DOCKER ASSIGNMENT

1. AUTOMATE DOCKER BUILT AND PUSH USING JENKINSFILE

STEP 1: Setup a Simple Flask App Project Structure

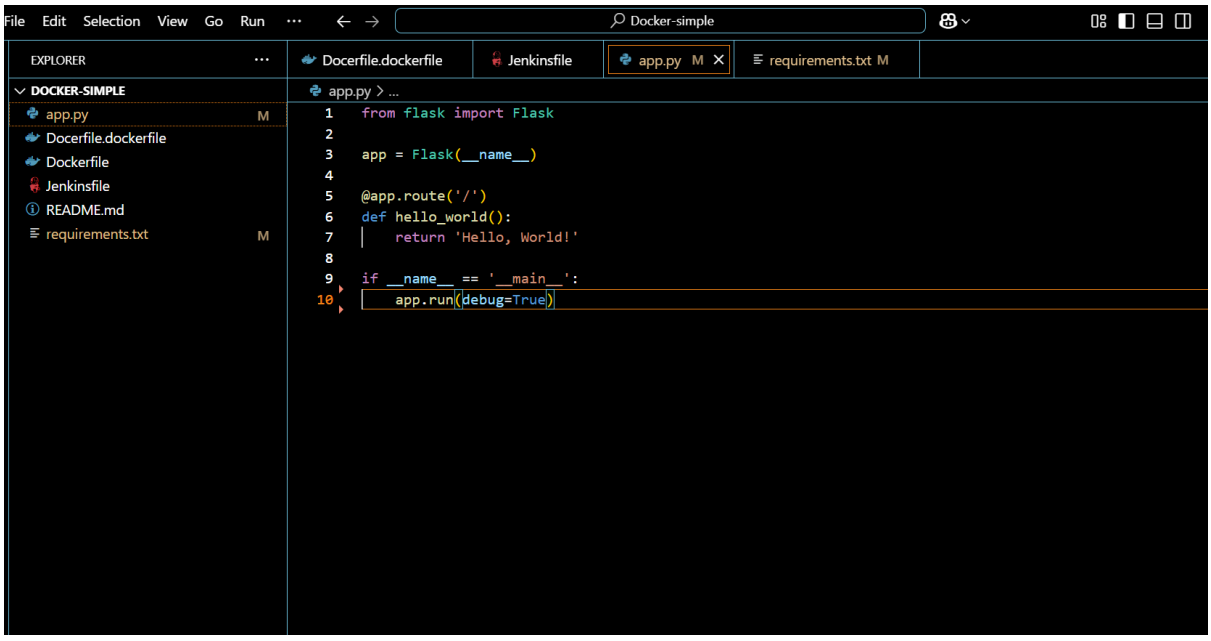
```
my-flask-app
├── app.py
├── requirements.txt
├── Dockerfile
└── Jenkinsfile
```

app.py: The main Flask application file.

requirements.txt: List of dependencies (Flask and others).

Dockerfile: Defines the Docker image for the Flask app.

Jenkinsfile: Contains the Jenkins pipeline configuration

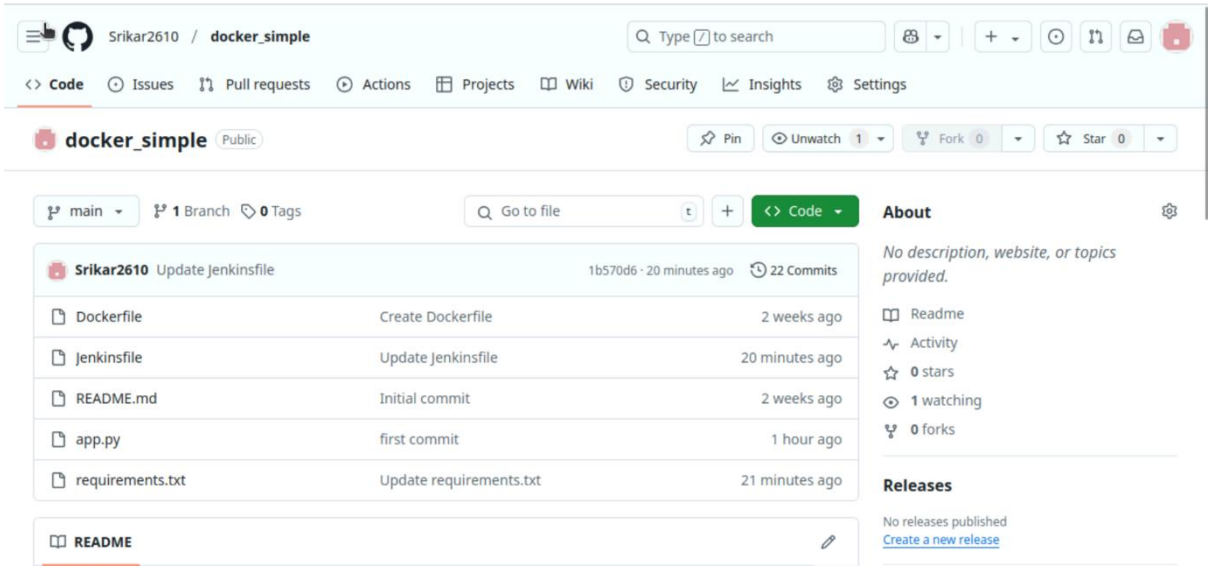


STEP 2: Push the Code to GitHub

- Make sure you have a GitHub repository created for the project.

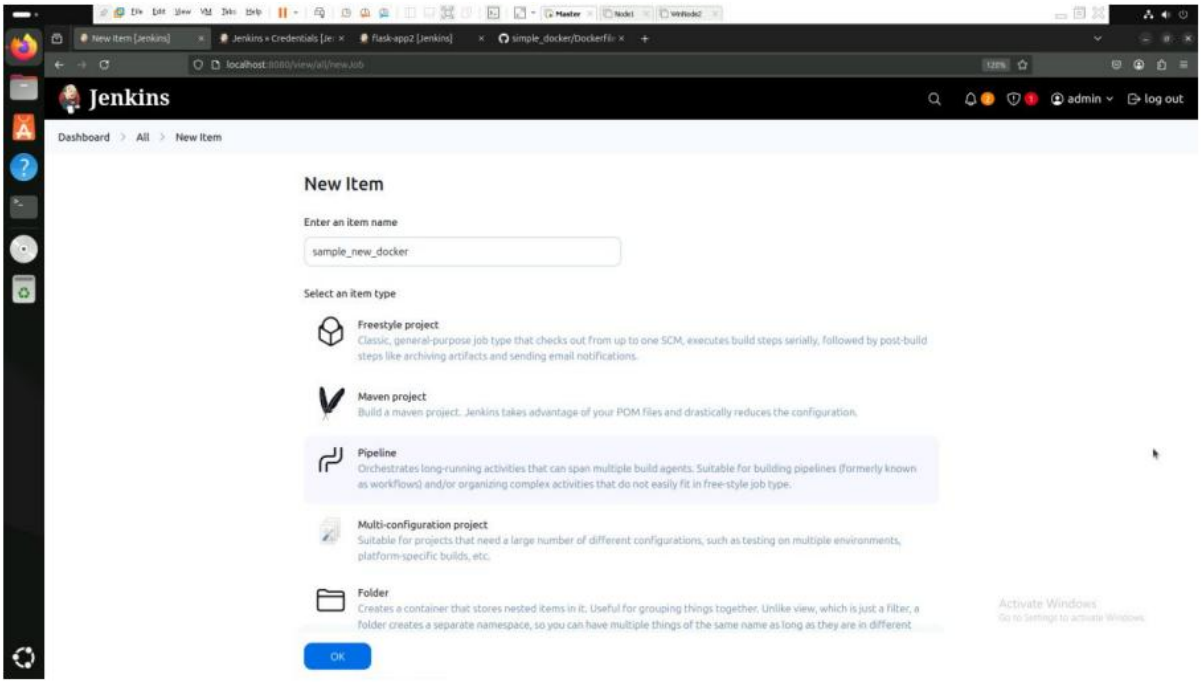
- Push all the files (app.py, requirements.txt, Dockerfile, Jenkinsfile) to the GitHub repository

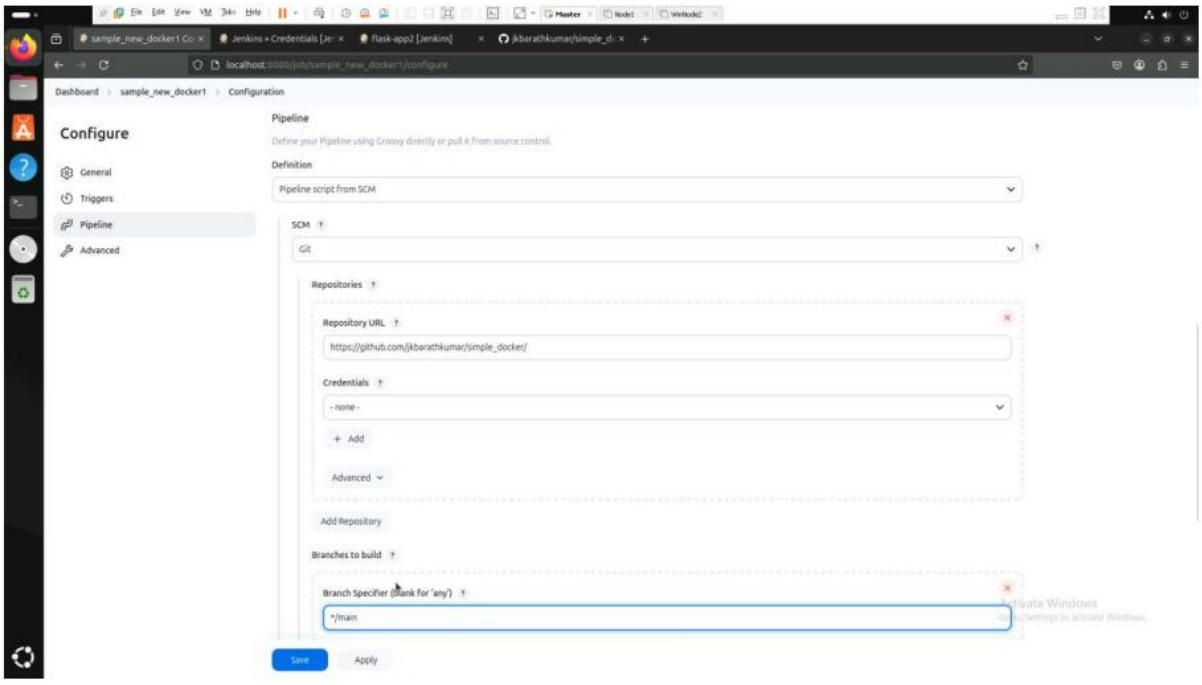
GITHUB URL for the code:
https://github.com/Srikar2610/docker_simple.git



STEP 3: Create a New Pipeline in Jenkins

- In Jenkins, click New Item > Pipeline.
- Enter a name for the pipeline.
- Under Pipeline Definition, select Pipeline script from SCM.
    - Select Git as the SCM.
    - Enter the GitHub repository URL (https://github.com/your-username/myflask-app.git).
    - Set the branch (typically master or main).
- Click Save.

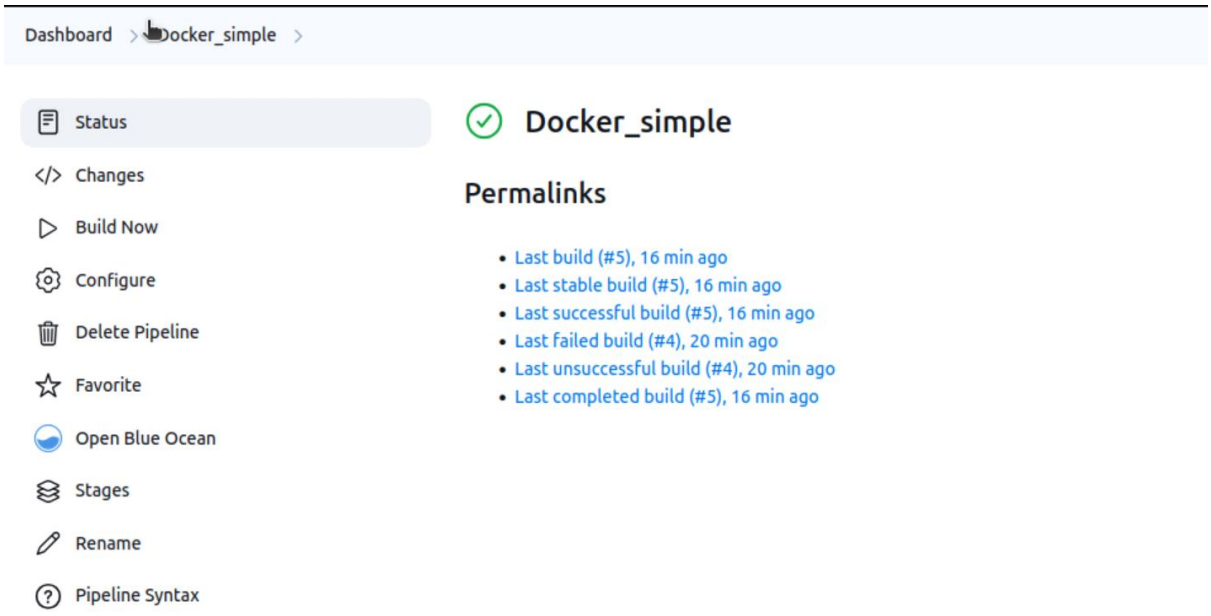


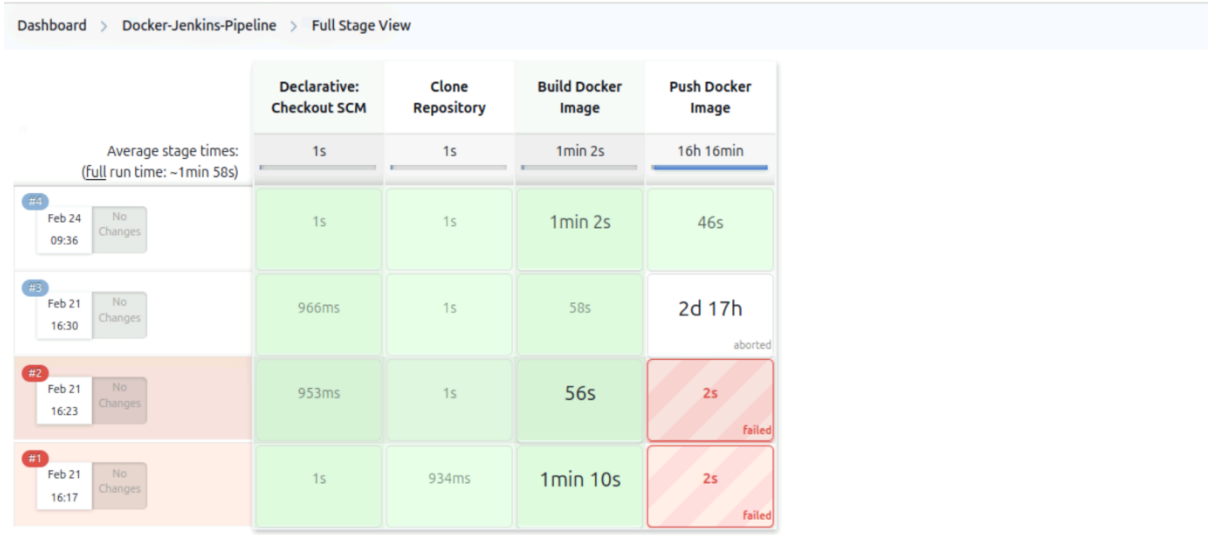


STEP 4: Click Build Now

- Click Build Now in Jenkins to trigger the build.
- Jenkins will:
    - Checkout the code from GitHub.
    - Build the Docker image.

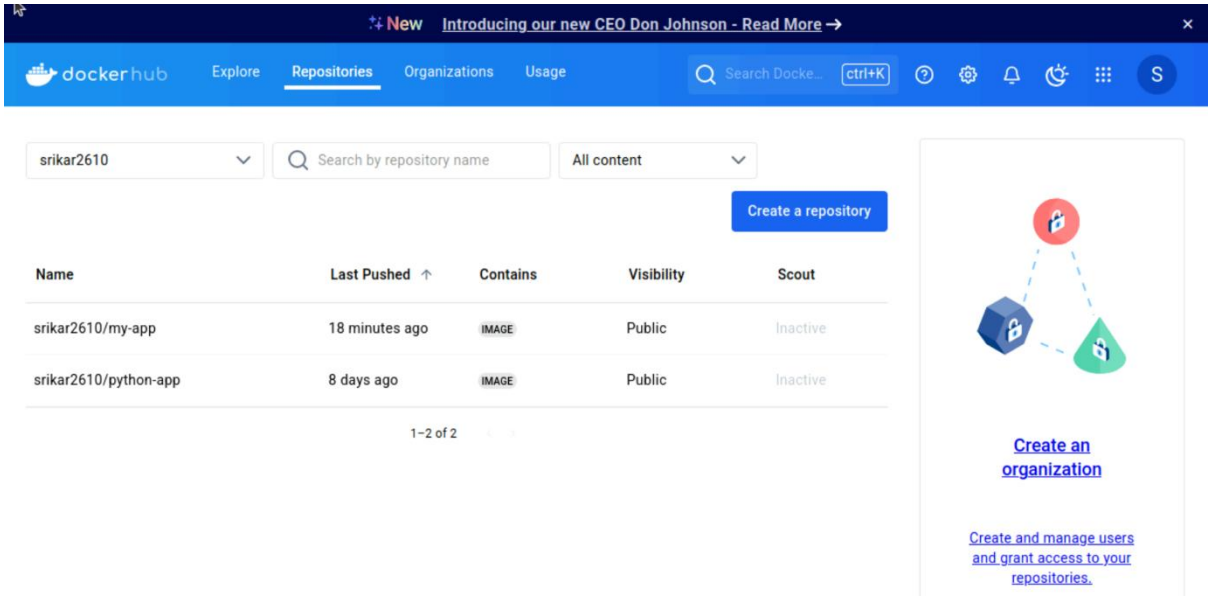
- Push the image to Docker Hub



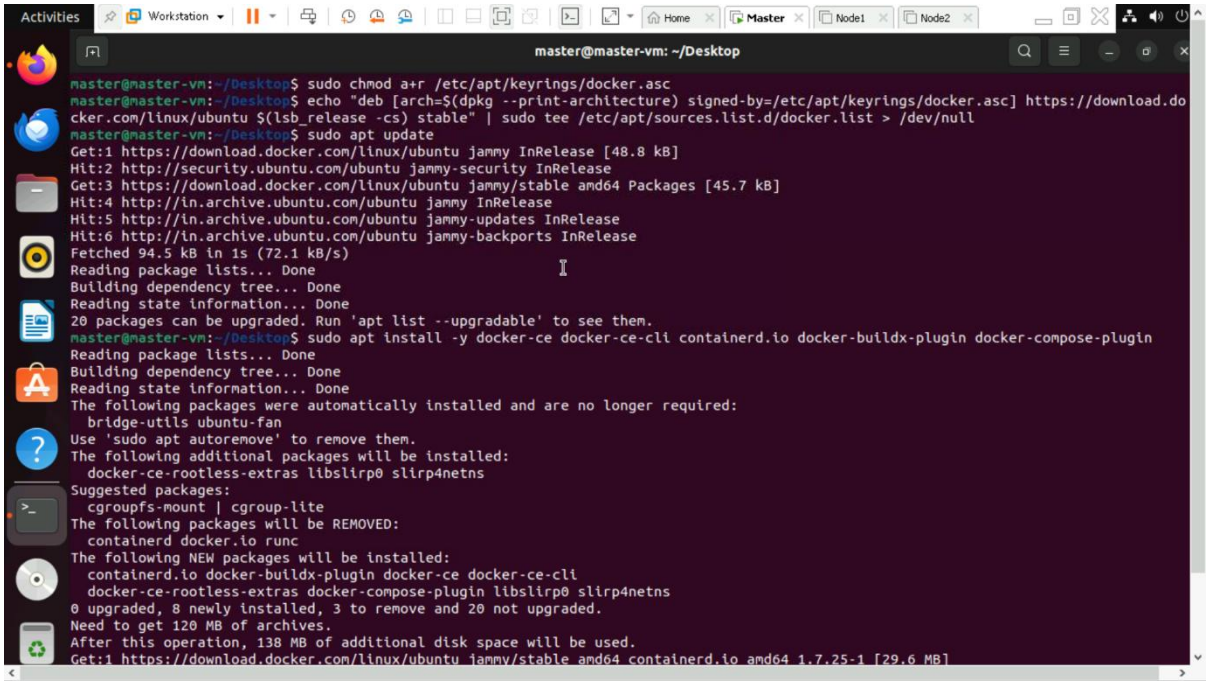


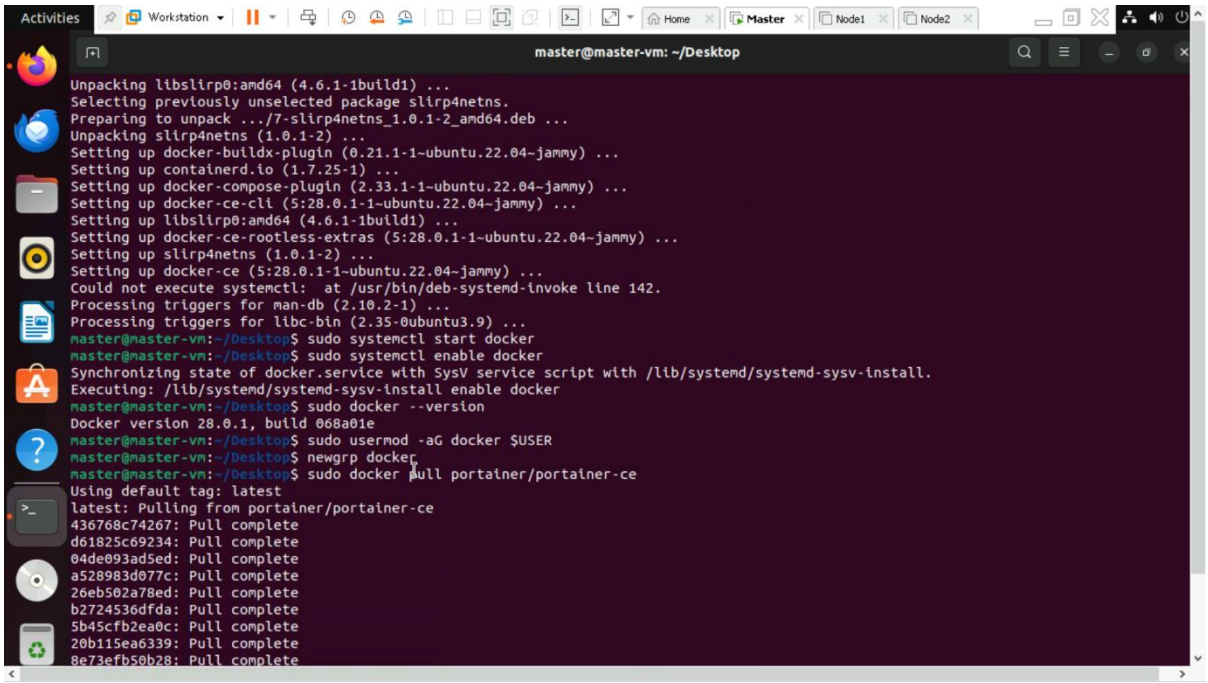
STEP 5: Verify Docker Image on Docker Hub

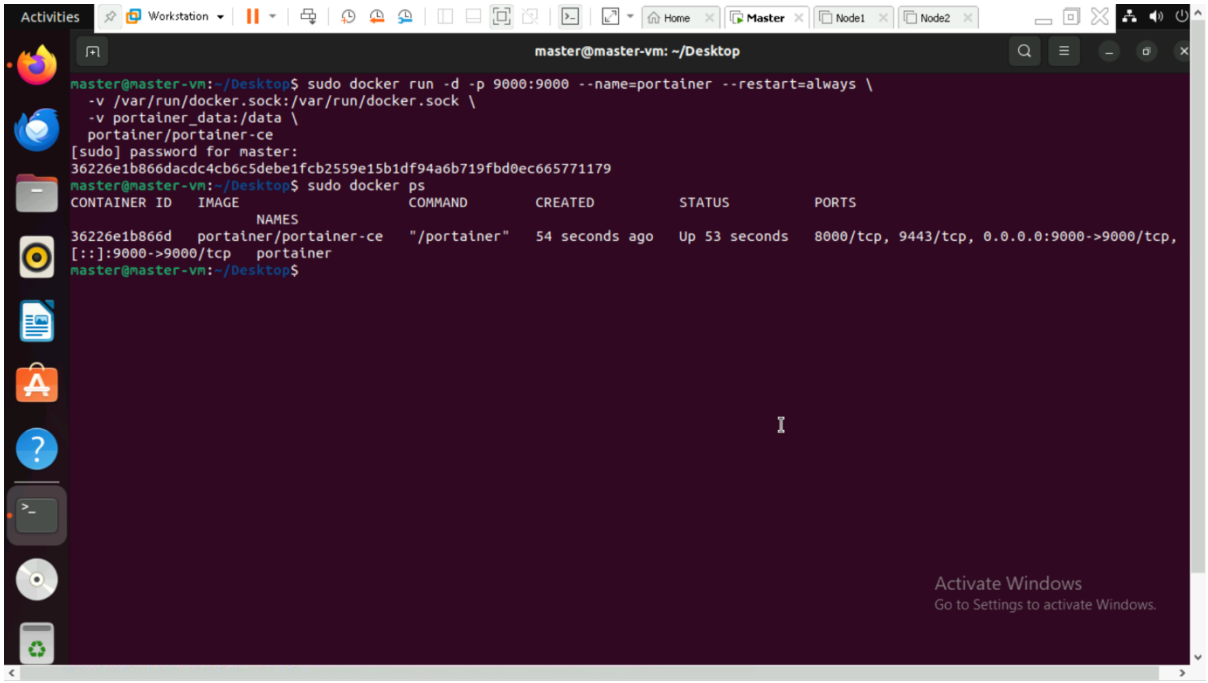
- After the build finishes, log into your Docker Hub account.
- You should see the my-flask-app image under Repositories with the latest tag.

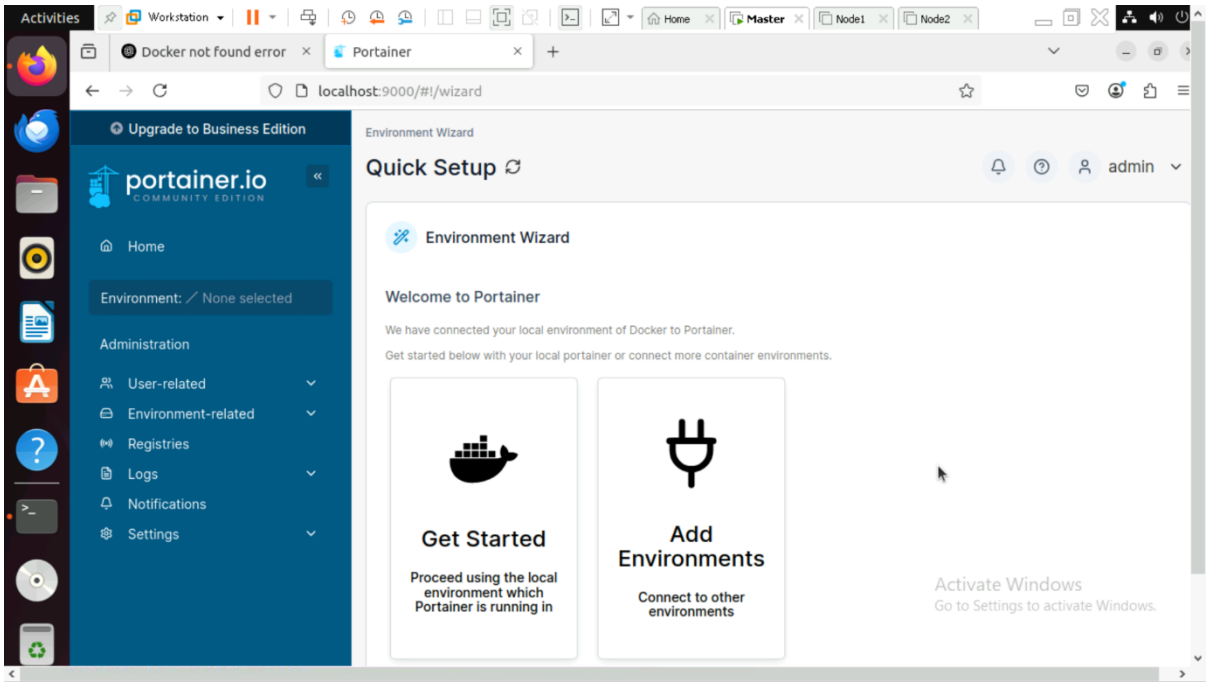


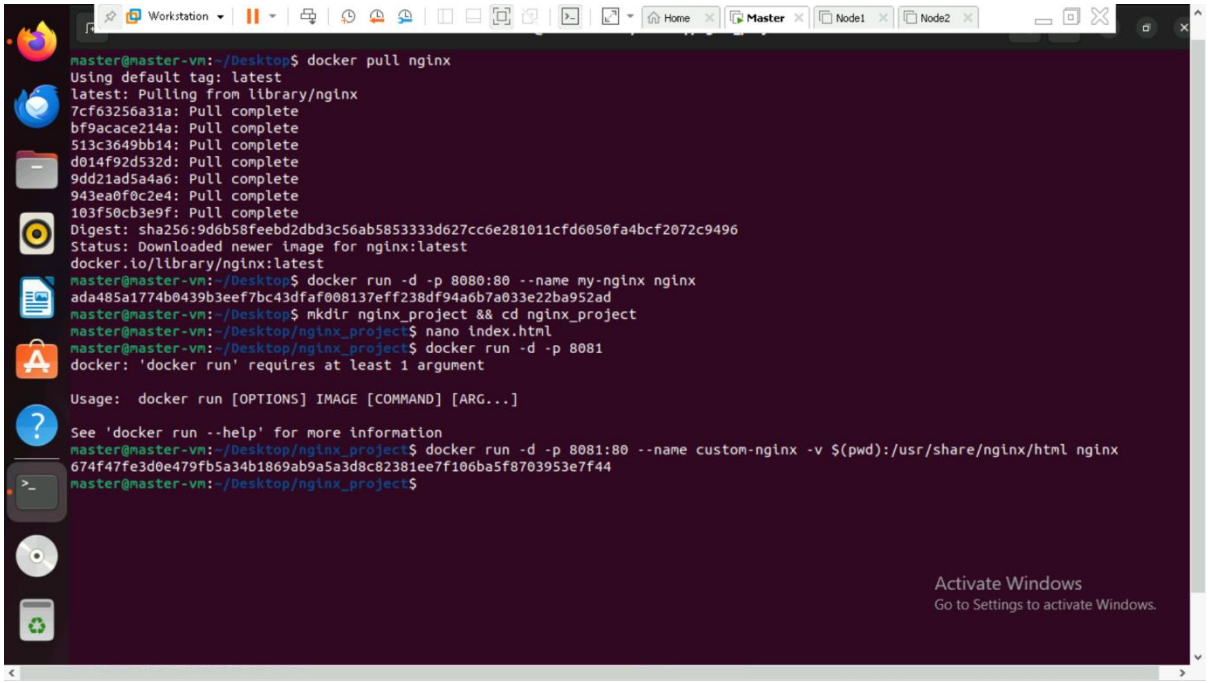
2. DOCKERS AND NGINX

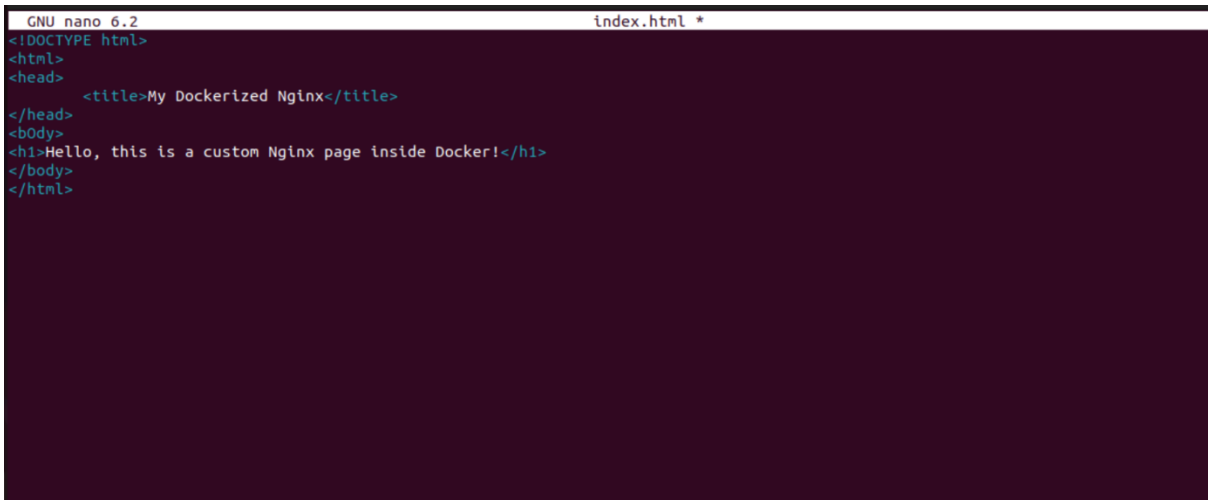

Activities
Workstation
Home
Master
Node1
Node2
master@master-vm: ~/Desktop
master@master-vm:~/Desktop$ sudo chmod a+r /etc/apt/keyrings/docker.asc
master@master-vm:~/Desktop$ echo "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] https://download.do
cker.com/linux/ubuntu $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
master@master-vm:~/Desktop$ sudo apt update
Get:1 https://download.docker.com/linux/ubuntu jammy InRelease [48.8 kB]
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Get:3 https://download.docker.com/linux/ubuntu jammy/stable amd64 Packages [45.7 kB]
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:6 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Fetched 94.5 kB in 1s (72.1 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
20 packages can be upgraded. Run 'apt list --upgradable' to see them.
master@master-vm:~/Desktop$ sudo apt install -y docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
bridge-utils ubuntu-fan
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
docker-ce-rootless-extras libslirp0 slirp4netns
Suggested packages:
cgroupfs-mount | cgroup-lite
The following packages will be REMOVED:
containerd docker.io runc
The following NEW packages will be installed:
containerd.io docker-buildx-plugin docker-ce docker-ce-cli
docker-ce-rootless-extras docker-compose-plugin libslirp0 slirp4netns
0 upgraded, 8 newly installed, 3 to remove and 20 not upgraded.
Need to get 120 MB of archives.
After this operation, 138 MB of additional disk space will be used.
Get:1 https://download.docker.com/linux/ubuntu jammy/stable amd64 containerd.io amd64 1.7.25-1 [29.6 MB]

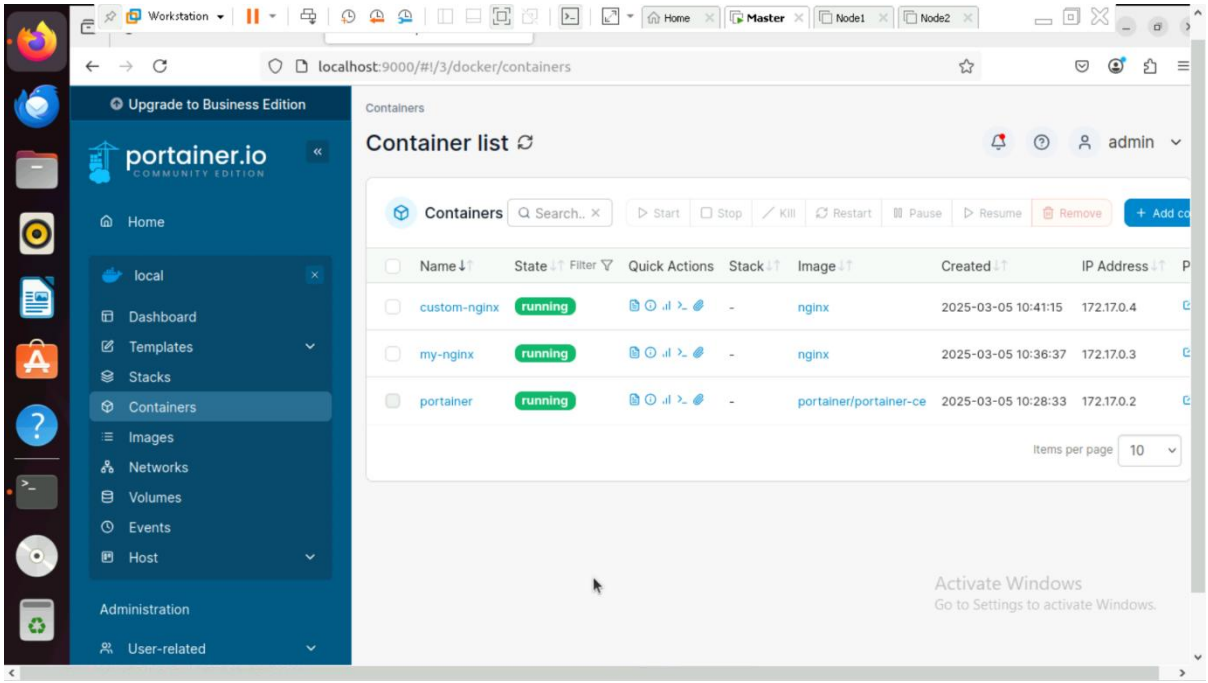

Activities
Workstation
Home
Master
Node1
Node2
master@master-vm: ~/Desktop
Unpacking libslirp0:amd64 (4.6.1-1build1) ...
Selecting previously unselected package slirp4netns.
Preparing to unpack .../7-slirp4netns_1.0.1-2_amd64.deb ...
Unpacking slirp4netns (1.0.1-2) ...
Setting up docker-buildx-plugin (0.21.1-1~ubuntu.22.04~jammy) ...
Setting up containerd.io (1.7.25-1) ...
Setting up docker-compose-plugin (2.33.1-1~ubuntu.22.04~jammy) ...
Setting up docker-ce-cli (5:28.0.1-1~ubuntu.22.04~jammy) ...
Setting up libslirp0:amd64 (4.6.1-1build1) ...
Setting up docker-ce-rootless-extras (5:28.0.1-1~ubuntu.22.04~jammy) ...
Setting up slirp4netns (1.0.1-2) ...
Setting up docker-ce (5:28.0.1-1~ubuntu.22.04~jammy) ...
Could not execute systemctl: at /usr/bin/deb-systemd-invoke line 142.
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.9) ...
master@master-vm:~/Desktop$ sudo systemctl start docker
master@master-vm:~/Desktop$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable docker
master@master-vm:~/Desktop$ sudo docker --version
Docker version 28.0.1, build 068a01e
master@master-vm:~/Desktop$ sudo usermod -aG docker $USER
master@master-vm:~/Desktop$ newgrp docker
master@master-vm:~/Desktop$ sudo docker pull portainer/portainer-ce
Using default tag: latest
latest: Pulling from portainer/portainer-ce
436768c74267: Pull complete
d61825c69234: Pull complete
04de093ad5ed: Pull complete
a528983d077c: Pull complete
26eb502a78ed: Pull complete
b2724536dfda: Pull complete
5b45cfb2ea0c: Pull complete
20b115ea6339: Pull complete
8e73efb50b28: Pull complete

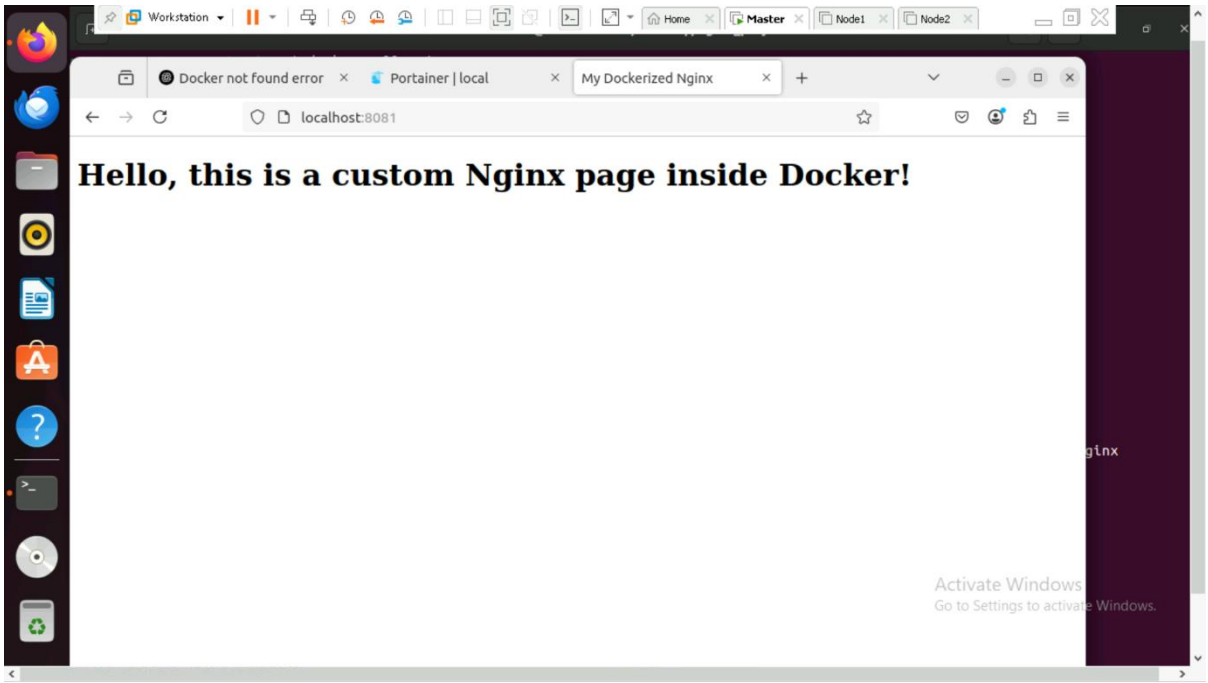

Activities
Workstation
Home
Master
Node1
Node2
master@master-vm: ~/Desktop
master@master-vm:~/Desktop$ sudo docker run -d -p 9000:9000 --name=portainer --restart=always \
-v /var/run/docker.sock:/var/run/docker.sock \
-v portainer_data:/data \
portainer/portainer-ce
[sudo] password for master:
36226e1b866dacdc4cb6c5debe1fcb2559e15b1df94a6b719fbd0ec665771179
master@master-vm:~/Desktop$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS
NAMES
36226e1b866d portainer/portainer-ce "/portainer" 54 seconds ago Up 53 seconds 8000/tcp, 9443/tcp, 0.0.0.0:9000->9000/tcp,
[::]:9000->9000/tcp portainer
master@master-vm:~/Desktop$
Activate Windows
Go to Settings to activate Windows.


Activities
Workstation
Home
Master
Node1
Node2
Docker not found error
Portainer
localhost:9000/#!/wizard
Upgrade to Business Edition
portainer.io
COMMUNITY EDITION
Home
Environment: None selected
Administration
User-related
Environment-related
Registries
Logs
Notifications
Settings
Environment Wizard
Quick Setup
admin
Environment Wizard
Welcome to Portainer
We have connected your local environment of Docker to Portainer.
Get started below with your local portainer or connect more container environments.
Get Started
Proceed using the local environment which Portainer is running in
Add Environments
Connect to other environments
Activate Windows
Go to Settings to activate Windows.


Workstation
Home
Master
Node1
Node2
master@master-vm:~/Desktop$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
7cf63256a31a: Pull complete
bf9acace214a: Pull complete
513c3649bb14: Pull complete
d014f92d532d: Pull complete
9dd21ad5a4a6: Pull complete
943ea0f0c2e4: Pull complete
103f50cb3e9f: Pull complete
Digest: sha256:9d6b58feebd2dbd3c56ab5853333d627cc6e281011cfd6050fa4bcf2072c9496
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
master@master-vm:~/Desktop$ docker run -d -p 8080:80 --name my-nginx nginx
ada485a1774b0439b3eef7bc43dfaf008137eff238df94a6b7a033e22ba952ad
master@master-vm:~/Desktop$ mkdir nginx_project && cd nginx_project
master@master-vm:~/Desktop/nginx_project$ nano index.html
master@master-vm:~/Desktop/nginx_project$ docker run -d -p 8081
docker: 'docker run' requires at least 1 argument
Usage: docker run [OPTIONS] IMAGE [COMMAND] [ARG...]
See 'docker run --help' for more information
master@master-vm:~/Desktop/nginx_project$ docker run -d -p 8081:80 --name custom-nginx -v $(pwd):/usr/share/nginx/html nginx
674f47fe3d0e479fb5a34b1869ab9a5a3d8c82381ee7f106ba5f8703953e7f44
master@master-vm:~/Desktop/nginx_project$
Activate Windows
Go to Settings to activate Windows.


GNU nano 6.2
index.html *
<!DOCTYPE html>
<html>
<head>
<title>My Dockerized Nginx</title>
</head>
<bOdy>
<h1>Hello, this is a custom Nginx page inside Docker!</h1>
</body>
</html>


Workstation
Home
Master
Node1
Node2
localhost:9000/#!/3/docker/containers
Upgrade to Business Edition
portainer.io
COMMUNITY EDITION
Containers
Container list
admin
Home
local
Dashboard
Templates
Stacks
Containers
Images
Networks
Volumes
Events
Host
Administration
User-related
Containers
Search...
Start
Stop
Kill
Restart
Pause
Resume
Remove
Add co
Name
State
Filter
Quick Actions
Stack
Image
Created
IP Address
custom-nginx
running
nginx
2025-03-05 10:41:15
172.17.0.4
my-nginx
running
nginx
2025-03-05 10:36:37
172.17.0.3
portainer
running
portainer/portainer-ce
2025-03-05 10:28:33
172.17.0.2
Items per page
10
Activate Windows
Go to Settings to activate Windows.


Workstation
Home
Master
Node1
Node2
Docker not found error
Portainer | local
My Dockerized Nginx
localhost:8081
Hello, this is a custom Nginx page inside Docker!
Activate Windows
Go to Settings to activate Windows.