

Assignment 1

Sillah Babar 19i-2029

Aliza Adnan 19i-1654

Section: AI-J

MLOps

Repository: <https://github.com/geekquad/AlgoBook>

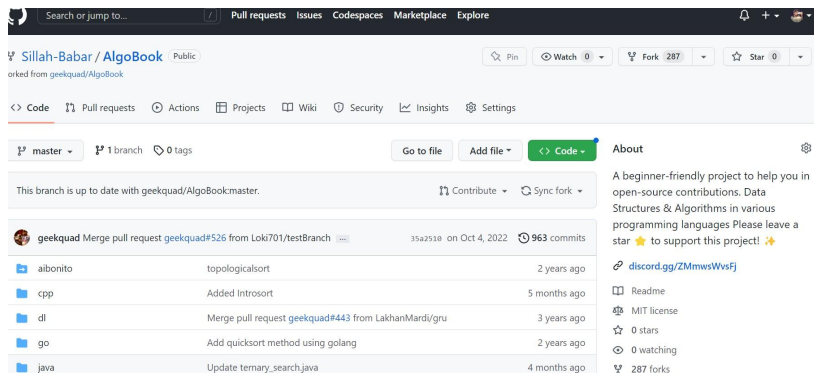
Our Repository: <https://github.com/Aliza-adnan1/AlgoBook>

Table Of Contents

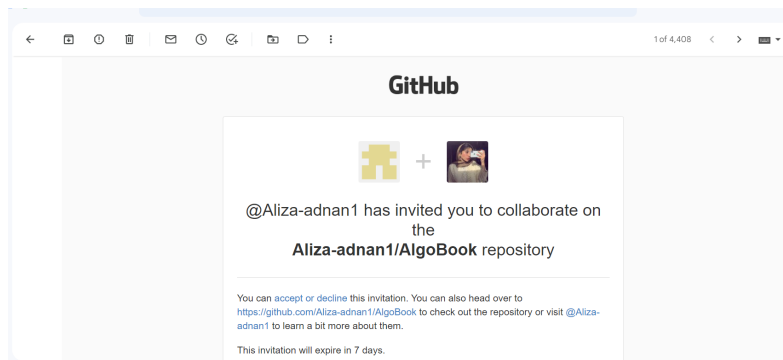
#page

Forking the repository	3
Requirements.txt File	4
.gitignore File	5
Setting up the local environment	5
Creating branches using git	6
Adding test cases	
1.Aliza Adnan	7
2.Sillah Babar	11
Creating Workflows	15
Running Workflows to merge into Master	16
Running jobs using jenkins	18

Forking the repository:

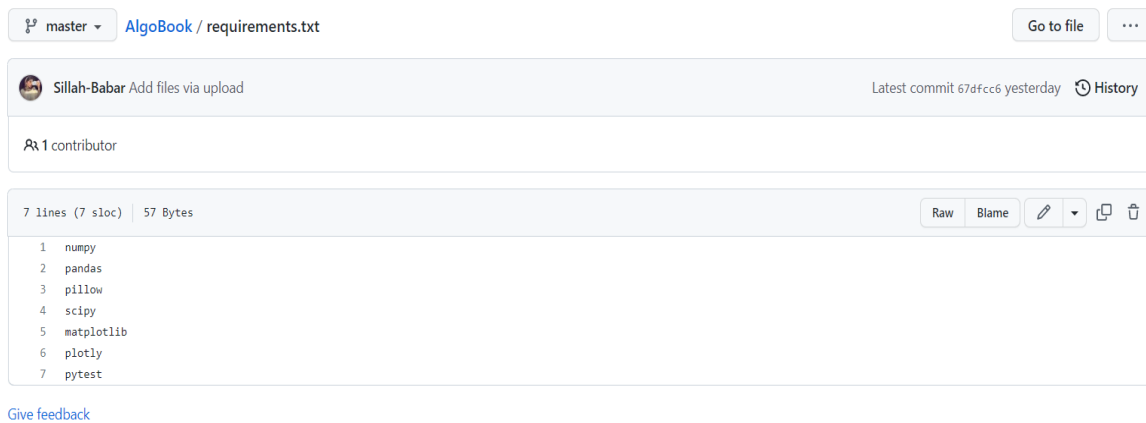


Adding Group mate as a collaborator:



Requirements.txt File

In our analysis of the repository, we realized that it was missing some integral libraries that need to be consolidated at one place so that open source contributors can easily download those libraries and get on working with the project. Therefore we created a requirements.txt in the master branch of our forked repo which has all the necessary libraries required to run this project.



The screenshot shows the GitHub interface for the file requirements.txt in the master branch of the AlgoBook repository. The file is 57 bytes and contains 7 lines of code. The content of the file is as follows:

```
1 numpy
2 pandas
3 pillow
4 scipy
5 matplotlib
6 plotly
7 pytest
```

Below the code, there is a link to "Give feedback".

The requirements can be installed globally or by activating an environment using the following command.

```
pip install -r requirements.txt
```

.gitignore File

To support the process of continuous integration , it necessary that the collaborators can make pushes to the repositories without adding certain files in their local system which are not required in the development branch and at the same time, not modifying certain files in the development branch when pushing the code for instance any files that contain metadata about the repository should not be modified. For this we created the following .gitignore file in the master branch.

```
1 *.md
2 *.txt
3 *.pytest_cache
4 *__pycache__
```

This ignores all md and txt files. It also ignores all cache files and directories created when running pytest for the algorithms.

Setting up the local environment

Inorder to familiarize ourselves with version control we explored the use of git in the local environment.

1. Cloning the git repository locally

```
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook
$ git clone https://github.com/Aliza-adnan1/AlgoBook.git
Cloning into 'AlgoBook'...
remote: Enumerating objects: 15881, done.
remote: Counting objects: 100% (381/381), done.
remote: Compressing objects: 100% (219/219), done.
Receiving objects: 100% (15881/15881), 1.10 GiB | 1.12 MiB/s, done.
Resolving deltas: 0% (0/2004)
Resolving deltas: 100% (2004/2004), done.
warning: the following paths have collided (e.g. case-sensitive paths
on a case-insensitive filesystem) and only one from the same
colliding group is in the working tree:
```

2. Creating an environment to install dependencies

```
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook
$ python3 -m venv "C:\Users\silla\OneDrive\Desktop\Algobook\env"
```

3. activating the environment

```
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook
$ source "C:\Users\silla\OneDrive\Desktop\Algobook\env\Scripts\activate"
(env)
```

4. Installing dependencies using requirements.txt

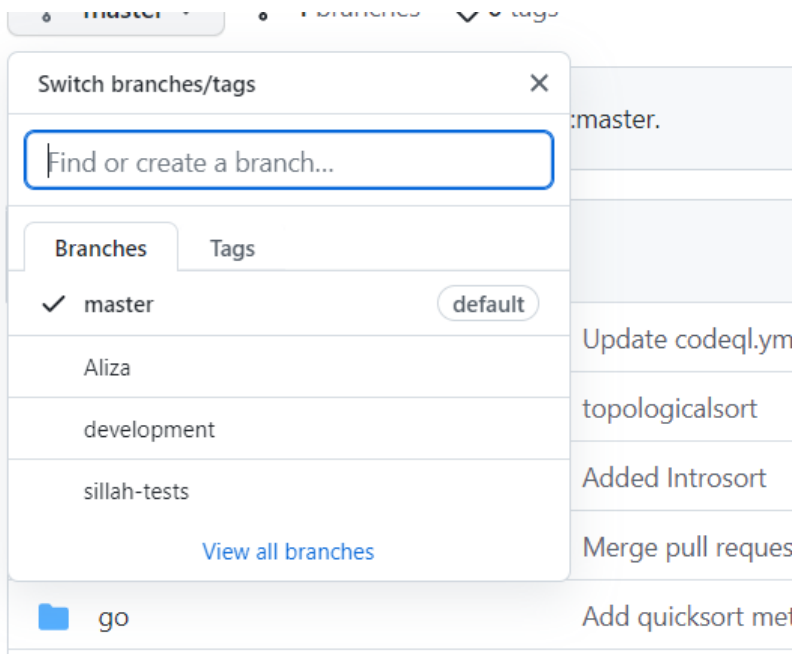
```
(env)
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook/AlgoBook (master)
$ pip install -r requirements.txt
Collecting numpy
  Using cached numpy-1.24.2-cp310-cp310-win_amd64.whl (14.8 MB)
Collecting pandas
  Downloading pandas-1.5.3-cp310-cp310-win_amd64.whl (10.4 MB)
  0.6/10.4 MB 106.8 kB/s eta 0:01:32
```

Creating branches using git

In order to make changes and write unit test cases, following branches were made

- Sillah-tests
- Aliza
- Development

```
(env)
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook/AlgoBook (master)
$ git checkout master
Already on 'master'
Your branch is up to date with 'origin/master'.
(env)
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook/AlgoBook (master)
$ git checkout -b sillah-tests
Switched to a new branch 'sillah-tests'
(env)
silla@DESKTOP-UAH8PCO MINGW64 ~/OneDrive/Desktop/Algobook/AlgoBook (sillah-tests)
$
```



Both of us pushed our separate branches of test cases to the development branch after which the development branch was merged into master after undergoing CODEQL analysis.

Adding Test Cases


We each found a few files that could be tested and wrote tests for it. The unit tests were executed using pytest and were part of the workflows.

1. Aliza Adnan

1. Test case created for stack.py

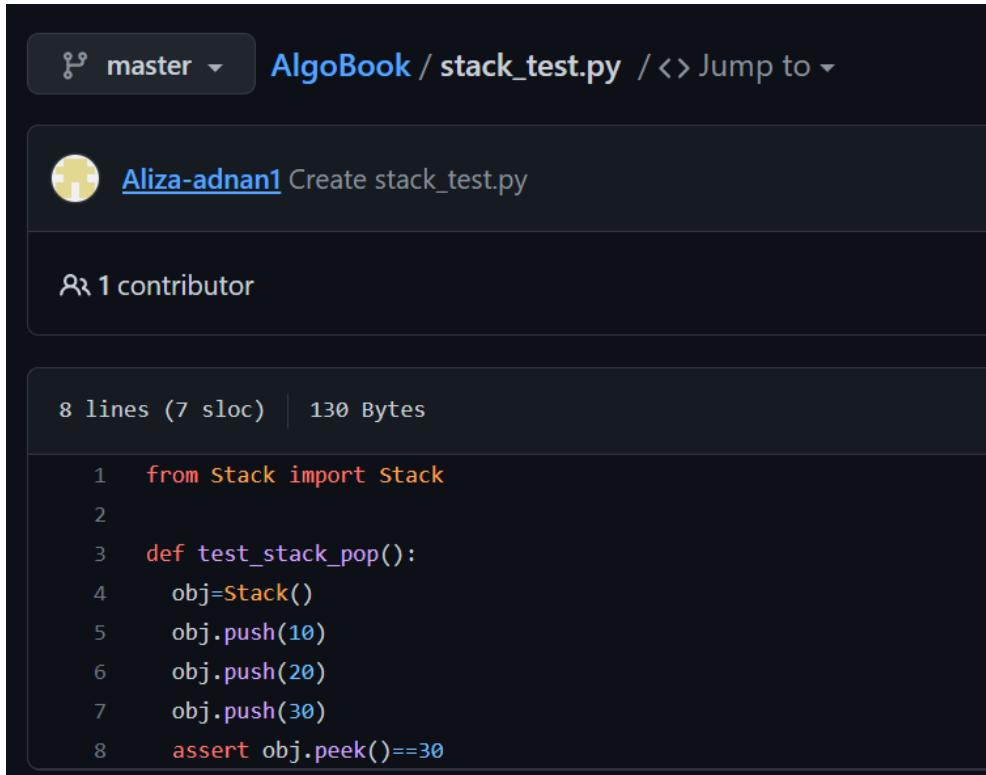
2. Workflow created.
3. The workflow was executed.
4. Then the branch “Aliza” was merged.

The following source code was used:



```
1  """
2      Time Complexity
3      -----
4      push      O(1)
5      pop       O(1)
6      is_empty  O(1)
7      is_full   O(1)
8      peek     O(1)
9      size     O(1)
10 """
11
12
13 class Stack(object):
14     def __init__(self, capacity=5):
15         self.stack = []
16         self.capacity = capacity
```

For the given source code, the following test case was written to test the peek() function.



The screenshot shows a GitHub repository interface. At the top, the repository name 'AlgoBook' and the file path 'stack_test.py' are displayed, along with a 'Jump to' dropdown. Below this, the contributor 'Aliza-adnan1' is listed with a profile picture and the text 'Create stack_test.py'. A section indicates '1 contributor'. The file details show '8 lines (7 sloc)' and '130 Bytes'. The code content is as follows:

```
1  from Stack import Stack
2
3  def test_stack_pop():
4      obj=Stack()
5      obj.push(10)
6      obj.push(20)
7      obj.push(30)
8      assert obj.peak()==30
```

The yaml file was created in which the workflow was written. After that the workflow was executed and was merged into the main branch.

master ▾ AlgoBook / .github / workflows / update1.yml

Aliza-adnan1 Create update1.yml ✓

1 contributor

39 lines (32 sloc) | 998 Bytes

```

1  name: Push Event Workflow
2
3  on: push
4  jobs:
5    unit-testing:
6      runs-on: ubuntu-latest
7
8      steps:
9        - name: Checkout code
10         uses: actions/checkout@v2
11
12        - name: Set up Python environment
13         uses: actions/setup-python@v4
14         with:
15           python-version: "3.11"
16
17        - name: Install dependencies
18         run: |
19           python -m pip install --upgrade pip
20           if [ -f requirements.txt ]; then pip install -r requirements.txt; fi
21
22        - name: Install Package
23         run: pip install pytest
24
25        - name: Lint with flake8
26         id: flake8
27         continue-on-error: true
28         run: |
29           # fail if there are any flake8 errors
30           flake8 . --count --max-complexity=15 --max-line-length=127 --statistics
31
32        - name: Check if 'Lint with flake8' step failed
33         if: steps.flake8.outcome != 'success'
34         run: |
35           echo "flake8 fails"
36
37        # - name: flake8
38        #   run: py-actions/flake8@v2
39
40        - name: Run tests
41         run: pytest stack_test.py

```

26 workflow runs		Event ▾	Status ▾	Branch ▾	Actor ▾
✓	Merge pull request #2 from Aliza-adnan1/Aliza	Push Event Workflow #27: Commit d41228f pushed by Aliza-adnan1	master	3 minutes ago	...
				49s	
✓	Merge branch 'master' into Aliza	Push Event Workflow #26: Commit 916e74b pushed by Aliza-adnan1	Aliza	3 minutes ago	...
				45s	
✓	Create update1.yml	Push Event Workflow #25: Commit 1e24bb6 pushed by Aliza-adnan1	Aliza	5 minutes ago	...
				26s	

<> Code
Pull requests
Actions
Projects
Wiki
Secur

Filters ▾
is:pr is:closed

✕ Clear current search query, filters, and sorts

☐ 0 Open ✓ 2 Closed

☐ Aliza ✓
#2 by Aliza-adnan1 was merged 2 minutes ago

☐ Aliza
#1 by Aliza-adnan1 was merged yesterday

2.Sillah Babar

1. Test cases written for quick sort
2. Locally running test cases for checking
3. Pushing the branch after adding and committing files
4. Workflows successfully running
5. Merged into development branch

```

3
4 import numpy as np
5 def asc_sorted(array):
6     check=True
7     print(array)
8     for i in range(len(array)):
9         if(i<len(array)-1):
10             if(array[i]>array[i+1]):
11                 check=False
12                 return check
13     return check
14
15 def test_nums():
16     array=[3,5,7,92,7,9]
17
18     array=quicksort(array)
19     isSorted=asc_sorted(array)
20     assert isSorted == True, "Test Passed for Normal Numbers"
21
22 def test_negative_nums():
23     array=[-3,-5,-7,-92,-7,-9]
24     array=quicksort(array)
25     isSorted=asc_sorted(array)
26     assert isSorted == True, "Test Passed for Negative Numbers"
27
28 def test_random_nums():
29     arr = np.random.randint(0,10,50)
30     arr=quicksort(arr)
31     isSorted=asc_sorted(arr)
32     assert isSorted == True, "Test Passed for Random Numbers"
33
34
35 def test_random_float():
36     low=0
37     high=300
38     size=60
39     arr=[np.random.uniform(low,high) for _ in range(size)]

```

```


(algobokenv)
sillah@DESKTOP-AVPFCKM MINGW64 /d/algobook/AlgoBook (sillah-tests)
$ pytest tests/QuickSort_test.py
===== test session starts =====
platform win32 -- Python 3.11.2, pytest-7.2.1, pluggy-1.0.0
rootdir: D:\algobook\AlgoBook
collected 4 items

tests\QuickSort_test.py .... [100%]

===== 4 passed in 0.12s =====
(algobokenv)
sillah@DESKTOP-AVPFCKM MINGW64 /d/algobook/AlgoBook (sillah-tests)

```


Merged


Sillah-Babar merged 7 commits into `development` from `sillah-tests`  now

Conversation 0


Commits 7

Checks 1


Files changed 13



 Sillah-Babar commented 1 minute ago



Collaborator







No description provided.



 Sillah-Babar and others added 7 commits 1 hour ago



  Sorting tests



  Update update1.yml

  changes

  tests

  Changes to branches

  Merge branch 'sillah-tests' of <https://github.com/Aliza-adnan1/AlgoBook...>

  yml changed

✖ a3d1341

Verified ✓ 03ed220

5942354

d0b1c82

6b96e5b

4177f02

✓ 059d830

No reviews


Still in progress

No one—assign

None yet

None yet


No milestone

 Sillah-Babar merged commit `546d134` into `development` now

1 check passed

View details

Revert


 Pull request successfully merged and closed

You're all set—the `sillah-tests` branch can be safely deleted.

Delete branch

You're receiving open/close stat

1 participant



Creating Workflows

Firstly we created a workflow to apply code formatting using flake8 and then we ran jobs to run our unit test cases.

```

1  name: Push Event Workflow
2
3  on: push
4  jobs:
5    unit-testing:
6      runs-on: ubuntu-latest
7
8      steps:
9        - name: Checkout code
10         uses: actions/checkout@v2
11
12        - name: Set up Python environment
13         uses: actions/setup-python@v4
14         with:
15           python-version: "3.11"
16
17        - name: Install dependencies
18         run: |
19           python -m pip install --upgrade pip
20           if [ -f requirements.txt ]; then pip install -r requirements.txt; fi
21
22        - name: Install Package
23         run: pip install pytest
24
25        - name: Lint with flake8
26         id: flake8
27         continue-on-error: true
28         run: |
29           # fail if there are any flake8 errors
30           flake8 . --count --max-complexity=15 --max-line-length=127 --statistics
31        - name: Check if 'Lint with flake8' step failed
32         if: steps.flake8.outcome != 'success'
33         run: |
34
35
36
37
38        - name: Run tests
39         run: pytest stack_test.py
40
41        - name: Run tests2
42         run: pytest tests/QuickSort_test.py

```

[Give feedback](#)

In the master branch we also created a codeQL.yml file for security analysis before any code is merged into the master branch.

```

12 name: "CodeQL"
13
14 on:
15   push:
16     branches: [ "master" ]
17   pull_request:
18     # The branches below must be a subset of the branches above
19     branches: [ "master" ]
20   schedule:
21     - cron: '36 14 * * 4'
22
23 jobs:
24   analyze:
25     name: Analyze
26     runs-on: ubuntu-latest
27     permissions:
28       actions: read
29       contents: read
30       security-events: write
31
32     strategy:
33       fail-fast: false
34       matrix:
35         language: ['python' ]
36         # CodeQL supports [ 'cpp', 'csharp', 'go', 'java', 'javascript', 'python', 'ruby' ]
37         # Use only 'java' to analyze code written in Java, Kotlin or both
38         # Use only 'javascript' to analyze code written in JavaScript, TypeScript or both
39         # Learn more about CodeQL language support at https://aka.ms/codeql-docs/language-support
40
41     steps:
42     - name: Checkout repository
43       uses: actions/checkout@v3
44
45     # Initializes the CodeQL tools for scanning.
46     - name: Initialize CodeQL
47       uses: github/codeql-action/init@v2

```

Running workflows to merge into Master


Development #4

 **Open** Sillah-Babar wants to merge 15 commits into `master` from `development` 

 Conversation **0**  Commits **15**  Checks **1**  Files changed **13**



Sillah-Babar commented 1 hour ago

Collaborator 

No description provided.

Reviewers

No reviews

Still in progress? Conv



Sillah-Babar and others added 15 commits 2 hours ago



Sorting tests

 a3d1341

Assignees

No one—assign yours

Analyze (python)

Started 3m 34s ago

Search logs

Jobs

Analyze (python)


Run details

Usage


Workflow file

▼ Perform CodeQL Analysis

1471	[2023-02-24 12:28:00] [build-stoutd] [INFO] [1] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/numpy/_typing/_nbit.py in 7ms
1472	[2023-02-24 12:28:00] [build-stoutd] [INFO] [1] Extracted folder /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/numpy/linalg/tests in 1ms
1473	[2023-02-24 12:28:00] [build-stoutd] [INFO] [1] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/scipy/stats/statlib.py in 11ms
1474	[2023-02-24 12:28:01] [build-stoutd] [INFO] [1] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/dateutil/parser/isoparser.py in 225ms
1475	[2023-02-24 12:28:01] [build-stoutd] [INFO] [1] Extracted module _struct in 5ms
1476	[2023-02-24 12:28:01] [build-stoutd] [INFO] [1] Extracted file /usr/lib/python3.10/http/cookies.py in 268ms
1477	[2023-02-24 12:28:01] [build-stoutd] [INFO] [1] Extracted file /usr/lib/python3.10/asyncio/base_subprocess.py in 284ms
1478	[2023-02-24 12:28:01] [build-stoutd] [INFO] [1] Extracted folder /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/numpy/tests in 0ms
1479	[2023-02-24 12:28:01] [build-stoutd] [INFO] [2] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/pandas/plotting/_matplotlib/core.py in 1281ms
1480	[2023-02-24 12:28:01] [build-stoutd] [INFO] [2] Extracted file /usr/lib/python3.10/email/mime/_init_.py in 3ms
1481	[2023-02-24 12:28:01] [build-stoutd] [INFO] [2] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/scipy/ndimage/filters.py in 15ms
1482	[2023-02-24 12:28:01] [build-stoutd] [INFO] [2] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/py.py in 5ms
1483	[2023-02-24 12:28:01] [build-stoutd] [INFO] [1] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/pandas/io/formats/printing.py in 272ms
1484	[2023-02-24 12:28:02] [build-stoutd] [INFO] [1] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/numpy/polynomial/polynomial.py in 261ms
1485	[2023-02-24 12:28:02] [build-stoutd] [INFO] [1] Extracted file /home/runner/work/AlgoBook/codeql-action-python-autoinstall/lib/python3.10/site-packages/scipy/stats/_warnings_errors.py in 22ms
1486	[2023-02-24 12:28:02] [build-stoutd] [INFO] [1] Extracted file /usr/lib/python3.10/asyncio/runners.py in 23ms
1487	[2023-02-24 12:28:02] [build-stoutd] [INFO] [1] Extracted file /home/cunqun/hunk14/onbook/codeql-action-python-autoinstall/lib/python3.10/site-




Add more commits by pushing to the **master** branch on **Aliza-adnan1/AlgoBook**.




All checks have passed


3 successful checks


[Hide all checks](#)




 **CodeQL / Analyze (python) (push)** Successful in 8m


[Details](#)




 **Push Event Workflow / unit-testing (push)** Successful in 36s

[Details](#)



 **Code scanning results / CodeQL** Successful in 4s — No new or fixed alerts

[Details](#)




This branch has no conflicts with the base branch

Merging can be performed automatically.



No milestone


Notifications

 Unsubscribe

You're receiving notifications thread.

2 participants

 Lock conversation

[illegible]

Running Jobs using Jenkins

Configuring the job

Dashboard > MLOPS > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

MLOps assignments

[Plain text] [Preview](#)

☐ Discard old builds ?

☒ GitHub project

Project url ?

<https://github.com/Aliza-adnan1/AlgoBook.git/>

Advanced...

☐ This project is parameterized ?

☐ Throttle builds ?

☐ Execute concurrent builds if necessary ?

Git ?

Repositories ?

Repository URL ?

<https://github.com/Aliza-adnan1/AlgoBook.git>

Credentials ?

- none -

+ Add

Advanced...

Executing the job:

✓ Console Output

```
Started by user Aliza Adnan
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\MLOPS
[WS-CLEANUP] Deleting project workspace...
[WS-CLEANUP] Deferred wipeout is used...
[WS-CLEANUP] Done
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/Aliza-adnan1/AlgoBook.git
> C:\Program Files\Git\cmd\git.exe init C:\ProgramData\Jenkins\.jenkins\workspace\MLOPS # timeout=10
Fetching upstream changes from https://github.com/Aliza-adnan1/AlgoBook.git
> C:\Program Files\Git\cmd\git.exe --version # timeout=10
> git --version # 'git version 2.38.0.windows.1'
> C:\Program Files\Git\cmd\git.exe fetch --tags --force --progress -- https://github.com/Aliza-adnan1/AlgoBook.git +refs/heads/*:refs/remotes/origin/* # timeout=240
> C:\Program Files\Git\cmd\git.exe config remote.origin.url https://github.com/Aliza-adnan1/AlgoBook.git # timeout=10
```

```

> C:\Program Files\Git\cmd\git.exe init C:\ProgramData\Jenkins\.jenkins\workspace\MLOPS # timeout=10
Fetching upstream changes from https://github.com/Aliza-adnan1/AlgoBook.git
> C:\Program Files\Git\cmd\git.exe --version # timeout=10
> git --version # 'git version 2.38.0.windows.1'
> C:\Program Files\Git\cmd\git.exe fetch --tags --force --progress -- https://github.com/Aliza-adnan1/AlgoBook.git +refs/heads/*:refs/remotes/origin/* # timeout=240
> C:\Program Files\Git\cmd\git.exe config remote.origin.url https://github.com/Aliza-adnan1/AlgoBook.git #
timeout=10
> C:\Program Files\Git\cmd\git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* #
timeout=10
Avoid second fetch
> C:\Program Files\Git\cmd\git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10
Checking out Revision df73b5ac631eb1494c0441b4307dcd8486b81245 (refs/remotes/origin/master)
> C:\Program Files\Git\cmd\git.exe config core.sparsecheckout # timeout=10
> C:\Program Files\Git\cmd\git.exe checkout -f df73b5ac631eb1494c0441b4307dcd8486b81245 # timeout=240
Commit message: "Update Stack.py"
First time build. Skipping changelog.
[MLOPS] $ cmd /c call C:\Windows\TEMP\jenkins1460061958489330982.bat

C:\ProgramData\Jenkins\.jenkins\workspace\MLOPS>echo "hello"
"hello"

C:\ProgramData\Jenkins\.jenkins\workspace\MLOPS>exit 0
Finished: SUCCESS

```