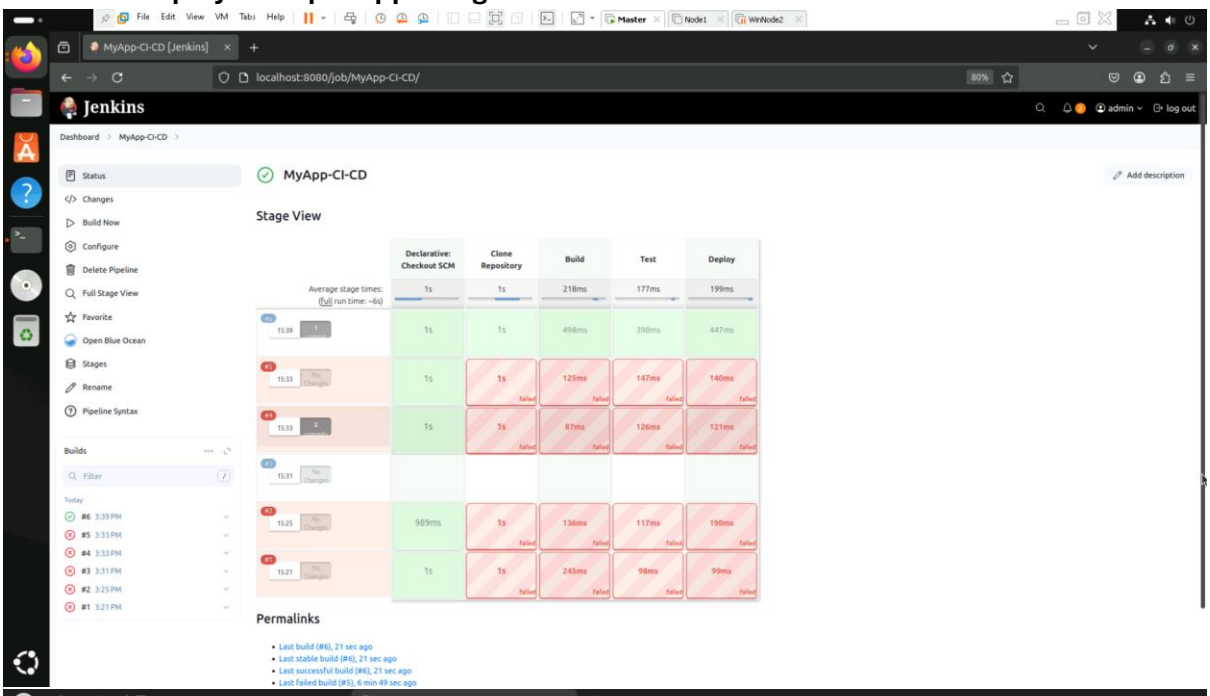
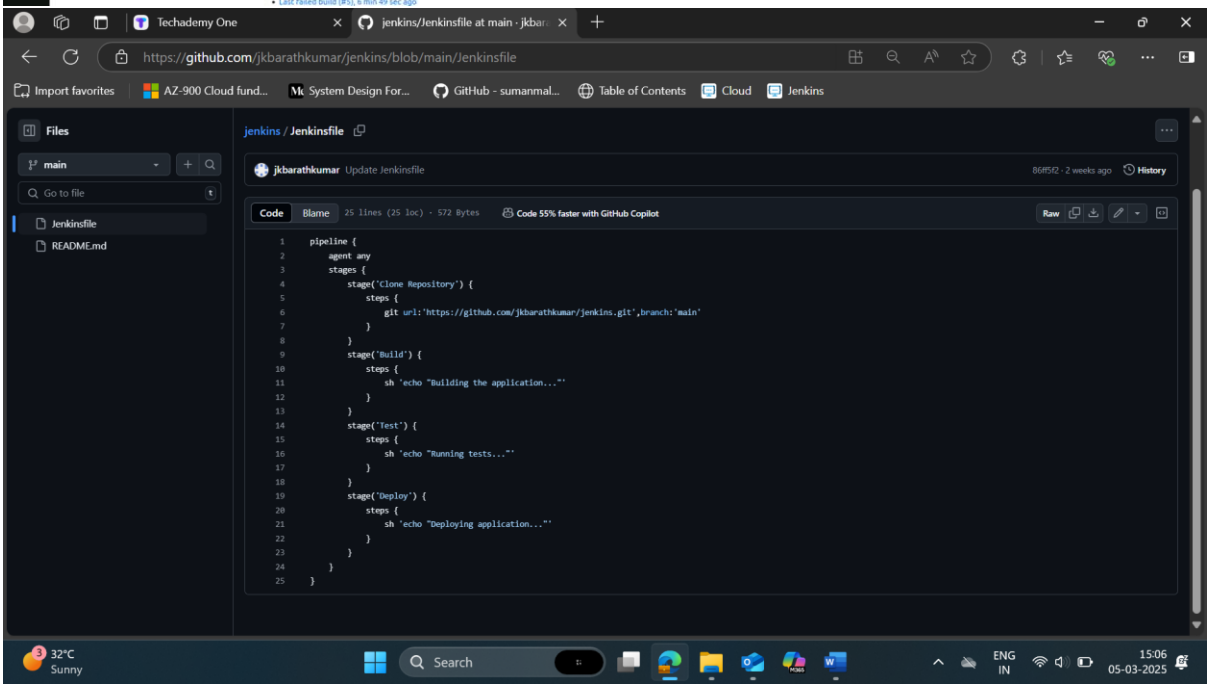
Name: Barathkumar J K

Jenkins Assignment

1) Build and Deploy a Simple App using Jenkins





2) Build and Deploy a Simple Python App using Jenkins & docker

Project Structure

```
my-flask-app
├── app.py
├── test.py
├── requirements.txt
├── Dockerfile
└── Jenkinsfile
```

---

1) Setup a Simple Flask App

app.py

```
from flask import Flask

app = Flask(__name__)

@app.route('/')

def hello():

    return 'Hello, World!'


if __name__ == '__main__':

    app.run(debug=True, host='0.0.0.0')
```

---

2) Create a Test File

test.py

```
import unittest

from app import app

class FlaskAppTestCase(unittest.TestCase):

    @classmethod

    def setUpClass(cls):

        cls.client = app.test_client()

        cls.client.testing = True

    def test_homepage(self):

        response = self.client.get('/')

        self.assertEqual(response.status_code, 200)
```

```
        self.assertIn(b'Hello, World!', response.data)
if __name__ == '__main__':
    unittest.main()
```

---

3) Create a requirements.txt File

requirements.txt

```
Flask==2.2.2
Werkzeug==2.2.2
```

---

4) Create a Dockerfile

Dockerfile

```
FROM python:3.12-slim
WORKDIR /app
COPY . /app
RUN pip install --no-cache-dir -r requirements.txt

EXPOSE 5000
ENV FLASK_APP=app.py
ENV FLASK_RUN_HOST=0.0.0.0
CMD ["flask", "run"]
```

---

5) Build & Push Docker Image

1. Build the Docker image:

```
docker build -t your-dockerhub-username/my-flask-app:latest .
```

2. Push the image to DockerHub:

```
docker login
docker push your-dockerhub-username/my-flask-app:latest
```

---

6) Connect Jenkins Pipeline to GitHub

1. Open Jenkins Dashboard.
2. Click on **New Item** → Select **Pipeline** → Name it → Click **OK**.

3. In the **Pipeline** section:
    - Select **Pipeline script from SCM**.
    - Choose **Git** as SCM.
    - Enter your **GitHub repository URL**.
    - Set **Branch: main**.
    - Define the **Jenkinsfile path**.
4. Click **Save**.

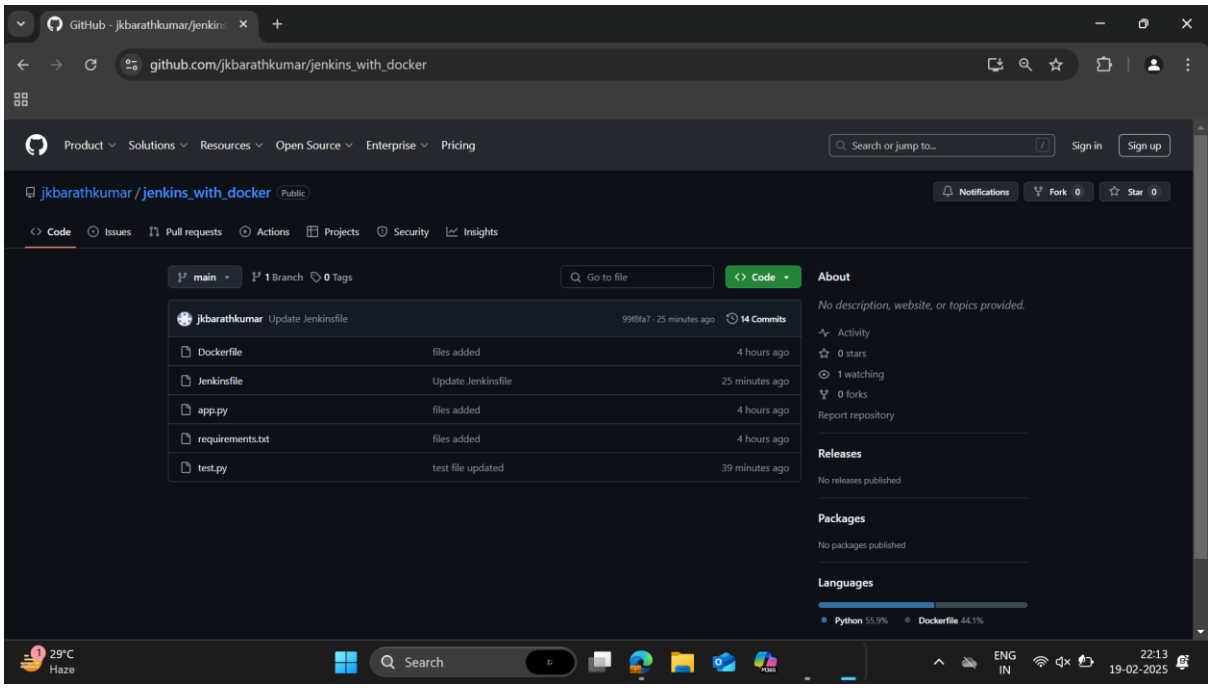
---

7) Click "Build Now"

1. Navigate to **Jenkins Dashboard** → Your Pipeline.
2. Click **Build Now**.

Results:

GITHUB



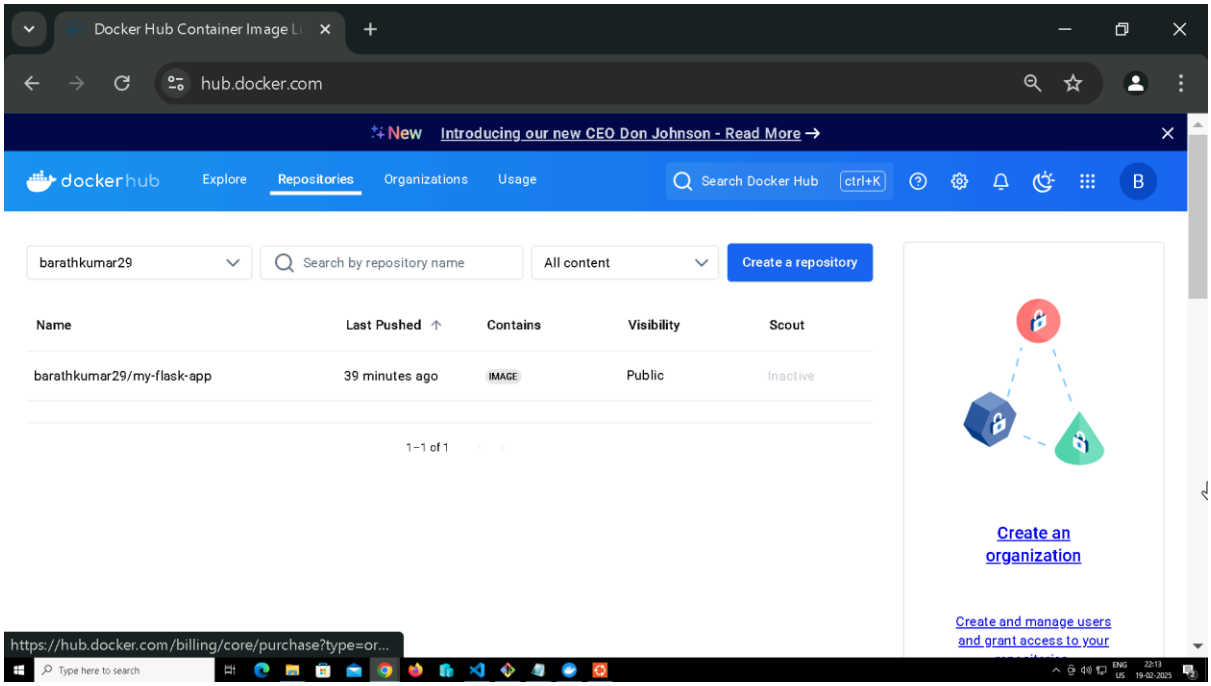
Docker

Creating the docker image using dockerfile

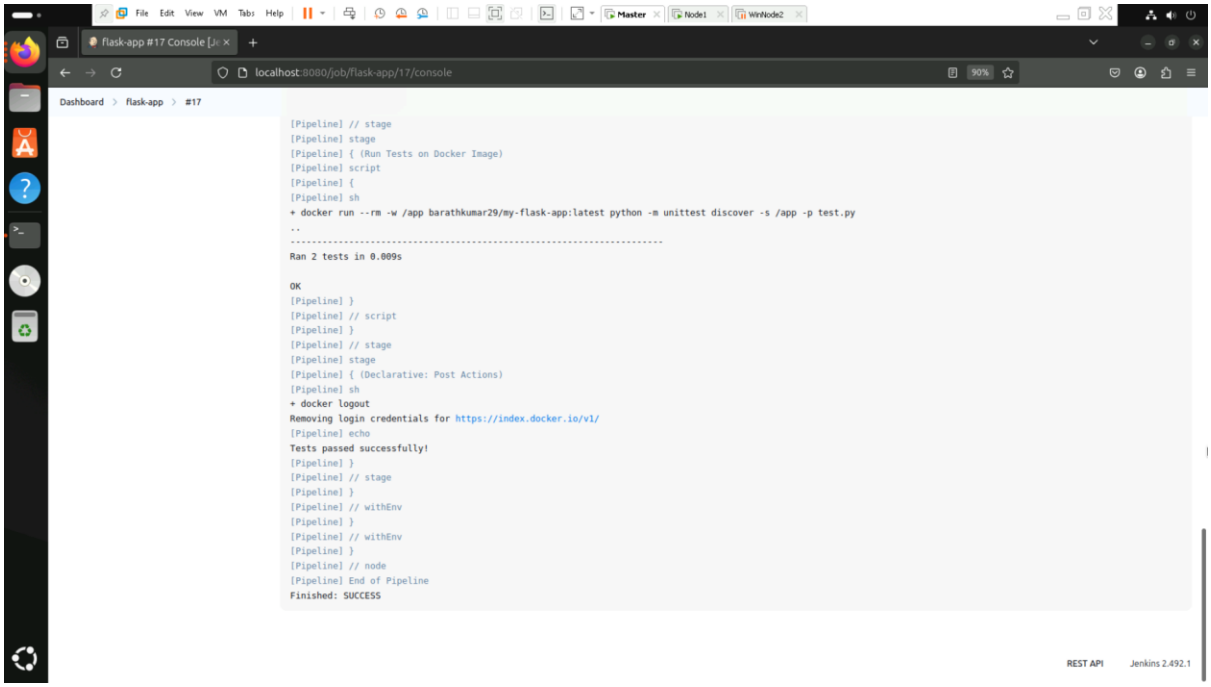
```
PS C:\Users\Administrator\Downloads\ust\flask> docker build -t barathkumar29/my-flask-app .
[+] Building 9.4s (9/9) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 649B
 => [internal] load metadata for docker.io/library/python:3.12-slim
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [1/4] FROM docker.io/library/python:3.12-slim@sha256:34656cd90456349040784165b9decccbcee4de66f3ead0a1168ba893455afd1e
 => => resolve docker.io/library/python:3.12-slim@sha256:34656cd90456349040784165b9decccbcee4de66f3ead0a1168ba893455afd1e
 => [internal] load build context
 => => transferring context: 6.45kB
 => CACHED [2/4] WORKDIR /app
 => [3/4] COPY . /app
 => [4/4] RUN pip install --no-cache-dir -r requirements.txt
 => exporting to image
 => => exporting layers
 => => exporting manifest sha256:4468c0d223782a113fb4db114ef2ea36622f2b6385c05f00a79eb3f230790932
 => => exporting config sha256:ce4d8e2f5999c61edda7131fe53571e101c303cb0bd2bc75ec1a67a10af1d581
 => => exporting attestation manifest sha256:c1e99bc6530ef6571ba6410a1f88604f38b10bc160bdf557f2f72587b00680b0
 => => exporting manifest list sha256:78d59f801aef320c64a995e61f0336a3ad5f6c2f91c95d0b138d82a2c684ad90
 => => naming to docker.io/barathkumar29/my-flask-app:latest
 => => unpacking to docker.io/barathkumar29/my-flask-app:latest

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/o793xuqru7v43cz2les8igncx
```

Push the docker image to dockerhub:

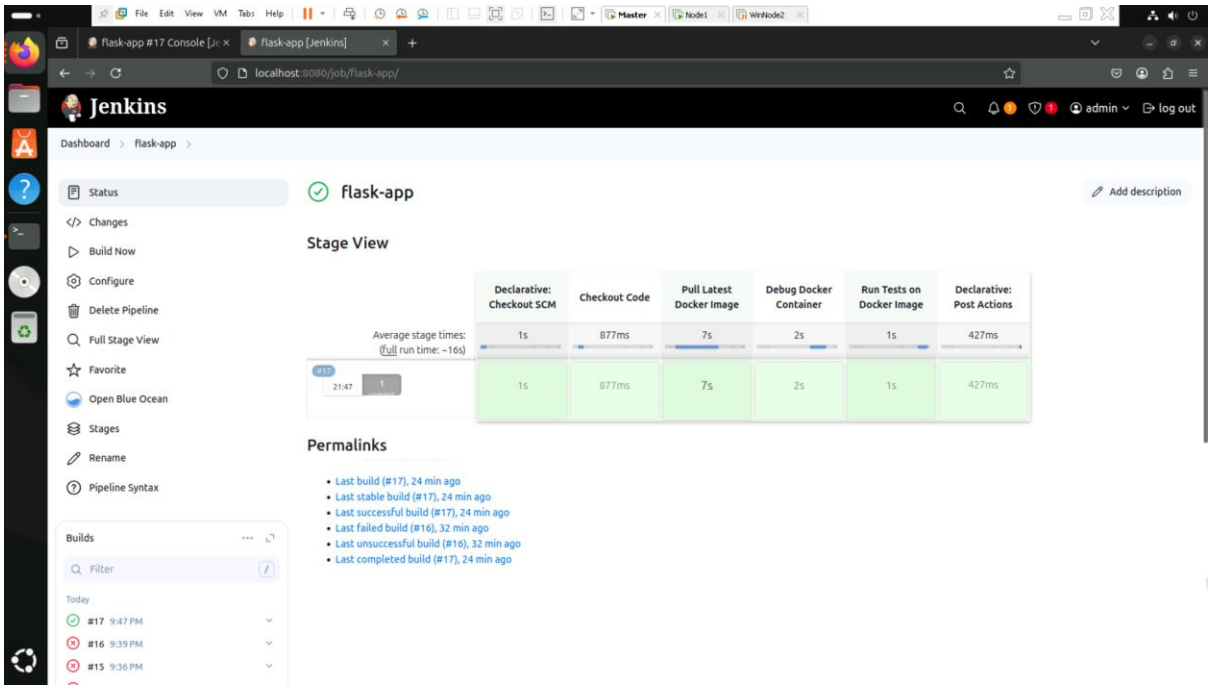
```
PS C:\Users\Administrator\Downloads\ust\flask> docker push barathkumar29/my-flask-app:latest
The push refers to repository [docker.io/barathkumar29/my-flask-app]
f7f520a378bd: Pushed
c29f5b76f736: Layer already exists
58c78b362c25: Layer already exists
6eae4ea23f4a: Layer already exists
c9727c30039b: Layer already exists
859caf3a263d: Layer already exists
1ef3011c664f: Pushed
9b97cb8d00d9: Pushed
```



Jenkins


flask-app #17 Console [Jenkins]
localhost:8080/job/flask-app/17/console
Dashboard > flask-app > #17
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Run Tests on Docker Image)
[Pipeline] script
[Pipeline] {
[Pipeline] sh
+ docker run --rm -w /app barathkumar29/my-flask-app:latest python -m unittest discover -s /app -p test.py
..

Ran 2 tests in 0.009s
OK
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] sh
+ docker logout
Removing login credentials for https://index.docker.io/v1/
[Pipeline] echo
Tests passed successfully!
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
REST API
Jenkins 2.492.1


flask-app #17 Console [Jenkins]
flask-app [Jenkins]
localhost:8080/job/flask-app/
Jenkins
admin
log out
Dashboard > flask-app >
Status
Changes
Build Now
Configure
Delete Pipeline
Full Stage View
Favorite
Open Blue Ocean
Stages
Rename
Pipeline Syntax
Builds
Filter
Today
#17 9:47 PM
#16 9:39 PM
#15 9:36 PM
flask-app
Add description
Stage View
Declarative: Checkout SCM
Checkout Code
Pull Latest Docker Image
Debug Docker Container
Run Tests on Docker Image
Declarative: Post Actions
Average stage times:
(full run time: ~16s)
1s
877ms
7s
2s
1s
427ms
#17
21:47
Permalinks
Last build (#17), 24 min ago
Last stable build (#17), 24 min ago
Last successful build (#17), 24 min ago
Last failed build (#16), 32 min ago
Last unsuccessful build (#16), 32 min ago
Last completed build (#17), 24 min ago