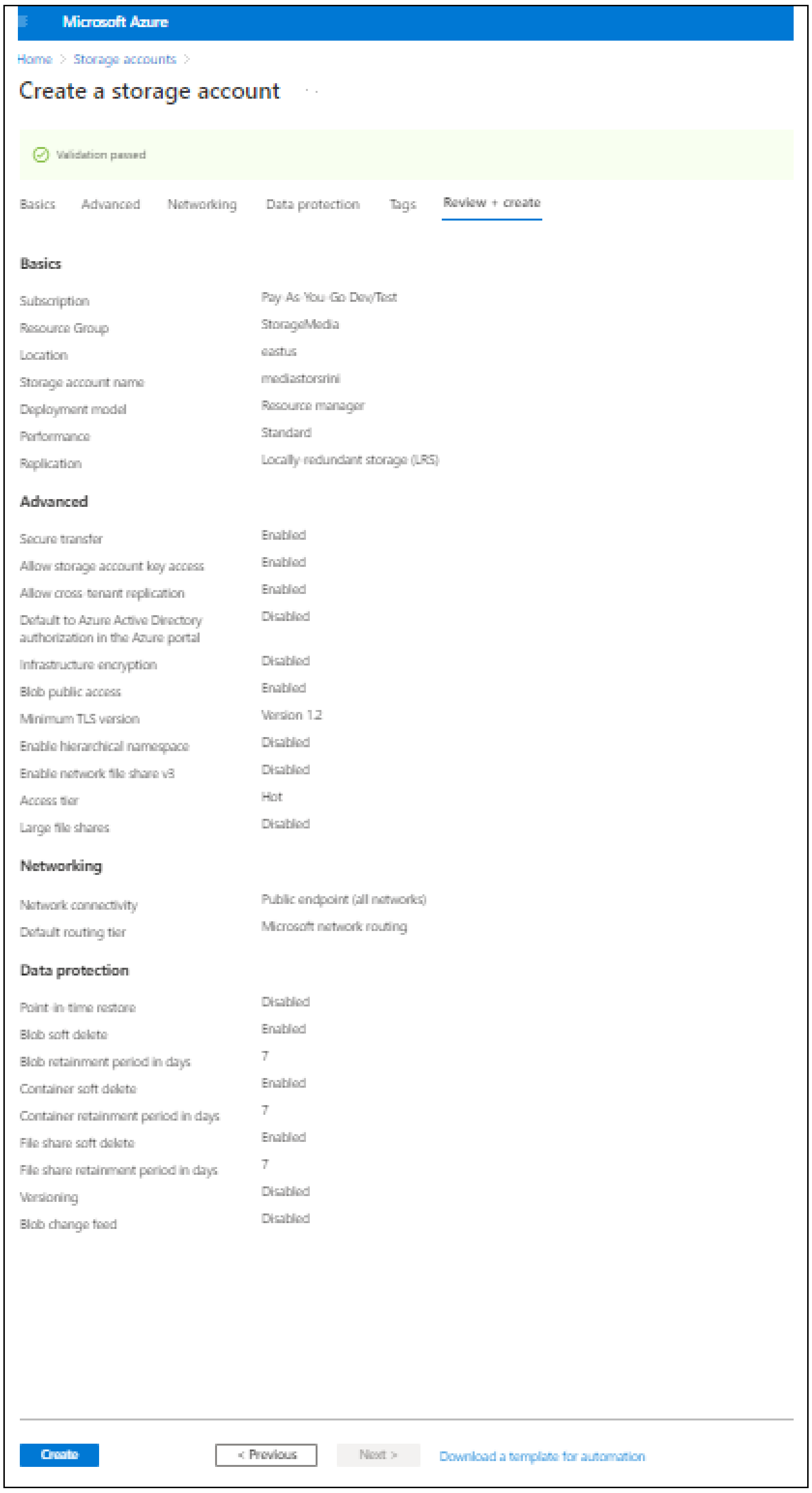
> **Note**: If this is your first time signing in to the Azure portal, you'll be offered a tour of the portal. Select **Get Started** to skip the tour and begin using the portal.

2.2 Task 2: Create a Storage account

1. In the Azure portal's navigation pane, select **All services**.
2. On the **All services** blade, select **Storage Accounts**.
3. On the **Storage accounts** blade, find your list of Storage instances.
4. On the **Storage accounts** blade, select **+ Create**.
5. Find the tabs on the **Create storage account** blade, such as **Basics**.

> **Note**: Each tab represents a step in the workflow to create a new storage account. You can select **Review + Create** at any time to skip the remaining tabs.

6. On the **Basics** tab, perform the following actions:
    1. Leave the **Subscription** text box set to its default value.
    2. In the **Resource group** section, select **Create new**, enter **StorageMedia**, and then select **OK**.
    3. In the **Storage account name** text box, enter **mediastor*[yourname]***.
    4. In the **Region** drop-down list, select the **(US) East US** region.
    5. In the **Performance** section, select **Standard**.
    6. In the **Redundancy** drop-down list, select **Locally-redundant storage (LRS)**.
    7. Select **Review + Create**.
7. On the **Review + Create** tab, review the options that you selected during the previous steps.



Create a storage account

Validation passed

Basics

Subscription	Pay-As-You-Go Dev/Test
Resource Group	StorageMedia
Location	eastus
Storage account name	mediastorsrini
Deployment model	Resource manager
Performance	Standard
Replication	Locally-redundant storage (LRS)

Advanced

Secure transfer	Enabled
Allow storage account key access	Enabled
Allow cross-tenant replication	Enabled
Default to Azure Active Directory authorization in the Azure portal	Disabled
Infrastructure encryption	Disabled
Blob public access	Enabled
Minimum TLS version	Version 1.2
Enable hierarchical namespace	Disabled
Enable network file share v3	Disabled
Access tier	Hot
Large file shares	Disabled

Networking

Network connectivity	Public endpoint (all networks)
Default routing tier	Microsoft network routing

Data protection

Point-in-time restore	Disabled
Blob soft delete	Enabled
Blob retainment period in days	7
Container soft delete	Enabled
Container retainment period in days	7
File share soft delete	Enabled
File share retainment period in days	7
Versioning	Disabled
Blob change feed	Disabled

8. Select **Create** to create the storage account by using your specified configuration.

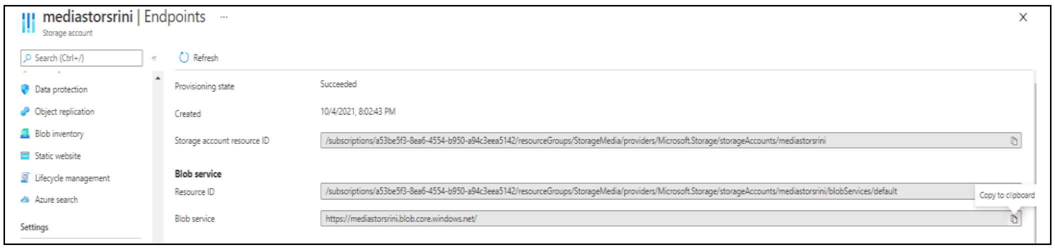
   Note: Wait for the creation task to complete before you move forward with this lab.

9. In the Azure portal's navigation pane, select **All services**.
10. On the **All services** blade, select **Storage Accounts**.

11. On the **Storage accounts** blade, select the **mediastor*[yourname]*** storage account instance.

    Note: If the **mediastor*[yourname]*** storage account instance doesn't appear, select **Refresh**.

12. On the **Storage account** blade, find the **Settings** section, and then select the **Endpoints** link.
13. In the **Endpoints** section, record the value of the **Blob Service** text box.



Provisioning state: Succeeded
Created: 10/4/2021, 8:02:43 PM
Storage account resource ID: /subscriptions/a53be5f3-8ea6-4554-b950-a94c3eea5142/resourceGroups/StorageMedia/providers/Microsoft.Storage/storageAccounts/mediastorsrini

Blob service
Resource ID: /subscriptions/a53be5f3-8ea6-4554-b950-a94c3eea5142/resourceGroups/StorageMedia/providers/Microsoft.Storage/storageAccounts/mediastorsrini/blobServices/default
Blob service: https://mediastorsrini.blob.core.windows.net/

    Note: You'll use this endpoint value later in the lab.

14. Still on the **Storage account** blade, find the **Security + networking** section, and then select the **Access keys** link.
15. In the **Access keys** section, perform the following actions:
    1. Record the value in the **Storage account name** text box.
    2. Select **Show Keys**.
    3. Select any one of the keys, and then record the value in either of the **Key** boxes.

    Note: All these values will be used later in this lab.

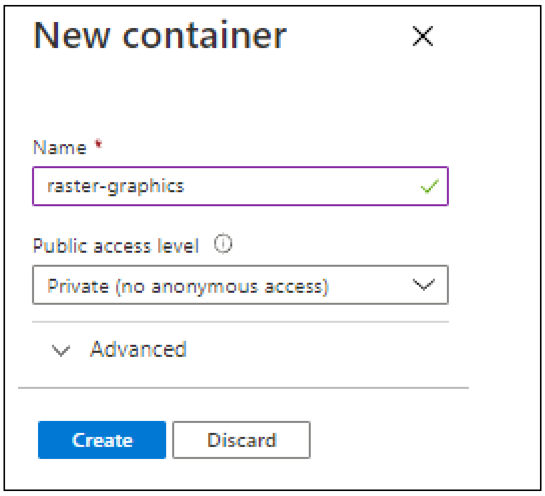
2.3 Review

In this exercise, you created a new Storage account to use throughout the remainder of the lab.

3 Exercise 2: Upload a blob into a container

3.1 Task 1: Create storage account containers

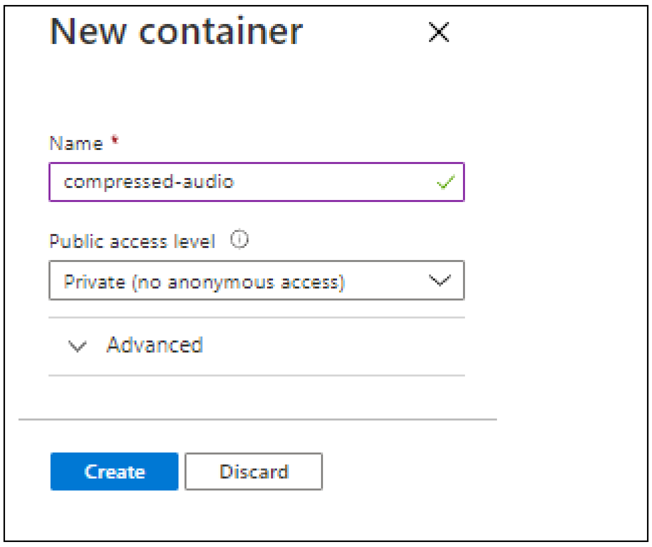
1. In the Azure portal's navigation pane, select the **Resource groups** link.
2. On the **Resource groups** blade, find and then select the **StorageMedia** resource group that you created earlier in this lab.
3. On the **StorageMedia** blade, select the **mediastor*[yourname]*** storage account that you created earlier in this lab.
4. On the **Storage account** blade, select the **Containers** link in the **Data storage** section.
5. In the **Containers** section, select **+ Container**.
6. In the **New container** pop-up window, perform the following actions:
    1. In the **Name** text box, enter **raster-graphics**.
    2. In the **Public access level** drop-down list, select **Private (no anonymous access)**, and then select **Create**.


New container

Name *
raster-graphics

Public access level
Private (no anonymous access)

7. Back in the **Containers** section, select **+ Container**.
8. In the **New container** pop-up window, perform the following actions:
    1. In the **Name** text box, enter **compressed-audio**.
    2. In the **Public access level** drop-down list, select **Private (no anonymous access)**, and then select **Create**.


New container

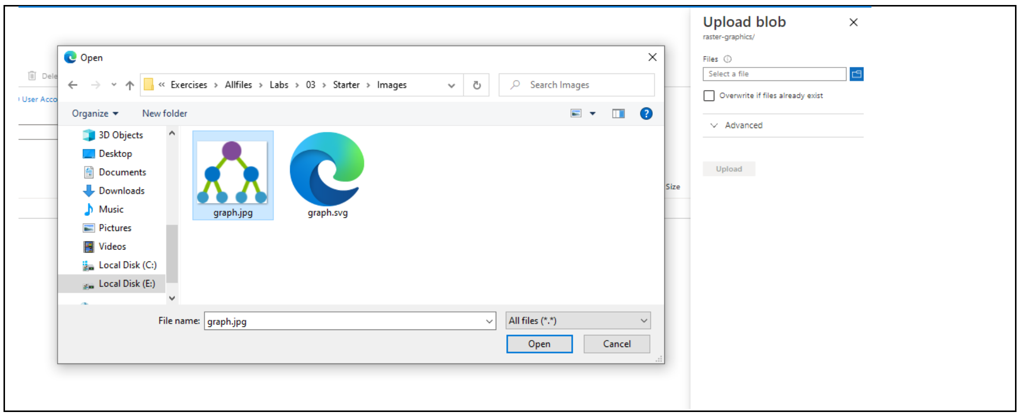
Name *
compressed-audio

Public access level
Private (no anonymous access)

9. Back in the **Containers** section, observe the updated list of containers.

3.2 Task 2: Upload a storage account blob

1. In the Azure portal's navigation pane, select the **Resource groups** link.
2. On the **Resource groups** blade, find and then select the **StorageMedia** resource group that you created earlier in this lab.
3. On the **StorageMedia** blade, select the **mediastor*[yourname]*** storage account that you created earlier in this lab.
4. On the **Storage account** blade, select the **Containers** link in the **Data storage** section.
5. In the **Containers** section, select the recently created **raster-graphics** container.
6. On the **Container** blade, select **Upload**.
7. In the **Upload blob** window, perform the following actions:
    1. In the **Files** section, select the **Folder** icon.
    2. In the **File Explorer** window, browse to **Allfiles (F):\Allfiles\Labs\03\Starter\Images**, select the **graph.jpg** file, and then select **Open**.



    3. Ensure that the **Overwrite if files already exist** check box is selected, and then select **Upload**.

       Note: Wait for the blob to upload before you continue with this lab.

3.3 Review

In this exercise, you created a couple of placeholder containers in the storage account and populated one of the containers with a blob.

4 Exercise 3: Access containers by using the .NET SDK

4.1 Task 1: Create .NET project

1. On the **Start** screen, select the **Visual Studio Code** tile.
2. From the **File** menu, select **Open Folder**.
3. In the **File Explorer** window that opens, browse to **Allfiles (F):\Allfiles\Labs\03\Starter\BlobManager**, and then select **Select Folder**.
4. In the **Visual Studio Code** window, right-click or activate the shortcut menu for the Explorer pane, and then select **Open in Terminal**.
5. At the open command prompt, enter the following command, and then select Enter to create a new .NET project named **BlobManager** in the current folder:

```
dotnet new console --name BlobManager --output .
```

Note: The **dotnet new** command will create a new **console** project in a folder with the same name as the project.

6. At the command prompt, enter the following command, and then select Enter to import version 12.0.0 of Azure.Storage.Blobs from NuGet:

```
dotnet add package Azure.Storage.Blobs --version 12.0.0
```

Note: The **dotnet add package** command will add the **Azure.Storage.Blobs** package from NuGet. For more information, go to Azure.Storage.Blobs.

7. At the command prompt, enter the following command, and then select Enter to build the .NET web application:

```
dotnet build
```

4.2 Task 2: Modify the Program class to access Storage

1. In the Explorer pane of the **Visual Studio Code** window, open the **Program.cs** file.
2. On the code editor tab for the **Program.cs** file, delete all the code in the existing file.
3. Add the following line of code to import the **Azure.Storage**, **Azure.Storage.Blobs**, and **Azure.Storage.Blobs.Models** namespaces from the **Azure.Storage.Blobs** package imported from NuGet and **System.Threading.Tasks**

```csharp
using System;
using System.Threading.Tasks;
using Azure.Storage;
using Azure.Storage.Blobs;
using Azure.Storage.Blobs.Models;
```

4. Modify the Program class as shown below code and

```csharp
namespace BlobManager
{
    class Program
    {
        private const string blobServiceEndpoint = "https://mediastorsrini.blo
b.core.windows.net/";
        private const string storageAccountName = "mediastorsrini";
        private const string storageAccountKey = "r2hKMaNT3s8wUhD5U+5UC0NQgzaf
7ZfSGuxpr5DzW4kAsKQrOEA4TlnBGLqh/lU/HZya8RfZlgKH6xGFVWtc8Q==";

        public static async Task Main(string[] args)
        {

            Console.WriteLine("Hello World!");
        }
    }
}
```

4.3 Task 3: Connect to the Azure Storage blob service endpoint

1. In the **Main** method, add the following line of code to create a new instance of the **StorageSharedKeyCredential** class by using the **storageAccountName** and **storageAccountKey** constants as constructor parameters:

```

StorageSharedKeyCredential accountCredentials = new StorageSharedKeyCredential
(storageAccountName, storageAccountKey);
```

2. In the Main method, add the following line of code to create a new instance of the BlobServiceClient class by using the blobServiceEndpoint constant and the accountCredentials variable as constructor parameters:

```
 BlobServiceClient serviceClient = new BlobServiceClient(new Uri(blobServiceEn
dpoint), accountCredentials);
```

3. In the Main method, add the following line of code to invoke the GetAccountInfoAsync method of the BlobServiceClient class to retrieve account metadata from the service:

```
 AccountInfo info = await serviceClient.GetAccountInfoAsync();
```

4. In the Main method, add the following line of code to render a welcome message:

```
 await Console.Out.WriteLineAsync($"Connected to Azure Storage Account");
```

5. In the Main method, add the following line of code to render the storage account's name:

```
await Console.Out.WriteLineAsync($"Account name:\t{storageAccountName}");
```

6. In the Main method, add the following line of code to render the type of storage account:

```
 await Console.Out.WriteLineAsync($"Account kind:\t{info?.AccountKind}");
```

7. In the Main method, add the following line of code to render the currently selected stock keeping unit (SKU) for the storage account:

```
 await Console.Out.WriteLineAsync($"Account sku:\t{info?.SkuName}");
```

8. Observe the Main method, which should now include:

```
   public static async Task Main(string[] args)
        {
            StorageSharedKeyCredential accountCredentials = new StorageSharedKeyCredenti
al(storageAccountName, storageAccountKey);
            BlobServiceClient serviceClient = new BlobServiceClient(new Uri(blobServiceE
ndpoint), accountCredentials);
            AccountInfo info = await serviceClient.GetAccountInfoAsync();
            await Console.Out.WriteLineAsync($"Connected to Azure Storage Account");
            await Console.Out.WriteLineAsync($"Account name:\t{storageAccountName}");
            await Console.Out.WriteLineAsync($"Account kind:\t{info?.AccountKind}");
            await Console.Out.WriteLineAsync($"Account sku:\t{info?.SkuName}");

          }
```

9. Save the Program.cs file.

At the open command prompt, enter the following command, and then select Enter to run the .NET web application:

```
dotnet run
```

Note: If there are any build errors, review the **Program.cs** file in the **Allfiles (F):\Allfiles\Labs\03\Solution\BlobManager** folder.

11. Observe the output from the currently running console application. The output contains metadata for the Storage account that was retrieved from the service.
12. Select **Kill Terminal** or the **Recycle Bin** icon to close the currently open terminal and any associated processes.

4.4 Task 4: Enumerate the existing containers

1. In the **Program** class, enter the following code to create a new **private static** method named **EnumerateContainersAsync** that's asynchronous and has a single **BlobServiceClient** parameter type:

```
private static async Task EnumerateContainersAsync(BlobServiceClient client)
 {


 }
```

2. In the EnumerateContainersAsync method, enter the following code to create an asynchronous foreach loop that iterates over the results of an invocation of the GetBlobContainersAsync method of the BlobServiceClient class:

```
await foreach (BlobContainerItem container in client.GetBlobContainersAsync())
{

}
```

3. Within the foreach loop, enter the following code to print the name of each container:

```
await Console.Out.WriteLineAsync($"Container:\t{container.Name}");
```

4. Observe the EnumerateContainersAsync method, which should now include:

```
private static async Task EnumerateContainersAsync(BlobServiceClient client)
       {

           await foreach (BlobContainerItem container in client.GetBlobContainersAsync())
           {
               await Console.Out.WriteLineAsync($"Container:\t{container.Name}");
           }

       }
```

5. In the Main method, enter the following code at the end of the method to invoke the EnumerateContainersAsync method, passing in the serviceClient variable as a parameter:

```
await EnumerateContainersAsync(serviceClient);
```

6. Observe the Main method, which should now include:

```
public static async Task Main(string[] args)
       {
          //code removed for brevity
          await EnumerateContainersAsync(serviceClient);

       }
```

7. Observe the EnumerateContainersAsync Method

```
 private static async Task EnumerateContainersAsync(BlobServiceClient client)
       {

           await foreach (BlobContainerItem container in client.GetBlobContainersAsync())
           {
               await Console.Out.WriteLineAsync($"Container:\t{container.Name}");
           }

       }
```

8. Save the Program.cs file.

9. At the open command prompt, enter the following command, and then select Enter to run the .NET web application:

```
dotnet run
```

Note: If there are any build errors, review the **Program.cs** file in the **Allfiles (F):\Allfiles\Labs\03\Solution\BlobManager** folder.

9. Observe the output from the currently running console application. The updated output includes a list of every existing container in the account.
10. Select **Kill Terminal** or the **Recycle Bin** icon to close the currently open terminal and any associated processes.

4.5 Review

In this exercise, you accessed existing containers by using the Azure Storage SDK.

5 Exercise 4: Retrieve blob Uniform Resource Identifiers (URIs) by using the .NET SDK

5.1 Task 1: Enumerate the blobs in an existing container by using the SDK

1. In the **Program** class, enter the following code to create a new **private static** method named **EnumerateBlobsAsync** that's asynchronous and has two parameter types, **BlobServiceClient** and **string**:

```
  private static async Task EnumerateBlobsAsync(BlobServiceClient client, string contai
nerName)
        {
        }
```

2. In the EnumerateBlobsAsync method, enter the following code to get a new instance of the BlobContainerClient class by using the GetBlobContainerClient method of the BlobServiceClient class, passing in the containerName parameter:

```
BlobContainerClient container = client.GetBlobContainerClient(containerName);
```

3. In the EnumerateBlobsAsync method, enter the following code to render the name of the container that will be enumerated:

```
await Console.Out.WriteLineAsync($"Searching:\t{container.Name}");
```

4. In the EnumerateBlobsAsync method, enter the following code to create an asynchronous foreach loop that iterates over the results of an invocation of the GetBlobsAsync method of the BlobContainerClient class:

```
 await foreach (BlobItem blob in container.GetBlobsAsync())
 {
 }
```

5. Within the foreach loop, enter the following code to print the name of each blob:

```
  await Console.Out.WriteLineAsync($"Existing Blob:\t{blob.Name}");
```

6. Observe the EnumerateBlobsAsync method, which should now include:

```
   private static async Task EnumerateBlobsAsync(BlobServiceClient client, string conta
inerName)
        {
            BlobContainerClient container = client.GetBlobContainerClient(containerName
);
```

```
            await Console.Out.WriteLineAsync($"Searching:\t{container.Name}");
            await foreach (BlobItem blob in container.GetBlobsAsync())
            {
                await Console.Out.WriteLineAsync($"Existing Blob:\t{blob.Name}");
            }

        }
```

7. In the Main method, enter the following code at the end of the method to create a variable named existingContainerName with a value of raster-graphics:

```
  string existingContainerName = "raster-graphics";
```

8. In the Main method, enter the following code at the end of the method to invoke the EnumerateBlobsAsync method, passing in the serviceClient and existingContainerName variables as parameters:

```
await EnumerateBlobsAsync(serviceClient, existingContainerName);
```

9. Observe the Main method, as shown below:

```
 public static async Task Main(string[] args)
        {
            StorageSharedKeyCredential accountCredentials = new StorageSharedKeyCredential
(storageAccountName, storageAccountKey);
            BlobServiceClient serviceClient = new BlobServiceClient(new Uri(blobServiceEnd
point), accountCredentials);
            AccountInfo info = await serviceClient.GetAccountInfoAsync();
            await Console.Out.WriteLineAsync($"Connected to Azure Storage Account");
            await Console.Out.WriteLineAsync($"Account name:\t{storageAccountName}");
            await Console.Out.WriteLineAsync($"Account kind:\t{info?.AccountKind}");
            await Console.Out.WriteLineAsync($"Account sku:\t{info?.SkuName}");
            await EnumerateContainersAsync(serviceClient);
            string existingContainerName = "raster-graphics";
            await EnumerateBlobsAsync(serviceClient, existingContainerName);

        }
```

10. Save the Program.cs file.

In the **Visual Studio Code** window, right-click or activate the shortcut menu for the Explorer pane, and then select **Open in Terminal**.

11. At the open command prompt, enter the following command, and then select Enter to run the .NET web application:

```
dotnet run
```

Note: If there are any build errors, review the **Program.cs** file in the **Allfiles (F):\Allfiles\Labs\03\Solution\BlobManager** folder.

12. Observe the output from the currently running console application. The updated output includes metadata about the existing container and blobs.
13. Select **Kill Terminal** or the **Recycle Bin** icon to close the currently open terminal and any associated processes.

5.2 Task 2: Create a new container by using the SDK

1. In the **Program** class, enter the following code to create a new **private static** method named **GetContainerAsync** that's asynchronous and has two parameter types, **BlobServiceClient** and **string**:

```
private static async Task<BlobContainerClient> GetContainerAsync(BlobServiceClient client, string containerName)
{
}
```

2. In the GetContainerAsync method, enter the following code to get a new instance of the BlobContainerClient class by using the GetBlobContainerClient method of the BlobServiceClient class, passing in the containerName parameter:

```
BlobContainerClient container = client.GetBlobContainerClient(containerName);
```

3. In the GetContainerAsync method, enter the following code to invoke the CreateIfNotExistsAsync method of the BlobContainerClient class:

```
await container.CreateIfNotExistsAsync(PublicAccessType.Blob);
```

4. In the GetContainerAsync method, enter the following code to render the name of the container that was potentially created:

```
await Console.Out.WriteLineAsync($"New Container:\t{container.Name}");
```

5. In the GetContainerAsync method, enter the following code to return the instance of the BlobContainerClient class named container as the result of the GetContainerAsync method:

```
return container;
```

6. Observe the GetContainerAsync method, which should now include:

```
 private static async Task<BlobContainerClient> GetContainerAsync(BlobServiceClient cli
ent, string containerName)
        {
            BlobContainerClient container = client.GetBlobContainerClient(containerName
);
            await container.CreateIfNotExistsAsync(PublicAccessType.Blob);
            await Console.Out.WriteLineAsync($"New Container:\t{container.Name}");
            return container;
        }
```

7. In the Main method, enter the following code at the end of the method to create a variable named newContainerName with a value of vector-graphics:

```
 string newContainerName = "vector-graphics";
```

8. In the Main method, enter the following code at the end of the method to invoke the GetContainerAsync method, passing in the serviceClient and newContainerName variables as parameters, and to store the result in a variable named containerClient of type BlobContainerClient:

```
BlobContainerClient containerClient = await GetContainerAsync(serviceClient, newContainerName)
;
```

9. Observe the Main method, which should now look as below:

```
      public static async Task Main(string[] args)
        {
            StorageSharedKeyCredential accountCredentials = new StorageSharedKeyCredential(sto
rageAccountName, storageAccountKey);
            BlobServiceClient serviceClient = new BlobServiceClient(new Uri(blobServiceEndpoin
t), accountCredentials);
            AccountInfo info = await serviceClient.GetAccountInfoAsync();
            await Console.Out.WriteLineAsync($"Connected to Azure Storage Account");
            await Console.Out.WriteLineAsync($"Account name:\t{storageAccountName}");
            await Console.Out.WriteLineAsync($"Account kind:\t{info?.AccountKind}");
            await Console.Out.WriteLineAsync($"Account sku:\t{info?.SkuName}");
            await EnumerateContainersAsync(serviceClient);
            string existingContainerName = "raster-graphics";
            await EnumerateBlobsAsync(serviceClient, existingContainerName);
            string newContainerName = "vector-graphics";
            BlobContainerClient containerClient = await GetContainerAsync(serviceClient, newCo
ntainerName);

        }
```

10. Save the Program.cs file.

In the **Visual Studio Code** window, right-click or activate the shortcut menu for the Explorer pane, and then select **Open in Terminal**.

11. At the open command prompt, enter the following command, and then select Enter to run the .NET web application:

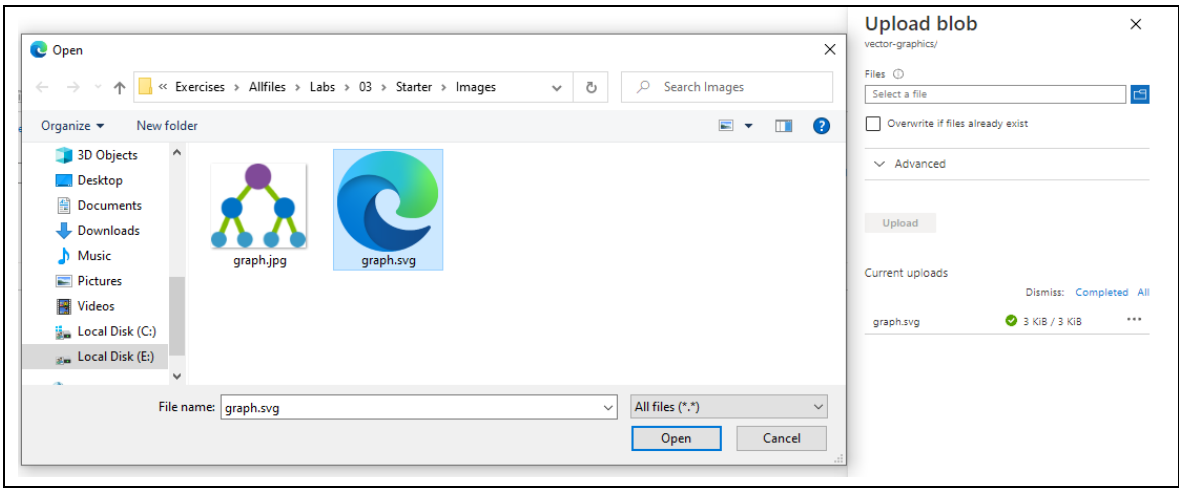
```
dotnet run
```

Note: If there are any build errors, review the **Program.cs** file in the **Allfiles (F):\Allfiles\Labs\03\Solution\BlobManager** folder.

12. Observe the output from the currently running console application. The updated output includes metadata about the existing container and blobs.
13. Select **Kill Terminal** or the **Recycle Bin** icon to close the currently open terminal and any associated processes.

5.3 Task 3: Upload a new blob by using the portal

1. In the Azure portal's navigation pane, select the **Resource groups** link.
2. On the **Resource groups** blade, find and then select the **StorageMedia** resource group that you created earlier in this lab.
3. On the **StorageMedia** blade, select the **mediastor*[yourname]*** storage account that you created earlier in this lab.
4. On the **Storage account** blade, select the **Containers** link in the **Data storage** section.
5. In the **Containers** section, select the newly created **vector-graphics** container.
6. On the **Container** blade, select **Upload**.
7. In the **Upload blob** window, perform the following actions:
    1. In the **Files** section, select the **Folder** icon.
    2. In the **File Explorer** window, browse to **Allfiles (F):\Allfiles\Labs\03\Starter\Images**, select the **graph.svg** file, and then select **Open**.
    3. Ensure that the **Overwrite if files already exist** check box is selected, and then select **Upload**.



Note: Wait for the blob to upload before you continue with this lab.

5.4 Task 4: Access blob URI by using the SDK

1. In the **Program** class, enter the following code to create a new **private static** method named **GetBlobAsync** that's asynchronous and has two parameter types, **BlobContainerClient** and **string**:

```
private static async Task<BlobClient> GetBlobAsync(BlobContainerClient client, string blobN
ame)
 {
 }
```

2. In the GetBlobAsync method, enter the following code to get a new instance of the BlobClient class by using the GetBlobClient method of the BlobContainerClient class, passing in the blobName parameter:

```
 BlobClient blob = client.GetBlobClient(blobName);
```

3. In the GetBlobAsync method, enter the following code to render the name of the blob that was referenced:

```
 await Console.Out.WriteLineAsync($"Blob Found:\t{blob.Name}");
```

4. In the GetBlobAsync method, enter the following code to return the instance of the BlobClient class named blob as the result of the GetBlobAsync method:

```
 return blob;
```

5. Observe the GetBlobAsync method, which should now include:

```
   private static async Task<BlobClient> GetBlobAsync(BlobContainerClient client, strin
g blobName)
        {
            BlobClient blob = client.GetBlobClient(blobName);
            await Console.Out.WriteLineAsync($"Blob Found:\t{blob.Name}");
            return blob;
        }
```

6. In the Main method, enter the following code at the end of the method to create a variable named uploadedBlobName with a value of graph.svg:

```
string uploadedBlobName = "graph.svg";
```

7. In the Main method, enter the following code at the end of the method to invoke the GetBlobAsync method, passing in the containerClient and uploadedBlobName variables as parameters, and to store the result in a variable named blobClient of type BlobClient:

```
 BlobClient blobClient = await GetBlobAsync(containerClient, uploadedBlobName);
```

8. In the Main method, enter the following code at the end of the method to render the Uri property of the blobClient variable:

```
 await Console.Out.WriteLineAsync($"Blob Url:\t{blobClient.Uri}");
```

9. Observe the Main method, which should now include:

```
  public static async Task Main(string[] args)
        {
            StorageSharedKeyCredential accountCredentials = new StorageSharedKeyCredentia
l(storageAccountName, storageAccountKey);
            BlobServiceClient serviceClient = new BlobServiceClient(new Uri(blobServiceEn
dpoint), accountCredentials);
            AccountInfo info = await serviceClient.GetAccountInfoAsync();
            await Console.Out.WriteLineAsync($"Connected to Azure Storage Account");
            await Console.Out.WriteLineAsync($"Account name:\t{storageAccountName}");
            await Console.Out.WriteLineAsync($"Account kind:\t{info?.AccountKind}");
            await Console.Out.WriteLineAsync($"Account sku:\t{info?.SkuName}");
            await EnumerateContainersAsync(serviceClient);
            string existingContainerName = "raster-graphics";
            await EnumerateBlobsAsync(serviceClient, existingContainerName);
            string newContainerName = "vector-graphics";
            BlobContainerClient containerClient = await GetContainerAsync(serviceClient,
newContainerName);
            string uploadedBlobName = "graph.svg";
            BlobClient blobClient = await GetBlobAsync(containerClient, uploadedBlobName)
;
            await Console.Out.WriteLineAsync($"Blob Url:\t{blobClient.Uri}");

        }
```

10. Save the Program.cs file.

In the **Visual Studio Code** window, right-click or activate the shortcut menu for the Explorer pane, and then select **Open in Terminal**.

11. At the open command prompt, enter the following command, and then select Enter to run the .NET web application:

```
dotnet run
```

Note: If there are any build errors, review the **Program.cs** file in the **Allfiles (F):\Allfiles\Labs\03\Solution\BlobManager** folder.

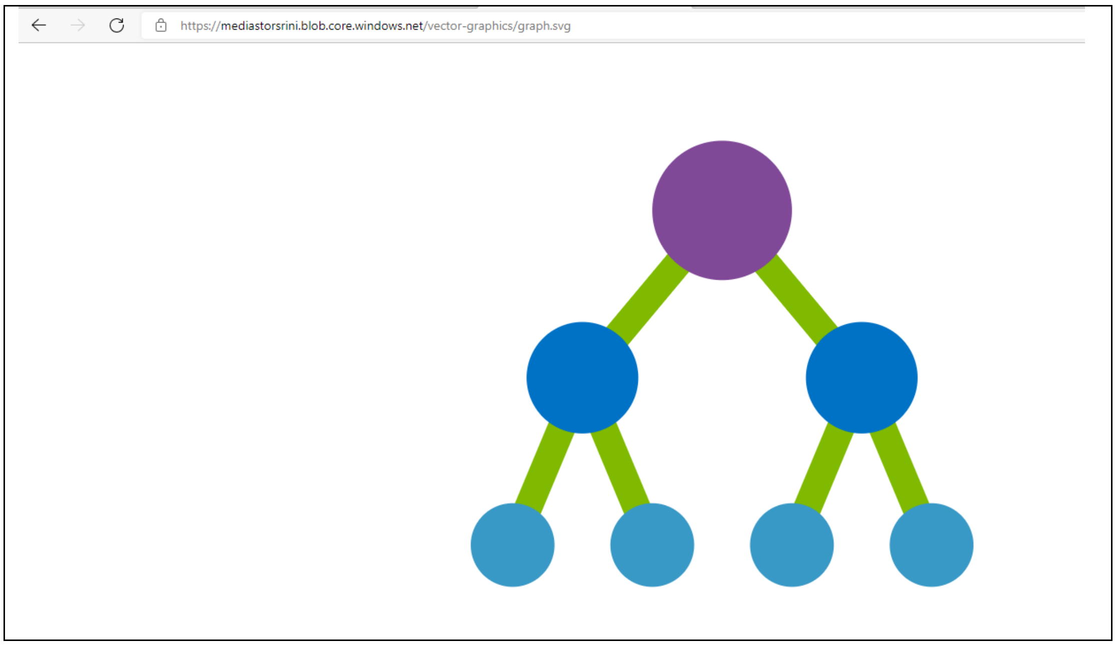
12. Observe the output from the currently running console application. The updated output includes the final URL to access the blob online. Record the value of this URL to use later in the lab.

Note: The URL will likely be similar to the following string:
https://mediastor*[yourname]*.blob.core.windows.net/vector-graphics/graph.svg

13. Select **Kill Terminal** or the **Recycle Bin** icon to close the currently open terminal and any associated processes.

5.5 Task 5: Test the URI by using a browser

1. On the taskbar, right-click the **Microsoft Edge** icon or activate the shortcut menu, and then select **New window**.
2. In the new browser window, go to the URL that you copied for the blob earlier in this lab.
3. You should now notice the Scalable Vector Graphic (SVG) file in your browser window.


https://mediastorsrini.blob.core.windows.net/vector-graphics/graph.svg

5.6 Review

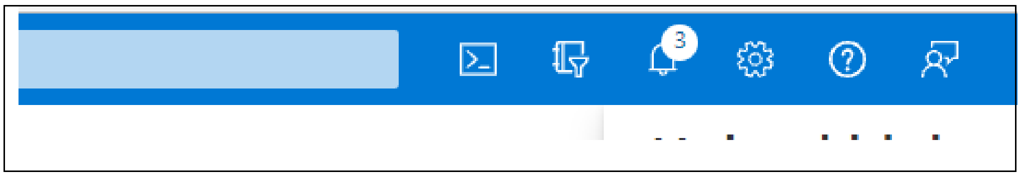
In this exercise, you created containers and managed blobs by using the Storage SDK.

6 Exercise 5: Clean up your subscription

6.1 Task 1: Open Azure Cloud Shell and list resource groups

1. In the Azure portal's navigation pane, select the **Cloud Shell** icon to open a new shell instance.

   Note: The **Cloud Shell** icon is represented by a greater than sign (>) and underscore character (_).



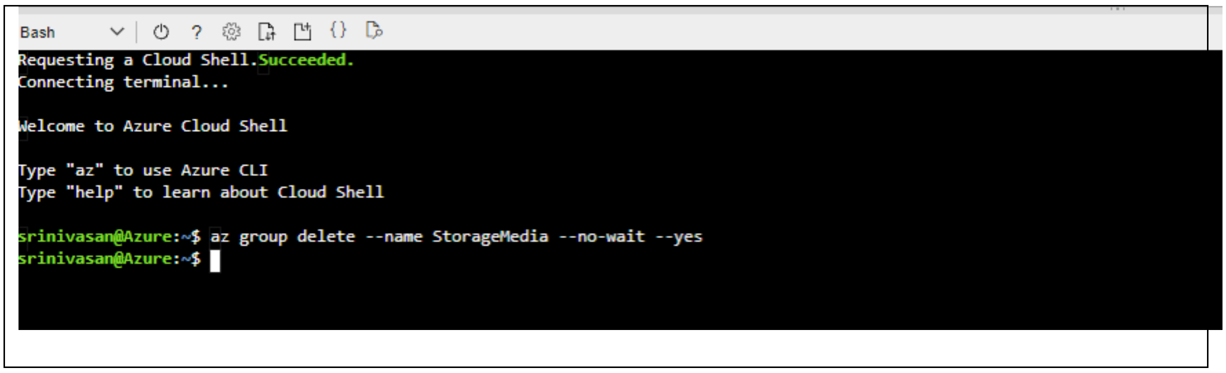
2. If this is your first time opening Cloud Shell using your subscription, you can use the **Welcome to Azure Cloud Shell Wizard** to configure Cloud Shell for first-time usage. Perform the following actions in the wizard:
   1. A dialog box prompts you to configure the shell. Select **Bash**, review the selected subscription, and then select **Create storage**.

      Note: Wait for Cloud Shell to finish its initial setup procedures before moving forward with the lab. If you don't notice Cloud Shell configuration options, this is most likely because you're using an existing subscription with this course's labs. The labs are written with the presumption that you're using a new subscription.

6.2 Task 2: Delete a resource group

1. At the command prompt, enter the following command, and then select Enter to delete the **StorageMedia** resource group:

```
az group delete --name StorageMedia --no-wait --yes
```



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

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

srinivasan@Azure:~$ az group delete --name StorageMedia --no-wait --yes
srinivasan@Azure:~$
```

1. Close the Cloud Shell pane in the portal.

6.3 Task 3: Close the active application

1. The currently running Microsoft Edge application.

6.4 Review

In this exercise, you cleaned up your subscription by removing the resource group used in this lab.