AWS Solutions Architect Certification Training

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DevOps Project: Capstone 1 COMPLETED by Nagesha KS Please check the following screenshots for each question.

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.git

Following are the specifications of the lifecycle:

- 1. Install the necessary software on the machines using a configuration management tool Ansible
- 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**.

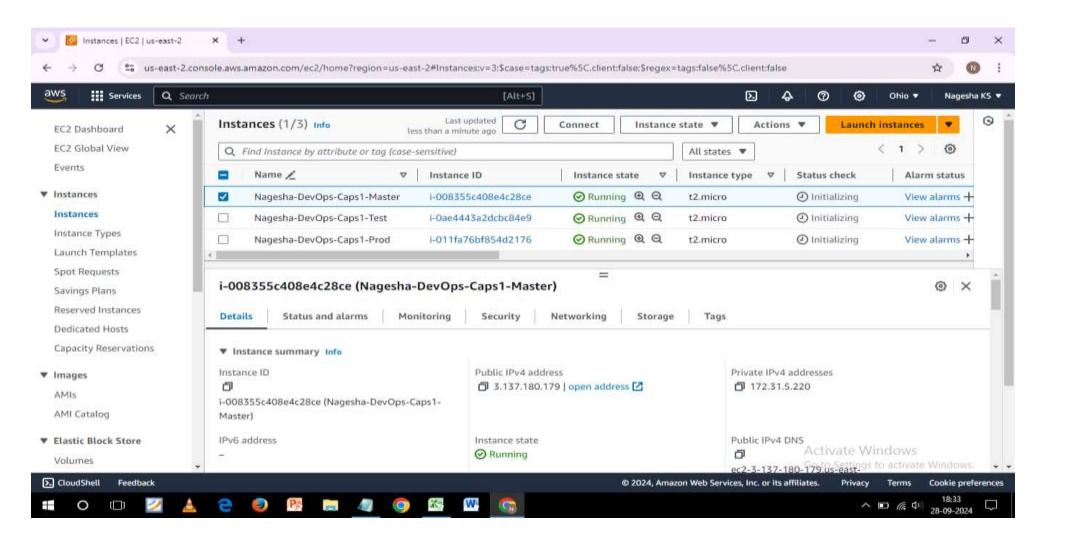
Use the following pre-built container for your application: hshar/webapp

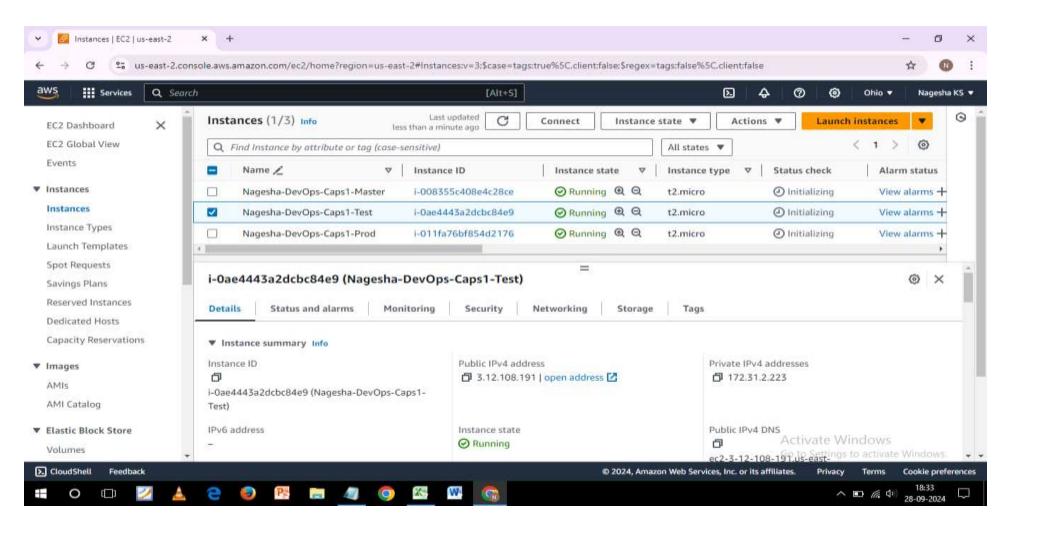
The code should reside in '/var/www/html'

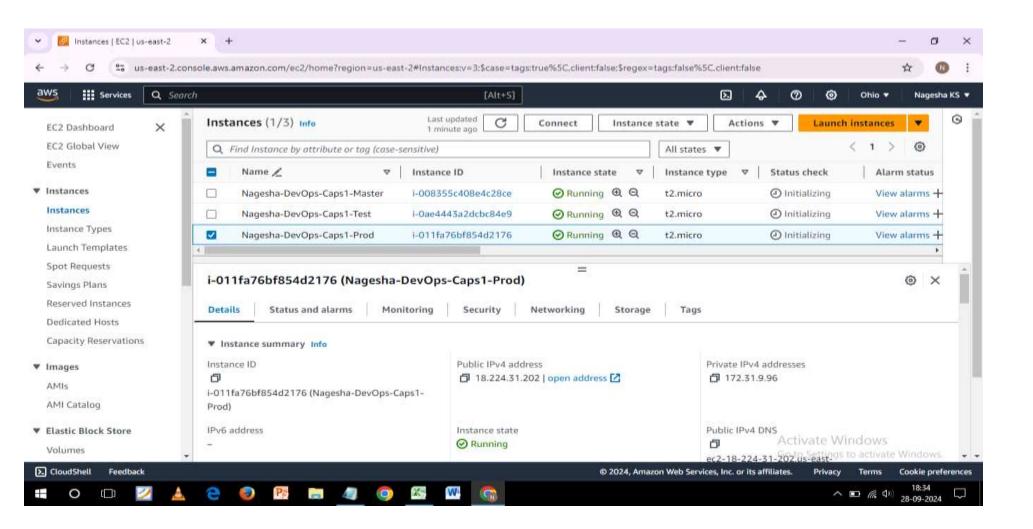
5. The above tasks should be defined in a **Jenkins Pipeline** with the following jobs:

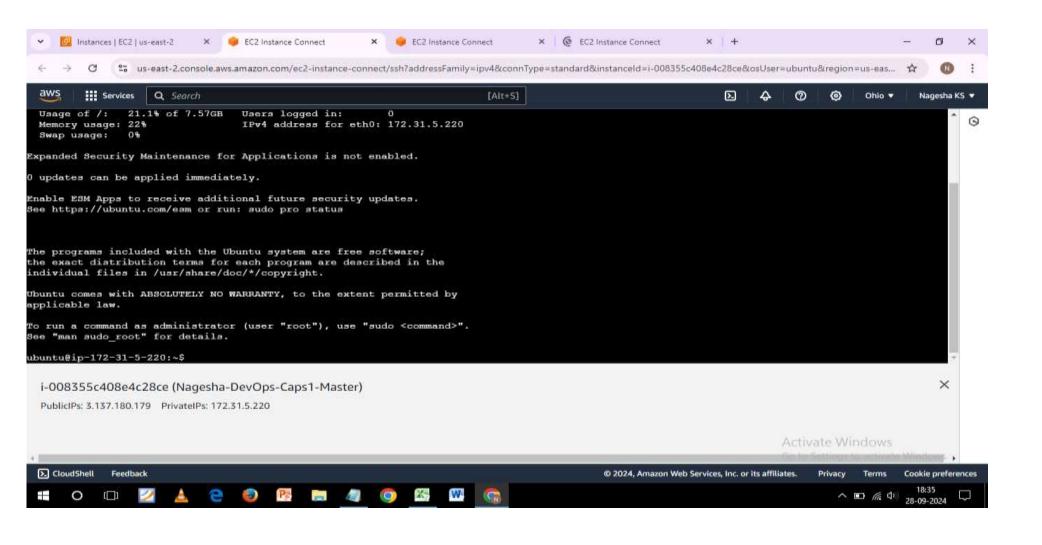
a. Job1 : build b. Job2 : test

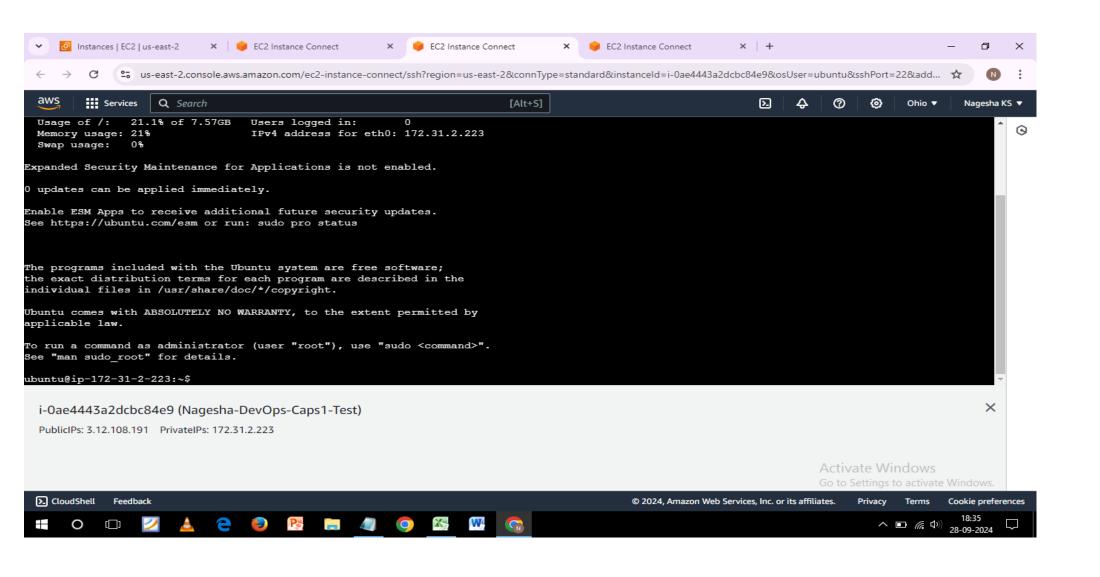
c. Job3: prod

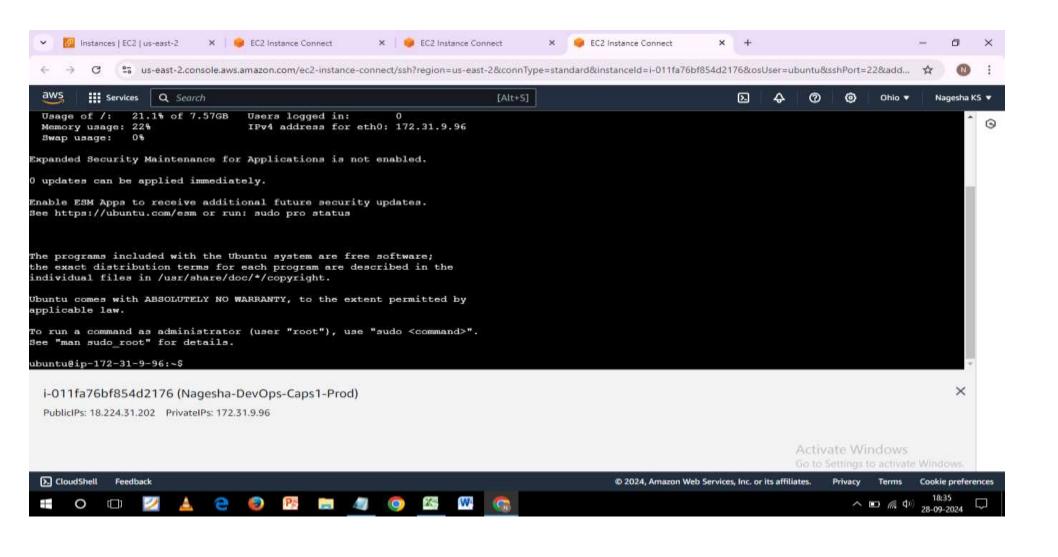


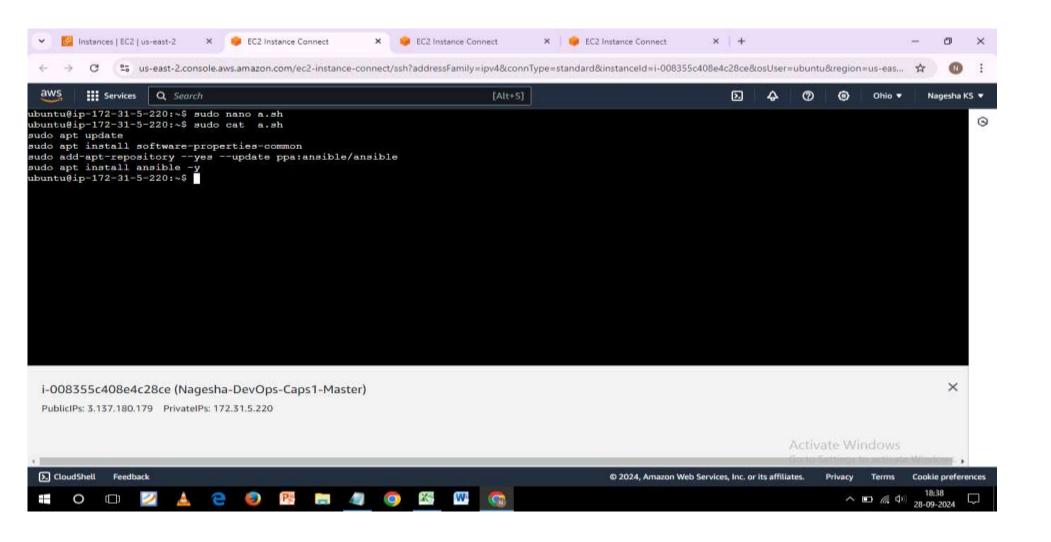


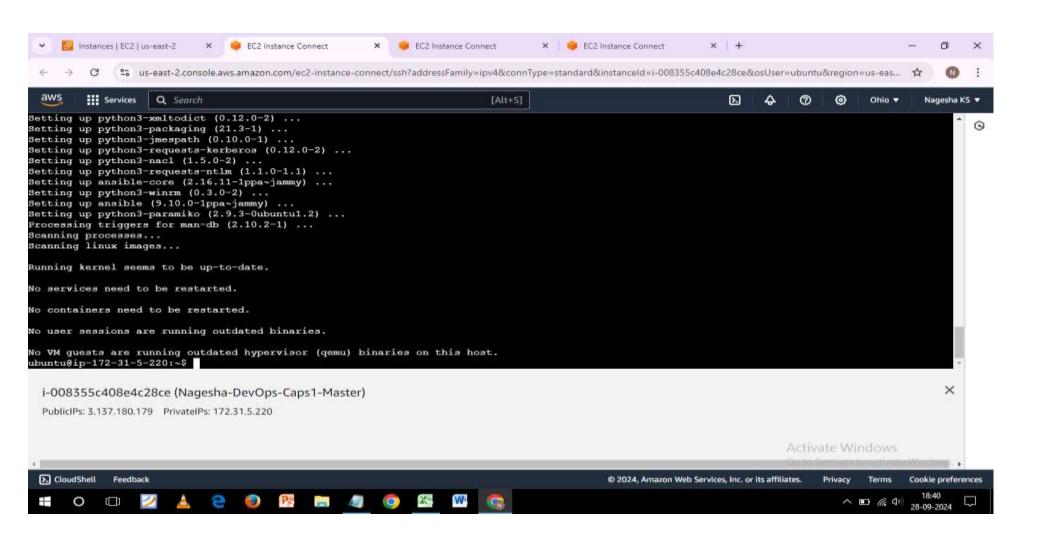


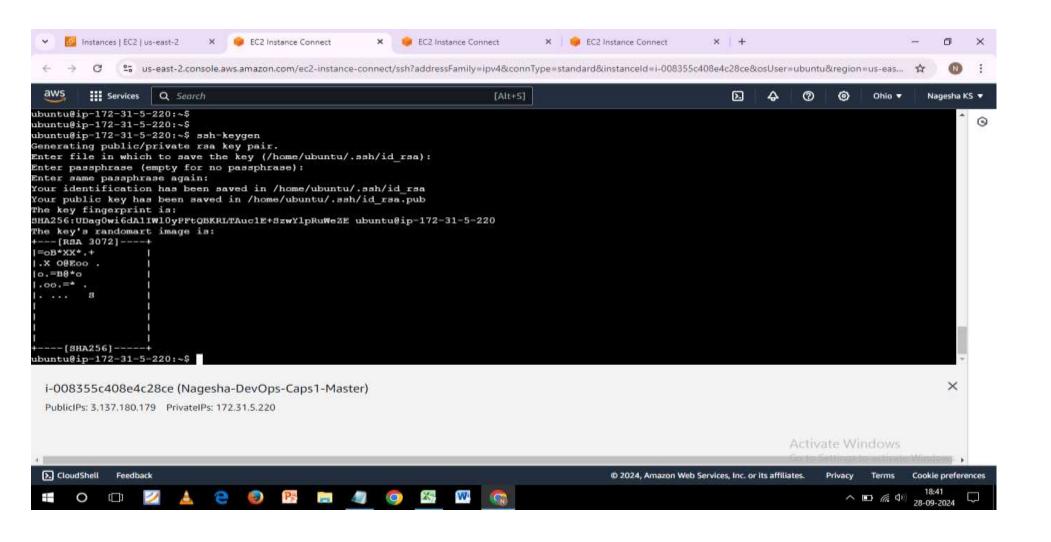


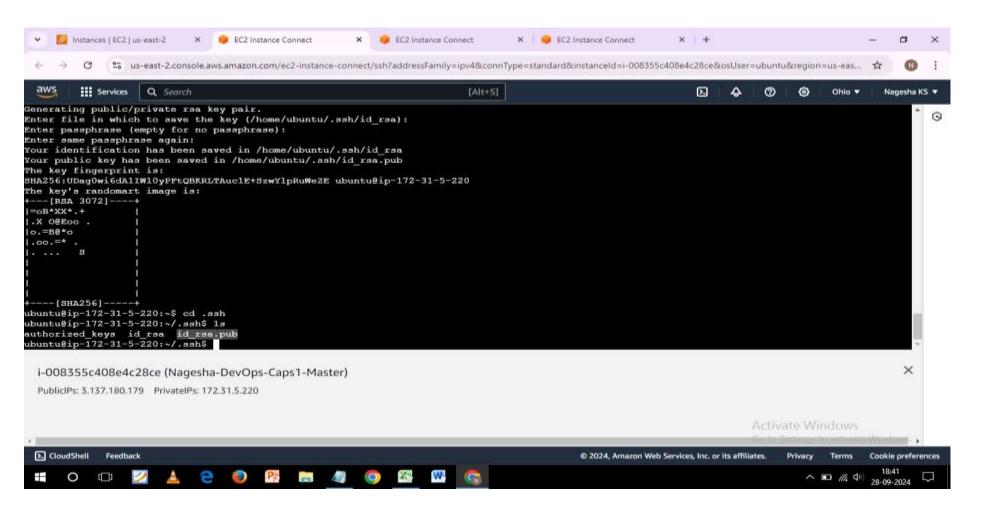


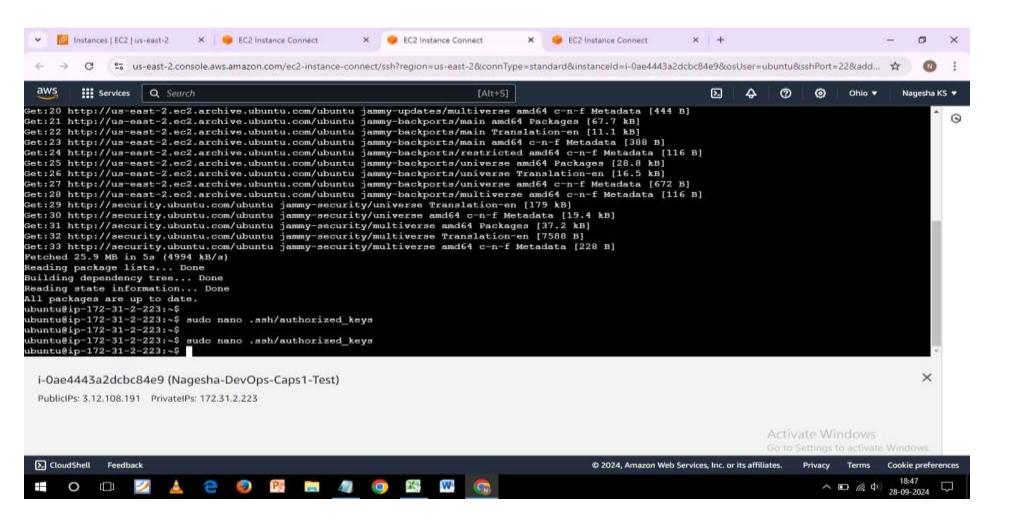


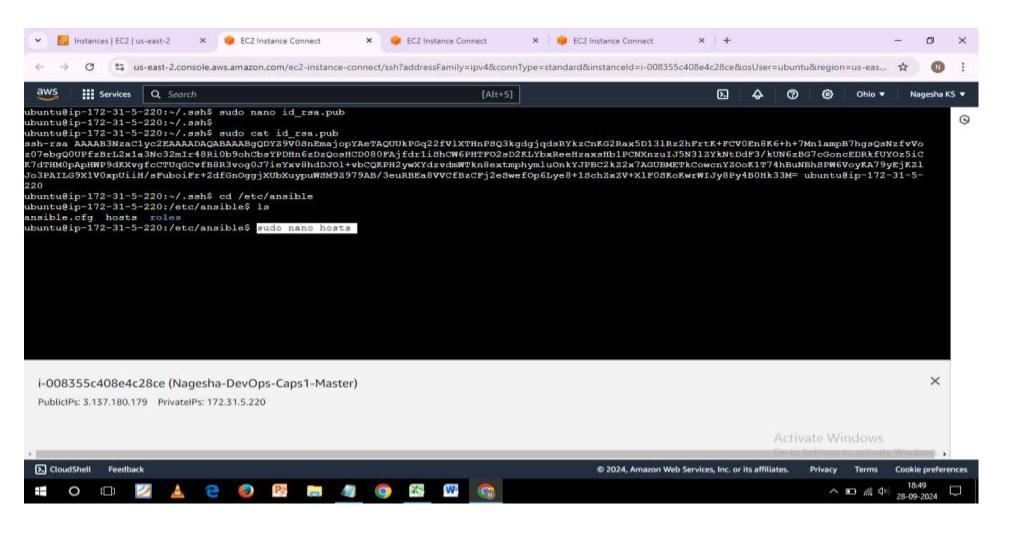


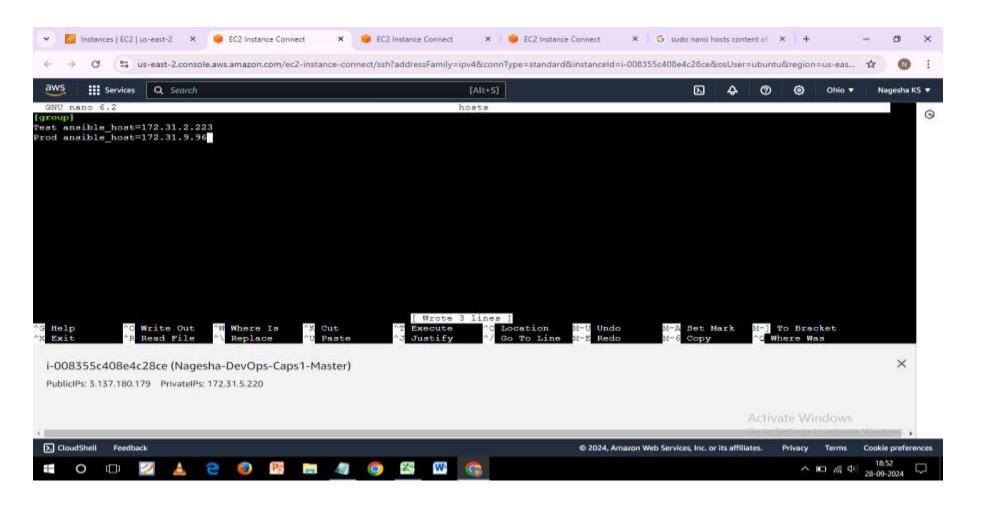


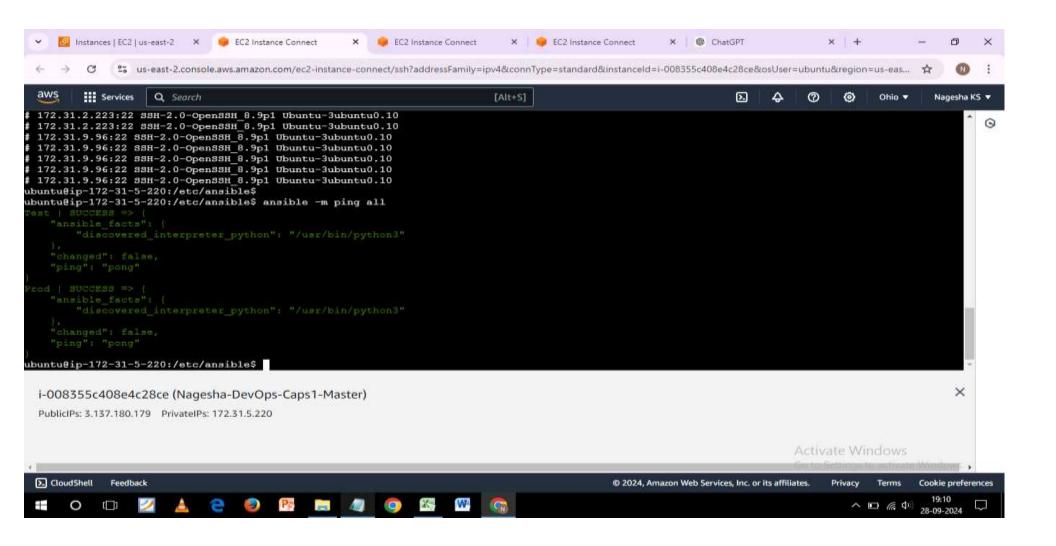


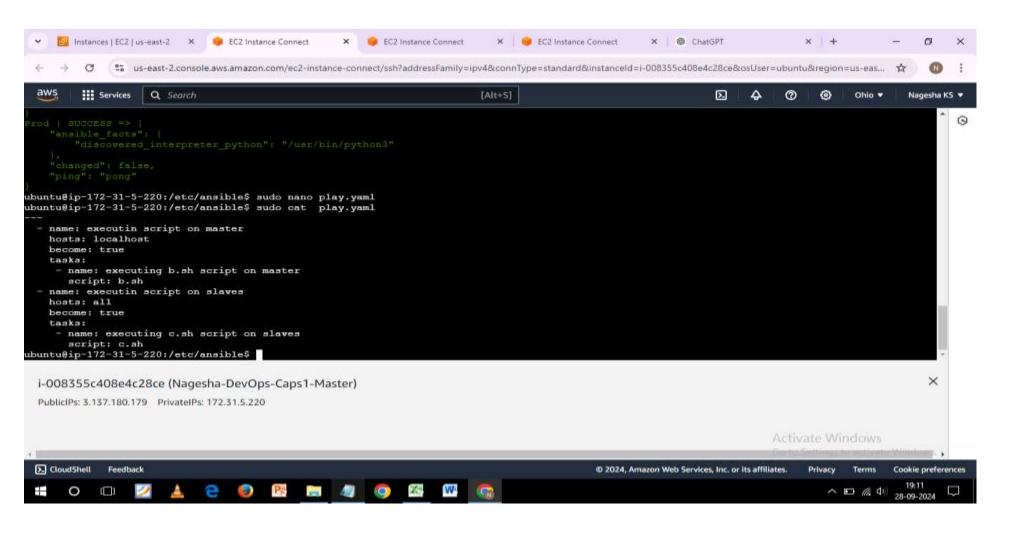


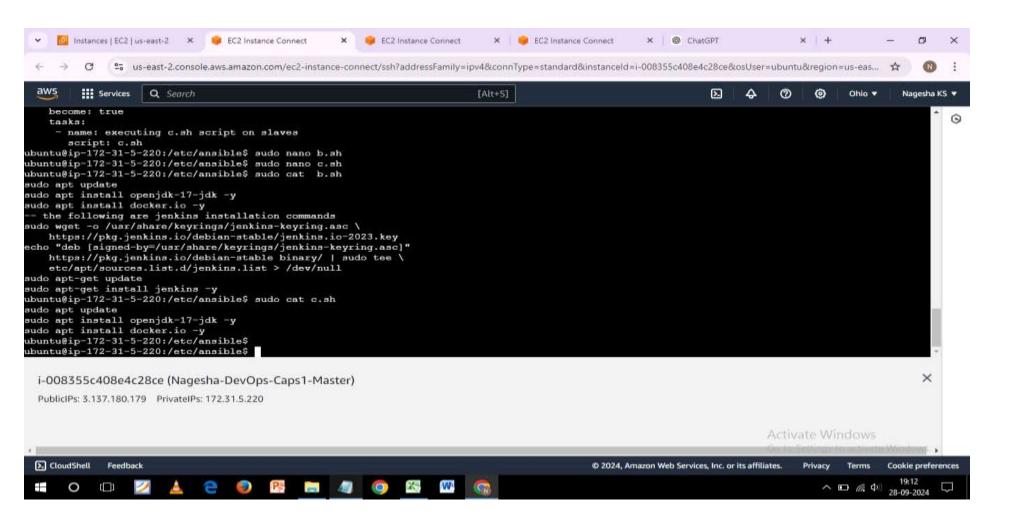


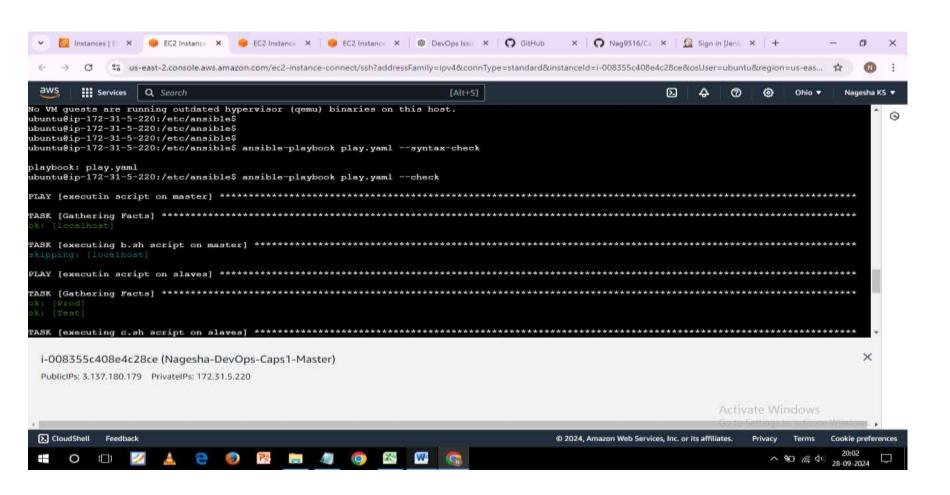


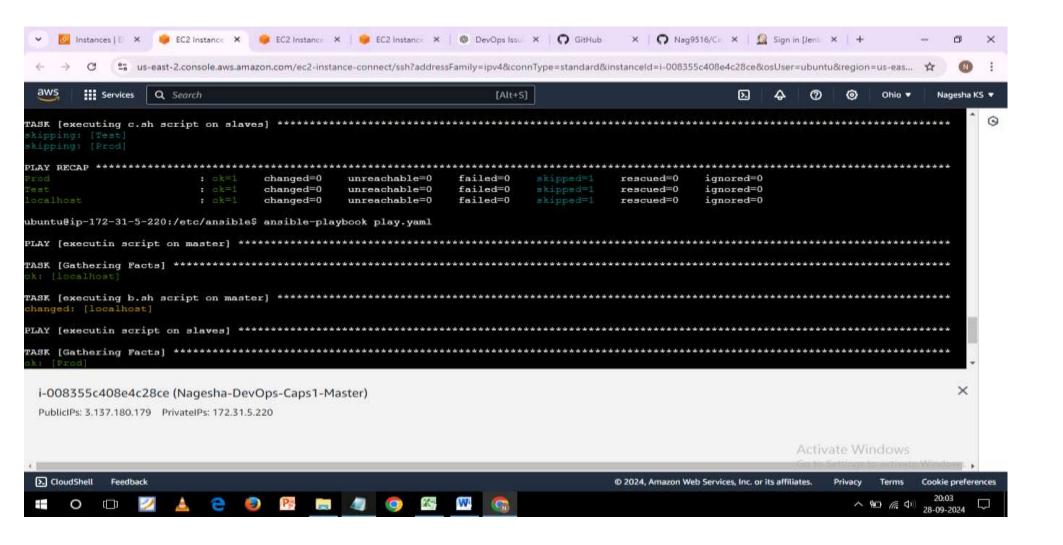


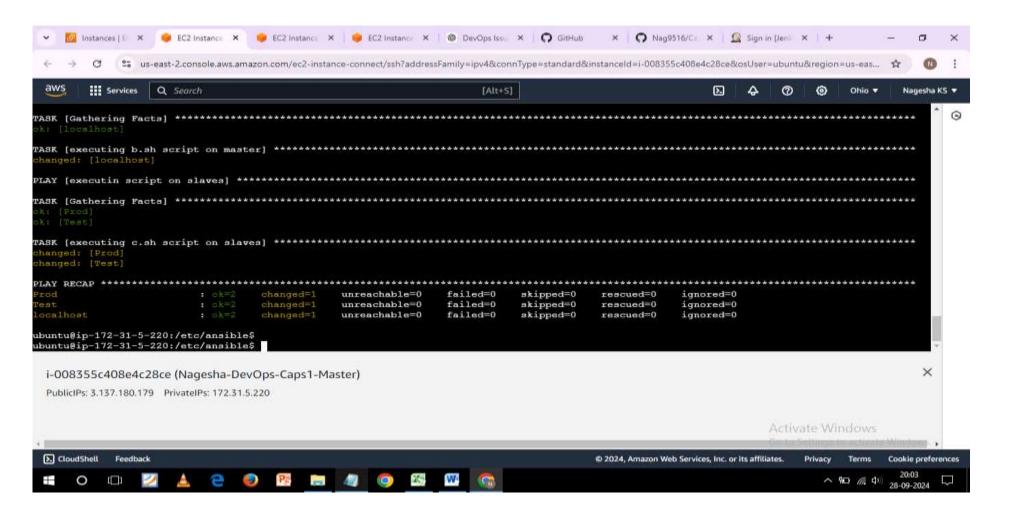


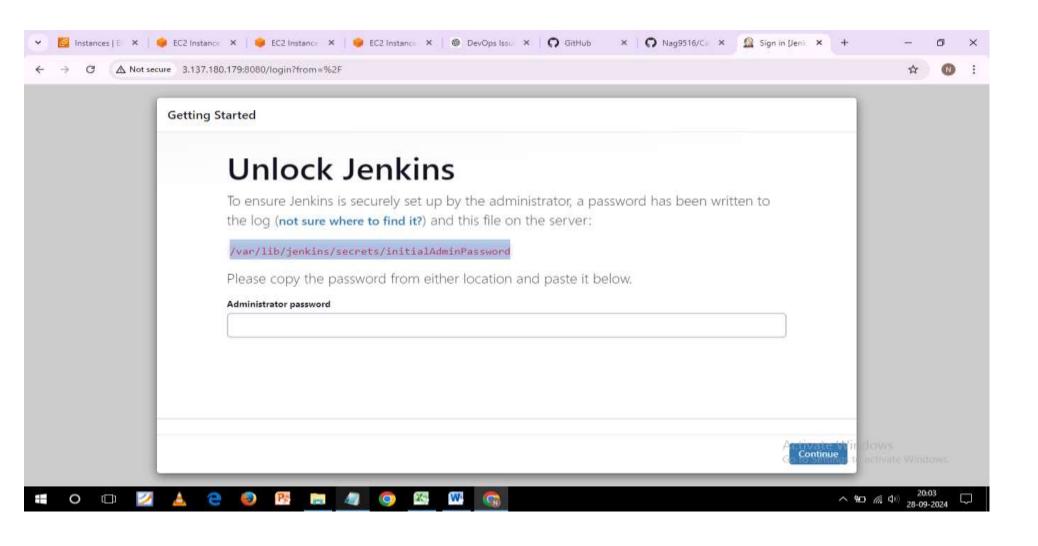


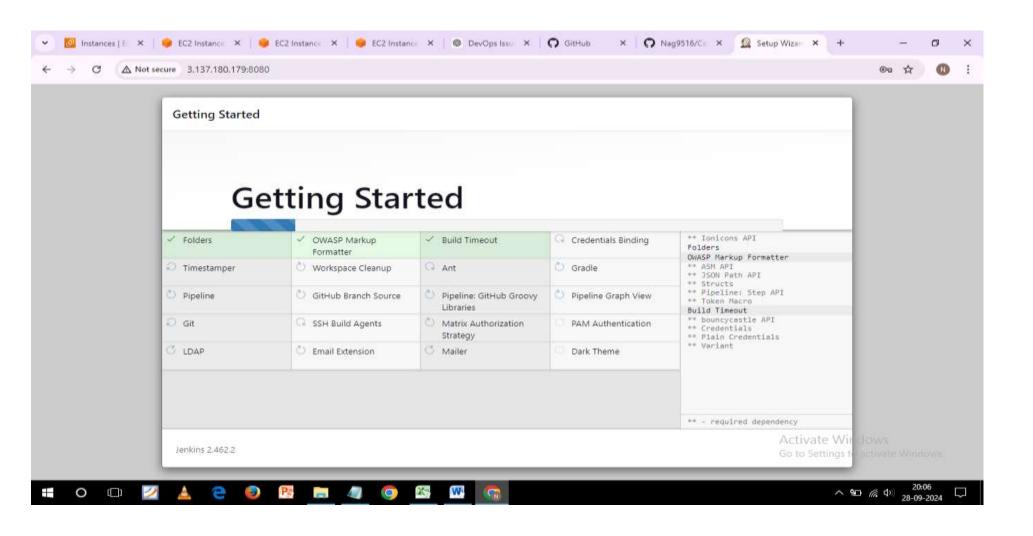


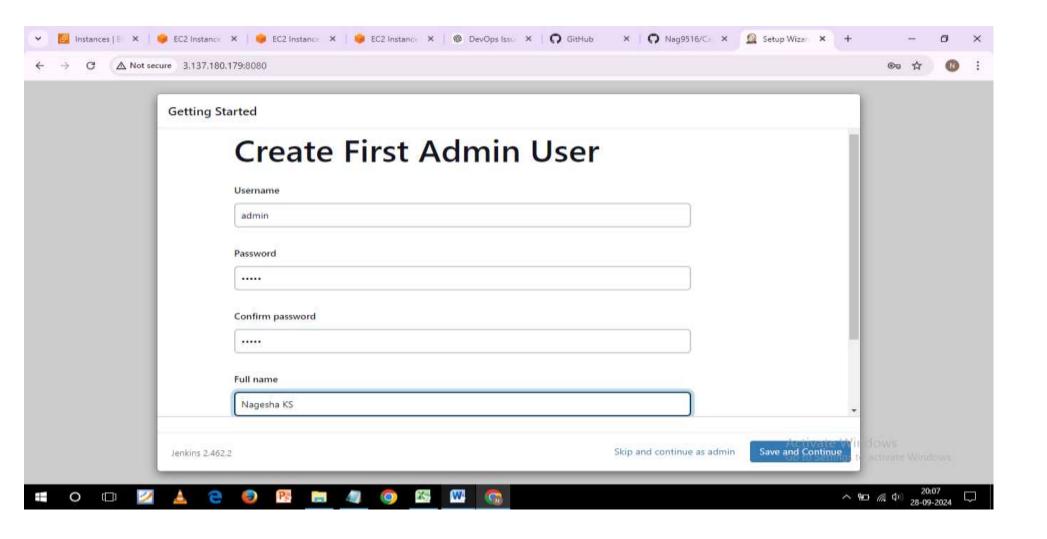


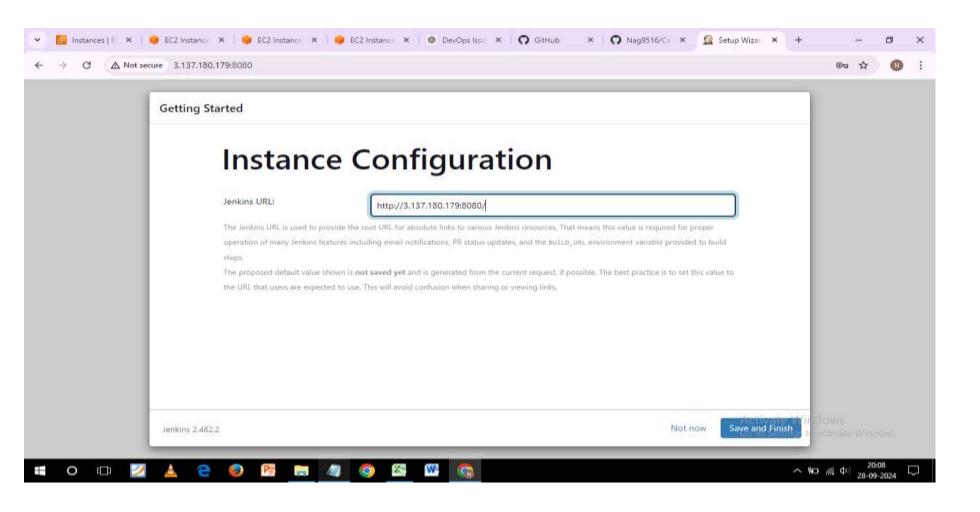


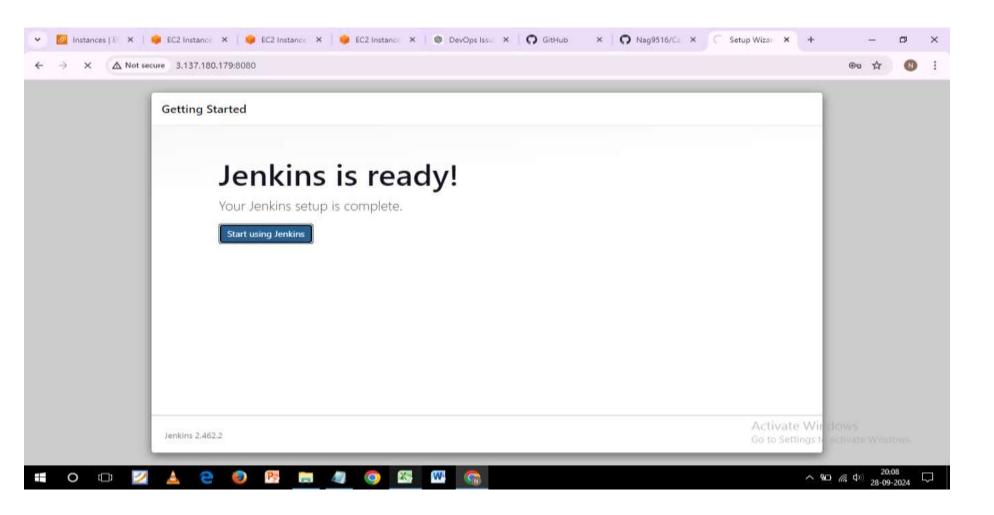


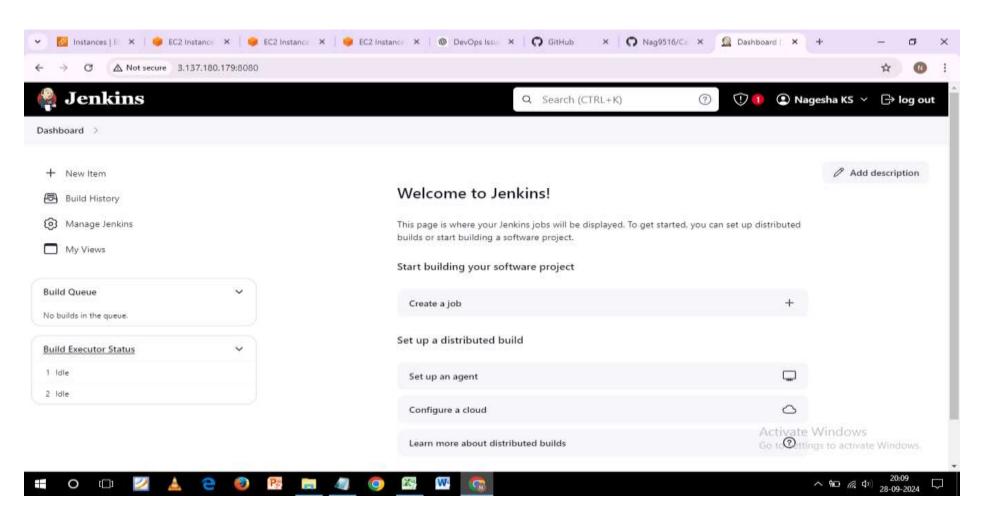


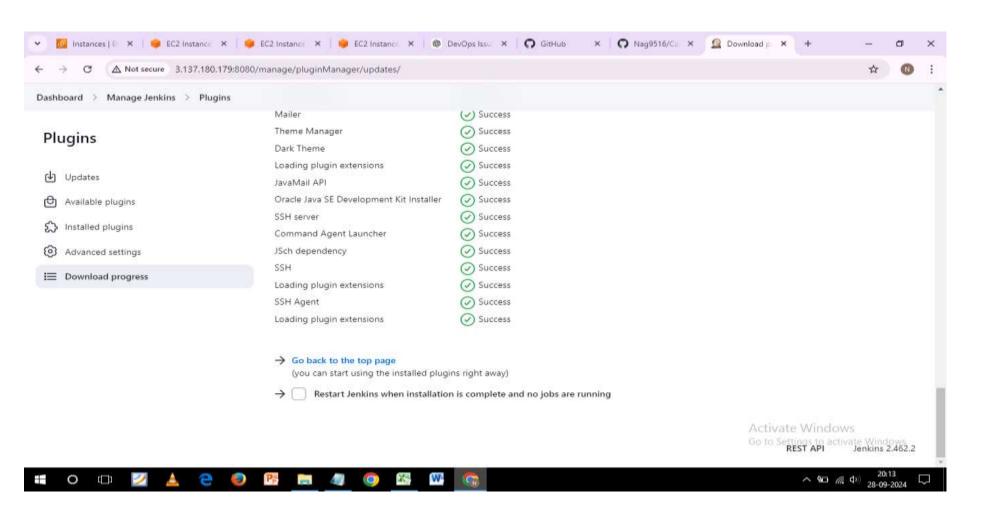


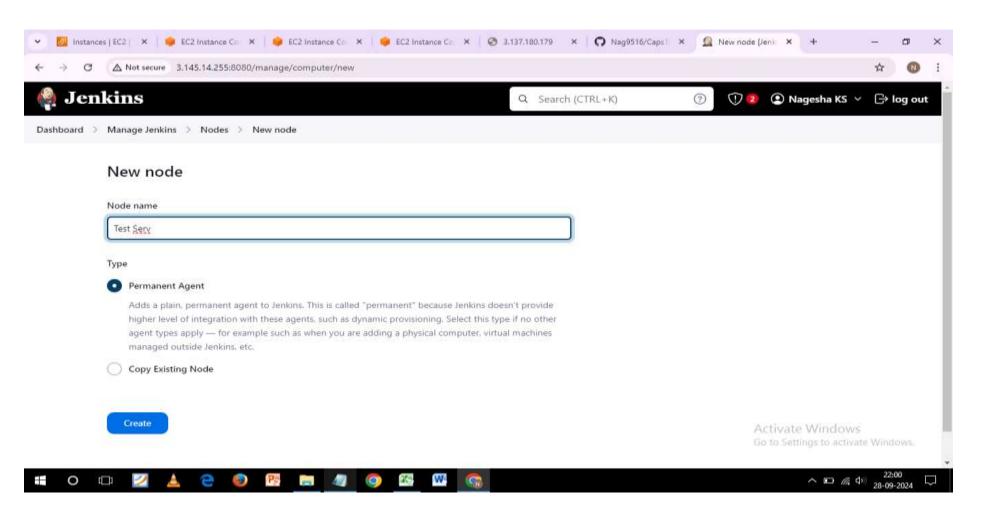


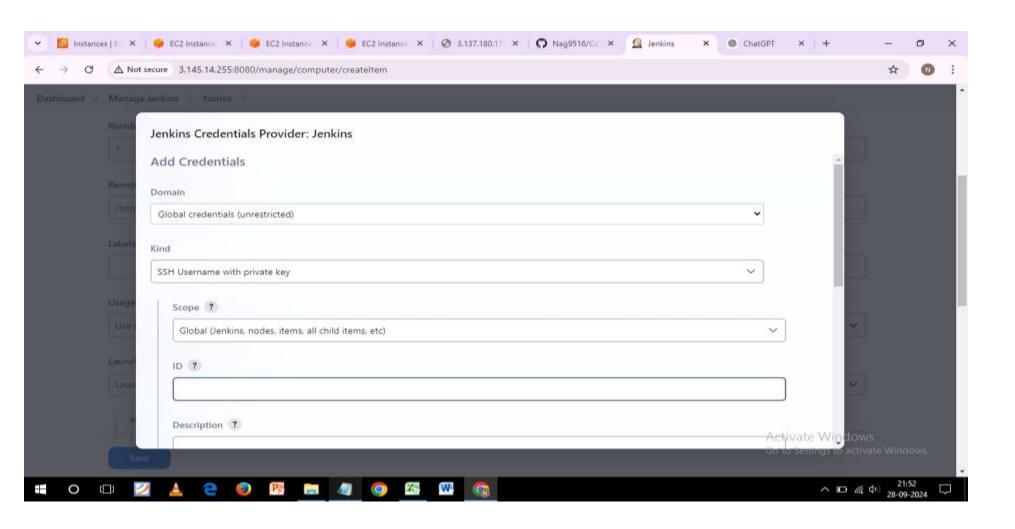


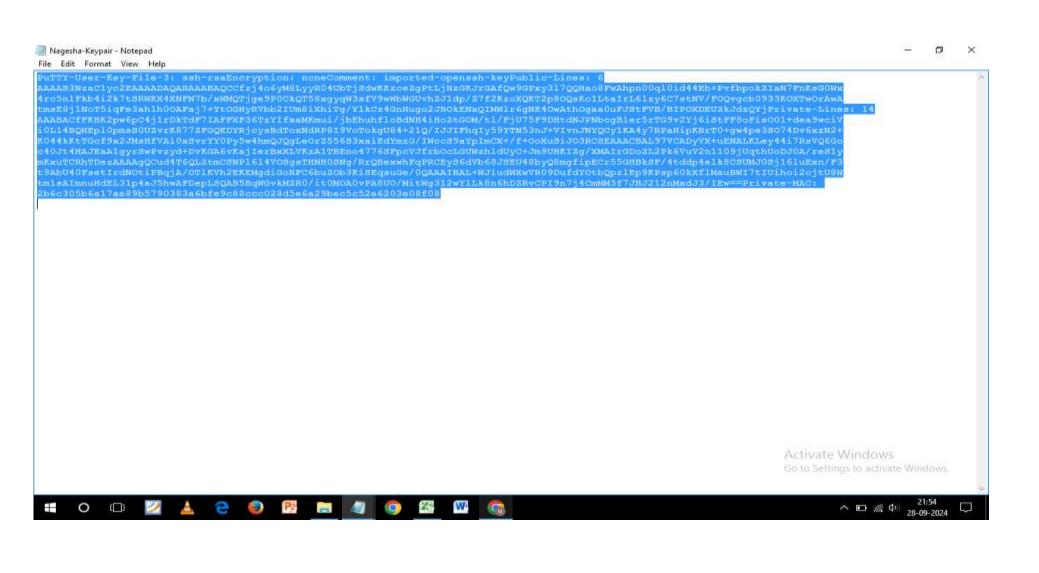


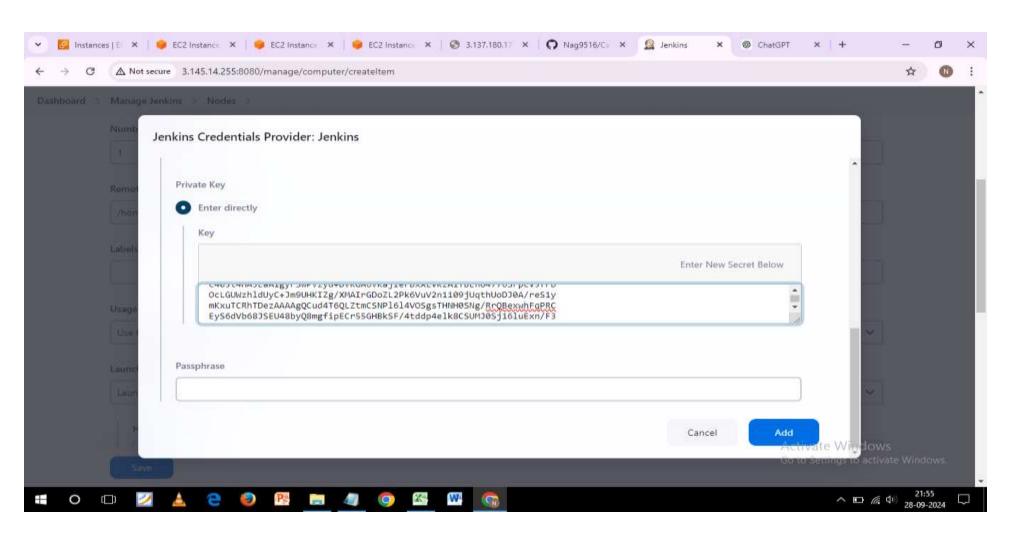


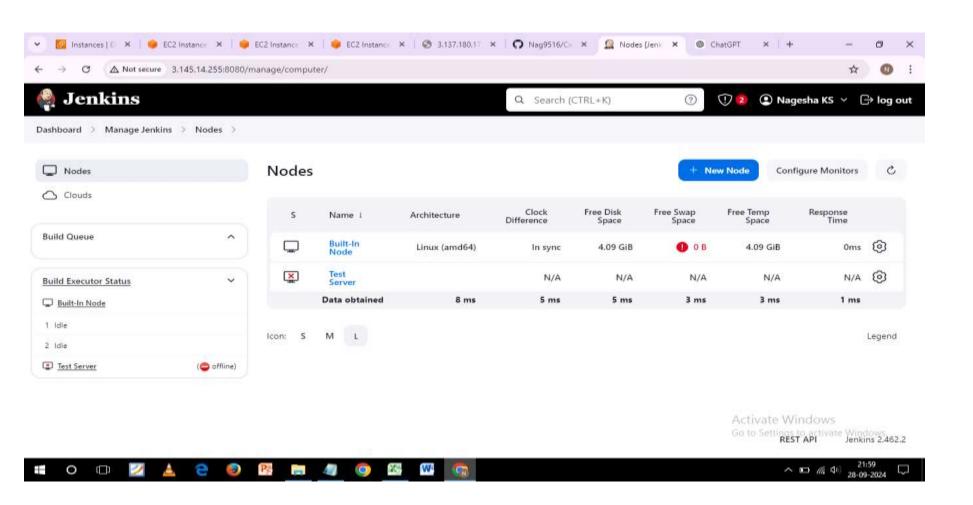


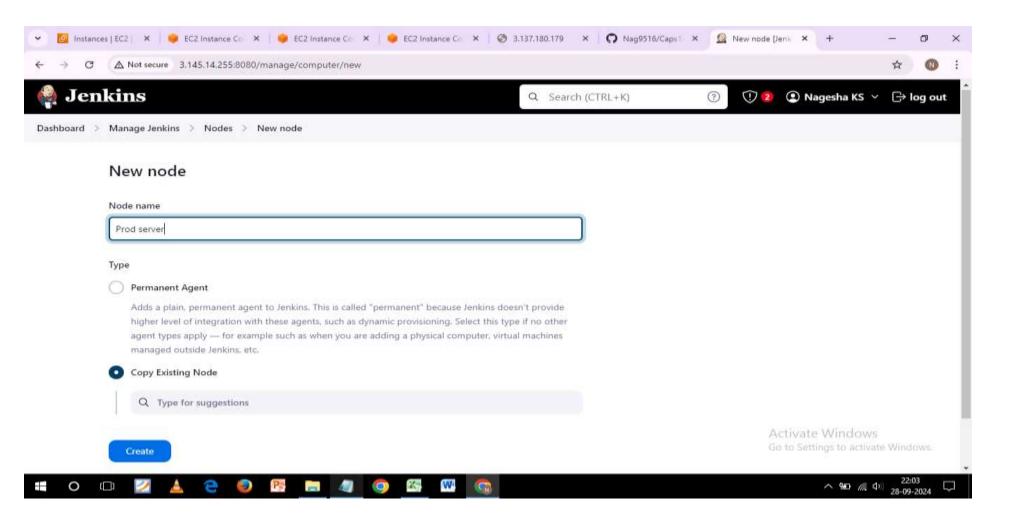


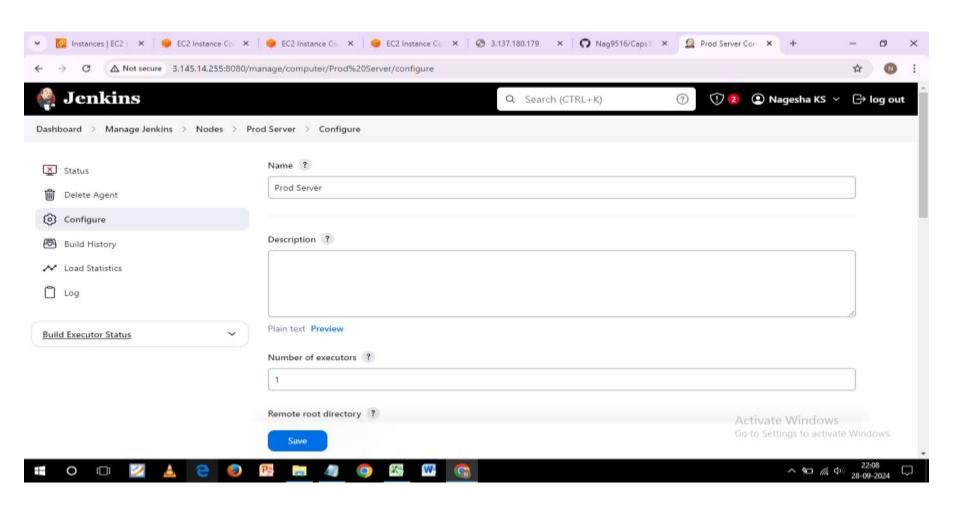


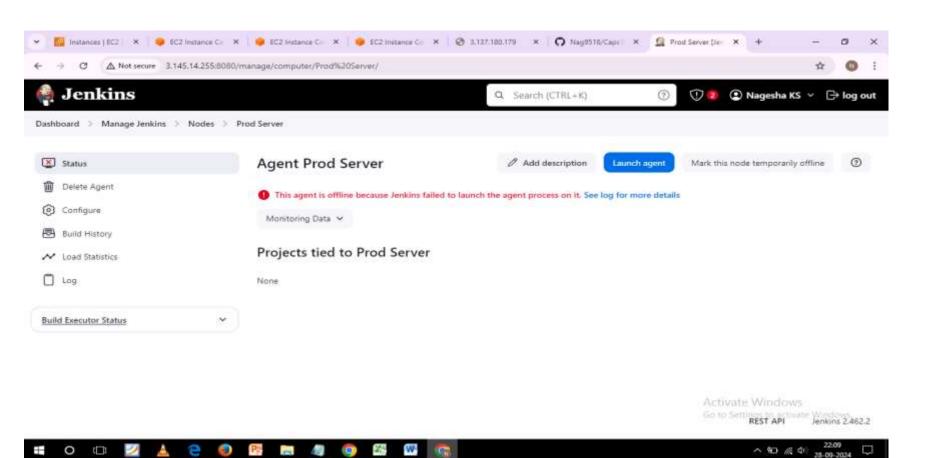


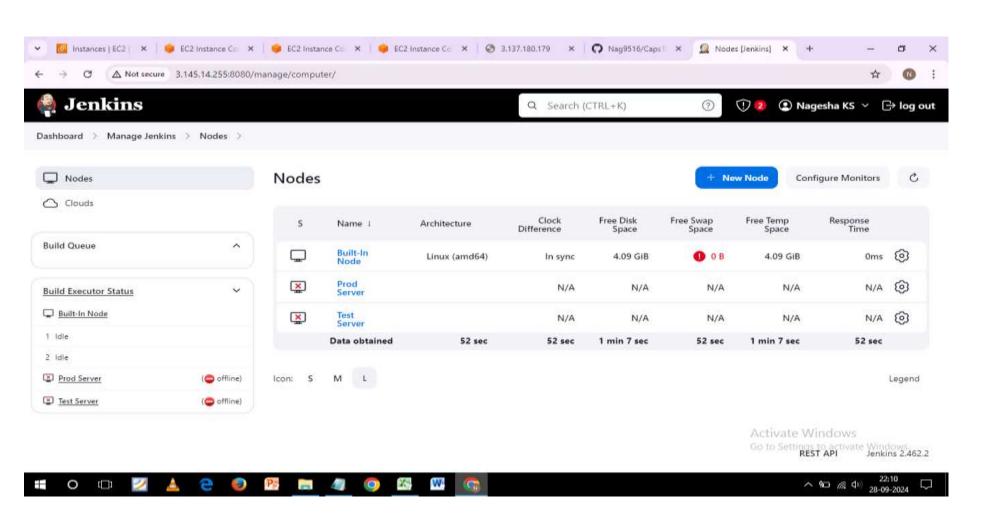


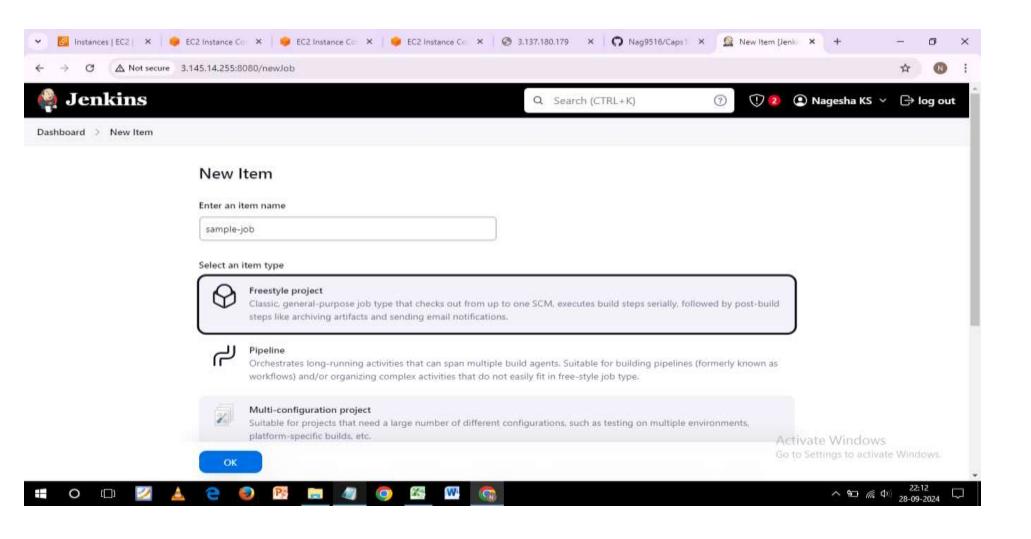


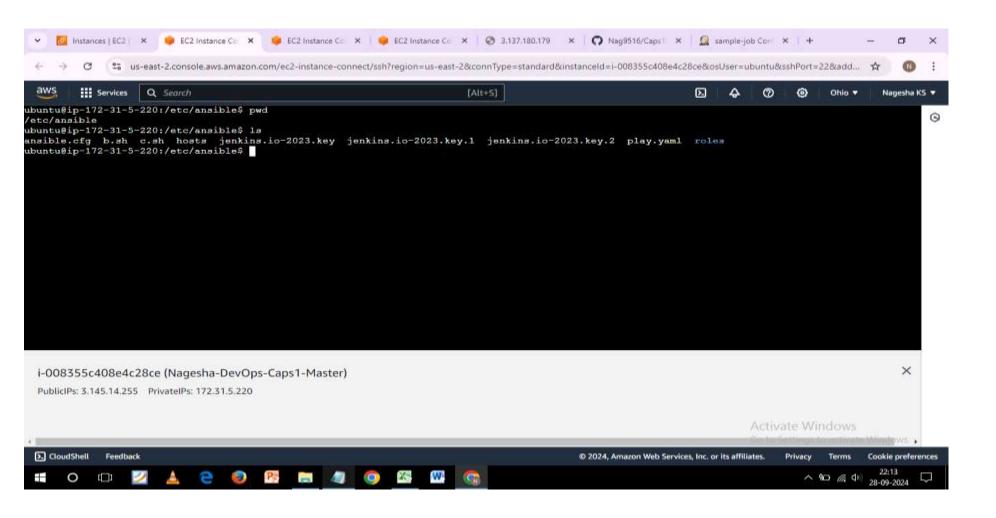


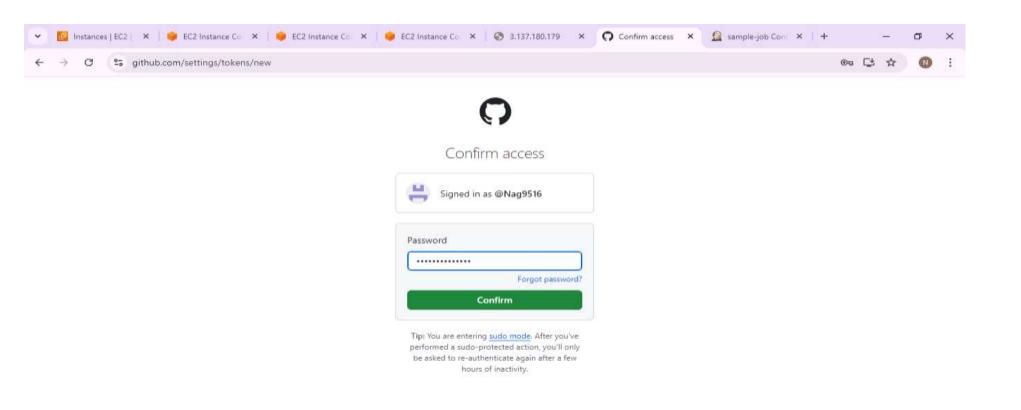








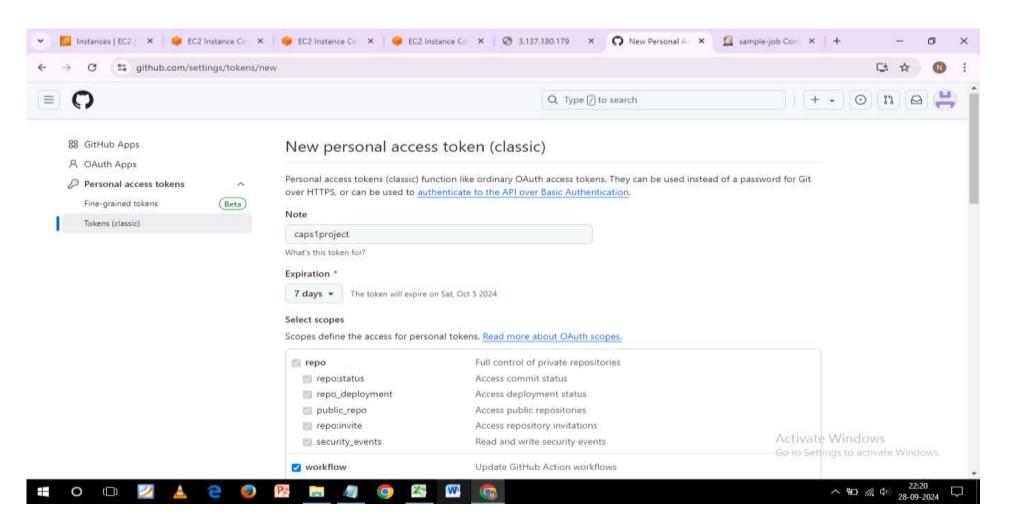


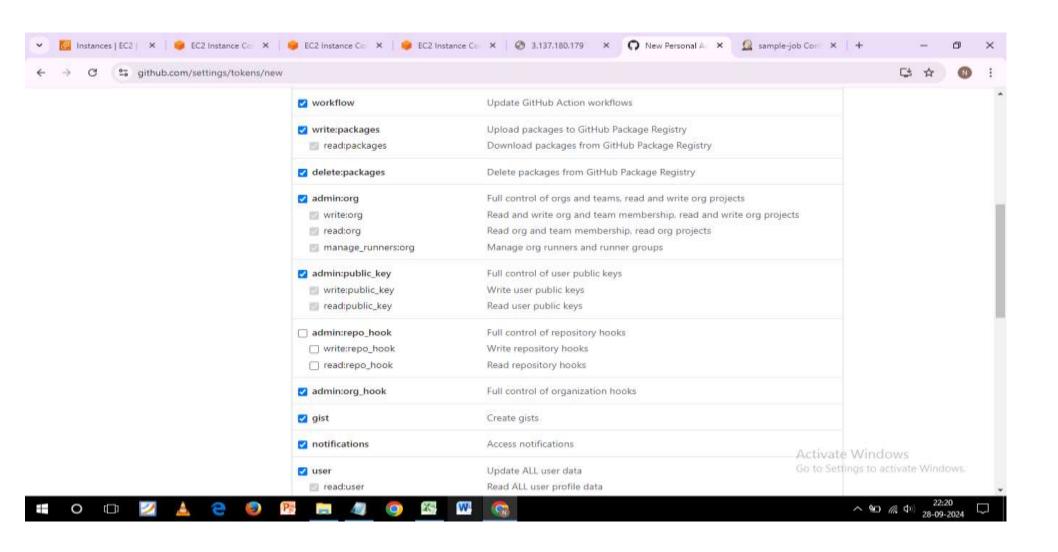


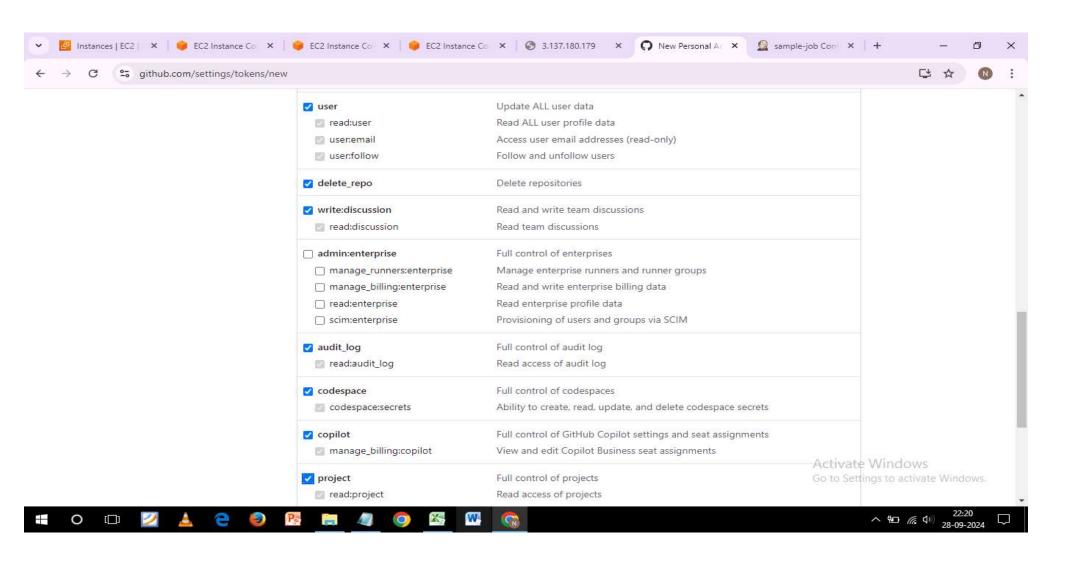
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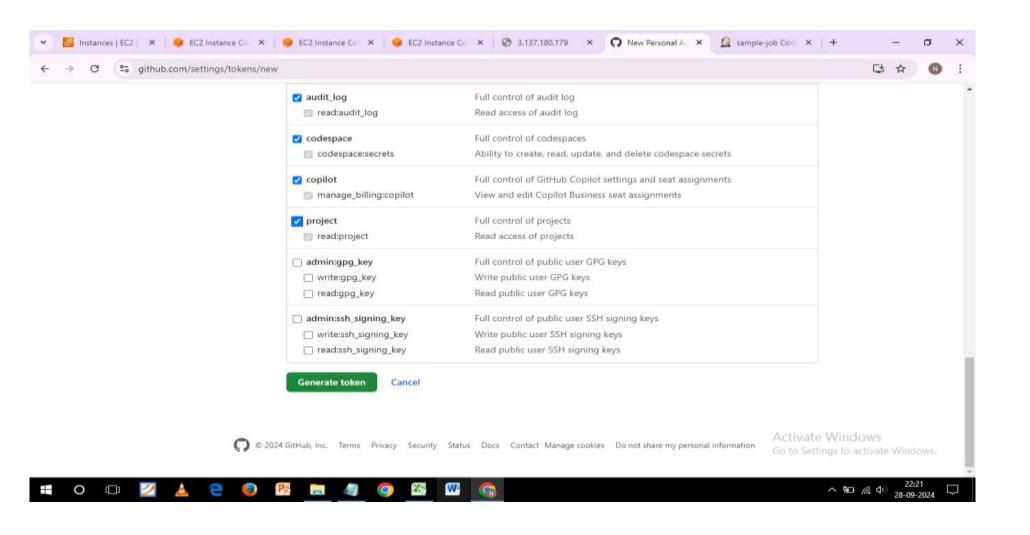
Activate Windows

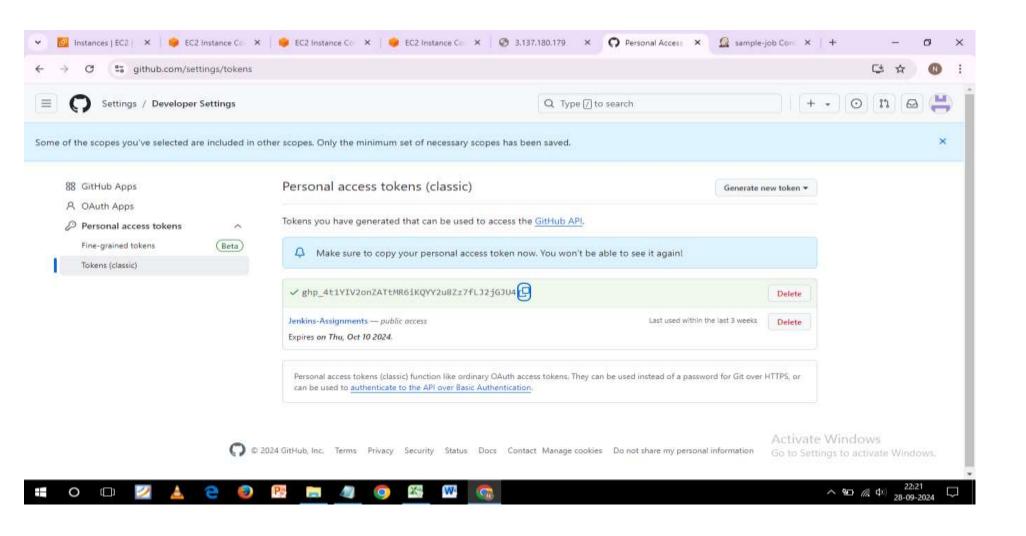
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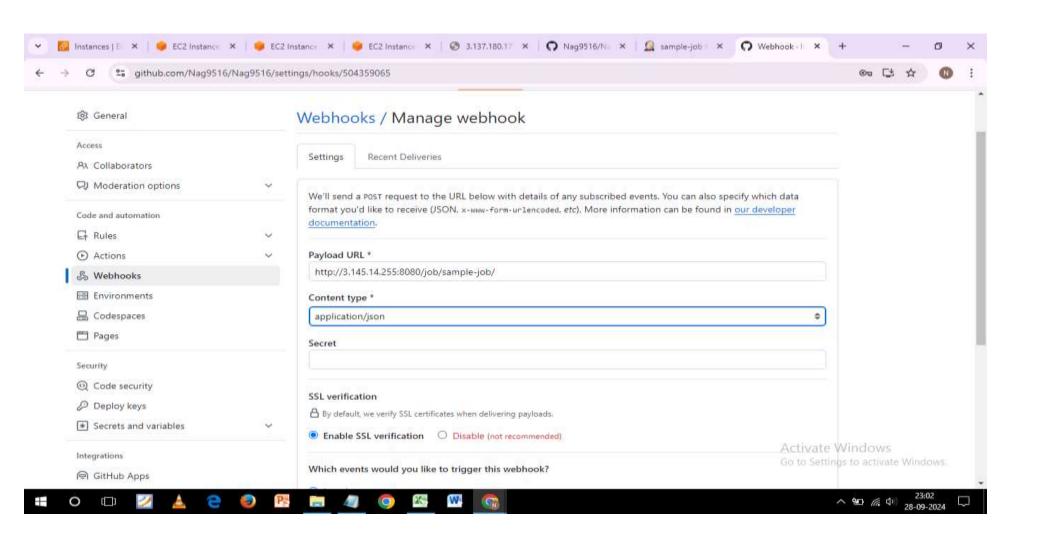


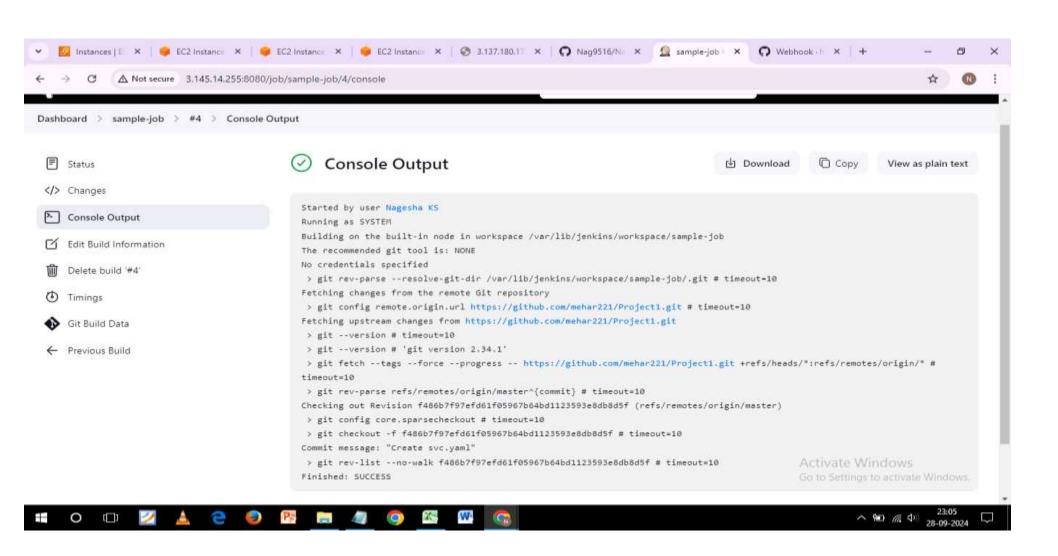


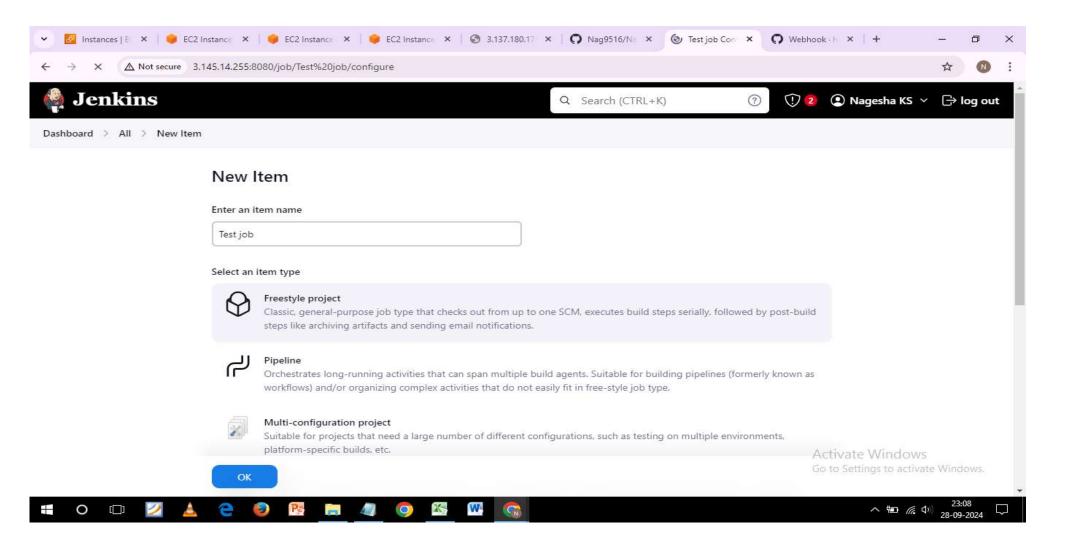


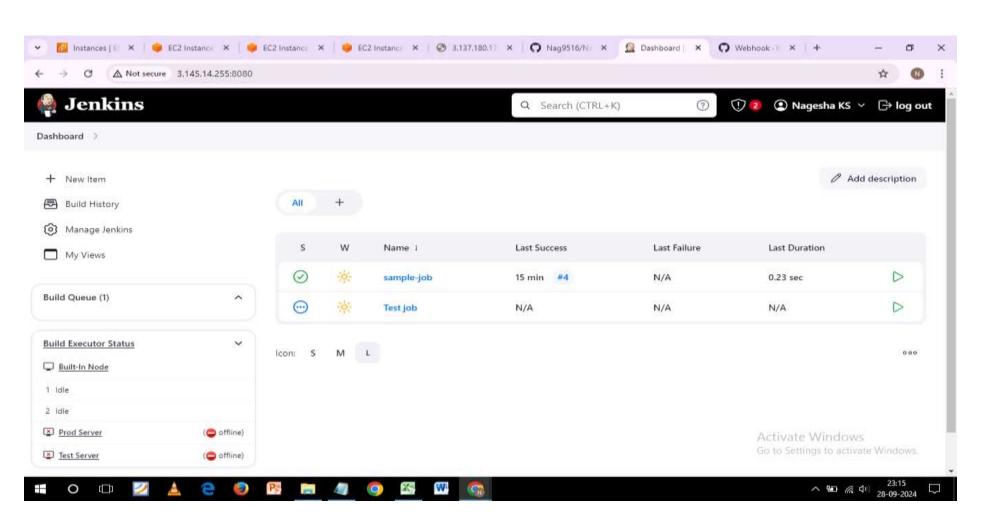


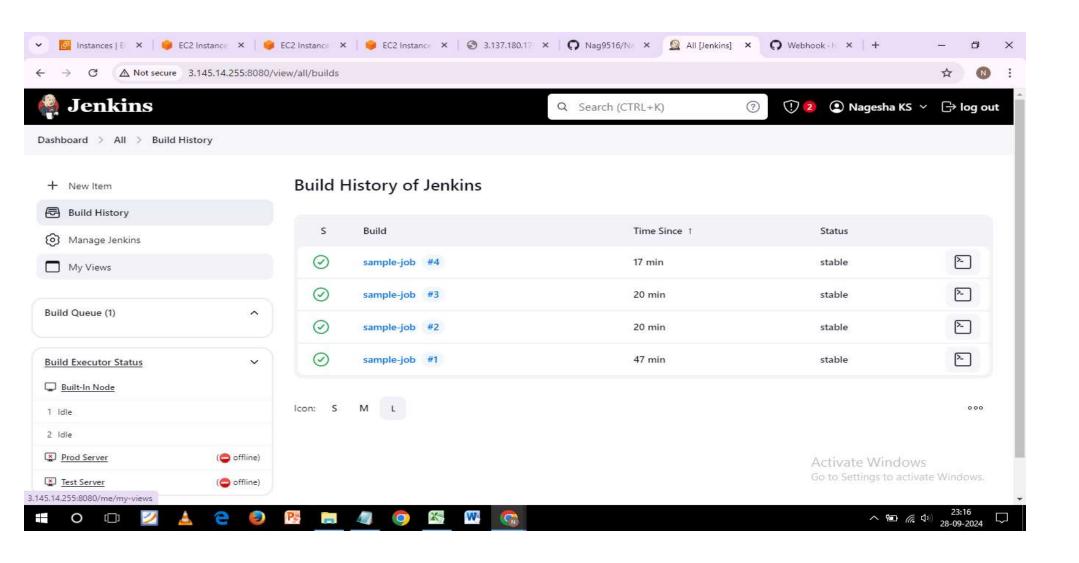


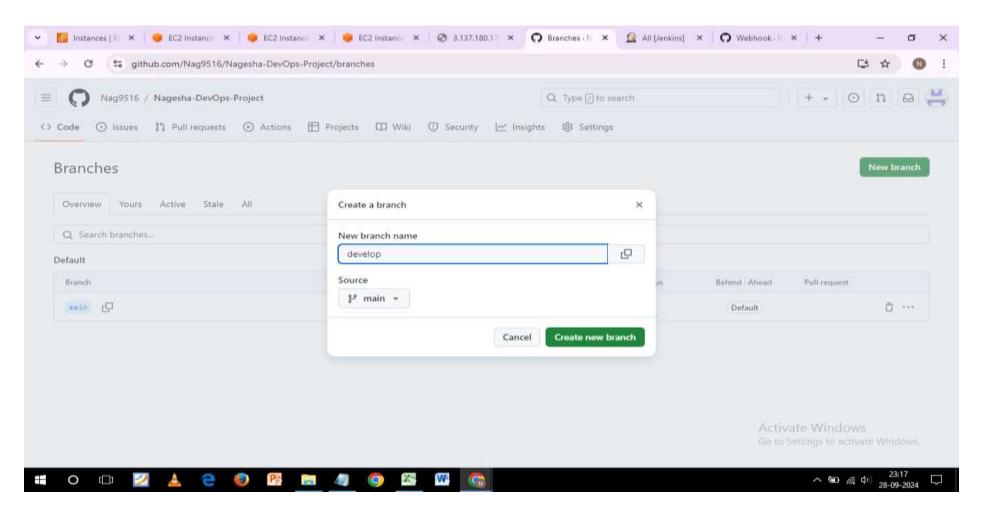


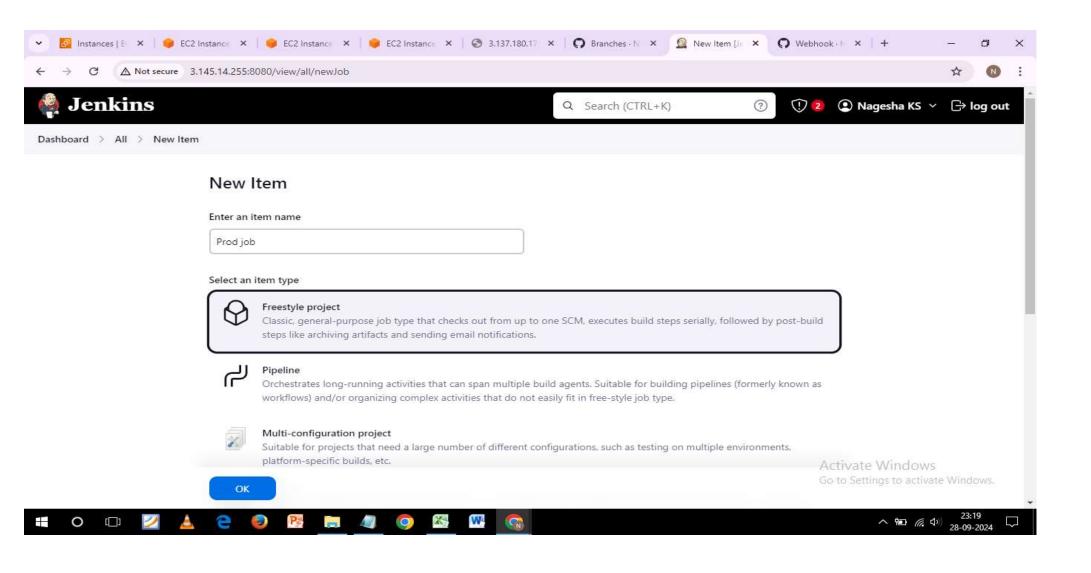


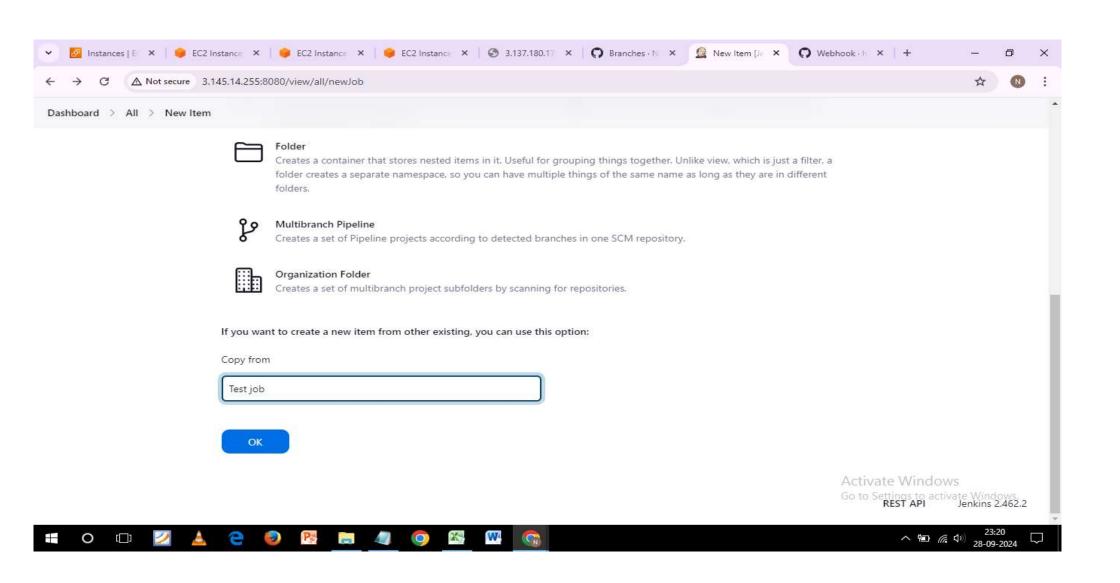


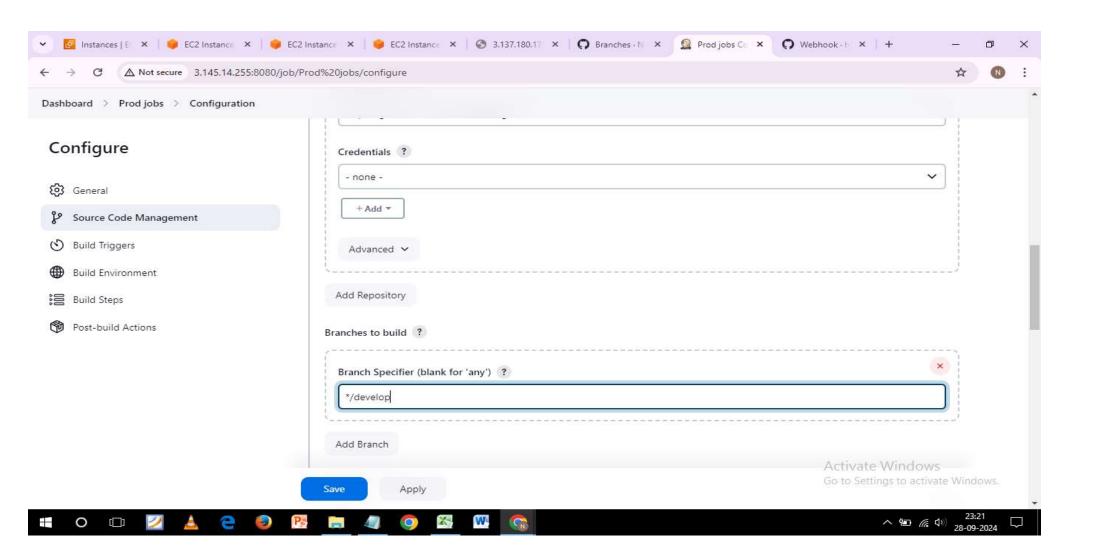


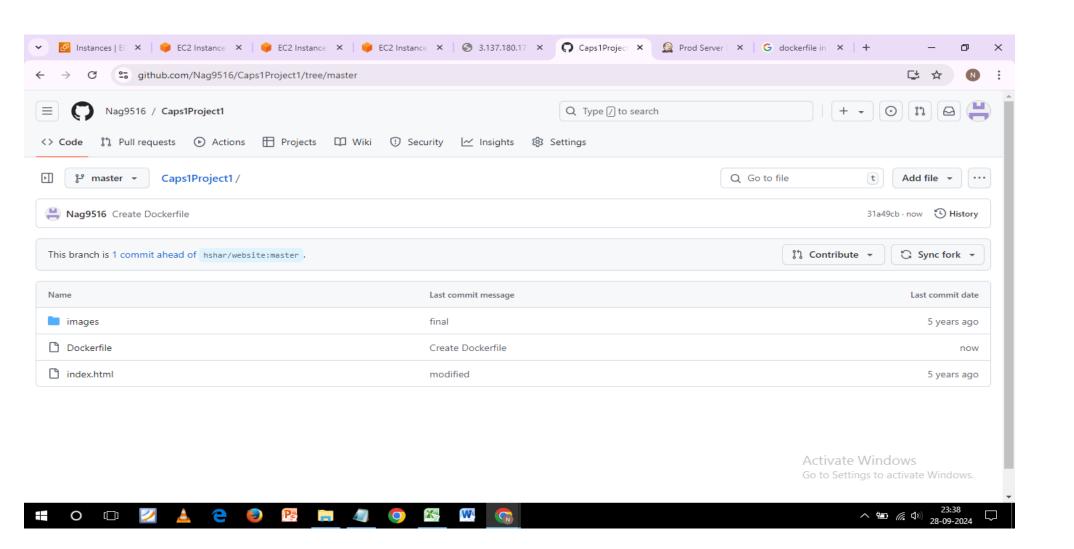












Capstone1 Project - Commands

goto AWS console EC2 install 3 EC2 instances ubuntu t2.micro ami 22.04 keypair security group and launch rename as

Nagesha-DevOps-Caps1-Master Nagesha-DevOps-Caps1-Test Nagesha-DevOps-Caps1-Prod

connect ec2 instnce dashboard to ssh

goto master

sudo nano a.sh

sudo apt update sudo apt install software-properties-common sudo add-apt-repository --yes --update ppa:ansible/ansible sudo apt install ansible -y

bash a.sh

=-- enter keypair
ssh-keygen
Generating public/private e2939393 key pair.
Enter in which to save key (/home/ubuntu/id_ed....): click enter as it is the default location cd .ssh
ls

sudo cat id_rsa.pub
=-- copy the content

goto text slave1 (Test)
sudo nano .ssh/authorized_keys

goto prod slave2 (Prod) bash a.sh sudo nano .ssh/authorized_keys

goto master cd /etc/ansible ls sudo nano hosts

[group]

Test ansible_host=<private IP of test slave1>
Prod ansible host=<private IP of prod slave2>

[group]

Test ansible_host=172.31.2.223 Prod ansible_host=172.31.9.96

ansible -m ping all

Are you sure you want to continue connecting: yes

Please type 'yes' or the fingerprint: yes Please type 'yes' or the fingerprint: yes

goto master

sudo nano play.yaml

- name: executing script on master

hosts: localhost become: true

tasks:

- name: executing b.sh script on master

script: b.sh

- name: executin script on slaves

hosts: all

become: true

tasks:

- name: executing c.sh script on slaves

script: c.sh

sudo nano b.sh

#!/bin/bash

Update package list

sudo apt update

Install OpenJDK 17

sudo apt install openjdk-17-jdk -y

Install Docker

sudo apt install docker.io -y

Jenkins installation commands

Download Jenkins key and add to keyrings

sudo wget -q -O /usr/share/keyrings/jenkins-keyring.asc https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key

Add Jenkins repository to the sources list

echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.jenkins.io/debian-stable binary/" | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null

Update package list again to include Jenkins repository

sudo apt-get update

Install Jenkins

sudo apt-get install jenkins -y

sudo nano c.sh

sudo apt update sudo apt install openjdk-17-jdk -y sudo apt install docker.io -y

sudo cat play.yaml

ansible-playbook play.yaml --syntax-check

=-- syntax is fine

=-- next is dry run

ansible-playbook play.yaml --check

=-- dry run is successful

=-- next run it

ansible-playbook play.yaml

go to test slave1

docker --version

java --version

goto prod slave2

docker --version

java --version

goto github copy the following github link from "DevOps Capstone Project 1 MANDATORY.pdf"

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

click on fork

create a new fork

give fork name as Caps1Project1

click create fork

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

to access Jenkins

goto master ec2 copy public IP of master paste public IP and add port :8080 -- port :8080 is jenkins port Unlock Jenkins

goto master

credntials:

sudo cat paste the copied address here as mentioned below sudo cat /var/lib/jenkins/secrets/initialAdminPassword

059c0e6999264c40b46e47e9fae39b56

create username: admin create password: admin full name Nagesha KS e-mail addres Instance URL:

goto manage jenkins
=-- to get ssh agent
plugins
available plugin
select ssh agent
once done goback to new code and give it as test
select permanent agent
create
remote root directory: /home/ubuntu/jenkins/
launch method: launch agent via ssh
host: copy private ip of test-server

add:

domain: Global credentials (unrestricted)

kind: SSH Username with private key

scope: Global (Jenkins nodes items, all child items, etc)

username: ubuntu

private key: click enter directly

key:

open the pem key of your key using the notepad copy the entire content and paste it here

click add so ssh credentials as Ubuntu has been created

Host key Veritification Strategy non verifying verification strategy add nodes: built-in is of master

sucessfully created node for test-server

New node

test

new name: Prod

select copy existing node: Test

goto Nodes goto to Jenkins dashboard create jobs sample-job Freestyle project click OK

click Git

repository URL: goto github repository https://github.com/mehar221/Project1.git

credentils: none

clilck add jenkins

user name: github username with password passowrd: here paste the personal token;....

goto github profile/settings/developer settings/persoal acces token > tokens(classic) /new token and get personal token

keep the expiration as 7 days

choose workflow write packages deletepackages admin.org admin.public_key

admin.org_hook

Generate token 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 goto jenkins dashboard and paste the token

build triggers

to add webhooks

http://3.145.14.255:8080/job/sample-job/

goto github and copy the private ip of master
=-- above is payload done
goto jenkins
click build
check console output
goto test-server

cd jenkins/
cd workplace/
ls
cd sample-job/
ls
images, index.html files are here

create test job and prod job
new item
Test job
freestyle project
selet restrict where this project can be run?
Label Expression
Prod Server
Git
repority info

branch specified build trigger

apply and save

goto build if its successful check console output prod workspace goto Prod server paste that and Is

goto github click branch and new branch develop create new branch devlop branch has been created

goto Jenkins dashboard another job new item Prod freestyle project copy from

select restrict where this project can be run?

repository is same as previous branch

buitl trigger

apply and save

build now prod job is built on test server test job is built on prod server gooto console outout goto test-server cd paste here Is

goto github create job Project1/Dockerfile

FROM ubuntu
RUN apt-get update
RUN apt-get install apache2 -y
COPY . /var/www/html/
ENTRYPOINT apachectl -D FOREGROUND

commit changes on master branh of github

goto github
copy Dockerfile to develop branch
here create Dockerfile
new file
paste content
commit
goto jenkins
check build history

goto Prod-server inside Test-Job\$ Is dockerfile is there

goto Build Steps

goto execute shell command box -- container codes sudo docker build .-t image sudo docker run -itd -p 80:80 image1

apply and save

build now build history

goto test-server Is you will see Dockerfile

copy test-server public ip and paste on browser with port :8080

goto github config

goto jenkins dashboard goto test-job config goto Build Steps goto execute shell command box -- container codes sudo docker build . -t image2 sudo dokere run -itd -p 81:80 image2 apply and save

build now build history goto prod-server sudo docker images sudo docker ps copy public ip of prod server and paste it on browser port :81

Done