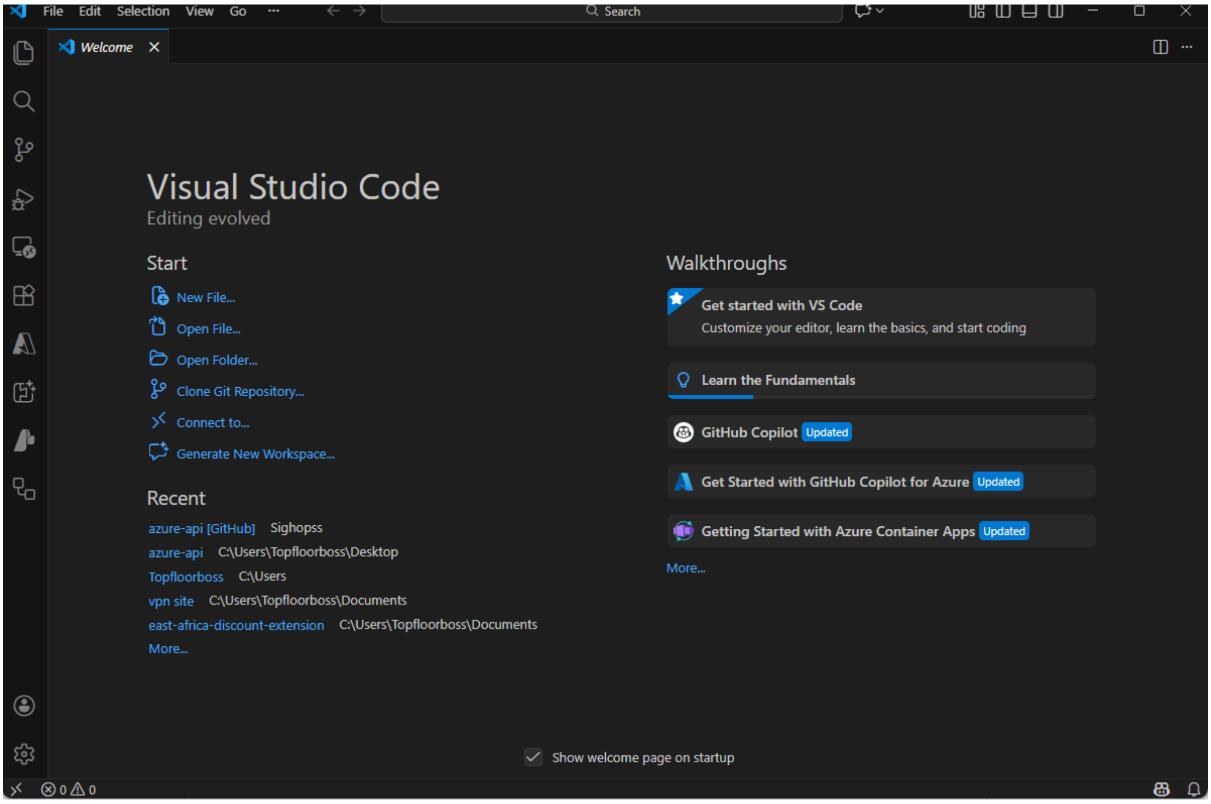
Trevor Kutto

Cloud Industry Trends - Lab 3 – Cosmos DB Change Feed



Visual Studio Code

Editing evolved

Start

- New File...
- Open File...
- Open Folder...
- Clone Git Repository...
- Connect to...
- Generate New Workspace...

Recent

azure-api [GitHub]	Sighopss
azure-api	C:\Users\Topfloorboss\Desktop
Topfloorboss	C:\Users
vpn site	C:\Users\Topfloorboss\Documents
east-africa-discount-extension	C:\Users\Topfloorboss\Documents

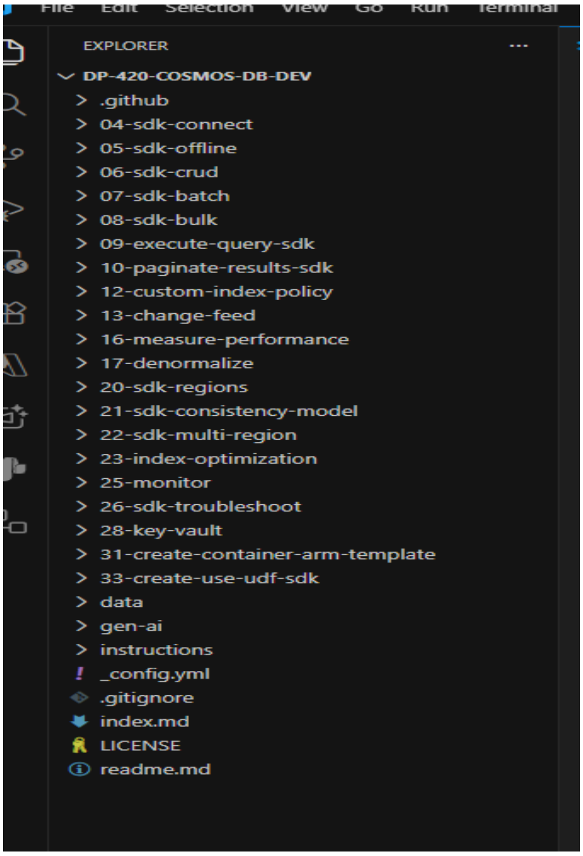
More...

Walkthroughs

- Get started with VS Code
  Customize your editor, learn the basics, and start coding
- Learn the Fundamentals
- GitHub Copilot Updated
- Get Started with GitHub Copilot for Azure Updated
- Getting Started with Azure Container Apps Updated

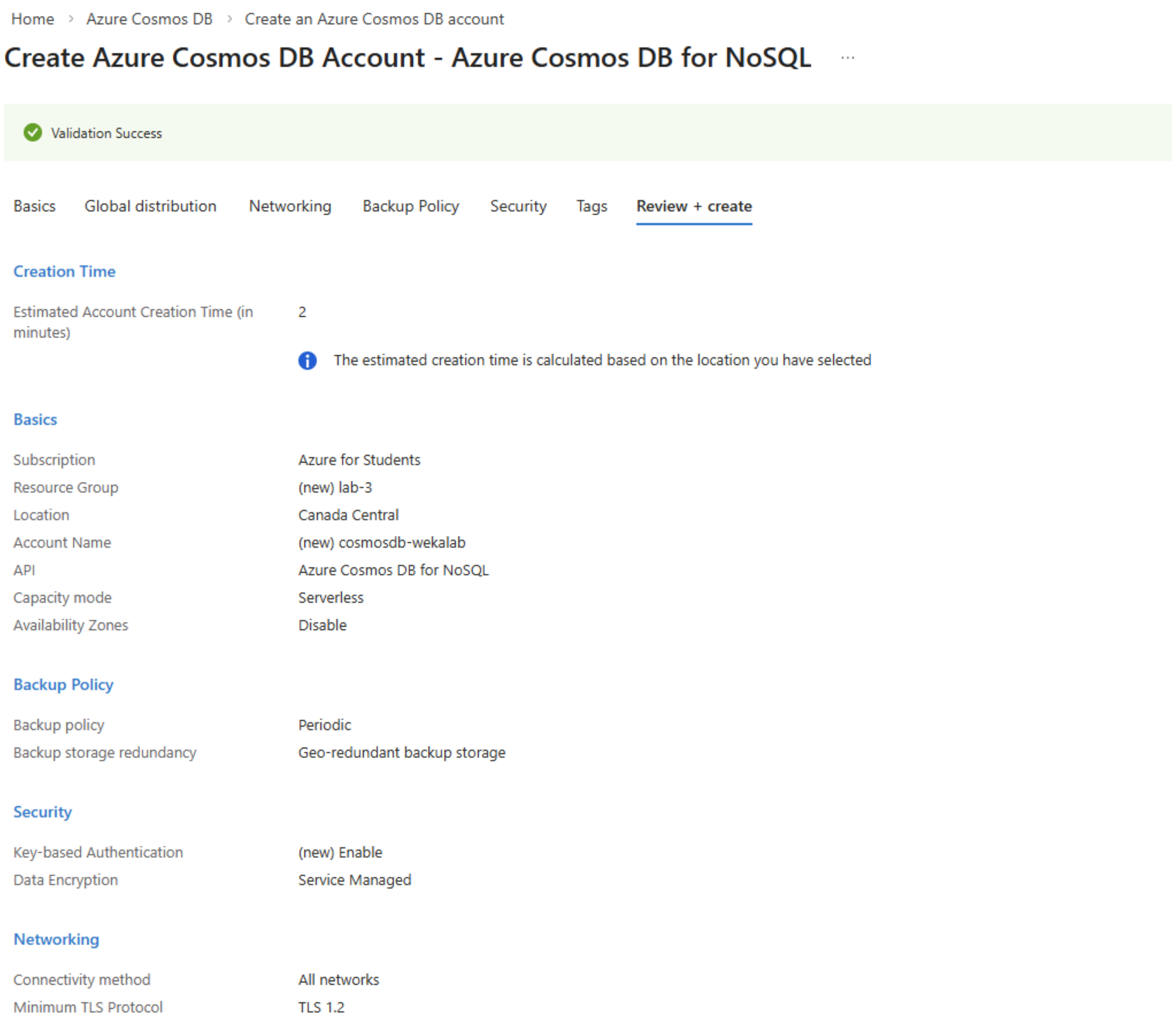
More...

Visual studio code opened and we are able to see the welcome page



```
DP-420-COSMOS-DB-DEV
  > .github
  > 04-sdk-connect
  > 05-sdk-offline
  > 06-sdk-crud
  > 07-sdk-batch
  > 08-sdk-bulk
  > 09-execute-query-sdk
  > 10-paginate-results-sdk
  > 12-custom-index-policy
  > 13-change-feed
  > 16-measure-performance
  > 17-denormalize
  > 20-sdk-regions
  > 21-sdk-consistency-model
  > 22-sdk-multi-region
  > 23-index-optimization
  > 25-monitor
  > 26-sdk-troubleshoot
  > 28-key-vault
  > 31-create-container-arm-template
  > 33-create-use-udf-sdk
  > data
  > gen-ai
  > instructions
  ! _config.yml
    .gitignore
    index.md
    LICENSE
    readme.md
```

Successfully cloned the repository



Create Azure Cosmos DB Account - Azure Cosmos DB for NoSQL

Validation Success

Creation Time

Estimated Account Creation Time (in minutes) 2

The estimated creation time is calculated based on the location you have selected

Basics

Subscription	Azure for Students
Resource Group	(new) lab-3
Location	Canada Central
Account Name	(new) cosmosdb-wekalab
API	Azure Cosmos DB for NoSQL
Capacity mode	Serverless
Availability Zones	Disable

Backup Policy

Backup policy	Periodic
Backup storage redundancy	Geo-redundant backup storage

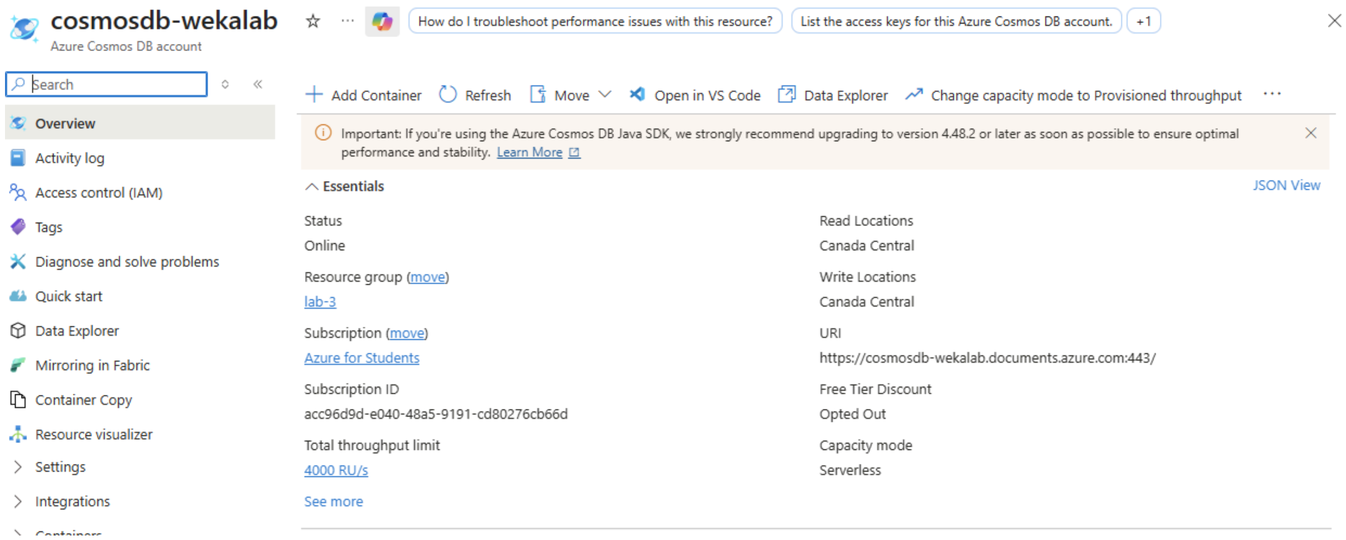
Security

Key-based Authentication	(new) Enable
Data Encryption	Service Managed

Networking

Connectivity method	All networks
Minimum TLS Protocol	TLS 1.2

Azure cosmos db initialized and validation was a success



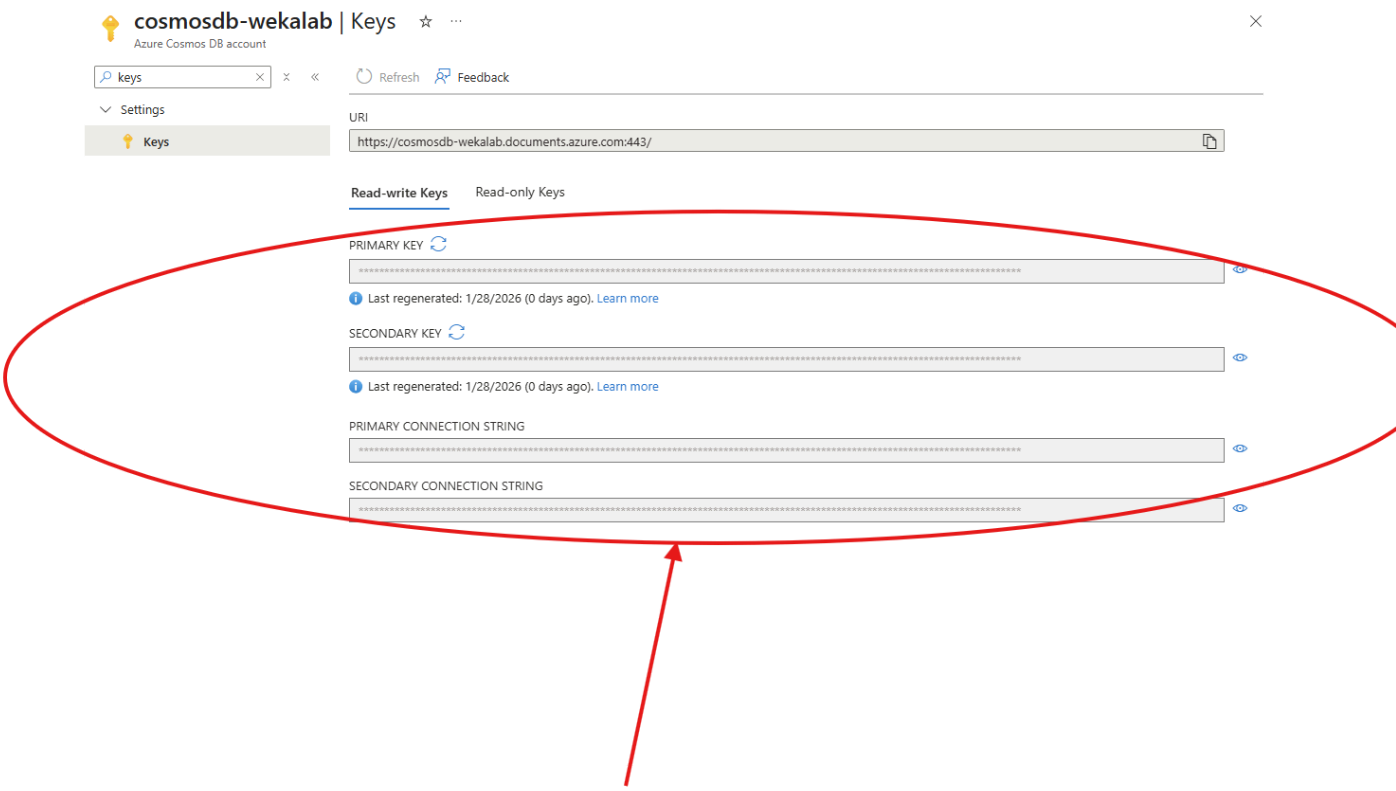
cosmosdb-wekalab

Azure Cosmos DB account

Important: If you're using the Azure Cosmos DB Java SDK, we strongly recommend upgrading to version 4.48.2 or later as soon as possible to ensure optimal performance and stability. Learn More

Essentials

Status Online	Read Locations Canada Central
Resource group (move) lab-3	Write Locations Canada Central
Subscription (move) Azure for Students	URI https://cosmosdb-wekalab.documents.azure.com:443/
Subscription ID acc96d9d-e040-48a5-9191-cd80276cb66d	Free Tier Discount Opted Out
Total throughput limit 4000 RU/s	Capacity mode Serverless



cosmosdb-wekalab | Keys

Azure Cosmos DB account

URI: https://cosmosdb-wekalab.documents.azure.com:443/

PRIMARY KEY

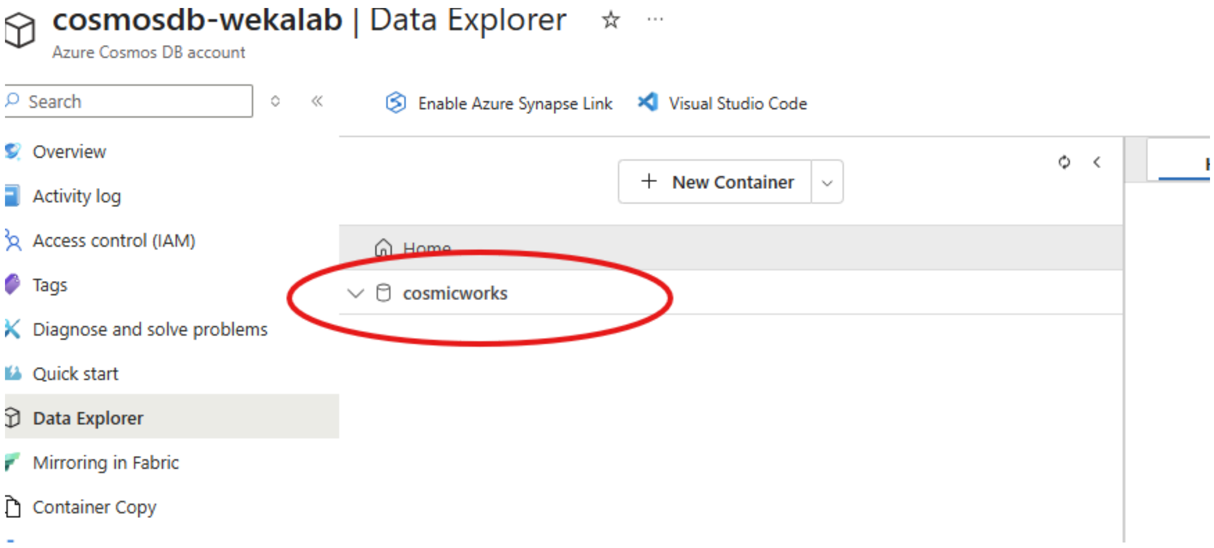
Last regenerated: 1/28/2026 (0 days ago). Learn more

SECONDARY KEY

Last regenerated: 1/28/2026 (0 days ago). Learn more

PRIMARY CONNECTION STRING

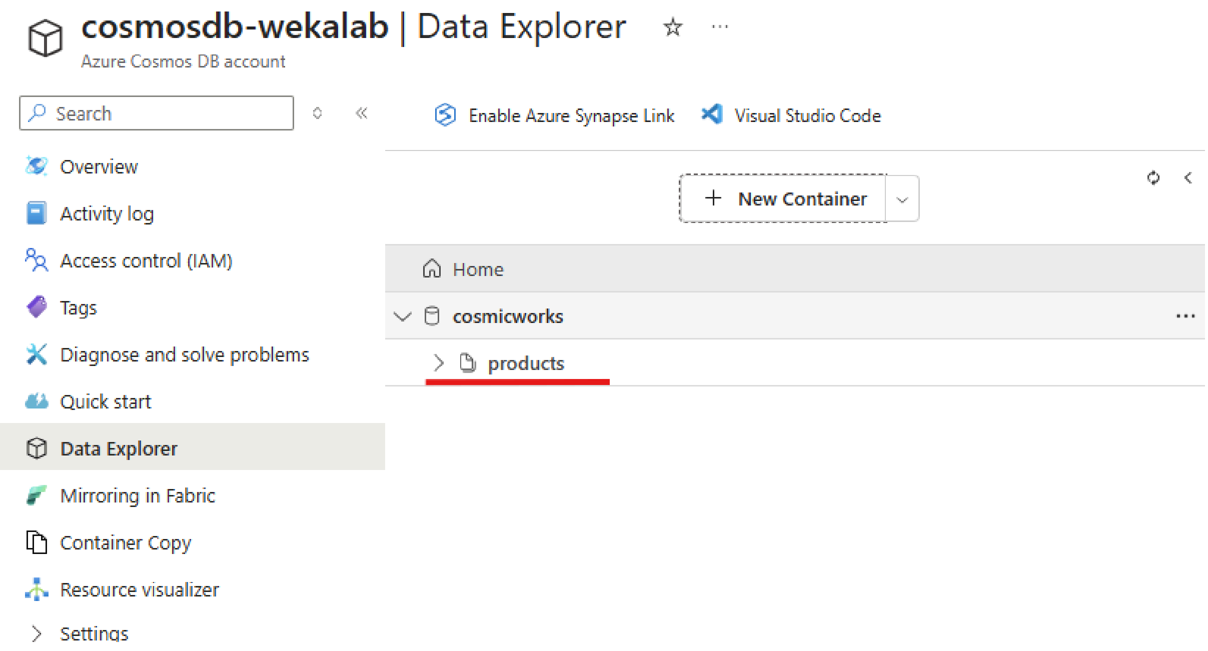
SECONDARY CONNECTION STRING



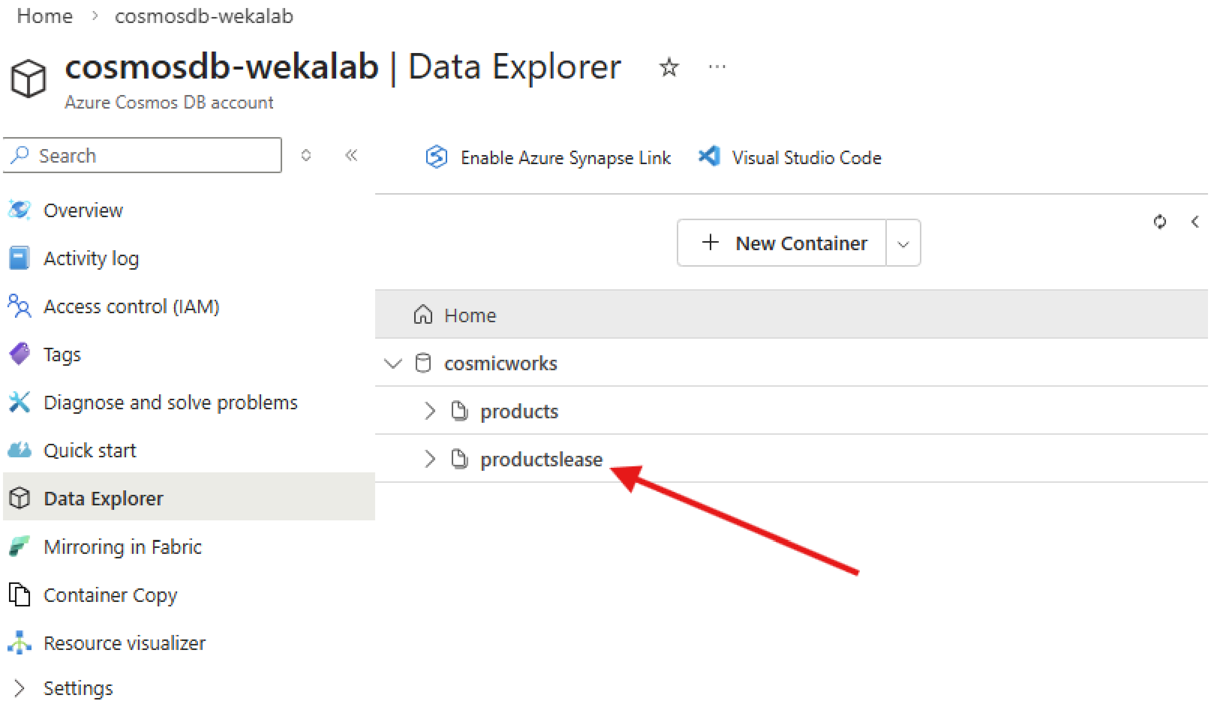
cosmosdb-wekalab | Data Explorer

Azure Cosmos DB account

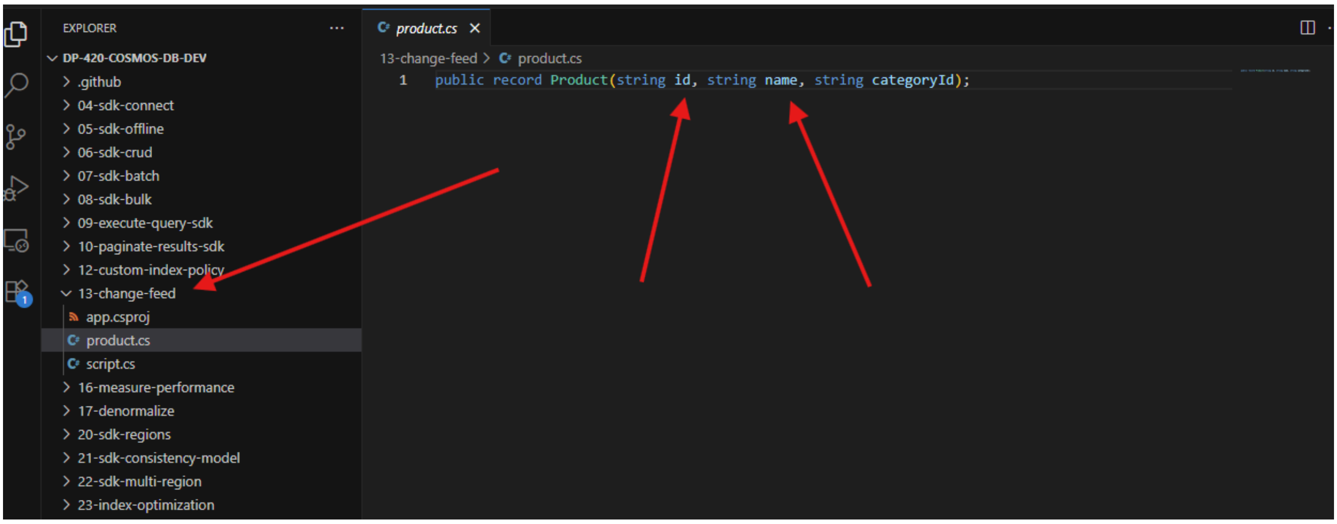
The database cosmic works has been created and is ready for use highlighted in red



The container is created successfully under cosmicworks database



The container is created under one database



EXPLORER

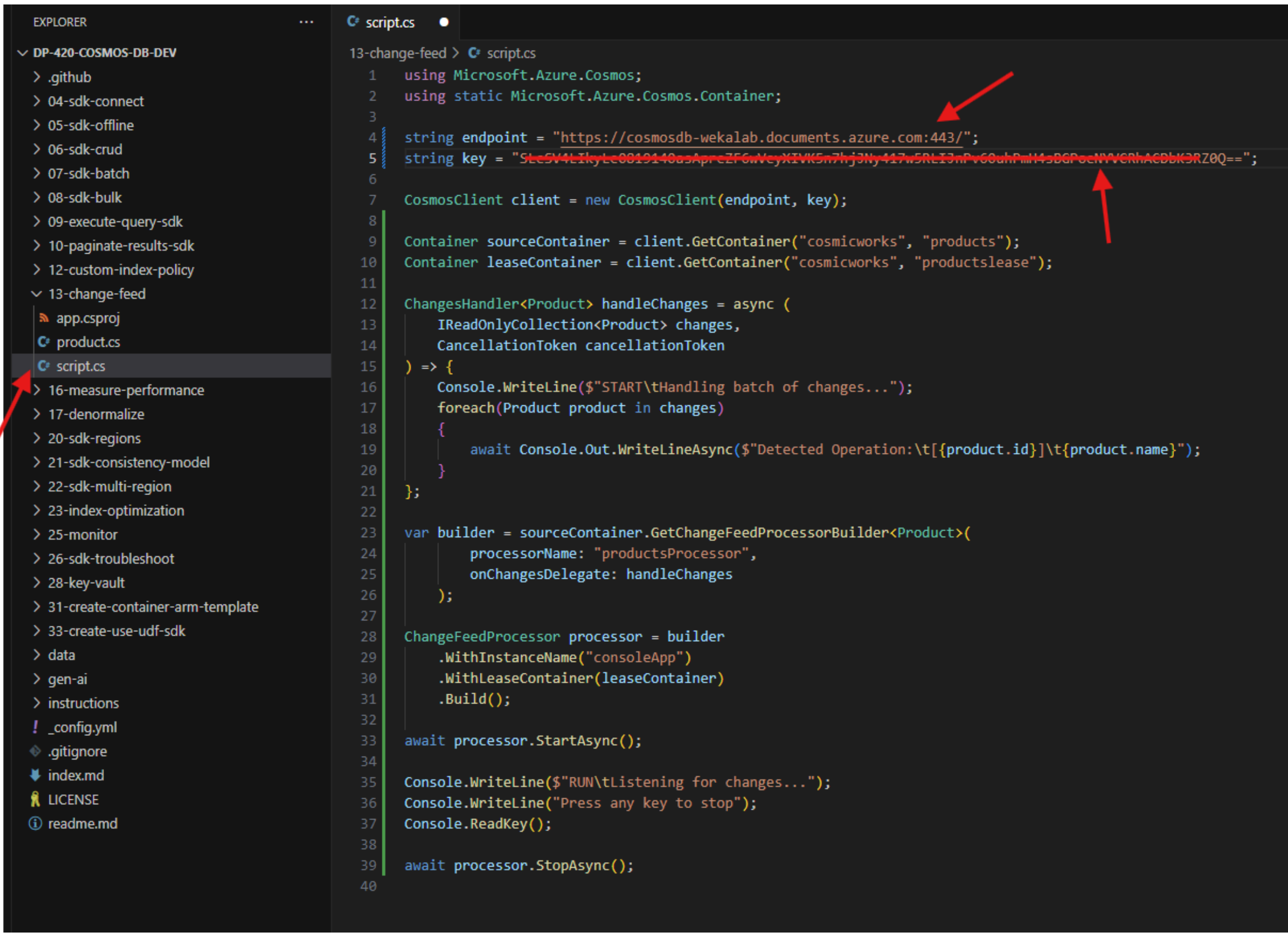
DP-420-COSMOS-DB-DEV
- .github
- 04-sdk-connect
- 05-sdk-offline
- 06-sdk-crud
- 07-sdk-batch
- 08-sdk-bulk
- 09-execute-query-sdk
- 10-paginate-results-sdk
- 12-custom-index-policy
- 13-change-feed
  - app.csproj
  - product.cs
  - script.cs
- 16-measure-performance
- 17-denormalize
- 20-sdk-regions
- 21-sdk-consistency-model
- 22-sdk-multi-region
- 23-index-optimization

product.cs

13-change-feed > product.cs

```
public record Product(string id, string name, string categoryId);
```

The change feed folder with the class properties highlighted



EXPLORER

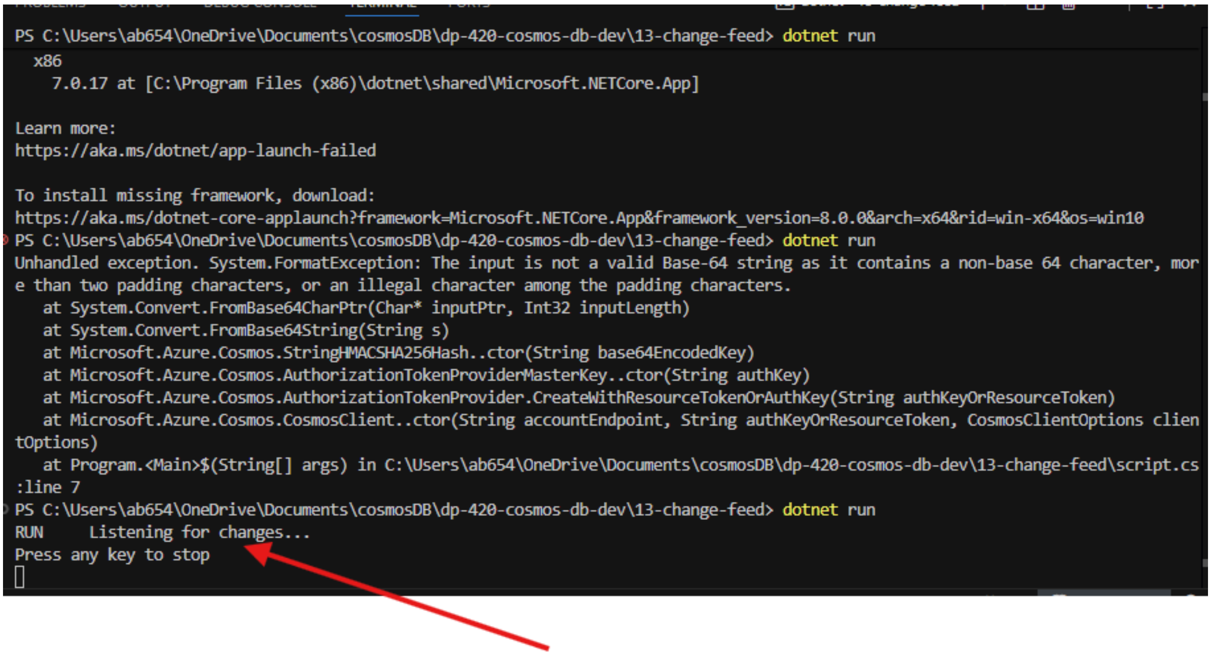
DP-420-COSMOS-DB-DEV
- .github
- 04-sdk-connect
- 05-sdk-offline
- 06-sdk-crud
- 07-sdk-batch
- 08-sdk-bulk
- 09-execute-query-sdk
- 10-paginate-results-sdk
- 12-custom-index-policy
- 13-change-feed
  - app.csproj
  - product.cs
  - script.cs
- 16-measure-performance
- 17-denormalize
- 20-sdk-regions
- 21-sdk-consistency-model
- 22-sdk-multi-region
- 23-index-optimization
- 25-monitor
- 26-sdk-troubleshoot
- 28-key-vault
- 31-create-container-arm-template
- 33-create-use-udf-sdk
- data
- gen-ai
- instructions
- _config.yml
- .gitignore
- index.md
- LICENSE
- readme.md

script.cs

13-change-feed > script.cs

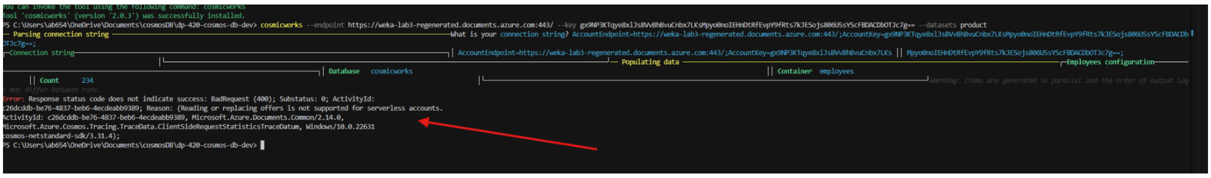
```
using Microsoft.Azure.Cosmos;
using static Microsoft.Azure.Cosmos.Container;

string endpoint = "https://cosmosdb-wekalab.documents.azure.com:443/";
string key = "[redacted]";

CosmosClient client = new CosmosClient(endpoint, key);

Container sourceContainer = client.GetContainer("cosmicworks", "products");
Container leaseContainer = client.GetContainer("cosmicworks", "productslease");

ChangesHandler<Product> handleChanges = async (
    IReadOnlyCollection<Product> changes,
    CancellationToken cancellationToken
) => {
    Console.WriteLine($"START\tHandling batch of changes...");
    foreach(Product product in changes)
    {
        await Console.Out.WriteLineAsync($"Detected Operation:\t[{product.id}]\t{product.name}");
    }
};

var builder = sourceContainer.GetChangeFeedProcessorBuilder<Product>(
        processorName: "productsProcessor",
        onChangesDelegate: handleChanges
    );

ChangeFeedProcessor processor = builder
    .WithInstanceName("consoleApp")
    .WithLeaseContainer(leaseContainer)
    .Build();

await processor.StartAsync();

Console.WriteLine($"RUN\tListening for changes...");
Console.WriteLine("Press any key to stop");
Console.ReadKey();

await processor.StopAsync();
```

The script file with keys input as said in the instruction document



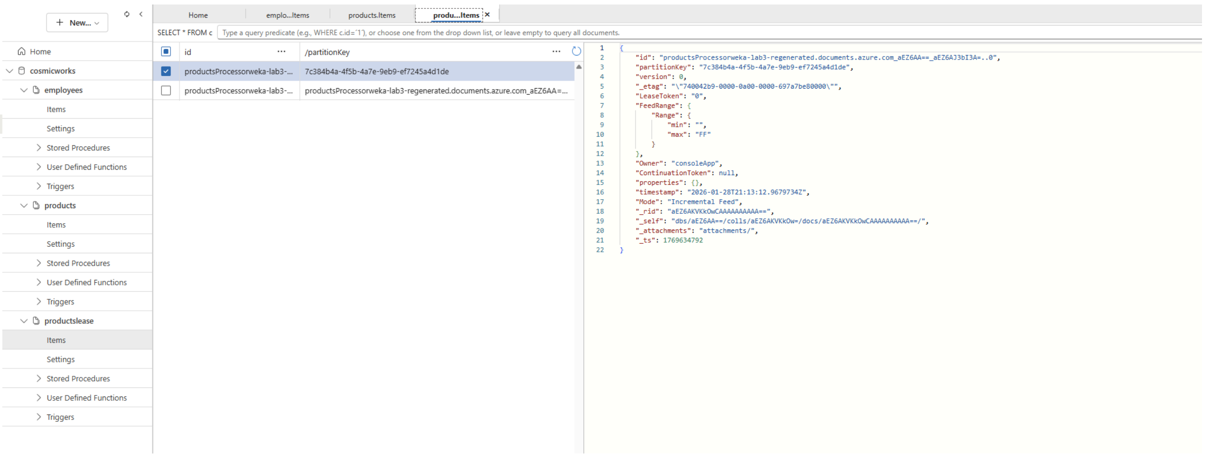
```
PS C:\Users\ab654\OneDrive\Documents\cosmosDB\dp-420-cosmos-db-dev\13-change-feed> dotnet run
  x86
    7.0.17 at [C:\Program Files (x86)\dotnet\shared\Microsoft.NETCore.App]

Learn more:
https://aka.ms/dotnet/app-launch-failed

To install missing framework, download:
https://aka.ms/dotnet-core-applaunch?framework=Microsoft.NETCore.App&framework_version=8.0.0&arch=x64&rid=win-x64&os=win10
PS C:\Users\ab654\OneDrive\Documents\cosmosDB\dp-420-cosmos-db-dev\13-change-feed> dotnet run
Unhandled exception. System.FormatException: The input is not a valid Base-64 string as it contains a non-base 64 character, mor
e than two padding characters, or an illegal character among the padding characters.
   at System.Convert.FromBase64CharPtr(Char* inputPtr, Int32 inputLength)
   at System.Convert.FromBase64String(String s)
   at Microsoft.Azure.Cosmos.StringHMACSHA256Hash..ctor(String base64EncodedKey)
   at Microsoft.Azure.Cosmos.AuthorizationTokenProviderMasterKey..ctor(String authKey)
   at Microsoft.Azure.Cosmos.AuthorizationTokenProvider.CreateWithResourceTokenOrAuthKey(String authKeyOrResourceToken)
   at Microsoft.Azure.Cosmos.CosmosClient..ctor(String accountEndpoint, String authKeyOrResourceToken, CosmosClientOptions clien
tOptions)
   at Program.<Main>$(String[] args) in C:\Users\ab654\OneDrive\Documents\cosmosDB\dp-420-cosmos-db-dev\13-change-feed\script.cs
:line 7
PS C:\Users\ab654\OneDrive\Documents\cosmosDB\dp-420-cosmos-db-dev\13-change-feed> dotnet run
RUN     Listening for changes...
Press any key to stop
```

Listening happens after dotnet is properly installed on the device



```
You can invoke the tool using the following command: cosmicworks
Tool 'cosmicworks' (version '2.0.3') was successfully installed.
PS C:\Users\ab654\OneDrive\Documents\cosmosDB\dp-420-cosmos-db-dev> cosmicworks --endpoint https://weka-lab3-regenerated.documents.azure.com:443/ --key gx9NP3KTqye8xlJsBVvBhBvuCnbx7LKsMpyo0noIEHnDtRfEvpY9fRts7kJESojs806U5sYScFBDACDbOTJc7g== --datasets product
── Parsing connection string ──────What is your connection string? AccountEndpoint=https://weka-lab3-regenerated.documents.azure.com:443/;AccountKey=gx9NP3KTqye8xlJsBVvBhBvuCnbx7LKsMpyo0noIEHnDtRfEvpY9fRts7kJESojs806U5sYScFBDACDb
OTJc7g==;
┌Connection string──────────────┐│ AccountEndpoint=https://weka-lab3-regenerated.documents.azure.com:443/;AccountKey=gx9NP3KTqye8xlJsBVvBhBvuCnbx7LKs || Mpyo0noIEHnDtRfEvpY9fRts7kJESojs806U5sYScFBDACDbOTJc7g==;
                    │└──────────────┘── Populating data ──────────┌Employees configuration──
──────────────┘│ Database   cosmicworks                    || Container  employees
      || Count     234                  │└──────────────┘Warning: Items are generated in parallel and the order of output log
s may differ between runs.
Error: Response status code does not indicate success: BadRequest (400); Substatus: 0; ActivityId:
c26dcddb-be76-4837-beb6-4ecdeabb9389; Reason: (Reading or replacing offers is not supported for serverless accounts.
ActivityId: c26dcddb-be76-4837-beb6-4ecdeabb9389, Microsoft.Azure.Documents.Common/2.14.0,
Microsoft.Azure.Cosmos.Tracing.TraceData.ClientSideRequestStatisticsTraceDatum, Windows/10.0.22631
cosmos-netstandard-sdk/3.31.4);
PS C:\Users\ab654\OneDrive\Documents\cosmosDB\dp-420-cosmos-db-dev>
```

I kept on getting this error even after trying to regenerate using the provisioned throughput which needs admin to approve more data transfer speeds which leaves me in limbo and cant really do much here with being stuck in such a situation i went back and forth thrice but the same error and online says to use provisioned throughput but that isnt allowed when making the two containers

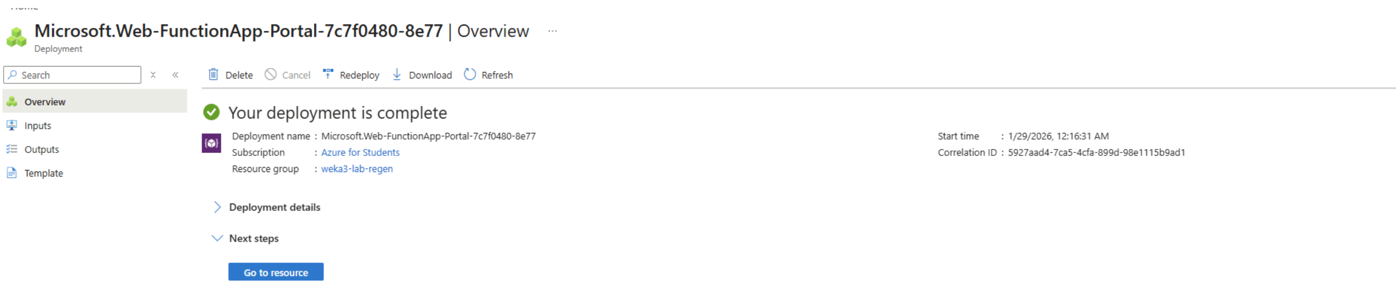


SELECT * FROM c Type a query predicate (e.g., WHERE c.id='1'), or choose one from the drop down list, or leave empty to query all documents.

☑	id	/partitionKey
☑	productsProcessorweka-lab3-...	7c384b4a-4f5b-4a7e-9eb9-ef7245a4d1de
□	productsProcessorweka-lab3-...	productsProcessorweka-lab3-regenerated.documents.azure.com_aEZ6AA=...

```
{
    "id": "productsProcessorweka-lab3-regenerated.documents.azure.com_aEZ6AA==_aEZ6AJ3bI3A=..0",
    "partitionKey": "7c384b4a-4f5b-4a7e-9eb9-ef7245a4d1de",
    "version": 0,
    "_etag": "\"740042b9-0000-0a00-0000-697a7be80000\"",
    "LeaseToken": "0",
    "FeedRange": {
        "Range": {
            "min": "",
            "max": "FF"
        }
    },
    "Owner": "consoleApp",
    "ContinuationToken": null,
    "properties": {},
    "timestamp": "2026-01-28T21:13:12.9679734Z",
    "Mode": "Incremental Feed",
    "_rid": "aEZ6AKVKkOwCAAAAAAAAAA==",
    "_self": "dbs/aEZ6AA==/colls/aEZ6AKVKkOw=/docs/aEZ6AKVKkOwCAAAAAAAAAA==/",
    "_attachments": "attachments/",
    "_ts": 1769634792
}
```

Some stuff was generated here and i was able to put it in my report even though seeding was quite literally impossible to do



Microsoft.Web-FunctionApp-Portal-7c7f0480-8e77 | Overview

Deployment

Your deployment is complete

Deployment name : Microsoft.Web-FunctionApp-Portal-7c7f0480-8e77
Subscription : Azure for Students
Resource group : weka3-lab-regen

Start time : 1/29/2026, 12:16:31 AM
Correlation ID : 5927aad4-7ca5-4cfa-899d-98e1115b9ad1

Function app created and is deployed

I was not able to do anything else since the create a function button isn't there for .NET version 8 and there is no 6 just 8 and 9 being displayed as available versions here to be honest

I got stuck continuing from here because of the first error needing extra throughput and the extra provision to get 4000ru is impossible and i was able to get to this point