

Cloud Developer using Microsoft Azure

Project 1: Deploy an Article CMS to Azure

1. Resource Group

Part 1:

CRITERIA

- All relevant resources are contained in a single resource group

MEETS SPECIFICATIONS

- The resource group must include a Storage Account, SQL Server, SQL Database, as well as any relevant services for deploying the web app.
- Provide a screenshot of the resource group in Azure, containing your running resources.

HOW TO DO IT

- It is mandatory to create a Resource Group and all resources must belong to that Resource Group
- The screenshot should show that all resources/services are in the same Resource group. So, after fulfilling all the requirements of the project, this request will be fulfilled.
- Link demo: [Subscriptions and Resource Groups](#)

Additional Resources:

- [Resource Group](#)
- [Use Case](#)

Name	Type	Location
flask-web-project	App Service plan	East US
flask-web-project	App Service	East US
flask-web-project-db (flask-web-project-server/flask-web-project-db)	SQL database	East US
flask-web-project-server	SQL server	East US
flaskwebprojectstorage	Storage account	East US

2. Storage

Part 1:

CRITERIA

- Create and add article data to a SQL Server in Azure.

MEETS SPECIFICATIONS

- A SQL Server is created in Azure and is capable of storing the necessary article data (title, author, body).
- Provide a screenshot from your SQL database within Azure, showing that both the posts and users tables have been created. Alternatively, if the site is still live, provide the URL for the site.

HOW TO DO IT

- Create SQL Database
 - Create SQL Database Server first and then create database on that server.
 - Tab Basics/Configure select Service tier as **Basic**.
 - Tab Networking. To make it easy to connect and complete the project, we will publicize this server.
 - ✿ Connectivity method: **Public endpoint**.
 - ✿ Allow Azure services and resources to access this server: **Yes**.
 - ✿ Add current client IP address: **Yes**.
- After creating SQL Database, you can use SSMS to try to connect first, to make sure connect successfully before deploy web (Check connection: SQL Database/ Properties).
- Import data 2 tables “users” and “posts” in folder **sql_scripts** into database. Can import on Portal (SQL Database / Query editor) to import or import from local.
- After creating SQL Database, you can use SSMS to try to connect first. Avoid that you don't know if there is a problem when you do Web deploy. (See connection: SQL Database/ Properties)
- The screenshot must show that the data has been successfully imported.

Additional Resources:

- [Azure Databases](#)

The screenshot shows the Microsoft Azure portal interface for a SQL database named 'flask-web-project-db'. The left sidebar includes links for Overview, Activity log, Tag, Diagnose and solve problems, Quick start, Power Platform (Power BI, Power Apps, Power Automate), Settings (Compute + storage, Connection strings, Properties, Locks), Data management (Replicas, Sync to other databases), Integrations (Stream analytics (preview)), and Add Azure Search. The main area displays the 'flask-web-project-db (udacityadmin)' database. The 'Tables' section lists 'dbo.POSTS' and 'dbo.USERS'. The 'Results' tab shows the output of the following queries:

```

1 SELECT * FROM [dbo].[POSTS]
2
3 SELECT * FROM [dbo].[USERS]

```

The results table contains one row of data:

	id	title	author	body	image_path	timestamp	user_id
1		Lorem ipsum dolor sit amet	John Smith	Proin sit amet mi ornare, ul...		2022-02-13T04:19:48.8470...	1

Part 2:

CRITERIA

- Create and upload images to a Storage Account.

MEETS SPECIFICATIONS

- A Storage Account is created in Azure and is capable of storing the necessary image data for an article.
- Provide a screenshot from your Storage Account within Azure, with the blob storage endpoint URL visible (can be seen in Settings -> Properties). Alternatively, if the site is still live, provide the URL for the CMS site to show images are able to be stored and viewed.

HOW TO DO IT

- Create Storage Account
- Screenshots can be done 2 ways.
 - Capture endpoints of Storage Account.
 - Or the URL of Web that we are about to deploy displays images from Blob.
- **Note:** This is not a connection to configure when deploying Web

Additional Resources:

- [Azure Storage](#)

The screenshot shows the Azure portal interface for managing a storage account. The main pane displays the 'Endpoints' section for the 'flaskwebprojectstorage' account. It lists several service endpoints with their resource IDs and URLs:

- Blob service**: Resource ID: /subscriptions/.../resourceGroups/udacity/providers/Microsoft.Storage/storageAccounts/flaskwebprojectstorage/blobServices/default; URL: https://flaskwebprojectstorage.blob.core.windows.net/
- File service**: Resource ID: /subscriptions/.../resourceGroups/udacity/providers/Microsoft.Storage/storageAccounts/flaskwebprojectstorage/fileServices/default; URL: https://flaskwebprojectstorage.file.core.windows.net/
- Queue service**: Resource ID: /subscriptions/.../resourceGroups/udacity/providers/Microsoft.Storage/storageAccounts/flaskwebprojectstorage/queueServices/default; URL: https://flaskwebprojectstorage.queue.core.windows.net/
- Table service**: Resource ID: /subscriptions/.../resourceGroups/udacity/providers/Microsoft.Storage/storageAccounts/flaskwebprojectstorage/tableServices/default; URL: https://flaskwebprojectstorage.table.core.windows.net/
- Data Lake Storage**: Resource ID: /subscriptions/.../resourceGroups/udacity/providers/Microsoft.Storage/storageAccounts/flaskwebprojectstorage/blobServices/default; URL: https://flaskwebprojectstorage.dfs.core.windows.net/
- Static website**: Resource ID: /subscriptions/.../resourceGroups/udacity/providers/Microsoft.Storage/storageAccounts/flaskwebprojectstorage/blobServices/default; URL: https://flaskwebprojectstorage.z13.web.core.windows.net/

The left sidebar contains a navigation menu with items such as Data management, Settings, Monitoring, and Logs.

3. Resource Justification

Part 1:

CRITERIA

- Analyze, choose, and justify the appropriate resource option for deploying the app.

MEETS SPECIFICATIONS

- In the provided `writeup.md` file, for **both** a VM or App Service solution for the CMS app:
 - Analyze costs, scalability, availability, and workflow
 - Choose the appropriate solution (VM or App Service) for deploying the app
 - Justify your choice
- This does not need to be substantially long, but should include information on all four analysis points for each option, your choice, and at least 2-3 sentences on why you choose that option

HOW TO DO IT

- Key Note:** You need to consider cost analysis, scalability-like features in more detail!!
- Hint :** You can create a table to display differences b/w both of the services !! You can explain like how a particular **VM** in a tier can cost and similarly **Azure App Service** in tier can cost. So, like you can compare the scenarios.
- For some helpful analysis between these options, check out this => [post](#).

FURTHER READING

- [Azure Pricing](#)

- [Scalability](#)
- [Availability](#)
- [App Service pricing](#)

Part 2:

CRITERIA

- Assess app changes that would change your decision.

MEETS SPECIFICATIONS

- In the provided `writeup.md` file, detail how the app and any other needs would have to change for you to change your decision in the last section.
- This should be at least 2-3 sentences, but feel free to add as much detail as you feel necessary.

HOW TO DO IT

- [Link](#) you can take reference from this and see cost estimation!
- Here is some helpful cost analysis: [Azure Cost Management + Billing documentation](#)

4. Deployment

Part 1:

CRITERIA

- The Python web app is deployed to Azure.

MEETS SPECIFICATIONS

- The Python web app has been deployed to Azure using the chosen resource in the previous section.
- As evidence, provide a screenshot of the Python application running from a browser (this can be part of the screenshot in the next section). **The screenshot should include the URL and the black header that states “Article CMS”.** Alternatively, you can provide a link to the deployed app, if it is still live.

HOW TO DO IT

- Recommended to use Visual Studio Code. Because it has an extension that supports deploying to Azure (including all the projects in this course).
- Should deploy locally to test before deploying to Azure.
- After deploying, you can find the Stream Logs section on Azure to see the logs, or VS Code also supports it

Note:

- Version of local Python and App Service Python must be the same
- Versions of libraries in the project (requirements.txt) may need updating.
- The `pyodbc` driver version must match the Azure Database version.
- Should keep App Service after submitting the project for reviewers to see.

Part 2:

CRITERIA

- The Python web app is able to connect to storage.

MEETS SPECIFICATIONS

- The Python web app is able to connect to the related storage solutions.
- As evidence, provide a screenshot of the Python application running from a browser. **The screenshot should include the URL and at least one article containing title, author, body, and an image.** Alternatively, you can provide a link to the deployed app, if it is still live.

HOW TO DO IT

- Check the connections in *config.py*
- Make sure that Account Storage is public.
- [Connecting Your App to Storage](#)
- Here are some tips and tricks related to [Azure Web App](#).

```
class Config(object):
    SECRET_KEY = os.environ.get('SECRET_KEY') or 'XXXXXXXXXX'
    BLOB_ACCOUNT = os.environ.get('BLOB_ACCOUNT') or 'XXXXXXXXXX'
    BLOB_STORAGE_KEY = os.environ.get('BLOB_STORAGE_KEY') or 'XXXXXXXXXX'
    BLOB_CONTAINER = os.environ.get('BLOB_CONTAINER') or 'images'

    SQL_SERVER = os.environ.get('SQL_SERVER') or 'XXXXXXXXXX.database.windows.net'
    SQL_DATABASE = os.environ.get('SQL_DATABASE') or 'XXXXXXXXXX-db'
    SQL_USER_NAME = os.environ.get('SQL_USER_NAME') or 'XXXXXXXXXX'
    SQL_PASSWORD = os.environ.get('SQL_PASSWORD') or 'XXXXXXXXXX'
    # Below URI may need some adjustments for driver version, based on your OS, if running locally
    SQLALCHEMY_DATABASE_URI = 'mssql+pyodbc://'+SQL_USER_NAME+'@'+SQL_SERVER+':'+SQL_PASSWORD+'@'+SQL_SERVER+':1433/' + SQL_DATABASE + '?driver=ODBC+Driver+17+for+SQL+Server'
    SQLALCHEMY_TRACK_MODIFICATIONS = False

    ### Info for MS Authentication ###
    ### As adapted from: https://github.com/Azure-Samples/ms-identity-python-webapp #####
    CLIENT_SECRET = 'XXXXXXXXXX'
    # In your production app, Microsoft recommends you to use other ways to store your secret,
    # such as KeyVault, or environment variable as described in Flask's documentation here:
    # https://flask.palletsprojects.com/en/1.1.x/config/#configuring-from-environment-variables
    # CLIENT_SECRET = os.getenv("CLIENT_SECRET")
    # If not CLIENT_SECRET:
    #     raise ValueError("Need to define CLIENT_SECRET environment variable")

    AUTHORITY = "https://login.microsoftonline.com/common" # For multi-tenant app, else put tenant name
    # AUTHORITY = "https://login.microsoftonline.com/Enter_the_Tenant_Name_Here"

    CLIENT_ID = "XXXXXXXXXX"

    REDIRECT_PATH = "/getAToken" # Used to form an absolute URL; must match to app's redirect_uri set in AAD

    # You can find the proper permission names from this document
    # https://docs.microsoft.com/en-us/graph/permissions-reference
    SCOPE = ["User.Read"] # Only need to read user profile for this app

    SESSION_TYPE = "filesystem" # Token cache will be stored in server-side session
```

5. Security & Monitoring

Part 1:

CRITERIA

- Add a functioning “Sign in with Microsoft” option to the app.

MEETS SPECIFICATIONS

- The Python web app has an additional, operational option to sign in with Microsoft.
- As evidence, provide a screenshot of the redirect URIs configured within the App Registration page in Azure. Alternatively, you can provide a link to the deployed app, if it is still live.

- Additionally, your code in `views.py` should appropriately implement the Microsoft sign-in button using the `msal` library.

HOW TO DO IT

- Guideline in here: [OAuth2 with MSAL](#)
 - Avoid confusion between *Client Secret* and *Secret Id*.
- Here is a reference Link on [MSAL](#).

The screenshot shows the Azure portal's 'App registrations' blade for a specific application. The left sidebar has a tree view with 'Overview', 'Quickstart', 'Integration assistant', 'Manage' (selected), 'Banding & properties', 'Authentication' (selected), 'Certificates & secrets', 'Token configuration', 'API permissions', 'Expose an API', 'App roles', 'Owners', 'Roles and administrators | Preview', 'Manifest', 'Support + Troubleshooting', 'Troubleshooting', and 'New support request'. The main content area is titled 'flask-web-project-app | Authentication'. It shows 'Platform configurations' with a note about redirect URIs. Under 'Web', there are sections for 'Redirect URIs' (containing 'https://[REDACTED].azurewebsites.net/getAToken') and 'Front-channel logout URL' (containing 'https://[REDACTED].azur...'). There are also sections for 'Implicit grant and hybrid flows' with checkboxes for 'Access tokens (used for implicit flows)' and 'ID tokens (used for implicit and hybrid flows)'.

Part 2:

CRITERIA

- Access attempts to the app are logged.

MEETS SPECIFICATIONS

- Both successful and unsuccessful attempts to access the web app are logged.
- As evidence, provide a screenshot or download the logs from Azure containing at least one successful and one unsuccessful access attempt, and include in your submission files. If otherwise submitting a URL, please include a link to screenshot/logs in the "Submission Details" box on the project submission page.

HOW TO DO IT

- Guideline in here: [Monitoring & Logging](#)

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
flask-web-project - Log ▾ □ ▲ ▶ ×
vscode-azureappservice/0.23.0"
2022-02-13T06:13:28.418415105Z 169.254.129.1 - - [13/Feb/2022:06:13:26 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:32.623158773Z 169.254.129.1 - - [13/Feb/2022:06:13:32 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"
2022-02-13T06:13:33.284153866Z 169.254.129.1 - - [13/Feb/2022:06:13:33 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:39.404865165Z 169.254.129.1 - - [13/Feb/2022:06:13:39 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:40.267527616Z 169.254.129.1 - - [13/Feb/2022:06:13:40 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:46.53776025Z 169.254.129.1 - - [13/Feb/2022:06:13:46 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"
2022-02-13T06:13:47.200203957Z 169.254.129.1 - - [13/Feb/2022:06:13:47 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:14:40.671740255Z 169.254.129.1 - - [13/Feb/2022:06:14:40 +0000] "GET /logout HTTP/1.1" 302 219 "http://flask-web-project.azurewebsites.net/home" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"
2022-02-13T06:14:41.314205734Z 169.254.129.1 - - [13/Feb/2022:06:14:41 +0000] "GET /login HTTP/1.1" 200 2873 "http://flask-web-project.azurewebsites.net/home" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"

2022-02-13T06:14:48.418396300Z Invalid login attempt.
2022-02-13T06:14:49.42537190Z 169.254.129.1 - - [13/Feb/2022:06:14:48 +0000] "POST /login HTTP/1.1" 302 219 "http://flask-web-project.azurewebsites.net/login" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"
2022-02-13T06:14:49.77348752Z 169.254.129.1 - - [13/Feb/2022:06:14:49 +0000] "GET /login HTTP/1.1" 200 3014 "http://flask-web-project.azurewebsites.net/login" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"

2022-02-13T06:13:05.213389768Z 169.254.129.1 - - [13/Feb/2022:06:13:05 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:10.805832860Z 169.254.129.1 - - [13/Feb/2022:06:13:10 +0000] "GET /login HTTP/1.1" 200 2873 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"
2022-02-13T06:13:11.328328388Z 169.254.129.1 - - [13/Feb/2022:06:13:11 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"
2022-02-13T06:13:12.204857412Z 169.254.129.1 - - [13/Feb/2022:06:13:12 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:18.460639220Z 169.254.129.1 - - [13/Feb/2022:06:13:18 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"
2022-02-13T06:13:19.378775804Z 169.254.129.1 - - [13/Feb/2022:06:13:19 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:21.384065226Z admin logged in successfully.
2022-02-13T06:13:21.398643525Z 169.254.129.1 - - [13/Feb/2022:06:13:21 +0000] "POST /Login HTTP/1.1" 302 217 "https://flask-web-project.azurewebsites.net/login" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"
2022-02-13T06:13:21.982782196Z 169.254.129.1 - - [13/Feb/2022:06:13:21 +0000] "GET /home HTTP/1.1" 200 2776 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/98.0.4758.82 Safari/537.36"

2022-02-13T06:13:25.512344822Z 169.254.129.1 - - [13/Feb/2022:06:13:25 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"
2022-02-13T06:13:26.418415105Z 169.254.129.1 - - [13/Feb/2022:06:13:26 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

2022-02-13T06:13:32.623158773Z 169.254.129.1 - - [13/Feb/2022:06:13:32 +0000] "GET / HTTP/1.1" 302 237 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"
2022-02-13T06:13:33.284153866Z 169.254.129.1 - - [13/Feb/2022:06:13:33 +0000] "GET /login?next=%2F HTTP/1.1" 200 3020 "-" "ms-rest-js/2.3.0 Node/v14.16.0 OS/(x64-Windows_NT-10.0.19044)
vscode-azureappservice/0.23.0"

```

Project 2: Deploying the Neighborly App with Azure Functions

1. Server less Functions

Part 1:

CRITERIA

- A MongoDB database in Azure CosmosDB service is created and initialized with the sample data provided.

MEETS SPECIFICATIONS

- Students should be able to create a MongoDB database, two collections, and import raw data into the database. The MongoDB database is hosted in Azure CosmosDB.
- To pass this criteria, you can provide a screenshot from the Azure portal showing the database & collections, as well as confirmation that the two pieces of sample data for advertisements (5 documents) and posts (4 documents) were imported correctly.

HOW TO DO IT

- Create a CosmosDB account for MongoDB API: [Create Azure Cosmos DB - Azure Portal \(1.7\)](#)
- Create a MongoDB database:
 - [VS Code](#)
 - [Azure Portal](#)
- Import Sample Data into MongoDB collection
 - The provided import command may not work in this case, refer to *Additional Resources*
 - You need to provide the information for the command:
Your CosmosDB hostname, port, database name, collection name, username - password of your CosmosDB account, file url, options: --jsonArray --writeConcern="{w:0}"
 - Take a screenshot from the terminal right after importing successfully
 - A **screenshot** from the Azure portal showing the database & collections: There must be at least 2 screenshots showing the two successfully imported collections with their data

Additional Resources:

- [mongoimport](#)

```
(Import command)
2022-06-08T22:54:37.285+0700 connected to: mongodb://my-cosmology.mongo.cosmos.azure.com:10255/
2022-06-08T22:54:37.474+0700 done

(Import command)
2022-06-08T22:55:47.730+0700 connected to: mongodb://my-cosmology.mongo.cosmos.azure.com:10255/
2022-06-08T22:55:47.921+0700 done
```

```

Welcome to Azure CosmosDB for MongoDB API.

Get started with 'help'
To try out an interactive tutorial type 'tutorial'

> db.advertisements.find()
Operation consumed 2.34 RUS
{
  "_id" : ObjectId("5ec34b22c800f5fb24c21490"),
  "title" : "Lost cat reward if found.",
  "description" : "My fat tabby disappeared last nite on 49th and Taylor.",
  "price" : "0.00"
}
{
  "_id" : ObjectId("5ec34b2265403b17d00ae864"),
  "title" : "Lawn mover",
  "description" : "Sunt eiusmod occaecat deserunt magna lorem cillum non consequat minim do.\r\n",
  "price" : "$520.13"
}
{
  "_id" : ObjectId("5ec34b22f764357ce29a775e"),
  "title" : "Trailer",
  "description" : "Ullamco nulla adipsicing esse occaecat ipsum deserunt. Est excepteur tempor eiusmod non. Elusmod occaecat enim eiusmod nostrud mollit.\r\n",
  "price" : "$1,703.56"
}
{
  "_id" : ObjectId("5ec34b22b05f7f6eac5f2ec3e"),
  "title" : "[testaccount11] Honda Tacoma pick up - low milage.",
  "description" : "Manual transmission. Great truck, clean title. Cash only.",
  "price" : "$3,587.05",
  "city" : "Poolsville"
}
{
  "_id" : ObjectId("5ec34b228eac7b1667a21a9a"),
  "title" : "Dirt",
  "description" : "Et ea officia occaecat minim adipsicing. Ut nostrud sunt mollit ex labore. Exercitation ut exercitation sint reprehenderit quis reprehenderit.\r\n",
  "price" : "Free"
}
>|

```

Part 2 & Part 3:

CRITERIA

- The finished server-side application contains working Azure Functions for HTTP Triggers in Python.

MEETS SPECIFICATIONS

- Students are expected to deploy 7 endpoints: createAdvertisement, updateAdvertisement, getAdvertisement, getAdvertisements, and deleteAdvertisement, getPost, getPosts. There should be 7 urls with the format:

`https://<STUDENT-APP-NAME>.azurewebsites.net/api/<endpoint>`

- To pass this criteria, show a screenshot, including URL, from the Azure portal where it is shown what endpoints are live.

CRITERIA

- The Azure Functions HTTP Trigger endpoints can connect to MongoDB in Azure CosmosDB service

MEETS SPECIFICATIONS

- To verify that the database is configured, the student should be able to retrieve the connection on each of their API endpoints in the server-API application.
- To pass this criteria, show a screenshot, including URL, of at least the data returned from querying the `getAdvertisements` endpoint; other endpoints will be checked for reasonableness within the related code files.

HOW TO DO IT

Update Functions

- Hook up your connection string into the NeighborlyAPI server folder, by modifying each functions's `__init__.py` class with your CosmosDb connection string and database name (marked by TODO comment)
- Just skip eventHubTrigger project, we will visit it later
- Demo:
 - [Connect Functions and Database - Part 1 - VS code](#)
 - [Connect Functions and Database - Part 2 - VS code](#)
 - [Connect Functions and Database - Part 1 - Azure CLI](#)
 - [Connect Functions and Database - Part 2 - Azure CLI](#)

Deploy

- Deploy using VS Code's Azure extension:
 - [Create and Deploy a Function - VS Code](#)
- Verify that all of them were deployed successfully:
 - You can see the HTTP Triggers are all enabled
 - Test the endpoint with Postman: You should test through at least 3 API and provide their response's screenshot, see: [Testing Your Endpoints with Postman](#)

Name	Trigger	Status
createAdvertisement	HTTP	Enabled
deleteAdvertisement	HTTP	Enabled
eventHubTrigger	EventHub	Enabled
getAdvertisement	HTTP	Enabled
getAdvertisements	HTTP	Enabled
getPost	HTTP	Enabled
getPosts	HTTP	Enabled
updateAdvertisement	HTTP	Enabled

```

1  [
2   {
3     "_id": {
4       "$oid": "5ec34b22c800f5f824c21490"
5     },
6     "title": "Lost cat reward if found.",
7     "description": "My fat tabby disappeared last nite on 49th and Taylor.",
8     "price": "0.00"
9   },
10  {
11    "_id": {
12      "$oid": "5ec34b2265403b17d00ae864"
13    },
14    "title": "Lawn mowei",
15    "description": "Sunt eiusmod occaecat deserunt magna Lorem cillum non consequat minim do.\r\n",
16    "price": "$520.13"
17  },
18  {
19    "_id": {
20      "$oid": "5ec34b22f764357ce29a775e"
21    },
22    "title": "Trailer",
23    "description": "Ullamco nulla adipisicing esse occaecat ipsum deserunt. Est excepteur tempor eiusmod non. Eiusmod occaecat enim eiusmod nostrud mollit.\r\n",
24    "price": "$1,763.56"
25  }
]

```

Part 4:

CRITERIA

- The client-side application in Flask should be able to call the live Functions API endpoints that the students published in previous steps.

MEETS SPECIFICATIONS

- The client-side python Flask application has the routes to obtain services created by server-side Azure Functions endpoints. The student can run the client-side application on localhost:5000 and on the home page, and should be able to view the feed of advertisements and posts.
 - Update the front-end code to appropriately query your published API
 - Provide a screenshot here of the front-end appropriately pulling up posts when you visit localhost. Note that if you have provided a screenshot or URL to a live site with the front-end later on in the assignment, that can also be used as proof here.

HOW TO DO IT

Modify NeighborlyFrontEnd project:

- Requirements.txt:
 - azure-functions==1.2.1 (remove)
 - Werkzeug: change from 0.16.1 to <1.0
 - add feedgen==0.9.0
- Change API url from deafult to your function app URL

Deploy: Refer to Project 1

- A screenshot of the front-end appropriately pulling up posts when you visit localhost
- Also provide some screenshot of the create/edit ad page

The screenshot shows a web browser window titled "Home Page". The address bar contains a URL starting with "https://.../edit/5ec34b22c800f5f824c21490". The main content area is titled "Edit advertisement". It contains several input fields: "Title" (with placeholder "Lost cat reward if found."), "City" (empty), "Description" (with placeholder "My fat tabby disappeared last nite on 49th and Taylor."), "Email" (empty), "Image Url" (empty), and "Price" (with value "0.00"). At the bottom are two buttons: "Confirm Update" (in blue) and "Cancel".

2. Logic Apps & Event Hubs

Part 1:

CRITERIA

- The student demonstrates mastery in using Azure Logic App Designer to create a trigger.

MEETS SPECIFICATIONS

- Students should be able to create a Logic App that watches for an HTTP trigger. When the HTTP request is triggered, the student is sent an email (with Gmail) notification. The student can validate this by a screenshot of their inbox.

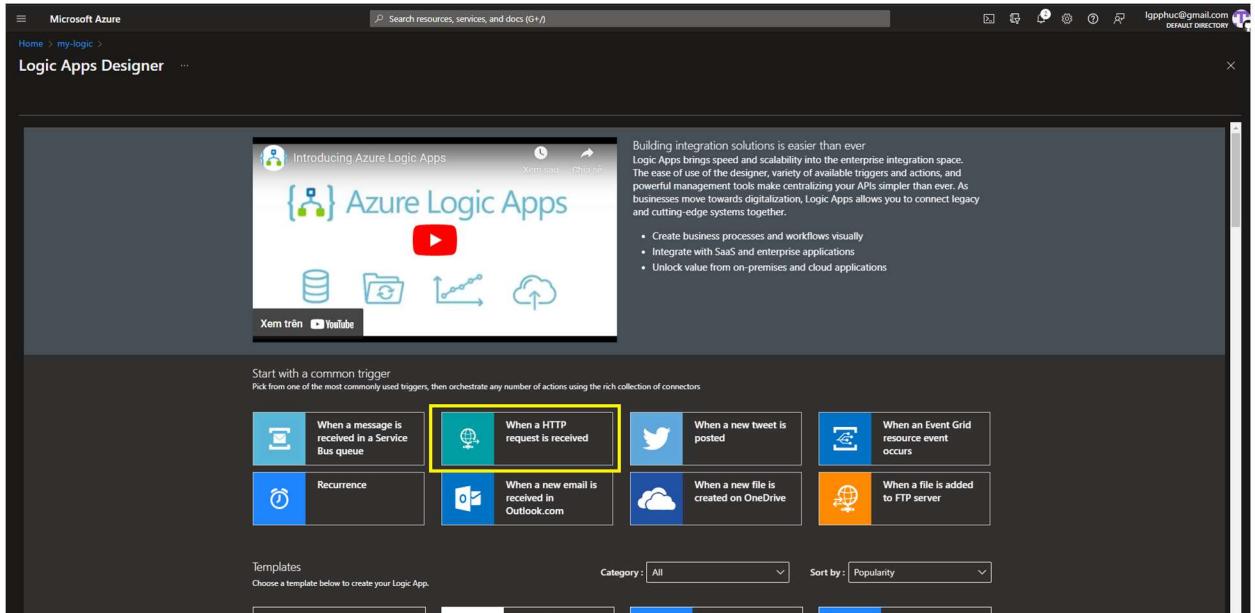
HOW TO DO IT

SendGrid account for sending email

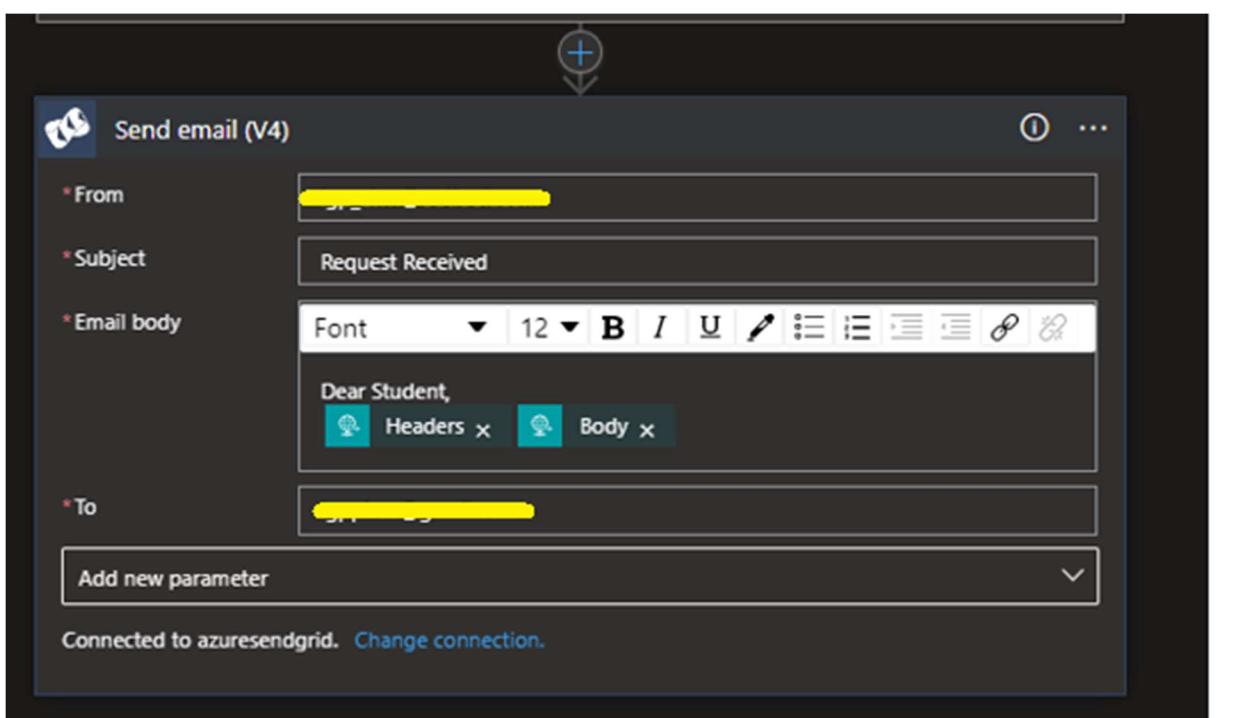
- ATTENTIONS: you cannot follow the instructions in [Exercise: Logic App Workflow](#), because we can no longer register the free service from <https://sendgrid.com/> freely. Subscribe it from your Azure Portal, carefully follow this instructions: [Create a Twilio SendGrid account](#)
- Also make sure to Activate Sender Authentication, following [Senders](#), in order to be able to send mail from an exact email address as you wish
- Save the *Connection name* and *API key* for the next step

Logic Apps:

- Follow the demonstration from [Logic Apps](#), [Logic Apps Workflow](#), but attend:
 - The Plan Type must be **Consumption**
 - Because the requirements are "a Logic App that watches for an HTTP trigger", the first *Steps* must be "**When a HTTP request is received**", instead of "RSS feed"
 - The "From" field must be the sender email you activate in the previous step
 - The Body can be some message, request headers or body content



The screenshot shows the Logic Apps Designer in the Microsoft Azure portal. At the top, there's a banner for 'Introducing Azure Logic Apps' with a video thumbnail. Below it, a section titled 'Start with a common trigger' displays various trigger options. The 'When a HTTP request is received' trigger is highlighted with a yellow box. Other triggers shown include 'When a message is received in a Service Bus queue', 'Recurrence', 'When a new tweet is posted', 'When an Event Grid resource event occurs', 'When a new file is created in OneDrive', and 'When a file is added to FTP server'. At the bottom of the designer, there are tabs for 'Play Logic App', 'Azure Monitor', 'Auto-tier Azure', and 'Delete old Azure'.



The screenshot shows the configuration of the 'Send email (V4)' action within the Logic Apps Designer. The action has the following parameters:

- *From: [REDACTED]
- *Subject: Request Received
- *Email body: Dear Student,
[REDACTED]
- *To: [REDACTED]

A rich text editor toolbar is visible above the email body. At the bottom, it says 'Connected to azuresendgrid. Change connection.'

Part 2:

CRITERIA

- The student should be able to create a custom event grid topic and publish the topic.

MEETS SPECIFICATIONS

- The student should be able to create an Event Hubs namespace and an event hub with the command line or through the portal. If successful, the student can obtain the namespace url. Add a screenshot from the portal of this being live.

HOW TO DO IT

- In this requirement, we just need to create a simple Event Hubs namespace and an Event Hub instance, instructions: [Event Hubs](#)

Part 3:

CRITERIA

- The student should be able to add the connection string of the event hub to the Azure Function.

MEETS SPECIFICATIONS

- The student should be able to use the endpoint connection string from the event hub to the *eventHubTrigger* function in the *function.json* file.

HOW TO DO IT

- Go back to the *eventHubTrigger* project we skipped in the above steps, ready to deploy it along with the other API project, modify its *function.json* file:
 - type: *eventHubTrigger* (not *eventGridTrigger*)
 - eventHubName: the name of your Event Hub namespace
 - connection: the connection string of your Event Hub namespace

3. Deploying Your Application

Part 1:

CRITERIA

- The student should be able to deploy their Neighborly web application on Azure App Service.

MEETS SPECIFICATIONS

- The student should be able to use the live url from Azure App Service in their browser. The URL should be accessible to all users on the World Wide Web, or a screenshot should be provided, including the URL, of the live site.

HOW TO DO IT

- Provide the **live url** from Azure App Service (which should be accessible to all users on the World Wide Web) in a text file, or a **screenshot** should be provided, including the URL, of the previously live site.
- If you completed the Client-side Application deployment step above, you done this requirement

Part 2:

CRITERIA

- The student should be able to containerize their Flask application with *Dockerfile*.

MEETS SPECIFICATIONS

- The student can run docker build and can import their *Dockerfile* in the Azure Container Registry.
- Provide a screenshot of the *Dockerfile* from Azure Container Registry as evidence.

HOW TO DO IT

- Containerize (*Dockerize*) your local Function and create an Azure Container Registry (ACR) repository. Push the Docker image from local to the ACR repository.
 - Follow: [Containerize and Create Azure Container Registry - CLI](#)
 - The required *Dockerfile* will also be created in this step
 - Just carefully run each commands and watch its result

Part 3:

CRITERIA

- The code demonstrates an automated pipeline to spin Kubernetes services in Azure.

MEETS SPECIFICATIONS

- The student should be able to create a cluster with the one node.
- Provide a screenshot of confirmation from the terminal, or from within Azure, as evidence.

HOW TO DO IT

Kubernetes cluster: [Instructions](#)

- Create, take a screenshot of your terminal right after creating successfully, try to capture all of the response result
- Store the cluster credentials in the local `.kube/config` file.
- Verify your connection to it with `kubectl get nodes`.

Deploy the function app to Kubernetes

- [Exercise: Containerize and Deploy to AKS - CLI - Part I](#)
- [Exercise: Containerize and Deploy to AKS - CLI - Part II](#)

- Check your deployment with `kubectl config get-contexts`

Additional Resources:

- [AZ AKS](#)

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL AZURE E:\LT\Python\Udacity\Azure Dev\Weightbyr API\src\WeightbyrAPI\set.py$AKSCluster-student-kuber
E:\LT\Python\Udacity\Azure Dev\Weightbyr API\src\WeightbyrAPI\set.py$az aks create --name AKSCluster-student-kuber --resource-group AKSCluster --node-count 2 --generate-ssh-keys --attach-acr AKSCluster --location eastasia
AKS role creation done#####
AKS cluster created#####
{
  "aadProfile": null,
  "addOnProfiles": null,
  "agentPoolProfiles": [
    {
      "availabilityZones": null,
      "count": 2,
      "creationData": null,
      "enableAutoScaling": false,
      "enableAutoUpgrade": false,
      "enableFips": false,
      "enableNodePublicIP": false,
      "enableProvisioned": false,
      "enableVirtualMachineScaleSets": null,
      "fqdn": null,
      "kubernetesConfig": null,
      "kubernetesType": "OS",
      "linuxOsConfig": null,
      "maxPods": 110,
      "minCount": null,
      "mode": "System",
      "nodeImage": null,
      "nodeImageVersion": "ASUSUbuntu-1804gen2containerrd-2022.05.16",
      "nodeLabels": null,
      "nodeLabelFilter": null,
      "nodeLabelsId": null,
      "nodeLabelsName": null,
      "orchestratorVersion": "1.22.6",
      "osDiskSizeGb": 128,
      "osType": "Linux",
      "podSubnetId": null,
      "powerState": {
        "code": "Running"
      },
      "provisioningState": "Succeeded",
      "provisioningStatus": null,
      "scaleOutMode": null,
      "scaleSetEvictionPolicy": null,
      "scaleSetPriority": null,
      "spotOfferPriority": null,
      "type": "VirtualMachineScaleSets",
      "upgradeSettings": null,
      "vmImage": "ASUSUbuntu-1804gen2",
      "vmSize": "Standard_B2v2",
      "workloadRuntime": null
    }
  ],
  "apiServerAccessProfile": null,
  "autoScalerProfile": null,
  "autoUpgradeProfile": null,
  "autoUpgradeProfileId": "ku-my-resource-718546-83fb367,portal.hcp.eastasia.azmk8s.io",
  "diskEncryptionSecretId": null,
  "dnsPrefix": "student-ku-my-resource-718546",
  "enableIdentityPolicy": null,
  "enableRbac": null,
  "extendedLocation": null,
  "fqdn": "student-ku-my-resource-718546-83fb367.hcp.eastasia.azmk8s.io",
  "fqdnList": null,
  "httpProxyConfig": null,
  "id": "/subscriptions/7185468e-6899-4a2c-8637-ea7d4a565854/resourceGroups/my-resource/providers/Microsoft.ContainerService/managedClusters/student-kuber",
  "identity": {
    "identityId": "02155c67-083e-4ab4-a99c-20d4bb02ef5f",
    "tenantId": "c4db9ba-e02a-4eb0-b700-1def2d11be09",
    "type": "SystemAssigned",
    "userAssignedIdentities": null
  },
  "identityProfile": {
    "kubernetesIdentity": {
      "clientId": "138bad02-8e47-429e-b5d1-ed7e5a3788ea",
      "objectID": "e4571465-23b0-4ef6-a51b-a55d91941d99",
      "resourceId": "/subscriptions/7185468e-6899-4a2c-8637-ea7d4a565854/resourceGroups/%C_my-resource_student-kuber_eastasia/providers/Microsoft.ManagedIdentity/userAssignedIdentities/student-kuber-agentpool"
    }
  },
  "kubernetesVersion": "1.22.6",
  "linuxProfile": {
    "adminUsername": "azuresuser",
    "ssh": {
      "publicKeys": [
        {
          "keyData": "ssh-rsa AAAQBlznaC1yZEAAMQDQmABADQdnjewD2DRwIyPcKDEsGvJdn0WbA7j92EENSMl4p2nB8yDk254n7Q/Sey8uSu/B3QkLVIn8QesSF712]Iwf1YspCbkkbkd42tIB5/J3pq91Y2fLDVjX5ZDobqfBtxuF172dQjVChp2e1JB/Yv+uWdJYVOpSk/19Y+soXunyV5e0My1o0x01Sx0p0p2mMyr4x0xtu4j791s4Qf388Aqutleqf115ukOxxodSag4v1y5fJtVlV1zh39/wGrRV91df19L3wh6G0bx3d3iale7/rddcbujob105kVX0GdqfA7j"
        }
      ]
    }
  },
  "location": "eastasia",
  "maxAgentPools": 100,
  "name": "student-kuber",
  "networkProfile": {
    "dnsService": "10.0.0.10",
    "dockerBridgeCidr": "172.17.0.1/16",
    "ipFamily": [
      "IPv4"
    ],
    "loadBalancerProfile": {
      "allocatedOutboundPorts": null,
      "effectiveOutboundPorts": [
        {
          "id": "/subscriptions/7185468e-6899-4a2c-8637-ea7d4a565854/resourceGroups/%C_my-resource_student-kuber_eastasia/providers/Microsoft.Network/publicIPAddresses/780dfba1-1aac-4af9-b03f-241671988e3b",
          "resourceGroup": "%C_my-resource_student-kuber_eastasia"
        }
      ],
      "enableMultipleStandardLoadBalancers": null,
      "idleTimeoutInMinutes": null,
      "managedOutboundIPs": [
        {
          "count": 1,
          "countIPv6": null
        }
      ],
      "outboundIPs": null,
      "outboundPrefixes": null
    },
    "loadBalancerSKU": "standard",
    "networkInterface": null,
    "networkMode": null,
    "networkPlugin": "kubenet",
    "networkPolicy": null,
    "networkType": "LoadBalancer",
    "podCIDR": "10.244.0.0/16",
    "podIDs": [
      "10.244.0.0/16"
    ],
    "serviceCIDR": "10.0.0.0/30",
    "serviceIDs": [
      "10.0.0.0/16"
    ],
    "nodeResourceGroup": "%C_my-resource_student-kuber_eastasia",
    "podIdentityProfile": null,
    "podIdentityProfileId": null,
    "provisioningState": "Running",
    "privateEndpoint": null,
    "privateLinkResources": null,
    "provisioningState": "Succeeded",
    "publicNetworkAccess": null,
    "resourceGroup": "my-resource",
    "secret": null,
    "secretName": null,
    "storageBackend": null
  },
  "oidcIssuerProfile": {
    "clientID": "w1",
    "secret": null
  },
  "skus": [
    {
      "name": "Basic",
      "tier": "Free"
    }
  ],
  "systemData": null,
  "tag": null,
  "type": "Microsoft.ContainerService/ManagedClusters",
  "windowsProfile": null
}

```

Essentials

- Resource group : my-resource
- Status : Succeeded (Running)
- Location : eastasia
- Subscription : Azure for Students
- Subscription ID : 718546-836b367-ea7d4a565854
- Tags (edit) : Click here to add tags

Kubernetes version : 1.22.6
API server address : student-ku-my-resource-718546-836b367.hcp.eastasia.azure.com
Network type (plugin) : Kubelet
Node pools : 1 node pool

Kubernetes services

Encryption type	Encryption at-rest with a platform-managed key
Virtual node pools	Not enabled

Node pools

Node pools	1 node pool
Kubernetes versions	1.22.6
Node sizes	Standard_DS2_v2

Configuration

Kubernetes version	1.22.6
Kubernetes RBAC	Enabled
AKS-managed AAD	Not enabled

Networking

API server address	student-ku-my-resource-718546-836b367.hcp.eastasia.azure.com
Network type (plugin)	Kubelet
Pod CIDR	10.244.0.0/16
Service CIDR	10.0.0.10
DNS service IP	10.0.0.10
Docker bridge CIDR	172.17.0.1/16
Network Policy	None
Load balancer	Standard
HTTP application routing	Not enabled
Private cluster	Not enabled
Authorized IP ranges	Not enabled
Application Gateway ingress controller	Not enabled

Integrations

Container insights	Not enabled
Workspace resource ID	-

Project 3: Migrate App to Azure

1. Migrate Web Applications

Part 1:

CRITERIA

- Create an Azure App resource in a free tier app service plan

MEETS SPECIFICATIONS

- Student provides a screenshot of the Azure resource showing the app service plan

HOW TO DO IT

- Create app service and app service plan

Essentials

- Resource group (move) : project3
- Status : Ready
- Location : East US
- Subscription (move) : Azure for Students
- Subscription ID : 3dc759a0-f8f4-4153-b5a1-92a633366e66
- Tags (edit) : Click here to add tags

App Service Plan : ASP-project3-901c (F1: Free) ✓
App(s) / Slots : 1/1
Operating System : Linux
Zone redundant : Disabled

Essentials

- Resource group (move) : [project2](#)
- Status : Running
- Location : East US 2
- Subscription (move) : [Azure for Students](#)
- Subscription ID : 3dc759a0-f8f4-4153-b5a1-92a633366e66
- URL : <https://p2-appservice.azurewebsites.net>
- Health Check : Not Configured
- App Service Plan : [ASP-project3-901c \(F1: Free\)](#)
- FTP/deployment username : No FTP/deployment user set
- FTP hostname : <ftp://waws-prod-bn1-155.ftp.azurewebsites.windows.net/>
- FTPS hostname : <ftps://waws-prod-bn1-155.ftp.azurewebsites.windows.net/>

Tags (edit) : Click here to add tags

Diagnose and solve problems
Our app-service diagnostic and troubleshooting experience helps you identify and resolve issues with your web app.

Http 5xx	Data In	Data Out
100	14kB	350kB
90	12kB	300kB
80	10kB	250kB
70	8kB	200kB
60	6kB	150kB
50	4kB	100kB
40		
30		
20		

Additional Resources:

- [App Plan Tiers](#)

Part 2:

CRITERIA

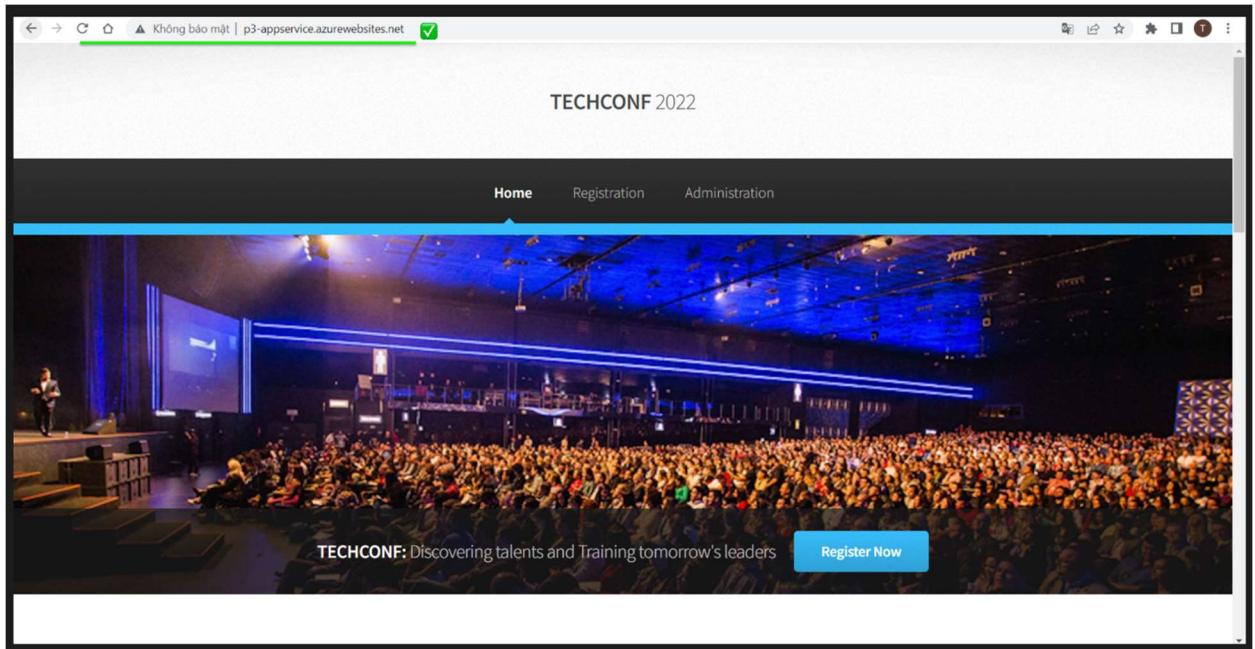
- Web App code deployed in Azure

MEETS SPECIFICATIONS

- Student provides a screenshot of the application successfully running with the URL in this format https://*.azurewebsites.net. The screenshot should be full screen showing the URL and application running.

HOW TO DO IT

- Here is an additional [Link](#) on how to deploy flask apps.



2. Migrate Database

Part 1:

CRITERIA

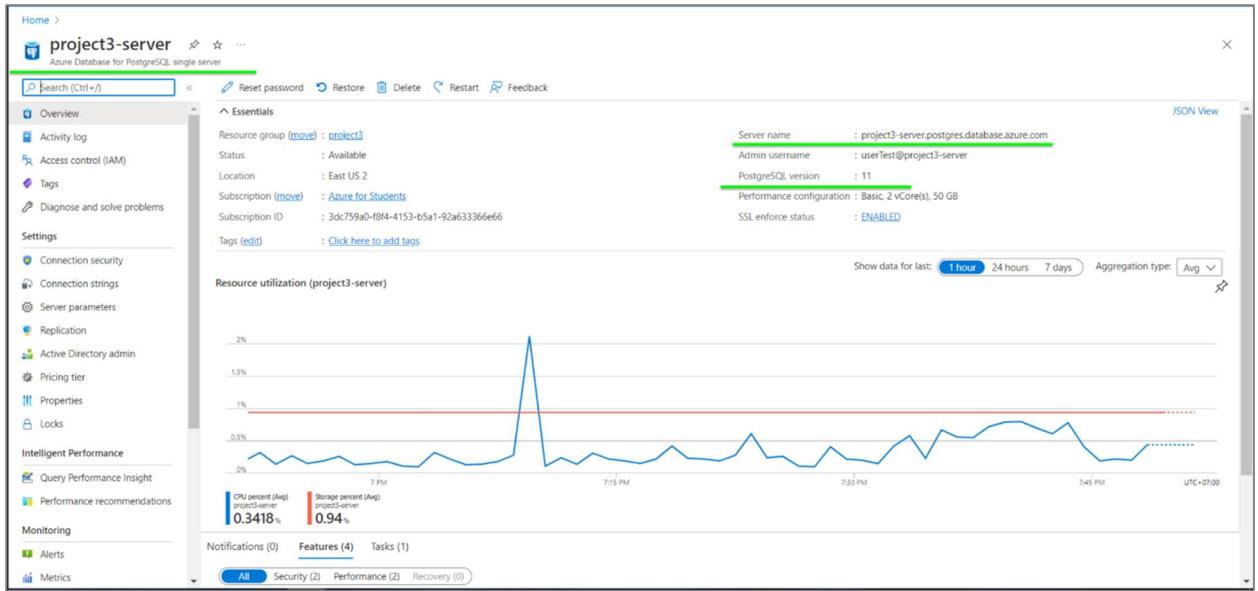
- Create an Azure Postgres database in Azure

MEETS SPECIFICATIONS

- Student provides a screenshot of the Azure Postgres database resource created in Azure showing the database name, version, server name

HOW TO DO IT

- Here is an additional [Link](#) on the type of Azure Databases.



FURTHER READING

- [Azure Database for PostgreSQL documentation](#)
- [Performance best practices for using Azure Database for PostgreSQL](#)
- [Optimize performance using Azure Database for PostgreSQL Recommendations](#)

Part 2:

CRITERIA

- Restore database backup to Azure Postgres database

MEETS SPECIFICATIONS

- Student provides a screenshot of the web app successfully loading the list of attendees and notifications from the deployed website

HOW TO DO IT

- Screenshot showing web app successfully loading list of attendees

Không bảo mật | p3-appservice.azurewebsites.net/Attendees

The screenshot shows a web application interface titled "Attendees Registration List". At the top, there is a navigation bar with links for "Home", "Registration", and "Administration". The "Administration" link is highlighted with a blue underline. Below the navigation bar, the title "Attendees Registration List" is centered. On the left side, there is a "Show" dropdown set to "10 entries". On the right side, there is a "Search:" input field. The main content area contains a table with columns: First Name, Last Name, Email, Job Position, Company, City, State, and Date. The table lists five entries. At the bottom of the table, it says "Showing 1 to 5 of 5 entries". There are also "Previous" and "Next" buttons.

First Name	Last Name	Email	Job Position	Company	City	State	Date
Celine	Mabs	celinemabs@school.edu	Developer	Mabs Learning Center	Rawlings	WY	07-05-2020
Do	Ji	mar@smith.org	Director	Mafolab	Rockville	AZ	07-05-2020
Edem	Lamoine	lamoine@gmail.com	Executive	Paracetamole Pharma	Washington	DC	07-05-2020
Lanice	Montre	lamontre@gmail.com	Director	Montreal Consulting Inc	Philadelphia	PA	07-05-2020
Mary	Maine	mary.maine@noreply.com	Other	Maine Co	Hanover	PA	07-05-2020

Showing 1 to 5 of 5 entries

Previous 1 Next

- Screenshot showing web app successfully loading list of notifications

Không bảo mật | p3-appservice.azurewebsites.net/Notifications

The screenshot shows a web application interface titled "Email Notifications List". At the top, there is a navigation bar with links for "Home", "Registration", and "Administration". The "Administration" link is highlighted with a blue underline. Below the navigation bar, the title "Email Notifications List" is centered. On the left side, there is a "Show" dropdown set to "10 entries". On the right side, there is a "Search:" input field. The main content area contains a table with columns: #, Status, Submitted, Completed, and Message. The table lists six notifications. At the bottom of the table, it says "Showing 1 to 6 of 6 entries". There are also "Previous" and "Next" buttons.

#	Status	Submitted	Completed	Message
Notification#10	Notifications submitted	06-07-2022 03:21 AM	N/A	notification 3
Notification#11	Notified 5 attendees	06-07-2022 06:01 AM	06-07-2022 06:01 AM	notification 4
Notification#12	Notified 5 attendees	06-07-2022 06:05 AM	06-07-2022 06:05 AM	notification 5
Notification#13	Notifications submitted	06-07-2022 11:32 AM	N/A	Message 6
Notification#16	Notified 5 attendees	06-07-2022 12:38 PM	06-07-2022 12:38 PM	Test
Notification#2	Notifications submitted	N/A	N/A	

Showing 1 to 6 of 6 entries

Previous 1 Next

3. Migrate Background Process

Part 1:

CRITERIA

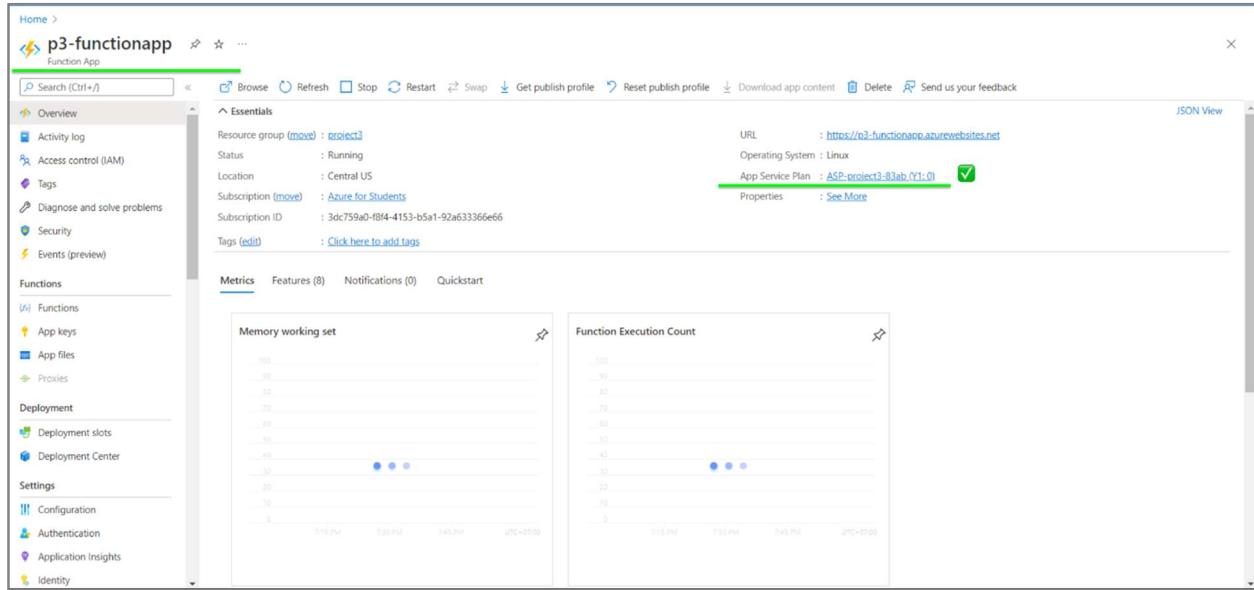
- Create an Azure Function resource for the migration

MEETS SPECIFICATIONS

- Student provides a screenshot of the Azure Function app running in Azure showing the function name and the function app plan

HOW TO DO IT

- Screenshot of the Azure Function App running in Azure showing the function name and the function app plan



FURTHER READING

- [Create Azure Function in the Azure portal](#)
- [Azure Functions documentation](#)
- [Best practices for performance and reliability of Azure Functions](#)

Part 2:

CRITERIA

- Azure function code implemented, deployed, and triggered

MEETS SPECIFICATIONS

- Student provides screenshots of the following showing functionality of the deployed site:
 1. Submitting a new notification
 2. Notification processed after executing the Azure function

HOW TO DO IT

- Screenshot for submitting a new notification web page

Không bảo mật | p3-appservice.azurewebsites.net/Notification

Home Registration Administration

Send Notification

Subject:

Message:

Send Notification

- Notification added to notification list with status Notifications submitted but yet to be processed by ServiceBusQueueTrigger azure function

Không bảo mật | p3-appservice.azurewebsites.net/Notifications

Home Registration Administration

Email Notifications List

Show entries

Search:

#	Status	Submitted	Completed	Message
Notification#10	Notifications submitted	06-07-2022 03:21 AM	N/A	notification 3
Notification#11	Notified 5 attendees	06-07-2022 06:01 AM	06-07-2022 06:01 AM	notification 4
Notification#12	Notified 5 attendees	06-07-2022 06:05 AM	06-07-2022 06:05 AM	notification 5
Notification#13	Notifications submitted	06-07-2022 11:32 AM	N/A	Message 6
Notification#16	Notified 5 attendees	06-07-2022 12:38 PM	06-07-2022 12:38 PM	Test
Notification#17	Notifications submitted	06-07-2022 13:12 PM	N/A	Message for Notification 7

- Notifications is processed by ServiceBusQueueTrigger azure function and contains completed dates as well as total number of attendees notified (status) in the Notifications list

Email Notifications List				
Show	entries	Search:		
#	Status	Submitted	Completed	Message
Notification#10	Notifications submitted	06-07-2022 03:21 AM	N/A	notification 3
Notification#11	Notified 5 attendees	06-07-2022 06:01 AM	06-07-2022 06:01 AM	notification 4
Notification#12	Notified 5 attendees	06-07-2022 06:05 AM	06-07-2022 06:05 AM	notification 5
Notification#13	Notifications submitted	06-07-2022 11:32 AM	N/A	Message 6
Notification#16	Notified 5 attendees	06-07-2022 12:38 PM	06-07-2022 12:38 PM	Test
Notification#17	Notified 5 attendees	06-07-2022 13:12 PM	06-07-2022 13:13 PM	Message for Notification 7

- You are correctly adding message to Service Bus Queue in the web-app
- You have correctly implemented ServiceBusQueueTrigger azure function to process the message from Service Bus Queue

The screenshot shows the Azure Function Monitor for the 'ServiceBusQueueTrigger' function. It displays the following information:

- Overview:** Success Count: 5, Error Count: 11, Last 30 Days.
- Invocation Traces:** A table showing 20 recent invocations with columns: Date (UTC), Success, Result Code, Duration (ms), and Operation Id.

Date (UTC)	Success	Result Code	Duration (ms)	Operation Id
2022-07-06 12:38:42.819	✓ Success	0	1878	a177ae0a1ec243af4c88202095e02fd
2022-07-06 11:43:48.729	✓ Success	0	1123	1220899cfbd36b341deb7859c359db
2022-07-06 11:32:05.072	✓ Success	0	1720	195aa09cced263aae8636d22962bc212
2022-07-06 06:01:02.569	✓ Success	0	2112	e9525ef7f5ad4570b21c7ff1fb332fe6b
2022-07-06 09:30:07.496	✗ Error	0	47	902356ca959961607ca8415107daeeea
2022-07-06 03:21:59.148	✓ Success	0	948	17c037cd601c77d4846441b015328942
2022-07-05 16:53:53.003	✗ Error	0	60	44fe00bb7e5584c558135b9a9b21ea4
2022-07-05 16:53:52.938	✗ Error	0	52	7e988661712ac5a3f51ddeddf119a7
2022-07-05 16:53:52.755	✗ Error	0	176	0d48a159b1559987bd65662c38c524bc
2022-07-05 16:53:52.692	✗ Error	0	58	92f1522e83143eb0163f5cbe77e9a3a1

FURTHER READING

- [Send messages to and receive messages from Azure Service Bus queues](#)

4. Predicting Costs

Part 1:

CRITERIA

- Cost-effective architecture for web app and function

MEETS SPECIFICATIONS

- Student provides a README that includes a short explanation and reasoning of the architecture selected for both the Azure web app and the Azure function in terms of cost-effectiveness

HOW TO DO IT

- I recommend reading this link for advanced information about serverless functionalities.
<https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/serverless/web-app>

Example:

Architecture Explanation

After migrate the application web app to an Azure App Service and refactor the notification logic to an Azure Function via a service bus queue message

- Scalable web application to handle ... [you should continuous here]
- When admin send notification, it won't take long now, ... [you should continuous here]
- Existing architecture optimized for ... [you should continuous here]

Part 2:

CRITERIA

- Predict the monthly cost of each Azure Resource

MEETS SPECIFICATIONS

- Student provides a README that includes a monthly cost analysis of the project detailing each resource's cost

HOW TO DO IT

- You can use [Azure Pricing Calculator](#) to do that.

For Reference:

Monthly Cost Analysis

Complete a month cost analysis of each Azure resource to give an estimate total cost using the table below: I have used the [Azure Pricing Calculator](#) to find monthly cost.

Azure Resource	Service Tier	Monthly Cost
Azure Postgres Database	Gen 5 Compute generation (Cost per vCore 24.82 × 1 selected) + ((0.10 Cost per GB * 5 GB selected)/ month x 100 Storage selected)	35.32 USD
Azure Service Bus	Standard	10 USD
Azure Web App	Linux OS (Basic Tier B1)	12.50 USD
Azure Functions App	0.005 million GB-s 400,000 GB-s (Free tier) < 0	0
Total		57.82 USD

Project 4: Enhancing Applications

1. Set Up of Application Insight

Part 1:

CRITERIA

- Create appropriate Azure resources to utilize Application Insights and Azure Log Analytics.

MEETS SPECIFICATIONS

- Azure Log Analytics Workspace and Azure Application Insights resources are created.
- As evidence, provide a screenshot of the resource group containing your running resources.

HOW TO DO IT

- Create Azure VMSS resource: run setup-script.sh
- Create Application Insights resource: [Lesson: Setting up Application Insights](#)

Note: Resources and the resource group should use the same Azure Region

- Add to requirements.txt

```
Flask==1.1.2
opencensus-ext-azure==1.0.4
opencensus-ext-flask==0.7.3
redis==3.5.3
opencensus==0.7.13
```

```
opencensus-ext-logging==0.1.0
opencensus-context==0.1.2
opencensus-ext-requests==0.7.5
appdirs==1.4.4
black==21.7b0
cachetools==4.2.2
certifi==2021.5.30
charset-normalizer==2.0.4
click==8.0.1
colorama==0.4.4
google-api-core==1.31.2
google-auth==1.35.0
googleapis-common-protos==1.53.0
idna==3.2
isort==5.9.3
itsdangerous==2.0.1
Jinja2==3.0.1
MarkupSafe==2.0.1
mypy-extensions==0.4.3
packaging==21.0
pathspec==0.9.0
protobuf==3.17.3
psutil==5.8.0
pyasn1==0.4.8
pyasn1-modules==0.2.8
pyparsing==2.4.7
pytz==2021.1
regex==2021.8.21
requests==2.26.0
```

rsa==4.7.2

six==1.16.0

tomli==1.2.1

urllib3==1.26.6

Werkzeug==2.0.1

wrapt==1.12.1

The screenshot shows the Microsoft Azure portal interface. The left sidebar navigation bar includes Home, Search (Ctrl+F), Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Deployments, Security, Policies, Properties, Locks, Cost Management, Cost analysis, Cost alerts (preview), Budgets, Advisor recommendations, Monitoring, Insights (preview), Alerts, Metrics, Diagnostic settings, Logs, Advisor recommendations, Workbooks, Automation, and Export template. The main content area displays the 'project4-rs' resource group details. At the top, it shows the subscription (Azure for Students), subscription ID (3edc759b0-f944-4153-b5a1-92ae63336eef6), and location (East US). It indicates 1 succeeded deployment. Below this, there is a 'Resource Recommendations (4)' section with a 'Filter for any field...' dropdown and a 'No grouping' button. A table lists 14 resources, each with a preview icon, name, type, and location. The resources include Automation Acc, Runbook, Container registry, Application insights, Runbook, Kubernetes service, Virtual machine scale set, Load balancer, Public IP address, Network security group, Virtual network, and Storage account.

Name	Type	Location
AutomationAcc	Automation Account	East US
AzureAutomationTutorialScript (AutomationAcc/AzureAutomationTutorialScript)	Runbook	East US
AzureAutomationTutorialWithIdentity (AutomationAcc/AzureAutomationTutorialWithIdentity)	Runbook	East US
AzureAutomationTutorialWithIdentityGraphical (AutomationAcc/AzureAutomationTutorialWithIdentityGraphical)	Runbook	East US
myapp202106	Container registry	East US
p4-app-insights	Application insights	East Asia
runbook-p4 (AutomationAcc/runbook-p4)	Runbook	East US
udacity-cluster	Kubernetes service	East US
udacity-vms	Virtual machine scale set	East US
udacity-vms-lb	Load balancer	East US
udacity-vms-lb/p4/p	Public IP address	East US
udacity-vms-nsg	Network security group	East US
udacity-vms-vnet	Virtual network	East US
udacitytag6756	Storage account	East US

2. Azure virtual machine scale sets – VMSS

Part 1:

CRITERIA

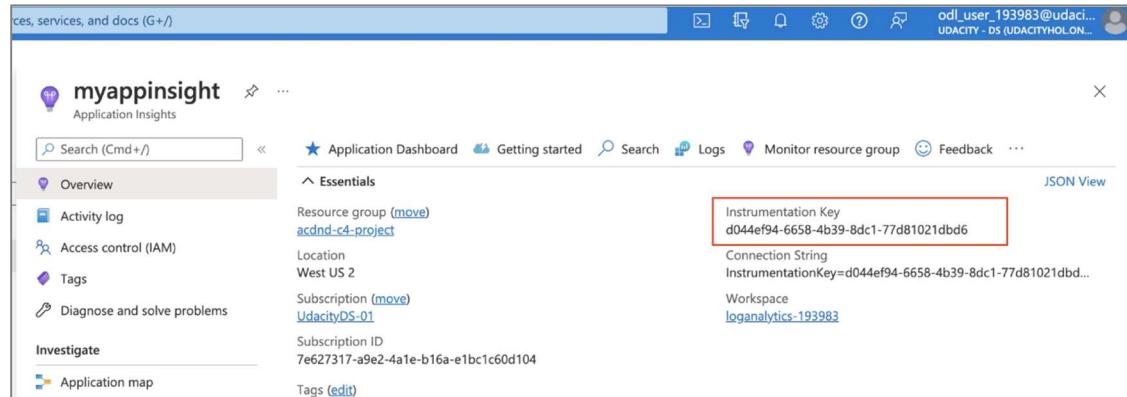
- Enable Application Insights for a VM Scale Set.

MEETS SPECIFICATIONS

- Application Insights monitoring is enabled on the VMSS.
- As evidence, provide a screenshot of the metrics from the VM Scale Set instance. This should show the following information:
 - CPU %
 - Available Memory %
 - Information about the Disk
 - Information about the bytes sent and received.
- There will be 7 graphs that display this data.

HOW TO DO IT

- Enable Application Insights monitoring for the VM Scale Set
- Copy the Instrumentation Key of your Application Insights instance to use in the main.py



myappinsight
Application Insights

Search (Cmd +/)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Investigate

Application map

Essentials

Resource group (move)
acndc-c4-project

Location
West US 2

Subscription (move)
UdacityDS-01

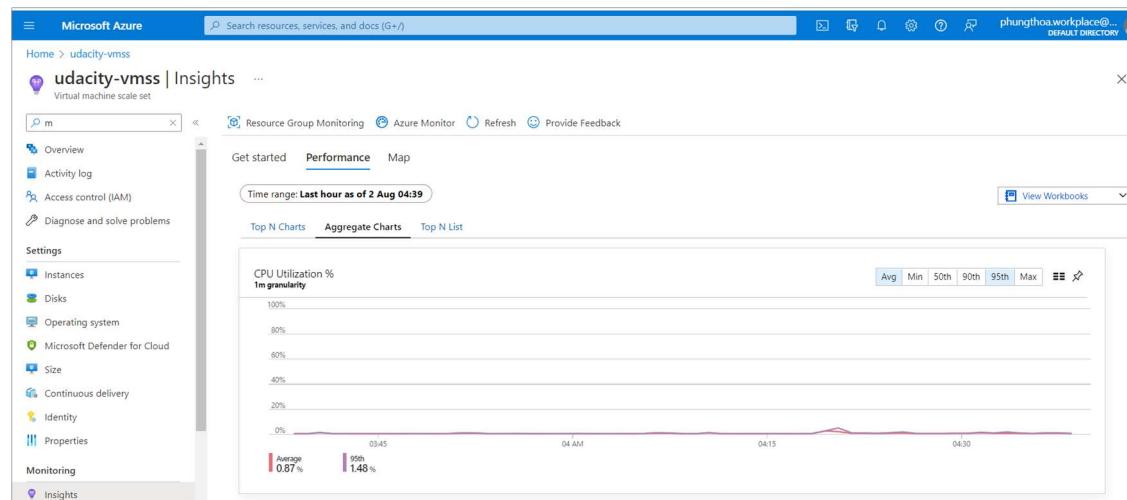
Subscription ID
7e627317-a9e2-4a1e-b16a-e1bc1c60d104

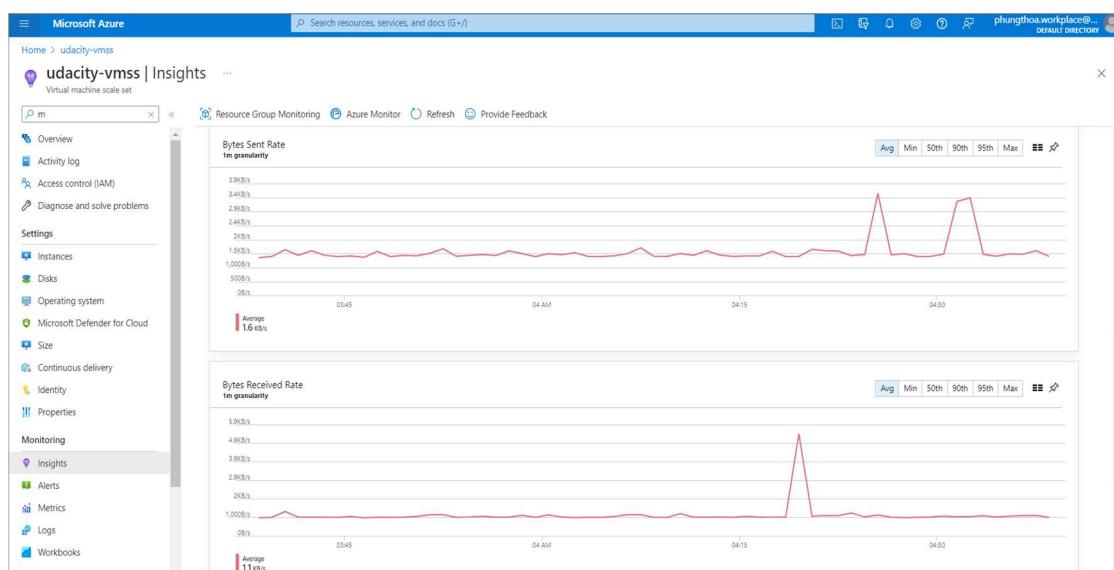
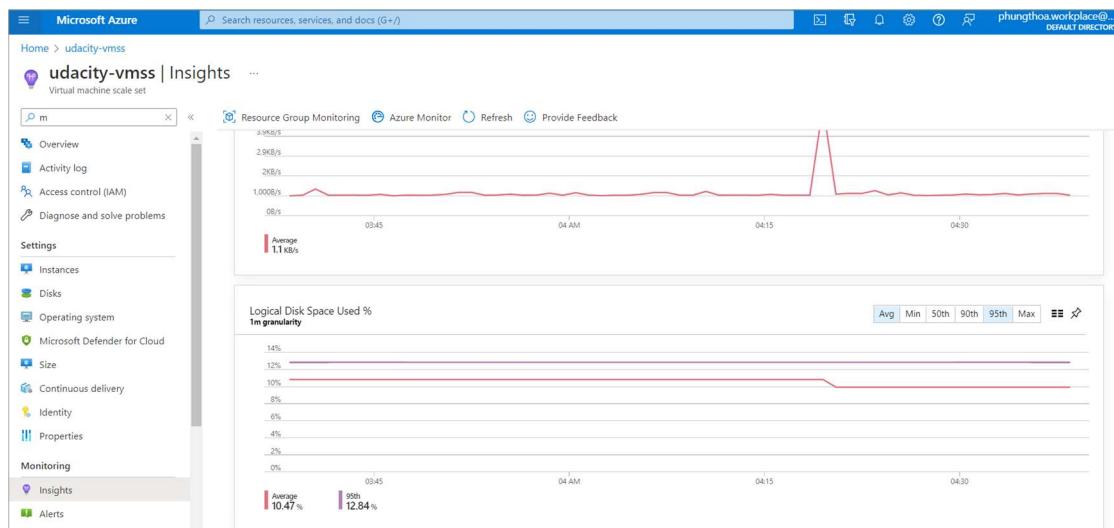
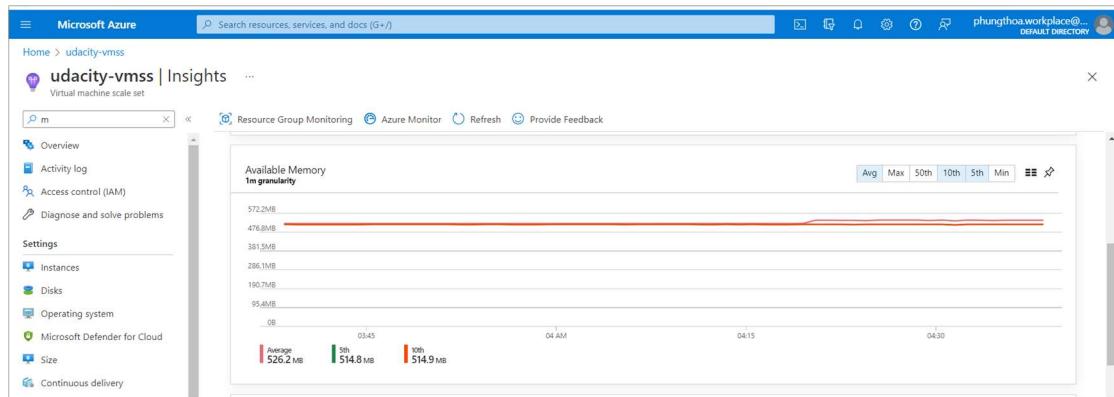
Tags (edit)

Instrumentation Key
d044ef94-6658-4b39-8dc1-77d81021dbd6

Connection String
InstrumentationKey=d044ef94-6658-4b39-8dc1-77d81021dbd...

Workspace
loganalytics-193983





Part 2:

CRITERIA

- Import and reference the correct libraries to enable the collection of Application Insights telemetry data.

MEETS SPECIFICATIONS

- In the provided `main.py` of the application:
 - Import and reference the correct libraries for Application Insights
 - Add code to reference the Application Insights Instrumentation key. The objects that will use this key include:
 - exporter
 - tracer
 - flask middleware
 - logger
- References to each of these objects should be found in the `def index()` function.

HOW TO DO IT

- Add code to main.py
 - [Lesson: Collecting Telemetry Data](#)
 - [Set up Azure Monitor for your Python application](#)
- Push code to a new branch Deploy_to_VMSS

Part 3:

CRITERIA

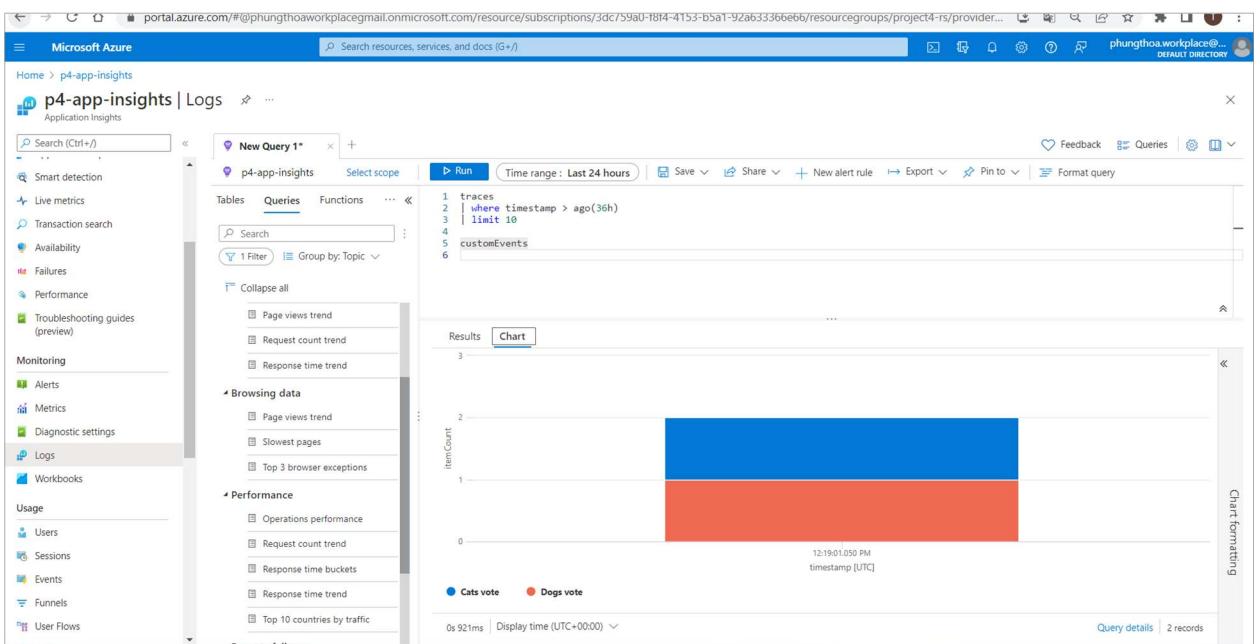
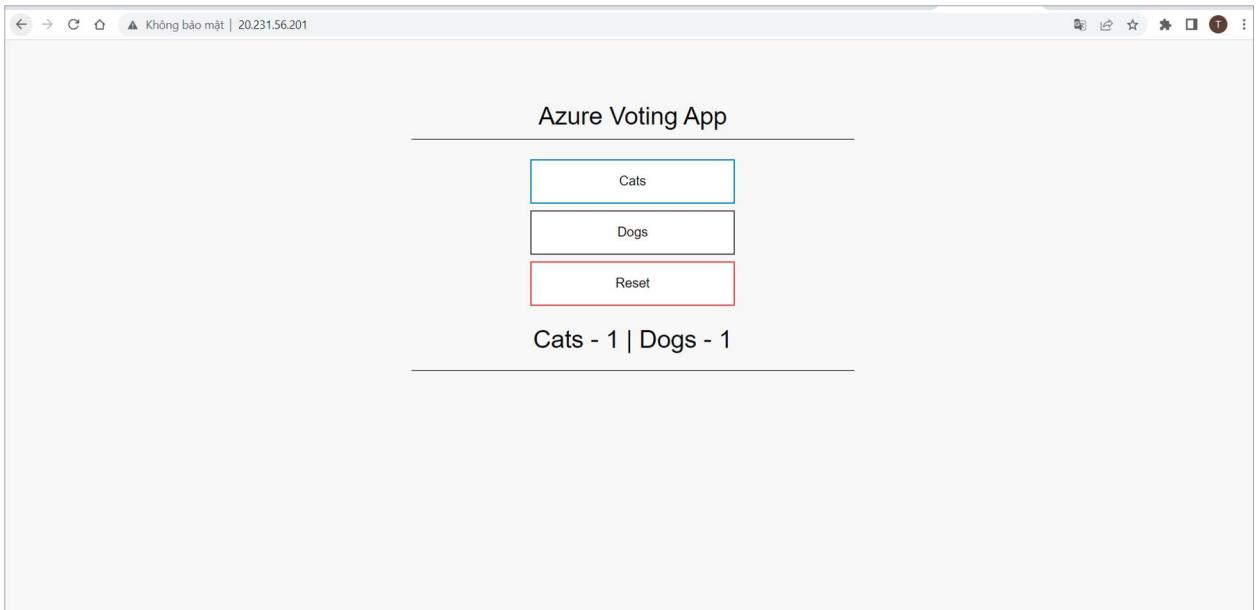
- View and display the collected data in Azure Application Insights & Azure Log Analytics.

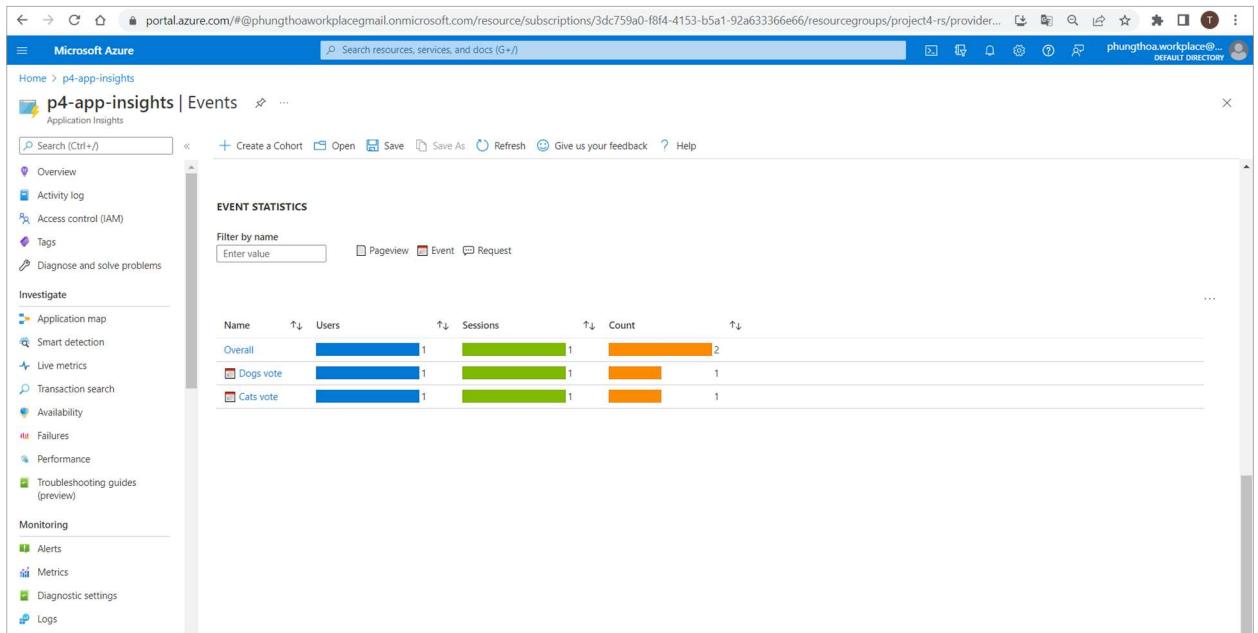
MEETS SPECIFICATIONS

- As evidence, provide screenshots of:
 - Application Insight Events that show the results of clicking **vote** for each **Dogs & Cats**
 - The output of the **traces** query in Azure Log Analytics
 - The chart created from the output of the **traces** query

HOW TO DO IT

- Deploy the application to one of the VMSS instances: [Deploy VMSS](#)





Part 4:

CRITERIA

- Create an auto scaling rule for a VM Scale Set.

MEETS SPECIFICATIONS

- Create an auto-scaling rule for a VMSS.
- As evidence, provide a screenshot showing the conditions set for the auto scaling rule. This can be found in the **Scaling** item in the VM Scale Set.

Part 5:

CRITERIA

- Cause the VM Scale Set to auto scale.

MEETS SPECIFICATIONS

- Trigger the VM Scale Set auto scale rule.
- As evidence, provide the following screenshots:
 - The Activity log of the VM scale set that shows it scaled up, including a timestamp.
 - The new instances being created.
 - The metrics showing the load increasing, then decreasing once scaled up, including a timestamp.

HOW TO DO IT

- Tạo Autoscaling VMSS: [Deploy VMSS \(Autoscaling VMSS\)](#)

Microsoft Azure

Home > udacity-vms

udacity-vmss | Scaling

Virtual machine scale set

Choose how to scale your resource

Manual scale: Maintain a fixed instance count.

Custom autoscale: Scale on any schedule, based on any metrics.

Custom autoscale

Autoscale setting name: udacity-vmss-Autoscale-725

Resource group: project4-rs

Instance count: 3

Predictive autoscale (public preview): Mode: Disabled, Pre-launch setup of instances (minutes): 0, Enable Forecast only or Predictive autoscale: Learn more about Predictive autoscale.

Default: Auto created scale condition

Delete warning: The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale to turn off autoscale.

Scale mode: Scale based on a metric (selected) Scale to a specific instance count.

Rules: It is recommended to have at least one scale in rule. To create new rules, click Add a rule.

Scale out: When: udacity-vmss, (Average) Percentage CPU >= 10, Increase count by 1.

Instance limits: Minimum: 2, Maximum: 3, Default: 2.

Schedule: This scale condition is executed when none of the other scale condition(s) match.

Microsoft Azure

Home > udacity-vms

udacity-vmss | Activity log

Virtual machine scale set

Activity log

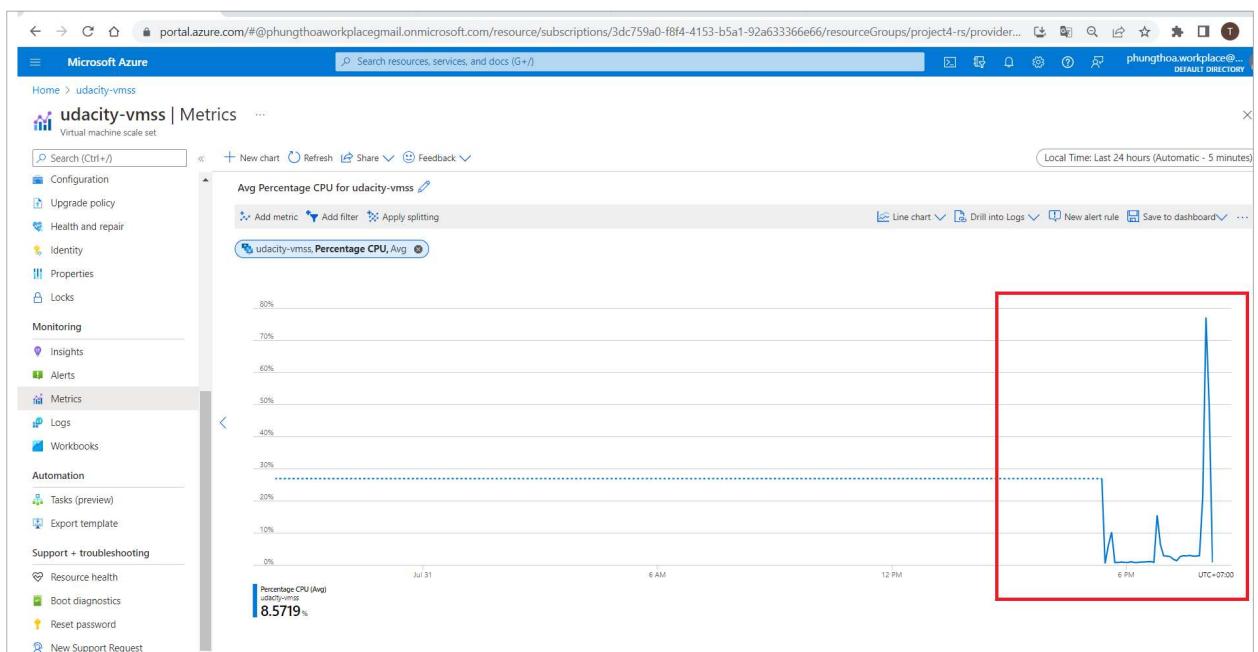
Looking for Log Analytics? In Log Analytics you can search for performance, diagnostics, health logs, and more. Visit Log Analytics.

Search: Quick insights

Subscription: Azure for Students, Event severity: All, Timespan: Last 6 hours, Resource group: project4-rs, Resource: udacity-vmss, Add Filter

14 items.

Operation name	Status	Time	Time stamp	Subscription	Event initiated by
> Health Event Updated	Updated	12 minutes ...	Sun Jul 31 2...	Azure for Students	Azure Monitor System
> Create or Update Virtual Machine Scale Set	Succeeded	12 minutes ...	Sun Jul 31 2...	Azure for Students	Microsoft.insights/autosc...
> Health Event Updated	Updated	14 minutes ...	Sun Jul 31 2...	Azure for Students	Microsoft.insights/autosc...
> Health Event Updated	Updated	14 minutes ...	Sun Jul 31 2...	Azure for Students	Microsoft.insights/autosc...
> Autoscale scale up completed	Succeeded	14 minutes ...	Sun Jul 31 2...	Azure for Students	Microsoft.insights/autosc...
> Autoscale scale up initiated	Succeeded	14 minutes ...	Sun Jul 31 2...	Azure for Students	Microsoft.insights/autosc...
> Create or Update Virtual Machine Scale Set Extension	Succeeded	3 hours ago	Sun Jul 31 2...	Azure for Students	phunghoaworkplace@g...
> Create or Update Virtual Machine Scale Set	Succeeded	3 hours ago	Sun Jul 31 2...	Azure for Students	phunghoaworkplace@g...



3. Azure Kubernetes Service –AKS

Part 1:

CRITERIA

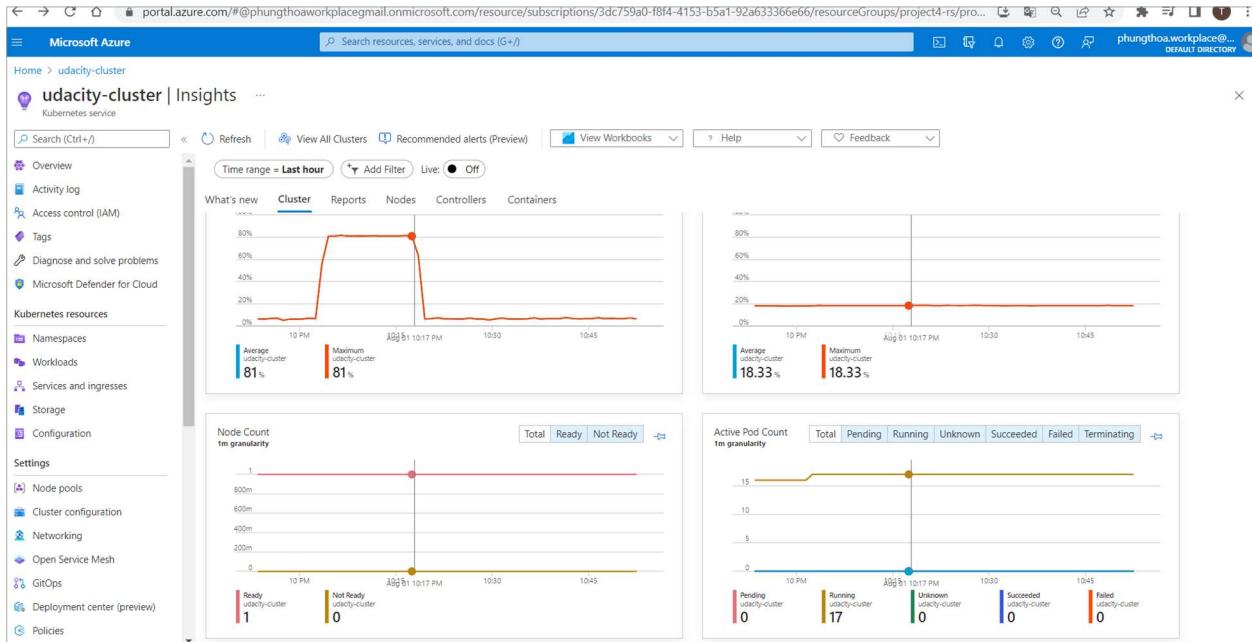
- Enable Application Insights on an AKS cluster.

MEETS SPECIFICATIONS

- Enable Application Insights on the AKS cluster created from the provided script `create-cluster.sh`.
- As evidence, provide a screenshot showing Application Insights is enabled on the AKS cluster.

HOW TO DO IT

- Steps to deploy AKS (item 1 → 7)



Part 2:

CRITERIA

- Create an Azure Alert.

MEETS SPECIFICATIONS

- Create an Azure Alert in Azure Monitor. This alert should trigger when the number of pods increases beyond a certain threshold.
- As evidence, provide a screenshot of the Azure Alert and email sent when the alert is triggered.

HOW TO DO IT

- Create an alert in Azure Monitor to trigger: [Lesson: Create Alerts](#)

Part 3:

CRITERIA

- Create a horizontal pod auto scaler and cause load on the container.

MEETS SPECIFICATIONS

- Create a horizontal pod autoscaler and cause load on the container.
- As evidence, provide screenshots showing:
 - The output of the Horizontal Pod Autoscaler, showing an increase in the number of pods.
 - The Application Insights metrics which show the increase in the number of pods.
 - The email you received from the alert when the pod count increased.

HOW TO DO IT

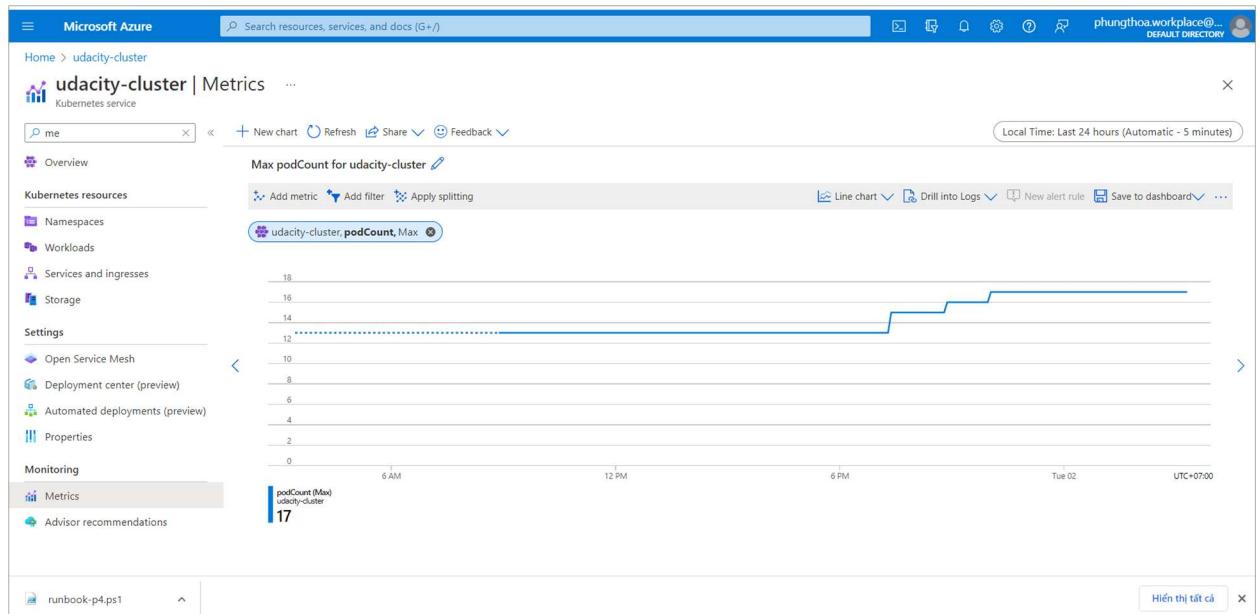
- [Create Autoscaling AKS Cluster](#)

The screenshot shows the Azure portal interface for managing alert rules. The main page displays the 'pod-count-alert-rule' for the 'udeacity-cluster'. The 'Scope' section shows the target resource is 'udeacity-cluster'. The 'Condition' section contains one condition: 'Whenever the maximum podcount is greater than 14'. The 'Actions' section shows an action group named 'action-group-name' that triggers an 'Email' notification. A tooltip indicates that alert rules can monitor multiple dimensions but must include only one condition.

This screenshot shows the detailed configuration of the alert rule's signal logic. It is titled 'Configure signal logic' and includes sections for 'Alert logic' and 'Condition preview'. In the 'Alert logic' section, the threshold is set to 'Static' with the operator 'Greater than' and a threshold value of '14'. The 'Condition preview' shows the condition: 'Whenever the maximum podcount is greater than 14'. Below this, 'Evaluated based on' settings are shown, including an aggregation granularity of '5 minutes' and a frequency of evaluation of 'Every 1 Minute'. A 'Done' button is at the bottom right.

The screenshot shows the AKS Insights blade with the following data visualizations:

- Node CPU Utilization %**: A line chart showing CPU usage over the last 12 hours. The Y-axis ranges from 0% to 100%. Two spikes are visible around 09 PM on Tuesday, peaking at 81.19% and 81.45% respectively. The average utilization is 8%.
- Node Memory Utilization %**: A line chart showing memory usage over the last 12 hours. The Y-axis ranges from 0% to 100%. Two spikes are visible around 09 PM on Tuesday, peaking at 17.45% and 18.52% respectively. The average utilization is 17.45%.
- Node Count**: A line chart showing the number of nodes over the last 5 minutes. The Y-axis ranges from 0 to 800m. The count is constant at 1 node.
- Active Pod Count**: A line chart showing the number of active pods over the last 5 minutes. The Y-axis ranges from 0 to 15. The count is constant at 15 pods.



Microsoft Azure | Home > udacity-cluster | Workloads

udacity-cluster | Workloads

Kubernetes service

w

Create Delete Refresh Show labels Give feedback

Deployments Pods Replica sets Stateful sets Daemon sets Jobs Cron jobs

Filter by deployment name Enter the full deployment name Filter by label selector foo=bar,key!=value Filter by namespace All namespaces

Name	Namespace	Ready	Up-to-date	Available	Age
azure-vote-back	default	1/1	1	1	8 hours
azure-vote-front	default	1/1	1	1	8 hours
coredns	kube-system	2/2	2	2	19 hours
coredns-autoscaler	kube-system	1/1	1	1	19 hours
konnectivity-agent	kube-system	2/2	2	2	19 hours
metrics-server	kube-system	1/1	1	1	19 hours
omsagent-rs	kube-system	1/1	1	1	19 hours

Hiển thị tất cả

Name	Namespace	Status	Type	Cluster IP	External IP	Ports	Age
kubernetes	default	Ok	ClusterIP	10.0.0.1	443/TCP		14 hours
kube-dns	kube-system	Ok	ClusterIP	10.0.0.10	53/UDP,53/TCP		14 hours
metrics-server	kube-system	Ok	ClusterIP	10.0.234.253	443/TCP		14 hours
azure-vote-back	default	Ok	ClusterIP	10.0.153.233	6379/TCP		4 hours
azure-vote-front	default	Ok	LoadBalancer	10.0.195.254	20.85.250.167	80:32091/TCP	4 hours

Name	Status	95th %	95th	Pod	Node	Restarts	UpTime	Trend 95th % (1 bar = 15m)
connectivity-agent	Ok	3%	99 mc	connectivity-agent-588bf96efdf-pqb5z	aks-nodepool1-29734...	0	14 hours	<div style="width: 3%;"> </div>
load-generator	Ok	19%	353 mc	load-generator	aks-nodepool1-29734...	1	42 mins	<div style="width: 19%;"> </div>
coredns	Ok	13%	402 mc	coredns-dc97cf5f5-fp76c	aks-nodepool1-29734...	0	14 hours	<div style="width: 13%;"> </div>
coredns	Ok	13%	395 mc	coredns-dc97cf5f5-pck4d	aks-nodepool1-29734...	0	14 hours	<div style="width: 13%;"> </div>
omsagent	Ok	10%	50 mc	omsagent-v68fc	aks-nodepool1-29734...	0	14 hours	<div style="width: 10%;"> </div>
azure-vote-front	Ok	6%	30 mc	azure-vote-front-6bccbd59-1mg88	aks-nodepool1-29734...	0	3 hours	<div style="width: 6%;"> </div>
omsagent	Ok	2%	15 mc	omsagent-rs-68d9f4ac5-469wb	aks-nodepool1-29734...	0	14 hours	<div style="width: 2%;"> </div>
connectivity-agent	Ok	0.8%	2 mc	connectivity-agent-588bf96efdf-prok	aks-nodepool1-29734...	0	14 hours	<div style="width: 0.8%;"> </div>
omsagent-prometheus	Ok	0.4%	2 mc	omsagent-v68fc	aks-nodepool1-29734...	0	14 hours	<div style="width: 0.4%;"> </div>
metrics-server	Ok	0.4%	4 mc	metrics-server-64b66fbcb8-44j8g	aks-nodepool1-29734...	0	14 hours	<div style="width: 0.4%;"> </div>
autoscaler	Ok	0.2%	0.4 mc	coredns-autoscaler-7d56cd888-d48nl	aks-nodepool1-29734...	0	14 hours	<div style="width: 0.2%;"> </div>
node-driver-registrar	Ok	0.1%	2 mc	csi-azurefile-node-d682z	aks-nodepool1-29734...	0	14 hours	<div style="width: 0.1%;"> </div>
node-driver-registrar	Ok	0.1%	2 mc	csi-azuredisk-node-gkwfk	aks-nodepool1-29734...	0	14 hours	<div style="width: 0.1%;"> </div>
azure-vote-back	Ok	0.1%	2 mc	azure-vote-back-59d587dbb7-76crb	aks-nodepool1-29734...	0	3 hours	<div style="width: 0.1%;"> </div>
kube-proxy	Ok	0%	0.5 mc	kube-proxy-42csd	aks-nodepool1-29734...	0	14 hours	<div style="width: 0%;"> </div>
cloud-node-manager	Ok	0%	0.4 mc	cloud-node-manager-rg5xt	aks-nodepool1-29734...	0	14 hours	<div style="width: 0%;"> </div>

4. Automate Resolution of Performance Issues

Part 1:

CRITERIA

- Create an Azure RunBook to be executed by an Azure Automation Account.

MEETS SPECIFICATIONS

- Azure Automation Account and RunBook resources are created.

- As evidence, provide a screenshot of your resource group containing your running resources.

HOW TO DO IT

- Create runbook: [Lesson: Create a Runbook](#)
- Code script for runbook to remedy a problem
- Create an alert rule to trigger runbook

Ex: Stop VMs in a scale set when CPU% >= 5 by Runbook Python

Name	Type	Location
AutomationAcc	Automation Account	East US
AzureAutomationTutorialScript (AutomationAcc/AzureAutomationTutorialScript)	Runbook	East US
AzureAutomationTutorialWithIdentity (AutomationAcc/AzureAutomationTutorialWithIdentity)	Runbook	East US
AzureAutomationTutorialWithIdentityGraphical (AutomationAcc/AzureAutomationTutorialWithIdentityGraphical)	Runbook	East US
myacr202106	Container registry	East US
p4-app-insights	Application Insights	East Asia
runbook-p4 (AutomationAcc/runbook-p4)	Runbook	East US
udacity-cluster	Kubernetes service	East US
udacity-vmss	Virtual machine scale set	East US
udacity-vmss-lb	Load balancer	East US
udacity-vmss-lbPublicIP	Public IP address	East US
udacity-vmss-msg	Network security group	East US
udacity-vmss-vnet	Virtual network	East US
udacitydiag6756	Storage account	East US

Part 2:

CRITERIA

- Configure an Azure Alert to trigger the RunBook to execute.

MEETS SPECIFICATIONS

- Configure an Azure Alert in Azure Monitor to trigger the RunBook.
- As evidence, provide a screenshot of the configuration.

HOW TO DO IT

Microsoft Azure | AutomationAcc

Automation Account

Resource group : project4-rs

Location : East US

Subscription : Azure for Students

Tags : Click here to add tags

Job Statistics Last 24 Hours

Status	Count
Failed	0
Suspended	0
Completed	1
Running	1
Queued	0
Stopped	0

Subscription ID : 3dc759a0-f8f4-4153-b5a1-92a633366e66

Status : Active

Last modified : 8/1/2022, 11:46 PM

JSON View

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Configuration Management
- Inventory
- Change tracking
- State configuration (DSC)
- Update management
- Update management
- Runbooks
- Jobs
- Hybrid worker groups
- Watcher tasks
- Shared Resources
- Schedules
- Modules
- Python packages
- Credentials
- Connections

Microsoft Azure | AutomationAcc | Runbooks

Automation Account

Runbooks

Create a runbook Import a runbook Browse gallery Learn more Refresh

Search runbooks... Runbook type : All Authoring status : All Runtime version : 7 selected

Name	Authoring status	Runbook type	Runtime version	Last modified	Tags
AzureAutomationTutorialScript	New	PowerShell	5.1	8/1/2022, 11:39 PM	
AzureAutomationTutorialWithIdentity	In edit	PowerShell	5.1	8/2/2022, 12:29 AM	
AzureAutomationTutorialWithIdentityGraph...	Published	Graphical PowerShell	5.1	8/1/2022, 11:37 PM	
runbook-p4	Published	PowerShell	7.1 (preview)	8/2/2022, 1:53 AM	

Microsoft Azure | Monitor | Alerts

Alerts

Create alert rules Action groups Alert processing rules Columns Refresh Export to CSV

Total alerts Critical Error Warning Informational Verbose

Name	Severity	Alert condition
CPU-alert-runbook	Informational	Resolved
pod-count-alert-rule	Informational	Fired
pod-count-alert-rule	Informational	Fired

Alert details Why did this alert fire?

Evaluation window start time (for which alert fired) 8/2/2022, 2:11 AM

Evaluation window end time (for which alert fired) 8/2/2022, 2:16 AM

UTC+07:00

CPU-alert-runbook

Metric name : Percentage CPU (last 5m)

Operator : GreaterThan

Metric value (when alert fired) : 7.765666666666667

Criterion

Metric namespace : Microsoft.Compute/virtualMachineScaleSets

Time aggregation : Average

Threshold : 5

Dimension name Dimension value

No results to display

Description : CPU-alert-runbook

Monitor service : Platform

Platform : Alert ID : 53a90714-ab08-4319-b2d0-8042f6ea5480

Alert rule : CPU-alert-runbook

Suppression status : None

Target resource type : microsoft.compute/virtualmachinescalesets

Signal type : Metric

CPU-alert-runbook

Scope
Select the target resource you wish to monitor.

Resource: **datadog-vms**

Hierarchy: Azure for Students > project4-rs

Condition
Configure when the alert rule should trigger by selecting a signal and defining its logic.

Condition name	Time series monitored	Estimated monthly cost (USD)
Whenever the average percentage cpu is greater than 5%	1	\$ 0.10
Add condition	1	Total \$ 0.10

You can add up to 5 conditions with a static threshold for a metric alert rule. All conditions must be met for an alert to be triggered.

Actions
Send notifications or invoke actions when the alert rule triggers, by selecting or creating a new action group. [Learn more](#)

Action group name	Contains actions
action-grp-runbook	1 Email, 1 Automation Runbook

[Manage action groups](#)

action-grp-runbook

Basics

Subscription: Azure for Students

Resource group: project4-rs

Action group name: action-grp-runbook

Display name: action-grp

Notifications

Notification type	Name	Status	Selected
Email/SMS message/Push/Voice	ActionGrpRunbook	Subscribed	Email

Actions

Action type	Name	Status	Selected
Automation Runbook	myRunbookP4	runbook-p4	

Part 3:

CRITERIA

- Cause the RunBook to be automatically triggered and resolve a problem.

MEETS SPECIFICATIONS

- Trigger the Azure Alert. The RunBook should execute and resolve the issue.
- As evidence, provide the following screenshots:
 - Email showing the alert was triggered
 - Metrics or other evidence showing the RunBook executed and resolved the issue.

HOW TO DO IT

Fired:Sev3 Azure Monitor Alert CPU-alert-runbook on udacity-vmss (microsoft.compute/virtualmachinescalesets) at 8/1/2022 7:19:40 PM

[View the alert in Azure Monitor](#)

Summary	
Alert name	CPU-alarm-runbook
Severity	Sev3
Monitor condition	Fire
Affected resource	udacity-vmss
Resource type	microsoft.compute/virtualmachinescalesets
Resource group	project4-rg
Subscription	Asute for Students
Description	CPU-alarm-runbook
Monitoring service	Platform
Signal type	Metric
Fire time	August 1, 2022 19:19 UTC
Alert ID	E3a00714-4008-4119-8202-8042f6ea8d8b
Alert rule ID	https://portal.azure.com/#blade/Microsoft_Azure_Monitoring/LogSearchResultsBlade/resourceId%3D7B12244c-ec0e-4a33-956a-69f2474resourceGroup%3Df9jqca-azurk8sprodvmss%2DresourceInsights%2fmetricAlerts%2fcpu-alarm-runbook
Metric alert condition	SingleResourceMultipleMetricCriteria
Type	Average
Metric name	Percentage CPU
Metric namespace	Microsoft.Compute/VirtualMachineScaleSets
Metric value (when alert fired)	7.765666666666667
Operator	Greater Than
Threshold	5

runbook-p4 8/2/2022, 2:19 AM

Status : Completed

Ran ... : Azure

Ran ... : User

[View source snapshot](#)

Input parameter

```
WEBHOOKDATA
[{"WebhookName": "Alert1659380013164", "RequestBody": "{\"schemaId\": \"Azure/MonitorMetricAlert\", \"data\": {\"version\": \"2.0\", \"properties\": null, \"status\": \"Activated\", \"context\": {\"timestamp\": \"2022-09-01T19:19:23.091665Z\", \"id\": \"subscriptions/3dc759a0-f8f4-4153-b5a1-92a633366e66/resourceGroups/project4-rg/providers/microsoft.insights/metricAlerts/CPU-alert-runbook\", \"name\": \"CPU-alert-runbook\", \"description\": \"CPU-alert-runbook\", \"conditionType\": \"SingleResourceMultipleMetricCriteria\", \"windowsSize\": \"PT5M\", \"allOf\": [{\"metricName\": \"Percentage CPU\", \"metricNamespace\": \"Microsoft.Compute/VirtualMachineScaleSets\", \"metricValue\": 7.765666666666667, \"webTestName\": null}], \"resourceName\": \"udacity-vmss\", \"resourceType\": \"Microsoft.Compute/virtualMachineScaleSets\\f8f4-4153-b5a1-92a633366e66/resourceGroups/project4-rg/providers/microsoft.Compute/virtualMachineScaleSets/udacity-vmss\", \"portalLink\": \"https://portal.azure.com/#resource/subscriptions/f8f4-4153-b5a1-92a633366e66/resourceGroups/project4-rg/providers/microsoft.Compute/virtualMachineScaleSets/udacity-vmss\"}, \"RequestHeader\": {\"X-CorrelationContext\": \"RkkKACgAAAAACAAAAEadwMx0BFwzR7RRQI9U6Alive\", \"Expect\": \"100-continue\", \"Host\": \"bd636e1d-51fc-48f7-86b5-ee8ced22ef72.webhook.eus.azure-automation.net\", \"User-Agent\": \"IcmBroadcaster/1.0\", \"x-ms-request-id\": \"94ec19e2-862c-436f-9832-00089b93170d\"}]}]
```

Resolved:Sev3 Azure Monitor Alert CPU-alert-runbook on udacity-vmss (microsoft.compute/virtualmachinescalesets) at 8/1/2022 7:30:28 PM - Alert Fired ... 02:30

Fired:Sev3 Azure Monitor Alert CPU-alert-runbook on udacity-vmss (microsoft.compute/virtualmachinescalesets) at 8/1/2022 7:19:40 PM - Alert Fired at A... 02:30