



National University
of computer and emerging sciences

Assignment No 1

MLOps

Names:

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Section:

B

GitHub repository link:

https://github.com/NUCES-ISB/i191717_i191695_polymath

Description:

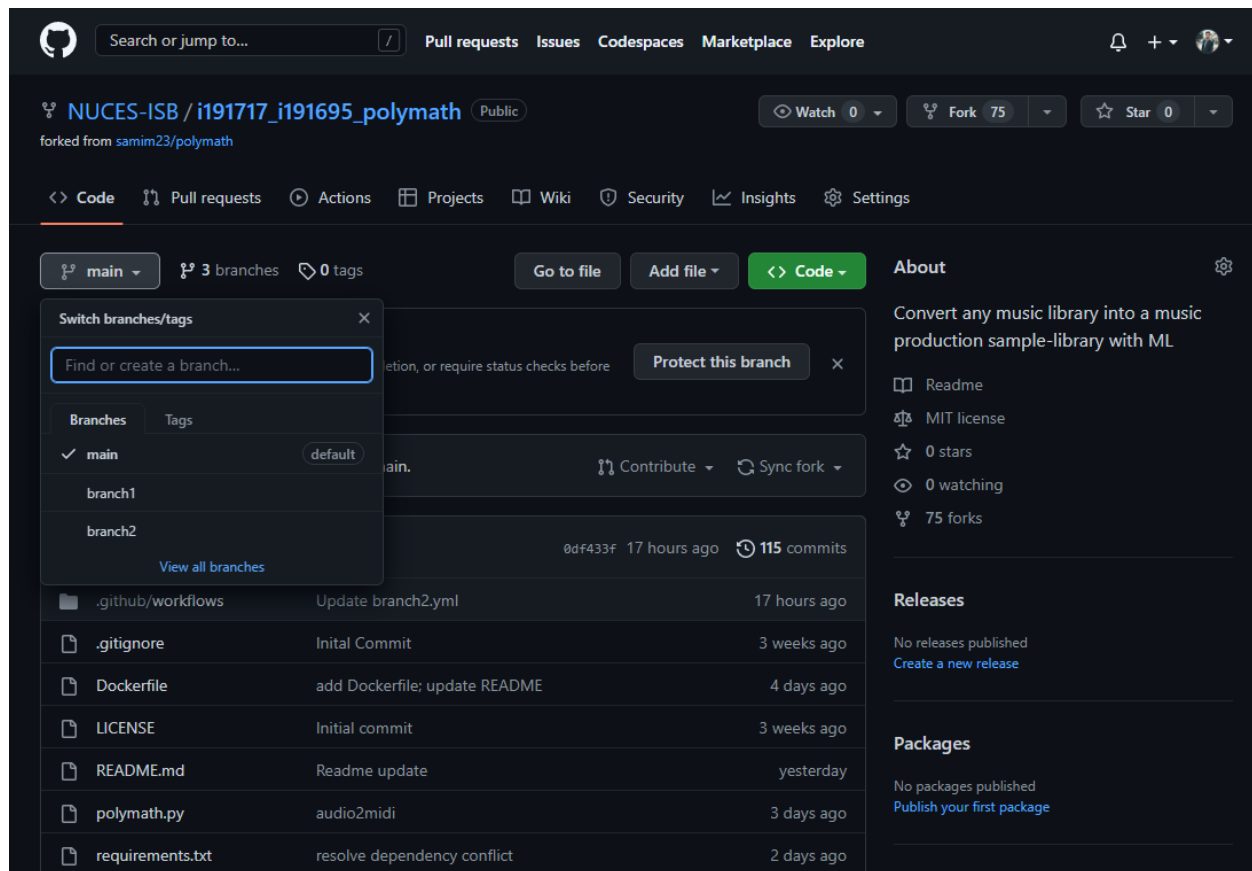
Repository selection:

We forked the following repository and according to requirement we do not own this repository directly or indirectly, the selected repository is in trending and workflow does not exist for the selected repository.

Repo link: <https://github.com/samim23/polymath>

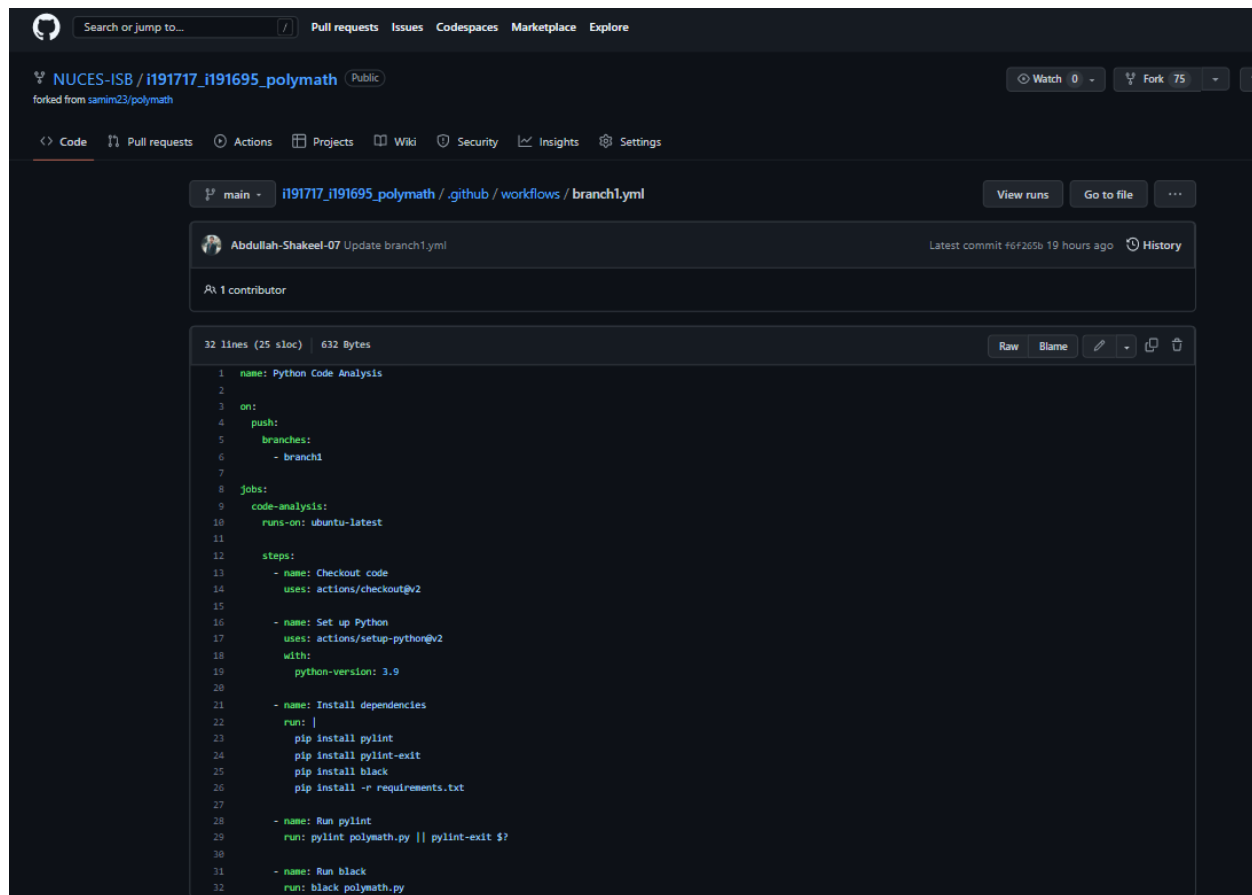
Workflow creation:

First of all, we created two branches one for each group member.



As you can see in the above picture, there are two branches named branch 1 and branch 2.

Then we created workflows for each branch and run the test (pylint and black as our repo contain python code). The structure of our yml file is as follows



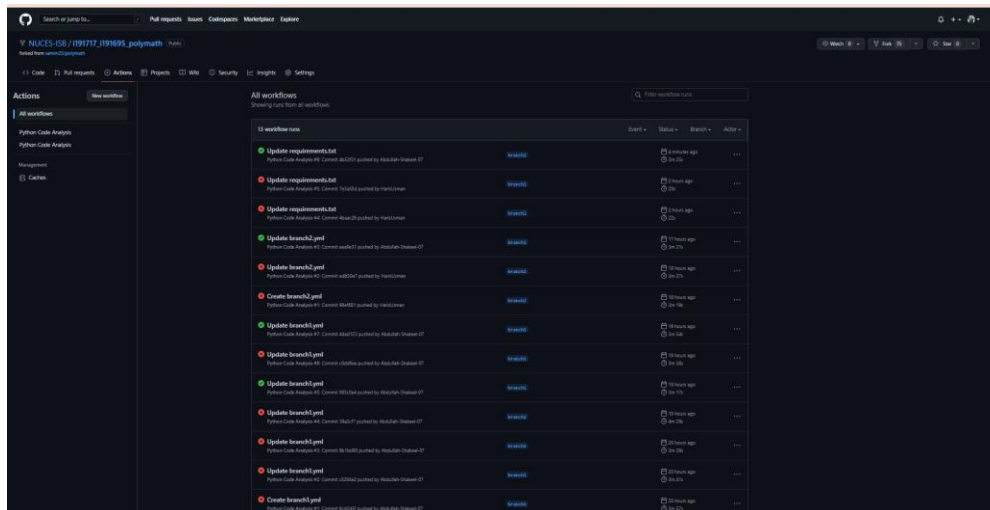
The screenshot shows a GitHub repository page for 'NUCES-ISB / i191717_i191695_polymath'. The repository is public and has 75 forks. The file being viewed is '.github/workflows/branch1.yml' in the 'main' branch. The file was updated by 'Abdullah-Shakeel-07' 19 hours ago. The file contains a GitHub Actions workflow named 'code-analysis' that runs on 'ubuntu-latest' and triggers on a 'push' event to the 'branch1' branch. The workflow has four steps: 1. Checkout code using 'actions/checkout@v2'. 2. Set up Python using 'actions/setup-python@v2' with 'python-version: 3.9'. 3. Install dependencies by running 'pip install pylint', 'pip install pylint-exit', 'pip install black', and 'pip install -r requirements.txt'. 4. Run pylint and black. The pylint step runs 'pylint polymath.py || pylint-exit \$?' and the black step runs 'black polymath.py'.

```
1 name: Python Code Analysis
2
3 on:
4   push:
5     branches:
6       - branch1
7
8 jobs:
9   code-analysis:
10    runs-on: ubuntu-latest
11
12    steps:
13      - name: Checkout code
14        uses: actions/checkout@v2
15
16      - name: Set up Python
17        uses: actions/setup-python@v2
18        with:
19          python-version: 3.9
20
21      - name: Install dependencies
22        run: |
23          pip install pylint
24          pip install pylint-exit
25          pip install black
26          pip install -r requirements.txt
27
28      - name: Run pylint
29        run: pylint polymath.py || pylint-exit $?
30
31      - name: Run black
32        run: black polymath.py
```

Description of above code:

The above code defines a job named "code-analysis" that runs on the "branch1" ("branch2" uses the same code) branch of a repository whenever a push event occurs. The job uses the "ubuntu-latest" runner environment and has four steps.

The first step checks out the source code of the repository using the "actions/checkout" action. The second step sets up the Python environment using the "actions/setup-python" action and specifies python version 3.9. The third step installs multiple packages, including pylint, pylint-exit, black, and the packages listed in the "requirements.txt" file. The fourth step runs two commands: pylint and black. The pylint command checks the quality of the Python code in a file named "polymath.py" using the pylint package, and if there are any errors or warnings, it exits with a non-zero status code. The pylint-exit command is used to fail the build if pylint has detected any issues in the code. The fifth step formats the code using the black package.



As you can, after a couple of tries we have successfully tested both branches.

Result of pylint

```

168 polymath.py:527:12: W0612: Unused variable 'comp_intensity' (unused-variable)
169 polymath.py:553:0: C0116: Missing function or method docstring (missing-function-docstring)
170 polymath.py:553:0: C0103: Function name "getNearest" doesn't conform to snake_case naming style (invalid-name)
171 polymath.py:560:0: C0116: Missing function or method docstring (missing-function-docstring)
172 polymath.py:560:0: R0914: Too many local variables (26/15) (too-many-locals)
173 polymath.py:591:12: C0103: Variable name "v" doesn't conform to snake_case naming style (invalid-name)
174 polymath.py:630:8: C0103: Constant name "basic_pitch_model" doesn't conform to UPPER_CASE naming style (invalid-name)
175 polymath.py:630:8: W0603: Using the global statement (global-statement)
176 polymath.py:637:4: C0103: Variable name "keepOriginalBpm" doesn't conform to snake_case naming style (invalid-name)
177 polymath.py:640:4: C0103: Variable name "pitchShiftFirst" doesn't conform to snake_case naming style (invalid-name)
178 polymath.py:652:45: C0103: Variable name "f" doesn't conform to snake_case naming style (invalid-name)
179 polymath.py:671:45: C0103: Variable name "f" doesn't conform to snake_case naming style (invalid-name)
180 polymath.py:560:0: R0912: Too many branches (31/12) (too-many-branches)
181 polymath.py:560:0: R0915: Too many statements (100/50) (too-many-statements)
182 polymath.py:24:0: W0611: Unused predict imported from basic_pitch.inference (unused-import)
183
184 -----
185 Your code has been rated at 6.02/10
186

```

Result of black

```

▼ Run black
1 ► Run black polymath.py
7 reformatted polymath.py
8
9 All done! 🌟 🍷 🌟
10 1 file reformatted.

```

Jenkins

For building a Jenkins job we ran Jenkins on localhost 8080 and used following GitHub link as shown in the image.

Source Code Management

☐ None

☒ Git ?

Repositories ?

Repository URL ?

https://github.com/NUCES-ISB/i191717_i191695_polymath.git

Credentials ?

Then we executed build commands on both branches and master that where successful and their prof are attached in the following images

Build success for Branch1

✓ Console Output

```
Started by user Haris Usman
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\jenkins\workspace\i191717_i191695_polymath
[MS-CLEANUP] Deleting project workspace...
[MS-CLEANUP] Deferred wipeout is used...
[MS-CLEANUP] Done
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/NUCES-ISB/i191717_i191695_polymath.git
> C:\Program Files\Git\bin\git.exe init C:\ProgramData\Jenkins\jenkins\workspace\i191717_i191695_polymath # timeout=10
Fetching upstream changes from https://github.com/NUCES-ISB/i191717_i191695_polymath.git
> C:\Program Files\Git\bin\git.exe --version # timeout=10
> git --version # 'git version 2.39.2.windows.1'
> C:\Program Files\Git\bin\git.exe fetch --tags --force --progress -- https://github.com/NUCES-ISB/i191717_i191695_polymath.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
> C:\Program Files\Git\bin\git.exe config remote.origin.url https://github.com/NUCES-ISB/i191717_i191695_polymath.git # timeout=10
> C:\Program Files\Git\bin\git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> C:\Program Files\Git\bin\git.exe rev-parse "refs/remotes/origin/branch1^{commit}" # timeout=10
Checking out Revision 4dad1237c0c9f7172b6d281e9ad54de908c99e04 (refs/remotes/origin/branch1)
> C:\Program Files\Git\bin\git.exe config core.sparsecheckout # timeout=10
> C:\Program Files\Git\bin\git.exe checkout -f 4dad1237c0c9f7172b6d281e9ad54de908c99e04 # timeout=10
Commit message: "Update branch1.yml"
First time build. Skipping changelog.
Finished: SUCCESS
```

Activate Windows
Go to Settings to activate Windows

Build success for Branch2

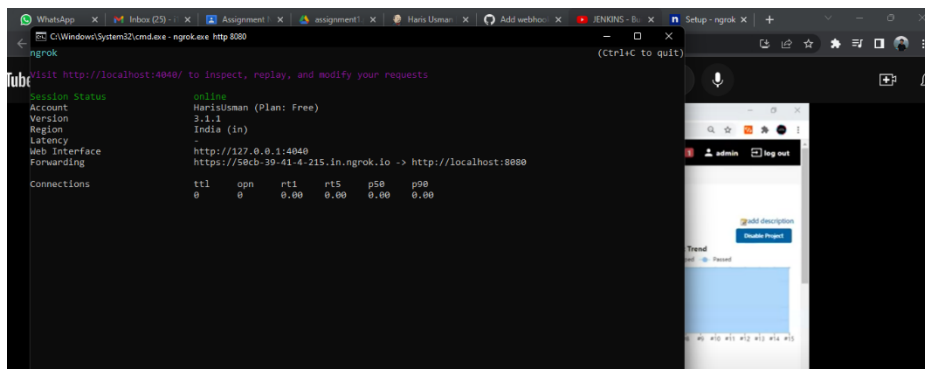
✓ Console Output

```
Started by user Haris Usman
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\jenkins\workspace\i191717_i191695_polymath
[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/NUCES-ISB/i191717_i191695_polymath.git
> C:\Program Files\Git\bin\git.exe init C:\ProgramData\Jenkins\jenkins\workspace\i191717_i191695_polymath # timeout=10
Fetching upstream changes from https://github.com/NUCES-ISB/i191717_i191695_polymath.git
> C:\Program Files\Git\bin\git.exe --version # timeout=10
> git --version # 'git version 2.39.2.windows.1'
> C:\Program Files\Git\bin\git.exe fetch --tags --force --progress -- https://github.com/NUCES-ISB/i191717_i191695_polymath.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> C:\Program Files\Git\bin\git.exe config remote.origin.url https://github.com/NUCES-ISB/i191717_i191695_polymath.git # timeout=10
> C:\Program Files\Git\bin\git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> C:\Program Files\Git\bin\git.exe rev-parse "refs/remotes/origin/main^{commit}" # timeout=10
Checking out Revision 0df433f72392e3323b05dc1a20cbcd57fabaf5dd (refs/remotes/origin/main)
> C:\Program Files\Git\bin\git.exe config core.sparsecheckout # timeout=10
> C:\Program Files\Git\bin\git.exe checkout -f 0df433f72392e3323b05dc1a20cbcd57fabaf5dd # timeout=10
Commit message: "Update branch2.yml"
First time build. Skipping changelog.
Finished: SUCCESS
```

Activate Windows
Go to Settings to activate Windows

Deploying on Ngrok

For Deployment on ngrok we configured authtoken that was successful. Then we ran ngrok server which was successful.



For successful implementation of automatic build, we created a webhook in GitHub settings with following configuration.

Payload URL *

`https://50cb-39-41-4-215.in.ngrok.io/github-webhook/`

Content type

`application/json`

Secret

SSL verification

By default, we verify SSL certificates when delivering payloads.

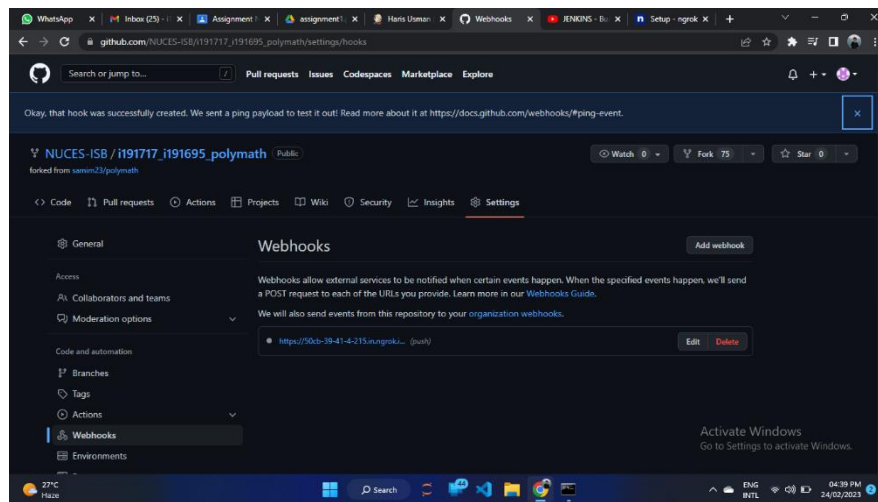
☒ **Enable SSL verification** ☐ **Disable (not recommended)**

Which events would you like to trigger this webhook?

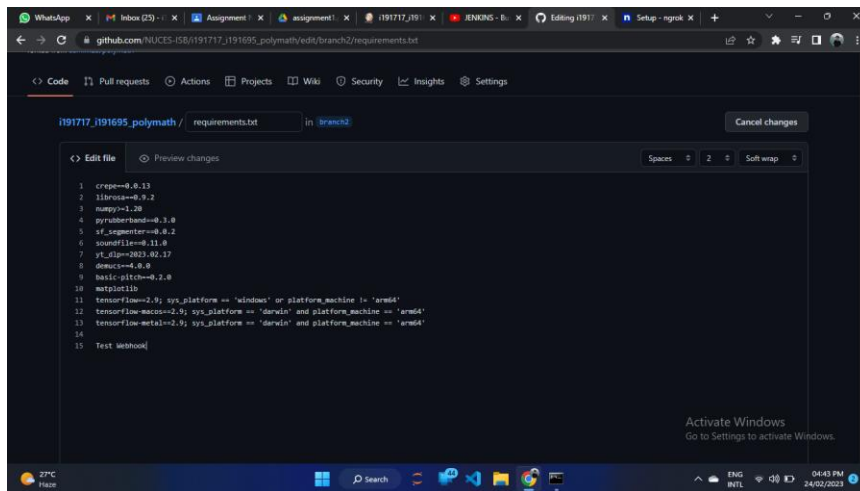
☒ **Just the push event.**

☐ **Send me everything.**

With above configuration webhook was created successfully as shown in following image.

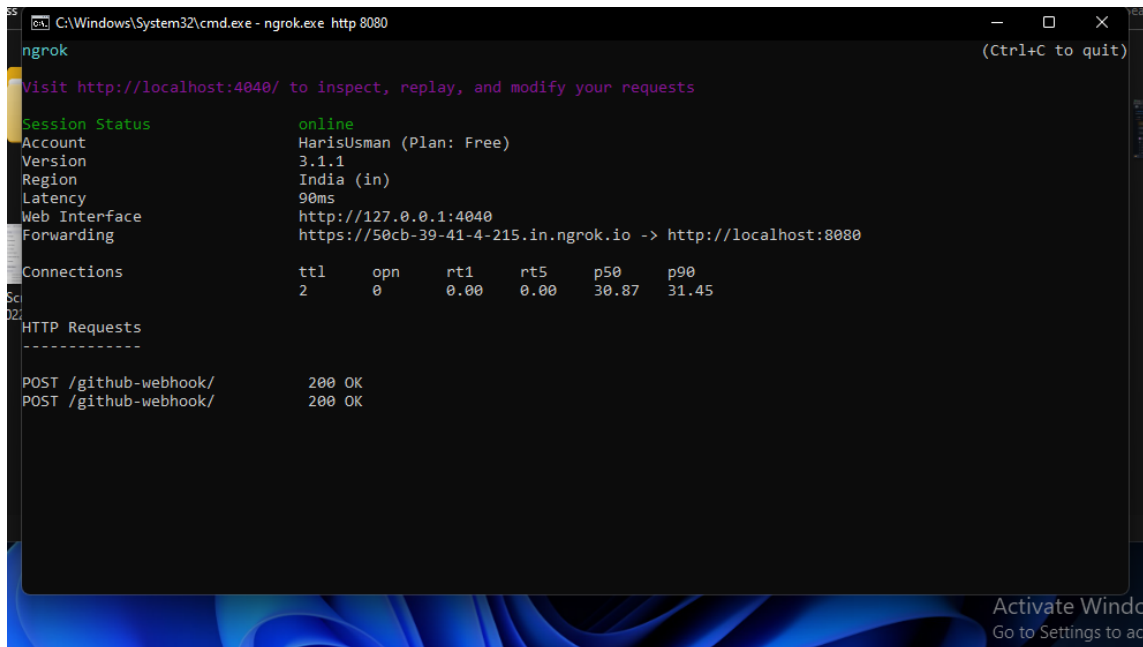


To check if project would built automatically I edited a file and committed from branch2.



```
1 crepe==0.9.13
2 librosa==0.9.2
3 numpy==1.20
4 pyrubberband==0.3.0
5 st_tqdm==0.8.1
6 soundfile==0.11.0
7 yt_dlp==2023.02.17
8 dmccom==1.0.0
9 basic-pitch==0.2.0
10 matplotlib
11 tensorflow==2.9; sys.platform == 'windows' or platform.machine != 'arm64'
12 tensorflow-macos==2.9; sys.platform == 'darwin' and platform.machine == 'arm64'
13 tensorflow-metal==2.9; sys.platform == 'darwin' and platform.machine == 'arm64'
14
15 Text Webhook
```

Then immediately response was generated from the server that is attached below



```
C:\Windows\System32\cmd.exe - ngrok.exe http 8080
ngrok
Visit http://localhost:4040/ to inspect, replay, and modify your requests

Session Status      online
Account             HarisUsman (Plan: Free)
Version             3.1.1
Region              India (in)
Latency              90ms
Web Interface        http://127.0.0.1:4040
Forwarding           https://50cb-39-41-4-215.in.ngrok.io -> http://localhost:8080

Connections
  ttl    opn    rt1    rt5    p50    p90
    2     0     0.00   0.00   30.87  31.45

HTTP Requests
-----
POST /github-webhook/ 200 OK
POST /github-webhook/ 200 OK
```


Then Jenkins job was executed automatically ones the change was committed. Build success image is attached below.

WhatsApp x Inbox (25) - i191695@ x Assignment No 1 x assignment1.pdf - Go x Haris Usman [Jenkins] x Webhooks x

localhost:8080/user/haris/builds

Jenkins Search (CTRL+K) Haris Usman log out

Dashboard > Haris Usman

People
Status
Builds
Configure
My Views
Credentials

Builds for haris

S	Build	Time Since 1	Status
✓	i191717_i191695_polymath #6	1 hr 33 min	stable
✓	i191717_i191695_polymath #5	1 hr 34 min	stable
✓	i191717_i191695_polymath #4	1 hr 36 min	stable
✓	i191717_i191695_polymath #3	1 hr 36 min	back to normal
✗	i191717_i191695_polymath #2	1 hr 47 min	broken since this build

Icon: S M L

Icon Legend Atom feed for all Atom feed for failures Atom feed for just latest builds

Activate Windows
Go to Settings to activate Windows.
REST API Jenkins 2.375.3

24°C Partly sunny Search ENG INTL 05:34 PM 24/02/2023