CST8921 – Cloud Industry Trends

Lab 5 Report

Title

Building and Managing Serverless Microservices with Azure Functions and Serverless Framework.

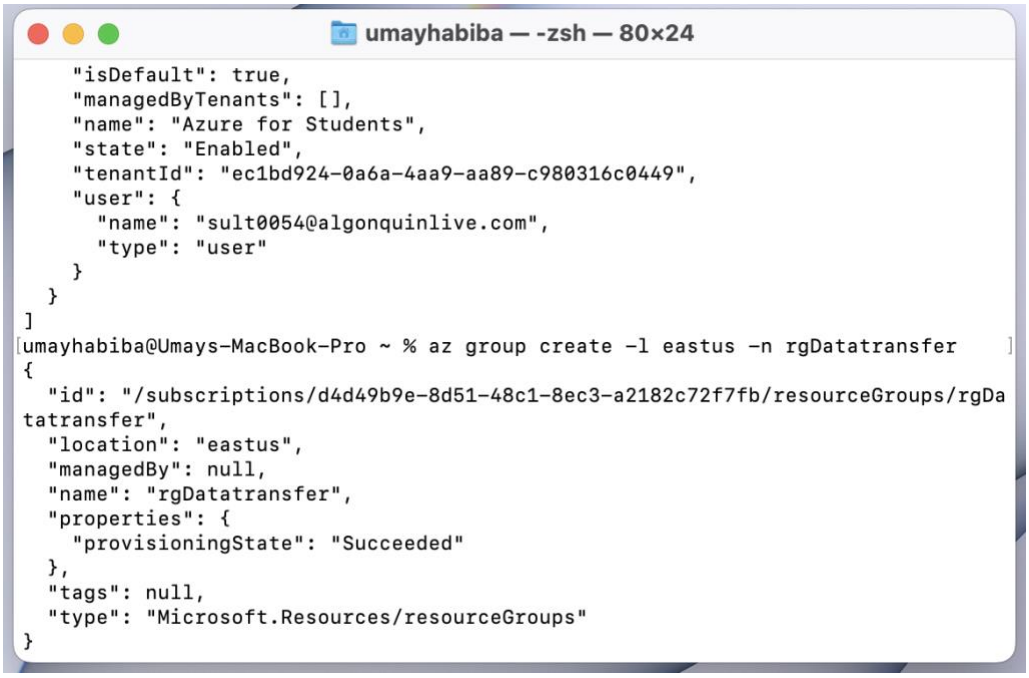
Introduction

Explore serverless computing in the cloud using Azure Functions and the Serverless Framework. Deploy a serverless microservice that migrates data from Azure Event Hubs to Synapse Analytics. Learn the basics of serverless architecture and the seamless integration of Azure services.

Steps

Step 1: Use Provided Template

Create Resource group using CLI : az group create -l eastus -n rgDatatransfer



Step 2: Execute Azure CLI Commands

1. Open Azure CLI (Bash).
2. Execute the following commands to create a resource group and deploy resources:

```
az deployment group create \
--resource-group rgDatatransfer \
--template-uri https://raw.githubusercontent.com/Azure/azure-docs-json-samples/master/event-grid/EventHubsDataMigration.json \
--parameters \
eventHubNamespaceName=ahmadnamespace \
eventHubName=ahmadhubdatamigration \
sqlServerName=ahmadsqlserver \
sqlServerUserName=ahmad8921 \
sqlServerPassword=ahmadP@ssw0rd123 \
sqlServerDatabaseName=ahmad8921DB \
storageName=ahmadstorage8921 \
functionAppName=ahmadfunctionapp
```


```
umayhabiba@Umays-MacBook-Pro ~ % az deployment group create \
--resource-group rgDatatransfer \
--template-uri https://raw.githubusercontent.com/Azure/azure-docs-json-samples/master/event-grid/EventHubsDataMigration.json \
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sqlServerDatabaseName=ahmad8921DB \
storageName=ahmadstorage8921 \
functionAppName=ahmadfunctionapp

{
  "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.Resources/deployments/EventHubsDataMigration",
  "location": null,
  "name": "EventHubsDataMigration",
  "properties": {
    "correlationId": "6513e318-50c0-4604-af99-54d9a3cd32f5",
    "debugSetting": null,
    "dependencies": [
      {
        "dependsOn": [
          {
            "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.Storage/storageAccounts/ahmadstorage8921",
            "resourceGroup": "rgDatatransfer",
            "resourceName": "ahmadstorage8921",
            "resourceType": "Microsoft.Storage/storageAccounts"
          }
        ],
        "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.EventHub/namespaces/ahmadnamespace",
        "resourceGroup": "rgDatatransfer",
        "resourceName": "ahmadnamespace",
        "resourceType": "Microsoft.EventHub/namespaces"
      },
      {
        "dependsOn": [
          {
            "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.EventHub/namespaces/ahmadnamespace",
            "resourceGroup": "rgDatatransfer",
            "resourceName": "ahmadnamespace",
            "resourceType": "Microsoft.EventHub/namespaces"
          }
        ],
        "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.EventHub/namespaces/ahmadnamespace/EventHubs/ahmadhubdatamigration",
        "resourceGroup": "rgDatatransfer",
        "resourceName": "ahmadnamespace/ahmadhubdatamigration",
        "resourceType": "Microsoft.EventHub/namespaces/EventHubs"
      },
      {
        "dependsOn": [
          {
            "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.Sql/servers/ahmadsqlserver",
            "resourceGroup": "rgDatatransfer",
            "resourceName": "ahmadsqlserver",
            "resourceType": "Microsoft.Sql/servers"
          }
        ],
        "id": "/subscriptions/d4d49b9e-8d51-48c1-8ec3-a2182c72f7fb/resourceGroups/rgDatatransfer/providers/Microsoft.Sql/servers/ahmadsqlserver/databases/ahmad8921DB",
        "resourceGroup": "rgDatatransfer",
        "resourceName": "ahmadsqlserver/ahmad8921DB",
        "resourceType": "Microsoft.Sql/servers/databases"
      },
```

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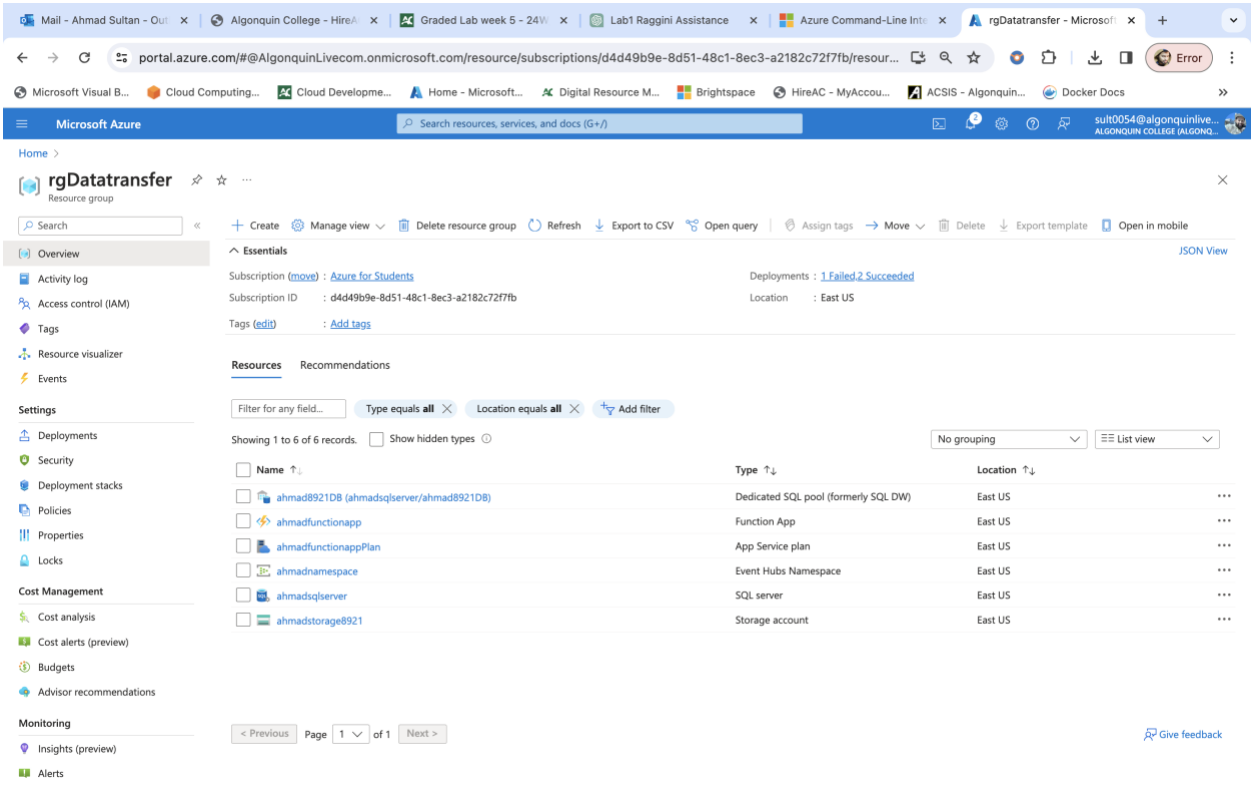
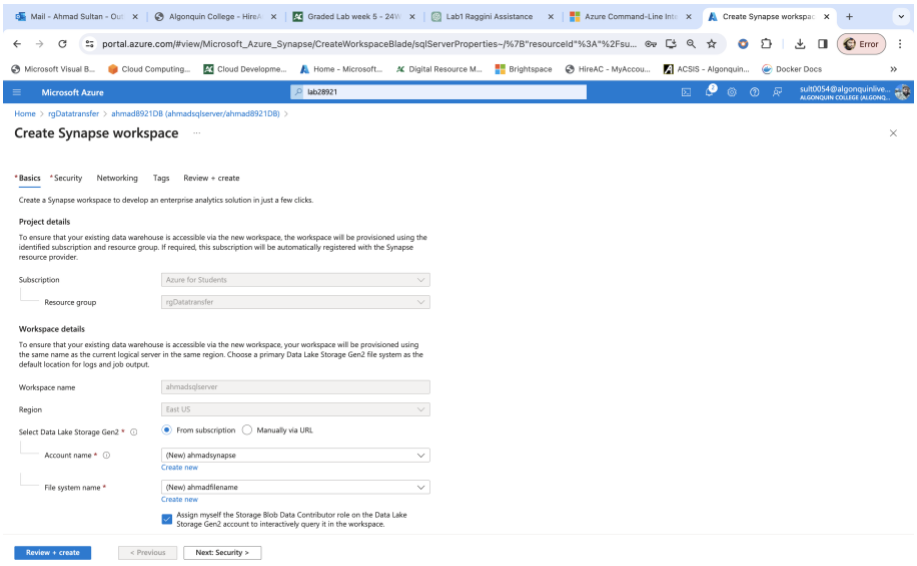
Step 3:
Confirm the resources is created

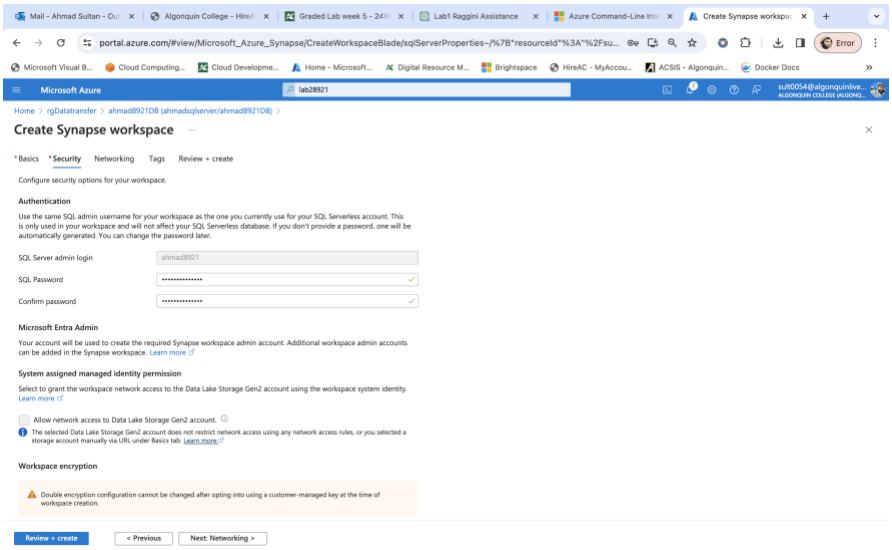


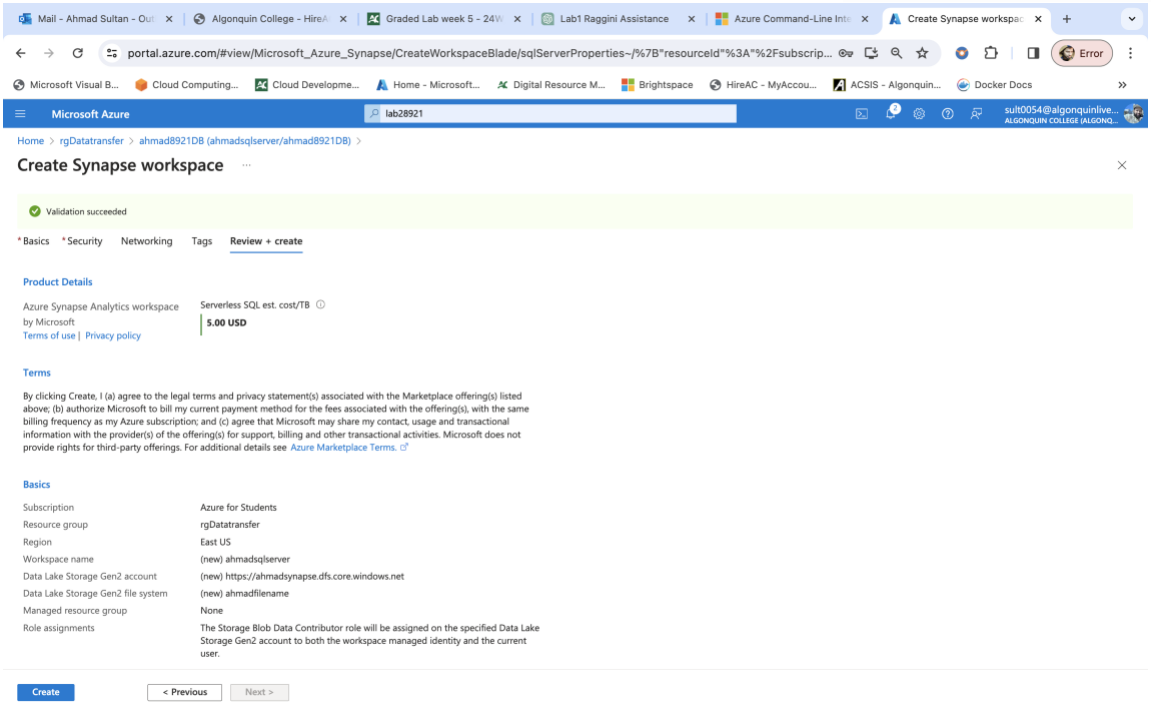
Step 4:

Create Table in Azure Synapse Analytics

1. In the Azure portal, navigate to the Synapse Analytics resource.
2. Select "Dedicated SQL pool" and then "Query editor (preview)."
3. Enter your username and password.
4. Run the SQL script provided to create the "Fact_WindTurbineMetrics" table.

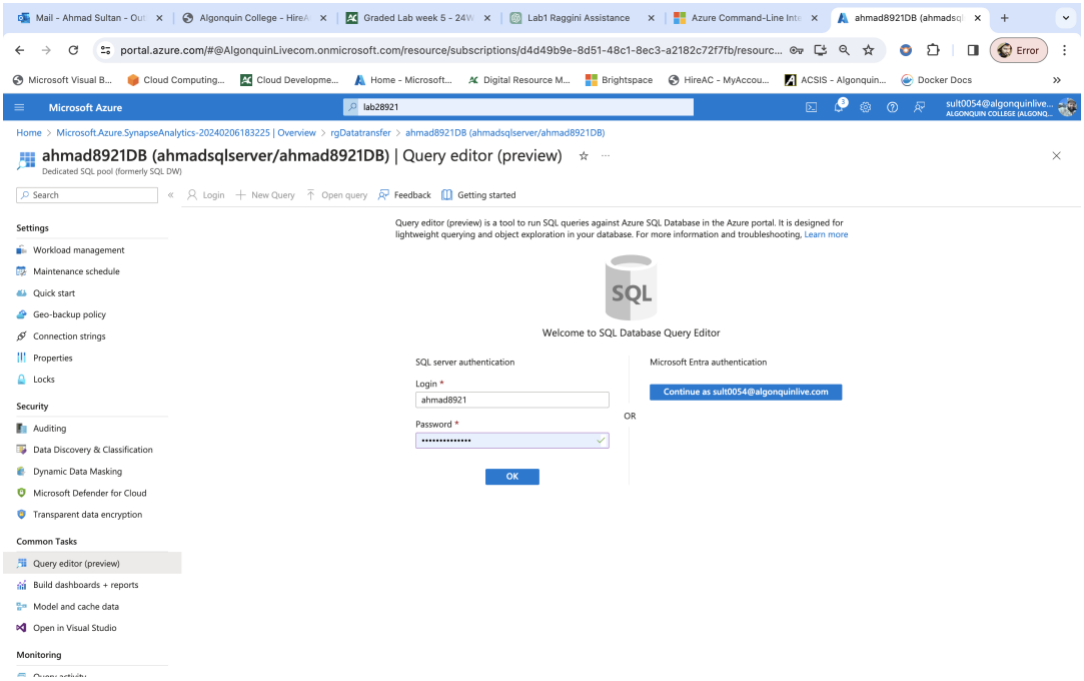






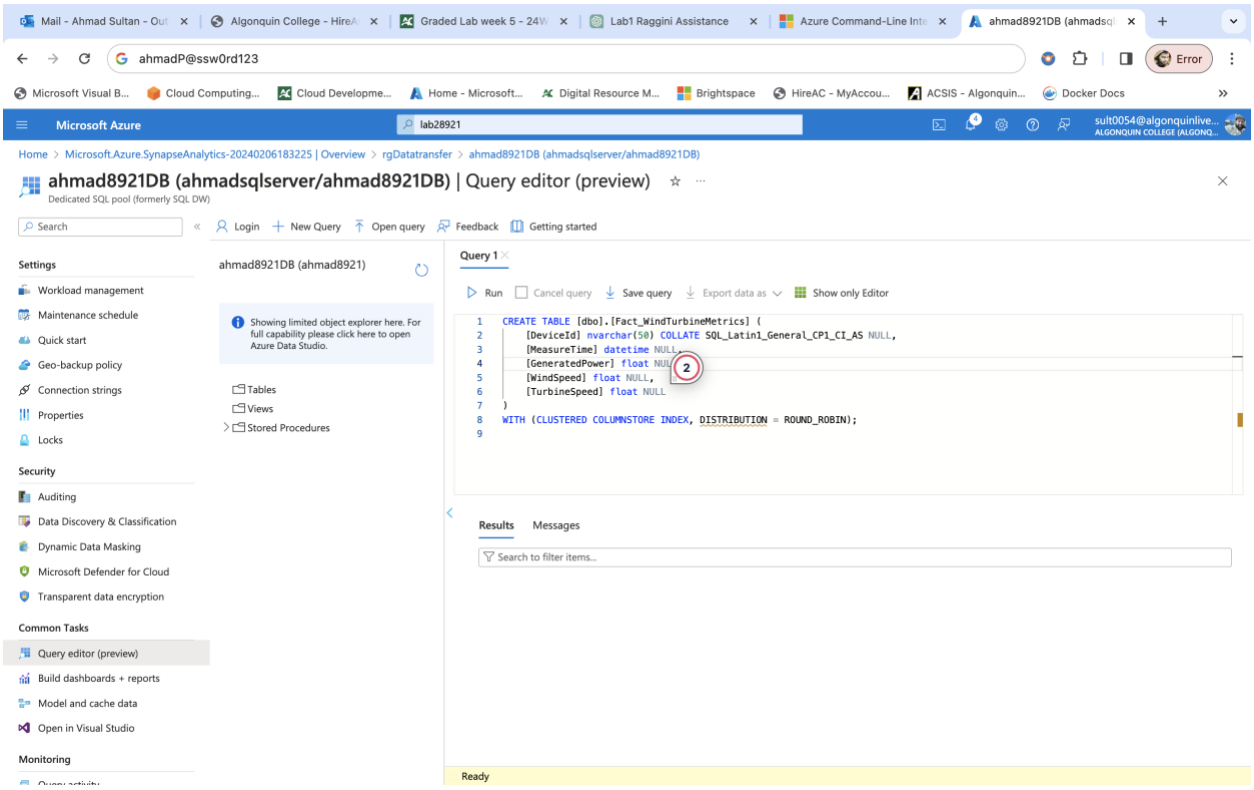
Step 5:

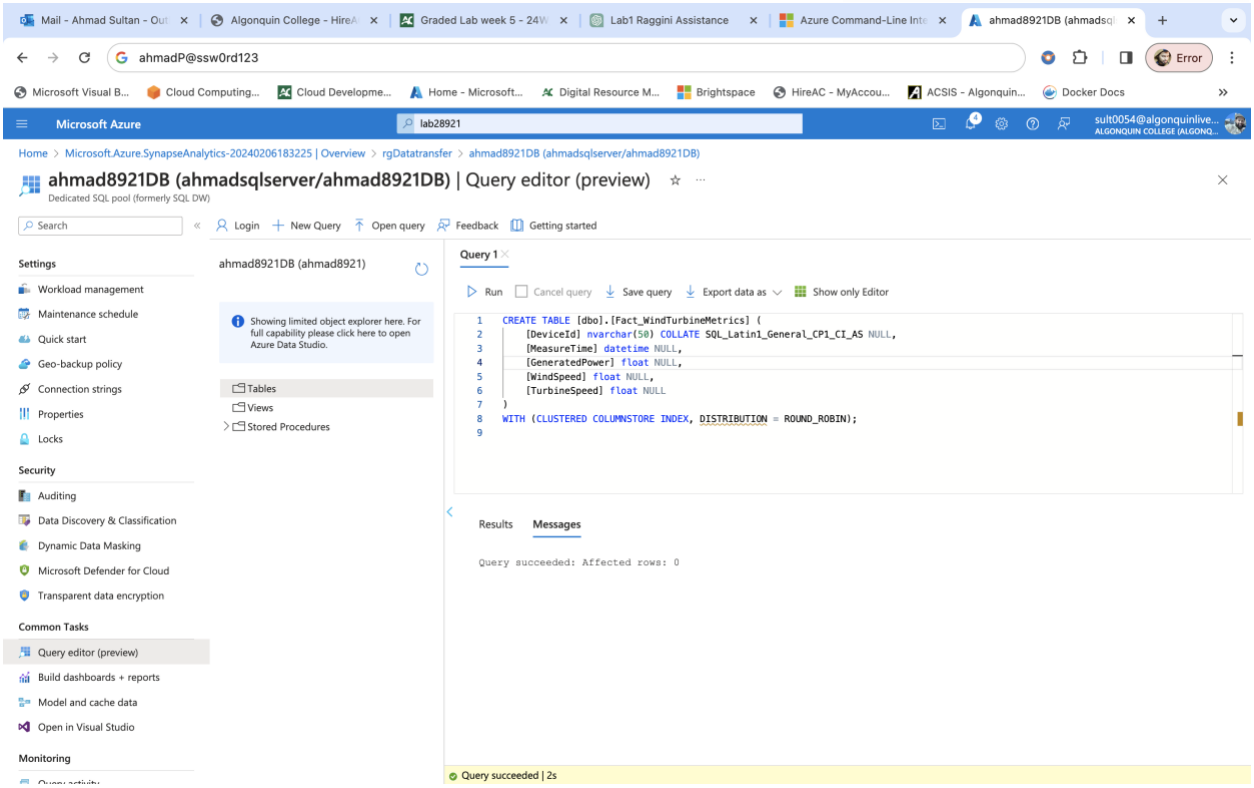
Enter your username and password and if there is any message about allowing client on access to server then select allowlist IP <your address> on server <your sql server> and select OK



Step 6: In query window, copy and run the following script

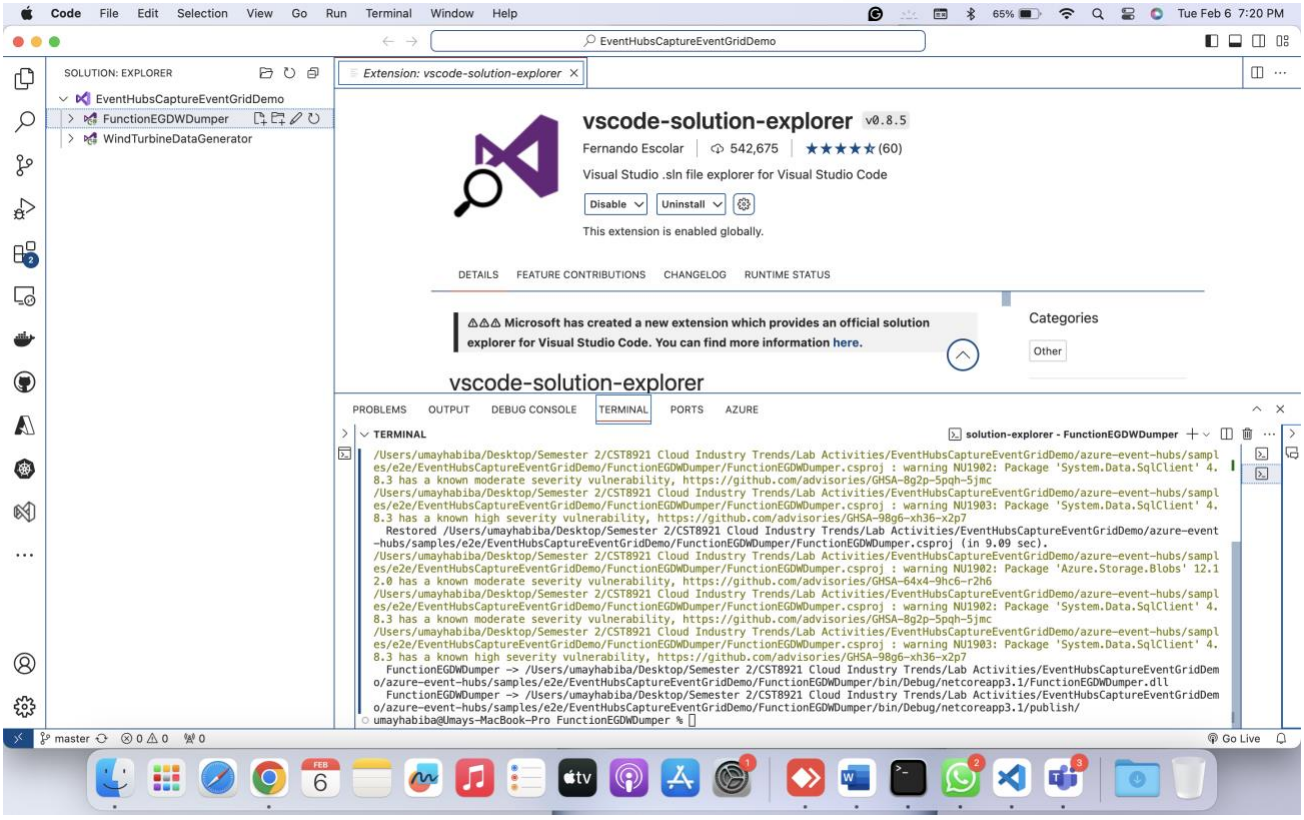
```
CREATE TABLE [dbo].[Fact_WindTurbineMetrics] (
    [DeviceId] nvarchar(50) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
    [MeasureTime] datetime NULL,
    [GeneratedPower] float NULL,
    [WindSpeed] float NULL,
    [TurbineSpeed] float NULL
)
WITH (CLUSTERED COLUMNSTORE INDEX, DISTRIBUTION = ROUND_ROBIN);
```



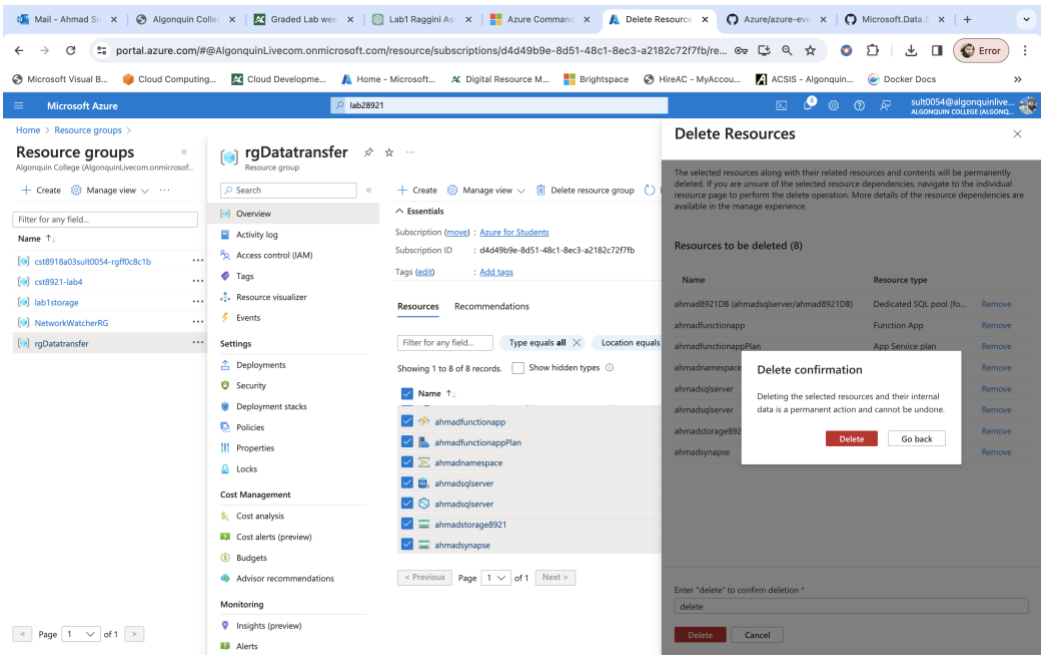


Step 7:

1. Publish azure function app
2. In VS code, open eventshubcaptureeventgriddedmo.sln Download GitHub and save the file into the FunctionEGDDumper subfolder of the EventHubsCaptureEventGridDemo folder.
3. In Solution Explorer, right-click FunctionEGDWDumper project, and select Publish.
4. In the following screen, select Start or Add a publish profile.
5. In the Publish dialog box, select Import Profile for Target, and select Next.
6. On the Import profile tab, select the publish settings file that you saved earlier in the FunctionEGDWDumper folder, and then select Finish.
7. When Visual Studio has configured the profile, select Publish. Confirm that the publishing succeeded.



Step 8: Delete resources after lab



Results

By the end of this lab, we will have successfully deployed a serverless solution for data migration, leveraging Azure Functions and Event Grid. Gain insights into serverless computing principles and the management of serverless applications using the Serverless Framework. Unfortunately, we were not able to complete lab 5, last step, which is publishing the app was giving a problem. I will try to work but now submitting all the steps completed.