

AZURE FUNCTIONS

INTRODUCTION

Azure Functions is a serverless solution that allows you to write less code, maintain less infrastructure, and save on costs. Azure Functions are an event-driven, compute-on-demand experience that extends the existing Azure application platform with capabilities to implement code triggered by events occurring in other Azure services, SaaS products, and on-premises systems.

The following features are included with Azure Functions:

- Choice of language - C#, Node.js, Python, F#, PHP, batch, bash, Java, or any executable.
- Bring your own
- Integrated security
- Pay-per-use pricing model
- Code-less integration
- Flexible development

HTTP TRIGGER

Azure functions http trigger is used to invoke a function by using the request of http. We are using the http trigger for building the serverless API's for responding to the webhooks. The azure http trigger function defines the authorization types needed to execute the same. At the time of running http trigger functions locally, the attribute of authorization types is ignored, and we can call the function.

TIME TRIGGER

The time-triggered Azure Function allows us to schedule time for executing the function. It means that it triggers the function at a specified time. It works as **CRON** expressions work. When creating a time-triggered function, we need to specify a time in CRON format that determines when the trigger will execute. The CRON expression consists of six parts - second, minute, hour, day, month, and day of the week in Azure Function and each part is separated by space.

QUEUE TRIGGER

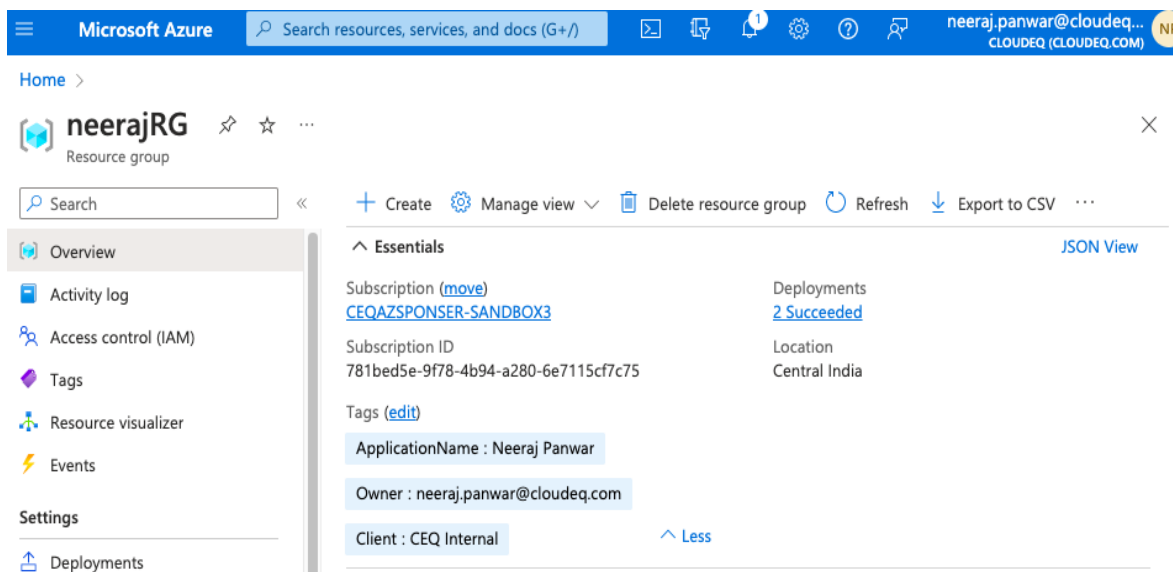
The queue storage trigger runs a function as messages are added to Azure Queue storage.

IMPLEMENTATION STEPS

(HTTP TRIGGER VIA AZURE PORTAL)

STEP 1: Create a Resource Group

Creating an RG named as **neerajRG**



The screenshot displays the Microsoft Azure portal interface. At the top, the header bar shows the 'Microsoft Azure' logo, a search bar, and user information for 'neeraj.panwar@cloudeq.com'. The main content area is titled 'neerajRG' and 'Resource group'. A left-hand navigation pane lists various options: Overview (selected), Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, and Deployments. The main pane shows the 'Essentials' section for the resource group, including details like Subscription (CEQAZSPONER-SANDBOX3), Subscription ID (781bed5e-9f78-4b94-a280-6e7115cf7c75), Location (Central India), and Tags (ApplicationName: Neeraj Panwar, Owner: neeraj.panwar@cloudeq.com, Client: CEQ Internal). A 'Deployments' section shows '2 Succeeded'.

STEP 2: Create the Function Application

Creating a Function App named as **neeraj-batch7**

The screenshot shows the 'Create Function App' wizard in the Microsoft Azure portal. The user is logged in as neeraj.panwar@cloudeq.com. The wizard is divided into two main sections: 'Project Details' and 'Instance Details'.

Project Details:

- Subscription: CEQAZSPONER-SANDBOX3
- Resource Group: neerajRG (with a 'Create new' link)

Instance Details:

- Function App name: neeraj-batch7 (with a green checkmark and '.azurewebsites.net' suffix)
- Publish: Code (selected), Docker Container
- Runtime stack: Python
- Version: 3.9
- Region: Central India

Operating system:

- Operating System: Linux (selected), Windows

At the bottom, there are three buttons: 'Review + create' (in blue), '< Previous', and 'Next : Hosting >'.

The screenshot shows the 'Overview' page for the 'neeraj-batch7' Function App in the Microsoft Azure portal. The user is logged in as neeraj.panwar@cloudeq.com. The page has a left-hand navigation pane with various options like 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Microsoft Defender for Cloud', 'Events (preview)', 'Functions', 'App keys', 'App files', and 'Proxies'.

The main content area is titled 'Essentials' and displays key information about the function app:

- Resource group: [neerajRG](#) (with a 'move' link)
- Status: Running
- Location: Central India
- Subscription: [CEQAZSPONER-SANDBOX3](#) (with a 'move' link)
- Subscription ID: 781bed5e-9f78-4b94-a280-6e7115cf7c75
- Tags: [\(edit\)](#)
- ApplicationName: Neeraj Panwar
- Owner: neeraj.panwar@cloudeq.com
- Client: CEQ Internal (with a 'Less' link)

On the right side, there are links for 'URL' (<https://neeraj-batch7.azurewebsites.net>), 'Operating System' (Linux), 'App Service Plan' ([ASP-neerajRG-b55f \(Y1: 0\)](#)), 'Properties' ([See More](#)), and 'Runtime version' (4.16.4.4). A 'JSON View' link is also present at the top right of the Essentials section.

STEP 3: Create Function (HTTP TRIGGER)

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'neeraj.panwar@cloudeq.com'. The breadcrumb trail indicates the location: Home > neerajRG > neeraj-batch7 | Functions > HttpTriggerDemo. The function 'HttpTriggerDemo' is selected, and the 'Overview' tab is active. The 'Essentials' section displays the function app 'neeraj-batch7', its status 'Enabled', resource group 'neerajRG', subscription 'CEQAZSPONSER-SANDBOX3', and subscription ID '781bed5e-9f78-4b94-a280-6e7115cf7c75'. A 'JSON View' link is visible on the right.

This screenshot shows the 'Code + Test' view for the 'HttpTriggerDemo' function. The code editor displays a Python function that uses the Azure Functions SDK. A 'Get function URL' dialog box is open, showing the key 'default' and the URL 'https://neeraj-batch7.azurewebsites.net/...'. Below the code editor, the 'Logs' section shows a message: 'Connected! You are now viewing logs of Function runs in the current Code + Test panel. To see all the logs for this Function, please go to 'Monitor' from the Function menu.'

URL RUN

The screenshot shows a web browser window with the address bar displaying 'neeraj-batch7.azurewebsites.net/api/HttpTriggerDemo'. The browser's address bar also shows the user's location and other open tabs. The main content area displays a message: 'This HTTP triggered function executed successfully. Pass a name in the query string or in the request body for a personalized response.'

LOGS

Microsoft Azure

Search resources, services, and docs (G+)

neeraj.panwar@cloud...
CLOUDREQ (CLOUDREQ.COM)

Home > HttpTriggerDemo

HttpTriggerDemo | Monitor

Function

Search

«

Overview

Invocations

Logs

Log Level

Stop

Copy

Clear

Open in Live Metrics

Leave Feedback

Connected!

2023-03-20T09:10:34Z [Information] Executing 'Functions.HttpTriggerDemo' (Reason='This function was programmatically called via the host APIs.', Id=91d20dda-b306-457b-a832-4604616c50dc)

2023-03-20T09:10:34Z [Verbose] Sending invocation id:91d20dda-b306-457b-a832-4604616c50dc

2023-03-20T09:10:34Z [Verbose] Posting invocation id:91d20dda-b306-457b-a832-4604616c50dc on workerId:470445e5-2d07-4122-9bb8-62a572f6624a

2023-03-20T09:10:34Z [Information] Python HTTP trigger function processed a request.

2023-03-20T09:10:34Z [Information] Executed 'Functions.HttpTriggerDemo' (Succeeded, Id=91d20dda-b306-457b-a832-4604616c50dc, Duration=12ms)

2023-03-20T09:10:39Z [Information] Executing 'Functions.HttpTriggerDemo' (Reason='This function was programmatically called via the host APIs.', Id=cbf1149b-4e6e-4c24-a582-7cbd7e05d800)

2023-03-20T09:10:39Z [Verbose] Sending invocation id:cbf1149b-4e6e-4c24-a582-7cbd7e05d800

2023-03-20T09:10:39Z [Verbose] Posting invocation id:cbf1149b-4e6e-4c24-a582-7cbd7e05d800 on workerId:470445e5-2d07-4122-9bb8-62a572f6624a

URL NAME RUN

← → ↺

neeraj-batch7.azurewebsites.net/api/HttpTriggerDemo?name=%20HELLO,%20Neeraj%20from%20CEQ

← → ↺

neeraj-batch7.azurewebsites.net/api/HttpTriggerDemo?name=%20HELLO,%20Neeraj%20from%20CEQ

Course | CC0101E... npneeraj (Neeraj... Online Python Co... Amazon Web Serv... My files - OneDrive Dashboard - CLC

Hello, HELLO, Neeraj from CEQ. This HTTP triggered function executed successfully.

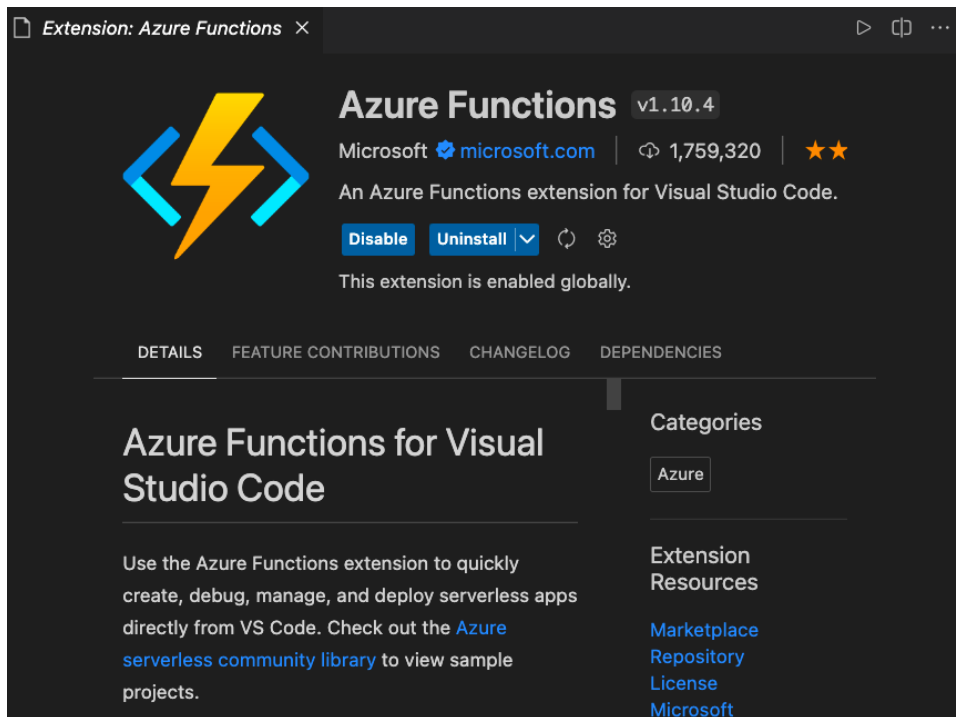
Date (UTC)	Success	Result Code	Duration (ms)
2023-03-20 09:15:39.310	✔ Success	200	17
2023-03-20 09:10:42.205	✔ Success	200	22
2023-03-20 09:10:42.041	✔ Success	200	23
2023-03-20 09:10:41.873	✔ Success	200	8

IMPLEMENTATION STEPS

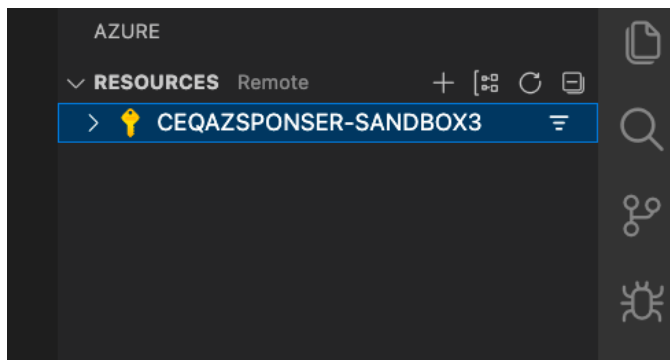
(HTTP TRIGGER VIA VS CODE)

STEP 1: Download Python3.9

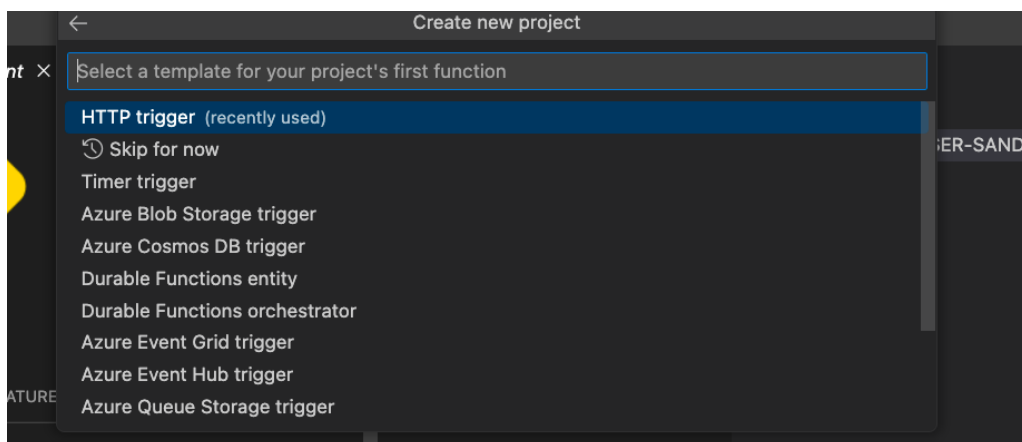
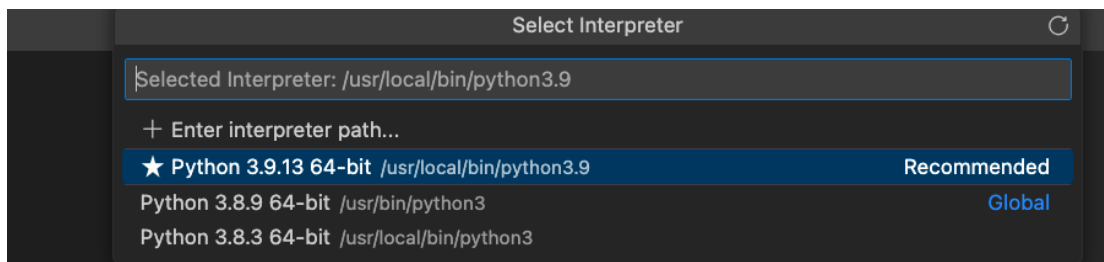
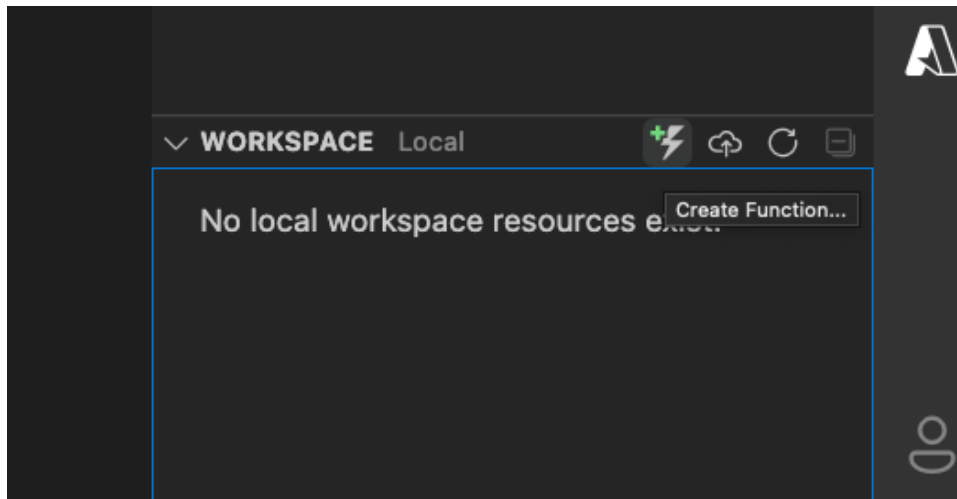
STEP 2: Install Azure Functions Extension on VSCODE



CONNECTED



STEP 3: Create an Azure Function Project




```
__init__.py > </> func
rt logging


rt azure.functions as func

main(req: func.HttpRequest) -> func.HttpResponse:
logging.info('Python HTTP trigger function processed a request.')

name = req.params.get('name')
if not name:
    try:
        req_body = req.get_json()

trigger: [GET,POST] http://localhost:7071/api/nphhttptrigger


output, run func with --verbose flag.
:27:05.024Z] Worker process started and initialized.
:27:06.586Z] Host lock lease acquired by instance ID '000000000000000000000000205a0000'.
```

 Are you sure you want to deploy to "neeraj-batch7"? This will overwrite any previous deployment and cannot be undone.

Microsoft Azure

Search resources, services, and docs (G+/)

Home > Function App > neeraj-batch7 | Functions >

 **nphhttptrigger**
Function

Overview

Developer

Code + Test

Integration

Monitor

Function Keys

Enable

Disable

Delete

Get Function Url

Refresh

This function has been edited through an external editor. Portal editing is disabled.

Essentials

Function app
[neeraj-batch7](#)

Status
Enabled

Resource group ([move](#))
[neerajRG](#)

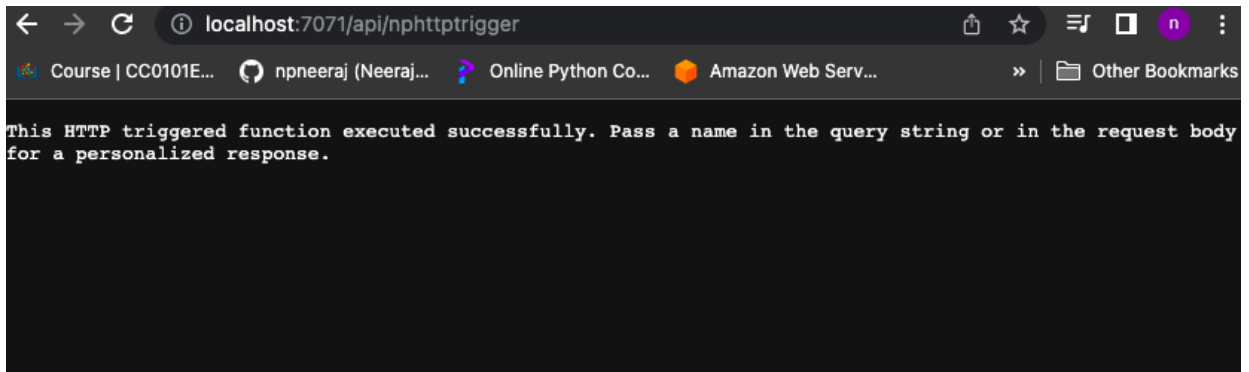
Subscription ([move](#))
[CEQAZSPONSER-SANDBOX3](#)

Subscription ID
781bed5e-9f78-4b94-a280-6e7115cf7c75

Application Insights
[neeraj-batch7](#)

[JSON View](#)

LOGS

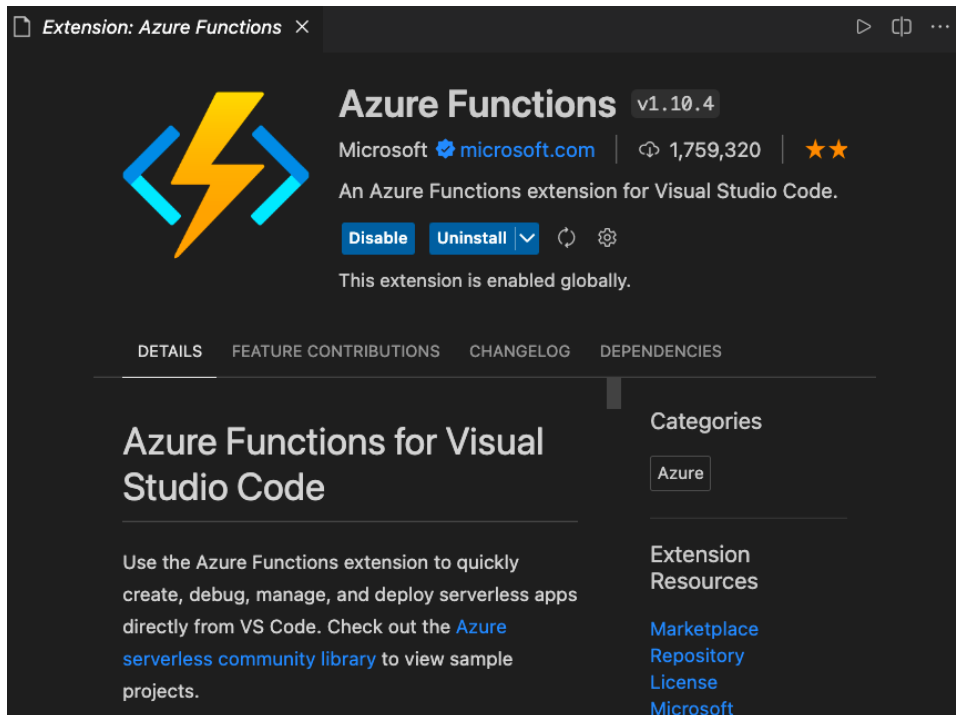


IMPLEMENTATION STEPS

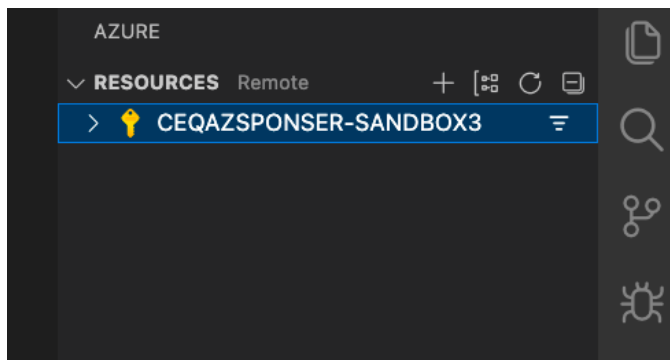
(TIMER TRIGGER VIA VS CODE)

STEP 1: Download Python3.9

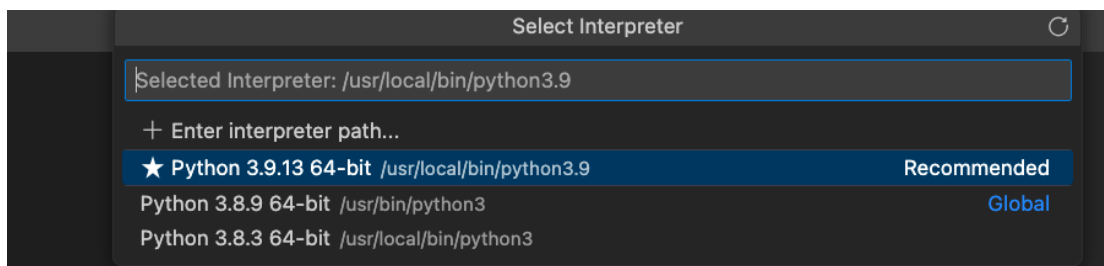
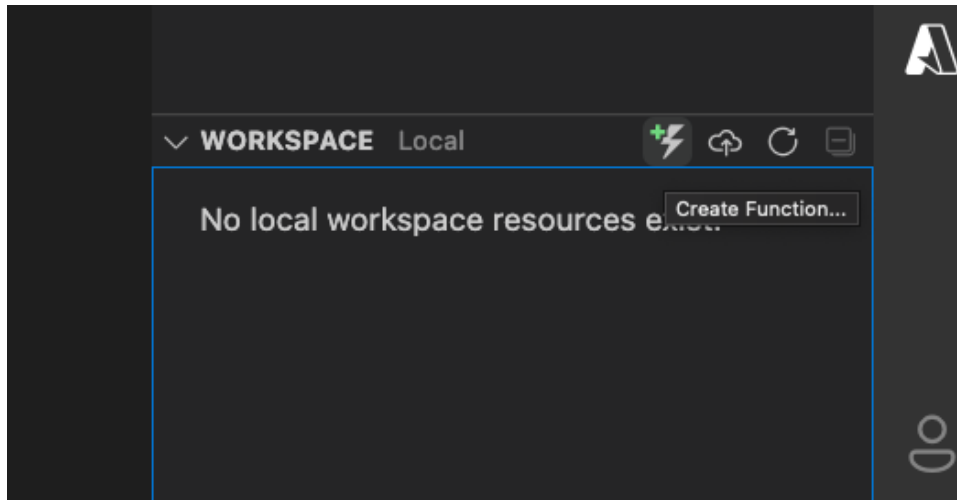
STEP 2: Install Azure Functions Extension on VSCODE



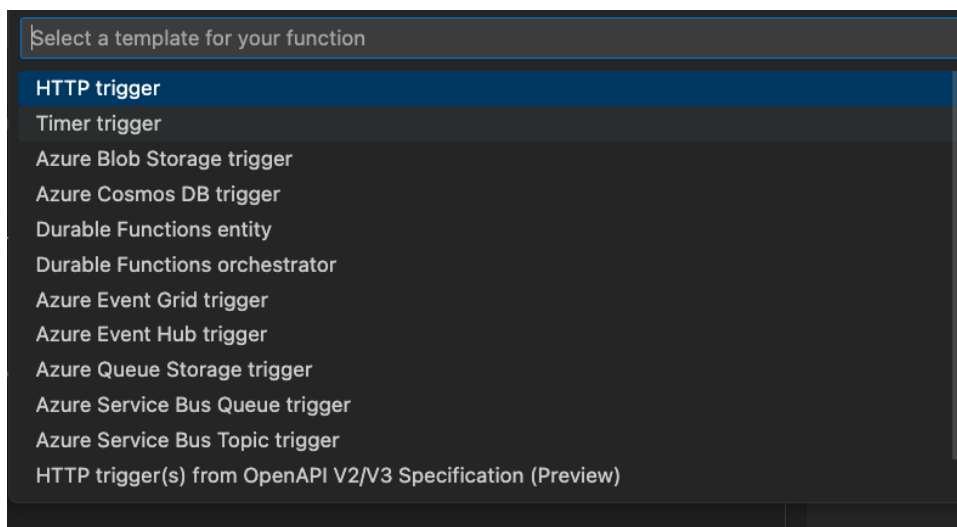
CONNECTED



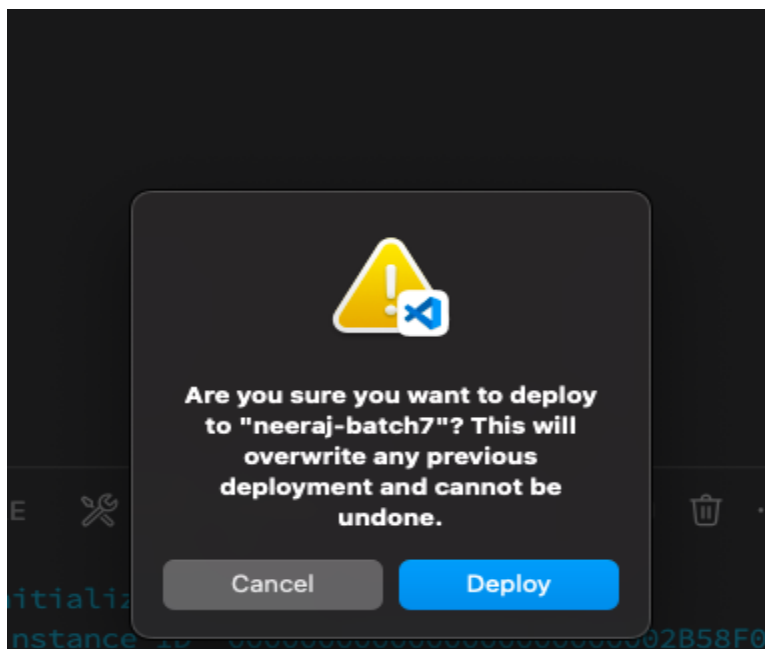
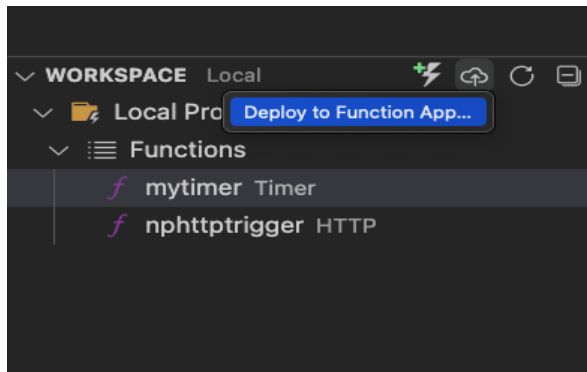
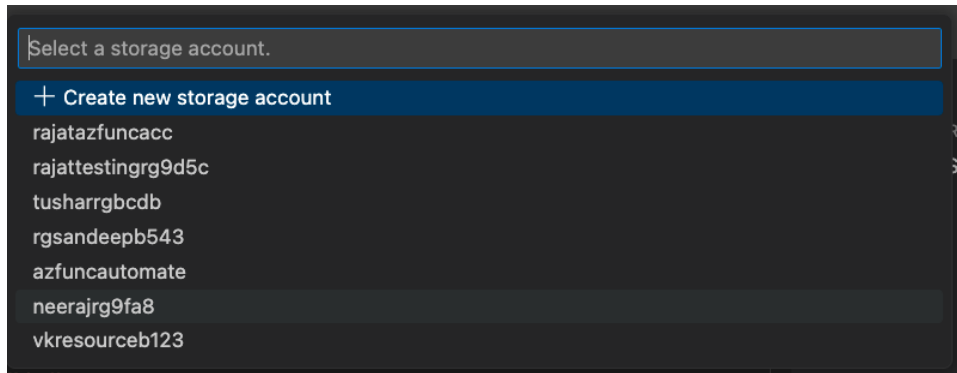
STEP 3: Create an Azure Function Project



SELECT Timer Trigger



STEP 4: DEPLOY the function to Azure



Microsoft Azure Search resources, services, and docs (G+)

Home > Function App > neeraj-batch7

Function App

cloudEQ (cloudreq.com)

+ Create Manage view ...

Filter for any field...

Name ↑↓

- azureresourceautomateTest
- neeraj-batch7
- testingfunctionappsand
- vikashfunctionapp

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Microsoft Defender for Cloud

Events (preview)

Functions

neeraj-batch7 | Functions

Search

+ Create Refresh Delete

This function has been edited through an external editor. Portal editing is disabled.

Filter by name...

Name ↑↓	Trigger ↑↓	Status ↑↓	Monitor ↑↓
mytimer	Timer	Enabled	Invocations and more
nphttptrigger	HTTP	Enabled	Invocations and more

Microsoft Azure Search resources, services, and docs (G+)

Home > Function App > neeraj-batch7 | Functions >

mytimer

Function

Search

Enable Disable Delete Get Function Url Refresh

This function has been edited through an external editor. Portal editing is disabled.

JSON View

Essentials

Function app: [neeraj-batch7](#)

Application Insights: [neeraj-batch7](#)

Status: Enabled

Resource group: [neerajRG](#)

Subscription: [CEQAZSPONER-SANDBOX3](#)

Subscription ID: 781bed5e-9f78-4b94-a280-6e7115cf7c75

Microsoft Azure Search resources, services, and docs (G+)

Home > Function App > neeraj-batch7 | Functions > mytimer

mytimer | Monitor

Function

Search

Overview

Developer

Code + Test

Integration

Monitor

Function Keys

Invocations

Logs

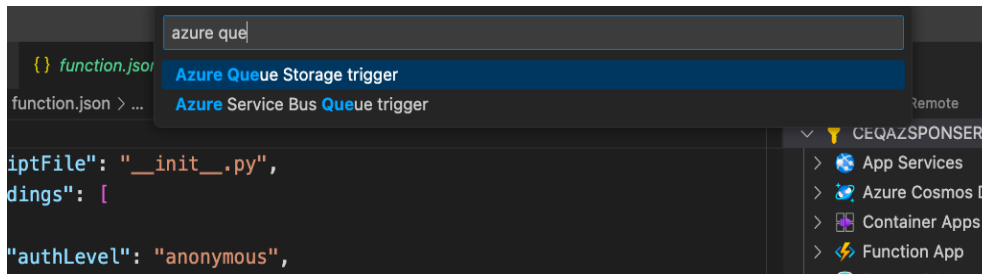
Log Level Stop Copy Clear Open in Live Metrics Leave Feedback

```
Connected!
2023-03-20T15:44:20Z [Information] Executing 'Functions.mytimer' (Reason='Timer fired at 2023-03-20T15:44:20.0002764+00:00', Id=15b08131-dbb4-458d-84a0-19d614beb1f0)
2023-03-20T15:44:20Z [Verbose] Sending invocation id:15b08131-dbb4-458d-84a0-19d614beb1f0
2023-03-20T15:44:20Z [Verbose] Posting invocation id:15b08131-dbb4-458d-84a0-19d614beb1f0 on workerId:3efeb0c0-31f2-4967-alae-08831c6c671a
2023-03-20T15:44:20Z [Information] HI, Neeraj Timer Trigger successfully run at 2023-03-20T15:44:20.003375+00:00
2023-03-20T15:44:20Z [Information] Executed 'Functions.mytimer' (Succeeded, Id=15b08131-dbb4-458d-84a0-19d614beb1f0, Duration=14ms)
```

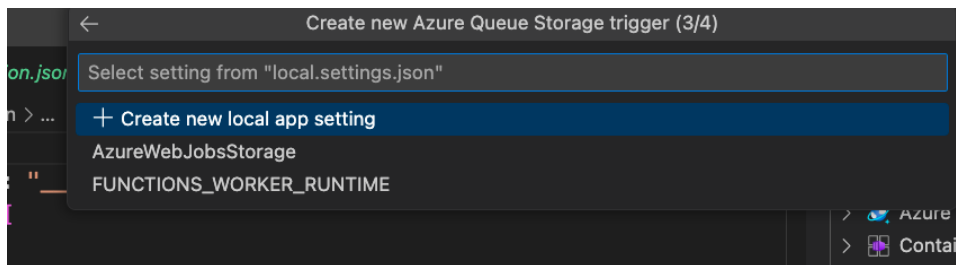

IMPLEMENTATION STEPS

(QUEUE STORAGE TRIGGER VIA VS CODE)

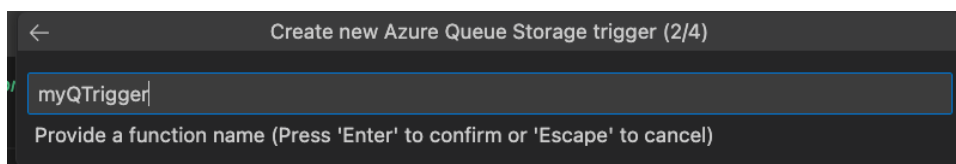
STEP 1: Create the Function Application



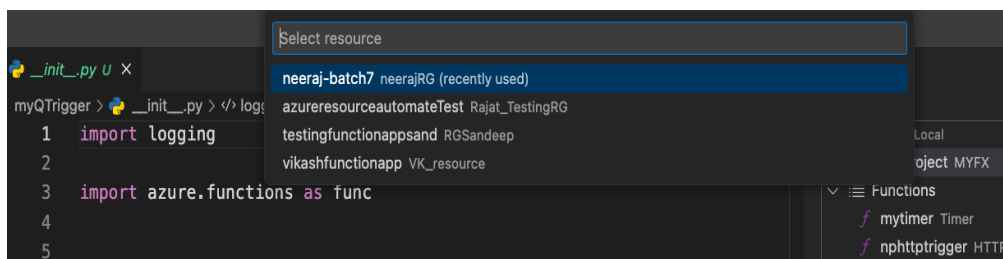
SELECT AzureWebJobsStorage



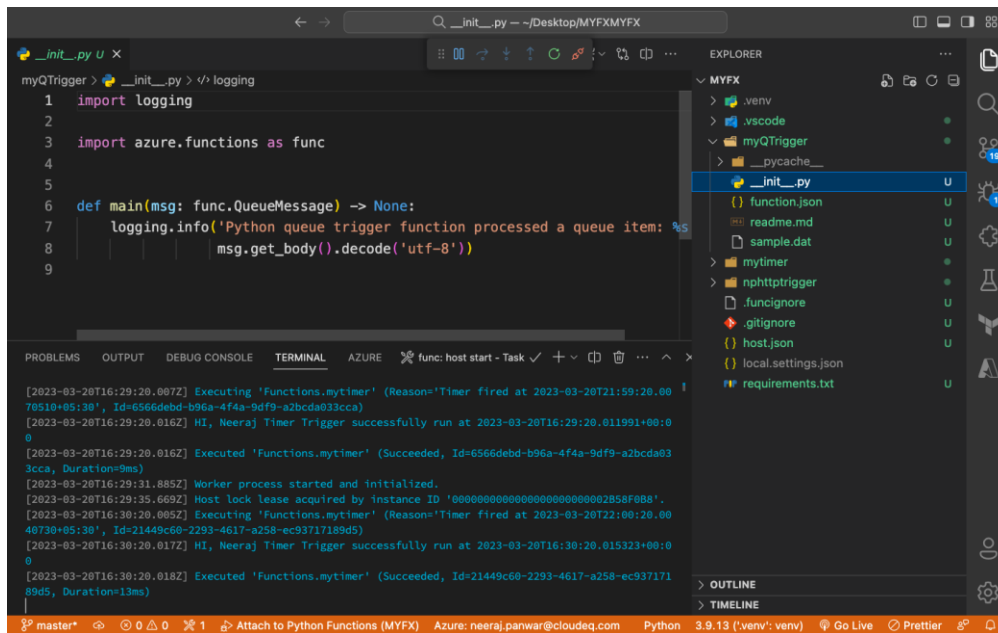
STEP 2: Create the Trigger



Select the Storage account



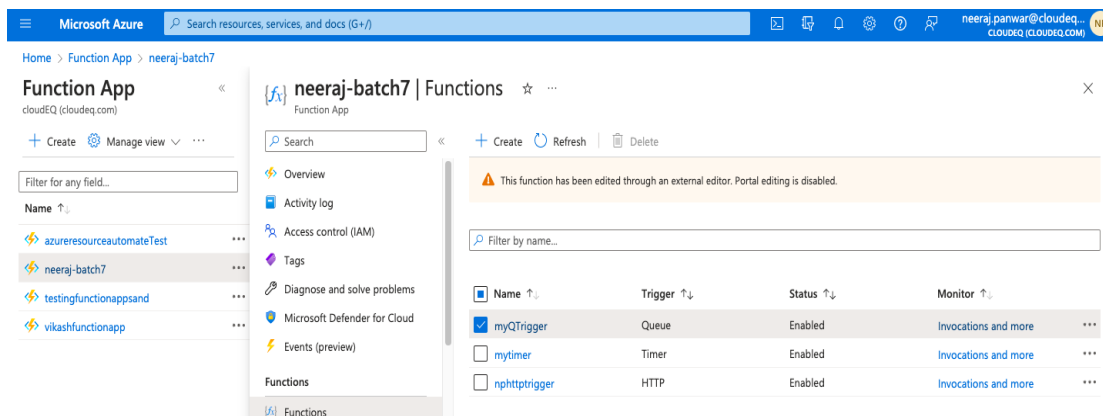
Debug



```
__init__.py
myQTrigger > __init__.py < /> logging
1 import logging
2
3 import azure.functions as func
4
5
6 def main(msg: func.QueueMessage) -> None:
7     logging.info('Python queue trigger function processed a queue item: %s' % msg.get_body().decode('utf-8'))
8
9
```

```
[2023-03-20T16:29:20.007Z] Executing 'Functions.mytimer' (Reason='Timer fired at 2023-03-20T21:59:20.0070510+05:30', Id=6566debd-b96a-4f4a-9df9-a2bcd833cca)
[2023-03-20T16:29:20.016Z] HI, Neeraj Timer Trigger successfully run at 2023-03-20T16:29:20.011991+00:00
[2023-03-20T16:29:20.016Z] Executed 'Functions.mytimer' (Succeeded, Id=6566debd-b96a-4f4a-9df9-a2bcd833cca, Duration=9ms)
[2023-03-20T16:29:31.885Z] Worker process started and initialized.
[2023-03-20T16:30:29.669Z] Host lock lease acquired by instance ID '0000000000000000000000002B58F0B0'.
[2023-03-20T16:30:29.669Z] Executing 'Functions.mytimer' (Reason='Timer fired at 2023-03-20T22:00:20.0040730+05:30', Id=21449c60-2293-4617-a258-ec93717189d5)
[2023-03-20T16:30:29.672Z] HI, Neeraj Timer Trigger successfully run at 2023-03-20T16:30:20.015323+00:00
[2023-03-20T16:30:29.672Z] Executed 'Functions.mytimer' (Succeeded, Id=21449c60-2293-4617-a258-ec93717189d5, Duration=13ms)
```

CREATED Trigger named as myQTrigger



Microsoft Azure | Search resources, services, and docs (G+/I)

neeraj.panwar@cloudreq.com

Home > Function App > neeraj-batch7

Function App

cloudreq (cloudreq.com)

+ Create Manage view

Filter for any field...

Name ↑

- azureresourceautomateTest
- neeraj-batch7
- testingfunctionappsand
- vikashfunctionapp

neeraj-batch7 | Functions

Function App

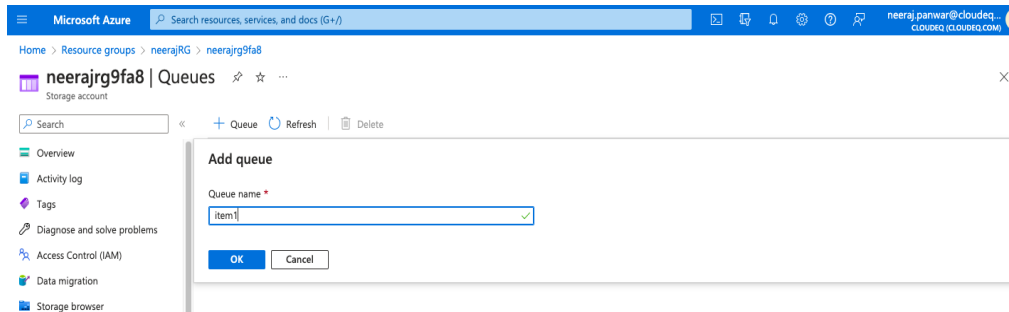
+ Create Refresh Delete

This function has been edited through an external editor. Portal editing is disabled.

Filter by name...

Name ↑	Trigger ↑	Status ↑	Monitor ↑
<input checked="" type="checkbox"/> myQTrigger	Queue	Enabled	Invocations and more
<input type="checkbox"/> mytimer	Timer	Enabled	Invocations and more
<input type="checkbox"/> nphttptrigger	HTTP	Enabled	Invocations and more

STEP 3: Enter Queue item



Microsoft Azure Search resources, services, and docs (G+)

Home > Resource groups > neerajRG > neerajrg9fa8

neerajrg9fa8 | Queues

Storage account

Search Queue Refresh Delete

Overview
Activity log
Tags
Diagnose and solve problems
Access Control (IAM)
Data migration
Storage browser

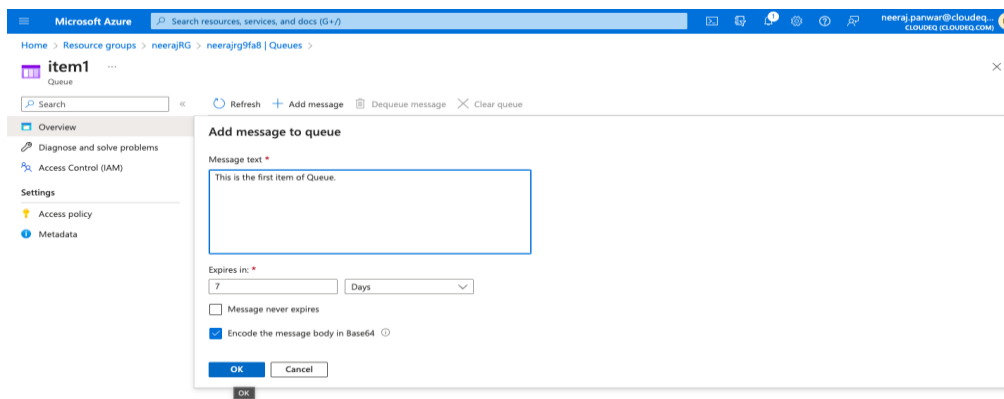
Add queue

Queue name *

item1

OK Cancel

STEP 4: Enter Request body



Microsoft Azure Search resources, services, and docs (G+)

Home > Resource groups > neerajRG > neerajrg9fa8 | Queues > item1

Queue

Search Refresh Add message Dequeue message Clear queue

Overview
Diagnose and solve problems
Access Control (IAM)
Settings
Access policy
Metadata

Add message to queue

Message text *

This is the first item of Queue.

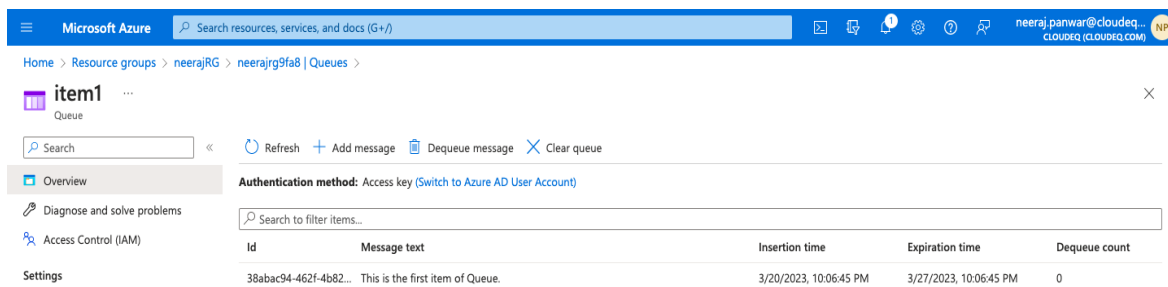
Expires in *

7 Days

☐ Message never expires

☒ Encode the message body in Base64

OK Cancel



Microsoft Azure Search resources, services, and docs (G+)

Home > Resource groups > neerajRG > neerajrg9fa8 | Queues > item1

Queue

Search Refresh Add message Dequeue message Clear queue

Authentication method: Access key (Switch to Azure AD User Account)

Search to filter items...

Id	Message text	Insertion time	Expiration time	Dequeue count
38abac94-462f-4b82...	This is the first item of Queue.	3/20/2023, 10:06:45 PM	3/27/2023, 10:06:45 PM	0

STEP 5: RESULTS

