LECTURE 5 report.

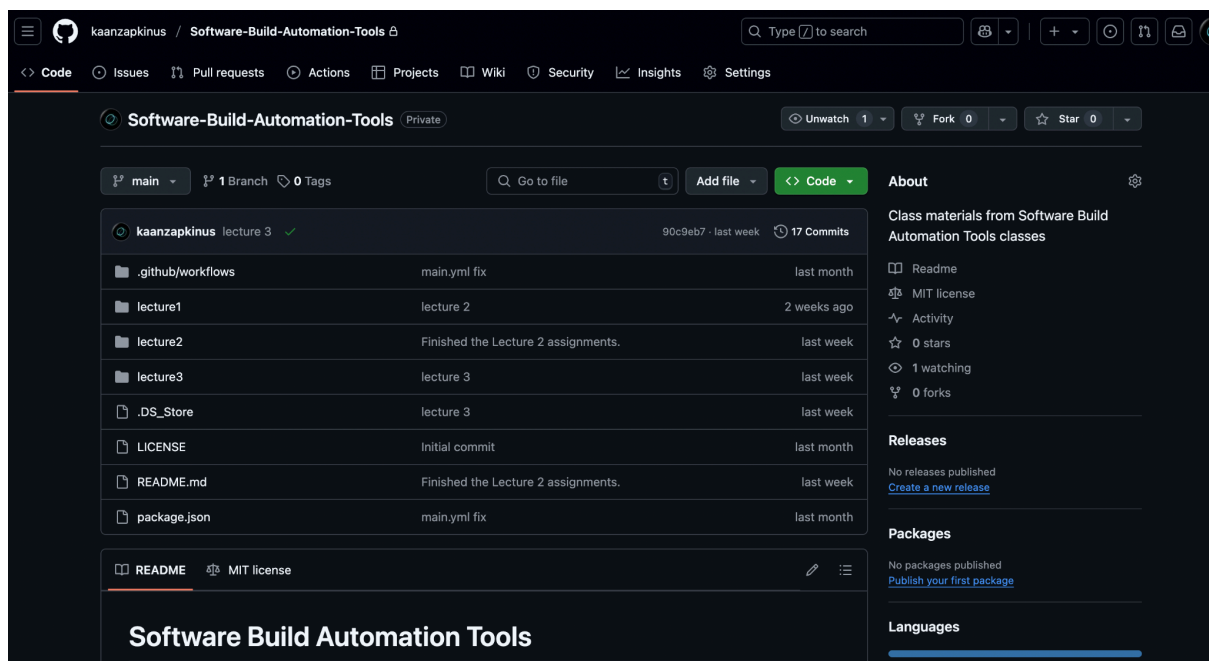**github repo: https://github.com/kaanzapkinus/Software-Build-Automation-Tools**

KAAN YAZICIOĞLU SD4

TASK 1 and Task 2

I already have done this tasks on the previous weeks so i skip them:

. Setting Up the Project

• Create a new Python project in ~~PyCharm~~ Visual Studio Code

• Initialize a Git repository and connect it to GitHub.

• Set up a virtual environment and install pytest.

```
kaan@Kaan-MacBook-Air Software-Build-Automation-Tools % pip3 install pytest
Defaulting to user installation because normal site-packages is not writeable
Collecting pytest
  Downloading pytest-8.3.5-py3-none-any.whl.metadata (7.6 kB)
Requirement already satisfied: exceptiongroup>=1.0.0rc8 in /Users/kaan/Library/Python/3.9/lib/python/site-packages (from pytest) (1.2
.2)
Collecting iniconfig (from pytest)
  Downloading iniconfig-2.1.0-py3-none-any.whl.metadata (2.7 kB)
Requirement already satisfied: packaging in /Users/kaan/Library/Python/3.9/lib/python/site-packages (from pytest) (24.1)
Collecting pluggy<2,>=1.5 (from pytest)
  Downloading pluggy-1.5.0-py3-none-any.whl.metadata (4.8 kB)
Collecting tomli>=1 (from pytest)
  Downloading tomli-2.2.1-py3-none-any.whl.metadata (10 kB)
Downloading pytest-8.3.5-py3-none-any.whl (343 kB)
Downloading pluggy-1.5.0-py3-none-any.whl (20 kB)
Downloading tomli-2.2.1-py3-none-any.whl (14 kB)
Downloading iniconfig-2.1.0-py3-none-any.whl (6.0 kB)
Installing collected packages: tomli, pluggy, iniconfig, pytest
Successfully installed iniconfig-2.1.0 pluggy-1.5.0 pytest-8.3.5 tomli-2.2.1
kaan@Kaan-MacBook-Air Software-Build-Automation-Tools %
```

TASK 3

Writing and Running Tests

• Create a simple Python function.

• Write a test case using pytest.

• Run the test suite and verify the results.

```
lecture5 > tests > test_sample.py > test_add
1    def add(x,y):
2        return x + y
3
4    def test_add():
5        assert add(1, 2) == 3
6        assert add(-1, 1) == 0
7        assert add(0, 0) == 0
8
```

```
kaan@Kaan-MacBook-Air tests % pytest
========================================= test session starts =========================================
platform darwin -- Python 3.9.6, pytest-8.3.5, pluggy-1.5.0
rootdir: /Users/kaan/Desktop/Second Semester/Software-Build-Automation-Tools/lecture5/tests
collected 1 item

test_sample.py .                                                                                 [100%]

========================================= 1 passed in 0.00s ==========================================
kaan@Kaan-MacBook-Air tests %
```

as seen on the photo, the example test has passed from pytest.

TASK 4

Implementing Advanced Testing Features

• Modify the test suite to use pytest fixtures.

• Implement parameterized tests for multiple inputs.

• Rerun the tests and analyze the results.

```python
import pytest

@pytest.fixture
def sample_data():
    return {"name": "Alice", "age": 30}

def test_sample_data(sample_data):
    assert sample_data["name"] == "Alice"
    assert sample_data["age"] == 30

def add(a, b):
    return a + b

@pytest.mark.parametrize("a, b, expected", [(2, 3, 5), (-1, 1, 0), (0, 0, 0)])
def test_add_param(a, b, expected):
    assert add(a, b) == expected
```

```
kaan@Kaan-MacBook-Air tests % pytest
========================================= test session starts =========================================
platform darwin -- Python 3.9.6, pytest-8.3.5, pluggy-1.5.0
rootdir: /Users/kaan/Desktop/Second Semester/Software-Build-Automation-Tools/lecture5/tests
collected 4 items

test_sample.py ....                                                                              [100%]

========================================= 4 passed in 0.00s =========================================
kaan@Kaan-MacBook-Air tests %
```
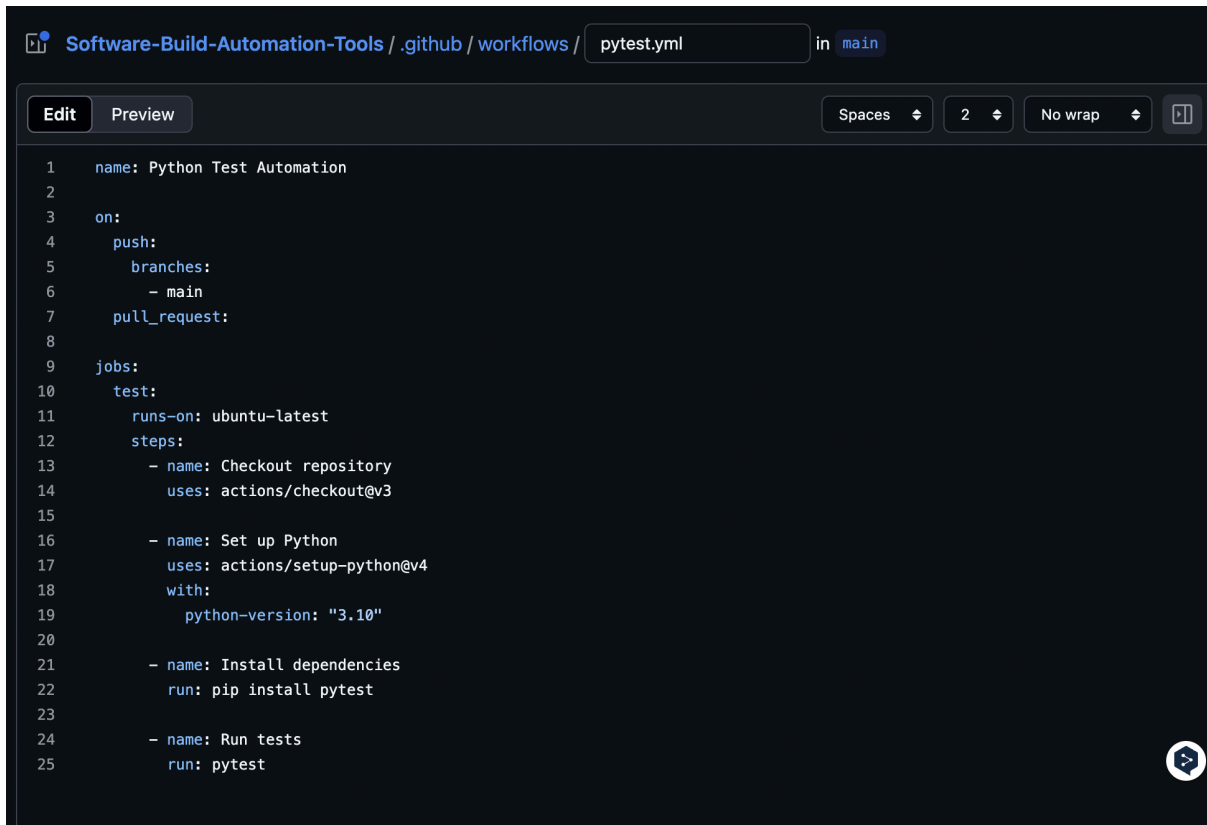
as seen on the photo, the example Implement parameterized tests has passed from pytest.

TASK 5

Automating Tests with CI/CD

• Create a GitHub Actions workflow file.

• Implement a CI pipeline that installs dependencies and runs tests.

```
Software-Build-Automation-Tools / .github / workflows / pytest.yml    in main

Edit   Preview                                    Spaces ⇕  2 ⇕  No wrap ⇕

 1    name: Python Test Automation
 2
 3    on:
 4      push:
 5        branches:
 6          - main
 7      pull_request:
 8
 9    jobs:
10      test:
11        runs-on: ubuntu-latest
12        steps:
13          - name: Checkout repository
14            uses: actions/checkout@v3
15
16          - name: Set up Python
17            uses: actions/setup-python@v4
18            with:
19              python-version: "3.10"
20
21          - name: Install dependencies
22            run: pip install pytest
23
24          - name: Run tests
25            run: pytest
```

• Push the changes to GitHub and observe the automated test execution.

```
onulmaz: Iraksak dalların nasıl uzlaştırılacağının belirtilmesi gerekiyor.
kaan@Kaan-MacBook-Air Software-Build-Automation-Tools % git pull --rebase
refs/heads/main başarıyla yeniden temellendirildi ve güncellendi.
kaan@Kaan-MacBook-Air Software-Build-Automation-Tools % git push
Nesneler ortaya dökülüyor: 11, bitti.
Nesneler sayılıyor: 100% (11/11), bitti.
Delta sıkıştırması 8 iş parçacığı kullanıyor
Nesneler sıkıştırılıyor: 100% (7/7), bitti.
Nesneler yazılıyor: 100% (8/8), 101.16 KiB | 33.72 MiB/sn, bitti.
Toplam 8 (delta 3), yeniden kullanılan 0 (delta 0), yeniden kullanılan paket 0 (0 konumundan)
remote: Resolving deltas: 100% (3/3), completed with 3 local objects.
To https://github.com/kaanzapkinus/Software-Build-Automation-Tools.git
   1fc6bd4..3af209f  main -> main
kaan@Kaan-MacBook-Air Software-Build-Automation-Tools %
```

• Fix any failing tests and verify successful execution.

it failed for 5 times because it cant find the requirements.txt file in folder.

so i updated the CI code

```yaml
1   name: Python Test Automation
2
3   on:
4     push:
5       branches:
6         - main
7     pull_request:
8
9   jobs:
10    test:
11      runs-on: ubuntu-latest
12      steps:
13        - name: Checkout repository
14          uses: actions/checkout@v3
15
16        - name: Set up Python
17          uses: actions/setup-python@v4
18          with:
19            python-version: "3.10"
20
21        - name: Install dependencies
22          run: |
23            cd lecture5
24            pip install -r requirements.txt || true        You, 22 saniye önce • Uncommitted changes
25
26        - name: Run tests
27          run: |
28            cd lecture5
29            [ -d tests ] && cd tests
30            pytest || true
```

and the sixth push has passed.

Python Test Automation
pytest.yml

Filter workflow runs

6 workflow runs

Event ▾   Status ▾   Branch ▾   Actor ▾

✅ **CI update**
Python Test Automation #6: Commit 56ddf87 pushed by kaanzapkinus
main
📅 now
⏱ 19s
...

❌ **lecture 5**
Python Test Automation #5: Commit 3bc5507 pushed by kaanzapkinus
main
📅 4 minutes ago
⏱ 14s
...

❌ **Update pytest.yml**
Python Test Automation #4: Commit d94b337 pushed by kaanzapkinus
main
📅 5 minutes ago
⏱ 14s
...

❌ **lecture 5**
Python Test Automation #3: Commit 78a5462 pushed by kaanzapkinus
main
📅 10 minutes ago
⏱ 16s
...

❌ **lecture 5**
Python Test Automation #2: Commit 3af209f pushed by kaanzapkinus
main
📅 15 minutes ago
⏱ 16s
...

❌ **Create pytest.yml**
Python Test Automation #1: Commit 1fc6bd4 pushed by kaanzapkinus
main
📅 16 minutes ago
⏱ 16s
...

> **Annotations**
1 warning

test
succeeded now in 9s

Search logs

> ✅ Set up job   1s
> ✅ Checkout repository   2s
> ✅ Set up Python   0s
> ✅ Install dependencies   3s
∨ ✅ Run tests   0s

```
 1  ▶ Run cd lecture5
13  ============================ test session starts ============================
14  platform linux -- Python 3.10.16, pytest-8.3.5, pluggy-1.5.0
15  rootdir: /home/runner/work/Software-Build-Automation-Tools/Software-Build-Automation-Tools/lecture5/tests
16  collected 4 items
17
18  test_sample.py ....                                      [100%]
19
20  ============================ 4 passed in 0.02s ============================
```

> ✅ Post Set up Python   0s
> ✅ Post Checkout repository   0s
∨ ✅ Complete job   0s

```
 1  Cleaning up orphan processes
```