Name -Parmeshwar*

Assignment (GITHUB, JENKINS, Gradle, DOCKER & KUBERNETES)

Problem Statement: Automated Deployment of Web application

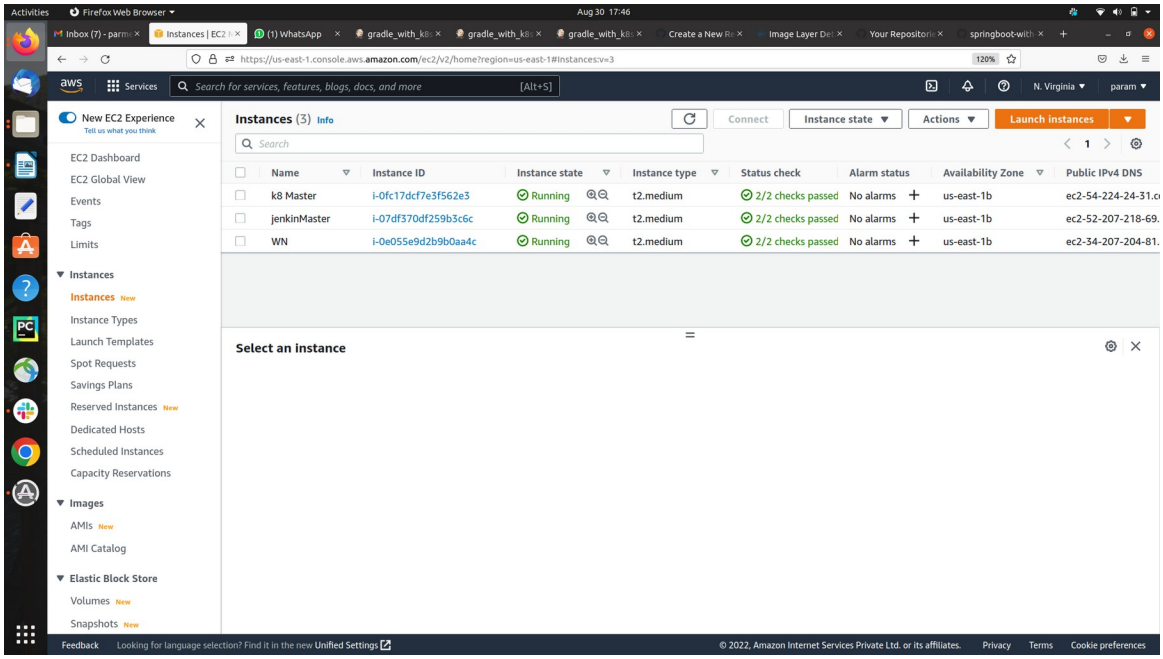
Q1) Design and develop tasks required to build CICD pipeline using ALL learned technologies to deploy WEB application on cloud platform as a set of microservices on containerized platform such as DOCKER. Deploy a web application on Docker container using GRADLE as build tool to install, test, package application. Push the code to Docker HUB and make it publicly available on internet. Pull this code from Docker Hub & Deploy it on KUBERNETES Cluster & create a pod with 3 Replicas. Access the Webpage from Kubernetes Worker Node using Node port service. Provision Infrastructure on AWS.

Step 1) created 3 instances

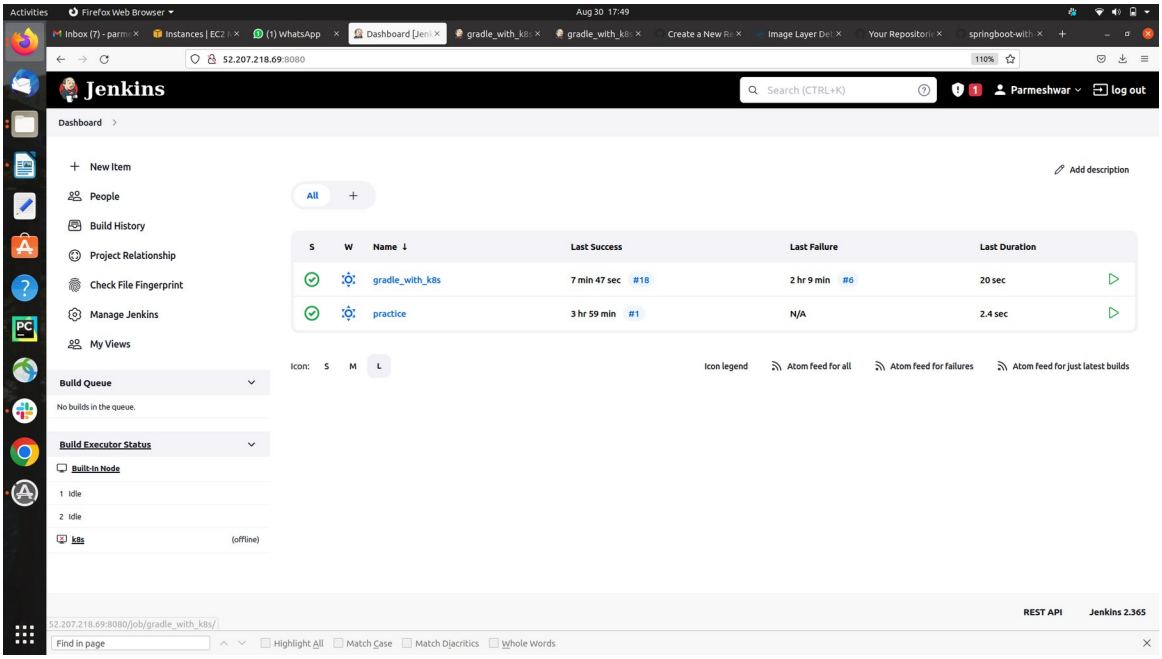
i) Kubernets master

i) Kubernets WorkNode

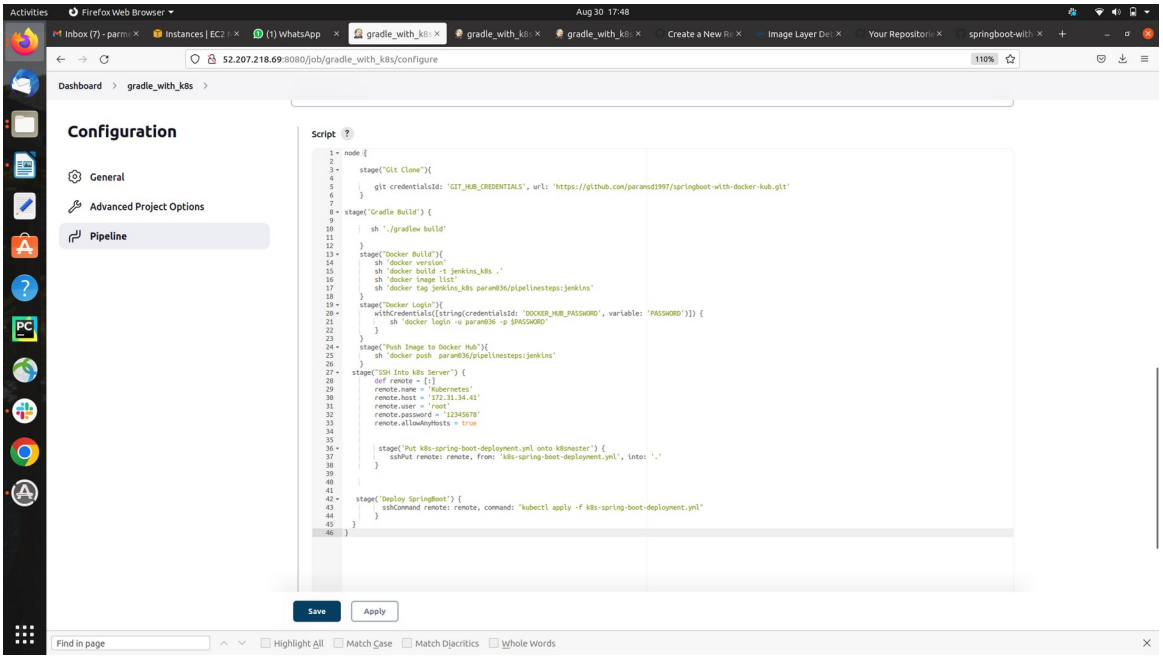
i) Jenkins master



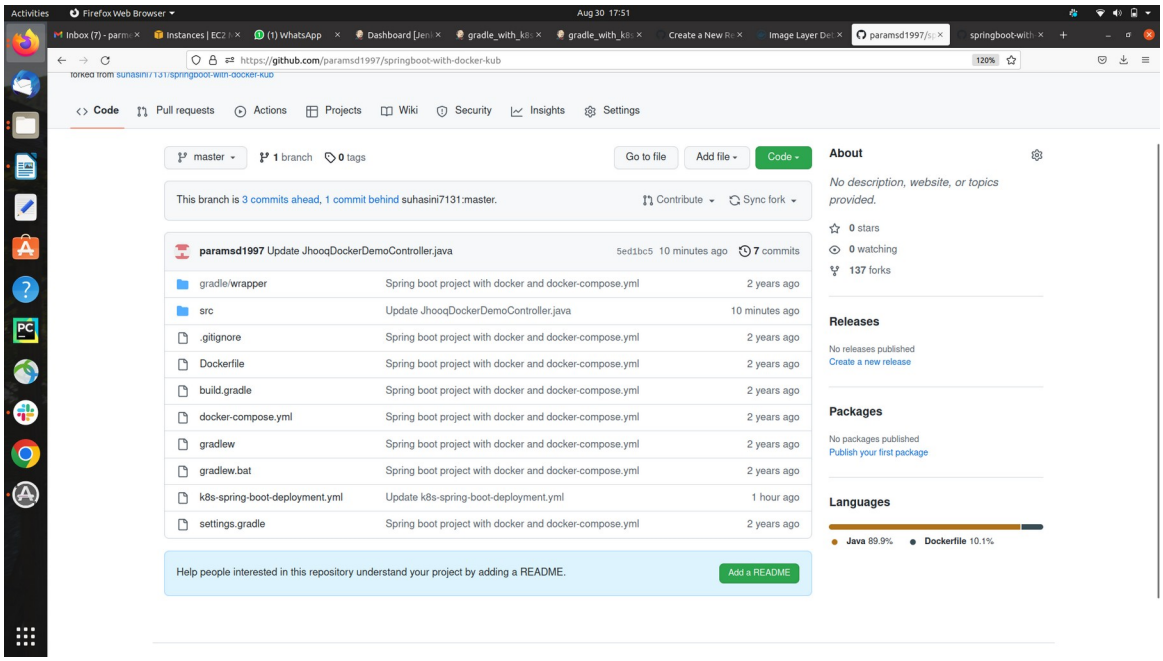
step 2) created the job



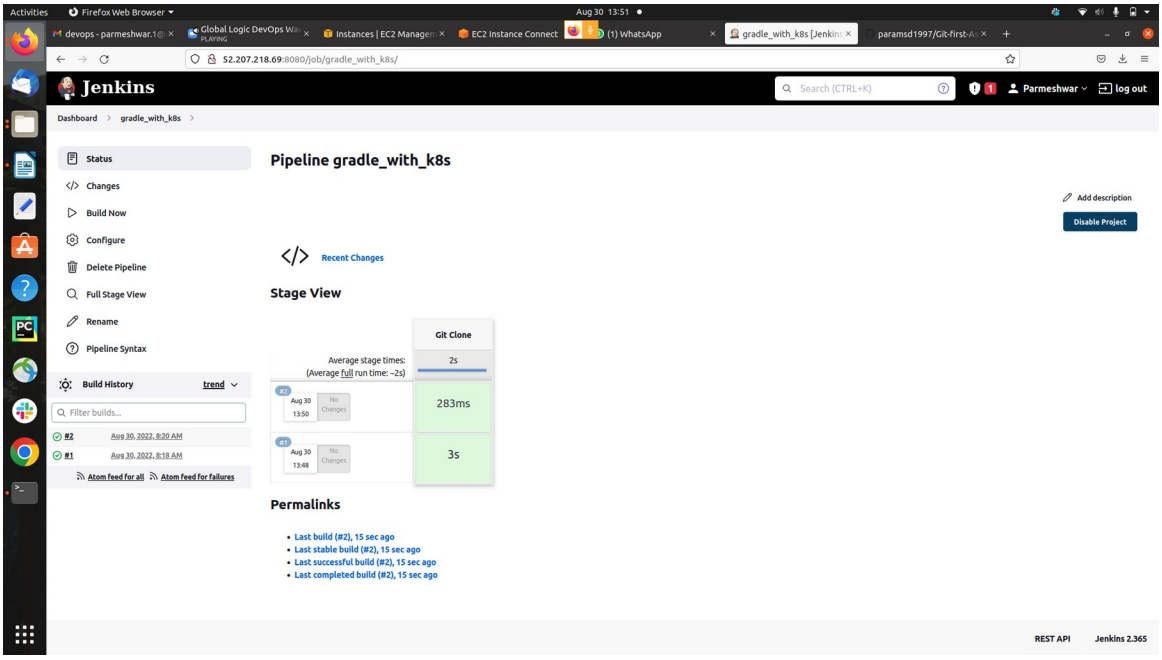
step 3) pipeline script is written for execution

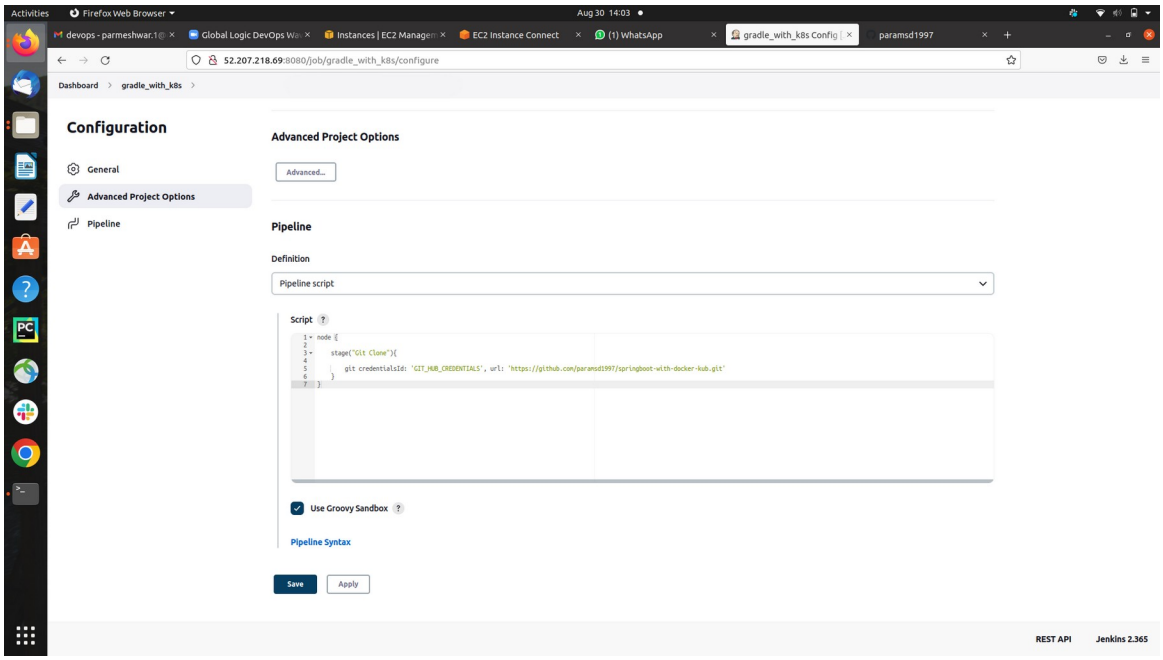


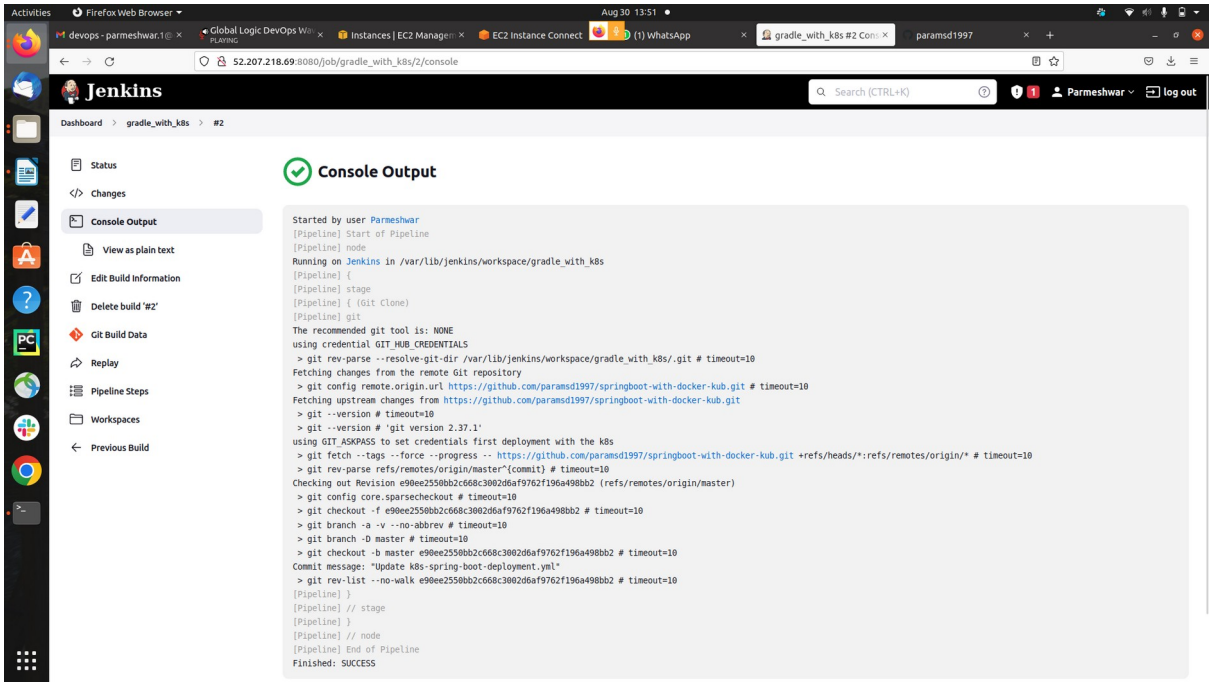
step 4) Git repo Code



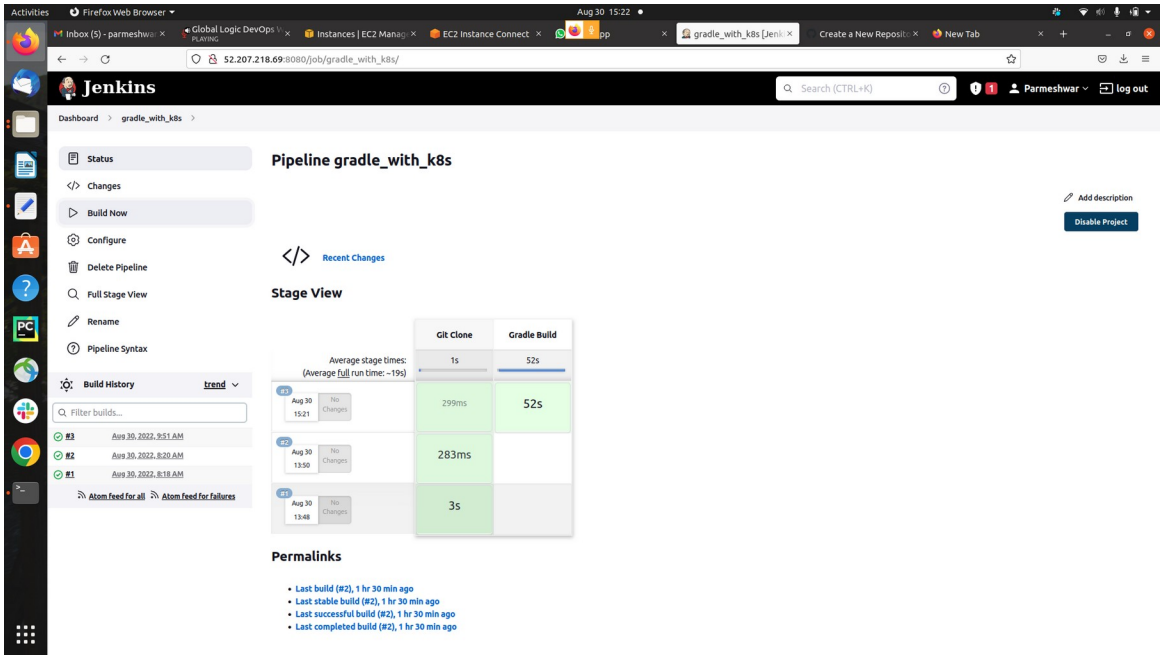
step 5) git clone successfully



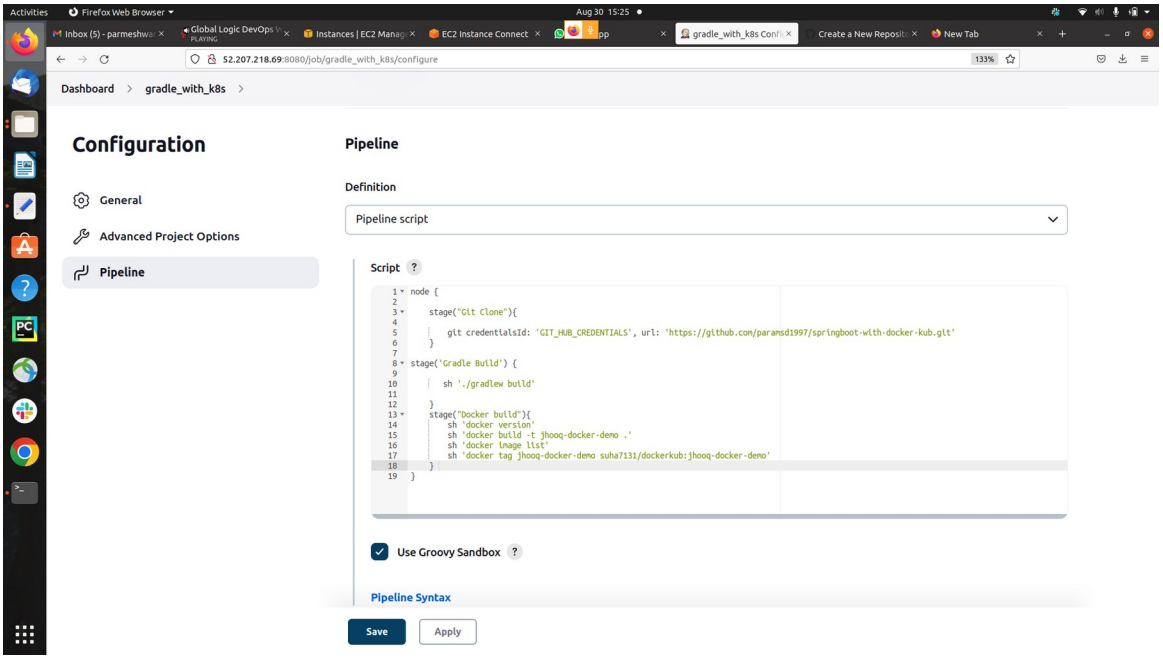

Activities
Firefox Web Browser
Aug 30 14:03
devops - parmeshwar.1@
Global Logic DevOps Wa
Instances | EC2 Manager
EC2 Instance Connect
(1) WhatsApp
gradle_with_k8s Config
paramsd1997
52.207.218.69:8080/job/gradle_with_k8s/configure
Dashboard
gradle_with_k8s
Configuration
General
Advanced Project Options
Pipeline
Advanced Project Options
Advanced...
Pipeline
Definition
Pipeline script
Script
node {
stage("Git Clone"){
git credentialsId: 'GIT_HUB_CREDENTIALS', url: 'https://github.com/paramsd1997/springboot-with-docker-kub.git'
}
}
Use Groovy Sandbox
Pipeline Syntax
Save
Apply
REST API
Jenkins 2.365

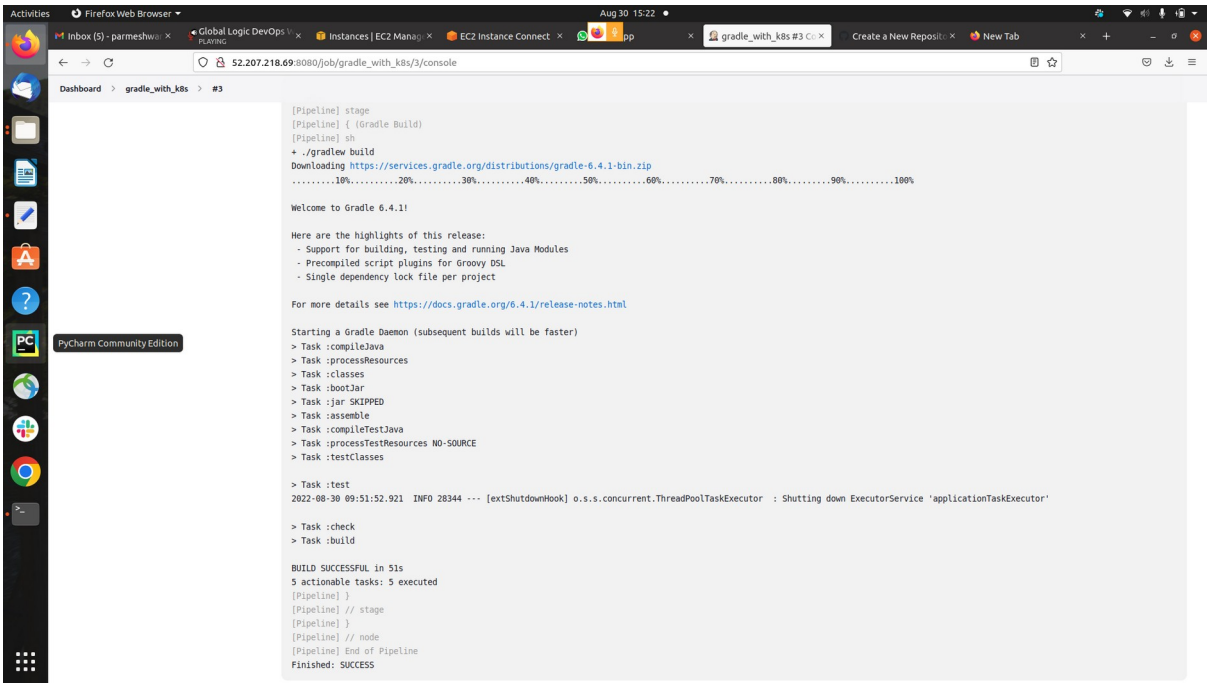

Activities
Firefox Web Browser
Aug 30 13:51
devops - parmeshwar.1@
Global Logic DevOps Wa
PLAYING
Instances | EC2 Manager
EC2 Instance Connect
(1) WhatsApp
gradle_with_k8s #2 Con
paramsd1997
52.207.218.69:8080/job/gradle_with_k8s/2/console
Jenkins
Search (CTRL+K)
Parmeshwar
log out
Dashboard
gradle_with_k8s
#2
Status
Changes
Console Output
View as plain text
Edit Build Information
Delete build '#2'
Git Build Data
Replay
Pipeline Steps
Workspaces
Previous Build
Console Output
Started by user Parmeshwar
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/gradle_with_k8s
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Git Clone)
[Pipeline] git
The recommended git tool is: NONE
using credential GIT_HUB_CREDENTIALS
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/gradle_with_k8s/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/paramsd1997/springboot-with-docker-kub.git # timeout=10
Fetching upstream changes from https://github.com/paramsd1997/springboot-with-docker-kub.git
> git --version # timeout=10
> git --version # 'git version 2.37.1'
using GIT_ASKPASS to set credentials first deployment with the k8s
> git fetch --tags --force --progress -- https://github.com/paramsd1997/springboot-with-docker-kub.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision e90ee2550bb2c668c3002d6af9762f196a498bb2 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f e90ee2550bb2c668c3002d6af9762f196a498bb2 # timeout=10
> git branch -a -v --no-abbrev # timeout=10
> git branch -D master # timeout=10
> git checkout -b master e90ee2550bb2c668c3002d6af9762f196a498bb2 # timeout=10
Commit message: "Update k8s-spring-boot-deployment.yml"
> git rev-list --no-walk e90ee2550bb2c668c3002d6af9762f196a498bb2 # timeout=10
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

step 5) Gradle Build Successfully

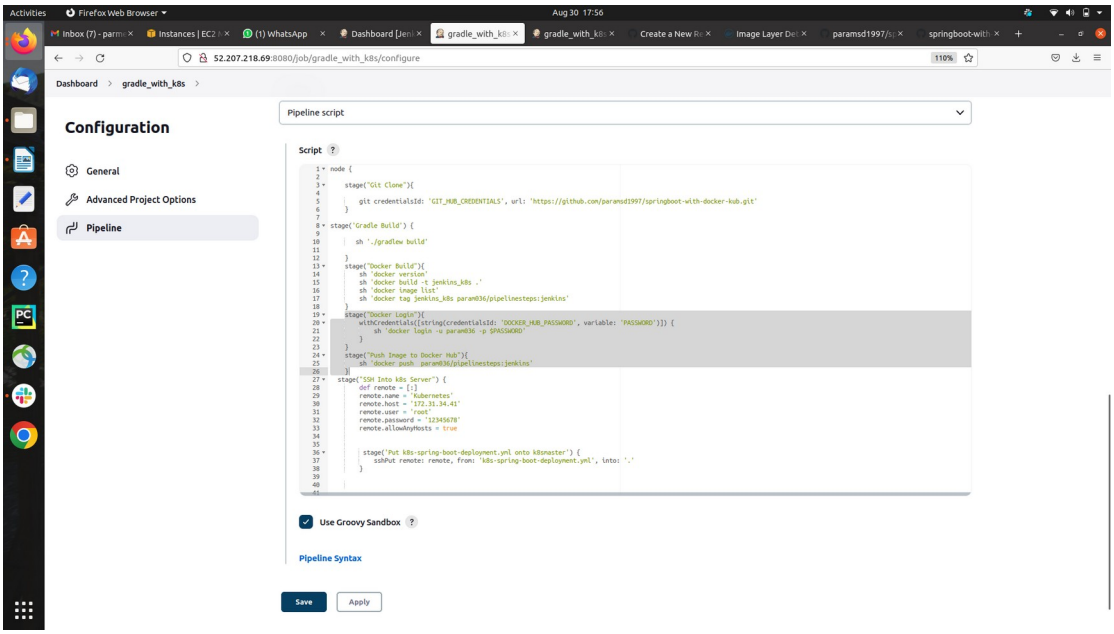


Successfully builted





step 6) Login to Docker hub and push to Docker hub



login Succeed

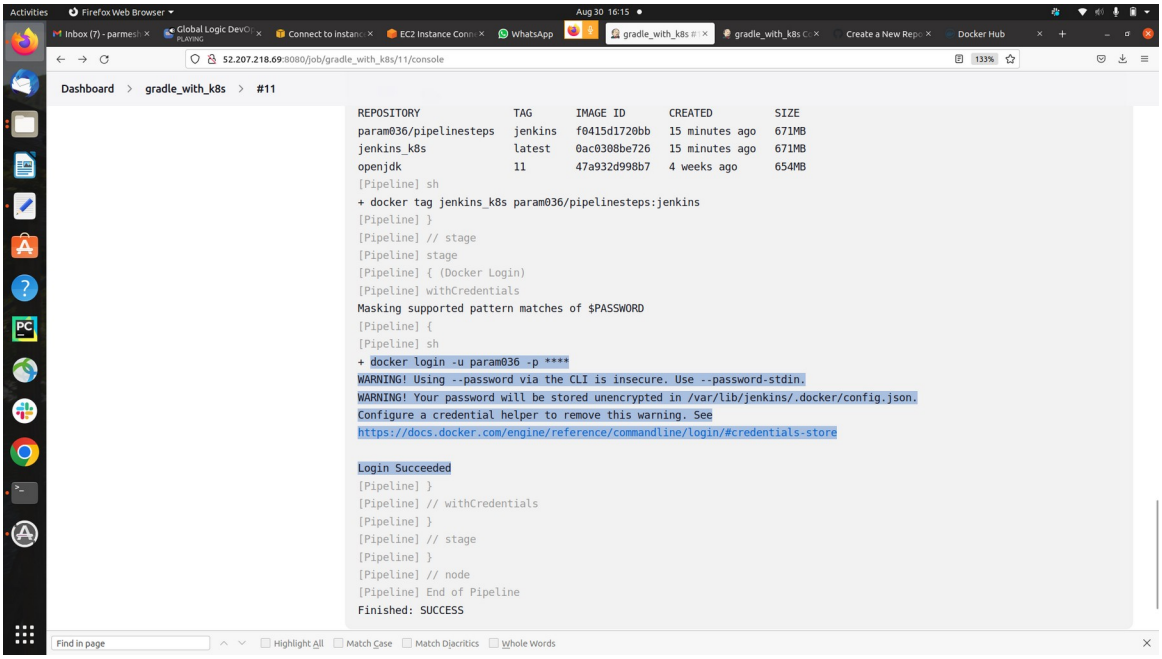
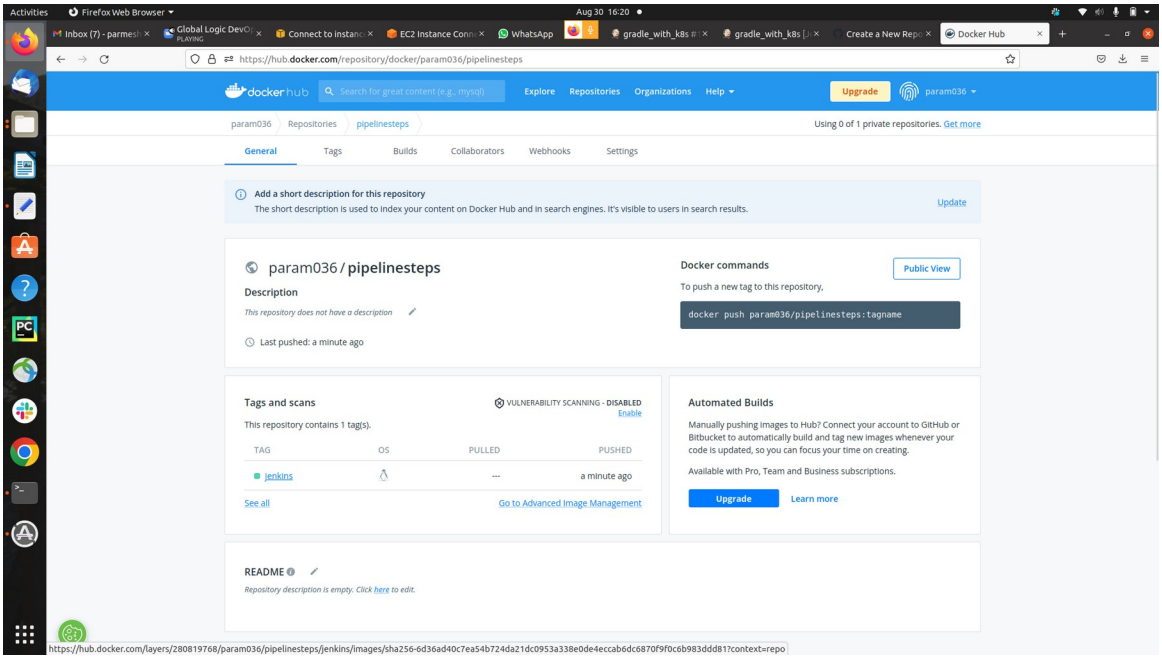
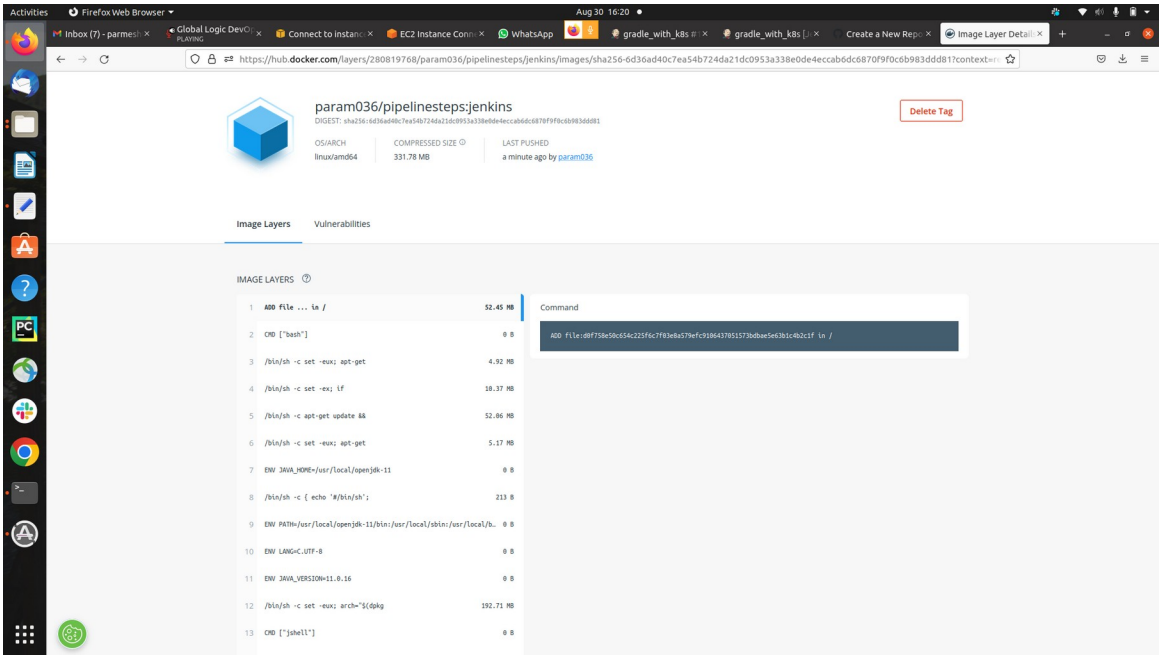
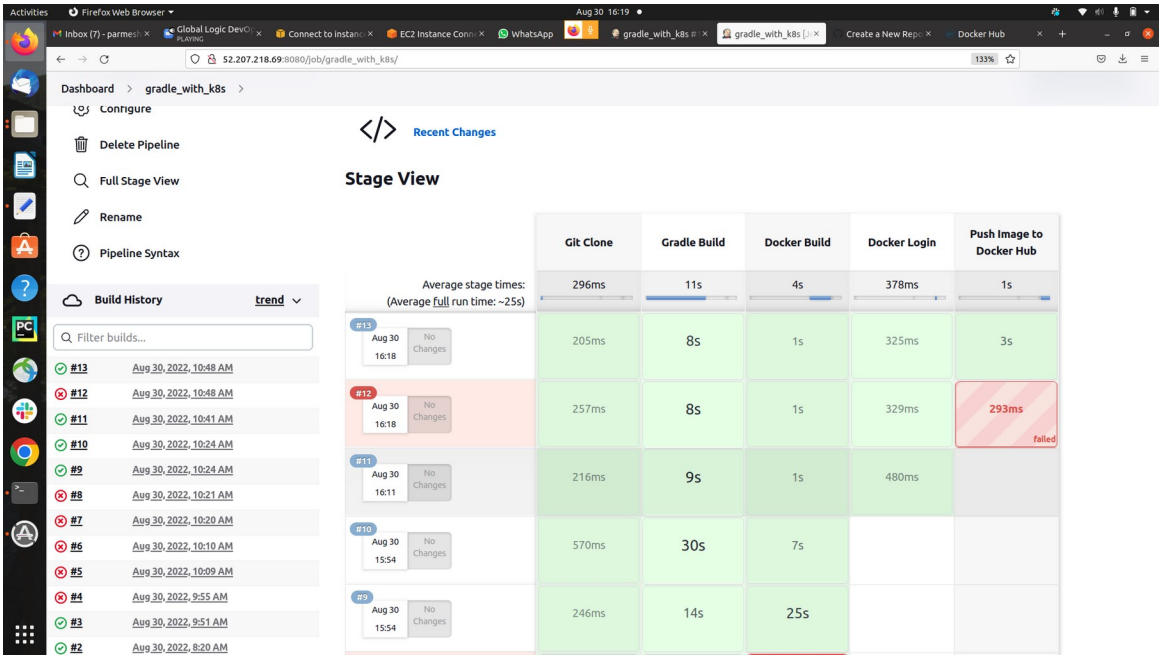


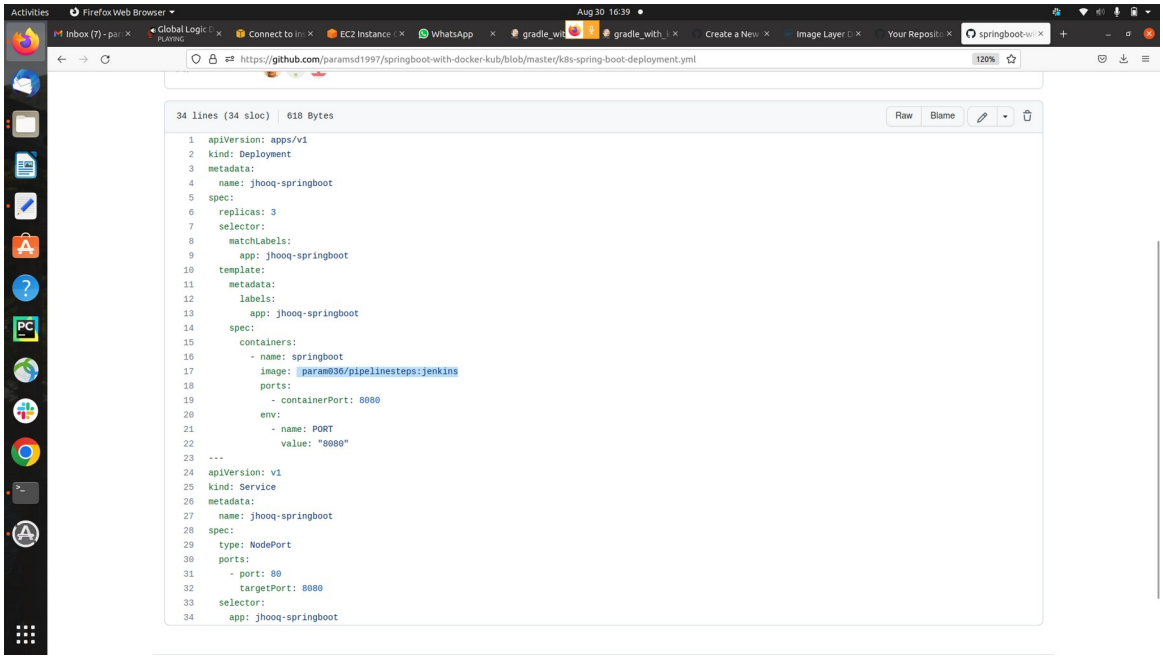
Image Successfully Pushed to docker hub




param036/pipelinesteps:jenkins
Delete Tag
Image Layers
Vulnerabilities
IMAGE LAYERS
Command


Dashboard
gradle_with_k8s
Configure
Delete Pipeline
Full Stage View
Rename
Pipeline Syntax
Build History
trend
Recent Changes
Stage View
Git Clone
Gradle Build
Docker Build
Docker Login
Push Image to Docker Hub
Average stage times:
(Average full run time: ~25s)
296ms
11s
4s
378ms
1s
#13
205ms
8s
1s
325ms
3s
#12
257ms
8s
1s
329ms
293ms
failed
#11
216ms
9s
1s
480ms
#10
570ms
30s
7s
#9
246ms
14s
25s

step 8) Yml file for the creating the deployment with 3 replicas

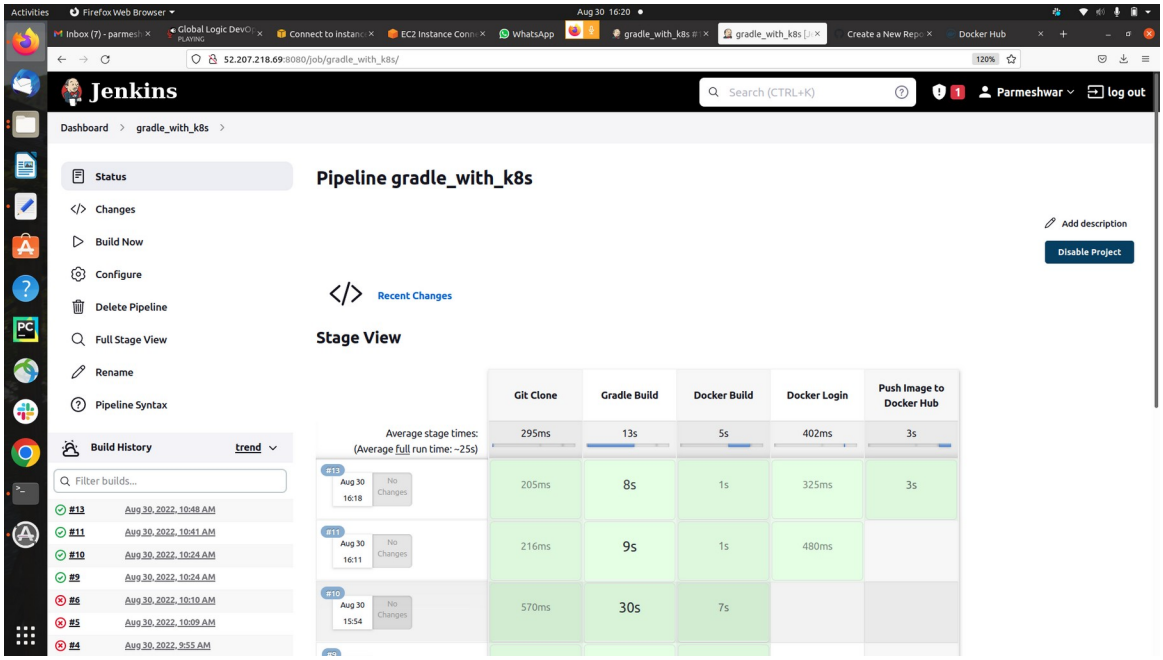


https://github.com/paramsd1997/springboot-with-docker-kub/blob/master/k8s-spring-boot-deployment.yml

34 lines (34 sloc) | 618 Bytes — Raw | Blame

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: jhooq-springboot
spec:
  replicas: 3
  selector:
    matchLabels:
      app: jhooq-springboot
  template:
    metadata:
      labels:
        app: jhooq-springboot
    spec:
      containers:
        - name: springboot
          image: param036/pipelinesteps:jenkins
          ports:
            - containerPort: 8080
          env:
            - name: PORT
              value: "8080"
---
apiVersion: v1
kind: Service
metadata:
  name: jhooq-springboot
spec:
  type: NodePort
  ports:
    - port: 80
      targetPort: 8080
  selector:
    app: jhooq-springboot
```

step 8) Access the SSH of K8s MAster



52.207.218.69:8080/job/gradle_with_k8s/

Jenkins — Search (CTRL+K) — Parmeshwar — log out

Dashboard > gradle_with_k8s >

Status
Changes
Build Now
Configure
Delete Pipeline
Full Stage View
Rename
Pipeline Syntax

Build History trend

Filter builds...

#13 Aug 30, 2022, 10:48 AM
#11 Aug 30, 2022, 10:41 AM
#10 Aug 30, 2022, 10:24 AM
#9 Aug 30, 2022, 10:24 AM
#6 Aug 30, 2022, 10:10 AM
#5 Aug 30, 2022, 10:09 AM
#4 Aug 30, 2022, 9:55 AM

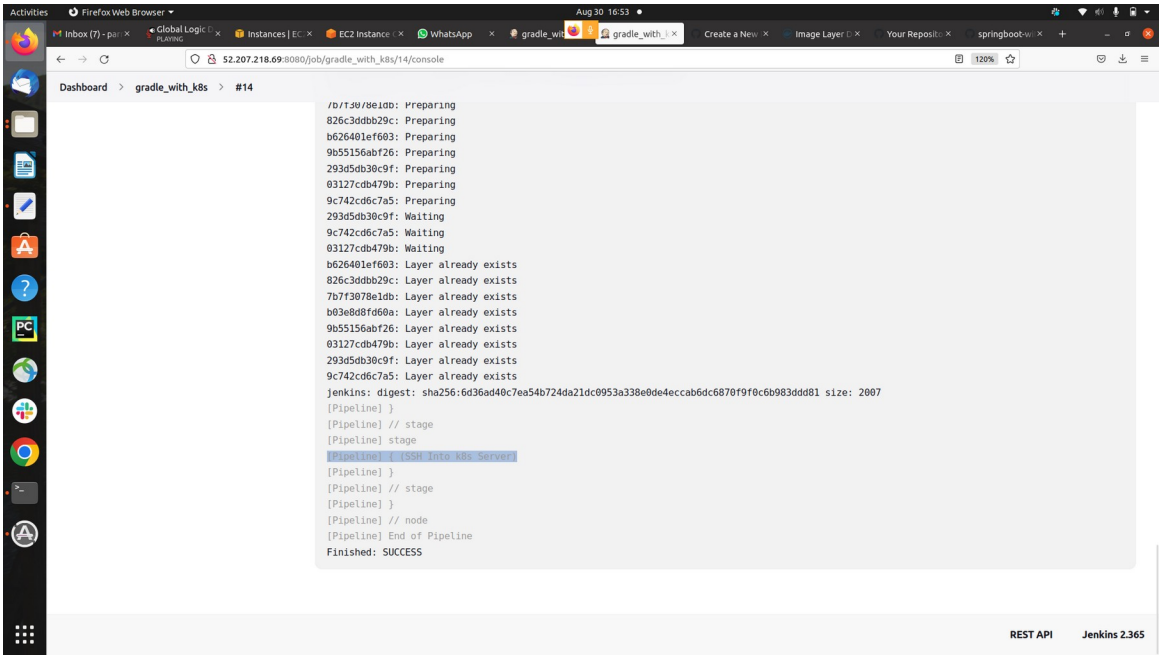
Pipeline gradle_with_k8s

Add description
Disable Project

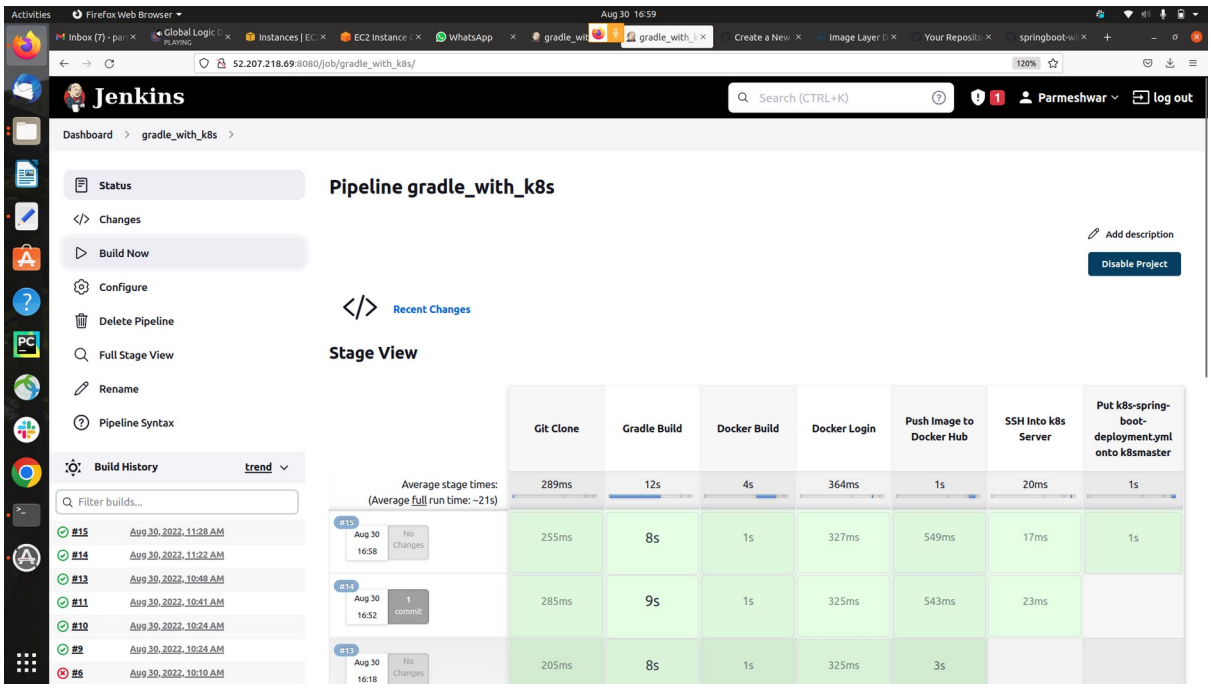
Recent Changes

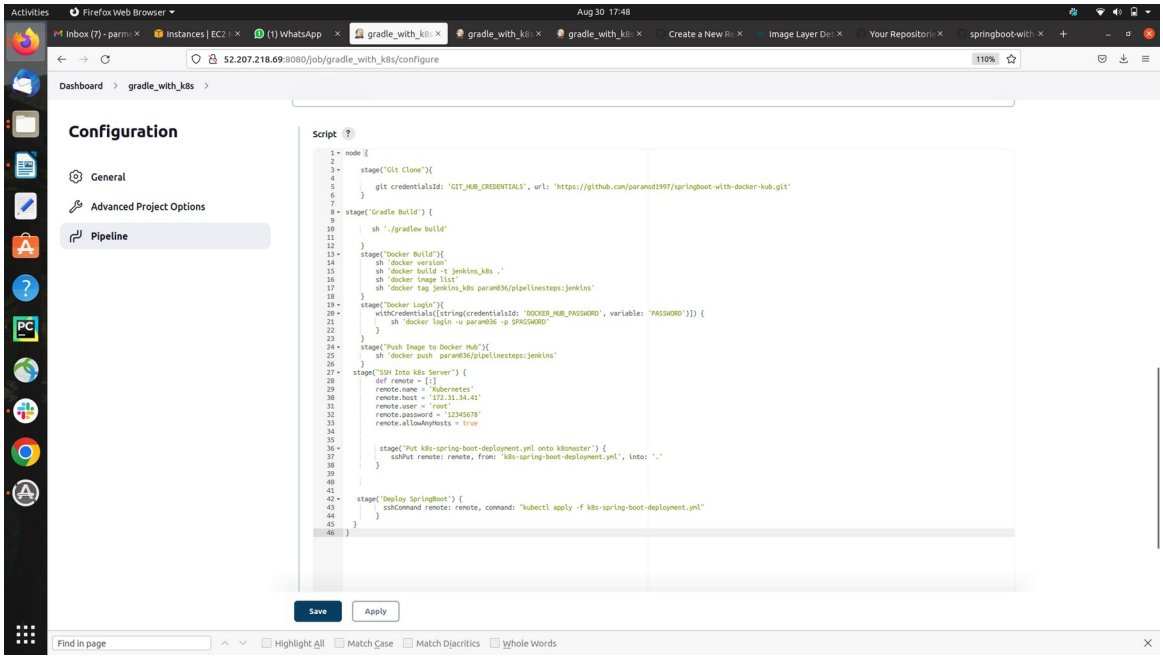
Stage View

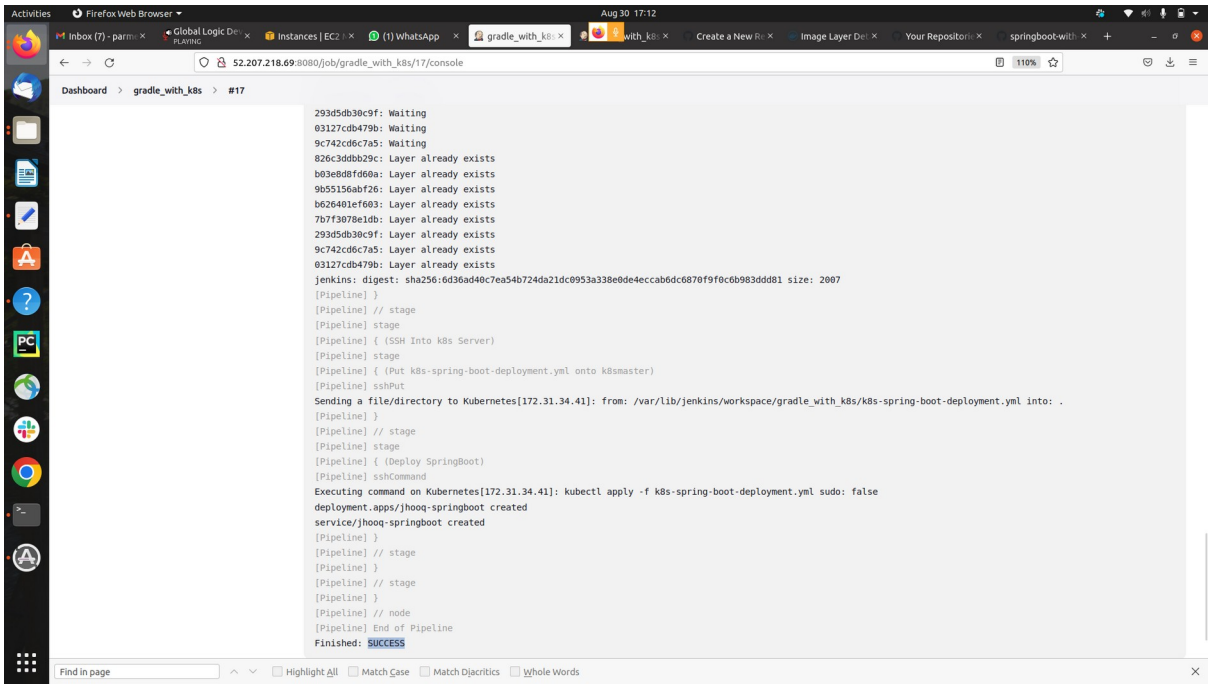
	Git Clone	Gradle Build	Docker Build	Docker Login	Push Image to Docker Hub
Average stage times: (Average full run time: ~25s)	295ms	13s	5s	402ms	3s
#13 Aug 30 16:18 No Changes	205ms	8s	1s	325ms	3s
#11 Aug 30 16:11 No Changes	216ms	9s	1s	480ms	
#10 Aug 30 15:54 No Changes	570ms	30s	7s		



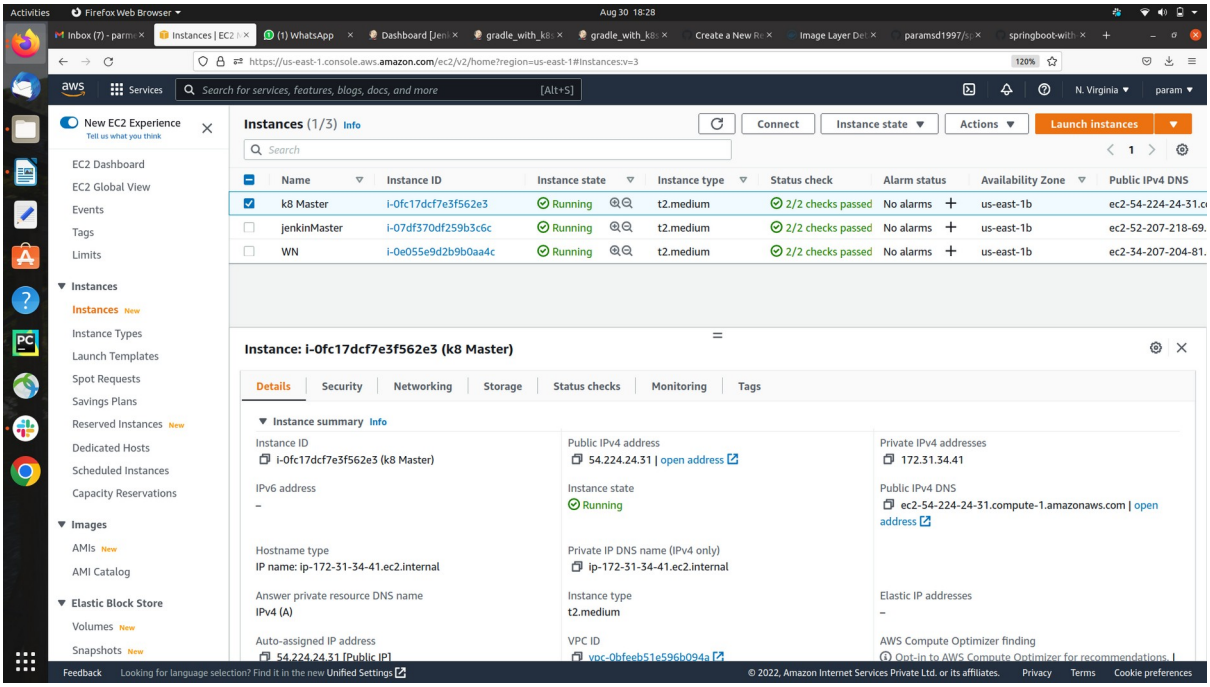
Step 9) Now Moving the yml file to the k8s server using SSH

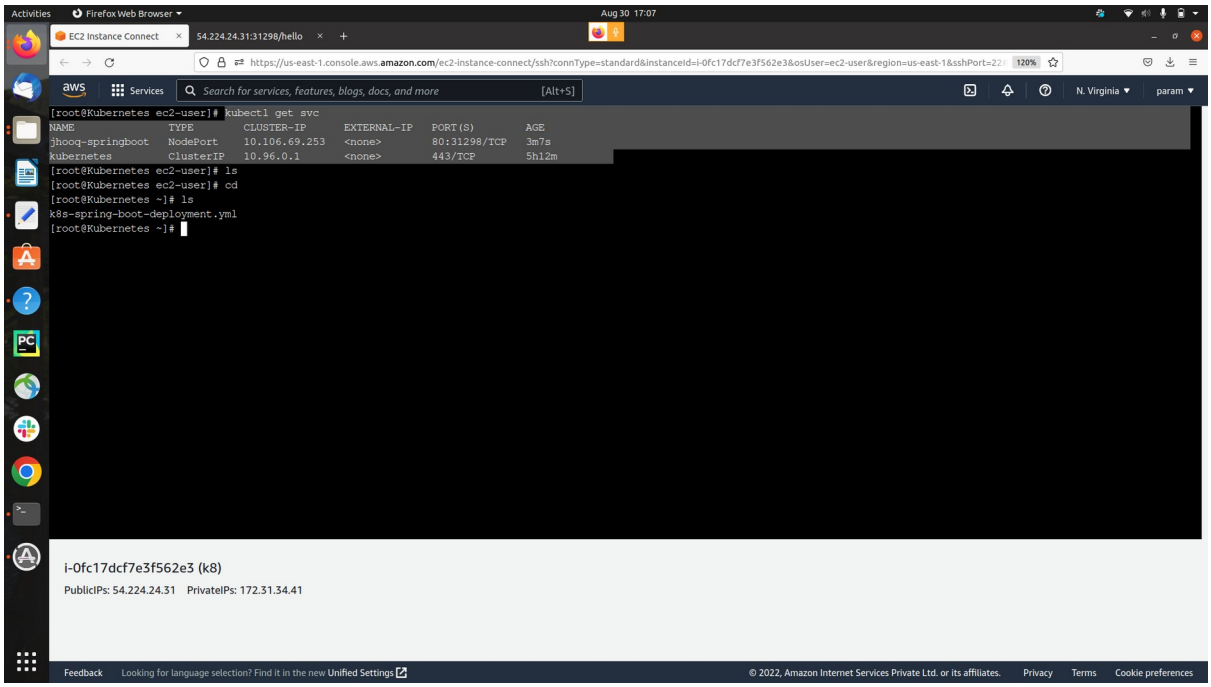



Activities
Firefox Web Browser
Aug 30 17:48
52.207.218.69:8080/job/gradle_with_k8s/configure
Dashboard
gradle_with_k8s
Configuration
General
Advanced Project Options
Pipeline
Script
node {
stage("Git Clone"){
git credentialsId: 'GIT_HUB_CREDENTIALS', url: 'https://github.com/paramsd1997/springboot-with-docker-kub.git'
}
stage('Gradle Build') {
sh './gradlew build'
}
stage("Docker Build"){
sh 'docker version'
sh 'docker build -t jenkins_k8s .'
sh 'docker image list'
sh 'docker tag jenkins_k8s param036/pipelinesteps:jenkins'
}
stage("Docker Login"){
withCredentials([string(credentialsId: 'DOCKER_HUB_PASSWORD', variable: 'PASSWORD')]) {
sh 'docker login -u param036 -p $PASSWORD'
}
}
stage("Push Image to Docker Hub"){
sh 'docker push param036/pipelinesteps:jenkins'
}
stage("SSH Into k8s Server") {
def remote = [:]
remote.name = 'Kubernetes'
remote.host = '172.31.34.41'
remote.user = 'root'
remote.password = '12345678'
remote.allowAnyHosts = true
stage('Put k8s-spring-boot-deployment.yml onto k8smaster') {
sshPut remote: remote, from: 'k8s-spring-boot-deployment.yml', into: '.'
}
stage('Deploy SpringBoot') {
sshCommand remote: remote, command: "kubectl apply -f k8s-spring-boot-deployment.yml"
}
}
}
Save
Apply
Find in page
Highlight All
Match Case
Match Diacritics
Whole Words

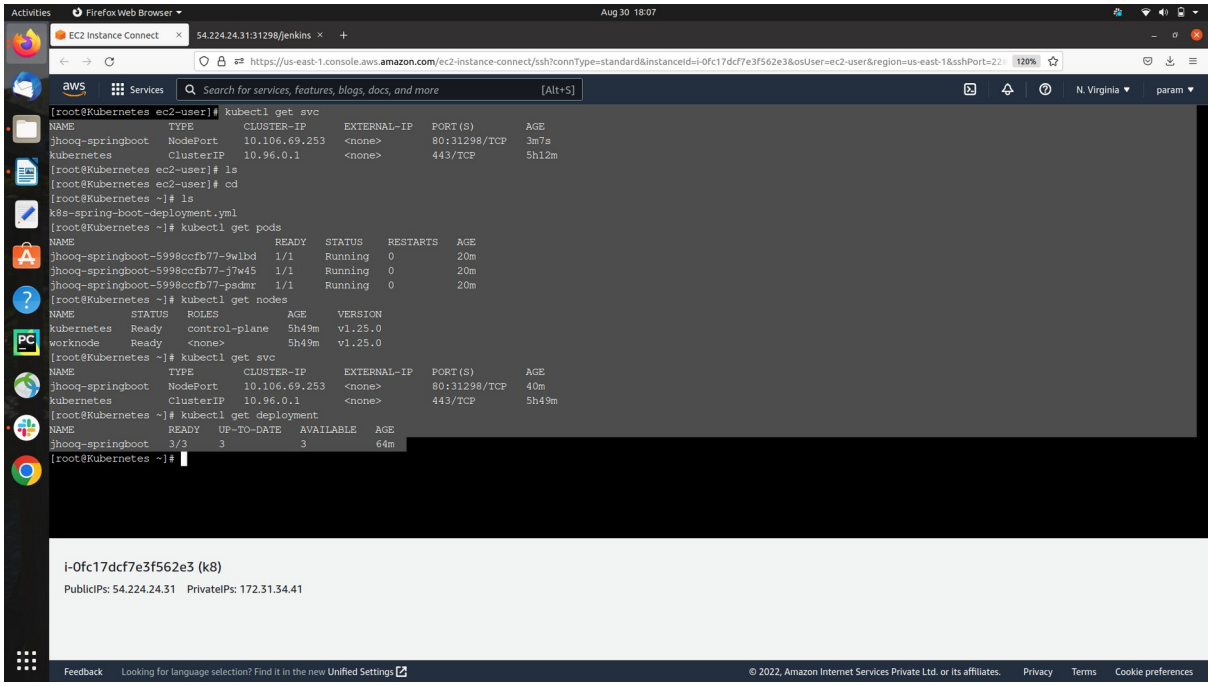

Activities
Firefox Web Browser
Aug 30 17:12
52.207.218.69:8080/job/gradle_with_k8s/17/console
Dashboard
gradle_with_k8s
#17
293d5db30c9f: Waiting
03127cdb479b: Waiting
9c742cd6c7a5: Waiting
826c3ddbb29c: Layer already exists
b03e8d8fd60a: Layer already exists
9b55156abf26: Layer already exists
b626401ef603: Layer already exists
7b7f3078e1db: Layer already exists
293d5db30c9f: Layer already exists
9c742cd6c7a5: Layer already exists
03127cdb479b: Layer already exists
jenkins: digest: sha256:6d36ad40c7ea54b724da21dc0953a338e0de4eccab6dc6870f9f0c6b983ddd81 size: 2007
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (SSH Into k8s Server)
[Pipeline] stage
[Pipeline] { (Put k8s-spring-boot-deployment.yml onto k8smaster)
[Pipeline] sshPut
Sending a file/directory to Kubernetes[172.31.34.41]: from: /var/lib/jenkins/workspace/gradle_with_k8s/k8s-spring-boot-deployment.yml into: .
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy SpringBoot)
[Pipeline] sshCommand
Executing command on Kubernetes[172.31.34.41]: kubectl apply -f k8s-spring-boot-deployment.yml sudo: false
deployment.apps/jhooq-springboot created
service/jhooq-springboot created
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
Find in page
Highlight All
Match Case
Match Diacritics
Whole Words

Public IP Of the Kubernetes M/c

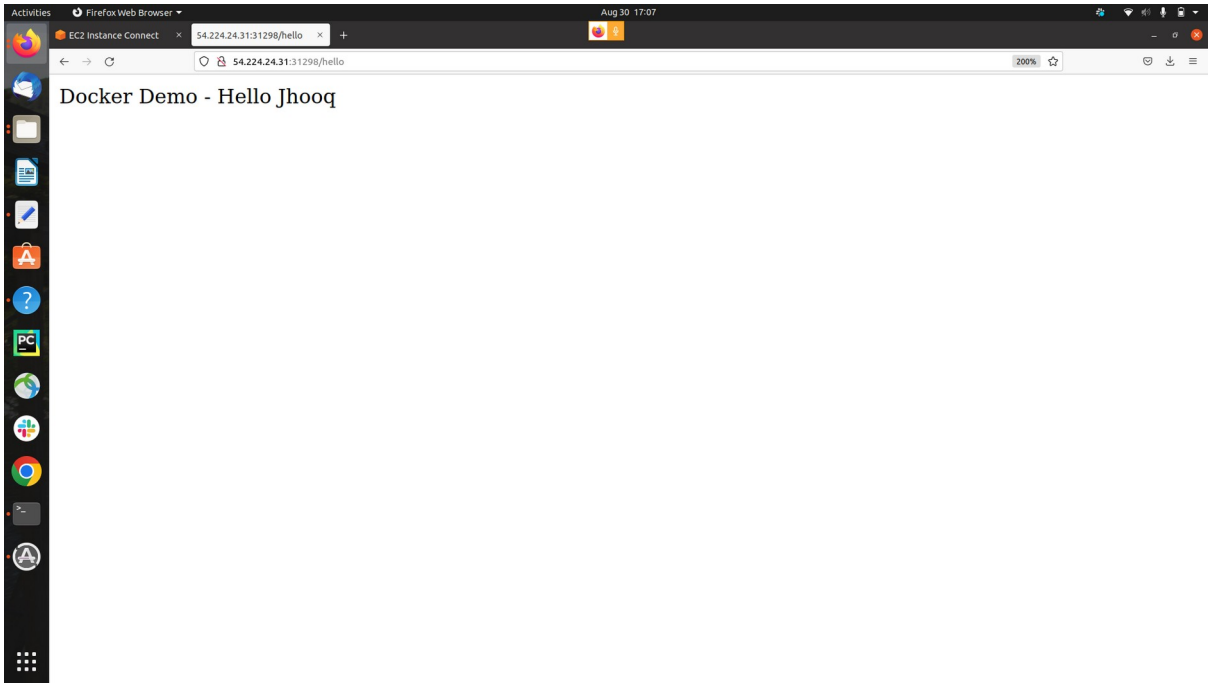




Step 10) Created the pods and container successfully and the NodePort also



Step 11) Successfully Acceesing the Source Code Using the NodePort Server



THANK YOU !!