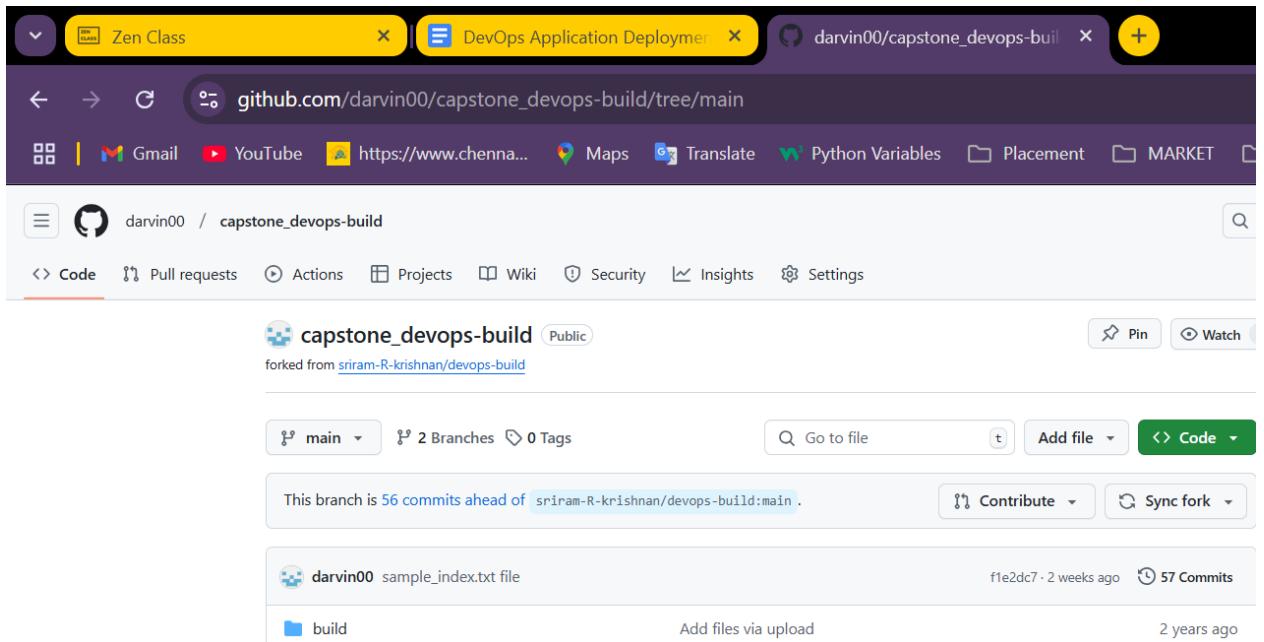


CAPSTONE PROJECT : APPLICATION DEPLOYMENT

STEP 1 : clone the repo <https://github.com/sriram-R-krishnan/devops-build>



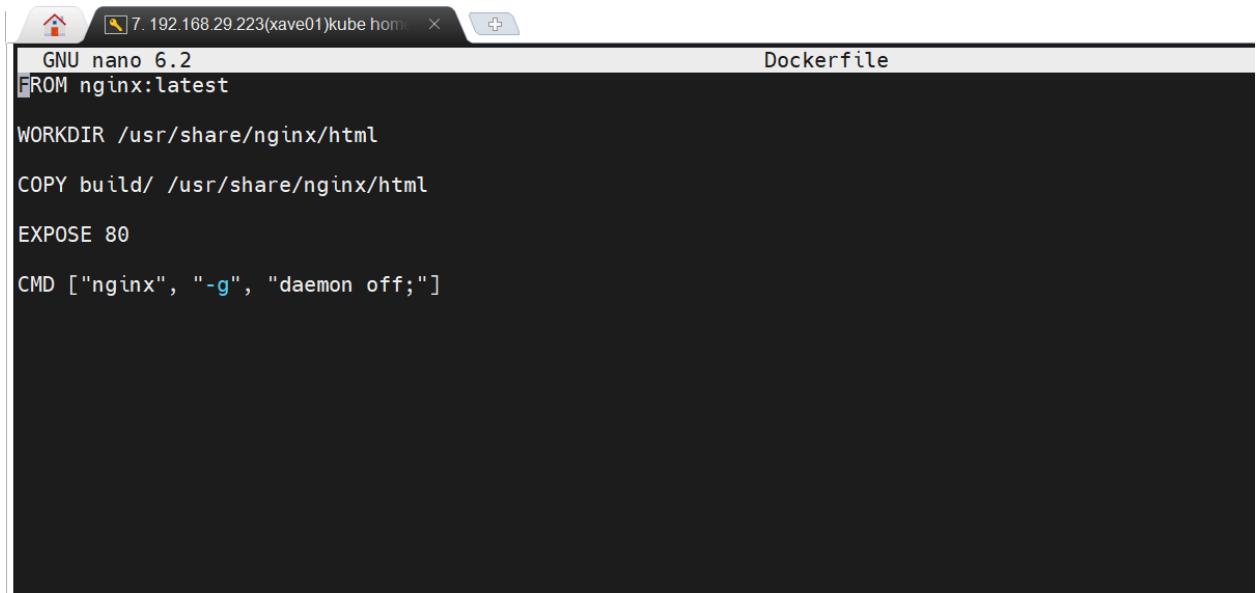
Step2: Docker

- Dockerize the application by creating a Dockerfile
- Create a docker-compose file to use the above image

Git Clone

```
root@xavier:~# git clone https://github.com/darvin00/capstone_devops-build.git
Cloning into 'capstone_devops-build'...
remote: Enumerating objects: 21, done.
remote: Counting objects: 100% (8/8), done.
remote: Compressing objects: 100% (8/8), done.
remote: Total 21 (delta 0), reused 0 (delta 0), pack-reused 13 (from 1)
Receiving objects: 100% (21/21), 720.09 KiB | 3.51 MiB/s, done.
root@xavier:~#
root@xavier:~# ls
capstone_devops-build  snap
root@xavier:~#
root@xavier:~# cd capstone_devops-build/
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build# l
```

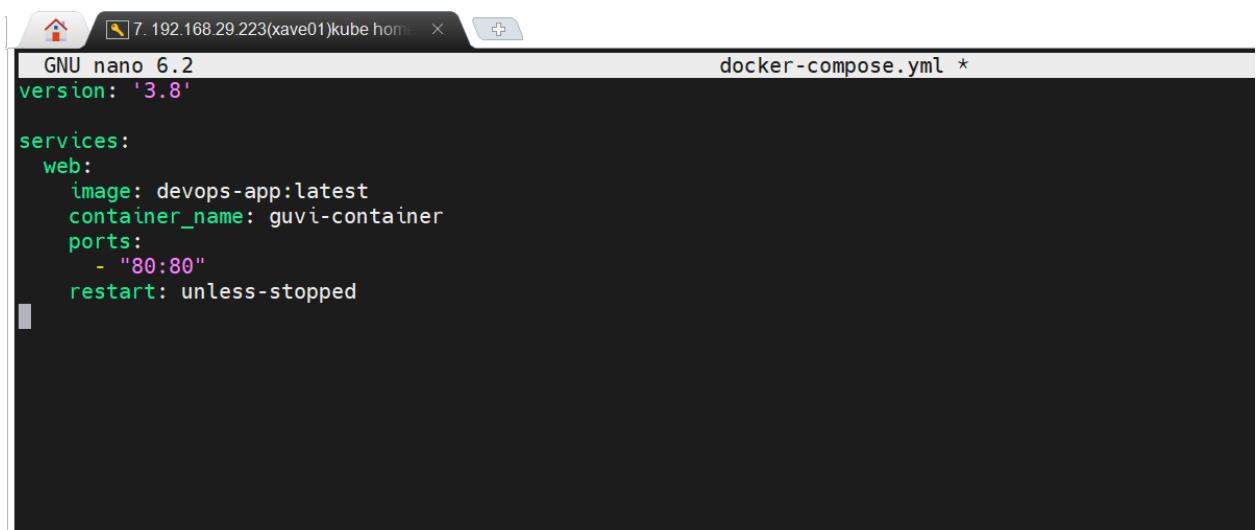
Dockerfile



A screenshot of a terminal window titled "7. 192.168.29.223(xave01)kube home". The file being edited is named "Dockerfile". The content of the file is:

```
GNU nano 6.2
FROM nginx:latest
WORKDIR /usr/share/nginx/html
COPY build/ /usr/share/nginx/html
EXPOSE 80
CMD ["nginx", "-g", "daemon off;"]
```

Docker-compose.yml



A screenshot of a terminal window titled "7. 192.168.29.223(xave01)kube home". The file being edited is named "docker-compose.yml". The content of the file is:

```
version: '3.8'
services:
  web:
    image: devops-app:latest
    container_name: guvi-container
    ports:
      - "80:80"
    restart: unless-stopped
```

Step3: Bash Scripting

- build.sh - for building docker images
- deploy.sh - for deploying the image to server

build.sh



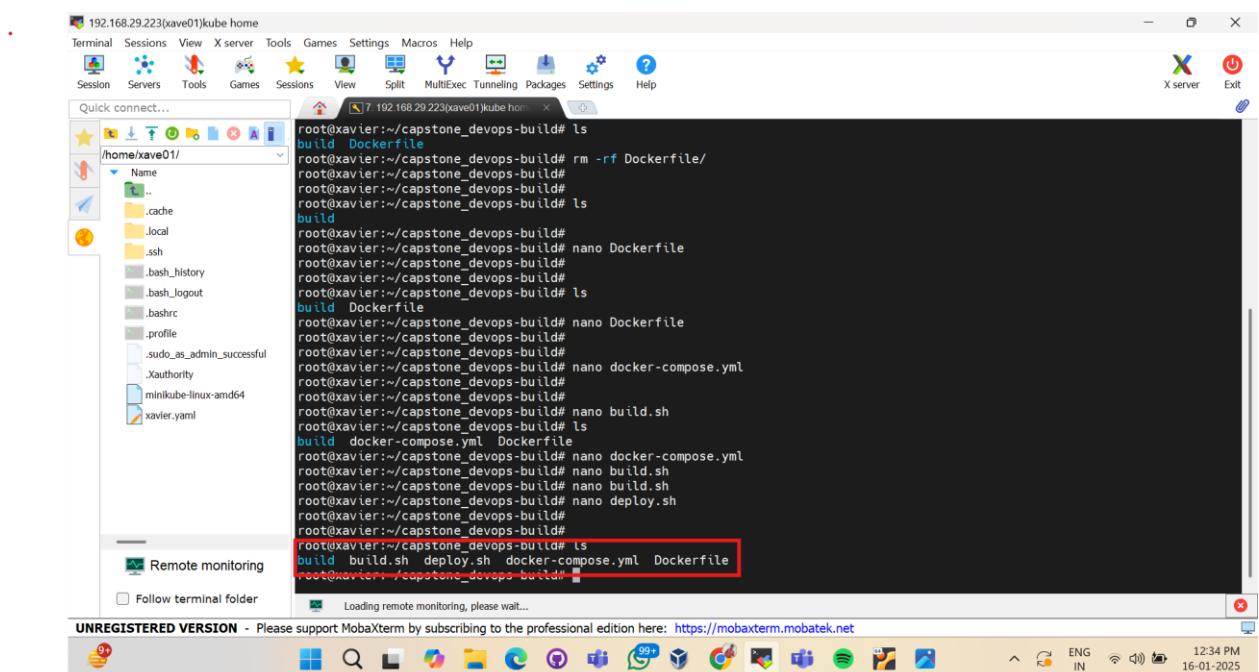
GNU nano 6.2 build.sh

```
#!/bin/bash
docker build -t devops-app .
```

deploy.sh

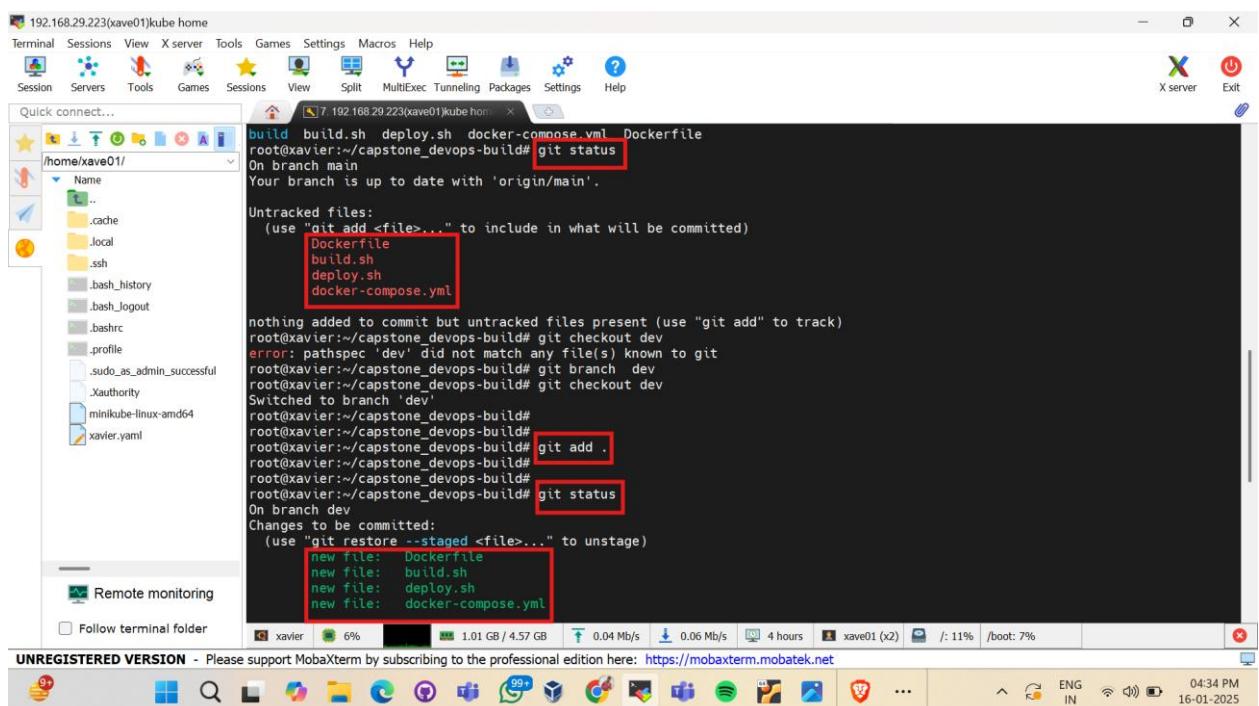
The screenshot shows a terminal window with a dark background. At the top, there's a header bar with icons for home, search, and a plus sign. The main area is a terminal window titled "7. 192.168.29.223(xave01)kube home". Inside the terminal, the command "GNU nano 6.2" is displayed at the top. Below it, the file content is shown:

```
#!/bin/bash
docker-compose up -d
```



Create dev Branch:

```
root@xavier:~/capstone_devops-build# git push origin dev
Username for 'https://github.com': darvin00
Password for 'https://darvin00@github.com':
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'dev' on GitHub by visiting:
remote:     https://github.com/darvin00/capstone_devops-build/pull/new/dev
remote:
To https://github.com/darvin00/capstone_devops-build.git
 * [new branch]      dev -> dev
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build#
```



```
root@xavier:~/capstone_devops-build# git commit -m "Pushed to dev branch"
Author identity unknown

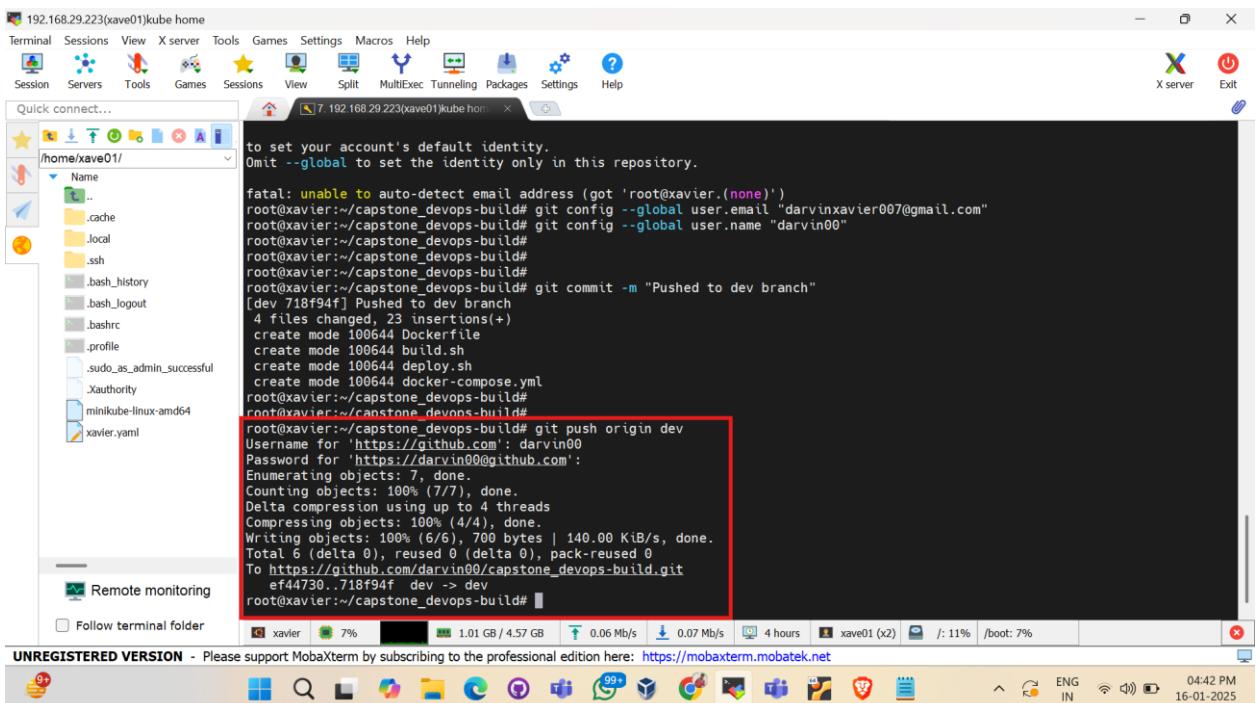
*** Please tell me who you are.

Run

git config --global user.email "you@example.com"
git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: unable to auto-detect email address (got 'root@xavier.(none)')
root@xavier:~/capstone_devops-build# git config --global user.email "darvinxavier007@gmail.com"
root@xavier:~/capstone_devops-build# git config --global user.name "darvin00"
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build# git commit -m "Pushed to dev branch"
[dev 718f94f] Pushed to dev branch
 4 files changed, 23 insertions(+)
   create mode 100644 Dockerfile
   create mode 100644 build.sh
   create mode 100644 deploy.sh
   create mode 100644 docker-compose.yml
root@xavier:~/capstone_devops-build#
```



```
192.168.29.223(xave01)kube home
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
/home/xave01/
Name
.. .cache .local .ssh .bash_history .bash_logout .bashrc .profile .sudo_as_admin_successful .xauthority minikube-linux-amd64 xavier.yaml
to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: unable to auto-detect email address (got 'root@xavier.(none)')
root@xavier:~/capstone_devops-build# git config --global user.email "darvinxavier007@gmail.com"
root@xavier:~/capstone_devops-build# git config --global user.name "darvin00"
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build# git commit -m "Pushed to dev branch"
[dev 718f94f] Pushed to dev branch
 4 files changed, 23 insertions(+)
   create mode 100644 Dockerfile
   create mode 100644 build.sh
   create mode 100644 deploy.sh
   create mode 100644 docker-compose.yml
root@xavier:~/capstone_devops-build# root@xavier:~/capstone_devops-build# git push origin dev
Username for 'https://github.com': darvin00
Password for 'https://darvin00@github.com':
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 4 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 700 bytes | 140.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/darvin00/capstone_devops-build.git
 efd44730..718f94f dev -> dev
root@xavier:~/capstone_devops-build#
```

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

About
No description, website, or topics provided.
Activity
0 stars
0 watching
0 forks

Releases
No releases published
[Create a new release](#)

Packages
No packages published
[Publish your first package](#)

Step4: Docker hub

Create 2 repos "dev" and "prod" to push images.

"Prod" repo must be private and "dev" repo can be public

Name	Last Pushed	Contains	Visibility	Scout
xave01/prod	12 days ago	IMAGE	Private	Inactive
xave01/dev	12 days ago	IMAGE	Public	Inactive
xave01/custom-nginx	4 months ago	IMAGE	Public	Inactive

By clicking "Accept All Cookies", you agree to the storing of cookies on your device to enhance site navigation, analyze site usage, and assist in our production efforts.
<https://hub.docker.com/repository/docker/xave01/custom-nginx>

Step5: Jenkins

- Install and configure jenkins build step as per needs to build, push & deploy the application

Connect jenkins to the github repo with auto build trigger from both dev & master branch

- If code pushed to dev branch, docker image must build and pushed to dev repo in docker hub
- If dev merged to master, then docker image must be pushed to prod repo in docker hub

The screenshot shows the AWS EC2 Instances page with two instances listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4	Elastic IP	IPv6 IPs	Monitoring	Security group name	Key name
capstone_deploy	i-0819724356cf9593	Running	t3.large	3/3 checks pass	View alarms	us-west-2c	ec2-52-40-215-195.us...	52.40.215.195	-	-	disabled	capstone_sg	aws-Oregon-k
capstone_jenkins	i-0034a01e4d6e9642	Running	t2.xlarge	Initializing	View alarms	us-west-2b	ec2-54-245-221-138.us...	54.245.221.138	-	-	disabled	ssh	aws-Oregon-k

The 'Actions' dropdown for the selected instance (i-0034a01e4d6e9642) includes the following options:

- Launch instances

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

```
/var/lib/jenkins/secrets/initialAdminPassword
```

Please copy the password from either location and paste it below.

Administrator password

[Continue](#)

44.243.127.54(ubuntu)cap

Terminal Sessions View X server Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...

* Support: <https://ubuntu.com/pro>

System information as of Sat Jan 18 11:11:50 UTC 2025

```
System load: 0.21 Processes: 144
Usage of /: 10.5% of 28.02GB Users logged in: 1
Memory usage: 9% IPv4 address for enX0: 172.31.30.60
Swap usage: 0%
```

Expanded Security Maintenance for Applications is not enabled.

```
1 update can be applied immediately.
1 of these updates is a standard security update.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

Last login: Sat Jan 18 11:08:50 2025 from 103.186.120.91

```
ubuntu@ip-172-31-30-60:~$ sudo -s
root@ip-172-31-30-60:/home/ubuntu#
root@ip-172-31-30-60:/home/ubuntu#
root@ip-172-31-30-60:/home/ubuntu#
root@ip-172-31-30-60:~# cd
root@ip-172-31-30-60:~#
root@ip-172-31-30-60:~# cat /var/lib/jenkins/secrets/initialAdminPassword
86e78ceebb574477abca10afaffa239f
root@ip-172-31-30-60:~#
```

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

ip-172-31-30-60 0% 1.62 GB / 15.62 GB 0.01 Mb/s 0.00 Mb/s 8 min ubuntu (x4) /: 11% /boot: 10% /boot/efi ← → ⌂

ENG IN 04:44 PM 18-01-2025

Setup Wizard [Jenkins] Not secure 44.243.127.54:8080

Gmail YouTube https://www.chenna... Maps Translate Python Variables Placement MARKET Bash script aws DevOps Candidate Home All Bookmarks

Getting Started

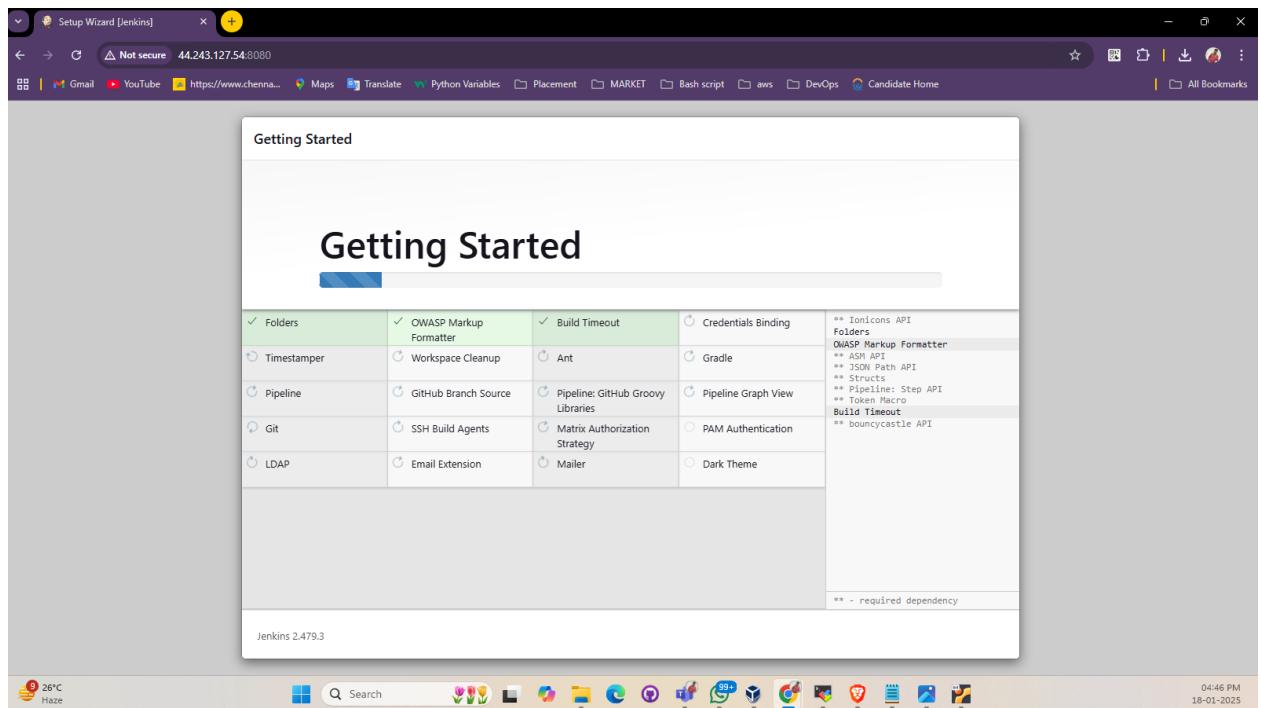
Getting Started

✓ Folders	✓ OWASP Markup Formatter	✓ Build Timeout	✗ Credentials Binding
✗ Timestamper	✗ Workspace Cleanup	✗ Ant	✗ Gradle
✗ Pipeline	✗ GitHub Branch Source	✗ Pipeline: GitHub Groovy Libraries	✗ Pipeline Graph View
✗ Git	✗ SSH Build Agents	✗ Matrix Authorization Strategy	✗ PAM Authentication
✗ LDAP	✗ Email Extension	✗ Mailer	✗ Dark Theme

** Jenkins Icons API
** Folders
** OWASP Markup Formatter
** ASH API
** JSON Path API
** Structs
** Pipeline: Step API
** Tool Macro
Build Timeout
** bouncycastle API

** - required dependency

Jenkins 2.479.3



Setup Wizard [Jenkins] Not secure 44.243.127.54:8080

Gmail YouTube https://www.chenna... Maps Translate Python Variables Placement MARKET Bash script aws DevOps Candidate Home All Bookmarks

Getting Started

Create First Admin User

Username: xavier

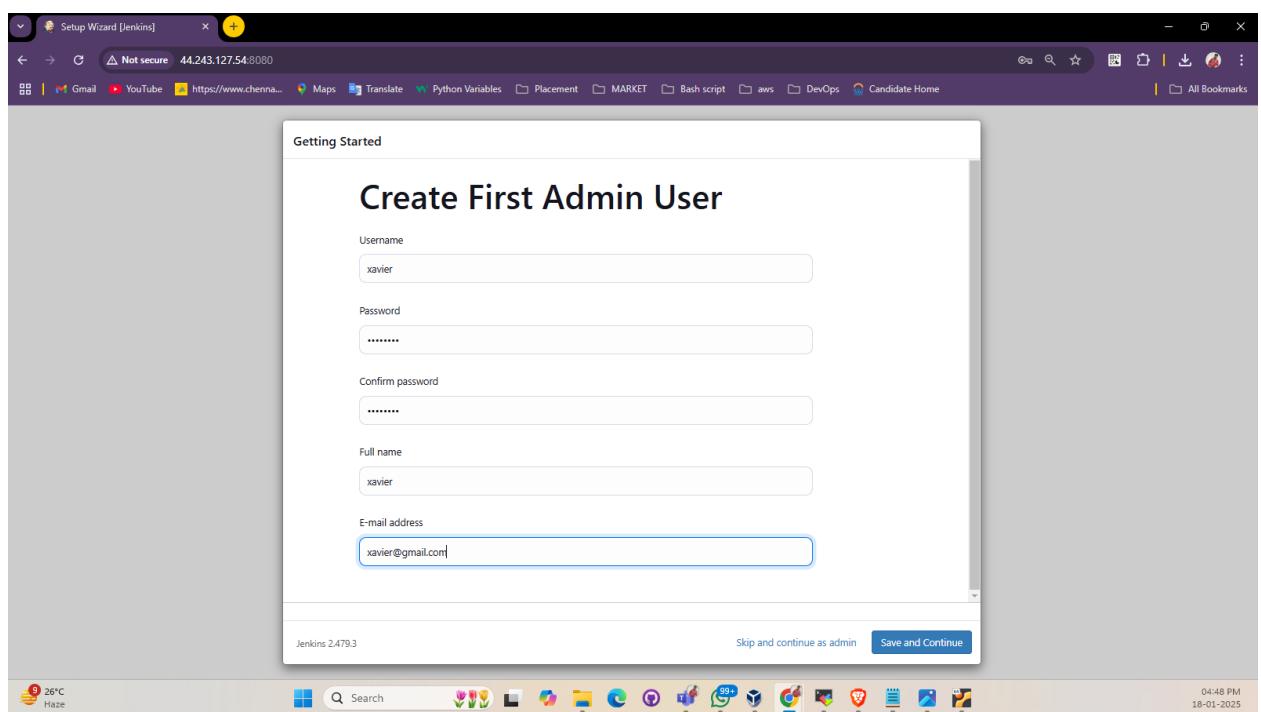
Password:

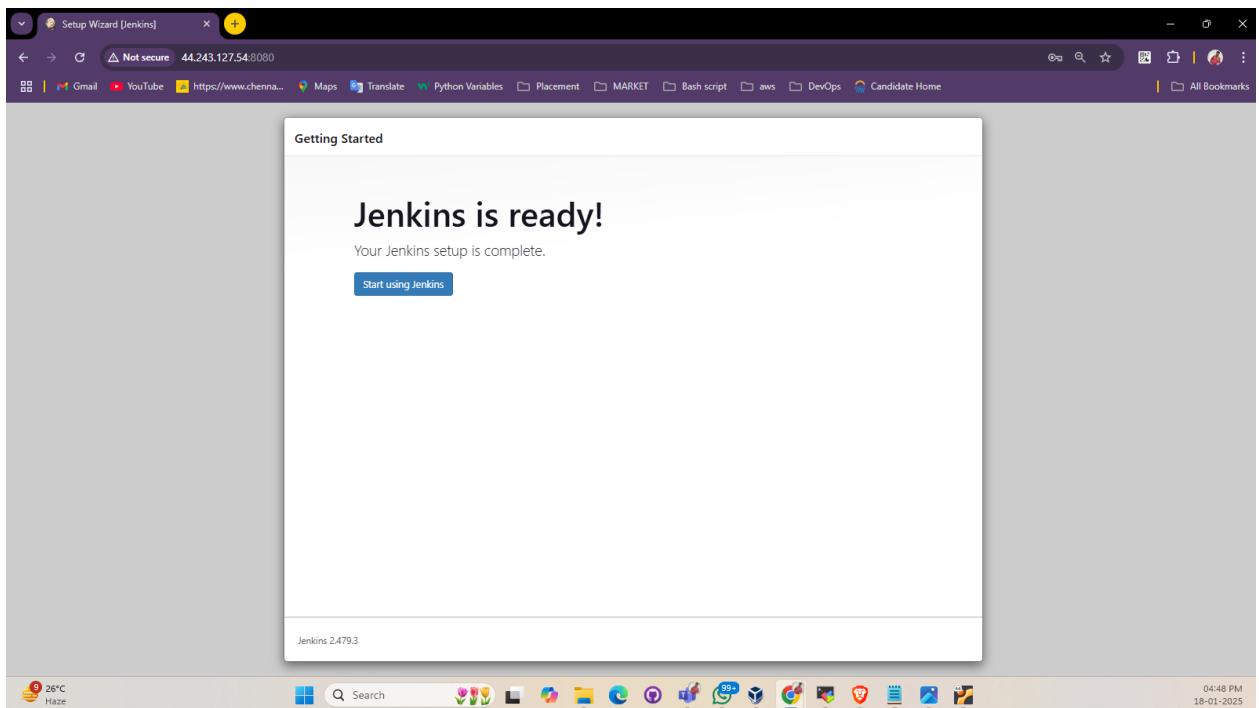
Confirm password:

Full name: xavier

E-mail address: xavier@gmail.com

Jenkins 2.479.3 Skip and continue as admin Save and Continue





Pipeline script from SCM for dev Branch

Configure

General

Pipeline

Advanced

Pipeline

Define your Pipeline using Groovy directly or pull it from source control.

Definition

Pipeline script from SCM

SCM

Git

Repositories

Repository URL

https://github.com/darvin00/capstone_devops-build.git

Credentials

- none -

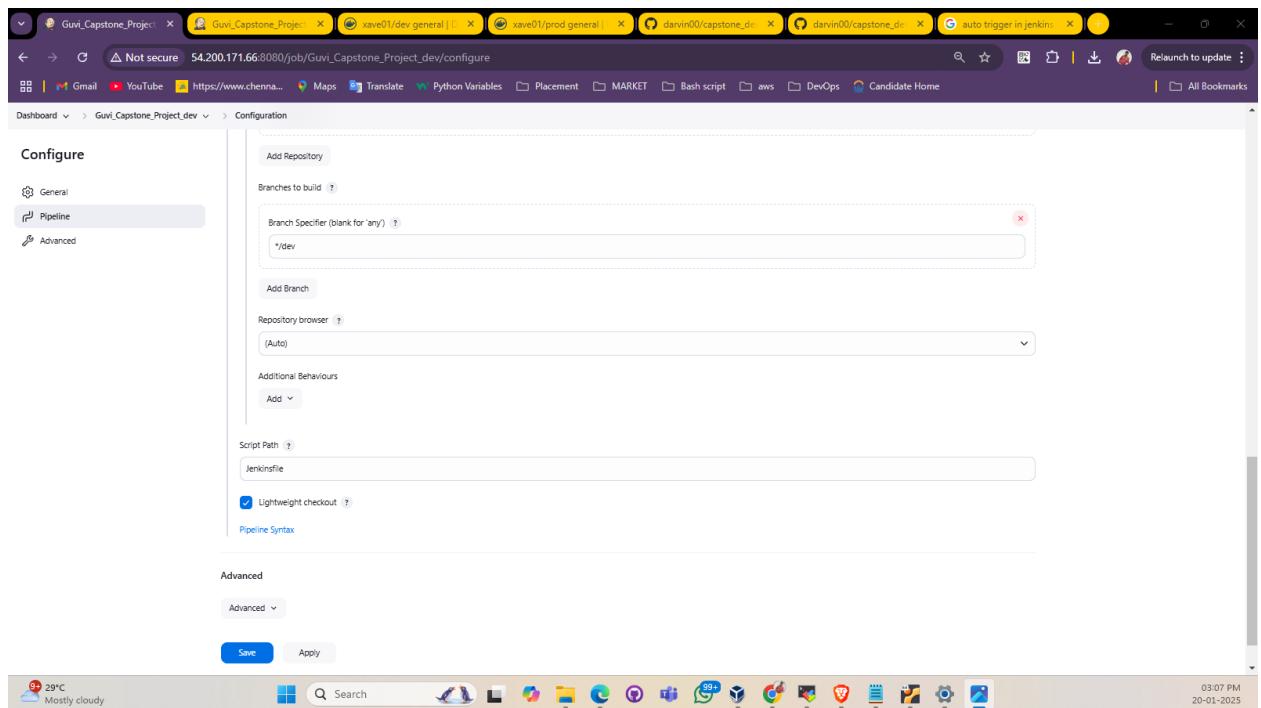
+ Add

Advanced

Add Repository

Save Apply

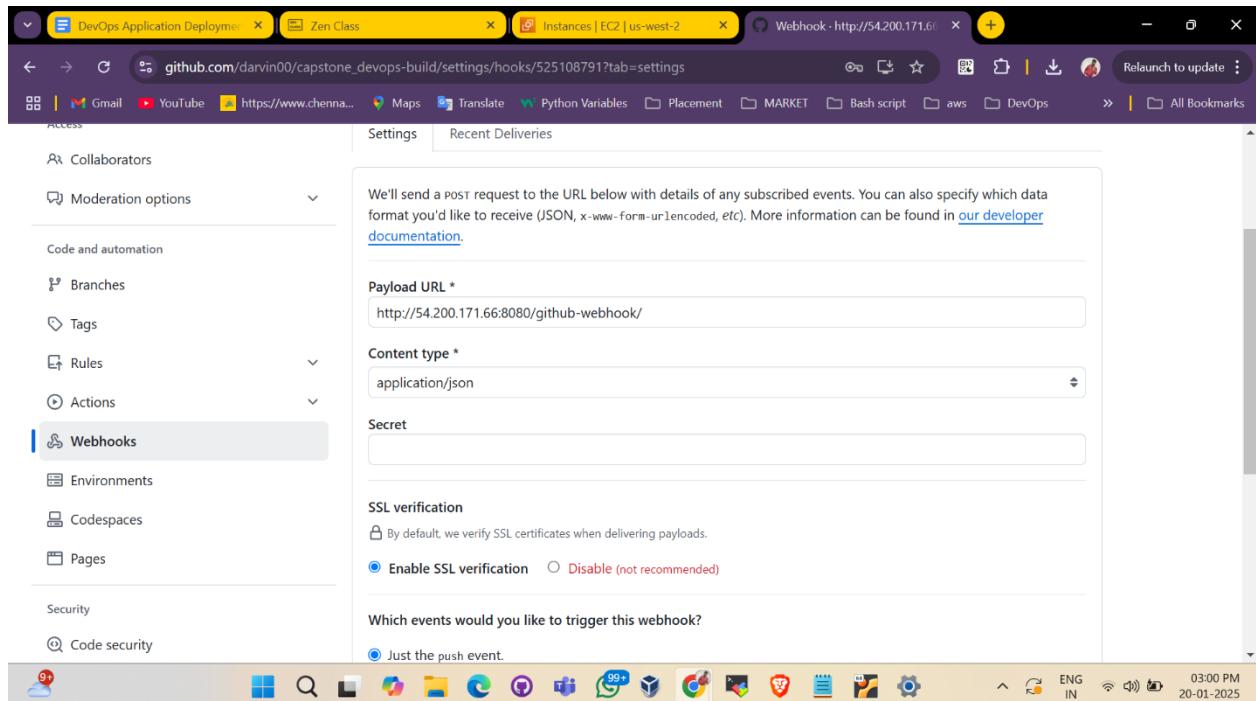
03:06 PM
20-01-2025



Jenkins file:

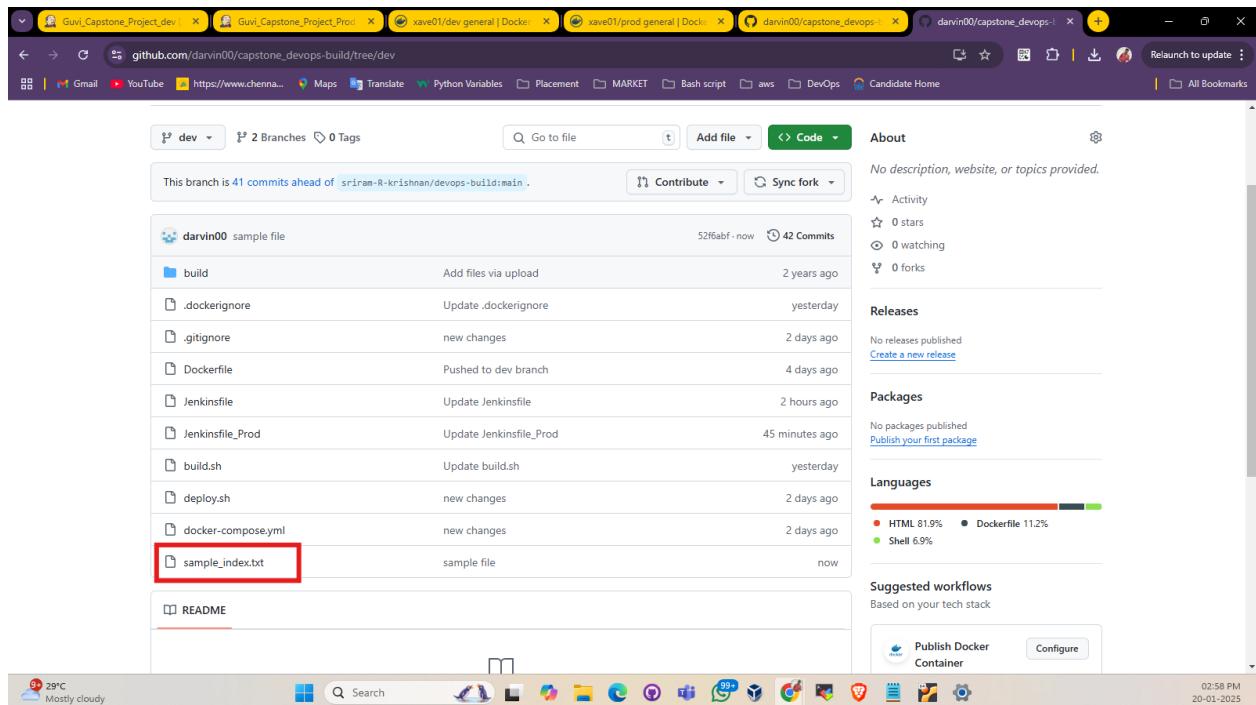
```
GNU nano 6.2
Jenkinsfile
pipeline {
    agent any
    environment {
        devRegistry = "xave01/dev"
        prodRegistry = "xave01/prod"
        registryCredential = 'DockerHub'
        dockerImage = ''
    }
    triggers {
        githubPush()
    }
    stages {
        stage('Checkout') {
            steps {
                checkout scmGit(branches: [[name: '*dev']], extensions: [], userRemoteConfigs: [[url: 'https://github.com/darvin00/capstone_devops-build.git']])
            }
        }
        stage('Build Docker Image') {
            steps {
                script {
                    // Build the Docker image
                    dockerImage = docker.build("${env.BRANCH_NAME == 'main' ? prodRegistry : devRegistry}:${env.BUILD_NUMBER}")
                }
            }
        }
        stage('Push Docker Image') {
            steps {
                script {
                    docker.withRegistry('', registryCredential) {
                        // Push to the appropriate registry (dev or prod)
                        dockerImage.push("${env.BUILD_NUMBER}")
                        dockerImage.push('latest')
                    }
                }
            }
        }
        stage('Deploy Application') {
            steps {
                echo "Deploying application from main to production environment..."
                // Add your deployment logic here
            }
        }
    }
    post {
        always {
            echo "Cleaning up Docker images..."
            sh "docker rmi ${env.BRANCH_NAME == 'main' ? prodRegistry : devRegistry}:${env.BUILD_NUMBER}"
            sh "docker rmi ${env.BRANCH_NAME == 'main' ? prodRegistry : devRegistry}:latest"
        }
    }
}
```

GitHub-Webhook:



The screenshot shows the GitHub 'Webhooks' settings page. On the left, there's a sidebar with options like Collaborators, Moderation options, Branches, Tags, Rules, Actions, Webhooks (which is selected and highlighted in blue), Environments, Codespaces, and Pages. The main area has tabs for 'Settings' and 'Recent Deliveries'. Under 'Settings', there's a note about sending POST requests with event details. It includes fields for 'Payload URL' (set to <http://54.200.171.66:8080/github-webhook/>), 'Content type' (set to application/json), and a 'Secret' field. Below that is an 'SSL verification' section with a note about verifying certificates and a radio button for 'Enable SSL verification' (which is selected). At the bottom, it asks 'Which events would you like to trigger this webhook?' with a radio button for 'Just the push event.' The status bar at the bottom right shows '03:00 PM 20-01-2025'.

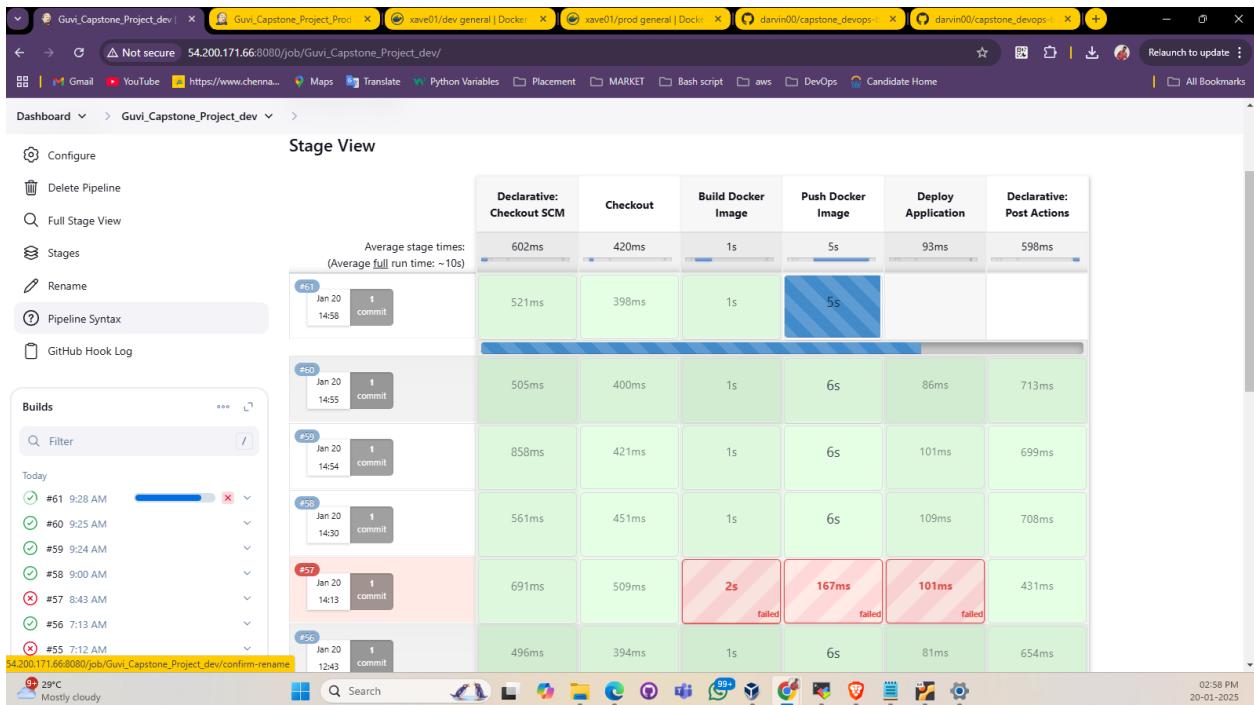
add new file in dev branch



The screenshot shows a GitHub repository page for 'darvin00/capstone_devops-build'. The repository has 2 branches and 0 tags. It is 41 commits ahead of the 'sriram-R-krishnan/devops-build:main' branch. A file named 'sample_index.txt' is highlighted with a red box. The repository details include an 'About' section with no description, activity (0 stars, 0 watching, 0 forks), releases (no releases), packages (no packages), languages (HTML 81.9%, Dockerfile 11.2%, Shell 6.9%), and suggested workflows (Publish Docker Container). The status bar at the bottom right shows '02:58 PM 20-01-2025'.

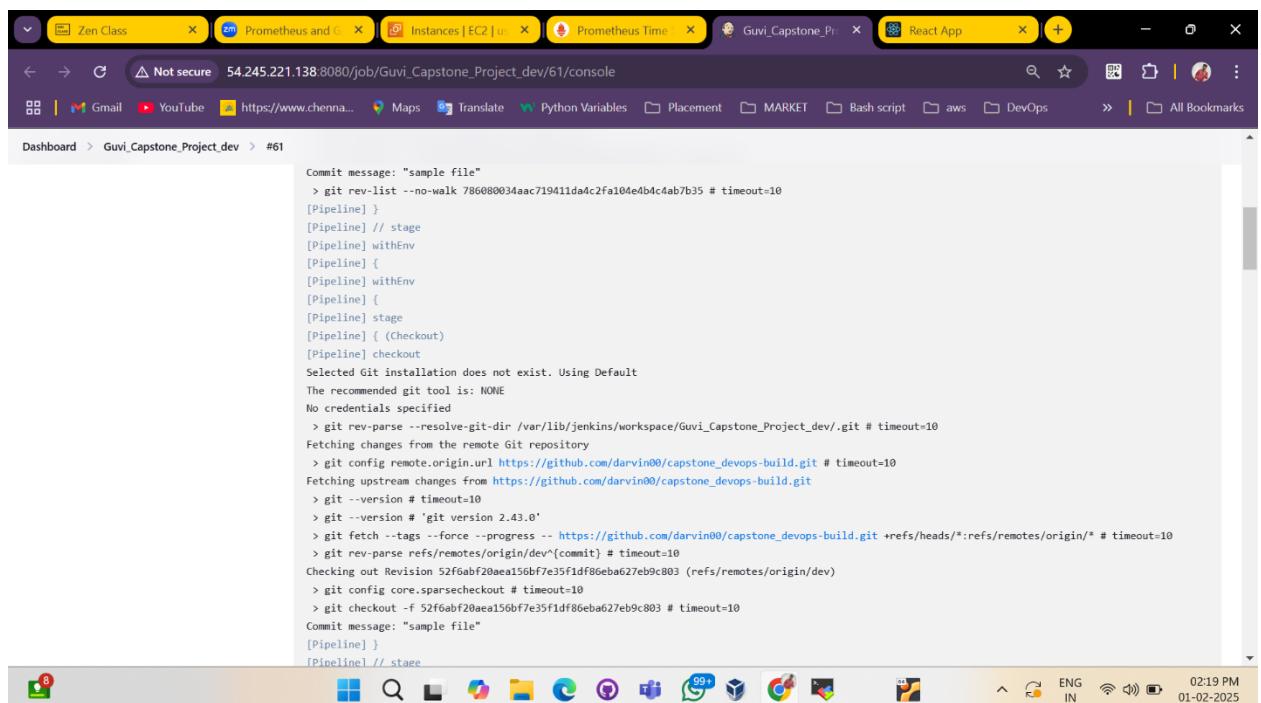
Auto trigger when new file is added in dev branch

Dev_Build

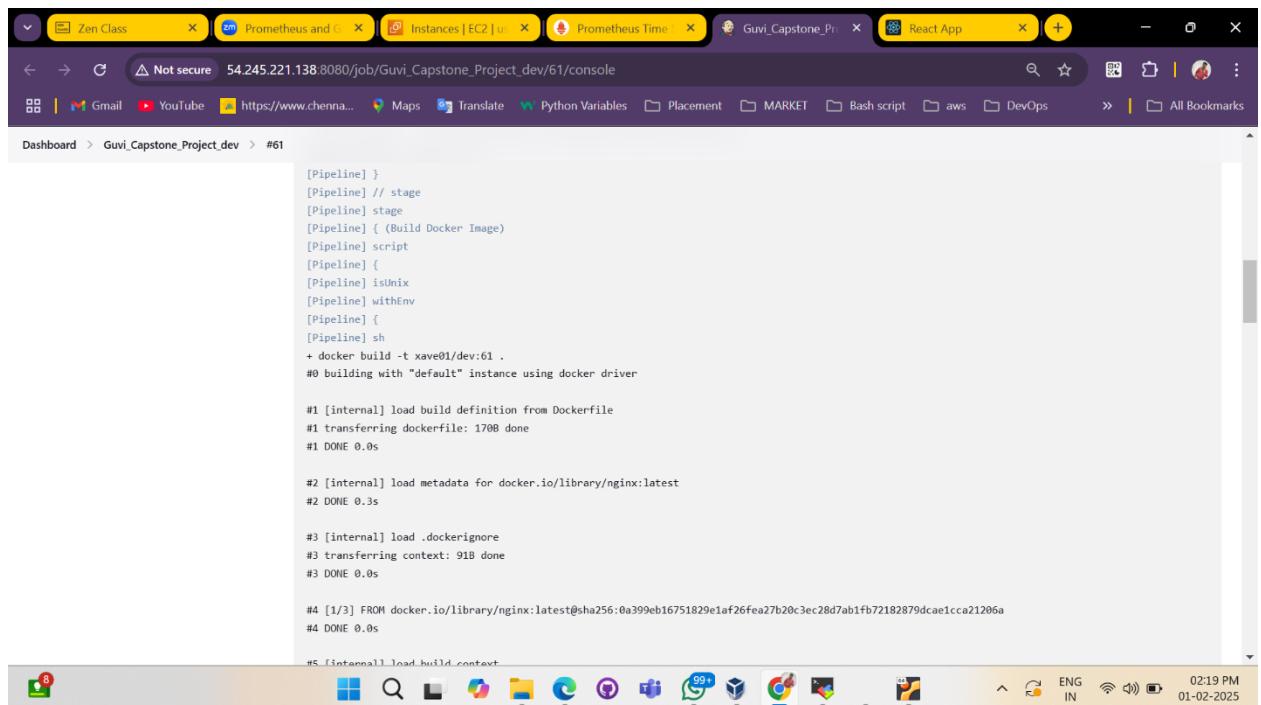


Console Output Guvi Capstone Project dev

```
Started by GitHub push by darvin00
Obtained Jenkinsfile from git https://github.com/darvin00/capstone_devops-build.git
[Pipeline] Start of Pipeline
[Pipeline] node
[Pipeline] {
[Pipeline] stage
[Pipeline] {
  [Pipeline] {
    [Pipeline] checkout
    Selected Git installation does not exist. Using Default
    The recommended git tool is: NONE
    No credentials specified
    > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/Guvi_Capstone_Project_dev/.git # timeout=10
    Fetching changes from the remote Git repository
    > git config remote.origin.url https://github.com/darvin00/capstone_devops-build.git # timeout=10
    Fetching upstream changes from https://github.com/darvin00/capstone_devops-build.git
    > git -version # timeout=10
    > git --version # 'git' version 2.43.0'
    > git fetch --force --progress -- https://github.com/darvin00/capstone_devops-build.git +refs/heads/*:refs/remotes/origin/*
    > git rev-parse refs/remotes/origin/dev{commit} # timeout=10
    Checking out Revision 52f6abf20aea156bf7e35f1df86eba627eb9c803 (refs/remotes/origin/dev)
    > git config core.sparsecheckout # timeout=10
    > git checkout -f 52f6abf20aea156bf7e35f1df86eba627eb9c803 # timeout=10
    Commit message: "sample file"
```



```
Commit message: "sample file"
> git rev-list --no-walk 786080034aac719411da4c2fa104e4b4c4ab7b35 # timeout=10
[Pipeline]
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Checkout)
[Pipeline] checkout
Selected Git installation does not exist. Using Default
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/Guvi_Capstone_Project_dev/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/darvin00/capstone_devops-build.git # timeout=10
Fetching upstream changes from https://github.com/darvin00/capstone_devops-build.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --tags --force --progress -- https://github.com/darvin00/capstone_devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/dev{commit} # timeout=10
Checking out Revision 52f6abf20ae156bf7e351df86eba627eb9c803 (refs/remotes/origin/dev)
> git config core.sparsecheckout # timeout=10
> git checkout -f 52f6abf20ae156bf7e351df86eba627eb9c803 # timeout=10
Commit message: "sample file"
[Pipeline]
[Pipeline] // stage
```



```
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build Docker Image)
[Pipeline] script
[Pipeline] {
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker build -t xave01/dev:61 .
#0 building with "default" instance using docker driver

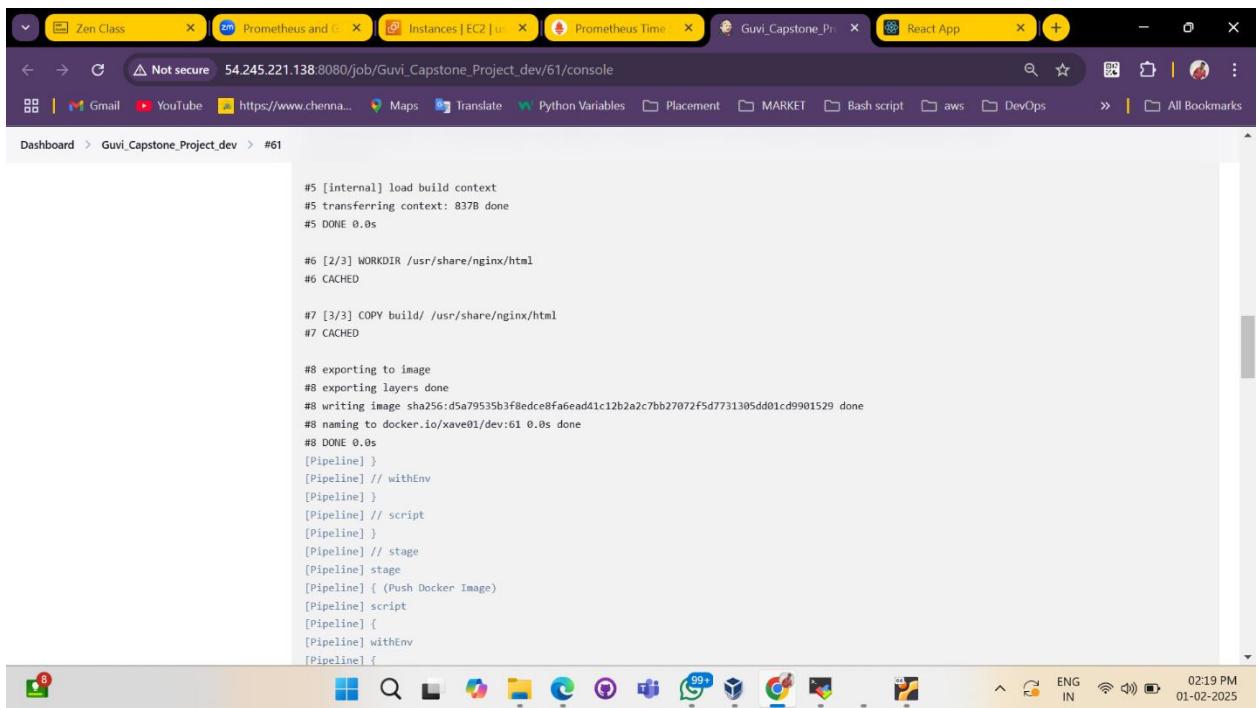
#1 [internal] load build definition from Dockerfile
#1 transferring dockerfile: 1700 done
#1 DONE 0.0s

#2 [internal] load metadata for docker.io/library/nginx:latest
#2 DONE 0.3s

#3 [internal] load .dockerignore
#3 transferring context: 918 done
#3 DONE 0.0s

#4 [1/3] FROM docker.io/library/nginx:latest@sha256:0a399eb16751829e1af26fea27b20c3ec28d7ab1fb72182879dcae1cca21206a
#4 DONE 0.0s

#5 [internal] load build context
```

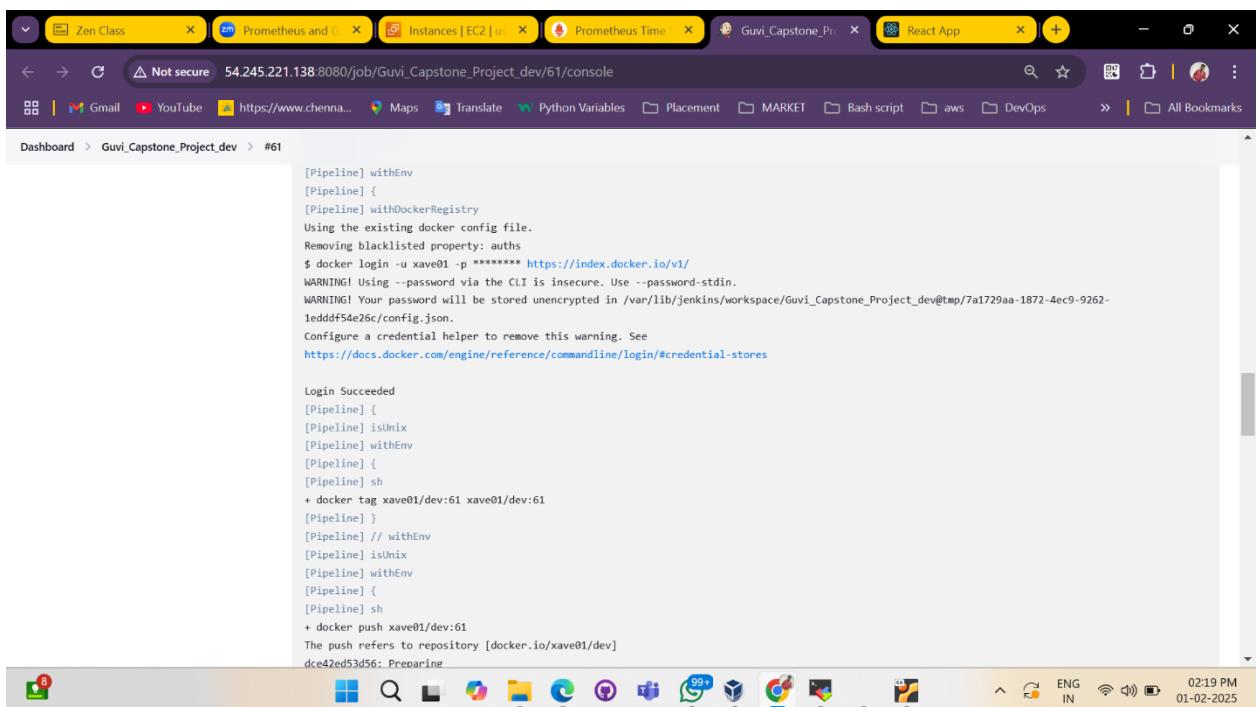


```
#5 [internal] load build context
#5 transferring context: 837B done
#5 DONE 0.0s

#6 [2/3] WORKDIR /usr/share/nginx/html
#6 CACHED

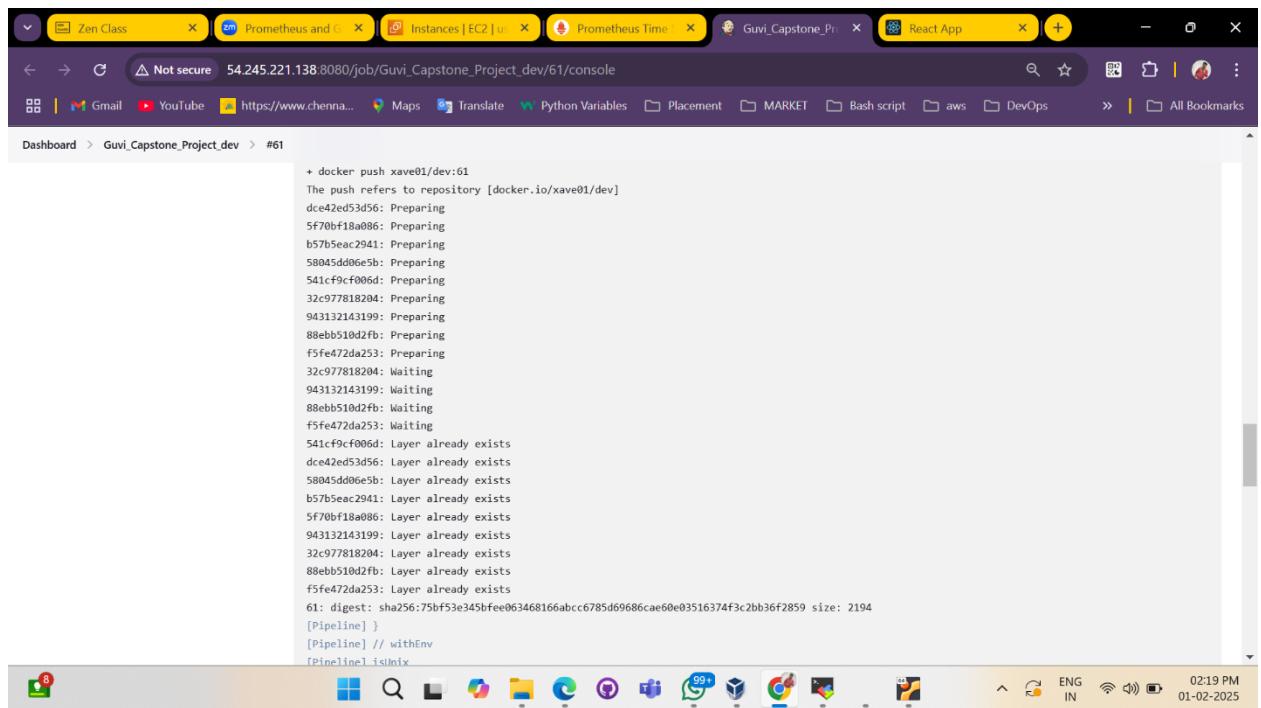
#7 [3/3] COPY build/ /usr/share/nginx/html
#7 CACHED

#8 exporting to image
#8 exporting layers done
#8 writing image sha256:d5a79535b3f8edce8fa6ead41c12b2a2c7bb27072f5d7731305dd01cd9901529 done
#8 naming to docker.io/xave01/dev:61 0.0s done
#8 DONE 0.0s
[Pipeline]
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Push Docker Image)
[Pipeline] script
[Pipeline] {
[Pipeline] withEnv
[Pipeline] {
```

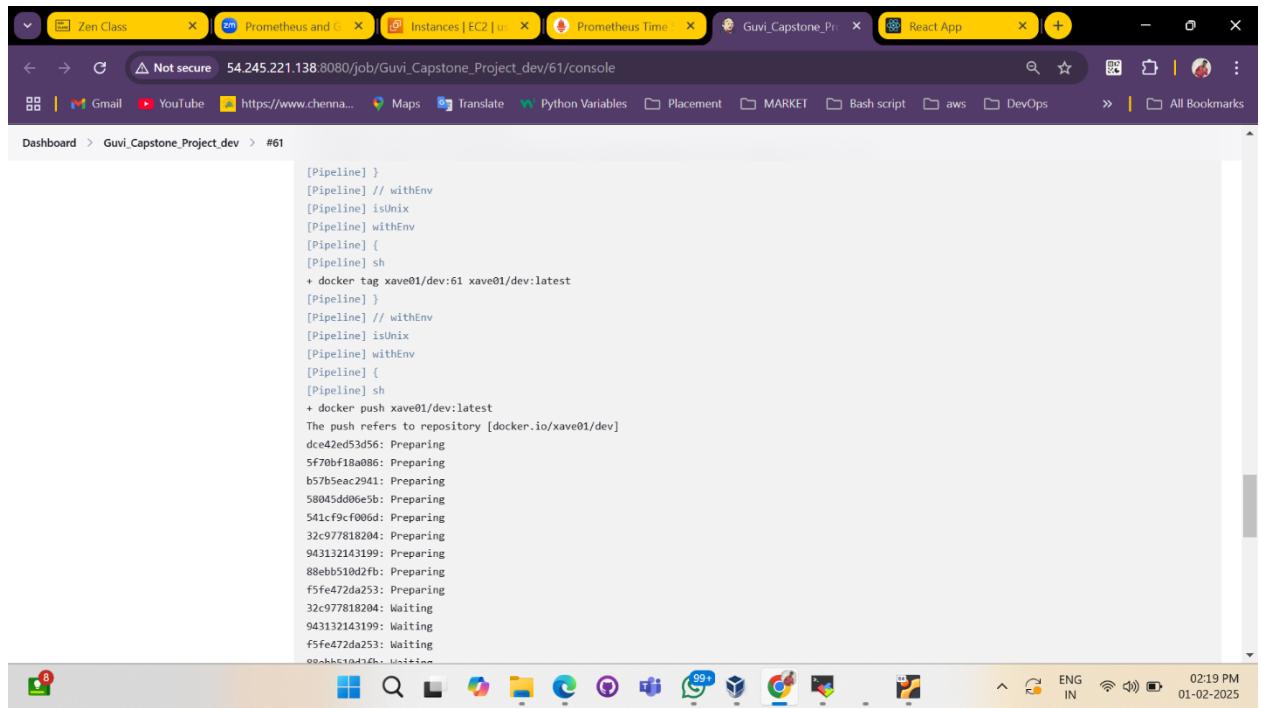


```
[Pipeline] withEnv
[Pipeline] {
[Pipeline] withDockerRegistry
Using the existing docker config file.
Removing blacklisted property: auths
$ docker login -u xave01 -p **** https://index.docker.io/v1/
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /var/lib/jenkins/workspace/Guvi_Capstone_Project_dev@tmp/7a1729aa-1872-4ec9-9262-1eddd55ae26c/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credential-stores

Login Succeeded
[Pipeline] {
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker tag xave01/dev:61 xave01/dev:61
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker push xave01/dev:61
The push refers to repository [docker.io/xave01/dev]
dce42ed53d56: Preparing
```



```
+ docker push xave01/dev:61
The push refers to repository [docker.io/xave01/dev]
dce42ed53d56: Preparing
5f70bf18a086: Preparing
b57b5eac2941: Preparing
58045dd06e5b: Preparing
541cf9c006d: Preparing
32c977818204: Preparing
943132143199: Preparing
88eb510d2fb: Preparing
f5fe472da253: Preparing
32c977818204: Waiting
943132143199: Waiting
88eb510d2fb: Waiting
f5fe472da253: Waiting
541cf9c006d: Layer already exists
dce42ed53d56: Layer already exists
58045dd06e5b: Layer already exists
b57b5eac2941: Layer already exists
5f70bf18a086: Layer already exists
943132143199: Layer already exists
32c977818204: Layer already exists
88eb510d2fb: Layer already exists
f5fe472da253: Layer already exists
61: digest: sha256:75bf53e345bfee063468166abcc6785d69686cae60e03516374f3c2bb36f2859 size: 2194
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] isLinux
```



```
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] isLinux
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker tag xave01/dev:61 xave01/dev:latest
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] isLinux
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker push xave01/dev:latest
The push refers to repository [docker.io/xave01/dev]
dce42ed53d56: Preparing
5f70bf18a086: Preparing
b57b5eac2941: Preparing
58045dd06e5b: Preparing
541cf9c006d: Preparing
32c977818204: Preparing
943132143199: Preparing
88eb510d2fb: Preparing
f5fe472da253: Preparing
32c977818204: Waiting
943132143199: Waiting
f5fe472da253: Waiting
98abb510d2fb: Waiting
```

The screenshot shows a Windows desktop environment. At the top is the taskbar with various pinned icons. Below it is a browser window with multiple tabs open, including 'Zen Class', 'Prometheus and ...', 'Instances | EC2 | us-east-1', 'Prometheus Time', 'Guvi.Capstone_Pro...', and 'React App'. The main content area of the browser displays a Jenkins pipeline log for job #61. The log output is as follows:

```
340152443179: Waiting
f5fe472da253: Waiting
88eb510d2fb: Waiting
58045dd06e5b: Layer already exists
541c19c1006d: Layer already exists
b57b5ea2941: Layer already exists
dce42ed53d56: Layer already exists
5f70bf18a086: Layer already exists
943132143199: Layer already exists
32c977818204: Layer already exists
f5fe472da253: Layer already exists
88eb510d2fb: Layer already exists
latest: digest: sha256:75bf53e345bfee063468166abcc6785d69686cae60e03516374f3c2bb36f2859 size: 2194
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy Application)
[Pipeline] echo
Deploying application from main to production environment...
[Pipeline] }
```

The taskbar also shows the system tray with network, battery, and clock icons.

This screenshot is nearly identical to the one above, showing the same Jenkins pipeline log for job #61. The log output is identical:

```
340152443179: Waiting
f5fe472da253: Waiting
88eb510d2fb: Waiting
58045dd06e5b: Layer already exists
541c19c1006d: Layer already exists
b57b5ea2941: Layer already exists
dce42ed53d56: Layer already exists
5f70bf18a086: Layer already exists
943132143199: Layer already exists
32c977818204: Layer already exists
f5fe472da253: Layer already exists
88eb510d2fb: Layer already exists
latest: digest: sha256:75bf53e345bfee063468166abcc6785d69686cae60e03516374f3c2bb36f2859 size: 2194
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy Application)
[Pipeline] echo
Deploying application from main to production environment...
[Pipeline] }
```

The taskbar at the bottom shows the system tray with network, battery, and clock icons.

Build 61 pushed to dev repo in DockerHub

The screenshot shows a browser window with several tabs open, including Docker Hub and various developer-related sites. The main content is a Docker Hub repository page for 'xave01/dev'. It displays a table of tags with their push times:

Tag	OS	Type	Pulled	Pushed
latest		Image	16 hours ago	19 minutes ago
61		Image	16 hours ago	19 minutes ago
60		Image	16 hours ago	21 minutes ago
59		Image	16 hours ago	23 minutes ago
58		Image	16 hours ago	an hour ago

A 'Docker commands' section shows the command to push a new tag: `docker push xave01/dev:tagname`. A 'Public view' button is also present.

dev branch merge to main

The screenshot shows a MobaXterm session connected to a remote host (192.168.0.248). The terminal window displays a series of git commands being run:

```
git branch
* main
git checkout dev
Switched to branch 'dev'
Your branch is up to date with 'origin/dev'.
git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
git merge dev
error: Empty commit message.
Not committing merge; use 'git commit' to complete the merge.
git status
On branch main
Your branch is up to date with 'origin/main'.

All conflicts fixed but you are still merging.
(use "git commit" to conclude merge)

Changes to be committed:
```

The terminal output is highlighted with red boxes around the 'git branch' command, the 'git checkout dev' command, and the 'git merge dev' command.

dev branch merge to main

```
root@xavier:~/capstone_devops-build# git branch
* dev
  main
root@xavier:~/capstone_devops-build# ls
build build.sh deploy.sh docker-compose.yml Dockerfile Jenkinsfile Jenkinsfile_Prod
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build# git checkout dev
Switched to branch 'dev'
Your branch is up to date with 'origin/dev'.
root@xavier:~/capstone_devops-build# ls
build build.sh deploy.sh docker-compose.yml Dockerfile Jenkinsfile Jenkinsfile_Prod sample_index.txt
root@xavier:~/capstone_devops-build# git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
root@xavier:~/capstone_devops-build# git merge dev
error: Empty commit message.
Not committing merge; use 'git commit' to complete the merge.
root@xavier:~/capstone_devops-build# git status
On branch main
Your branch is up to date with 'origin/main'.

All conflicts fixed but you are still merging.
(use "git commit" to conclude merge)

Changes to be committed:
  new file:  sample_index.txt

root@xavier:~/capstone_devops-build#
```

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pushed to main branch

```
root@xavier:~/capstone_devops-build# git commit -m "sample_index.txt file"
[main f1e2dc7] sample_index.txt file
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build# git merger dev
git: 'merger' is not a git command. See 'git --help'.
The most similar command is
    merge
root@xavier:~/capstone_devops-build# git merge dev
Already up to date.
root@xavier:~/capstone_devops-build# git status
On branch main
Your branch is ahead of 'origin/main' by 2 commits.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
root@xavier:~/capstone_devops-build#
root@xavier:~/capstone_devops-build# git push origin main
Username for 'https://github.com': darvin00
Password for 'https://darvin00@github.com':
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 221 bytes | 221.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/darvin00/capstone_devops-build.git
  1ccac85..f1e2dc7  main -> main
root@xavier:~/capstone_devops-build#
```

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

Jenkinsfile_Prod:

```
GNU nano 6.2 Jenkinsfile_Prod
pipeline {
    agent any
    environment {
        devRegistry = "xave01/dev"
        prodRegistry = "xave01/prod"
        registryCredential = 'DockerHub'
        dockerImage = ''
    }
    triggers {
        githubPush()
    }
    stages {
        stage('Checkout') {
            steps {
                checkout scmGit(branches: [[name: '*/main']], extensions: [], userRemoteConfigs: [[url:'https://github.com/darvin00/capstone_devops-build.git']])
            }
        }
        stage('Build Docker Image') {
            steps {
                script {
                    // Build the Docker image
                    dockerImage = docker.build("${env.BRANCH_NAME == 'main' ? devRegistry : prodRegistry}:${env.BUILD_NUMBER}")
                }
            }
        }
        stage('Push Docker Image') {
            steps {
                script {
                    docker.withRegistry('', registryCredential) {
                        // Push to the appropriate registry (dev or prod)
                        dockerImage.push("${env.BUILD_NUMBER}")
                        dockerImage.push('latest')
                    }
                }
            }
        }
        stage('Deploy Application') {
            steps {
                echo "Deploying application from main to production environment..."
                // Add your deployment logic here
            }
        }
    }
    post {
        always {
            echo "Cleaning up Docker images..."
            sh "docker rmi ${env.BRANCH_NAME == 'main' ? devRegistry : prodRegistry}:${env.BUILD_NUMBER}"
            sh "docker rmi ${env.BRANCH_NAME == 'main' ? devRegistry : prodRegistry}:latest"
        }
    }
}
```

Auto trigger when file are merged from dev branch

Prod_Build

The screenshot shows a CI/CD pipeline status dashboard for the project "Guvi_Capstone_Project_Prod". The top navigation bar includes tabs for "Guvi_Capstone_Project_Prod" and "xave01/dev general | Docker". The dashboard features a "Stage View" table with columns for Declarative: Checkout SCM, Checkout, Build Docker Image, Push Docker Image, Deploy Application, and Declarative: Post Actions. Each row represents a build step with specific times and commit details. On the left, there's a sidebar with "Status", "Changes", "Build Now", "Configure", "Delete Pipeline", "Full Stage View", "Stages", "Rename", "Pipeline Syntax", and "Github Hook Log". Below the sidebar is a "Builds" section with a "Filter" button and a list of builds from today, each with a green checkmark and a timestamp.

	Declarative: Checkout SCM	Checkout	Build Docker Image	Push Docker Image	Deploy Application	Declarative: Post Actions
#10 Jan 20 15:15 1 commit	525ms	418ms	1s	5s	86ms	556ms
#11 Jan 20 14:57 2 commits	518ms	309ms	1s	6s	68ms	687ms
#12 Jan 20 14:46 4 commits	527ms	480ms	1s	6s	95ms	679ms
#13 Jan 20 12:48 1 commit	575ms	431ms	1s	6s	106ms	711ms
#14 Jan 20 12:48 1 commit	500ms	381ms	1s	5s	81ms	665ms
#15 Jan 20 12:48 1 commit	506ms	403ms	1s	5s	78ms	110ms
#16 Jan 20 12:45 1 commit	505ms	409ms	1s	5s	83ms	377ms
#17 Jan 20 12:38 1 commit	498ms	402ms	1s	6s	82ms	663ms

Builds

Today

- #12 9:45 AM
- #11 9:27 AM
- #10 9:16 AM
- #9 7:18 AM
- #8 7:18 AM
- #7 7:15 AM
- #6 7:08 AM
- #5 7:01 AM
- #4 6:53 AM
- #3 6:50 AM
- #2 6:48 AM

Console Output Guvi Capstone Project Prod

The screenshot shows a Microsoft Edge browser window with the URL https://54.245.221.138:8080/job/Guvi_Capstone_Project_Prod/12/console. The title bar indicates the page is not secure. The main content area is titled "Console Output". On the left, there's a sidebar with various Jenkins management links like Status, Changes, Console Output (which is selected), Edit Build Information, Delete build '#12', Polling Log, Timings, Git Build Data, Pipeline Overview, Pipeline Console, Restart from Stage, Replay, Pipeline Steps, Workspaces, and Previous Build. The right side of the main area contains the actual Jenkins log output. At the bottom, there's a Windows taskbar with several pinned icons and system status indicators.

```
Started by GitHub push by darvin00
Obtained Jenkinsfile_Prod from git https://github.com/darvin00/capstone_devops-build.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/Guvi_Capstone_Project_Prod
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
Selected Git installation does not exist. Using Default
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/Guvi_Capstone_Project_Prod/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/darvin00/capstone_devops-build.git # timeout=10
Fetching upstream changes from https://github.com/darvin00/capstone_devops-build.git
> git --version # timeout=10
> git --version # 'git' version 2.43.0'
> git fetch -tags --force --progress -- https://github.com/darvin00/capstone_devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/main{commit} # timeout=10
Checking out Revision f62dc7894d8773a784f177fd869d02c619f6b3f (refs/remotes/origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f f62dc7894d8773a784f177fd869d02c619f6b3f # timeout=10
Commit message: "sample_index.txt file"
```

This screenshot is identical to the one above, showing the same Jenkins console output for build #12. The browser is Microsoft Edge, the URL is the same, and the log content is identical to the first screenshot. It also shows the same Windows taskbar at the bottom.

```
Started by GitHub push by darvin00
Obtained Jenkinsfile_Prod from git https://github.com/darvin00/capstone_devops-build.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/Guvi_Capstone_Project_Prod
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
Selected Git installation does not exist. Using Default
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/Guvi_Capstone_Project_Prod/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/darvin00/capstone_devops-build.git # timeout=10
Fetching upstream changes from https://github.com/darvin00/capstone_devops-build.git
> git --version # timeout=10
> git --version # 'git' version 2.43.0'
> git fetch -tags --force --progress -- https://github.com/darvin00/capstone_devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/main{commit} # timeout=10
Checking out Revision f62dc7894d8773a784f177fd869d02c619f6b3f (refs/remotes/origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f f62dc7894d8773a784f177fd869d02c619f6b3f # timeout=10
Commit message: "sample_index.txt file"
```

A screenshot of a Windows desktop environment. At the top is the taskbar with various pinned icons. Below it is a Microsoft Edge browser window displaying a Jenkins pipeline log. The log shows the build process for job #12, starting with a Dockerfile load, followed by metadata transfers for nginx, pulling a token for the registry, loading .dockerignore, and finally building the image from the context. The Jenkins status bar at the bottom right indicates the date as 01-02-2025 and the time as 02:14 PM.

```
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build Docker Image)
[Pipeline] script
[Pipeline] {
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker build -t xave01/prod:12 .
#0 building with "default" instance using docker driver

#1 [internal] load build definition from Dockerfile
#1 transferring dockerfile: 170B done
#1 DONE 0.0s

#2 [internal] load metadata for docker.io/library/nginx:latest
#2 ...

#3 [auth] library/nginx:pull token for registry-1.docker.io
#3 DONE 0.0s

#2 [internal] load metadata for docker.io/library/nginx:latest
#2 DONE 0.0s

#4 [internal] load .dockerignore
#4 transferring context: 91B done
#4 DONE 0.0s

#5 [1/3] FROM docker.io/library/nginx:latest@sha256:0a399eb16751829e1af26fea27b20c3ec28d7ab1fb72182879dcce1cce21206a
#5 DONE 0.0s

#6 [internal] load build context
#6 transferring context: 837B done
#6 DONE 0.0s

#7 [2/3] WORKDIR /usr/share/nginx/html
#7 CACHED

#8 [3/3] COPY build/ /usr/share/nginx/html
#8 CACHED

#9 exporting to image
#9 exporting layers done
#9 writing image sha256:d5a79535b3f8edce8fa6ead41c12b2a2c7bb27072f5d7731305dd01cd9901529 done
#9 naming to docker.io/xave01/prod:12 done
#9 DONE 0.0s
[Pipeline] }
```

A screenshot of a Windows desktop environment, identical to the one above, showing a browser window with a Jenkins pipeline log for job #12. This log continues where the first one left off, showing the final steps of the build process, including the creation of the Docker image and its naming. The Jenkins status bar at the bottom right indicates the date as 01-02-2025 and the time as 02:15 PM.

```
#9 naming to docker.io/xave01/prod:12 done
#9 DONE 0.0s
[Pipeline] }
```

The screenshot shows a Jenkins pipeline log for job #12. The log output is as follows:

```
#9 DONE 0.0s
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // script
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Push Docker Image)
[Pipeline] script
[Pipeline] {
[Pipeline] withEnv
[Pipeline] {
[Pipeline] withDockerRegistry
Using the existing docker config file.
Removing blacklisted property: auths
$ docker login -u xave01 -p **** https://index.docker.io/v1/
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /var/lib/jenkins/workspace/Guvi_Capstone_Project_Prod@tmp/60b5f4bc-c34b-45df-8e8e-e9c5ec98e8ff/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login#credential-stores

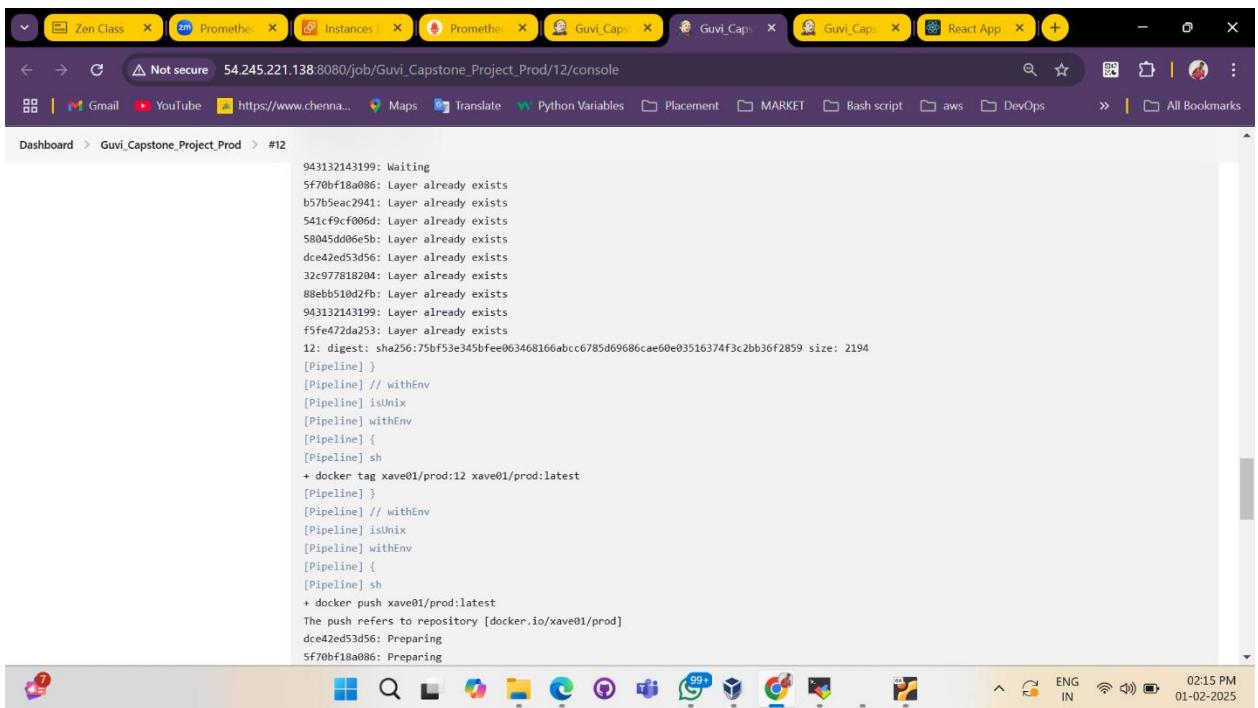
Login Succeeded
[Pipeline] {
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] f
```

The Jenkins interface includes a top navigation bar with tabs like Zen Class, Prometheus, Instances, Guvi_Caps, Guvi_Caps, Guvi_Caps, React App, and a plus sign. Below the tabs is a search bar and a bookmark section. The main content area displays the pipeline log. At the bottom, there's a toolbar with various icons and a system tray showing the date and time (01-02-2025) and language (ENG IN).

The screenshot shows a Jenkins pipeline log for job #12. The log output is as follows:

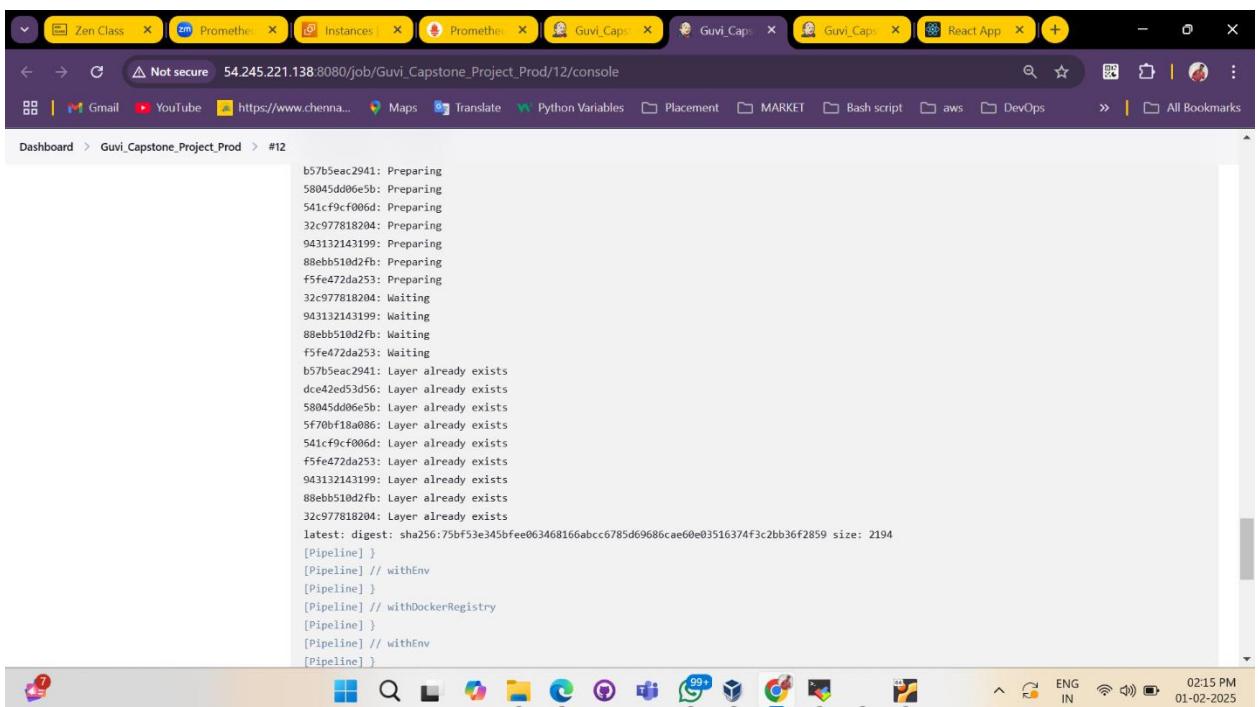
```
Login Succeeded
[Pipeline] {
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker tag xave01/prod:12 xave01/prod:12
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker push xave01/prod:12
The push refers to repository [docker.io/xave01/prod]
dce42ed53d56: Preparing
5f70bf18a086: Preparing
b57b5eac2941: Preparing
58045dd06e5b: Preparing
541cf9cf006d: Preparing
32c977818204: Preparing
943132143199: Preparing
88eb8510d2fb: Preparing
f5fe472da253: Preparing
32c977818204: Waiting
88eb8510d2fb: Waiting
f5fe472da253: Waiting
042123143100: Waiting
```

The Jenkins interface is identical to the first screenshot, featuring a top navigation bar, search, and bookmark sections. The main content area shows the detailed log of the pipeline steps. The bottom of the screen includes a toolbar and a system tray indicating the date and time (01-02-2025) and language (ENG IN).



Dashboard > Guvi_Capstone_Project_Prod > #12

```
943132143199: Waiting
5f70bf18a086: Layer already exists
b57b5eac2941: Layer already exists
541cf9c006d: Layer already exists
58045dd06e5b: Layer already exists
dce42ed53d56: Layer already exists
32c977818204: Layer already exists
88ebb510d2fb: Layer already exists
943132143199: Layer already exists
f5fe472da253: Layer already exists
12: digest: sha256:75bf53e345bfee063468166abcc6785d69680cae60e03516374f3c2bb36f2859 size: 2194
[Pipeline]
[Pipeline] // withEnv
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker tag xave01/prod:12 xave01/prod:latest
[Pipeline]
[Pipeline] // withEnv
[Pipeline] isUnix
[Pipeline] withEnv
[Pipeline] {
[Pipeline] sh
+ docker push xave01/prod:latest
The push refers to repository [docker.io/xave01/prod]
dce42ed53d56: Preparing
5f70bf18a086: Preparing
```



Dashboard > Guvi_Capstone_Project_Prod > #12

```
b57b5eac2941: Preparing
58045dd06e5b: Preparing
541cf9c006d: Preparing
32c977818204: Preparing
943132143199: Preparing
88ebb510d2fb: Preparing
f5fe472da253: Preparing
32c977818204: Waiting
943132143199: Waiting
88ebb510d2fb: Waiting
f5fe472da253: Waiting
b57b5eac2941: Layer already exists
dce42ed53d56: Layer already exists
58045dd06e5b: Layer already exists
5f70bf18a086: Layer already exists
541cf9c006d: Layer already exists
f5fe472da253: Layer already exists
943132143199: Layer already exists
88ebb510d2fb: Layer already exists
32c977818204: Layer already exists
latest: digest: sha256:75bf53e345bfee063468166abcc6785d69680cae60e03516374f3c2bb36f2859 size: 2194
[Pipeline]
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
```

```

[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy Application)
[Pipeline] echo
Deploying application from main to production environment...
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] echo
Cleaning up Docker images...
[Pipeline] sh
+ docker rmi xave01/prod:12
Untagged: xave01/prod:12
[Pipeline] sh
+ docker rmi xave01/prod:latest
Untagged: xave01/prod:latest
[Pipeline] }
[Pipeline] // stage
[Pipeline] {
[Pipeline] // withEnv
[Pipeline] {
[Pipeline] // withEnv
[Pipeline] {
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

```

02:15 PM 01-02-2025

Build 12 pushed to prod repo in DockerHub

hub.docker.com/repository/docker/xave01/prod/general

xave01 / [Repositories](#) / [prod](#) / [General](#)

Using 1 of 1 private repositories.

Tag	OS	Type	Pulled	Pushed
latest		Image	---	7 minutes ago
12		Image	---	7 minutes ago
11		Image	---	26 minutes ago
10		Image	---	36 minutes ago
9		Image	---	3 hours ago

[See all](#)

Docker commands

To push a new tag to this repository:

```
docker push xave01/prod:tagname
```

Automated builds

Manually pushing images to Docker Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions. [Read more about automated builds](#).

[Upgrade](#)

03:23 PM 20-01-2025

Step6: AWS

Launch t2. micro instance and deploy the create application.

Configure SG as below:

- Whoever has the ip address can access the application
- Login to server can should be made only from your ip address

The screenshot shows the AWS EC2 Instances page. It lists two instances: 'capstone_deploy' (running, t3.large, us-west-2c, Public IPv4: 52.40.215.195) and 'capstone_jenkins' (running, t2.xlarge, us-west-2b, Public IPv4: 54.245.221.138). The left sidebar shows navigation links for EC2 Instances, Images, Elastic Block Store, Network & Security, Load Balancing, Auto Scaling, and more. The bottom status bar indicates the date and time as 01-02-2025 at 01:45 PM.

capstone_deploy_SG

The screenshot shows the AWS Security Groups page for the 'capstone_sg' group. It displays five inbound rules: 1. Custom TCP rule (port 3000) allowing 0.0.0.0/0. 2. HTTP rule (port 80) allowing 0.0.0.0/0. 3. Custom TCP rule (port 9090) allowing 0.0.0.0/0. 4. Custom TCP rule (port 9200) allowing 0.0.0.0/0. 5. Custom TCP rule (port 9100) allowing 0.0.0.0/0. A note at the bottom states: "Rules with source of 0.0.0.0 / 0.0.0.0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only." Buttons for 'Cancel', 'Preview changes', and 'Save rules' are visible.



Docker pull:

```
root@ip-172-31-8-176:/home/ubuntu# docker pull xave01/prod:latest
latest: Pulling from xave01/prod
af302e5c37e9: Pull complete
207b812743af: Pull complete
841e383b441e: Pull complete
0256c04a8d84: Pull complete
38e992d287c5: Pull complete
9e9aab598f58: Pull complete
4de87b37f4ad: Pull complete
4f4fb700ef54: Pull complete
5032697ad013: Pull complete
Digest: sha256:75bf53e345bfee063468166abcc6785d69686cae60e03516374f3c2bb36f2859
Status: Downloaded newer image for xave01/prod:latest
docker.io/xave01/prod:latest
root@ip-172-31-8-176:/home/ubuntu#
```

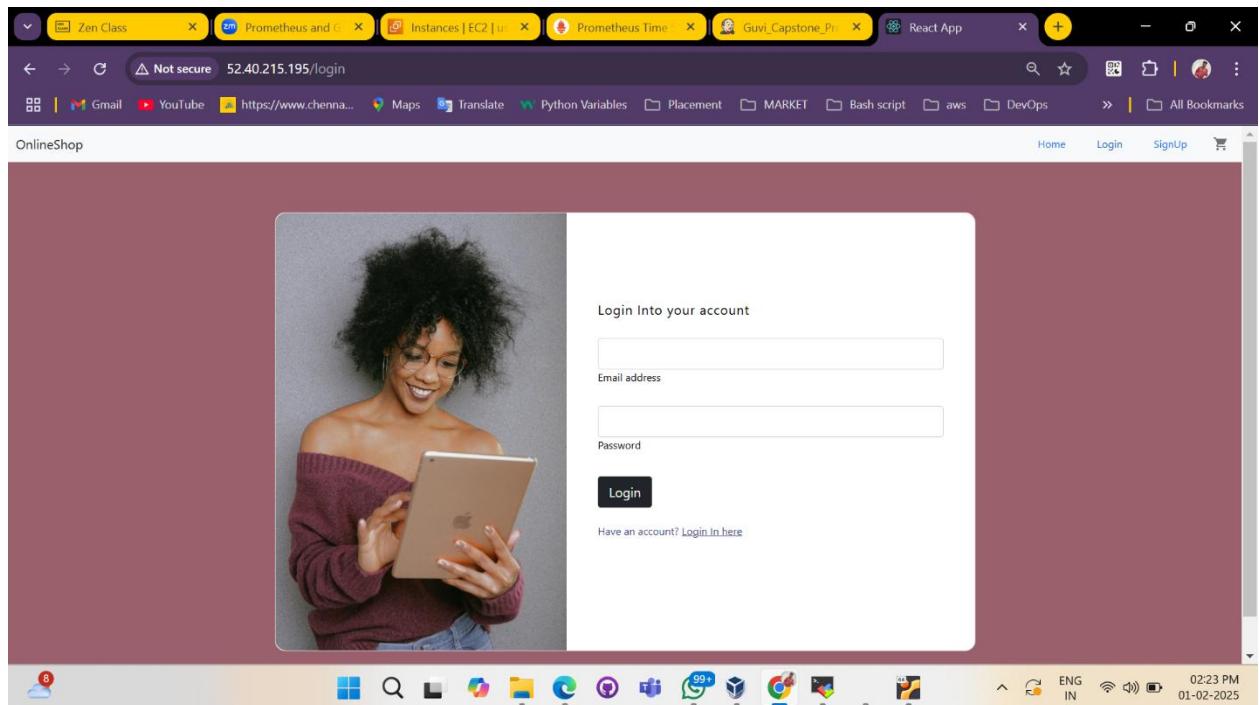
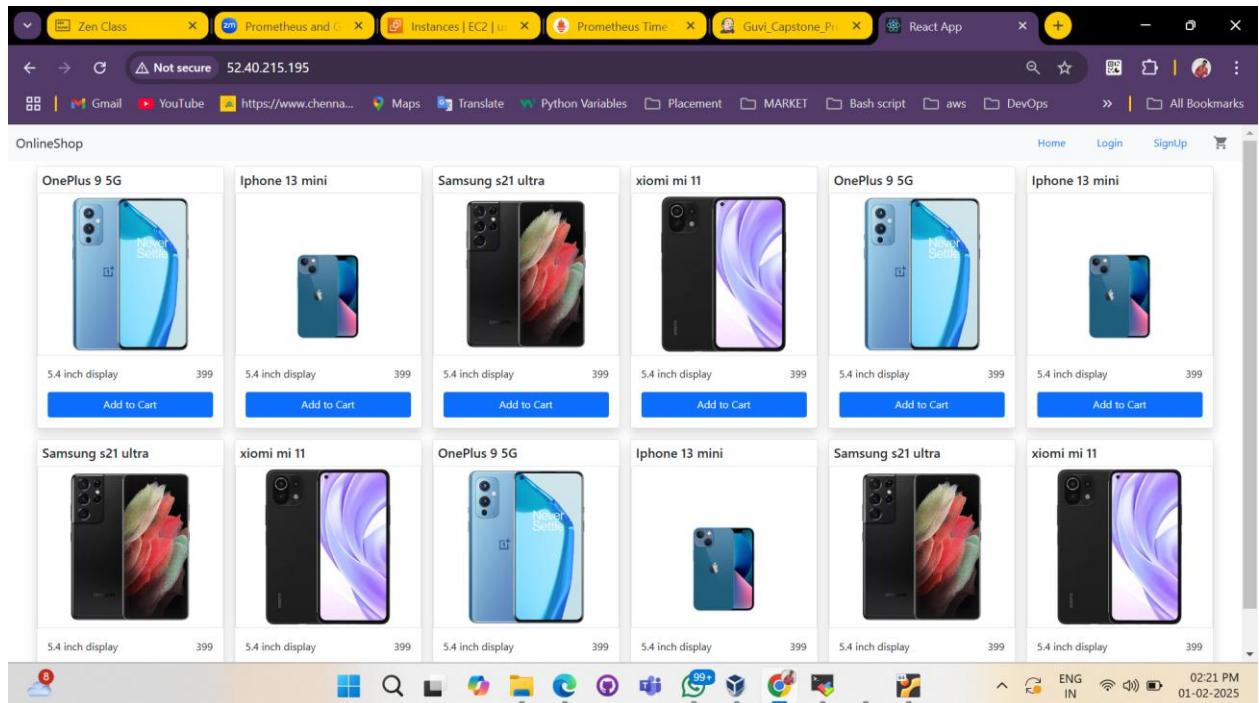
Docker run:

```
root@ip-172-31-8-176:/home/ubuntu# docker run -itd -p 80:80 xave01/prod:latest
491446d07d1ad1472a896c7e1b30066e9ac4fd4acce4a02446b8458314c374fb
root@ip-172-31-8-176:/home/ubuntu#
```

Docker images & container:

```
root@ip-172-31-8-176:/home/ubuntu# docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
xave01/prod    latest    d5a79535b3f8  13 days ago   194MB
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu# docker ps -a
CONTAINER ID      IMAGE      COMMAND      CREATED      STATUS      PORTS
 NAMES
491446d07d1a    xave01/prod:latest    "/docker-entrypoint..."  39 seconds ago   Up 38 seconds  0.0.0.0:80->80/tcp, :::80->8
0/tcp      elated_lamarr
root@ip-172-31-8-176:/home/ubuntu#
```

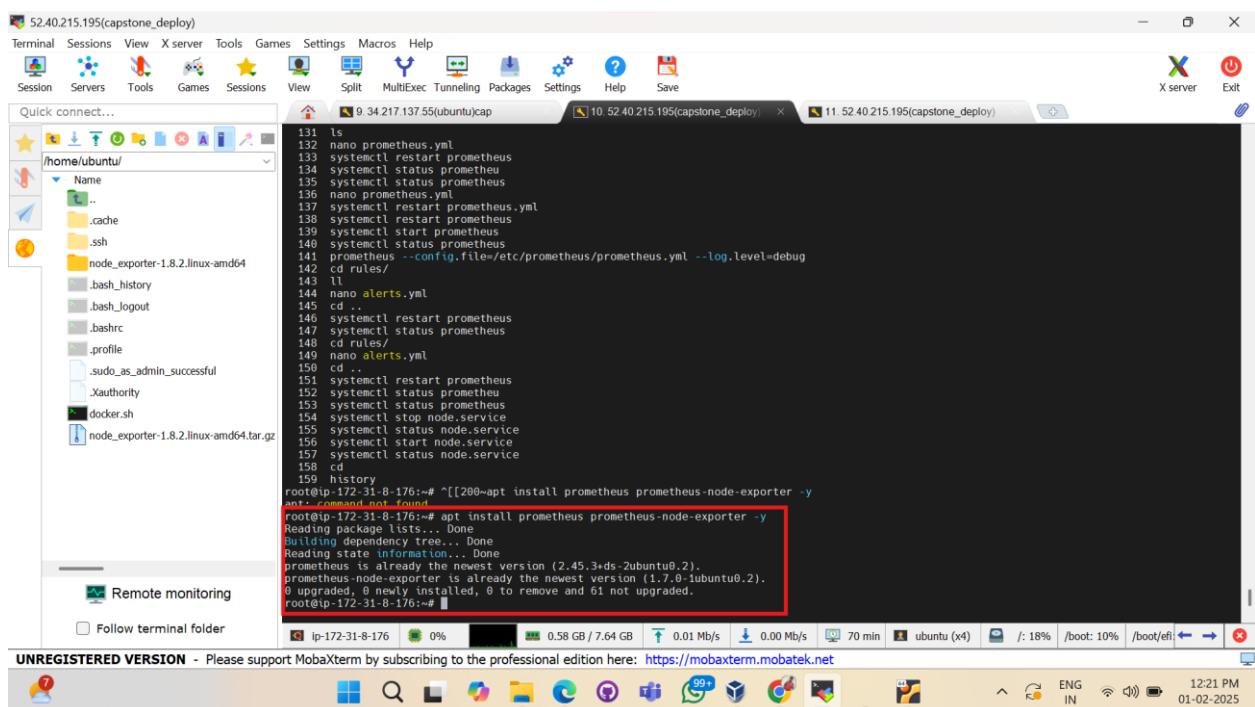
WEBSITE RUNNING ON PORT 80



Step7: Monitoring

- Setup a monitoring system to check the health status of the application.
- Sending notifications only if the application goes down is highly appreciable

→ Install Prometheus



```
ls
nano prometheus.yaml
systemctl restart prometheus
systemctl status prometheus
systemctl status prometheus
nano prometheus.yml
systemctl restart prometheus
systemctl restart prometheus
systemctl start prometheus
systemctl status prometheus
prometheus --config.file=/etc/prometheus/prometheus.yml --log.level=debug
systemctl restart prometheus
systemctl restart prometheus
systemctl status prometheus
systemctl status prometheus
cd rules/
nano alerts.yml
ls
systemctl restart prometheus
systemctl status prometheus
systemctl status prometheus
systemctl stop node.service
systemctl status node.service
systemctl start node.service
systemctl status node.service
history
root@ip-172-31-8-176:~# ^[[200~apt install prometheus prometheus-node-exporter -y
apt: command not found
root@ip-172-31-8-176:~# apt install prometheus prometheus-node-exporter -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
prometheus is already the newest version (2.45.3-0ubuntu0.2).
prometheus-node-exporter is already the newest version (1.7.0-1ubuntu0.2).
0 upgraded, 0 newly installed, 0 to remove and 61 not upgraded.
root@ip-172-31-8-176:~#
```

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→ Install Node Exporter

```
root@ip-172-31-8-176:/home/ubuntu# ls
docker.sh  node_exporter-1.8.2.linux-amd64  node_exporter-1.8.2.linux-amd64.tar.gz
root@ip-172-31-8-176:/home/ubuntu#
```

→ PROMETHEUS CODE

```
GNU nano 7.2
# Load configuration files once and periodically evaluate them according to the global 'evaluation_interval'.
role_files:
  # - "first_rules.yaml"
  # - "second_rules.yaml"
  # - "rules/alerts.yaml"

# A scrape configuration containing exactly one endpoint to scrape:
# Here it's Prometheus itself.
scrape_configs:
  # The job name is added as a label 'job=<job_name>' to any timeseries scraped from this config.
  - job_name: 'prometheus'

    # Override the global default and scrape targets from this job every 5 seconds.
    scrape_interval: 5s
    scrape_timeout: 5s

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.

    static_configs:
      - targets: ['localhost:9090']

    - job_name: node
      # If prometheus-node-exporter is installed, grab stats about the local
      # machine by default.
      static_configs:
        - targets: ['localhost:9100']

    - job_name: capstone_deploy_health
      # If prometheus-node-exporter is installed, grab stats about the local
      # machine by default.
      static_configs:
        - targets: [ '52.40.215.195:9100' ]
```

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→ PROMETHEUS DASHBOARD

Zen Class... Prometheus Instances SecurityC... Prometheus final-device Prometheus [2023] Ef... +

Not secure 52.40.215.195:9090/classic/graph

Gmail YouTube https://www.chenna... Maps Translate Python Variables Placement MARKET Bash script aws DevOps All Bookmarks

Prometheus Alerts Graph Status Help

Enable query history

Expression (press Shift+Enter for newlines)

Execute - insert metric at cursor - Remove Graph

Graph Console

Moment

Element no data

Add Graph

→ HEALTH CHECK HEALTHY

The screenshot shows the Prometheus Targets page. There are three sections:

- capstone_deploy_health (1/1 up)**: Shows one endpoint at <http://52.40.215.195:9100/metrics> labeled as UP.
- node (1/1 up)**: Shows one endpoint at <http://localhost:9100/metrics> labeled as UP.
- prometheus (1/1 up)**: Shows one endpoint at <http://localhost:9090/metrics> labeled as UP.

Each section includes a table with columns: Endpoint, State, Labels, Last Scrape, Scrape Duration, and Error.



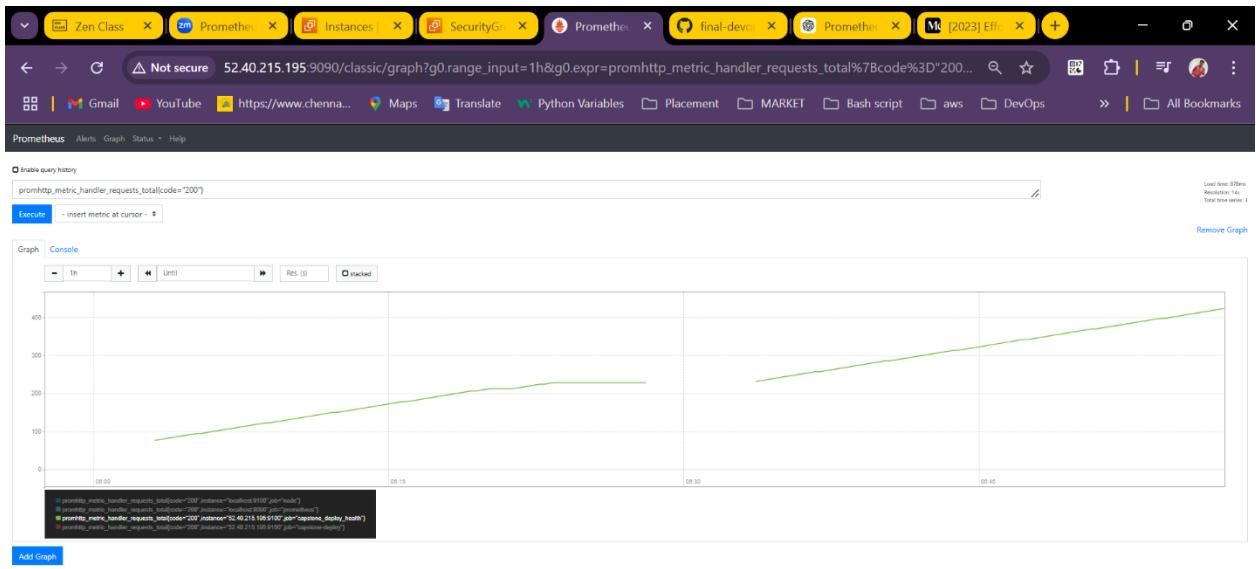
→ OVERALL PROMETHEUS GRAPH

The screenshot shows the Prometheus Graph page. The query entered is `promhttp_metric_handler_requests_total[code="200"]`. The graph displays two series:

- `promhttp_metric_handler_requests_total[code="200", instance="localhost:9100", job="node"]`: Represented by a blue line, showing a sharp increase from ~200 to ~220 around 06:15, followed by a steady upward trend reaching ~420 by 06:45.
- `promhttp_metric_handler_requests_total[code="200", instance="localhost:9090", job="prometheus"]`: Represented by a green line, showing a steady upward trend from ~20 to ~280 over the same period.

The graph interface includes a legend, a time range selector (1h), and a zoom control.

→ PROMETHEUS GRAPH capstone_deploy_health



→ Install the prerequisite packages

```
52.40.215.195(capstone_deploy)
```

```
Terminal Sessions View X server Tools Games Settings Macros Help
```

```
Session Servers Tools Games Sessions View Split MultiExec Tunnelling Packages Settings Help Save
```

```
X server Exit
```

```
Quick connect...
```

```
home/ubuntu/
```

```
Name .. .cache .ssh node_exporter-1.8.2.linux-amd64 .bash_history .bash_logout .bashrc .profile .sudo_as_admin_successful .Xauthority docker.sh node_exporter-1.8.2.linux-amd64.tar.gz
```

```
root@ip-172-31-8-176:~# sudo apt-get install -y apt-transport-https software-properties-common wget
```

```
Reading package lists... Done
```

```
Building dependency tree... Done
```

```
Reading state information... Done
```

```
software-properties-common is already the newest version (0.99.49.1).
```

```
Software-properties-common is set to manually installed.
```

```
Wget is already the newest version (1.21.4-1ubuntu4.1).
```

```
Wget is set to manually installed.
```

```
The following NEW packages will be installed:
```

```
apt-transport-https
```

```
0 upgraded, 1 newly installed, 0 to remove and 61 not upgraded.
```

```
Need to get 3974 B of archives.
```

```
After this operation, 35 8 KB of additional disk space will be used.
```

```
Get:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 apt-transport-https all 2.7.14build2 [3974 B]
```

```
Fetched 3974 B in 0s (112 kB/s)
```

```
Selecting previously unselected package apt-transport-https.
```

```
(Reading database ... 72726 files and directories currently installed.)
```

```
Preparing to unpack .../apt-transport-https_2.7.14build2_all.deb ...
```

```
Unpacking apt-transport-https (2.7.14build2) ...
```

```
Setting up apt-transport-https (2.7.14build2) ...
```

```
Scanning processes...
```

```
Scanning linux images...
```

```
Running kernel seems to be up-to-date.
```

```
No services need to be restarted.
```

```
No containers need to be restarted.
```

```
No user sessions are running outdated binaries.
```

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

```
root@ip-172-31-8-176:~#
```

```
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```

```
ip-172-31-8-176 1% 0.62 GB / 7.64 GB 0.10 Mb/s 0.00 Mb/s 89 min ubuntu (x6) /: 18% /boot: 10% /boot/efi 12:39 PM 01-02-2025
```

→ Import the GPG key

```
root@ip-172-31-8-176:~#
```

```
root@ip-172-31-8-176:~# sudo mkdir -p /etc/apt/keyrings/
```

```
wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null
```

```
root@ip-172-31-8-176:~#
```

→ To add a repository for stable releases

```
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu# echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main" | sudo tee /etc/apt/sources.list.d/grafana.list
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main
```

→ update the list of available packages

```
root@ip-172-31-8-176:/home/ubuntu# # Updates the list of available packages
sudo apt-get update -y
Hit:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Hit:4 https://download.docker.com/linux/ubuntu noble InRelease
Get:5 https://apt.grafana.com stable InRelease [7660 B]
Get:6 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:7 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [837 kB]
Get:8 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:9 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1002 kB]
Get:10 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [315 kB]
Get:11 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 kB]
Get:12 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [16,3 kB]
Get:13 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:14 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:15 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [17,7 kB]
Get:16 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:17 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:18 https://apt.grafana.com stable/main amd64 Packages [347 kB]
Get:19 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8976 B]
Get:20 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52,0 kB]
Get:21 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:22 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Fetched 3136 kB in 1s (2912 kB/s)
Reading package lists... 38%
```

→ To install Grafana OSS

```
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu# # Installs the latest OSS release:
sudo apt-get install grafana -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  musl
The following NEW packages will be installed:
  grafana musl
0 upgraded, 2 newly installed, 0 to remove and 61 not upgraded.
Need to get 139 MB of archives.
After this operation, 532 MB of additional disk space will be used.
Get:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 musl amd64 1.2.4-2 [416 kB]
Get:2 https://apt.grafana.com stable/main amd64 grafana amd64 11.5.0 [139 MB]
27% [2 grafana 29.6 MB/139 MB 21%]
```

→ To start the service

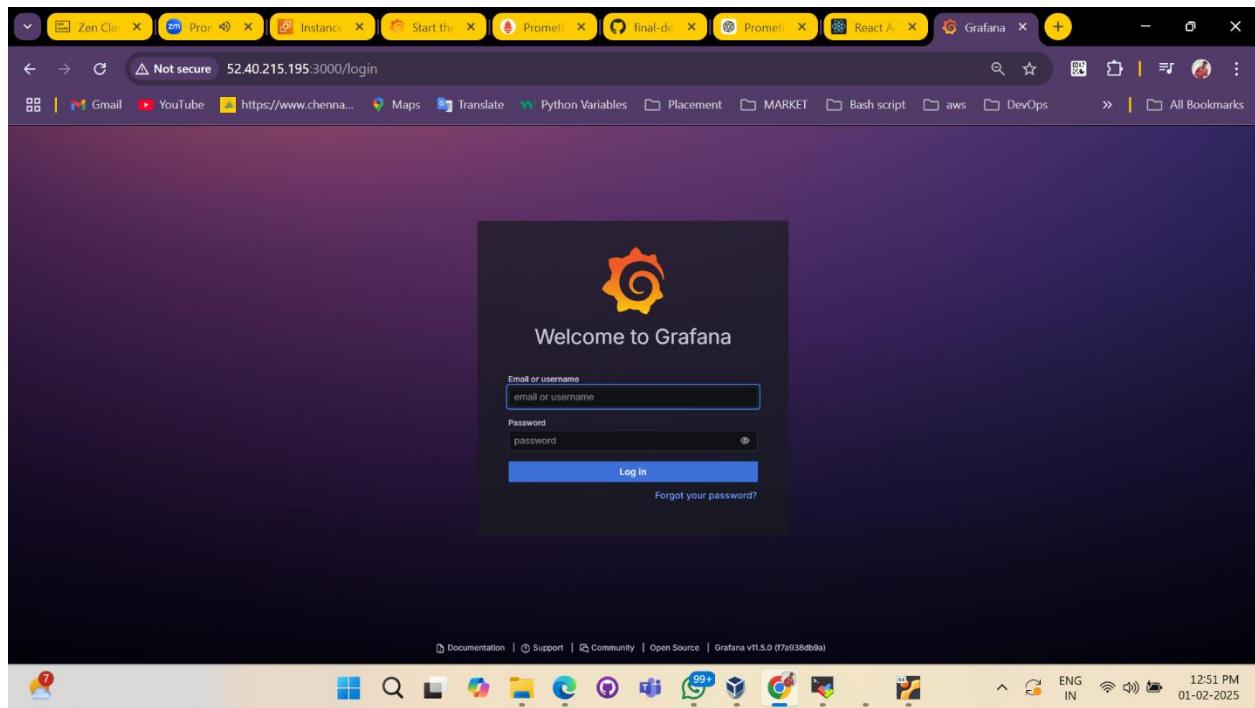
```
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu# sudo systemctl daemon-reload
sudo systemctl start grafana-server
root@ip-172-31-8-176:/home/ubuntu#
```

→ To verify that the service is running

```
root@ip-172-31-8-176:/home/ubuntu# sudo systemctl status grafana-server
● grafana-server.service - Grafana instance
   Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; disabled; preset: enabled)
     Active: active (running) since Sat 2025-02-01 07:16:23 UTC; 46s ago
       Docs: http://docs.grafana.org
   Main PID: 33497 (grafana)
      Tasks: 19 (limit: 9367)
     Memory: 83.8M (peak: 86.6M)
        CPU: 5.178s
      CGroup: /system.slice/grafana-server.service
              └─33497 /usr/share/grafana/bin/grafana server --config=/etc/grafana/grafana.ini --pidfile=/run/grafana/grafana-server.pid

Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=resource-server t=2025-02-01T07:16:30.780457803Z level=warn msg="failed to re...
Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=resource-server t=2025-02-01T07:16:30.780538987Z level=warn msg="failed to re...
Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=grafana-apiserver t=2025-02-01T07:16:30.782454009Z level=info msg="Adding Gro...
Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=grafana-apiserver t=2025-02-01T07:16:30.783344198Z level=info msg="Adding Gro...
Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=grafana-apiserver t=2025-02-01T07:16:30.784297235Z level=info msg="Adding Gro...
Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=app-registry t=2025-02-01T07:16:30.842305768Z level=info msg="app registry in...
Feb 01 07:16:30 ip-172-31-8-176 grafana[33497]: logger=plugin_installer t=2025-02-01T07:16:30.973081738Z level=info msg="Installing >...
Feb 01 07:16:31 ip-172-31-8-176 grafana[33497]: logger=installer_fs t=2025-02-01T07:16:31.033718679Z level=info msg="Downloaded and >...
Feb 01 07:16:31 ip-172-31-8-176 grafana[33497]: logger=plugins.registration t=2025-02-01T07:16:31.0902222646Z level=info msg="Plugin >...
Feb 01 07:16:31 ip-172-31-8-176 grafana[33497]: logger=plugin_backgroundinstaller t=2025-02-01T07:16:31.090301187Z level=info msg="P...
lines 1-21/21 (END)
```

→ GRAFANA LOGIN



→ GRAFANA HOME

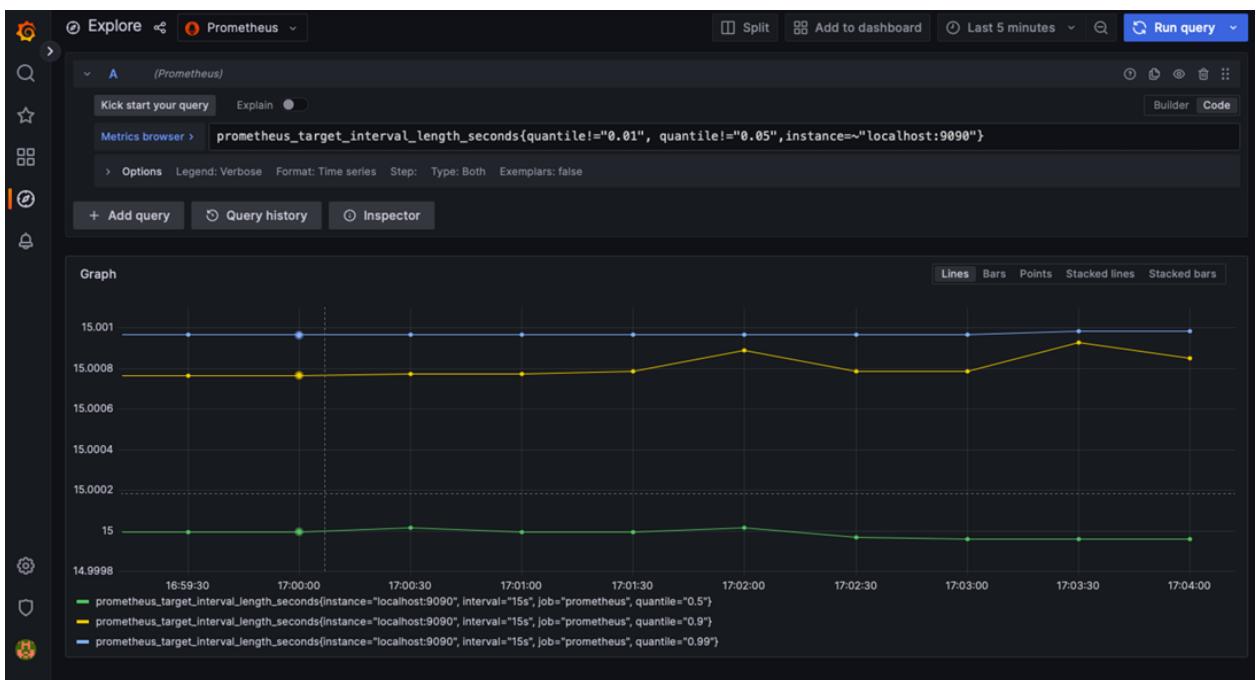
The screenshot shows the Grafana Home page. On the left, there's a sidebar with links like Home, Bookmarks, Starred, Dashboards, Explore, Alerting, Connections, and Administration. The main content area has a "Welcome to Grafana" header. Below it, there are three cards: "Basic" (with a guide to finishing setup), "TUTORIAL DATA SOURCE AND DASHBOARDS" (with a link to "Grafana fundamentals"), and "DATA SOURCES" (with a link to "Add your first data source"). To the right, there's a "DASHBOARDS" card with a link to "Create your first dashboard". A "Remove this panel" button is visible in the top right of the main content area. At the bottom, there's a "Dashboards" section showing "Starred dashboards" and "Recently viewed dashboards". On the far right, there's a "Latest from the blog" section with a post about performance testing and a link to "Grafana 11.5 release: easily share Grafana dashboards and annotations". The status bar at the bottom shows the URL "52.40.215.195:3000/dashboard/new?utm_source=grafana_gettingstarted", the date "01-02-2025", and the time "12:52 PM".

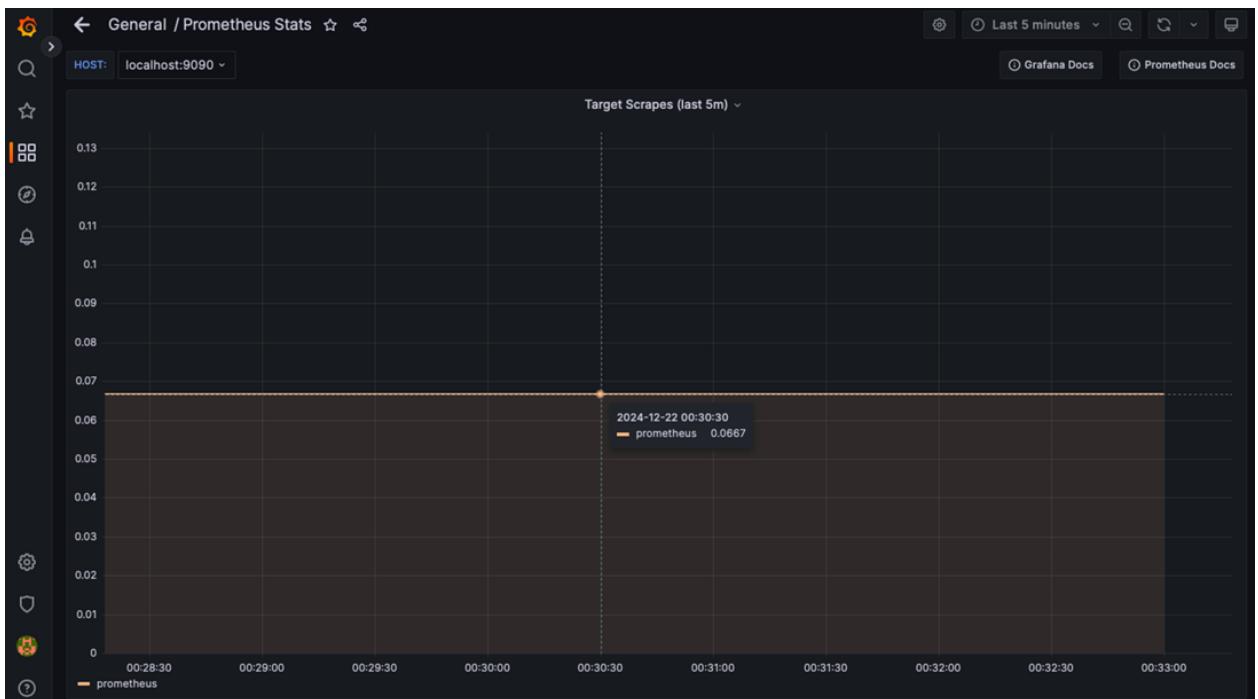
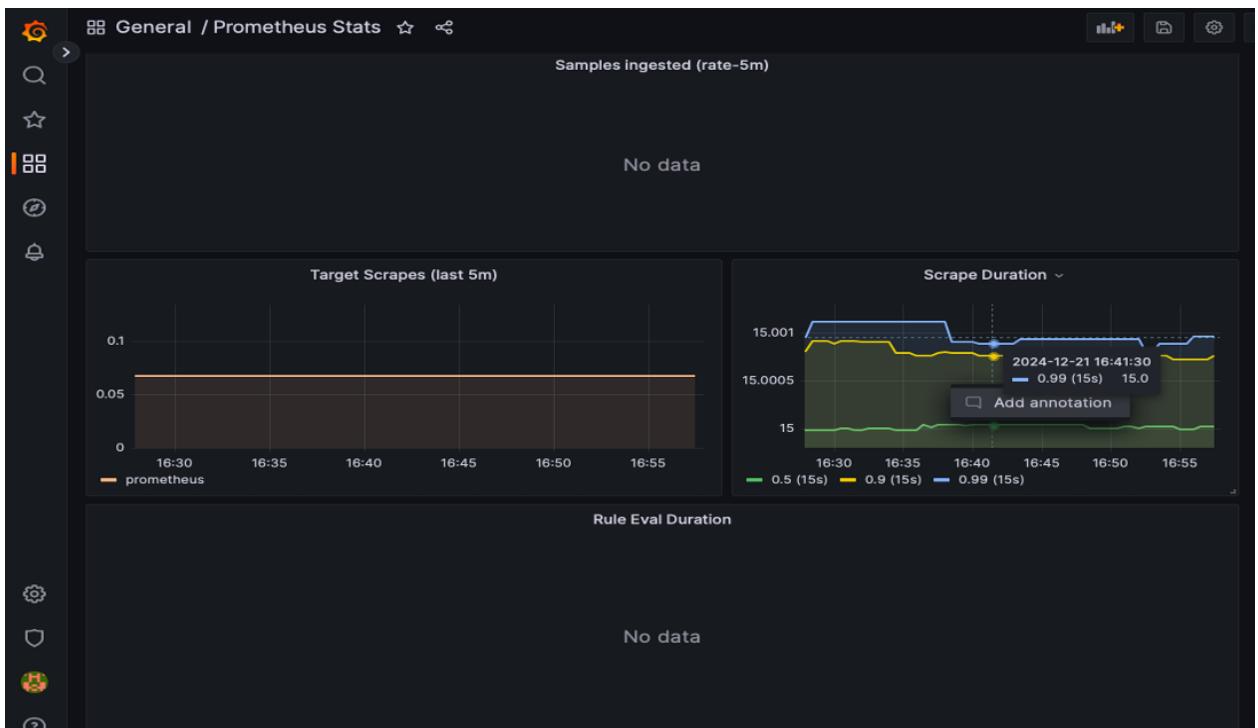
→ PROMETHEUS ADDED TO GRAFAN

The screenshot shows the "Connections > Data sources" page in Grafana. The sidebar on the left has a "Data sources" link highlighted. The main content area shows a "prometheus-1" data source configuration. It includes fields for "Name" (set to "prometheus-1") and "Default" (radio button selected). Below this, there's a note: "Before you can use the Prometheus data source, you must configure it below or in the config file. For detailed instructions, [view the documentation](#)". Under "Connection", there's a "Prometheus server URL" field containing "http://52.40.215.195:9090". Under "Authentication", there's a "Authentication methods" section with a note: "Choose an authentication method to access the data source". A dropdown menu shows "No Authentication" selected. Under "TLS settings", there are checkboxes for "Add self-signed certificate", "TLS Client Authentication", and "Skip TLS certificate validation". The status bar at the bottom shows the URL "52.40.215.195:3000/connections/datasources/edit/debqap6ajuhoge", the date "01-02-2025", and the time "01:04 PM".

The screenshot shows the Grafana interface for managing data sources. The left sidebar has a 'Data sources' section selected. The main panel shows configuration for a 'prometheus-1' connection. It includes sections for 'Performance' (Prometheus type: Choose, Cache level: Low, Incremental querying (beta), Disable recording rules (beta)), 'Other' (Custom query parameters: Example: max_source_resolution=5m&timeout, HTTP method: POST, Use series endpoint), and 'Exemplars' (+ Add). A success message at the bottom says 'Successfully queried the Prometheus API.' with a link to 'Explore view'. At the bottom are 'Delete' and 'Save & test' buttons. The status bar at the bottom right shows the date and time: 01:05 PM 01-02-2025.

→ GRAFANA MONITORING IMAGES





SUBMISSION OF URL, DOCKER IMAGES & DOCKERHUB REPOS:-

URL:

Github -> https://github.com/darvin00/capstone_devops-build

Deployed site -> <http://52.40.215.195/login>

Jenkins -> <http://54.245.221.138:8080>

Prometheus -> <http://52.40.215.195:9090>

Grafana -> <http://52.40.215.195:3000>

Docker images:

```
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu# docker images
REPOSITORY      TAG          IMAGE ID      CREATED        SIZE
xave01/prod     latest       d5a79535b3f8   13 days ago   194MB
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu#
root@ip-172-31-8-176:/home/ubuntu#
```

Dockerhub Prod Repo:

The screenshot shows a web browser window with multiple tabs open. The active tab is 'hub.docker.com/repository/docker/xave01/prod/general'. The page content includes:

- Repository Details:** xave01/prod, Last pushed 12 days ago, Repository size: 69.4 MB.
- Tags:** A table showing 12 tags: latest, 12, 11, 10, 9, and several unnamed tags represented by small green squares. Columns include Tag, OS, Type, Pulled, and Pushed.
- Automated builds:** A section explaining how to automatically build and tag images. It mentions GitHub and Bitbucket integration and a 'Upgrade' button.
- Repository overview:** A summary section with various icons and metrics.

Dockerhub Dev Repo:

The screenshot shows a web browser window with multiple tabs open. The active tab is 'hub.docker.com/repository/docker/xave01/dev/general'. The browser's address bar also shows other tabs like 'Zen Class', 'DevOps Application Deployment', and 'darvin00/capstone_devops-build'. The Dockerhub page displays the repository 'xave01/dev' with a general view. It shows a list of tags ('latest', '61', '60', '59', '58') and their details. There's a section for 'Automated builds' with a 'Upgrade' button. The bottom of the screen shows a Windows taskbar with various pinned icons and system status.

xave01/dev General

Last pushed 12 days ago · Repository size: 97.9 MB

dev Add a category

General Tags Builds Collaborators Webhooks Settings

Tags

This repository contains 25+ tag(s).

Tag	OS	Type	Pulled	Pushed
latest		Image	3 hours ago	12 days ago
61		Image	3 hours ago	12 days ago
60		Image	3 hours ago	12 days ago
59		Image	3 hours ago	12 days ago
58		Image	3 hours ago	12 days ago

[See all](#)

Automated builds

Manually pushing images to Docker Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions. [Read more about automated builds](#).

[Upgrade](#)

04:36 PM 01-02-2025

THANK YOU