

You have been hired as a Sr. DevOps Engineer in Abode Software. They want to implement DevOps Lifecycle in their company. You have been asked to implement this lifecycle as fast as possible. Abode Software is a product-based company and their product is available on this GitHub link.

<https://github.com/hshar/website>

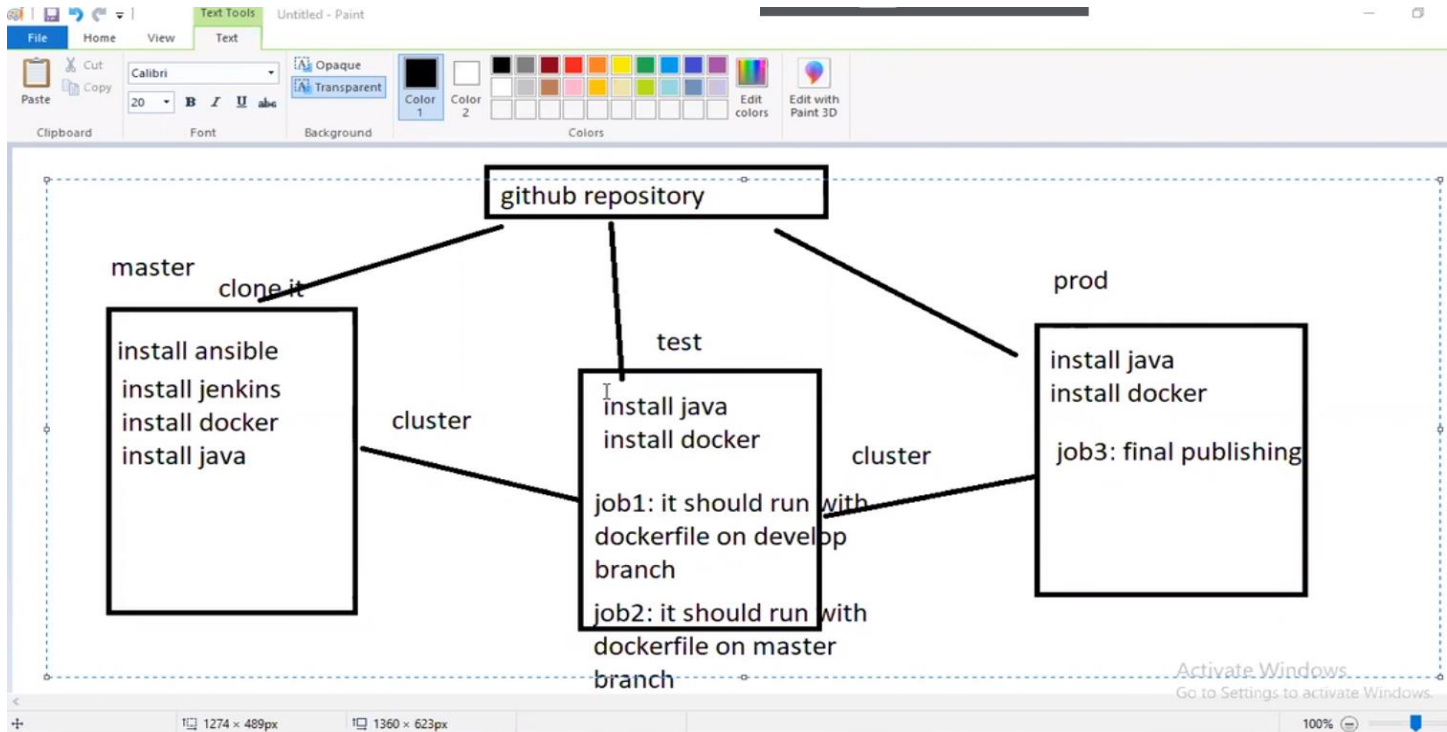
Following are the specifications of the lifecycle:

1. Install the necessary software on the machines using a configuration management tool
2. Git workflow has to be implemented
3. CodeBuild should automatically be triggered once a commit is made to master branch or develop branch.
  - a. If a commit is made to master branch, test and push to prod
  - b. If a commit is made to develop branch, just test the product, do not push to prod
4. The code should be containerized with the help of a Dockerfile. The Dockerfile should be built every time there is a push to GitHub. Use the following pre-built container for your application:  
hshar/webappThe code should reside in '/var/www/html'
5. The above tasks should be defined in a Jenkins Pipeline with the following jobs:
  - a. Job1 : build
  - b. Job2 : test
  - c. Job3:prod

## **STEPS :-**

1. ***We Need 3 Aws Instances***
  - a. Master
  - b. Test (Slave1)
  - c. Prod (Slave2)
2. ***We Need Some Software to be install on the instances.***
  - a. Git on Master
  - b. Github Account
  - c. Ansible on Master
  - d. Jenkins on Master
  - e. Docker on Master as well as Slave
  - f. Required dependencies (Java for Jenkins on all machines )

### 3. *Flowchart*



First we will clone the given data in github after cloning then we will install required tools to master and slave with the help of script and ansible. We will use a Yaml file to install all the tools at required system. Then we will create a dockerfile through docker file we will going to install Apache2 on our system through which we will publish data on net.

### 4. *Add Slave node Private ip to ansible host file to establish connection between Master And Slave*

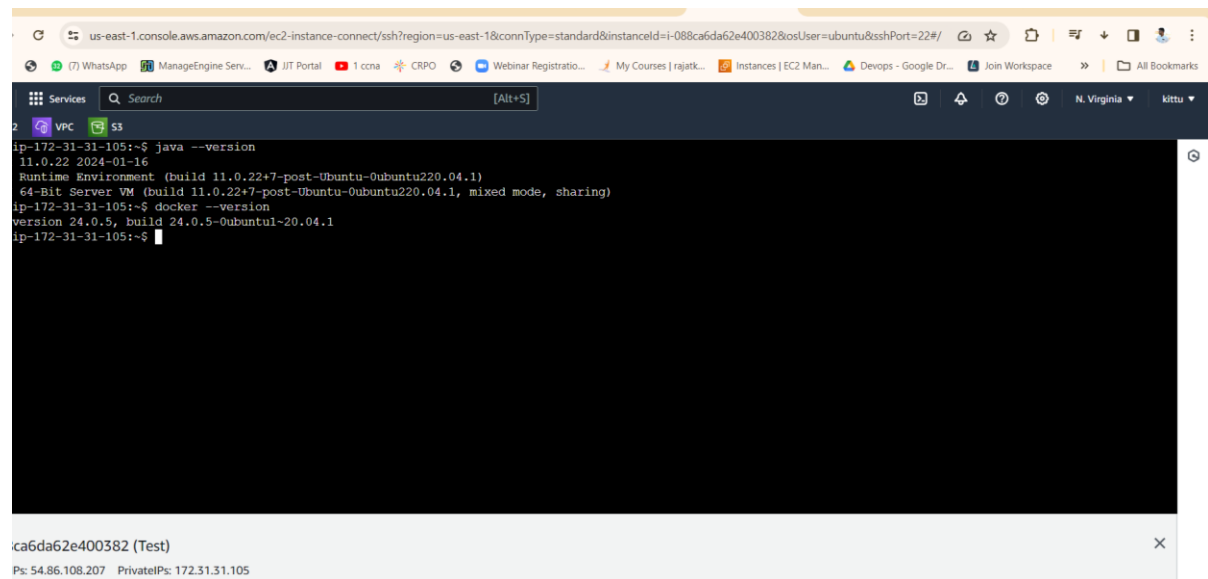
```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0b97c20c7ba822d08&osUser=ubuntu&region=us-east-1&sshPort=22#/  
AWS Services Search [Alt+S]  
EC2 VPC S3  
GNU nano 4.8 hosts Modified  
[Test]  
172.31.31.105  
[Prod]  
172.31.80.165  
Get Help Write Out Where Is Cut Text Justify Cur Pos Undo Mark Text To Bracket Previous  
Exit Read File Replace Paste Text To Spell Go To Line Redo Copy Text Where Was Next  
i-0b97c20c7ba822d08 (Master)  
PublicIPs: 3.80.32.216 PrivateIPs: 172.31.20.165
```

5. **Create a yaml file (Playbook) to install required tool through cmd to the specific system:**

```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0b97c20c7ba822d08&osUser=ubuntu&region=us-east-1&sshPort=22#/  
AWS Services Search [Alt+S]  
EC2 VPC S3  
--r-- 1 root root 43 Mar 8 14:21 hosts  
--r-- 1 root root 383 Mar 8 16:11 install.yml  
--r-- 1 root root 410 Mar 8 16:07 jenkins.sh  
-xr-x 2 root root 4096 Oct 25 2022 roles  
ip-172-31-20-165:/etc/ansible$ sudo cat install.yml  
hosts: localhost  
become: true  
name: install jenkins , java and docker  
tasks:  
- name: master task  
script: jenkins.sh  
- name: Test  
become: true  
name: install java and docker  
tasks:  
- name: test task  
script: docker.sh  
- name: Prod  
become: true  
name: install java and docker  
tasks:  
- name: prod task  
script: docker.sh  
ip-172-31-20-165:/etc/ansible$  
i-0b97c20c7ba822d08 (Master)
```

6. **Required tools install on respective Vm's.**

## On Test



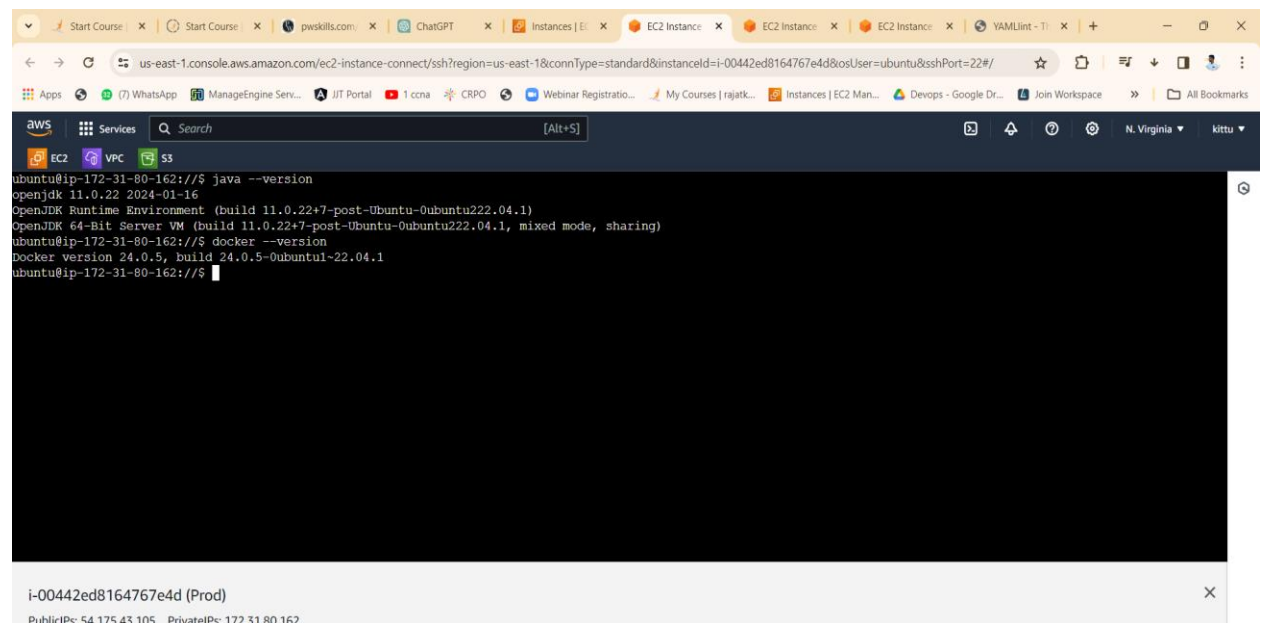
The screenshot shows the AWS Management Console interface for an EC2 instance. The terminal window displays the following output:

```
ip-172-31-31-105:~$ java --version
11.0.22 2024-01-16
Runtime Environment (build 11.0.22+7-post-Ubuntu-0ubuntu220.04.1)
64-Bit Server VM (build 11.0.22+7-post-Ubuntu-0ubuntu220.04.1, mixed mode, sharing)
ip-172-31-31-105:~$ docker --version
Docker version 24.0.5, build 24.0.5-0ubuntu1~20.04.1
ip-172-31-31-105:~$
```

Below the terminal window, the instance details are shown:

i-088ca6da62e400382 (Test)  
Public IP: 54.86.108.207 Private IP: 172.31.31.105

## On Prod



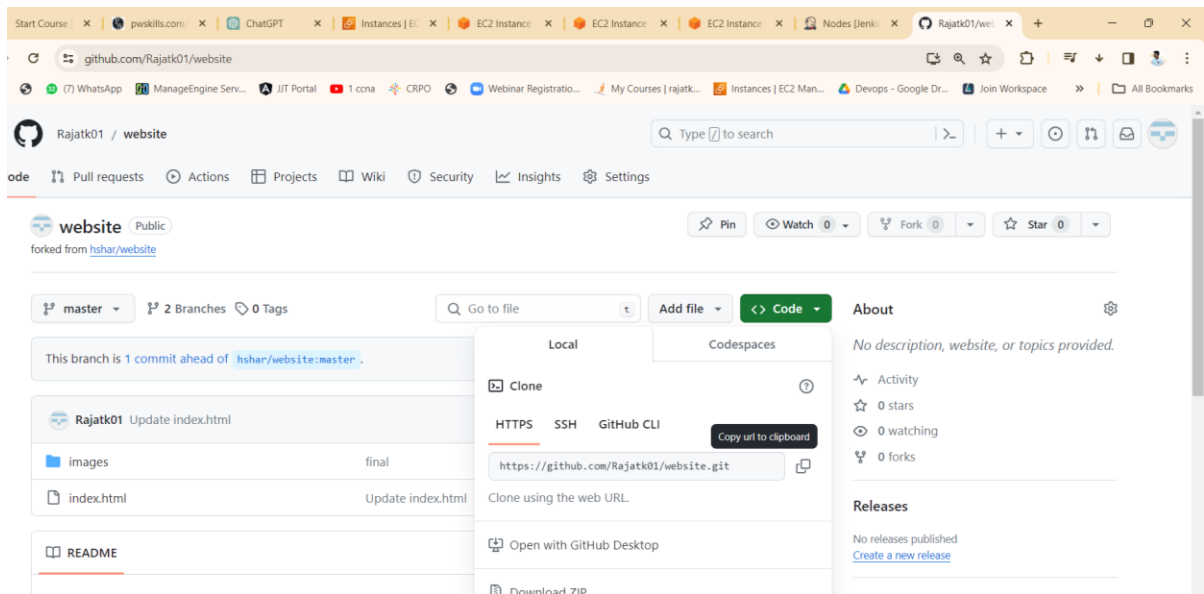
The screenshot shows the AWS Management Console interface for an EC2 instance. The terminal window displays the following output:

```
ubuntu@ip-172-31-80-162:~$ java --version
openjdk 11.0.22 2024-01-16
OpenJDK Runtime Environment (build 11.0.22+7-post-Ubuntu-0ubuntu222.04.1)
OpenJDK 64-Bit Server VM (build 11.0.22+7-post-Ubuntu-0ubuntu222.04.1, mixed mode, sharing)
ubuntu@ip-172-31-80-162:~$ docker --version
Docker version 24.0.5, build 24.0.5-0ubuntu1~22.04.1
ubuntu@ip-172-31-80-162:~$
```

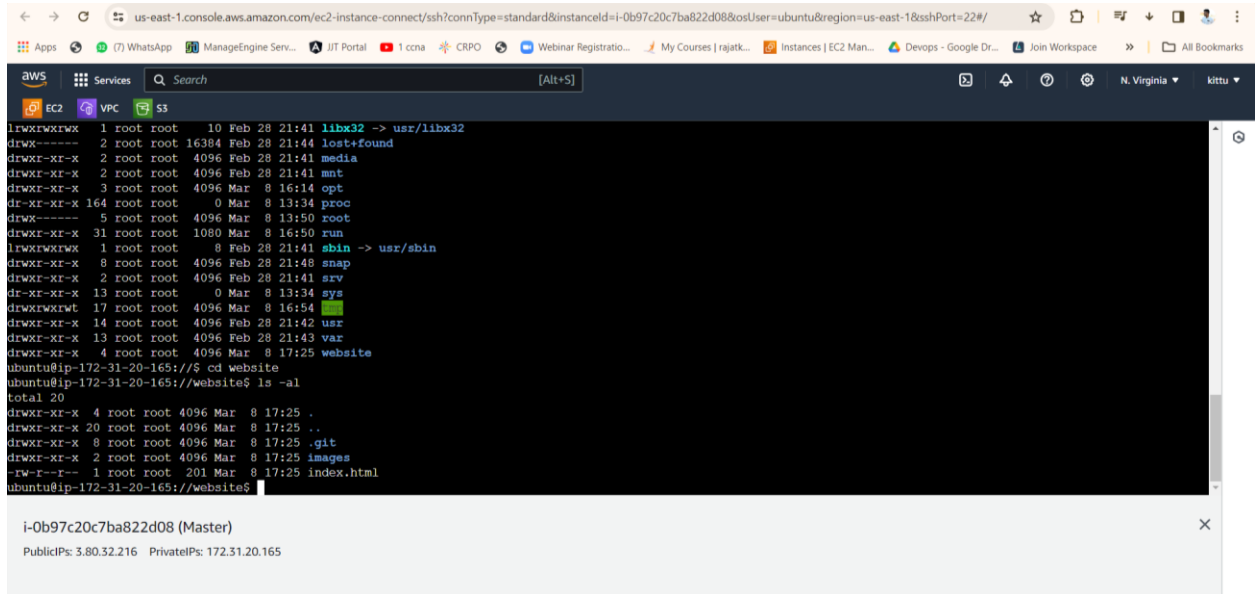
Below the terminal window, the instance details are shown:

i-00442ed8164767e4d (Prod)  
Public IP: 54.175.43.105 Private IP: 172.31.80.162

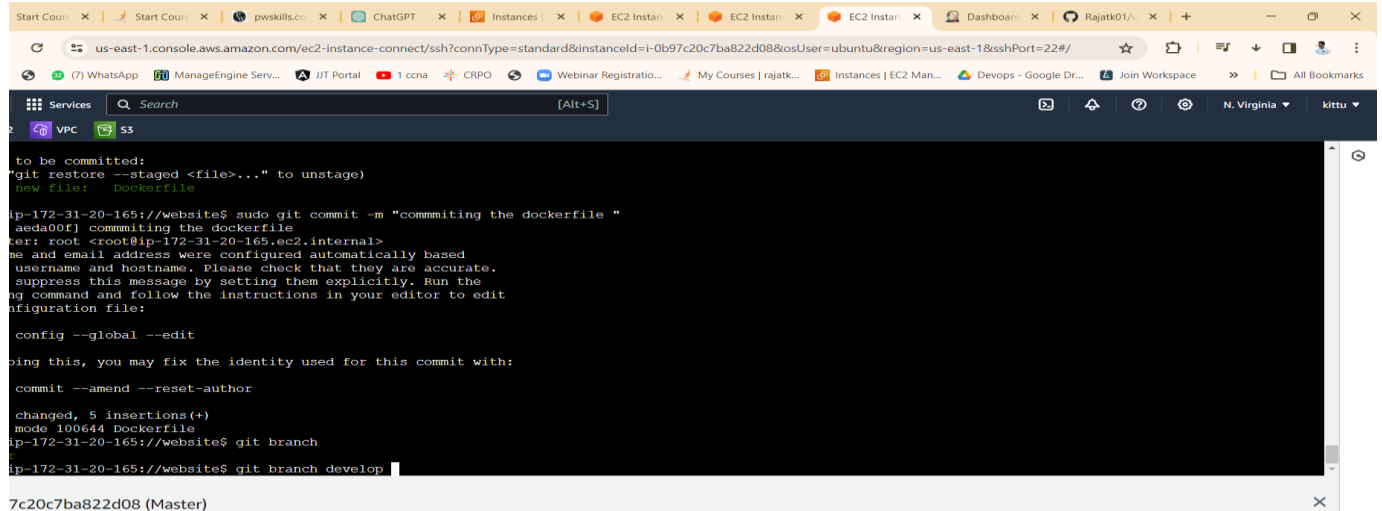
7. Fork the data through given github to your github account.



## 8. Clone Data From Github to Master Vm's



## 9. Create a Dockerfile in Website folder and commit the docker file.



The screenshot shows a terminal window within the AWS console. The terminal is connected to an EC2 instance with IP 172.31.20.165. The user is running a series of git commands to commit a Dockerfile and create a new branch. The output shows the commit process, including the creation of a new file (Dockerfile) and the creation of a new branch named 'develop'.

```
to be committed:
"git restore --staged <file>..." to unstage)
New file:   Dockerfile

ip-172-31-20-165:/website$ sudo git commit -m "committing the dockerfile "
[aeda00f] committing the dockerfile
Committer: root <root@ip-172-31-20-165.ec2.internal>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

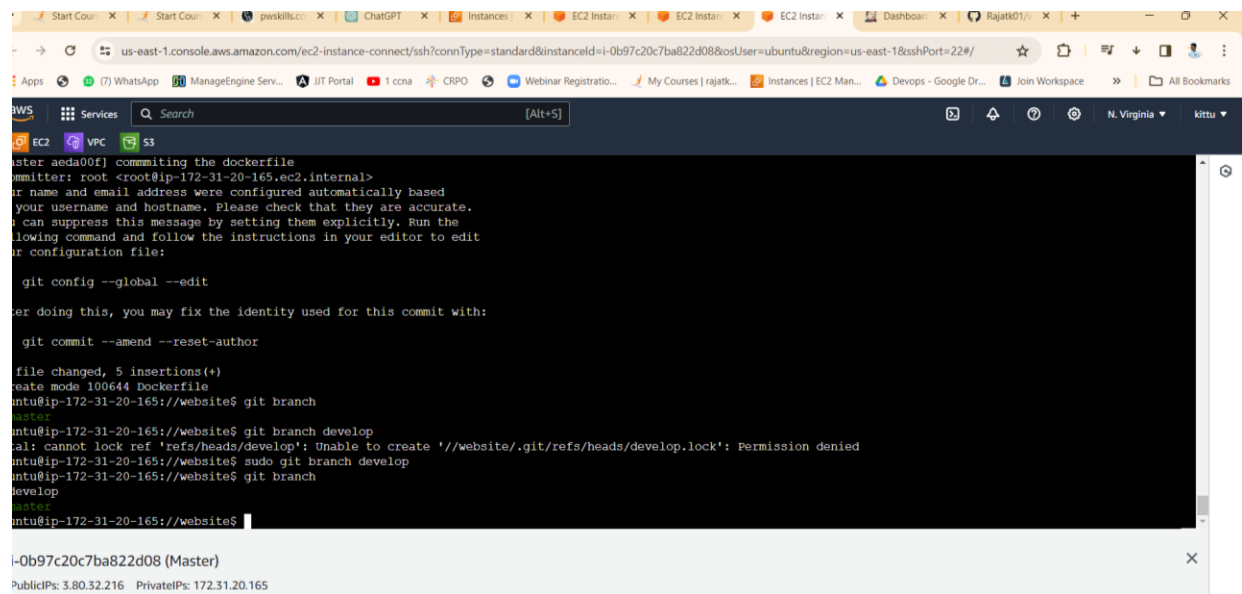
After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

file changed, 5 insertions(+)
create mode 100644 Dockerfile
ip-172-31-20-165:/website$ git branch
ip-172-31-20-165:/website$ git branch develop
```

7c20c7ba822d08 (Master)

10. *We need a develop branch also so we need to create develop also*



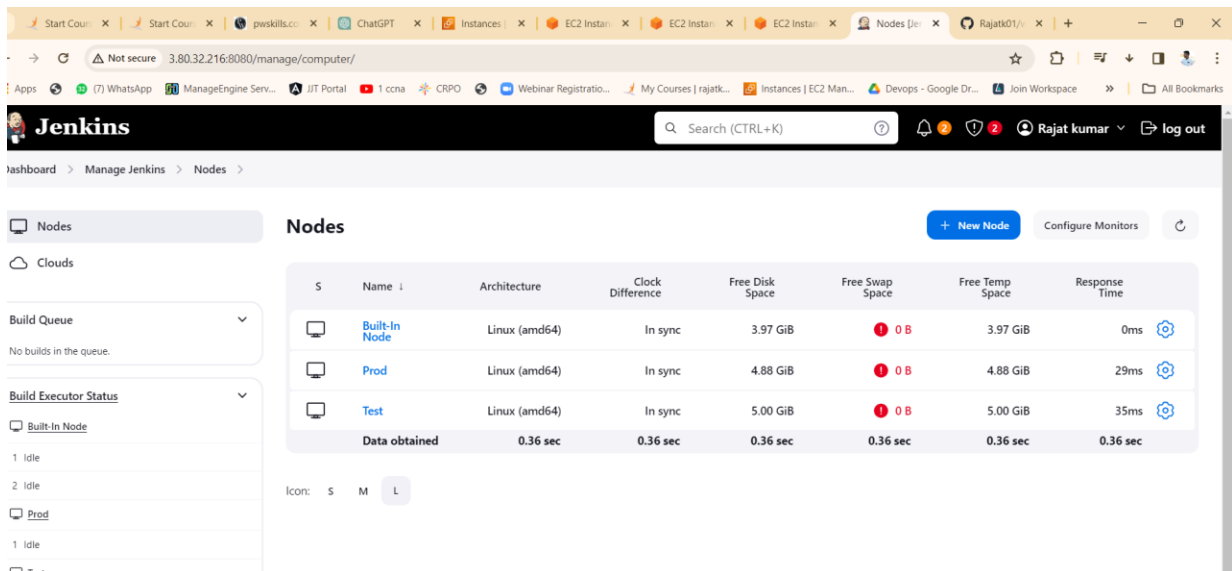
The screenshot shows a terminal window within the AWS console. The terminal is connected to an EC2 instance with IP 172.31.20.165. The user is running a series of git commands to create a new branch named 'develop'. The output shows the creation of the branch and the error message 'Permission denied' when trying to create the branch.

```
ip-172-31-20-165:/website$ git branch develop
ip-172-31-20-165:/website$ git branch develop
ip-172-31-20-165:/website$ sudo git branch develop
ip-172-31-20-165:/website$ git branch develop
ip-172-31-20-165:/website$
```

i-0b97c20c7ba822d08 (Master)

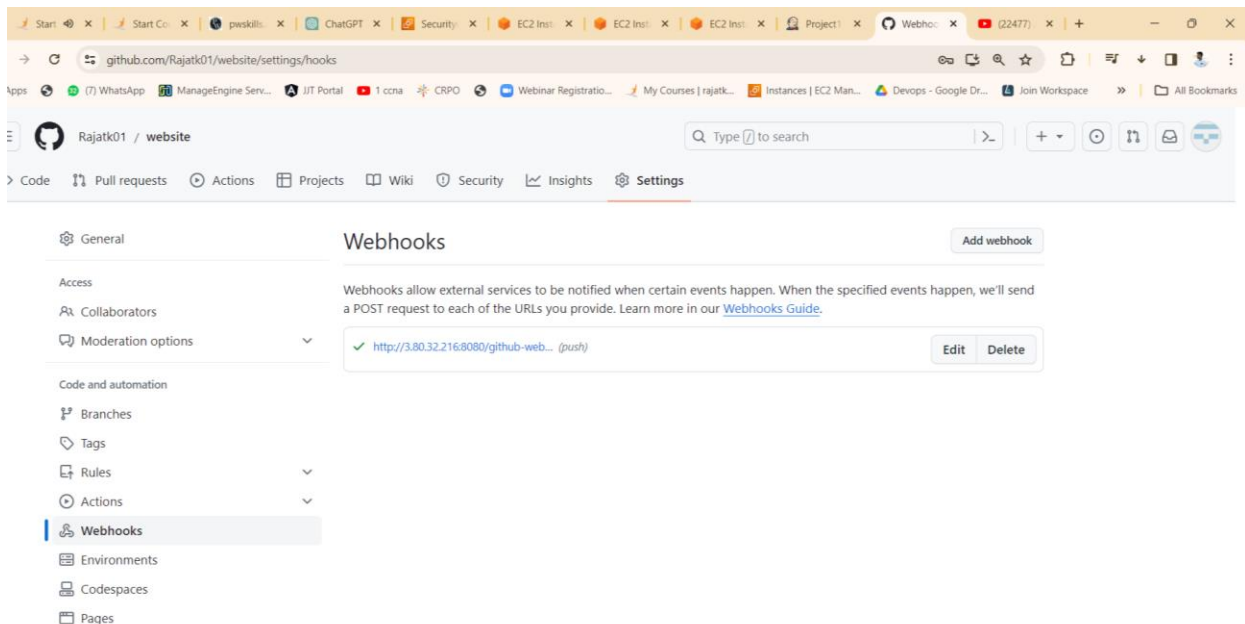
PublicIPs: 3.80.32.216 PrivateIPs: 172.31.20.165

11. *Now we add slave node to Jenkins master.*



- We have to perform CI/CD pipeline so we want if any changes made to specific gitgub repo branch then we it will invoke the task automatically so for this we will create a webhook for job 1. If jo1 is success then job2 will perform automatically on Test and if job2 is success then job3 will be triggered on Prod

Note :- Job1 And job2 is to performed on Test ( Job1 with develop branch & job2 with master branch on test ) (job3 to be trigged from any branch on Prod )



### 13. **Creating job1 by using Jenkins**

Start Course | In...

hshar/website

Instances | EC2

EC2 Instance Co

Nodes | Kubern...

ChatGPT

Speedtest by O...

Project1 Config

← → ↻ ⚠ Not secure 54.146.33.17:8080/job/Project1/configure ☆ 📄 ⚡

Apps 📱 (7) WhatsApp 🖨 ManageEngine Serv... 🖨 JIT Portal 📺 1 ccna ⚡ CRPO 📞 Webinar Registratio... 📁 My Courses | rajatk... 📁 Instances | EC2 Man... 📁 Devops - Google Dr... 📁 Join Workspace

Dashboard > Project1 > Configuration

Configure

⚙ General

🔑 Source Code Management

🕒 Build Triggers

🌐 Build Environment

📋 Build Steps

🔧 Post-build Actions

☐ execute concurrent builds if necessary

☒ Restrict where this project can be run ?

Label Expression ?

Test

Label Test matches 1 node. Permissions or other restrictions provided by plugins may further reduce that list.

Advanced ▾

Source Code Management

☐ None

☒ Git ?

Repositories ?

Repository URL ?

https://github.com/RajatK01/website.git

Credentials ?

← → ↻ ⚠ Not secure 54.146.33.17:8080/job/Project1/configure ☆ 📄 ⚡ Relaunch to update

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Dashboard > Project1 > Configuration

Configure

⚙ General

🔑 Source Code Management

🕒 Build Triggers

🌐 Build Environment

📋 Build Steps

🔧 Post-build Actions

https://github.com/RajatK01/website.git

Credentials ?

- none - ▾

+ Add ▾

Advanced ▾

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?

\*/develop

Add Branch

Repository browser ?

Save Apply



← → ↻ ⚠ Not secure 54.146.33.17:8080/job/Project1/configure ☆ 📄 ⚡ 🖨 📱 📄 ⚙ Relaunch to update ⋮

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Dashboard > Project1 > Configuration

Configure

⚙ General

🔑 Source Code Management

🕒 Build Triggers

🌐 Build Environment

📋 Build Steps

📦 Post-build Actions

☐ Trigger builds remotely (e.g., from scripts) ?

☐ Build after other projects are built ?

☐ Build periodically ?

☒ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Build Environment

☐ Delete workspace before build starts

☐ Use secret text(s) or file(s) ?

☐ Add timestamps to the Console Output

☐ Inspect build log for published build scans

☐ Terminate a build if it's stuck

☐ With Ant ?

Build Steps

Save Apply

← → ↻ ⚠ Not secure 54.146.33.17:8080/job/Project1/configure ☆ 📄 ⚡ 🖨 📱 📄 ⚙ Relaunch to update ⋮

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Dashboard > Project1 > Configuration

Configure

⚙ General

🔑 Source Code Management

🕒 Build Triggers

🌐 Build Environment

📋 Build Steps

📦 Post-build Actions

Build Steps

≡ Execute shell ?

Command

See [the list of available environment variables](#)

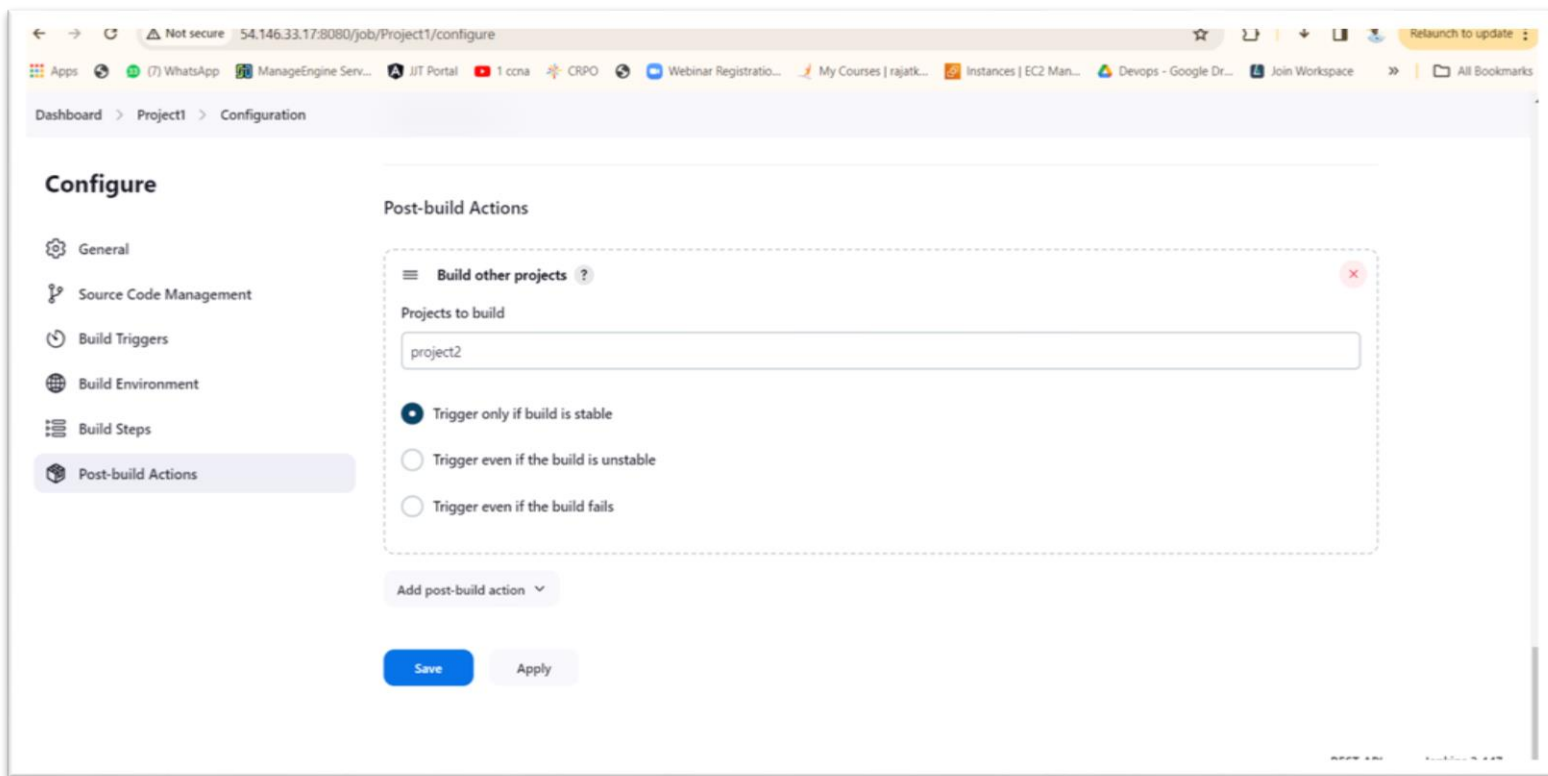
```
sudo docker rm -f $(sudo docker ps -a -q)
sudo docker build . -t webapp
sudo docker run -itd -p 81:80 webapp
```

Advanced ▾

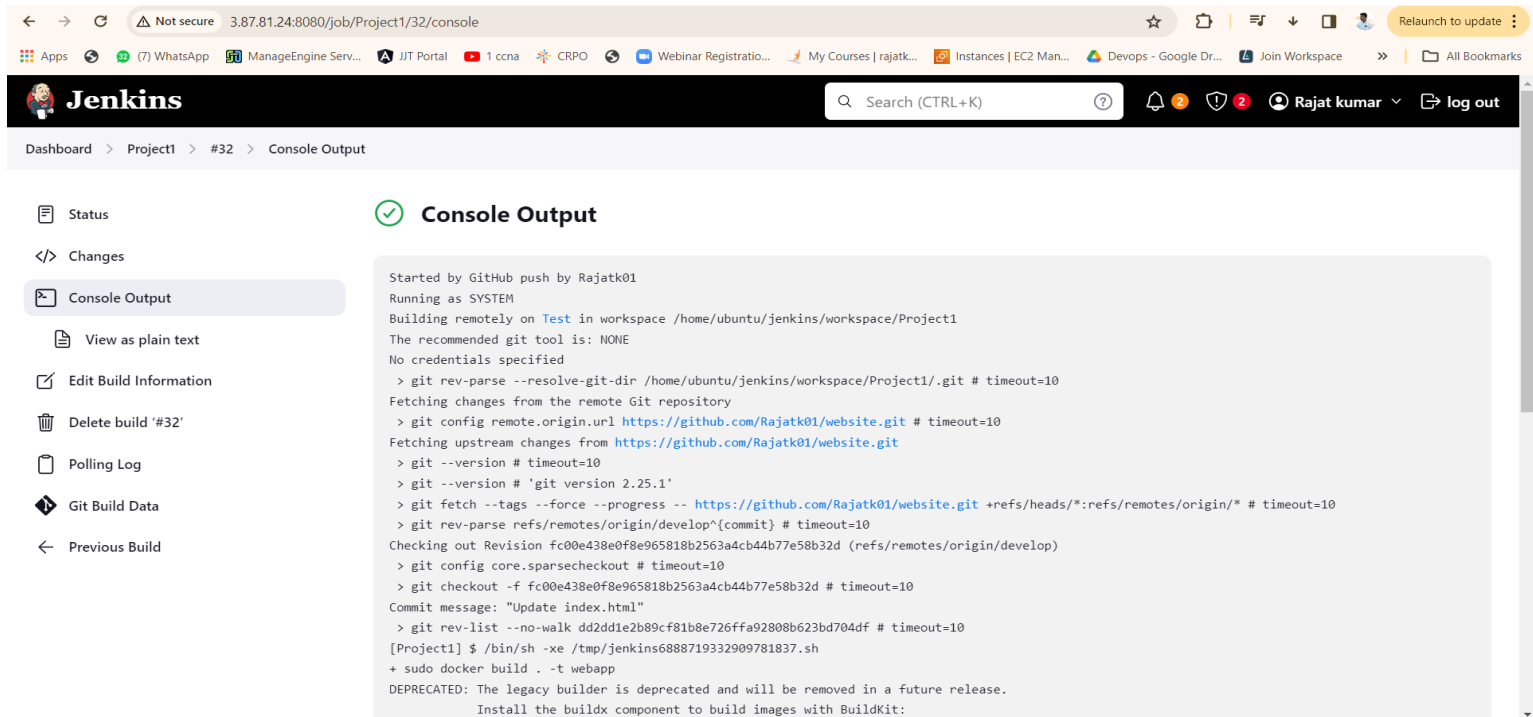
Add build step ▾

Post-build Actions

Save Apply




*Similarly Remaining two job will be done .*





← → ↺ ⚠ Not secure 3.87.81.24:8080/job/project2/1/console ☆ 📄 ⚙ ⏏ 👤 Relaunch to update

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 **Jenkins**

? 🔔 2 🛡️ 2 👤 Rajat kumar ▾ 🚪 log out

Dashboard > project2 > #1 > Console Output

📄 Status

</> Changes

📄 Console Output

📄 View as plain text

📄 Edit Build Information

🗑️ Delete build '#1'

📄 Polling Log


🔍 Git Build Data

✅ Console Output

Started by GitHub push by Rajatk01  
Running as SYSTEM  
Building remotely on **Test** in workspace /home/ubuntu/jenkins/workspace/project2  
The recommended git tool is: NONE  
No credentials specified  
Cloning the remote Git repository  
Cloning repository <https://github.com/Rajatk01/website.git>  
> git init /home/ubuntu/jenkins/workspace/project2 # timeout=10  
Fetching upstream changes from <https://github.com/Rajatk01/website.git>  
> git --version # timeout=10  
> git --version # 'git version 2.25.1'  
> git fetch --tags --force --progress -- <https://github.com/Rajatk01/website.git> +refs/heads/\*:refs/remotes/origin/\* # timeout=10  
> git config remote.origin.url <https://github.com/Rajatk01/website.git> # timeout=10  
> git config --add remote.origin.fetch +refs/heads/\*:refs/remotes/origin/\* # timeout=10  
Avoid second fetch  
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10  
Checking out Revision f0b16b635b9c4b4986c966704361412eab0137f3 (refs/remotes/origin/master)  
> git config core.sparsecheckout # timeout=10  
> git checkout -f f0b16b635b9c4b4986c966704361412eab0137f3 # timeout=10  
Commit message: "Update index.html"  
First time build. Skipping changelog.  
[project2] \$ /bin/sh -xe /tmp/jenkins14953665384179126153.sh

← → ↺ ⚠ Not secure 3.87.81.24:8080/job/Project3/5/console ☆ 📄 ⚙ ⏏ 👤 Relaunch to update

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 **Jenkins**

? 🔔 2 🛡️ 2 👤 Rajat kumar ▾ 🚪 log out

Dashboard > Project3 > #5 > Console Output

📄 Status

</> Changes

📄 Console Output

📄 View as plain text

📄 Edit Build Information

🗑️ Delete build '#5'

🔍 Git Build Data

← Previous Build

✅ Console Output

Started by upstream project "project2" build number 7  
originally caused by:  
Started by upstream project "Project1" build number 35  
originally caused by:  
Started by GitHub push by Rajatk01  
Running as SYSTEM  
Building remotely on **Prod** in workspace /home/ubuntu/jenkins/workspace/Project3  
The recommended git tool is: NONE  
No credentials specified  
> git rev-parse --resolve-git-dir /home/ubuntu/jenkins/workspace/Project3/.git # timeout=10  
Fetching changes from the remote Git repository  
> git config remote.origin.url <https://github.com/Rajatk01/website.git> # timeout=10  
Fetching upstream changes from <https://github.com/Rajatk01/website.git>  
> git --version # timeout=10  
> git --version # 'git version 2.34.1'  
> git fetch --tags --force --progress -- <https://github.com/Rajatk01/website.git> +refs/heads/\*:refs/remotes/origin/\* # timeout=10  
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10  
Checking out Revision f0b16b635b9c4b4986c966704361412eab0137f3 (refs/remotes/origin/master)  
> git config core.sparsecheckout # timeout=10  
> git checkout -f f0b16b635b9c4b4986c966704361412eab0137f3 # timeout=10  
Commit message: "Update index.html"  
> git rev-list --no-walk f0b16b635b9c4b4986c966704361412eab0137f3 # timeout=10

← → ↻ ⚠ Not secure 3.87.81.24:8080 ☆ 📁 ⚙ ⬇ 🖨 👤 Relaunch to update ⋮

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Dashboard >

+ New Item

👤 People

📅 Build History

🕒 Project Relationship

🔍 Check File Fingerprint

⚙ Manage Jenkins

📌 My Views

All +

S	W	Name ↓	Last Success	Last Failure	Last Duration	
✓	☀	Project1	19 min #34	1 hr 26 min #31	1.2 sec	▶
✓	☁	project2	19 min #6	36 min #3	1.2 sec	▶
✓	☁	Project3	19 min #4	23 min #3	1.4 sec	▶

Build Queue

No builds in the queue.

Build Executor Status

🖨 Built-In Node

1 Idle

2 Idle

🖨 Build

Icon: S M L

Icon legend

📡 Atom feed for all

📡 Atom feed for failures

📡 Atom feed for just latest builds

Add description

← → ↻ ⚠ Not secure 35.172.225.150:85 ☆ 📁 ⚙ ⬇ 🖨 👤 Relaunch to update ⋮

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Hello world!

The GitHub Octocat logo, a stylized black cat with large eyes and a small smile, standing on a blue circular base.

GitHub

