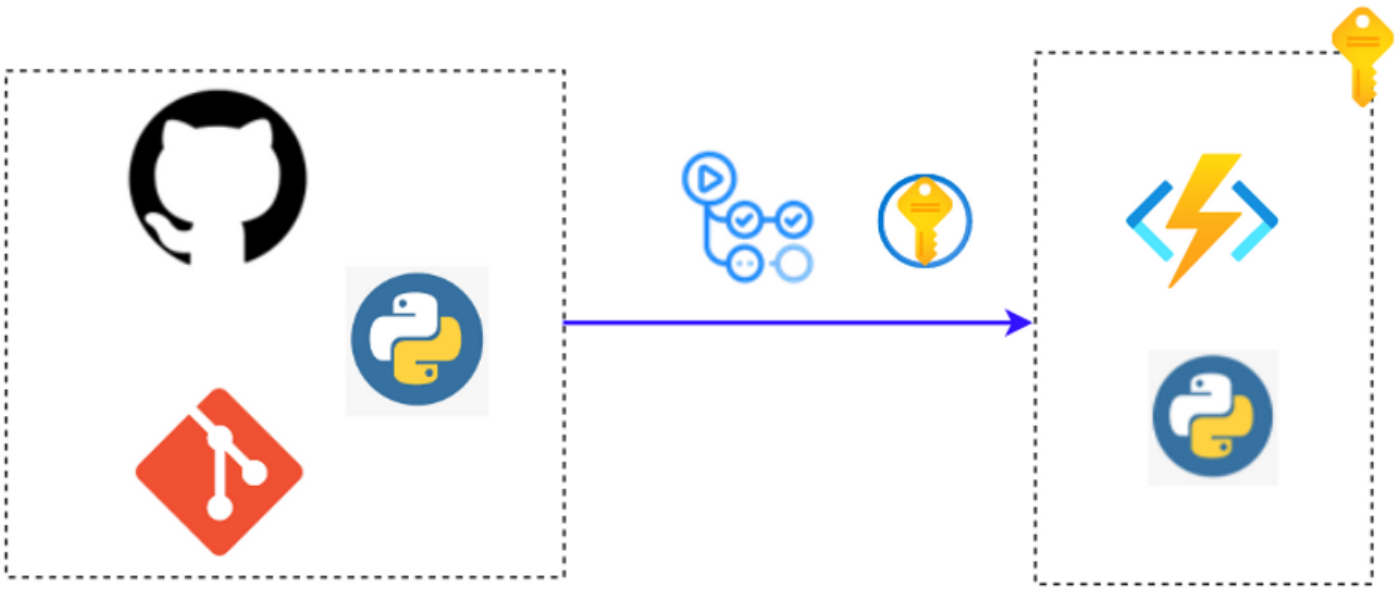
LetsDevOps: Deploy Python Function to Azure Function App using GitHub Actions, Setup CI/CD

Introduction

In this section we will learn how to Deploy Python Function to Azure Function App using GitHub Actions. With this we can also implement CI/CD for Azure Function App.

Architecture



CI/CD Workflow

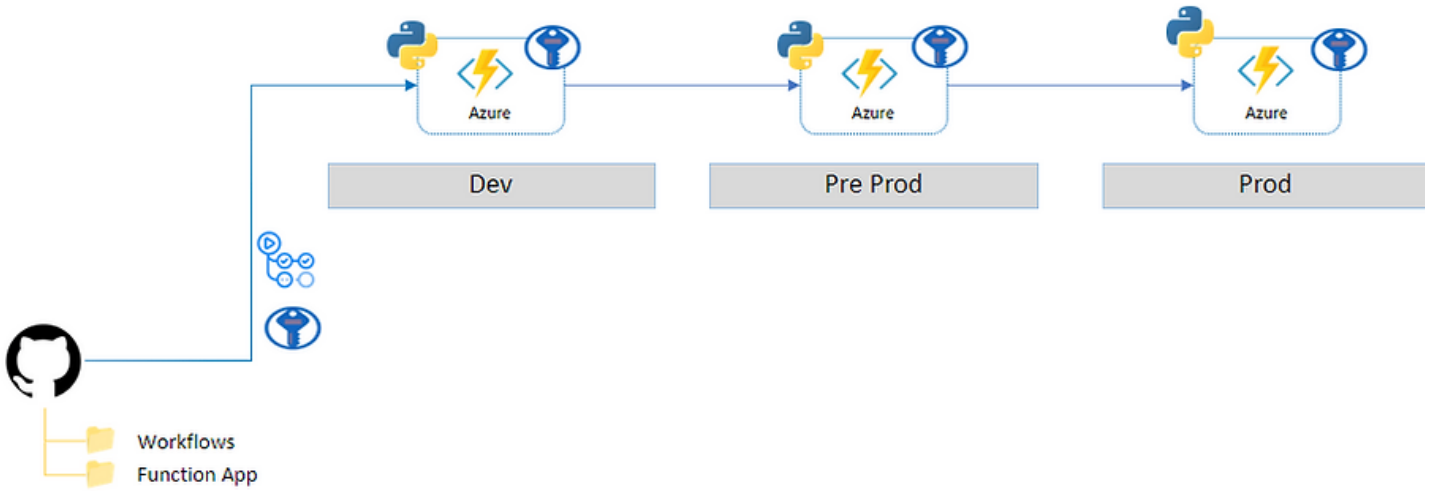
1. To implement CI/CD we are using the Source Code from GitHub Repo
2. GitHub Actions Workflow will

    Build

    - Checkout the code
    - Create Function App Package
    - Include Dependent Module in Package [Module can be added in requirements.txt]

    Deploy (Dev --> Pre Prod --> Prod)

    - Download the Package with Dependent Module
    - Deploy using the Function-Deploy Action



How to Setup CI/CD

In this section we will learn how to setup CI/CD with GitHub and GitHub Action using YAML workflow.

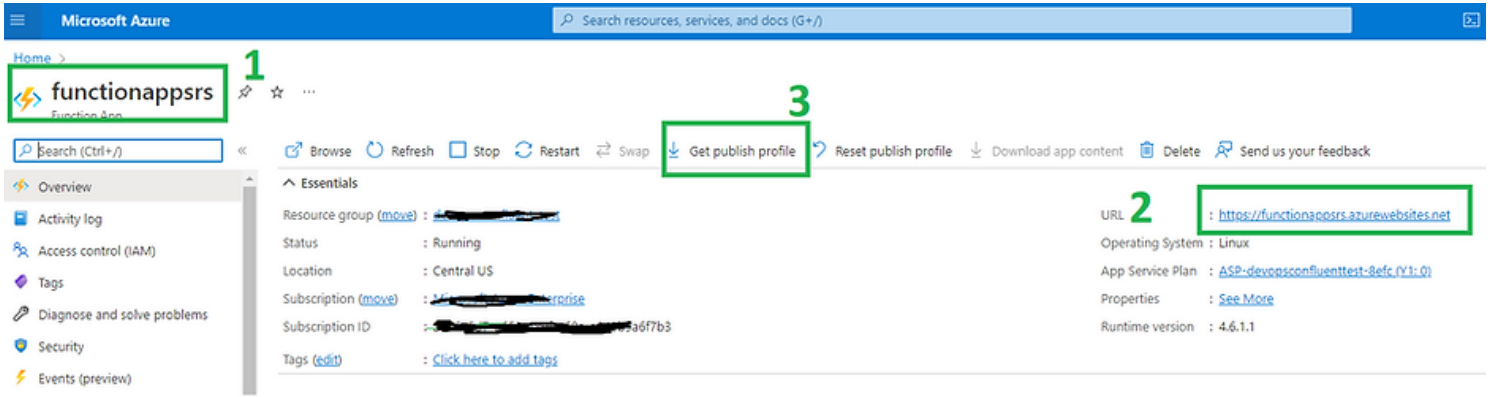
If you are new to GitHub Action you can follow below Tutorial.

GitHub Action Tutorial.

Prerequisites

1. Make Sure you have the Function App created with Python Runtime.

2. Get the Publish Profile Setting from the Function App Resource.
3. Import the Azure Function App Code to GitHub Repo
4. Get Azure Function App Details Like Azure Function App Name, Function App URL, Get Publish Profile credential.



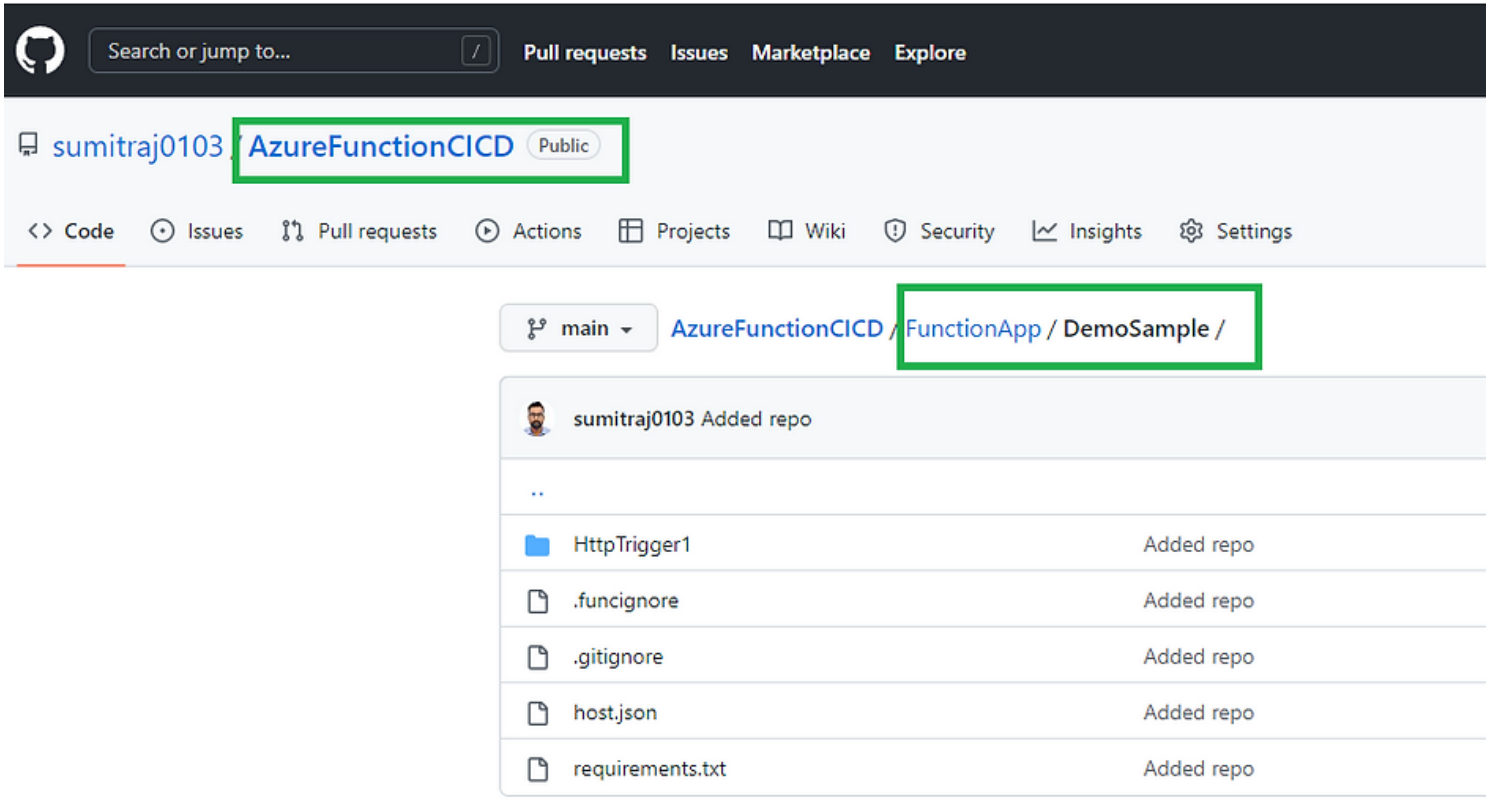
Note: Since we are deploying the Python App Azure Function must be created with Runtime--> Python

GitHub Repo Setup

As part of the prerequisite step you should have the Function App Source Code imported to GitHub Repo.

Here is the Sample Repo, you can refer.

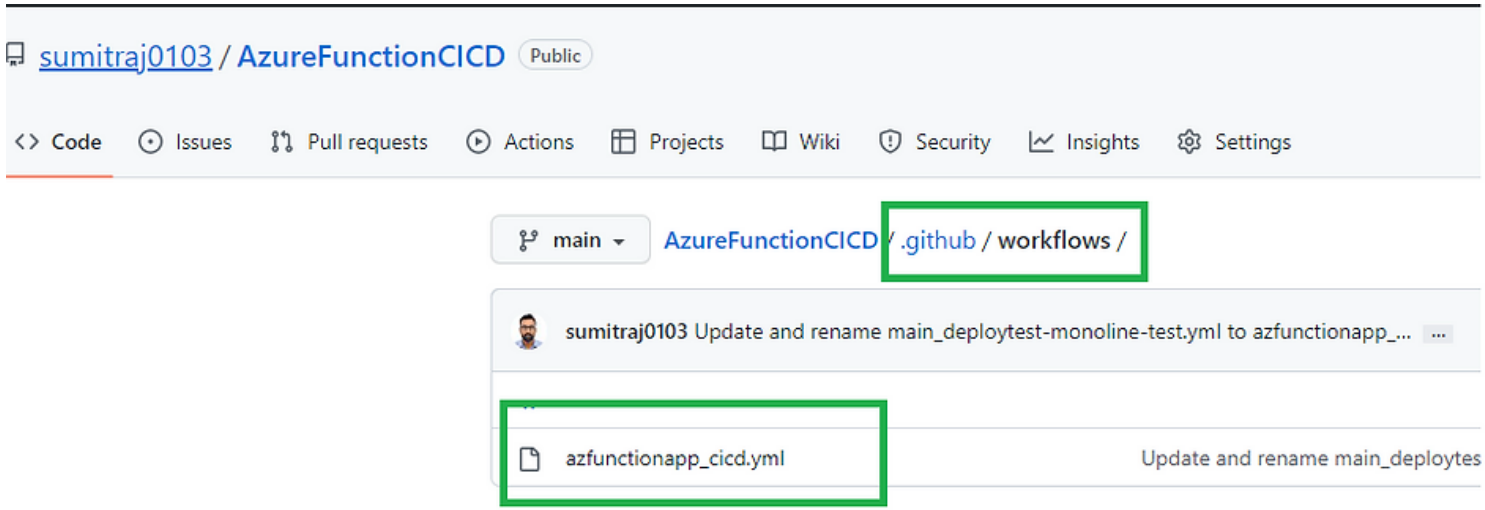
https://github.com/sumitraj0103/AzureFunctionCICD



CI/CD Workflow Setup

In GitHub Action, workflow is termed like Pipeline. Hence we will setup the Workflow which will deploy the Function App.

Create Azure Function App workflow in the Repo Folder and save the File as:
.github/workflows/azfunctionapp_cicd.yml



This sample file is available at.

https://github.com/sumitraj0103/AzureFunctionCICD/edit/main/.github/workflows/azfunctionapp_cicd.yml

```yaml
# Docs for the Azure Web Apps Deploy action:
https://github.com/azure/functions-action
# More GitHub Actions for Azure: https://github.com/Azure/actions
# More info on Python, GitHub Actions, and Azure Functions:
https://aka.ms/python-webapps-actions

name: Function-CICD-Monoline

on:

  workflow_dispatch:
    inputs:
      # This is the path of your Azure Function in Git.
      GIT_FunctionApp_Name:
        description: 'Provide the Function App Name'
        required: true
        default: 'functionappsrs'

      GIT_FunctionApp_URL:
        description: 'Provide the Function App URL'
        required: true
        default: 'https://functionappsrs.azurewebsites.net'

       # This is the path of your Function app in Git.
      GIT_FunctionApp_PATH:
        description: 'Relative path for Function'
        required: true
        default: '/FunctionApp/DemoSample/'
```

```
jobs:
  build:
    runs-on: ubuntu-latest
    env:
      AZURE_FUNCTIONAPP_PACKAGE_PATH: ${{ github.workspace }}/${{
github.event.inputs.GIT_FunctionApp_PATH }} # set this to the path to
your web app project, defaults to the repository root
      PYTHON_VERSION: '3.9' # set this to the python version to use
(supports 3.6, 3.7, 3.8)
    steps:
      - name: Checkout repository
        uses: actions/checkout@v2

      - name: Setup Python version
        uses: actions/setup-python@v1
        with:
          python-version: ${{ env.PYTHON_VERSION }}

      #Install All the Required Depenedent Modules
      - name: Install dependencies
        run: |
          pushd $GITHUB_WORKSPACE/${{
github.event.inputs.GIT_FunctionApp_PATH }}
          pip install -r requirements.txt --
target=".python_packages/lib/site-packages"
          popd

      - name: Upload artifact for deployment job
        uses: actions/upload-artifact@v2
```

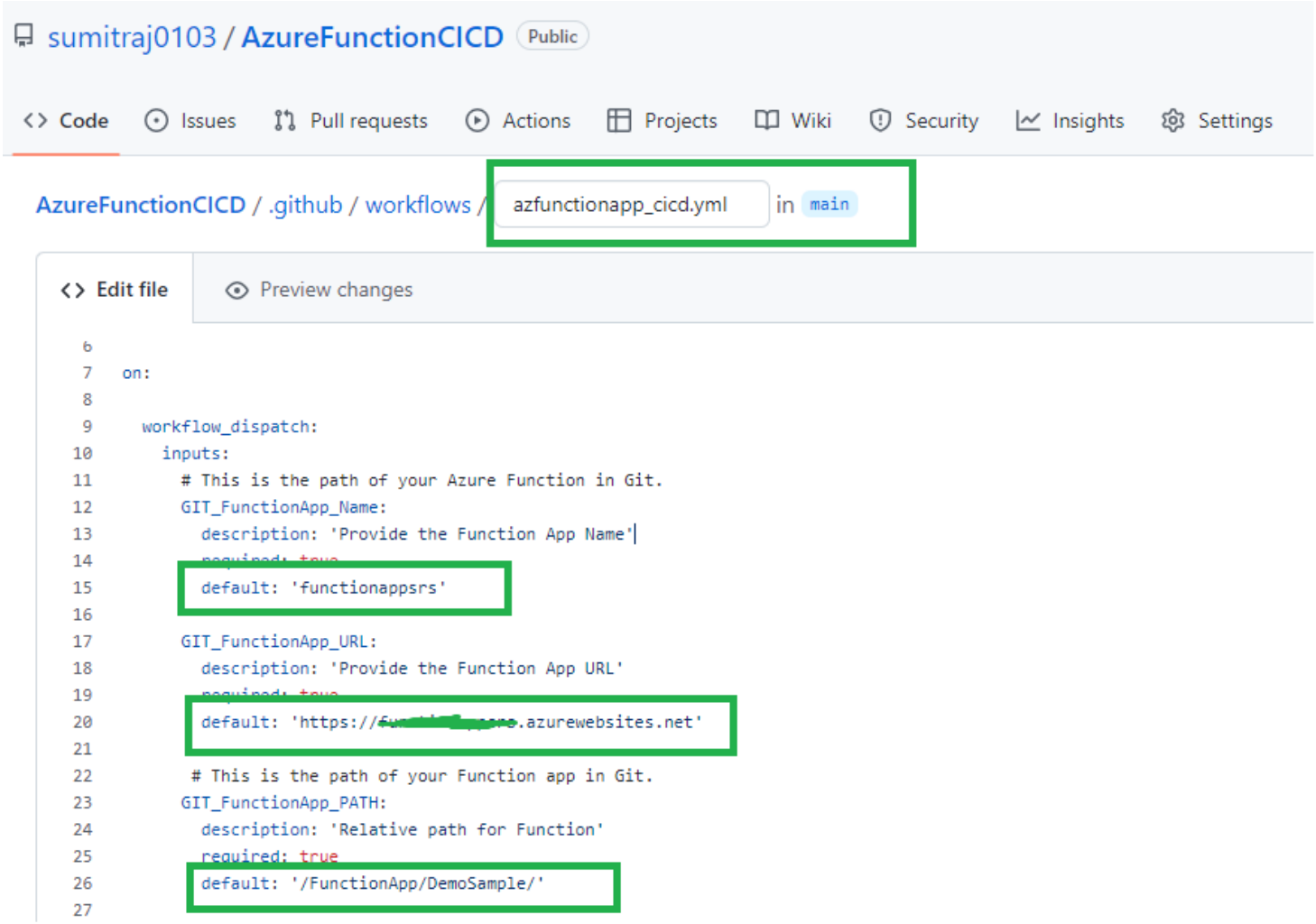
```
        with:
          name: python-app
          path: |
            ${{ github.workspace }}/${{
github.event.inputs.GIT_FunctionApp_PATH }}
            !venv/

  Deploy:
    runs-on: ubuntu-latest
    needs: build
    environment:
      name: 'Production'
      url: ${{ github.event.inputs.GIT_FunctionApp_URL }}

    steps:
      - name: Download artifact from build job
        uses: actions/download-artifact@v2
        with:
          name: python-app
          path: ${{ github.workspace }}/${{
github.event.inputs.GIT_FunctionApp_PATH }}

      - name: 'Deploy to Azure Functions'
        uses: Azure/functions-action@v1
        id: deploy-to-function
        with:
          app-name: ${{ github.event.inputs.GIT_FunctionApp_Name }}
          package: ${{ github.workspace }}/${{
```

```
  github.event.inputs.GIT_FunctionApp_PATH }}
            publish-profile: ${{ secrets.FUNCTIONAPP_PUBLISH }}
```

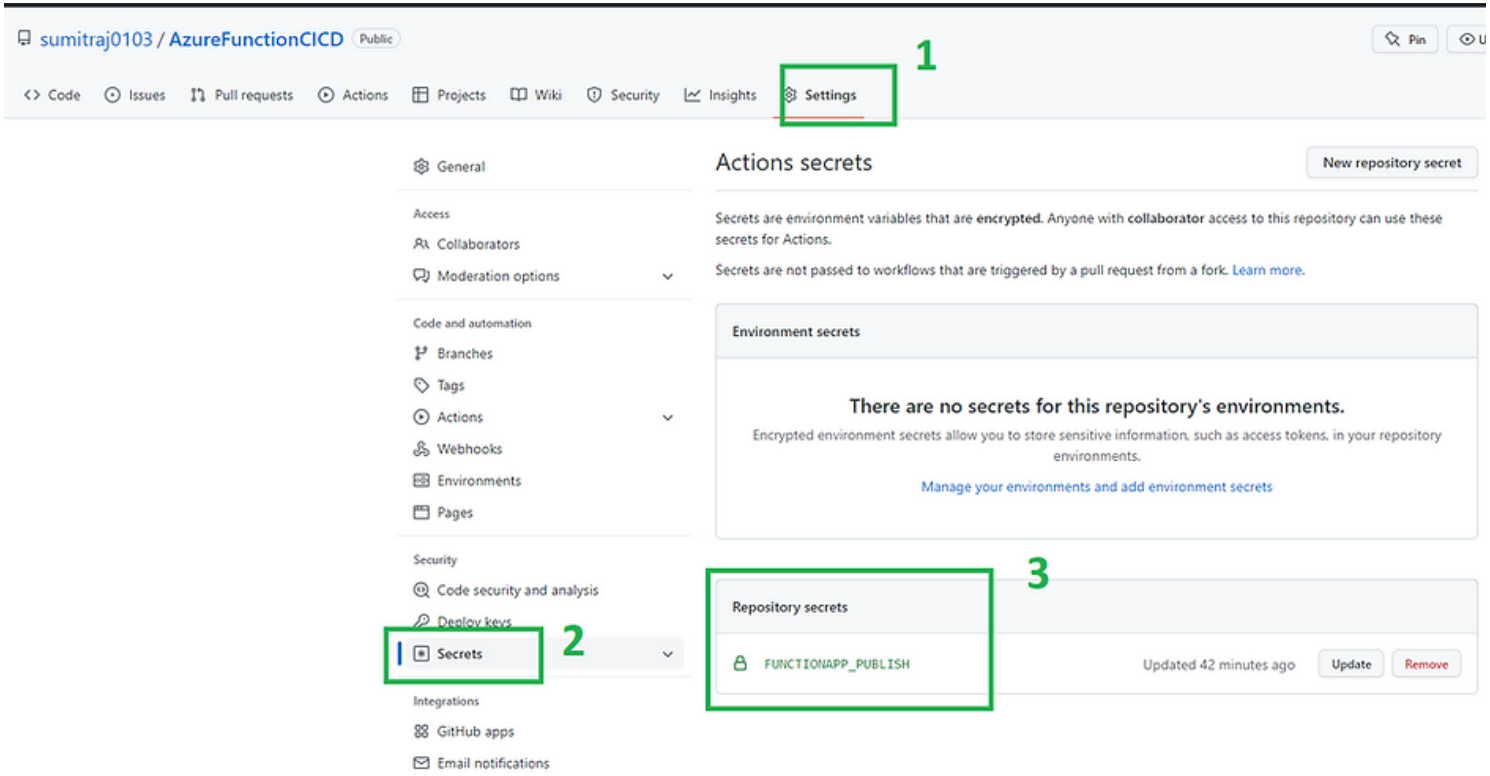
Update the YAML Workflow

Once Workflow file is imported to your GitHub, Some Details Needs to be Updated as per Function App which was acquired at Prerequisite Step.

1. Function App Name, Function App URL and Function App Git Location.


sumitraj0103 / AzureFunctionCICD
Public
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
AzureFunctionCICD / .github / workflows / azfunctionapp_cicd.yml in main
Edit file
Preview changes
on:
workflow_dispatch:
inputs:
This is the path of your Azure Function in Git.
GIT_FunctionApp_Name:
description: 'Provide the Function App Name'
default: 'functionappsrs'
GIT_FunctionApp_URL:
description: 'Provide the Function App URL'
default: 'https://[redacted].azurewebsites.net'
This is the path of your Function app in Git.
GIT_FunctionApp_PATH:
description: 'Relative path for Function'
required: true
default: '/FunctionApp/DemoSample/'

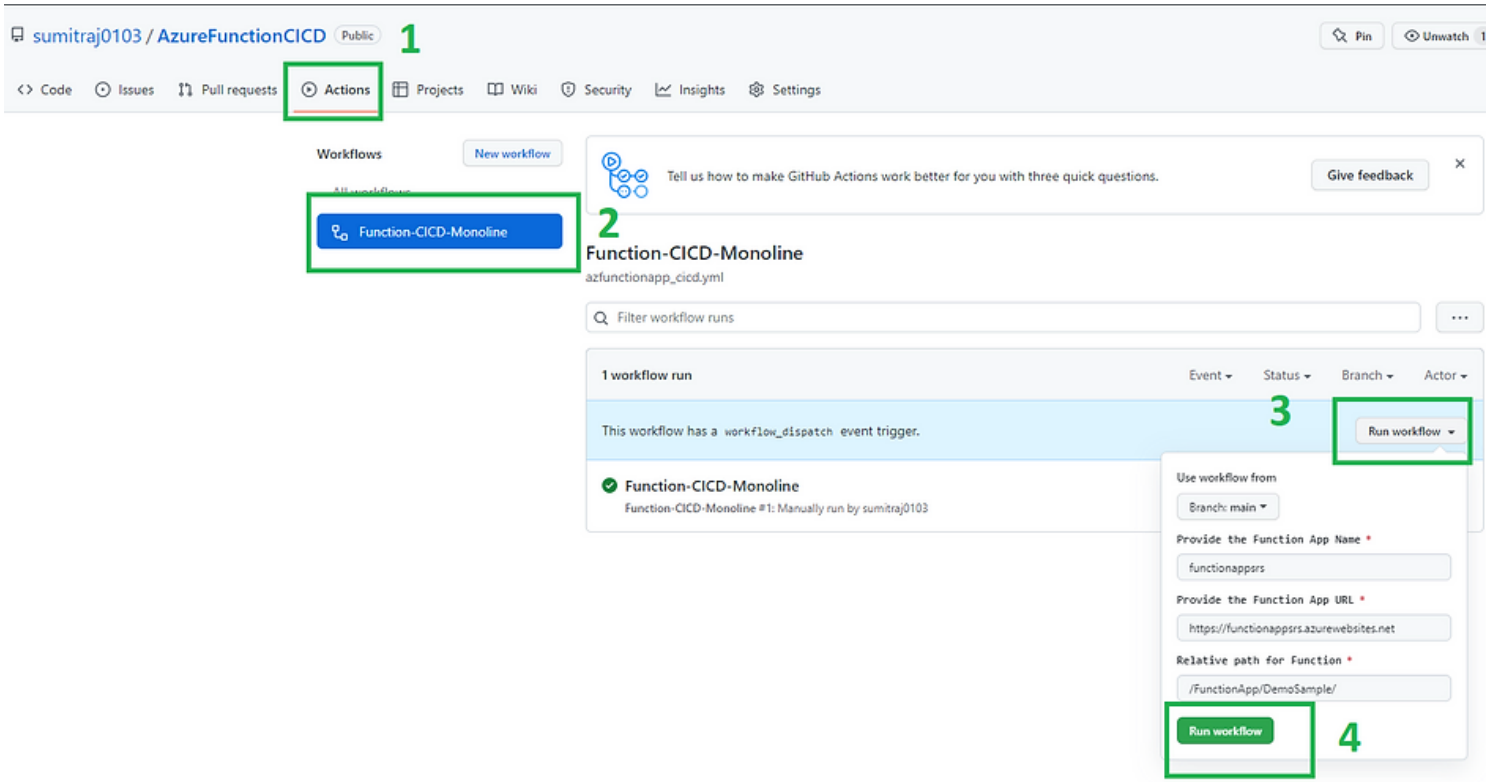
2. Make Sure the Downloaded Publish Profile Content is updated under the secret. You can also manage this using Key Vault.



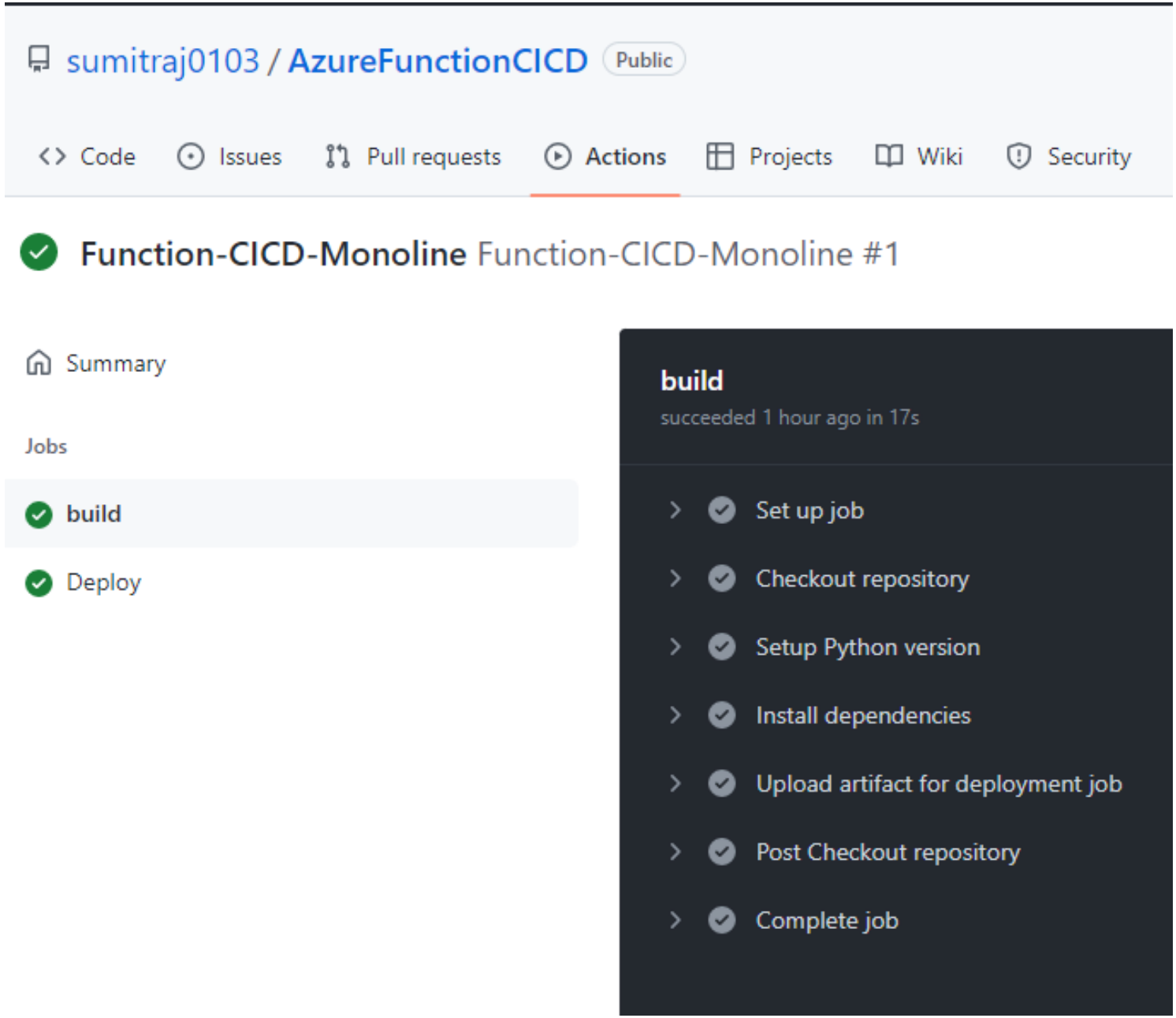
How to Run CI/CD

Now all the Configuration is completed we are ready to deploy.

Go to GitHub Account --> Actions --> **Run the Workflow**



After the Successful Run you can see the Output like.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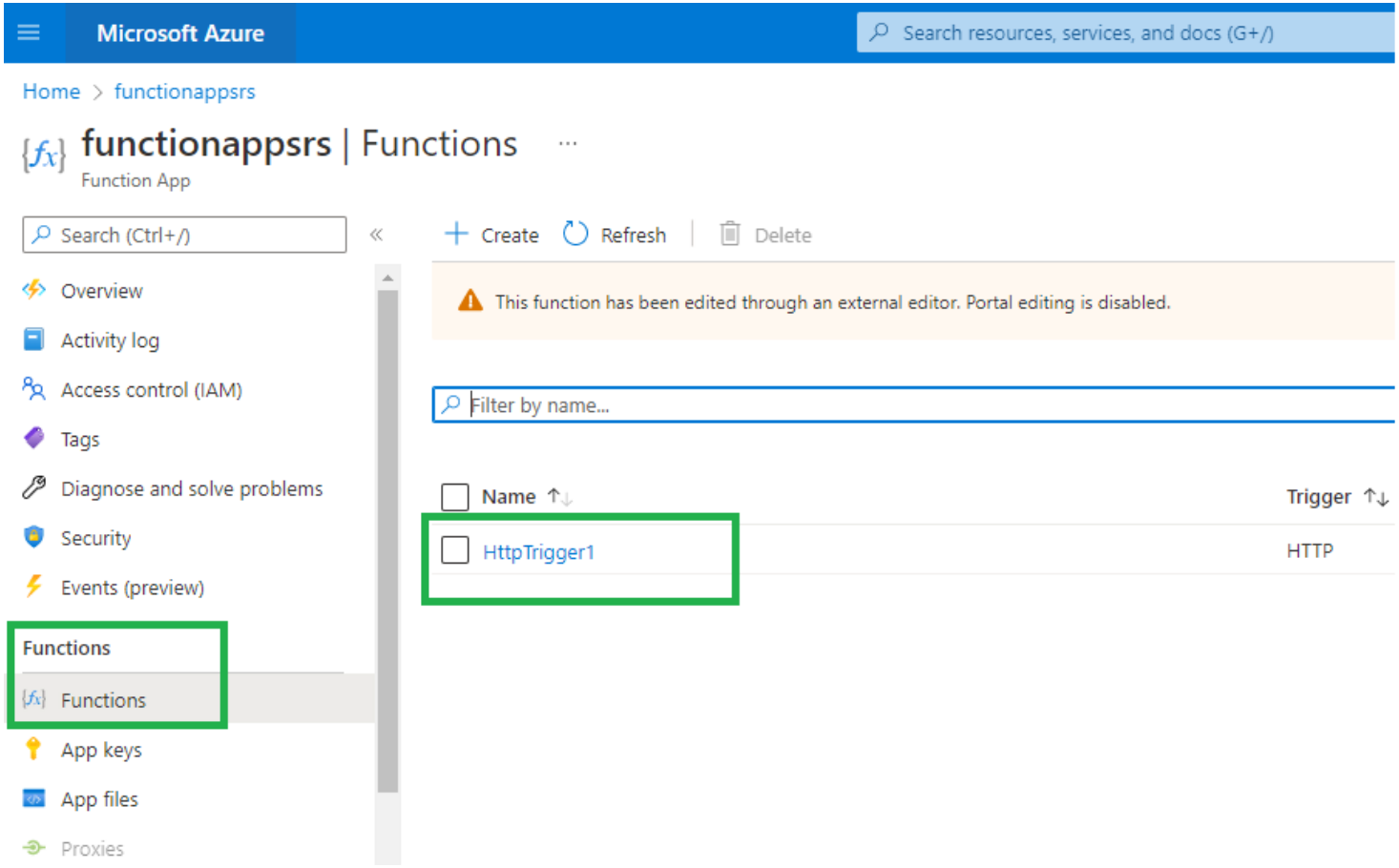
Public
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Function-CICD-Monoline Function-CICD-Monoline #1
Summary
Jobs
build
Deploy
build
succeeded 1 hour ago in 17s
Set up job
Checkout repository
Setup Python version
Install dependencies
Upload artifact for deployment job
Post Checkout repository
Complete job

Check whether the Function App Deployed or Not.


Microsoft Azure
Search resources, services, and docs (G+/)
Home > functionappsrs
functionappsrs | Functions
Function App
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Security
Events (preview)
Functions
Functions
App keys
App files
Proxies
Create
Refresh
Delete
This function has been edited through an external editor. Portal editing is disabled.
Filter by name...
Name
Trigger
HttpTrigger1
HTTP

Demo

Setup CI/CD for Azure Function App, Python Function using GitHub Actions