GitHub Actions

Code signing using GitHub actions. For this, we create a workflow in our desired repository in GitHub and perform code signing using the script.

Prerequisites for performing this task include:

1. A GitHub repository (You'll require an admin account)
2. Signtool installed and configured
3. ECSigning KSP installed and configured.

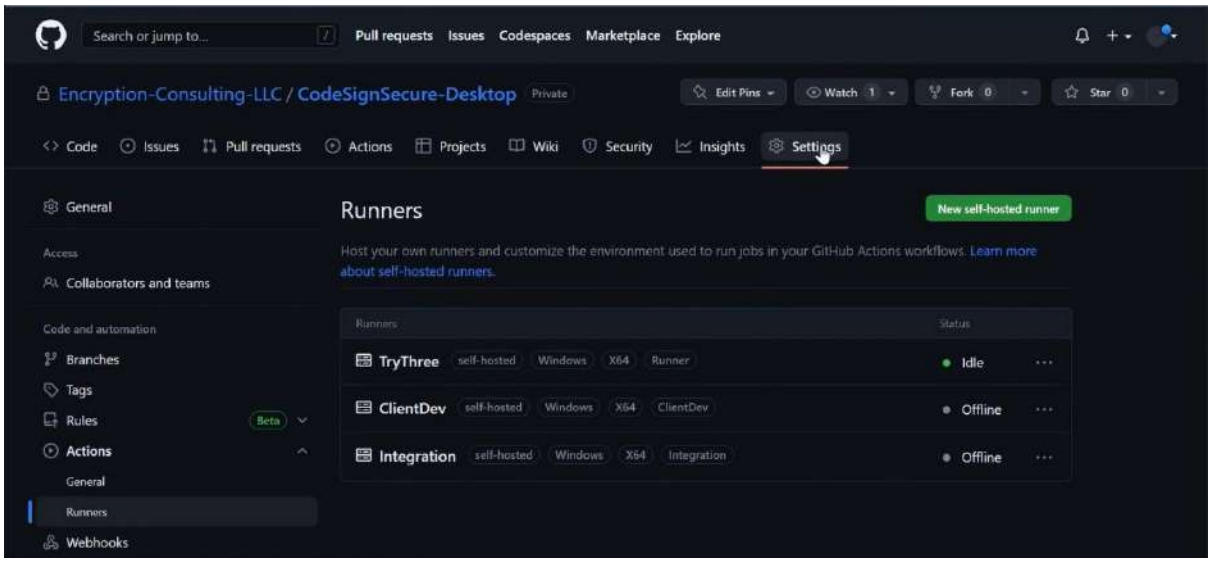
To install and configure Signtool and the ECSigning KSP, please follow the steps mentioned here.

Before we get started, we will need to configure a runner. Runner will be set up in the device where you have SIgntool and ECSigning KSP installed and configured.

To set up the runner, follow the steps below:

Navigate to your GitHub repository. You'll need to have an admin account for this.

- Navigate to the Settings of the Repository.
- Scroll down to Actions and select Runner from the dropdown menu.
- Click on New Self-Hosted Runner.

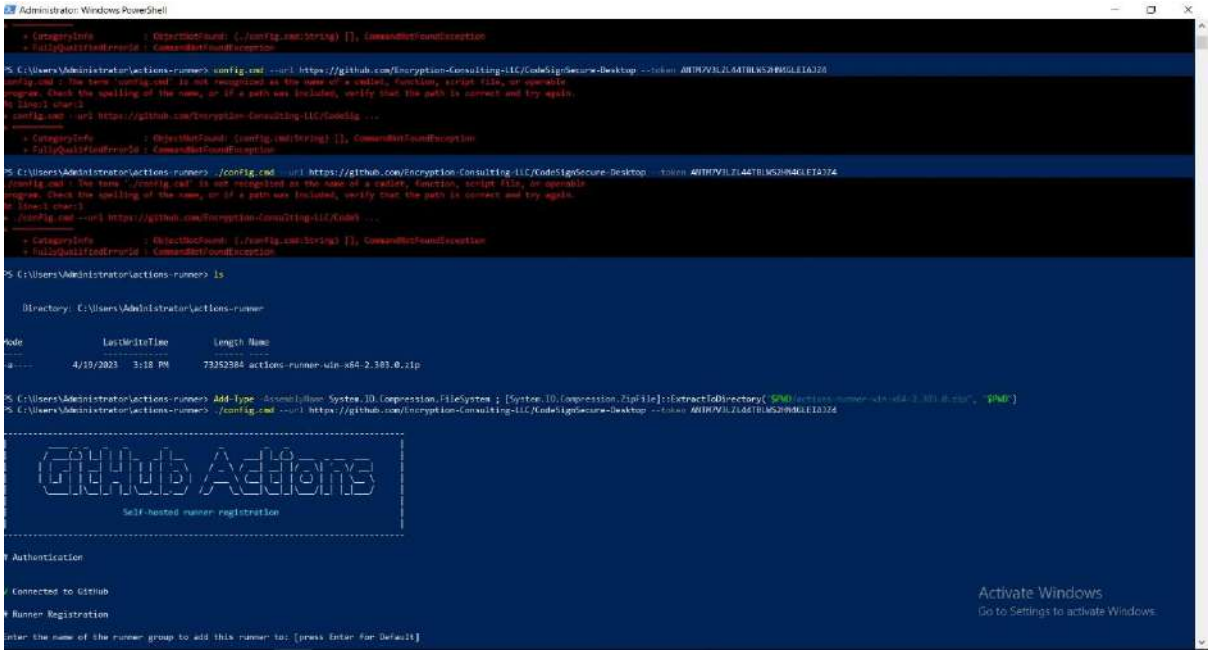


After doing so, you can click on the runner image (macOS/Linux/Windows) of your choice. The instructions below are for Windows. You'll see a number of commands to be followed on the screen.

Run the commands that were shown in the runner configuration. The commands are also given below

- mkdir actions-runner; cd actions-runner
- Invoke-WebRequest -Uri **https://github.com/actions/runner/releases/download/v2.303.0/actions-runner-win-x64-2.303.0.zip -OutFile actions-runner-win-x64-2.303.0.zip**
- Add-Type -AssemblyName System.IO.Compression.FileSystem ; [System.IO.Compression.ZipFile]::ExtractToDirectory("$PWD/actions-runner-win-x64-2.303.0.zip", "$PWD")
- ./config.cmd --url https://github.com/Encryption-Consulting-LLC/CodeSignSecure-Desktop --token <token_number>

Once you see GitHub Actions written on your screen, you'll be asked for runner registration.



- Enter the name of the runner group to add this runner to: [press Enter for Default] (You can leave this to default).
- Enter the name of the runner: [press Enter for CLIENT] (You can enter the desired name for your runner).
- This runner will have the following labels: 'self-hosted', 'Windows', 'X64'

Enter any additional labels (ex., label-1,label-2): [press Enter to skip] (Please enter a label here, it can be anything, do not leave/skip this step. The same name will be used later to call the runner in the script).

- The following will be prompted on your screen once it’s done
    - Runner successfully added

- Runner connection is good

#Runner settings

- Enter name of work folder: [press Enter for _work] (You can leave this to the default, or you can specify a folder of your choice)

Settings Saved

- Would you like to run the runner as a service? (Y/N) [press Enter for N] (Enter Y)
- User account to use for the service [press Enter for NT AUTHORITY\NETWORK SERVICE] (Make sure you enter Administrator here)

(Administrator privilege is required to run the command. Hence, it is a MUST to set the user as an administrator.

- Password for the account CLIENT\Administrator (Provide password of your Administrator account)
- Once done, you'll see the following prompt on your screen.

It will be prompted as Service actions.runner.<repository name>.<runner_name>

Granting file permissions to 'CLIENT\Administrator'.

Service actions.runner.Encryption-Consulting-LLC-CodeSignSecure-Desktop.TryThree successfully installed

Service actions.runner.Encryption-Consulting-LLC-CodeSignSecure-Desktop.TryThree successfully set recovery option

Service actions.runner.Encryption-Consulting-LLC-CodeSignSecure-Desktop.TryThree is successfully set to delayed auto start

Service actions.runner.Encryption-Consulting-LLC-CodeSignSecure-Desktop.TryThree successfully configured

Waiting for service to start...

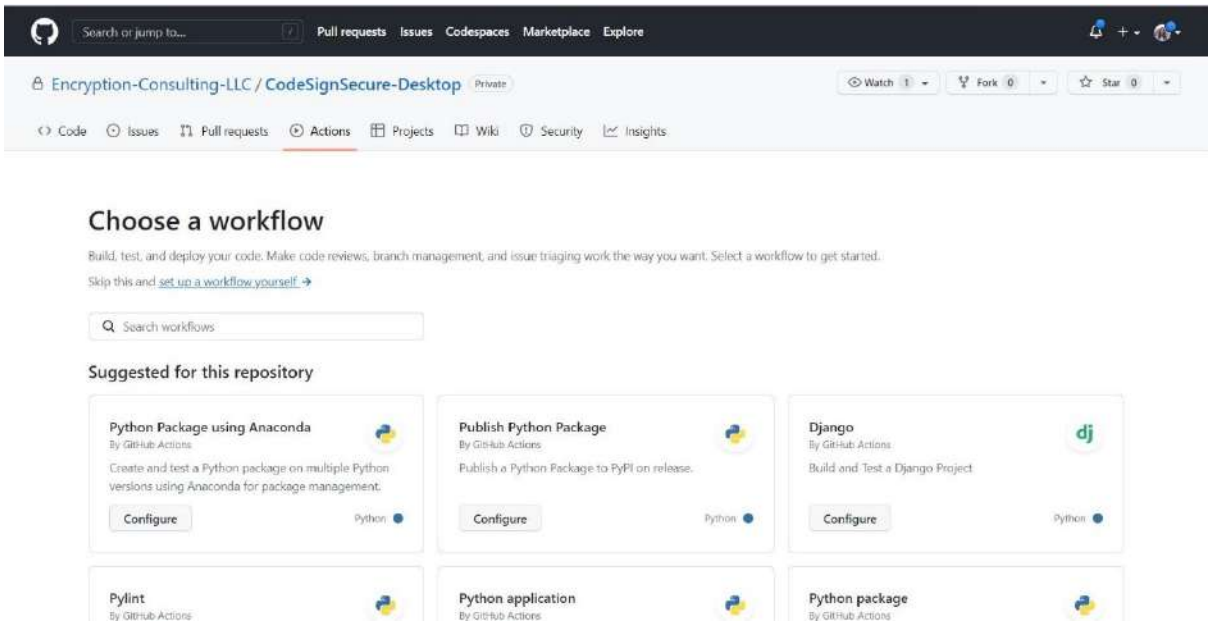
Service actions.runner.Encryption-Consulting-LLC-CodeSignSecure-Desktop.TryThree started successfully

Once the runner is set up on your device, navigate to your repository in GitHub.

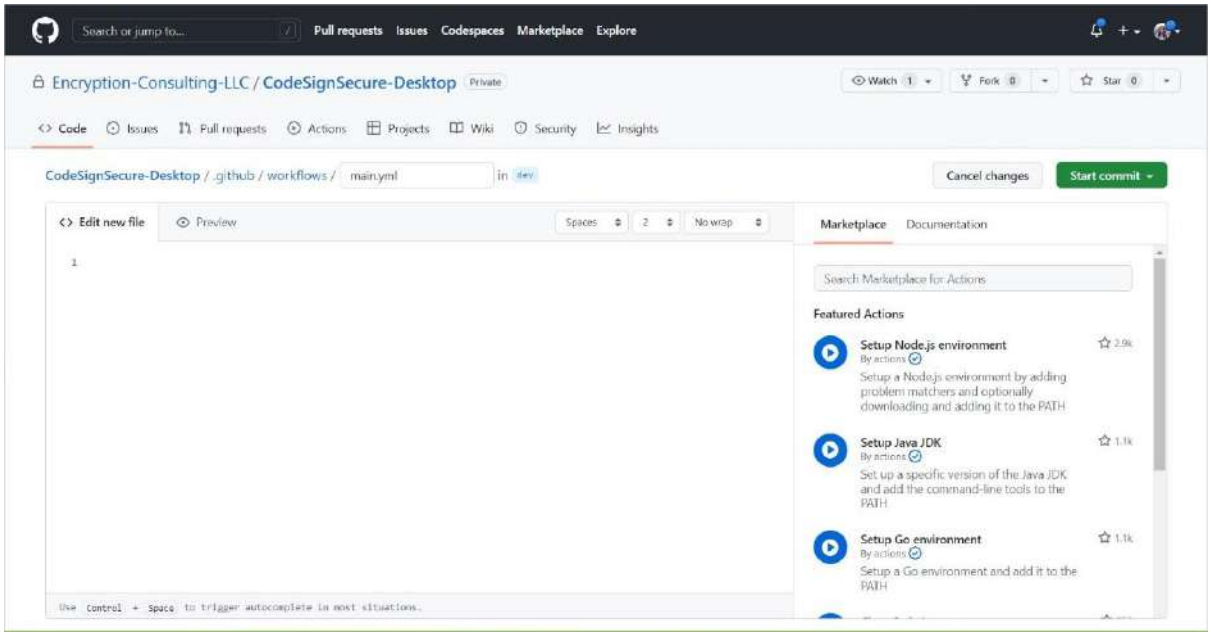
Go to Actions.

Click on New Workflow

Click on Set up a workflow yourself



This is how your editor will look. You can rename your .yaml file or leave the name as is.



Add the script below to your editor after making some changes or updating the variables.

```
name: Code Signing


on:

push:

  branches: <[ Your Branch Name ]>
```

```
jobs:
build:
  runs-on: <Your runner name>
  steps:
  - name: Checkout code
    uses: actions/checkout@v2


  - name: Sign code
    run: |
    signtool sign /csp "Encryption Consulting Key Storage provider" /kc <Key Name> /fd <hashing algorithm> /f "<Certificate Location>" /tr <timestampserver> /td SHA256 "<file path>"
```

Please replace the variables specified under **<variable name>**. A short description of the expected variable is given below.

<file path>: This is where you provide the path of the file that you want to sign. Example C:\<Folder_name>\<File_name>. Make sure you have provided a file name with the proper extension.

<key name>This refers to the cryptographic key used to sign the code. Example: evcodesigning

<certificate location>: An example of what can be put in this field is C:\testing.pem. The certificate**.pem** file MUST be included in this input. You can generate a pem file of the certificate for codesigning if you have the key name using ECSigningKSP. To do so, follow the commands below:

In your device where you have ECSigningKSP installed and configured, navigate to the folder of ECSigningKSP, which is usually present in “C:\Program Files\Encryption Consulting\SigningKSP”

In your command prompt, reach this directory.

Then, use the following command to get the certificate PEM file.

ECGetCert.exe <Key_Name> (example: ECGetCert.exe evcodesigning)

Provide the location of the certificate saved.

<hashing algorithm>: You need provide the name of hashing algorithm such as SHA256, SHA384, or SHA512. It must be one of these three values.

<time stamp server>: A timestamp server **provides proof that a digital signature was performed at a specific time**, allowing verification in the future that a file was signed at a particular time. The one we generally use is **http://timestamp.digicert.com**

The Command I used for signing was

signtool sign /csp "Encryption Consulting Key Storage provider" /kc evcodesigning /fd SHA256 /f "C:\Users\Administrator\Desktop\ForTesting\evcodesigning.pem" /tr http://timestamp.digicert.com /td SHA256 "C:\Users\Administrator\Desktop\ForTesting\AgentService.exe"

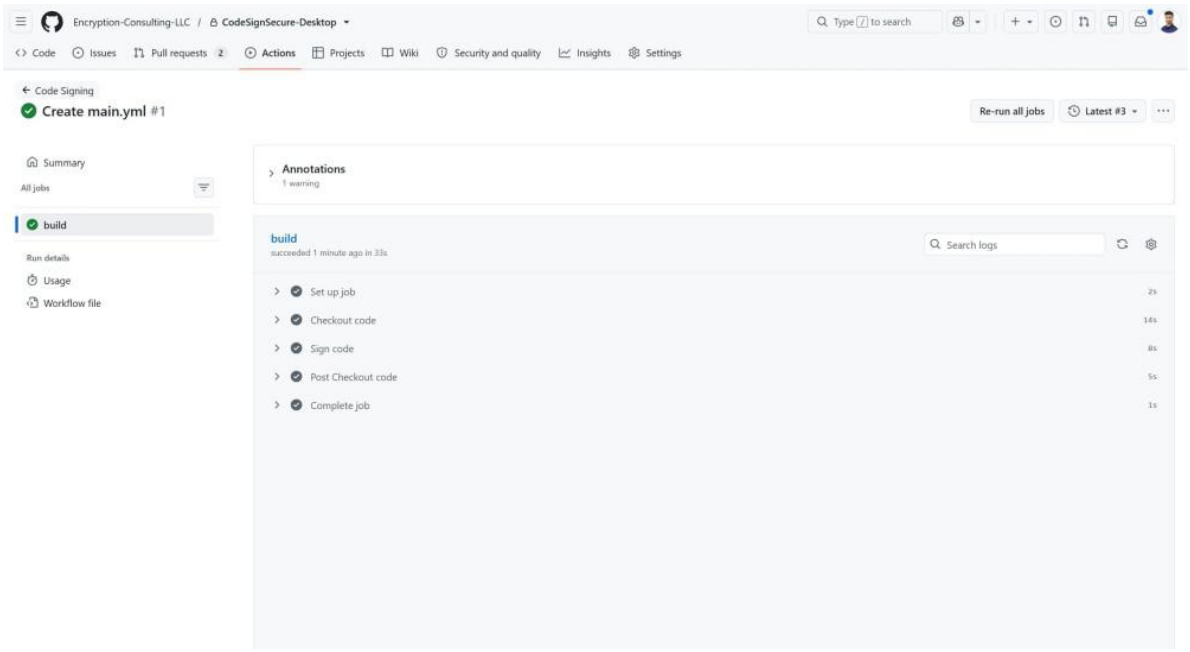
The Script I used was:

```
Name: Code Signing

on:
push:
  branches: [ Github_Actions ]

jobs:
build:
  runs-on: runner
  steps:
  - name: Checkout code
    uses: actions/checkout@v2

  - name: Sign code
    run: |
```

signtool sign /csp "Encryption Consulting Key Storage provider" /kc evcodesigning /fd SHA256 /f "C:\Users\Administrator\Desktop\ForTesting\evcodesigning.pem" /tr http://timestamp.digicert.com /td SHA256 *"C:\Users\Administrator\Desktop\ForTesting\AgentService.exe"*

Once you've edited your script, click on commit. You can commit directly to your default branch or commit to a new branch. Make sure you update the name of your branch inside the code. After committing, the job will run.