Capstone Projects 1

Problem statement :

You have been Hired 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, their product is available on this GitHub link.

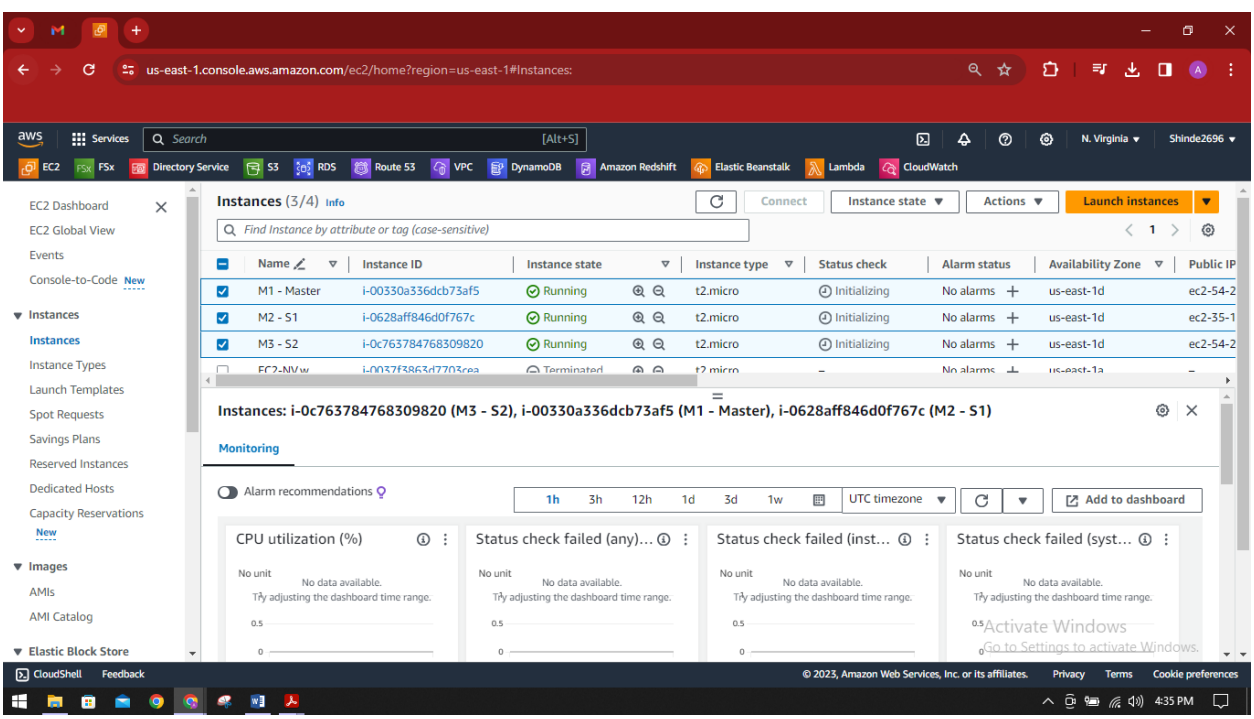
https://github.com/hshar/website.git

Following are the specifications of the lifecycle:

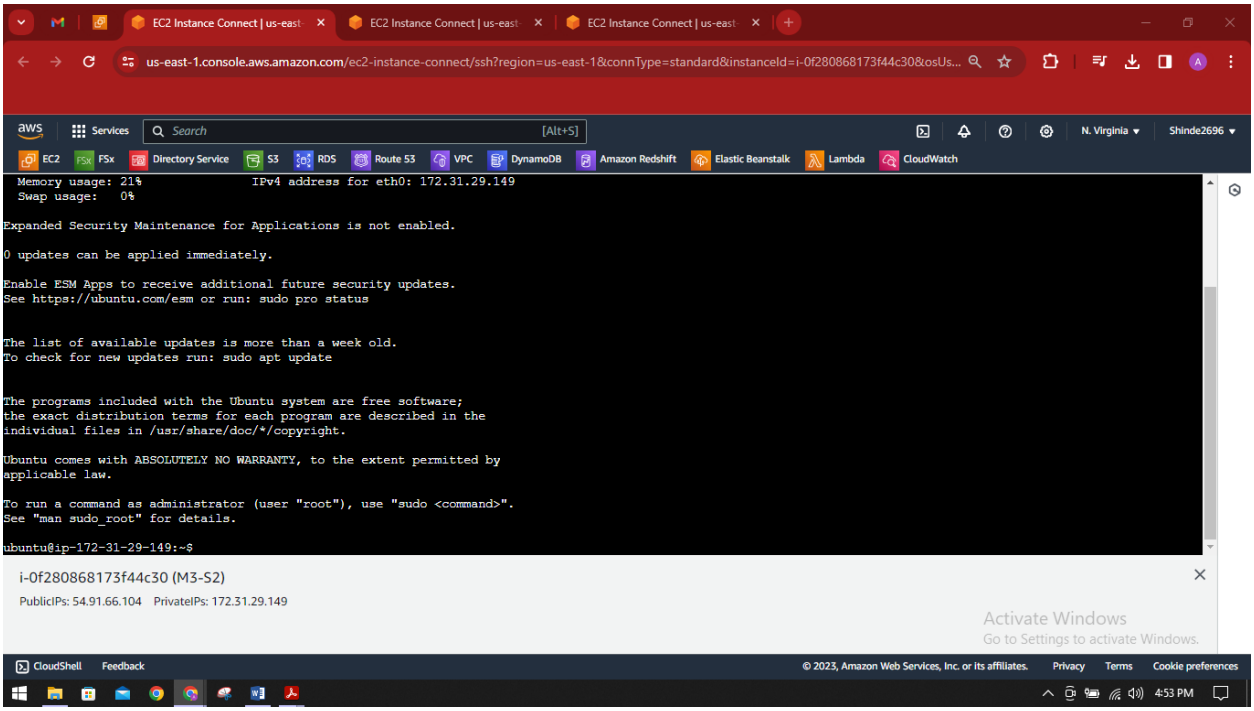
1. Install the necessary software on the machines using a configuration management tool.
2. Git Workflow has to be implemented
3.Code Build should automatically be triggered once commit is made to master branch or develop branch.
If commit is made to master branch, test and push to prod
If commit is 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 Git-Hub. 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:
Job1 : build
Job2: test
Job3 : prod

Solution :

Creating 3 instances Machine 1 will be Master and the other 2 will be sleeves named M1 – Master and M2 – S1 and M3 – S2 using Ubuntu OS

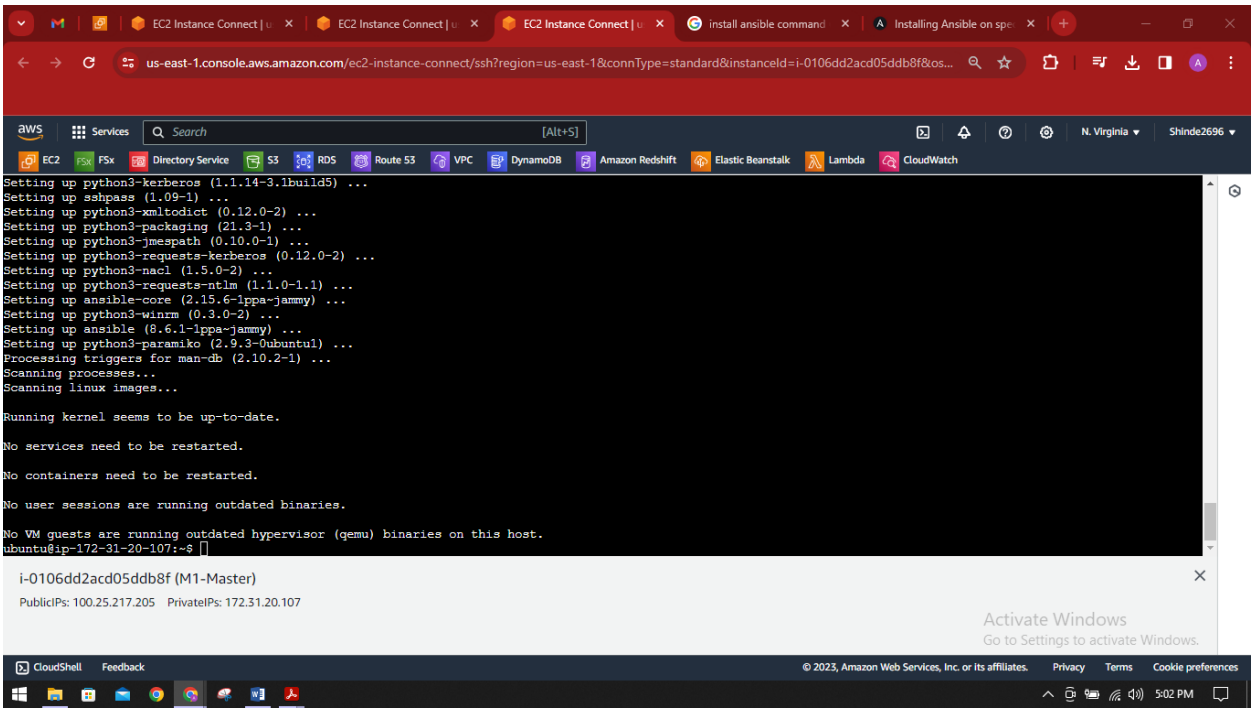


Connected to All 3 instances

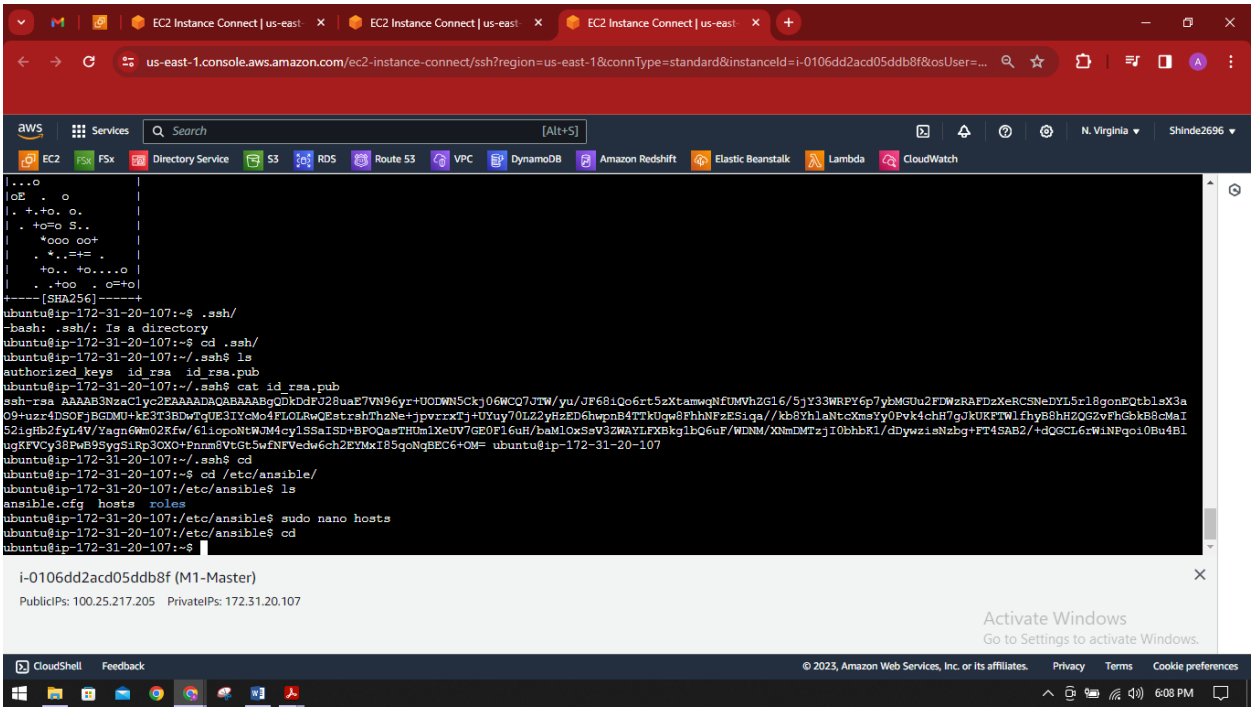


Installed Ansible on Master machine by running below commands

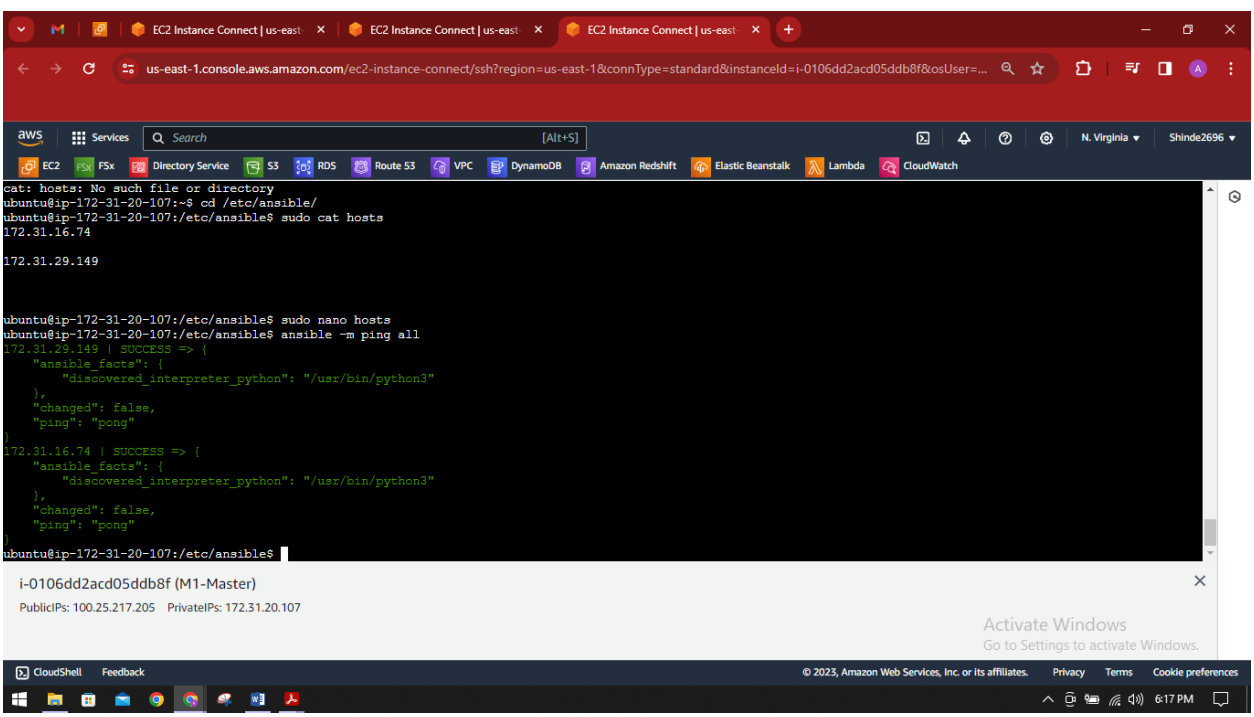
```
sudo apt update
sudo apt install software-properties-common
sudo add-apt-repository --yes --update ppa:ansible/ansible
sudo apt install ansible
```



Configured the Ansible successfully and the Master machine is linked to both the Sleeves machine

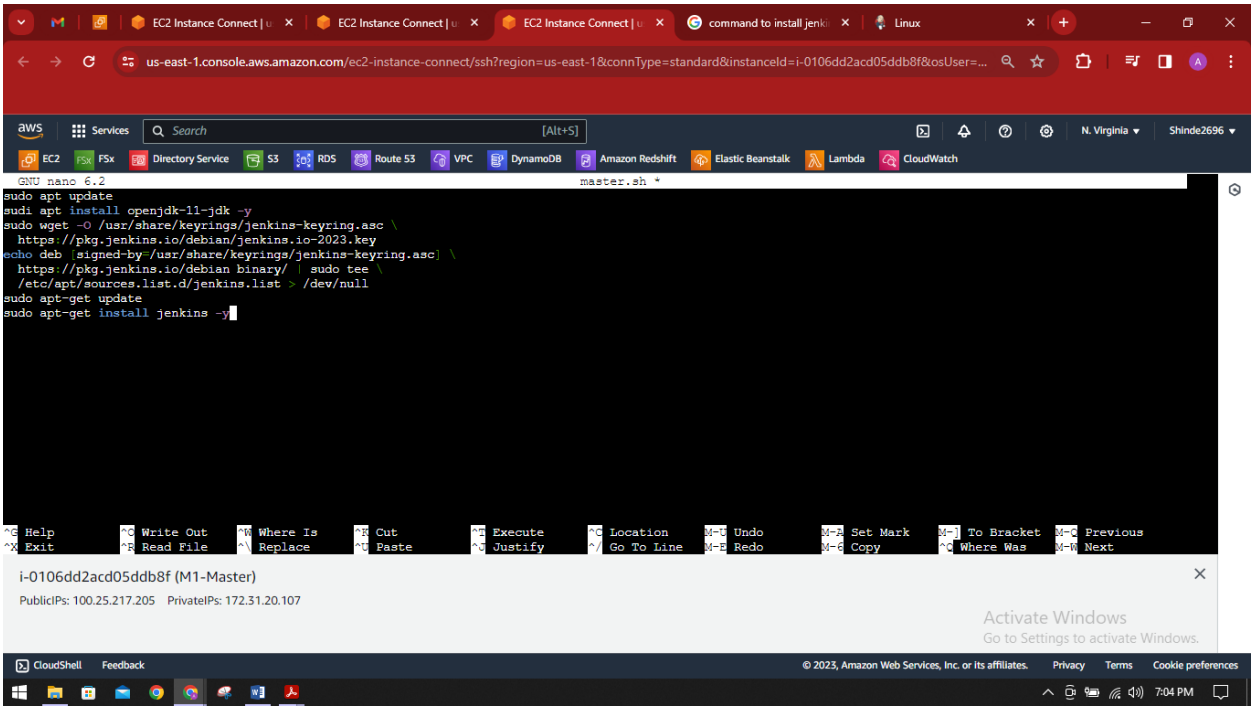


Add the Private ip address of the 2 sleeves machine to the directory of the Anisble on the Master machine and then ping all



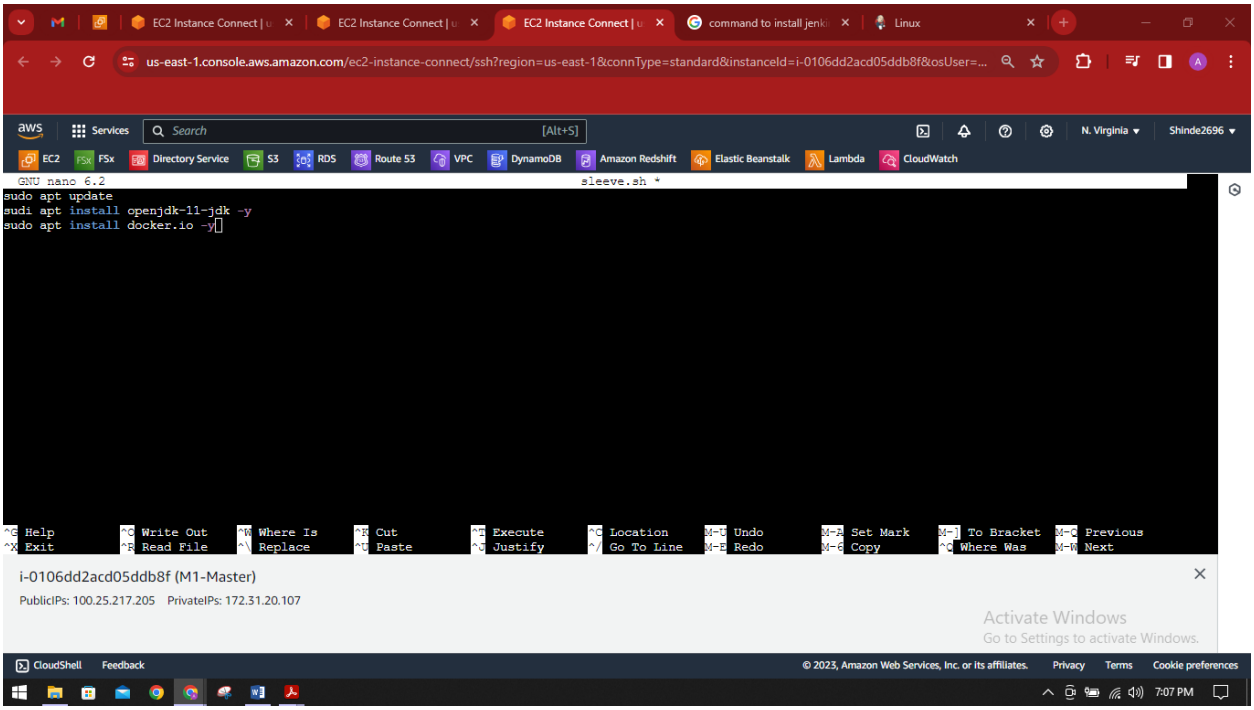
Installing Jenkins and Java in the Master machine using commands

```
sudo apt update
sudo apt install openjdk-11-jdk -y
sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
  https://pkg.jenkins.io/debian/jenkins.io-2023.key
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.jenkins.io/debian binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get install jenkins –y
```

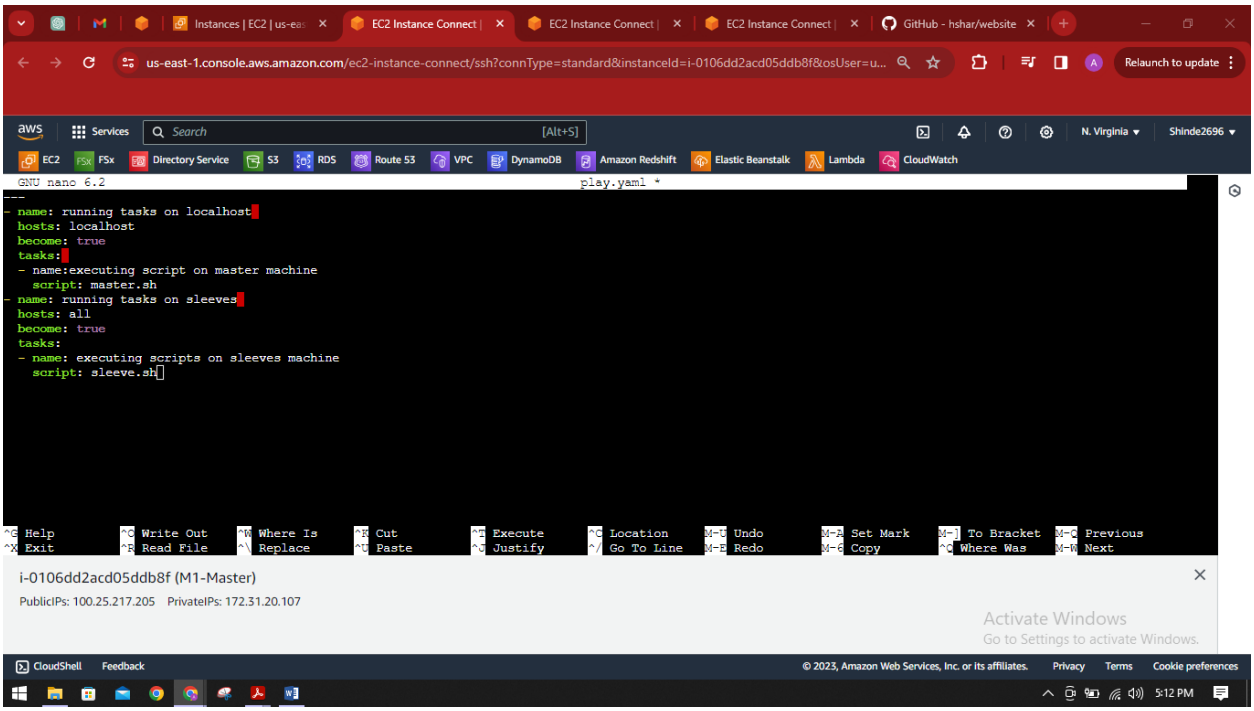


And then Installing Java and Docker in the Sleeves machine using below commands

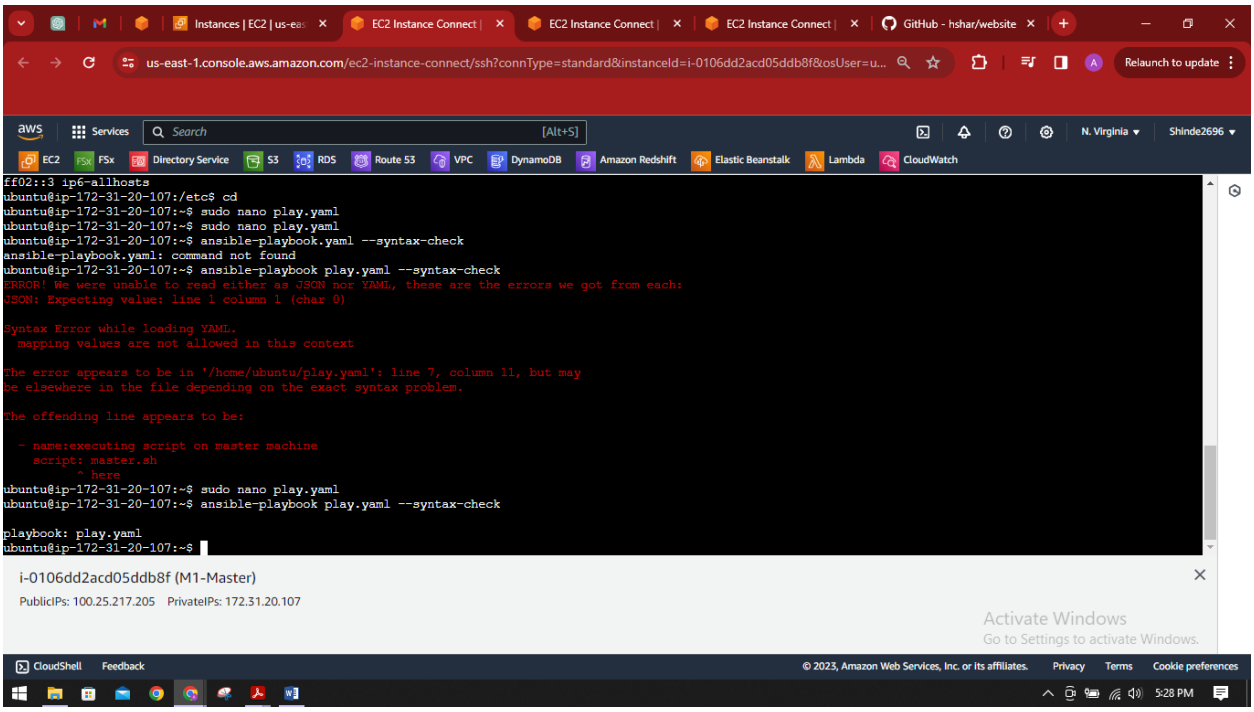
```
sudo apt update
sudo apt install openjdk-11-jdk –y
sudo apt install docker.io -y
```

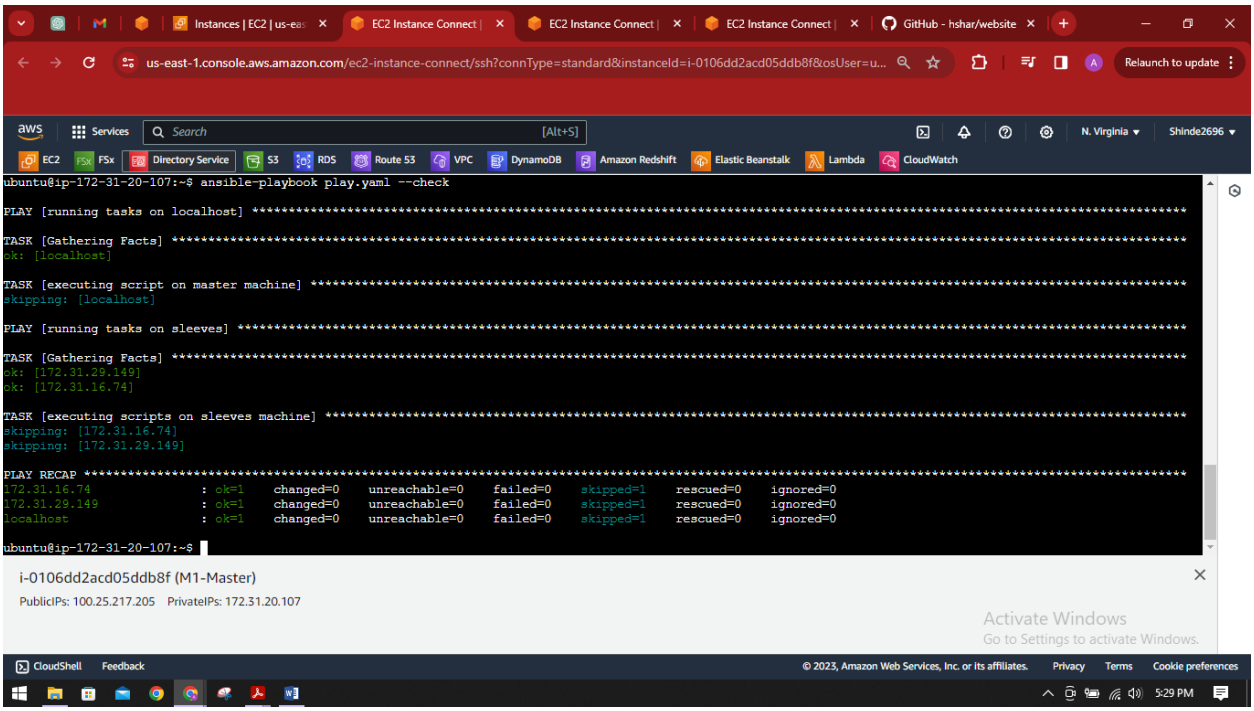


Create a playbook to execute for the Master as well as Sleeves machines named play.yaml

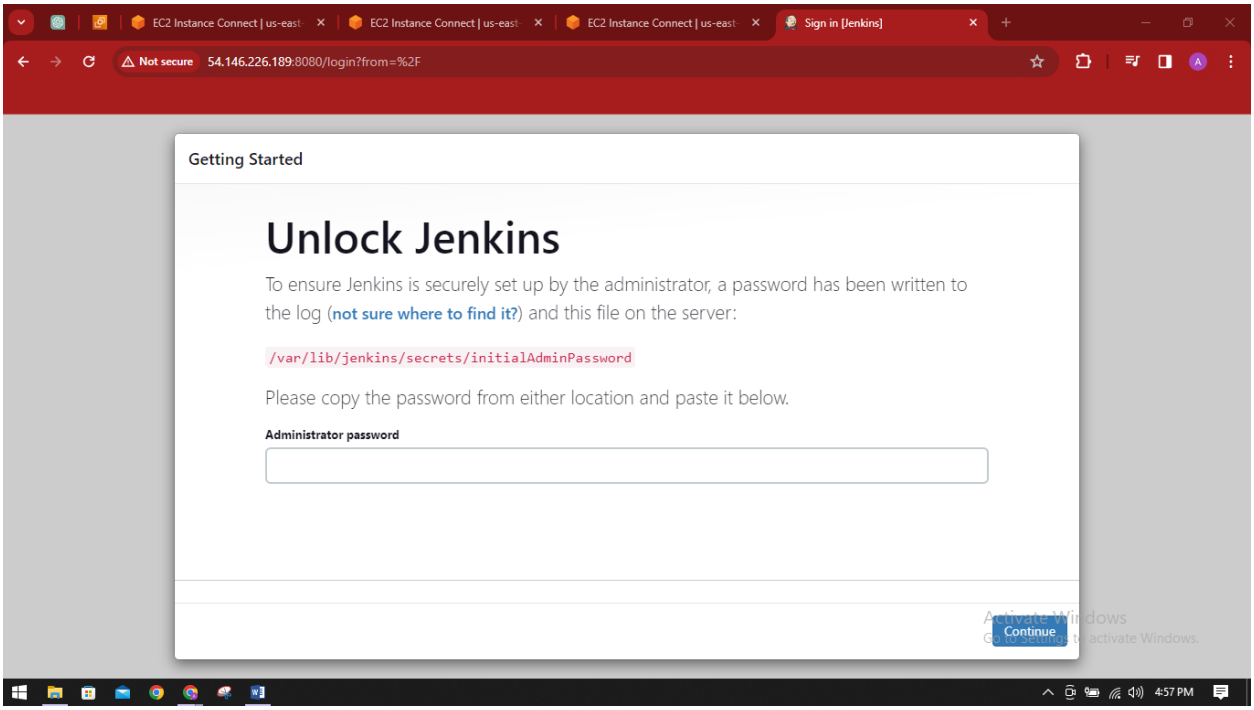


And then ran did a syntax check and then dry run to check if there are any error,
And found an error and then checked in the play.yaml and then corrected it and then checked again.

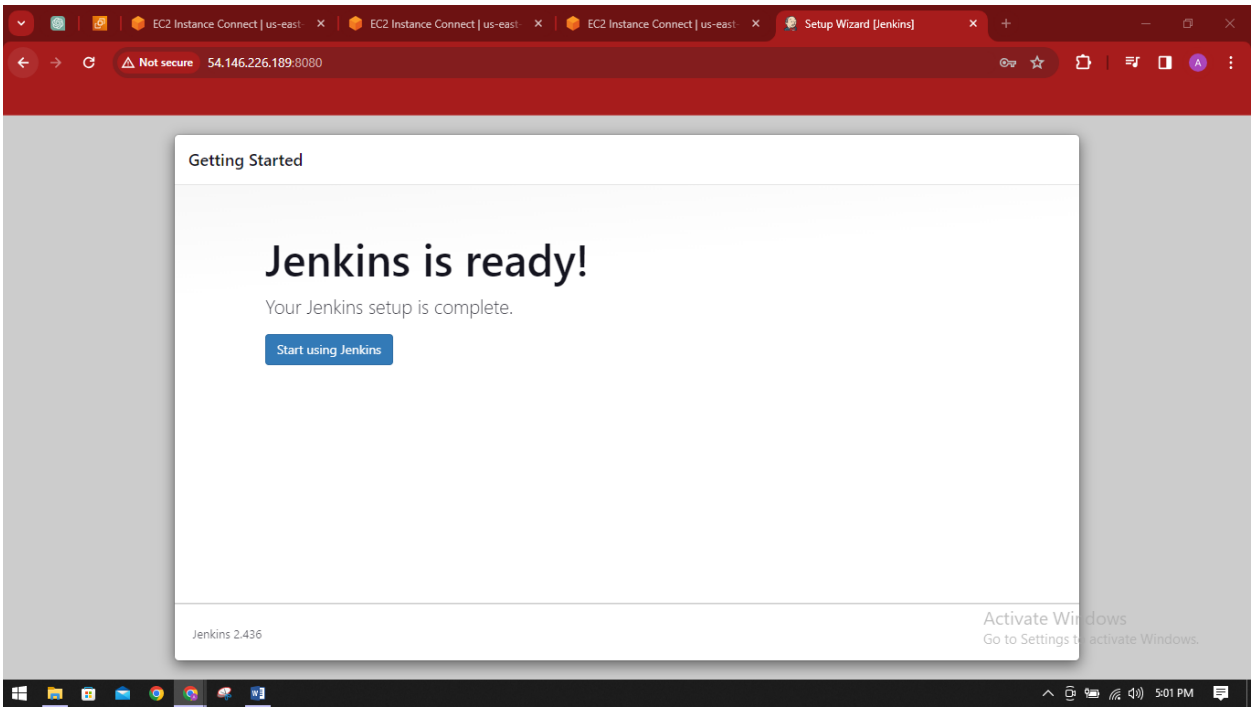




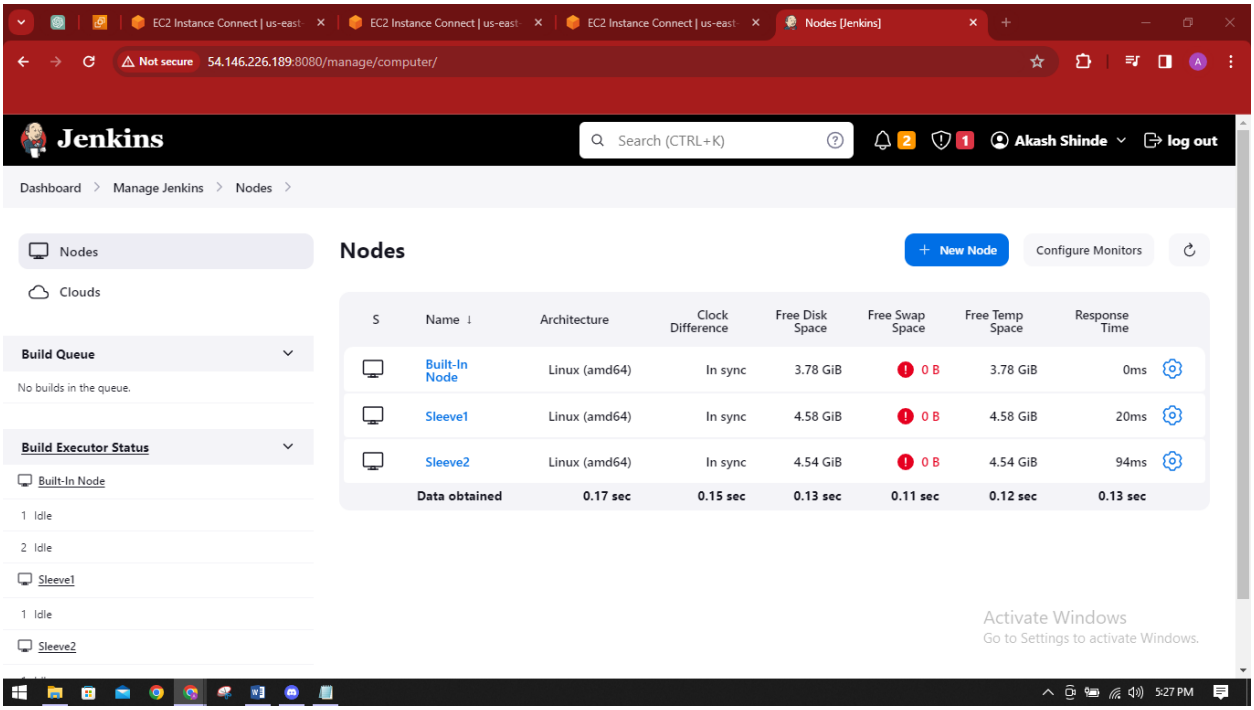
Hence everything was run successfully executing the file to install the required tools,
And we can see the Jenkins page when we go to the public IP on port 8080



Create Admin User and set the password and then hence Completed the Jenkins setup

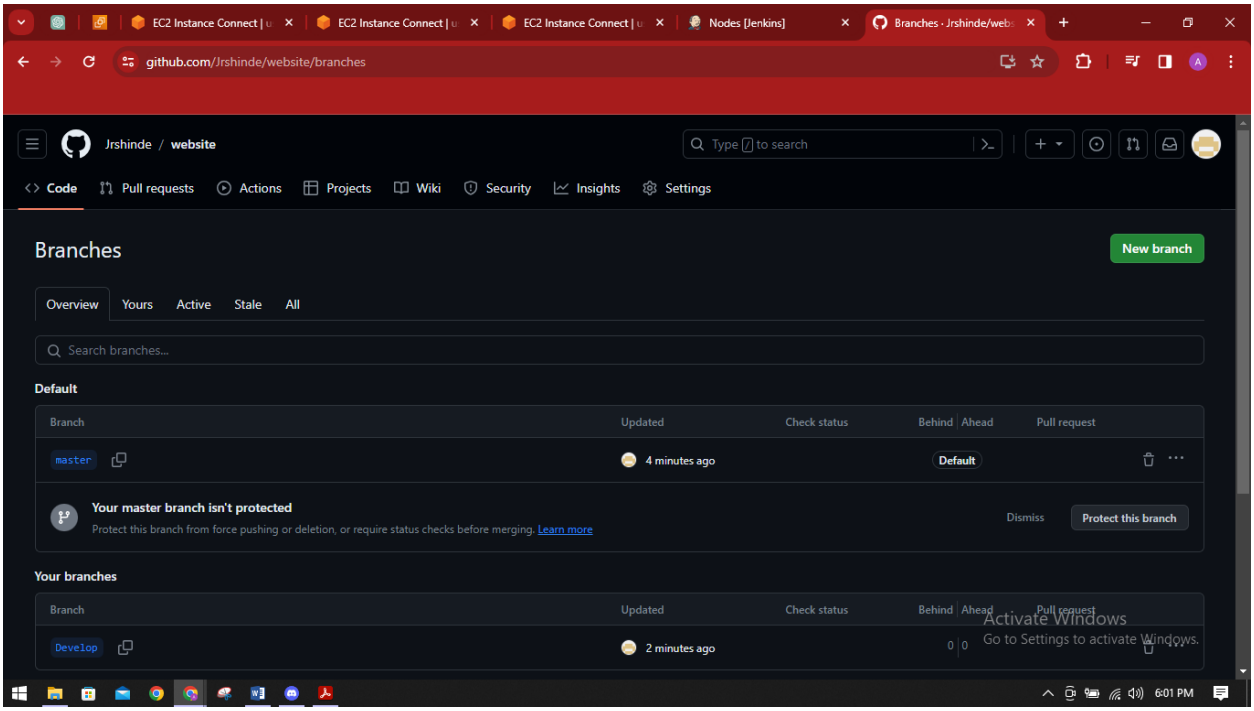


Created nodes for the Sleeves machine in the Jenkins named Sleeve1 and Sleeve2

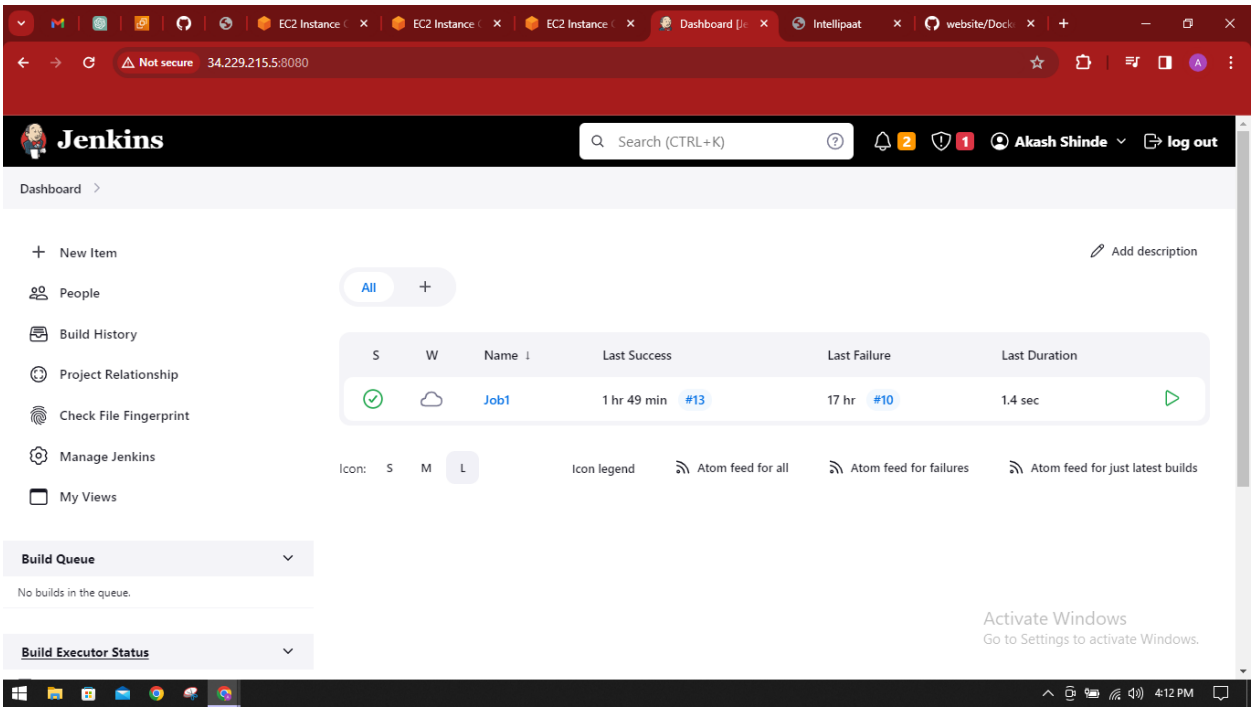


Created a Docker file in the Git and then created 2 branches one Master and then it's sub branch Develops

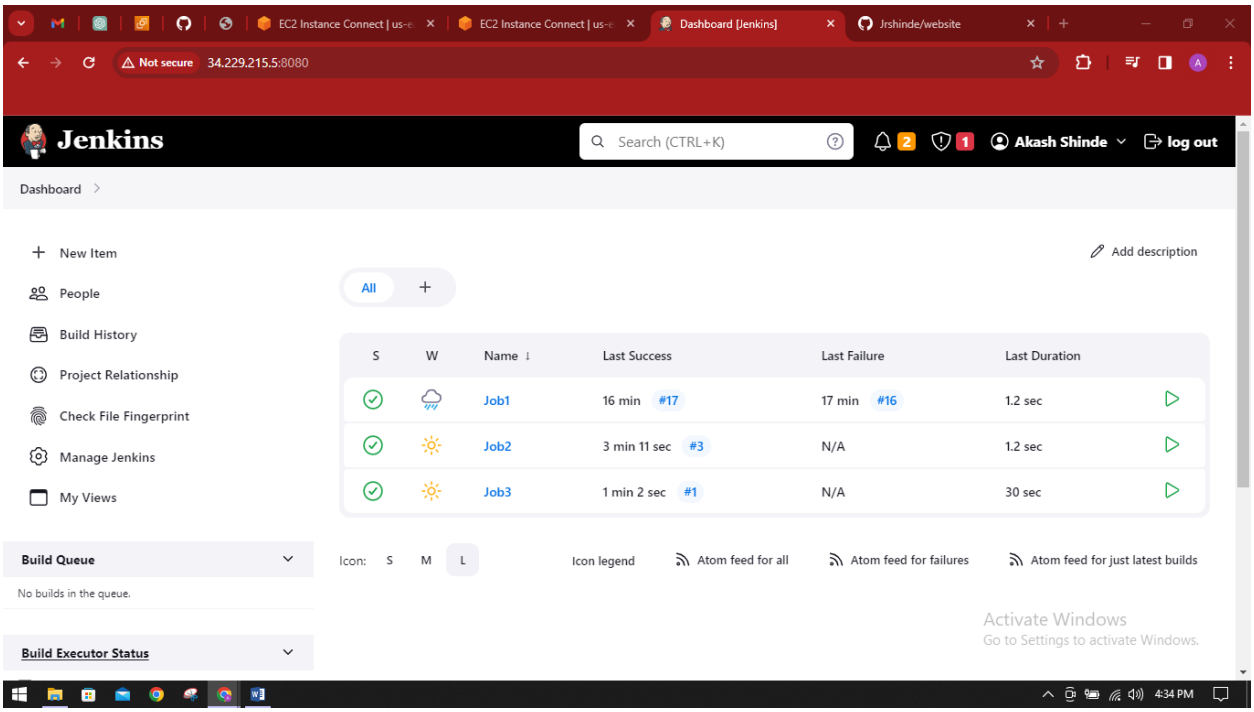
And saved the code in '/var/www/html'



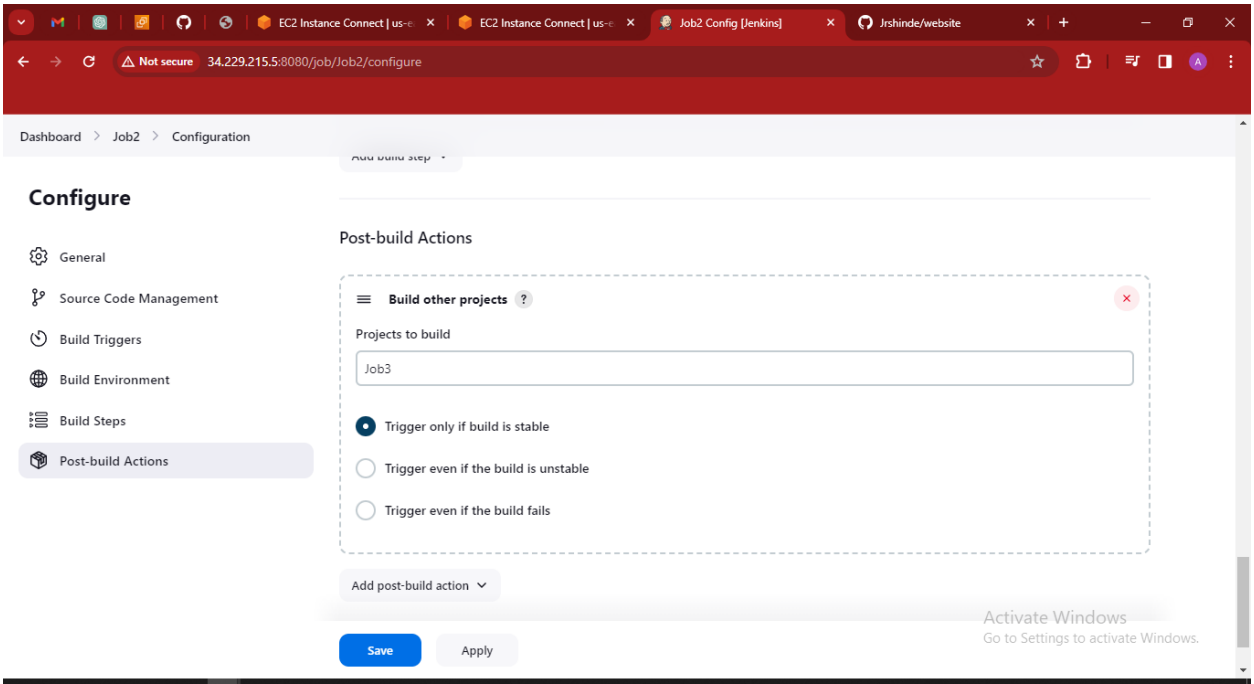
Hence Job 1 created successfully and executed successfully

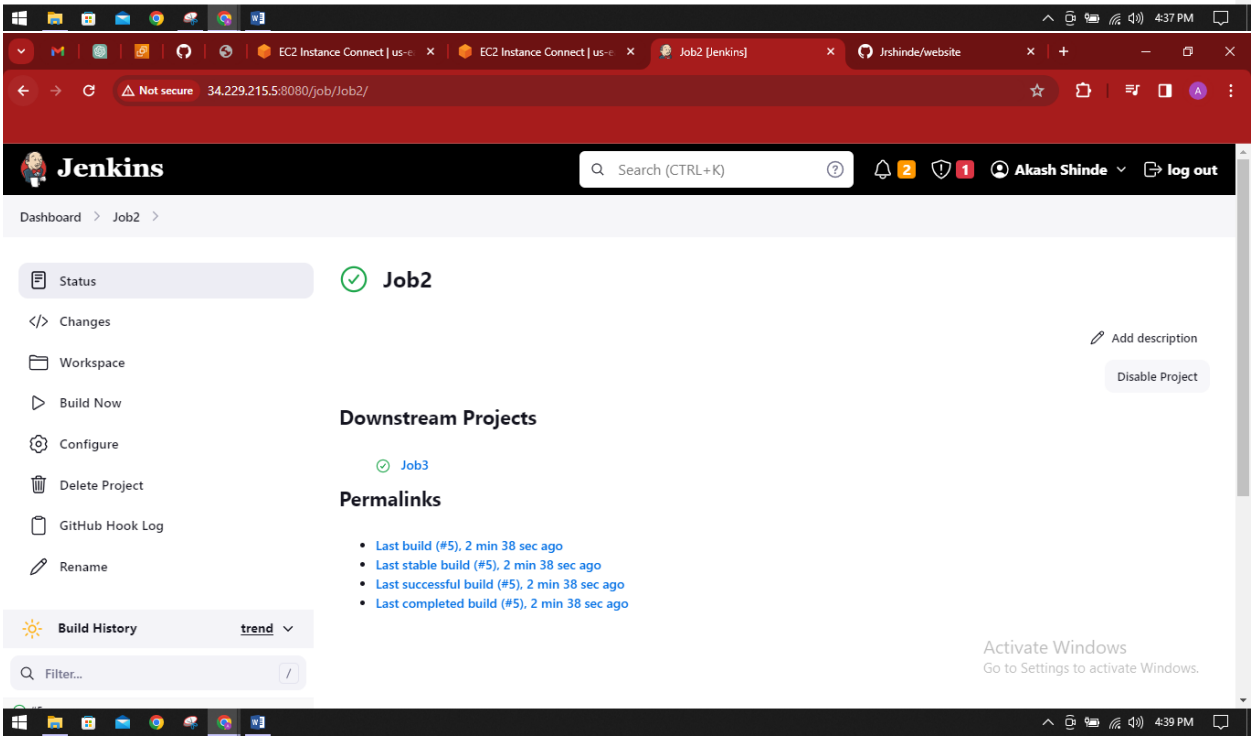


So All the 3 Jobs are build successfully

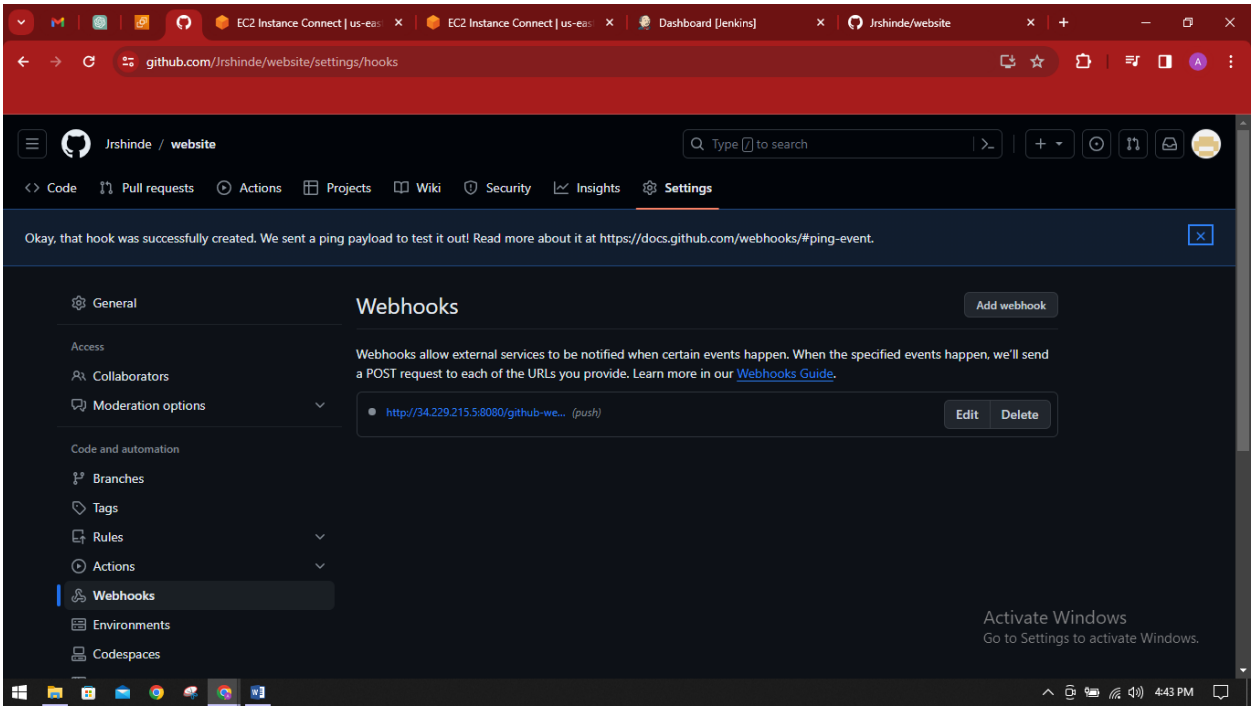


Connected the Job2 and Job3, so that once the Job2 is ran successfully it will trigger the Job3 and run automatically which means Job3 is queued after the Job2.





And a Webhook is also added in the Github too:



So in this project the successful implementation of the DevOps lifecycle at Adobe Software has significantly improved the efficiency and reliability of our product development processes. Through the integration of Ansible for software provisioning, Gitflow for version control, and Jenkins for continuous integration and deployment, we have established a streamlined and automated workflow. The three-stage pipeline, encompassing Build, Test, and Prod stages, ensures that code changes undergo thorough testing before reaching production.