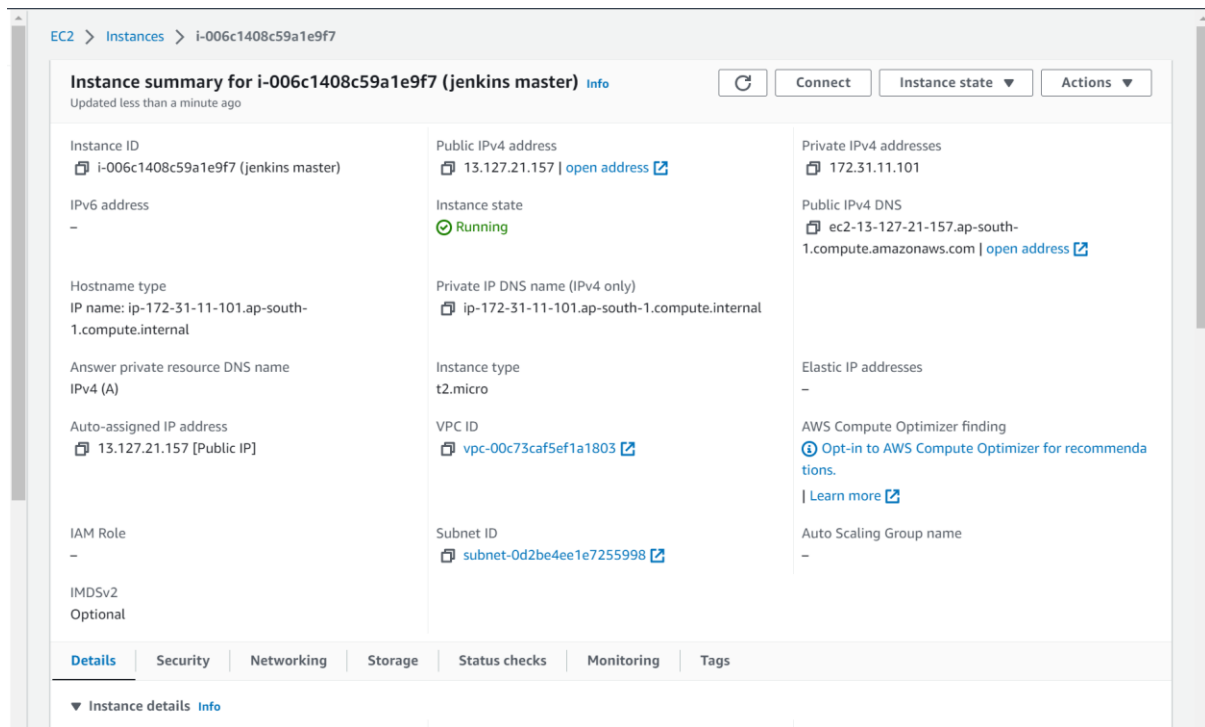
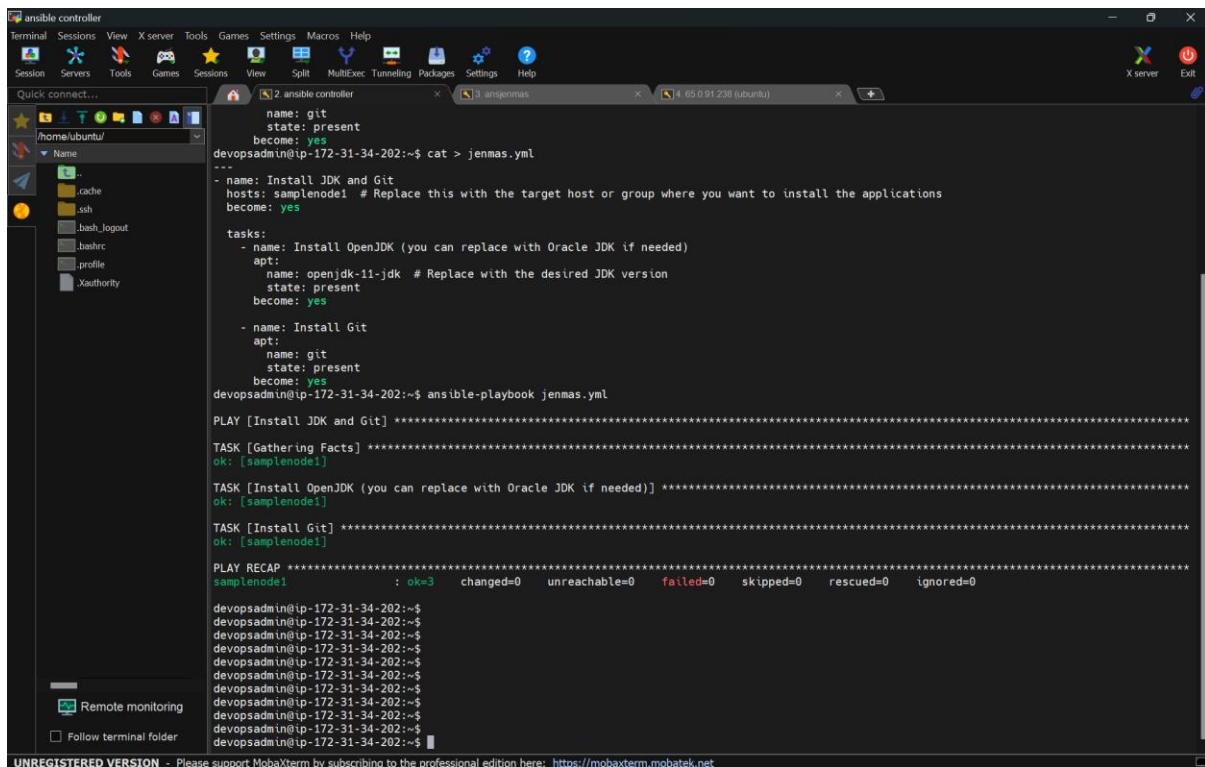


Summary: Creating an end-to-end CI/CD pipeline for Java application using Jenkins, Maven, Docker, Ansible and deployment using Kubernetes.

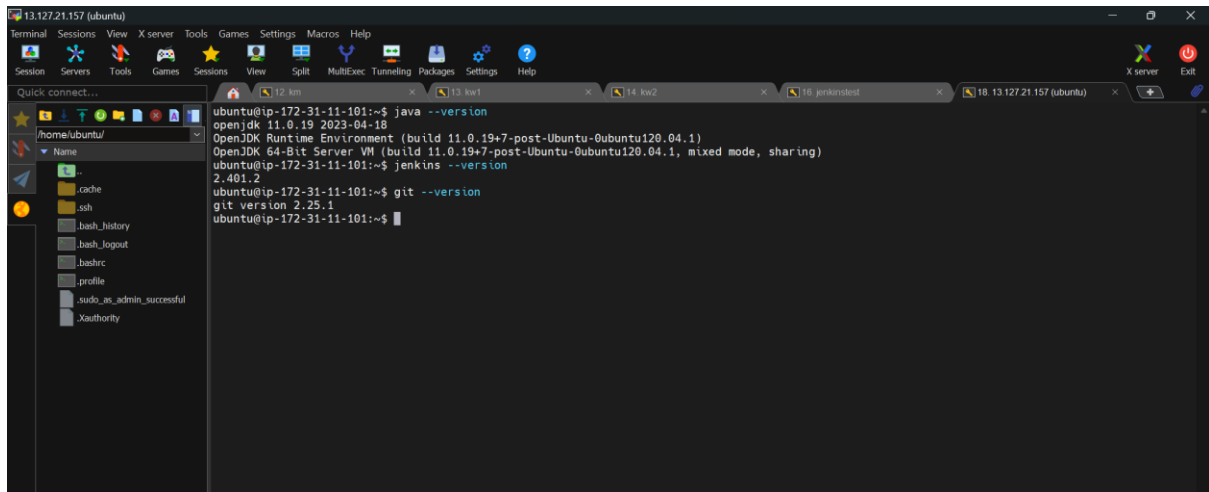
Creating EC2 instances for Jenkins



Installing Java, Git through Ansible in Jenkins Master.

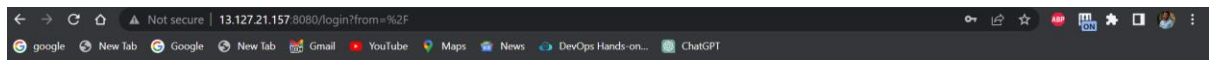


Checking the versions of the installed packages for confirmation.

A terminal window titled '13.127.21.157 (ubuntu)' with a menu bar (Terminal, Sessions, View, X server, Tools, Games, Settings, Macros, Help) and a toolbar. The left sidebar shows a file explorer for '/home/ubuntu/' with folders like '.cache', '.ssh', and files like '.bash_history'. The terminal output shows the following commands and their results:

```
ubuntu@ip-172-31-11-101:~$ java --version
openjdk 11.0.19 2023-04-18
OpenJDK Runtime Environment (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-Bit Server VM (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
ubuntu@ip-172-31-11-101:~$ jenkins --version
2.401.2
ubuntu@ip-172-31-11-101:~$ git --version
git version 2.25.1
ubuntu@ip-172-31-11-101:~$
```

Entering into Jenkins web page

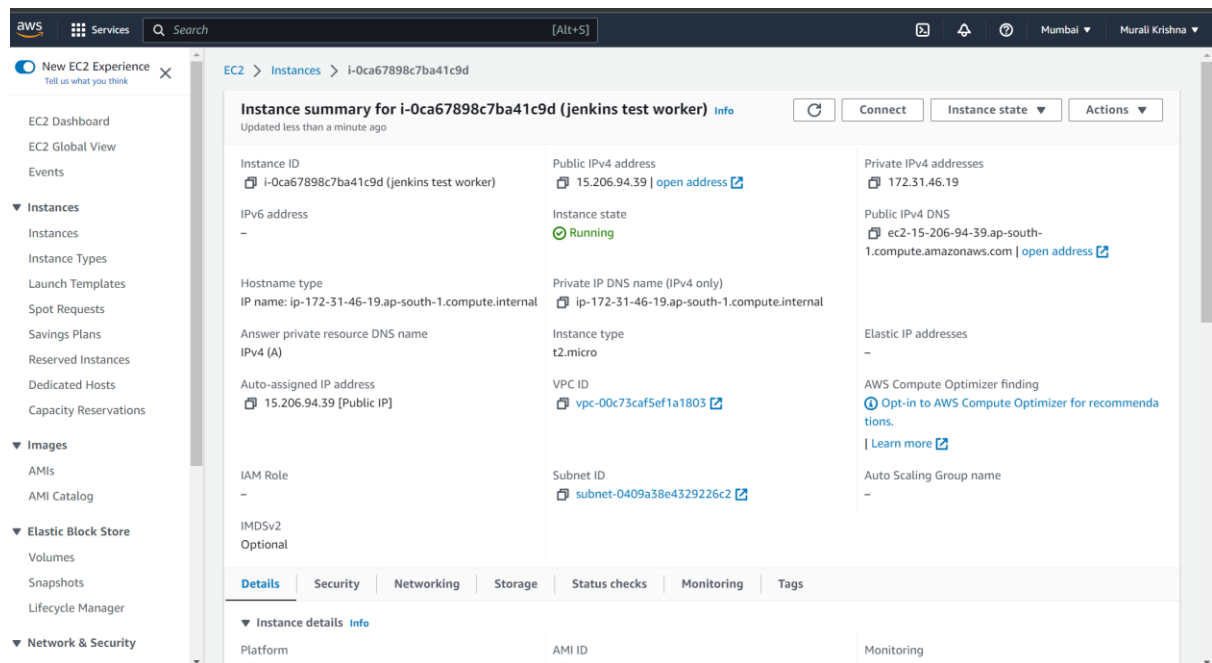


Welcome to Jenkins!

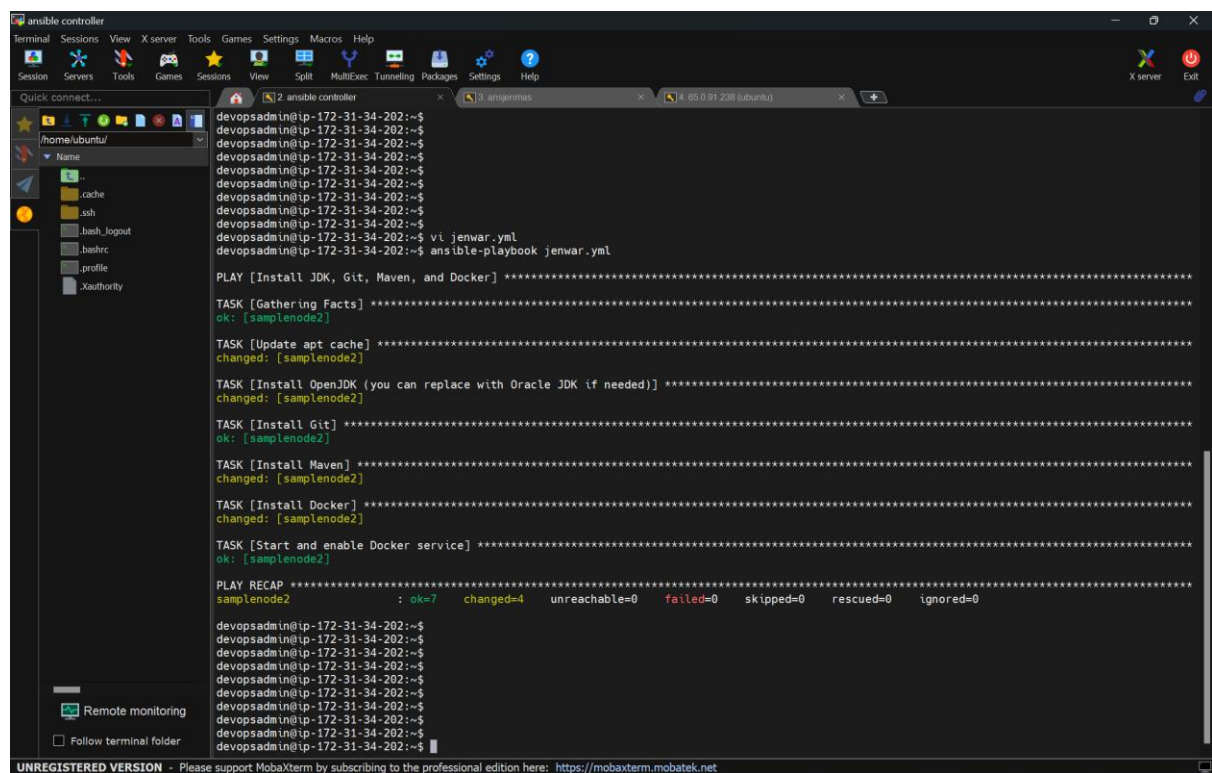
☐ Keep me signed in

Sign in

Launching EC2 instance which will be used as Jenkins working node

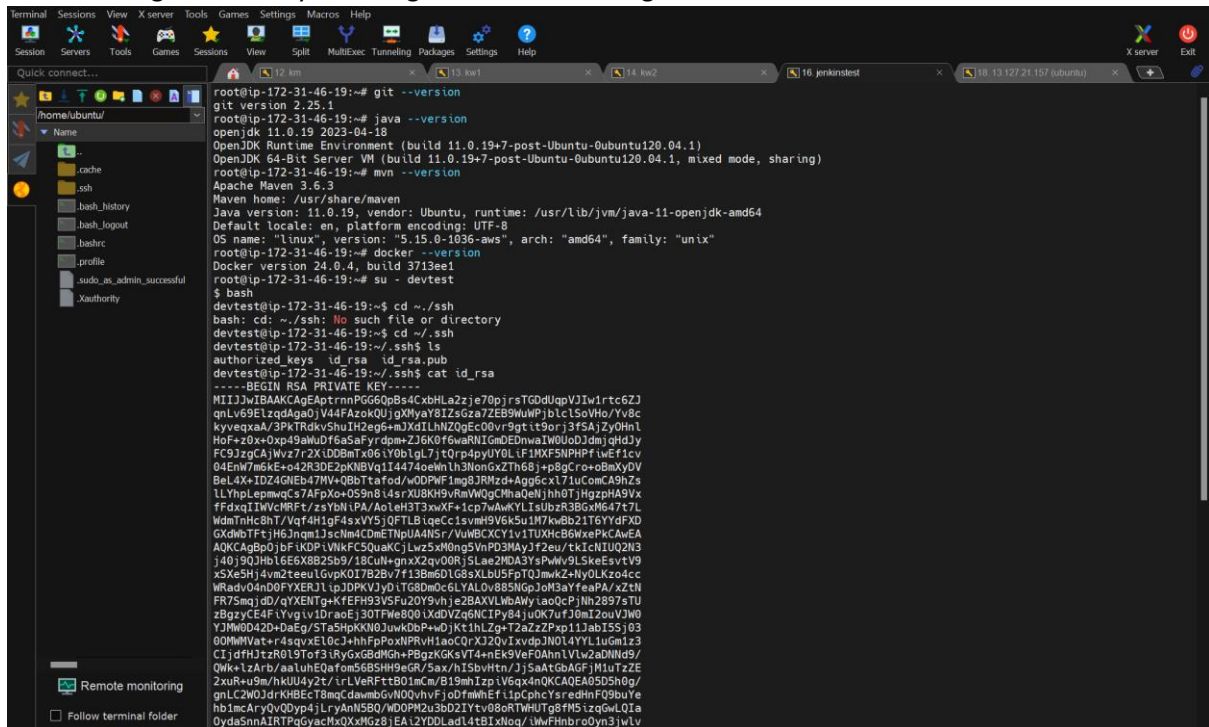


Installing the JDK, GIT, MAVEN and Docker packages through Ansible.



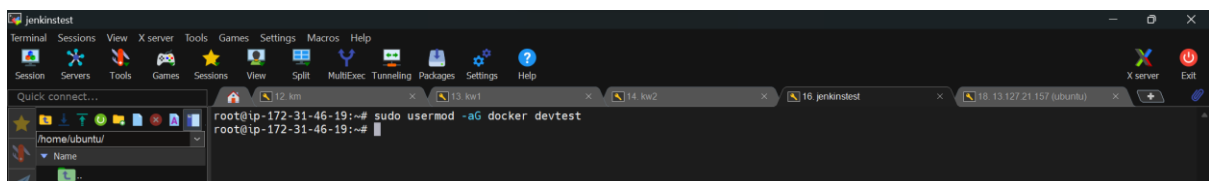
Checking the versions of the installed packages in Jenkins working Node

And creating the SSH key to configure Jenkins working Node to Jenkins Master

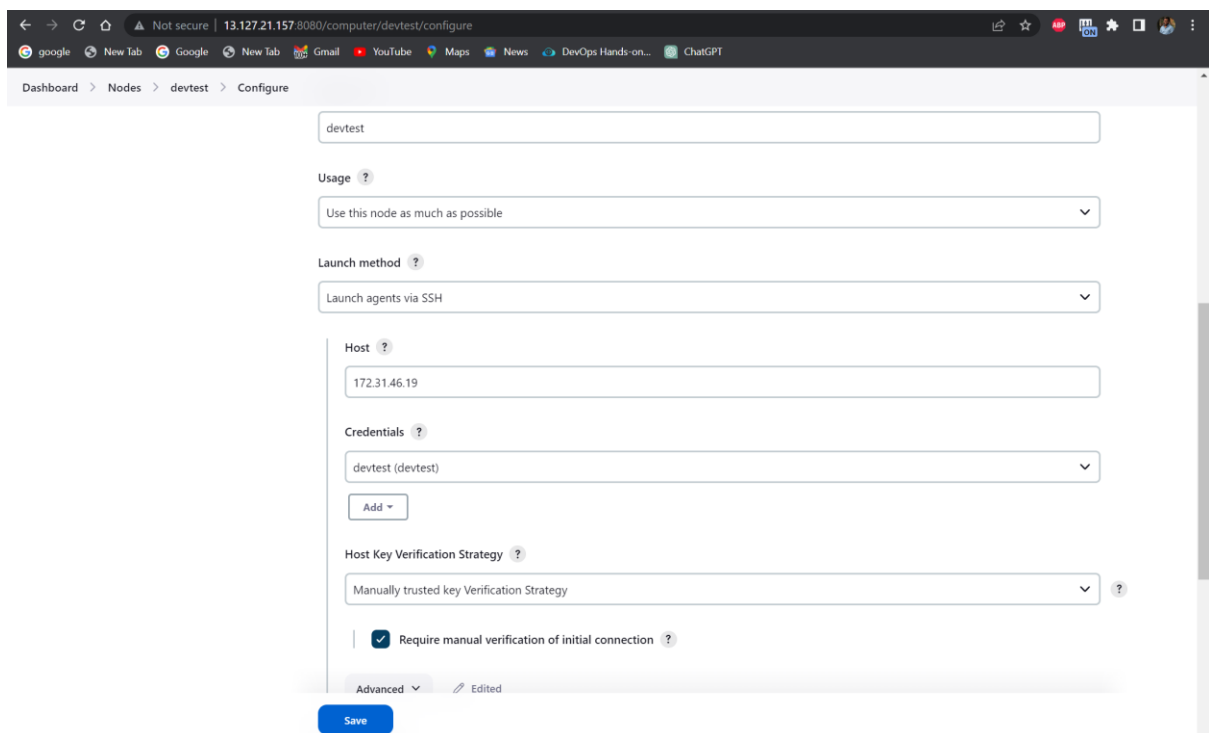


```
root@ip-172-31-46-19:~# git --version
git version 2.25.1
root@ip-172-31-46-19:~# java --version
openjdk 11.0.19 2023-04-18
OpenJDK Runtime Environment (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1)
OpenJDK 64-Bit Server VM (build 11.0.19+7-post-Ubuntu-0ubuntu120.04.1, mixed mode, sharing)
root@ip-172-31-46-19:~# mvn --version
Apache Maven 3.6.3
Maven home: /usr/share/maven
Java version: 11.0.19, vendor: Ubuntu, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1036-aws", arch: "amd64", family: "unix"
root@ip-172-31-46-19:~# docker --version
Docker version 24.0.4, build 3713ee1
root@ip-172-31-46-19:~# su - devtest
devtest@ip-172-31-46-19:~$ cd ~/.ssh
bash: cd: ~/.ssh: No such file or directory
devtest@ip-172-31-46-19:~$ cd ~/.ssh
devtest@ip-172-31-46-19:~$ ls
authorized_keys  id_rsa  id_rsa.pub
devtest@ip-172-31-46-19:~$ ssh-keygen -t rsa -C "devtest@ip-172-31-46-19"
Generating public/private rsa key pair.
Enter file in which to save the key (/home/devtest/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/devtest/.ssh/id_rsa
Your public key has been saved in /home/devtest/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:MIJ1JwIBAACKAgEApTrnnPGG6OpBs4CxbHL2je70pJrsTGDQUpVJ1wrtc6ZJ
qnLv69ELzqdAga0jV44FAzok0UjgXMya8IZsGza7ZEB9mWpjb1clS0VoHo/Yv8c
kyveqxA/3PkTRdkvShuIH2eg+mJXdlhNZQeC0vrr9gtit9orj3f5AjZy0HnI
HoF+20xOxp49awDf6aSaFyrdpm+ZJ6K0f6waRNLc0EdnwaIWB0b0JdmqHdJy
FC9JzgCAjWvZ7r2Xl008mX06Y08lgl7jt0rP4pyUY0LlFJMXfSNRPfUwEfCv
04EnW7m6xE+o42R3DE2pKNBVqI14474oeMnLh3NonGzZTh68j+pbGcro+oBmXyDV
BeL4X+IDZ4GHEb47MW+QBbTtaFod/vODPMWF1mg8JRMZd+Agg6cx171uComCAhZs
LLYhpLepmwQs7AFpXo+OS9n814srXU8KH9vRmVWQgCmhaQeNjh0TjHgzPHA9Vx
fFdxqI1WvcMRfT/zsYbNlPA/AoLeH3T3xwXf+1cp7wAwKYLIsUbr3B8xM647t7L
WdmTnHc8hT/vq4H1g4sXV15jQFTLB1qeCcisvm9V6K5u1W7kwB21T6YfdFXD
GXdbTFtjH6Jnq135oNmCDmETNqU4MNSr/VuBCKxy1v1TUXHc86mxePKAcEA
AQKCAgBp0jBfIKDPiVnkFC5QuaKcjLw25xM0nq5VnPD3M4yJf2eu/tk1cNIUQ2N3
j40j9QJHb16E6X8B25b9/18cuH+gnxx2qV00RjSLae2MDA3YpWwV9LSkeEsvtV9
xSx5Hj4vm2teeuL6vPK0I7B2bv7f13Bm6DLG8sXLBu5FpTQJmwKZ+NyOLKzo4cc
WRadV04nD0FYXERJLipJDPKVjy0tTGSdM0c6LYALDv88SNGpJ0M3aYfaPA/xZtN
FR7Smqjdd/qXENTg+KtFEH93VSFu20Y9vnhJeZBAXVLbAMyLaoQcPJNh28975TU
fBgzrCE4fYvgvuoBj30TfMe00UXdVZ6GmCTPy84jw0K7urJ0m12ouVJW0
YJMWQD42D+0aeg/STaShpKN0JuwkDbP+0Jk1hLZg+T2aZzZp11Jab155j03
00MmWVat+r4sqvxE10cJ+hhFpPxNPRVhIaoCQrXJ20v1xvdpJN0L1YLL1uGm1z3
CIjdFHJtzR019toF3iRyGxGBdHgh+PBgzKKGsVT4+nEK9VeFOAhnlVLW2aDNNd9/
QWk+LzArb/aaluhEQafom56B5HH9eGR/5ax/h15bvHtn/JJ5aAtGbAGFJMuTzZE
2xuR+u9m/hkU4y2t/1rLVeRFT+80Jfcm/B19mhIzpLV6qx4nQKCAQEA850Sh0g/
gnLCw0JdrKMBEct8mGdmbGvN00mhuVfj0TmhmEftipCphYsredhNFQbuYe
hb1mcArYvQDyp4jLrYAnN580/N00PM2u3bD21Ytv08oRTMHUTg8fMS1zqGwLQ1a
Oyda5nAIRPqGyacMxQXMGz8jEAi2YDDad14tBIxNoq/iWfHnbro0yn3jWLV
```

Configuring Jenkins working Node to Jenkins Master



```
jenkintest
root@ip-172-31-46-19:~# sudo usermod -s /bin/bash devtest
root@ip-172-31-46-19:~#
```



Dashboard > Nodes > devtest > Configure

devtest

Usage ?
Use this node as much as possible

Launch method ?
Launch agents via SSH

Host ?
172.31.46.19

Credentials ?
devtest (devtest)

Add +

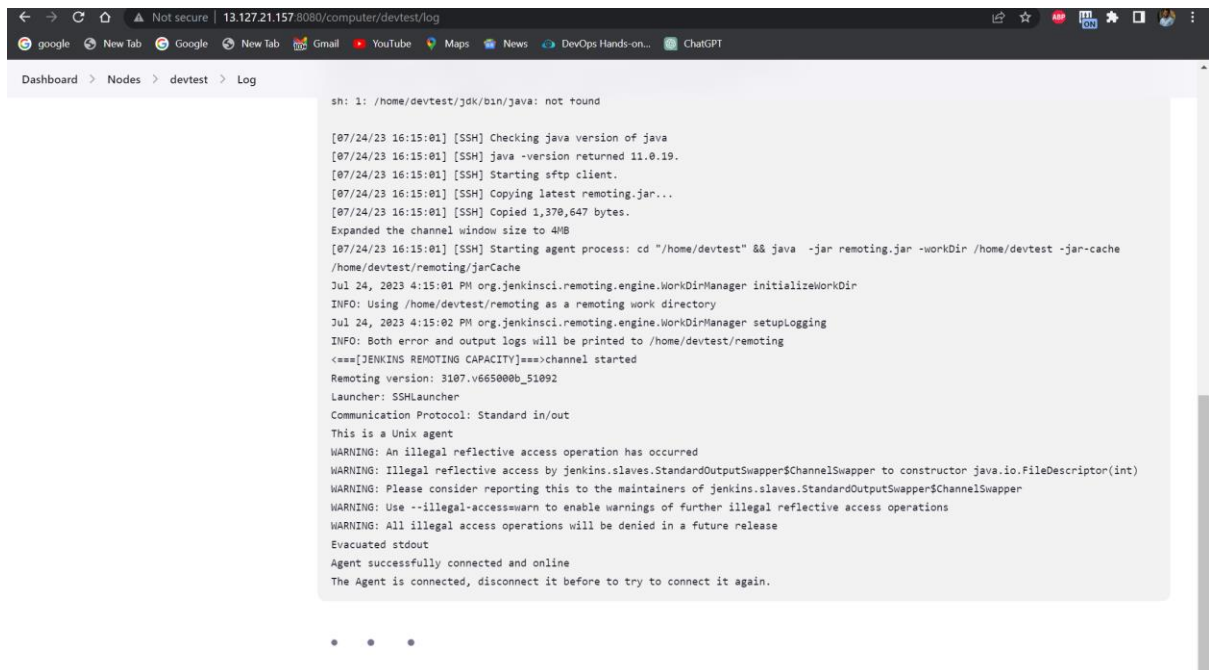
Host Key Verification Strategy ?
Manually trusted key Verification Strategy

☒ Require manual verification of initial connection ?

Advanced ▾ Edited

Save

Checking the Agent Connection.

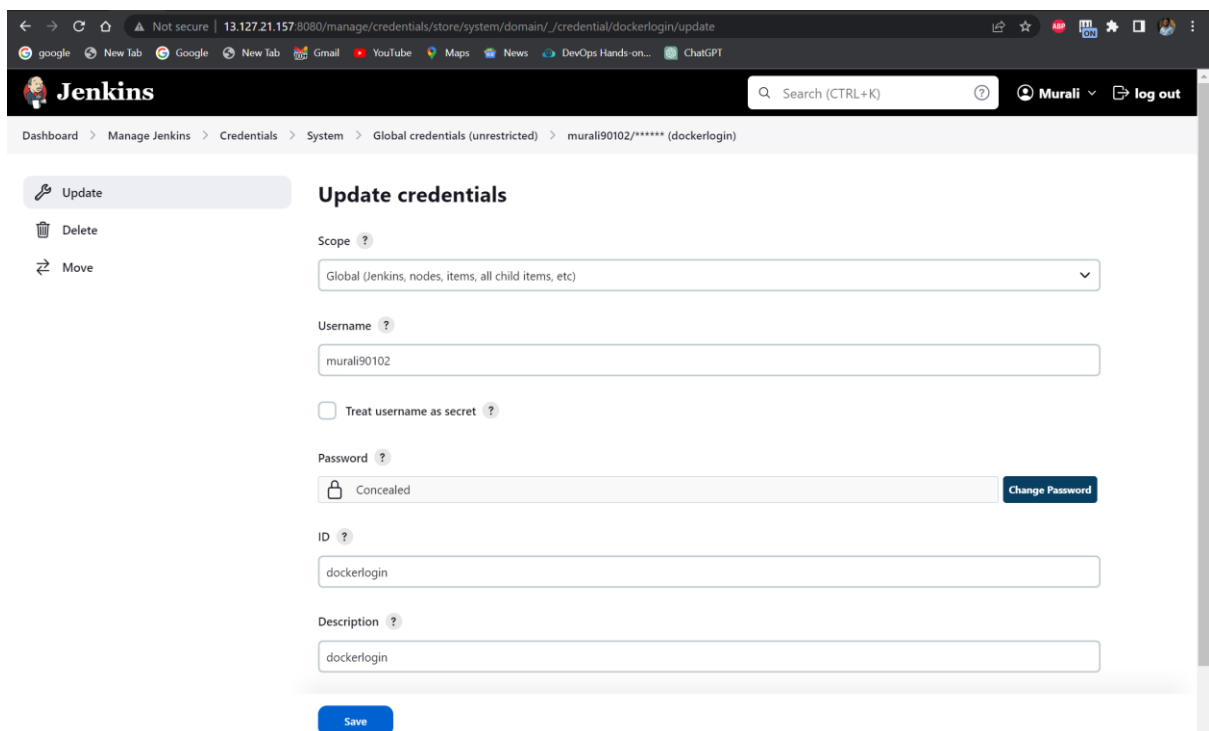


The screenshot shows a terminal window with the following content:

```
sh: 1: /home/devtest/jdk/bin/java: not found

[07/24/23 16:15:01] [SSH] Checking java version of java
[07/24/23 16:15:01] [SSH] java -version returned 11.0.19.
[07/24/23 16:15:01] [SSH] Starting sftp client.
[07/24/23 16:15:01] [SSH] Copying latest remoting.jar...
[07/24/23 16:15:01] [SSH] Copied 1,370,647 bytes.
Expanded the channel window size to 4MB
[07/24/23 16:15:01] [SSH] Starting agent process: cd "/home/devtest" && java -jar remoting.jar -workDir /home/devtest -jar-cache /home/devtest/remoting/jarCache
Jul 24, 2023 4:15:01 PM org.jenkinsci.remoting.engine.WorkDirManager initializeWorkDir
INFO: Using /home/devtest/remoting as a remoting work directory
Jul 24, 2023 4:15:02 PM org.jenkinsci.remoting.engine.WorkDirManager setupLogging
INFO: Both error and output logs will be printed to /home/devtest/remoting
<===[JENKINS REMOTING CAPACITY]===>channel started
Remoting version: 3107.v665000b_51092
Launcher: SSHLauncher
Communication Protocol: Standard in/out
This is a Unix agent
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by jenkins.slaves.StandardOutputSwapper$ChannelSwapper to constructor java.io.FileDescriptor(int)
WARNING: Please consider reporting this to the maintainers of jenkins.slaves.StandardOutputSwapper$ChannelSwapper
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
Evacuated stdout
Agent successfully connected and online
The Agent is connected, disconnect it before to try to connect it again.
```

Adding the DockerHub login credentials in Jenkins



The screenshot shows the Jenkins 'Update credentials' form for a DockerHub login. The form is titled 'Update credentials' and has a 'Scope' dropdown set to 'Global (Jenkins, nodes, items, all child items, etc)'. The 'Username' field is filled with 'murali90102'. The 'Password' field is labeled 'Concealed' and has a 'Change Password' button. The 'ID' field is filled with 'dockerlogin'. The 'Description' field is filled with 'dockerlogin'. There is a 'Save' button at the bottom.

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) > murali90102/***** (dockerlogin)

Update credentials

Scope ?
Global (Jenkins, nodes, items, all child items, etc)

Username ?
murali90102

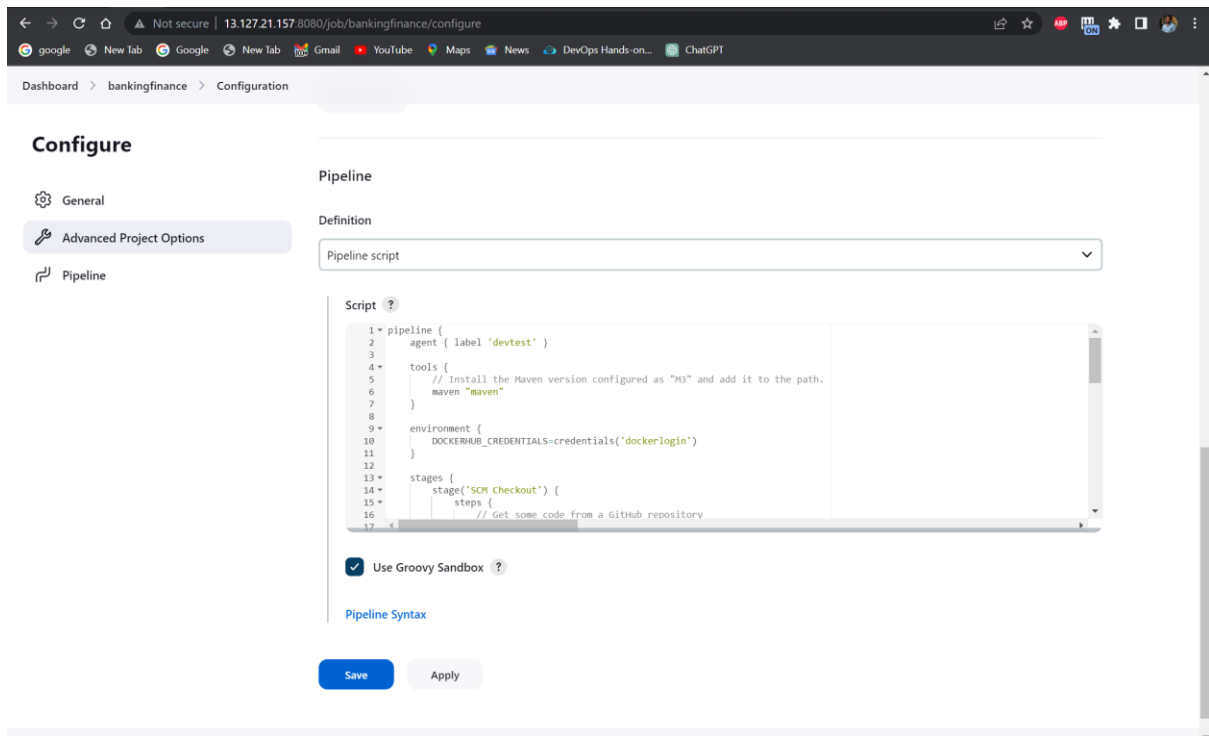
☐ Treat username as secret ?

Password ?
Concealed Change Password

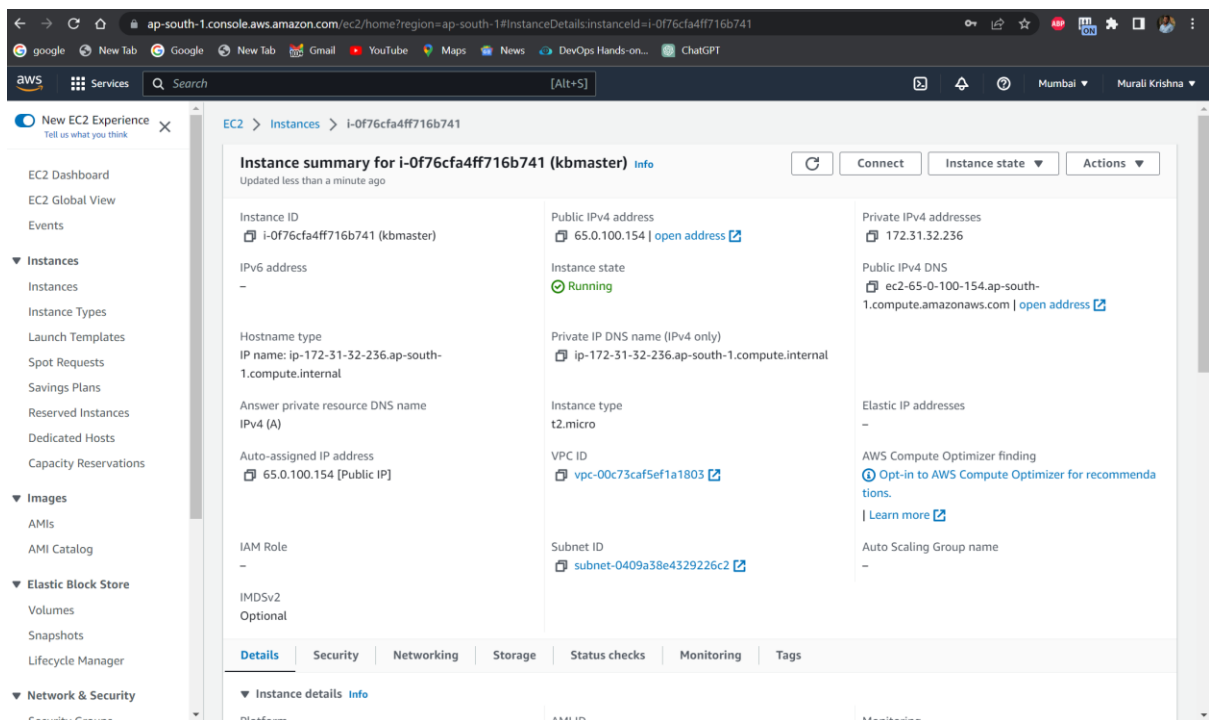
ID ?
dockerlogin

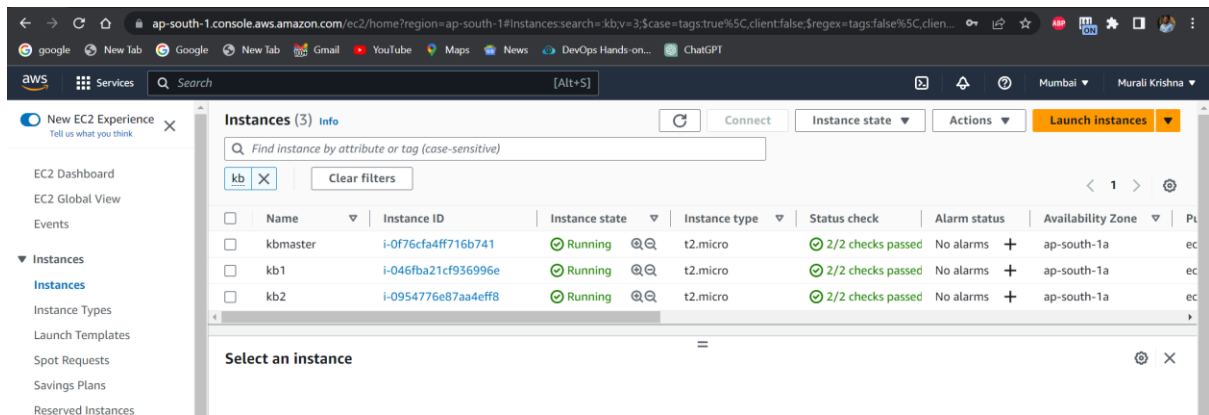
Description ?
dockerlogin

Save

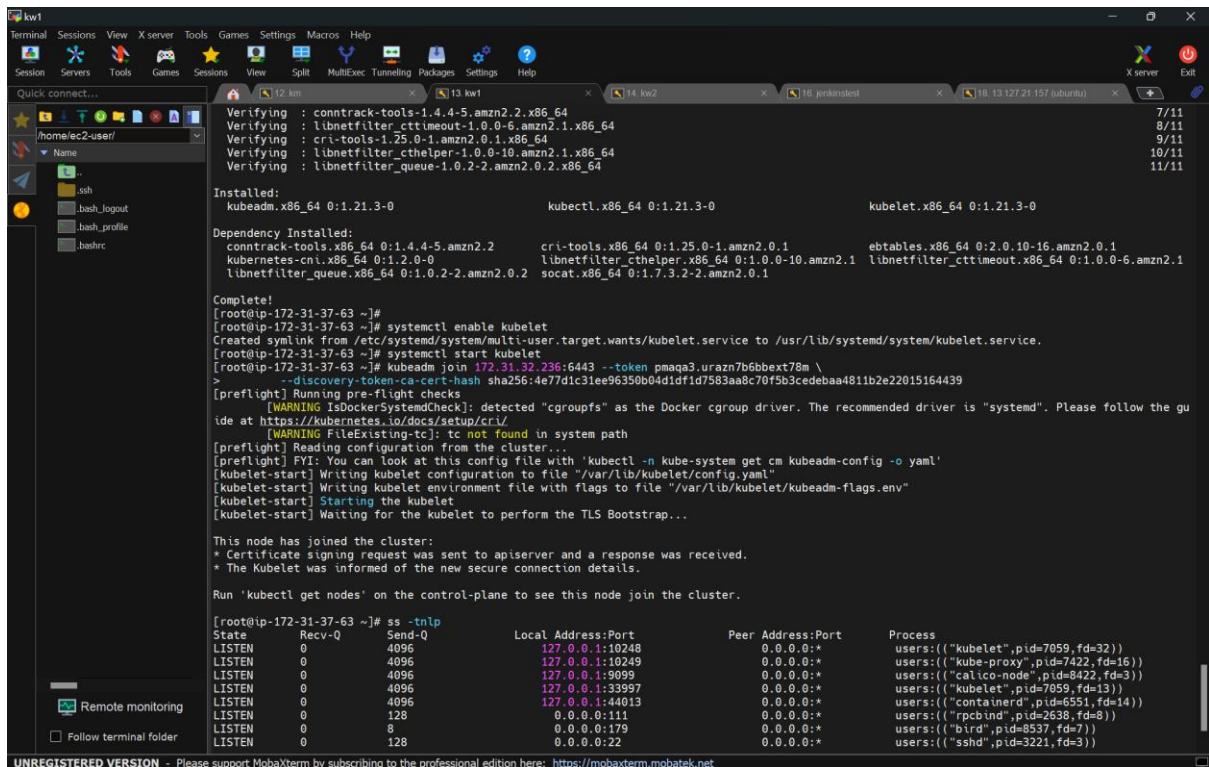


Creating instances for Kubernetes master(kbmaster) and working nodes 1(kb1) and 2(kb2)





Installing Kubernetes in Kubernetes Master Instance and worker nodes instances.



```
kw2
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/ec2-user/
Name
ssh
bash_logout
bash_profile
bashrc

Installing : kubelet-1.21.3-0.x86_64 9/11
Installing : kubectcl-1.21.3-0.x86_64 10/11
Installing : kubeadm-1.21.3-0.x86_64 11/11
Verifying : kubectcl-1.21.3-0.x86_64 1/11
Verifying : socat-1.7.3.2-2.amzn2.0.1.x86_64 2/11
Verifying : kubernetes-cni-1.2.0-0.x86_64 3/11
Verifying : ebtables-2.0.10-16.amzn2.0.1.x86_64 4/11
Verifying : kubeadm-1.21.3-0.x86_64 5/11
Verifying : kubelet-1.21.3-0.x86_64 6/11
Verifying : conntrack-tools-1.4.4-5.amzn2.2.x86_64 7/11
Verifying : libnetfilter_cttimeout-1.0.0-6.amzn2.1.x86_64 8/11
Verifying : cri-tools-1.25.0-1.amzn2.0.1.x86_64 9/11
Verifying : libnetfilter_cthelper-1.0.0-10.amzn2.1.x86_64 10/11
Verifying : libnetfilter_queue-1.0.2-2.amzn2.0.2.x86_64 11/11

Installed:
kubeadm.x86_64 0:1.21.3-0 kubectcl.x86_64 0:1.21.3-0 kubelet.x86_64 0:1.21.3-0

Dependency Installed:
conntrack-tools.x86_64 0:1.4.4-5.amzn2.2 cri-tools.x86_64 0:1.25.0-1.amzn2.0.1 ebtables.x86_64 0:2.0.10-16.amzn2.0.1
kubernetes-cni.x86_64 0:1.2.0-0 libnetfilter_cthelper.x86_64 0:1.0.0-10.amzn2.1 libnetfilter_cttimeout.x86_64 0:1.0.0-6.amzn2.1
libnetfilter_queue.x86_64 0:1.0.2-2.amzn2.0.2 socat.x86_64 0:1.7.3.2-2.amzn2.0.1

Complete!
[root@ip-172-31-38-236 ~]# systemctl enable kubelet
Created symlink from /etc/systemd/system/multi-user.target.wants/kubelet.service to /usr/lib/systemd/system/kubelet.service.
[root@ip-172-31-38-236 ~]# systemctl start kubelet
[root@ip-172-31-38-236 ~]# kubeadm join 172.31.32.236:6443 --token pmaqa3.ura3n7b6bbext78m \
> --discovery-token-ca-cert-hash sha256:4e77d1c31ee96350b04d1df1d7583aa8c70f5b3cedebaa4811b2e22015164439
[preflight] Running pre-flight checks
[WARNING IsDockerSystemdCheck]: detected "cgroups" as the Docker cgroup driver. The recommended driver is "systemd". Please follow the gu
ide at https://kubernetes.io/docs/setup/cry/
[WARNING FileExisting-tc]: tc not found in system path
[preflight] FYI: You can look at this config file with 'kubectcl -n kube-system get cm kubeadm-config -o yaml'
[kubelet-start] Writing kubelet configuration to file "/var/lib/kubelet/config.yaml"
[kubelet-start] Writing kubelet environment file with flags to file "/var/lib/kubelet/kubeadm-flags.env"
[kubelet-start] Starting the kubelet
[kubelet-start] Waiting for the kubelet to perform the TLS Bootstrap...

This node has joined the cluster:
* Certificate signing request was sent to apiserer and a response was received.
* The Kubelet was informed of the new secure connection details.

Run 'kubectcl get nodes' on the control-plane to see this node join the cluster.
[root@ip-172-31-38-236 ~]# ss -tlnp
```

Checking the number of nodes available for Kubernetes Master

```
km
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/ec2-user/
Name
ssh
bash_logout
bash_profile
bashrc

[root@ip-172-31-32-236 ~]# kubectcl get nodes
NAME STATUS ROLES AGE VERSION
ip-172-31-32-236.ap-south-1.compute.internal Ready control-plane,master 6h51m v1.21.3
ip-172-31-37-63.ap-south-1.compute.internal Ready <none> 6h48m v1.21.3
ip-172-31-38-236.ap-south-1.compute.internal Ready <none> 6h48m v1.21.3
[root@ip-172-31-32-236 ~]#
```


Configuring the Kubernetes Master server to Jenkins Master through SSH key and generating the pipeline script.

Dashboard > Manage Jenkins > System >

SSH Servers

SSH Server

Name ?
kubernetes

Hostname ?
172.31.32.236

Username ?
root

Remote Directory ?
/root

☐ Avoid sending files that have not changed ?

Advanced

Edited

Test Configuration

Save

Apply

Not secure | 13.127.21.157:8080/job/bankingfinance/pipeline-syntax/

google New Tab Google New Tab Gmail YouTube Maps News DevOps Hands-on... ChatGPT

Dashboard > bankingfinance > Pipeline Syntax

Advanced

Add Transfer Set

Add Server

Advanced

Generate Pipeline Script

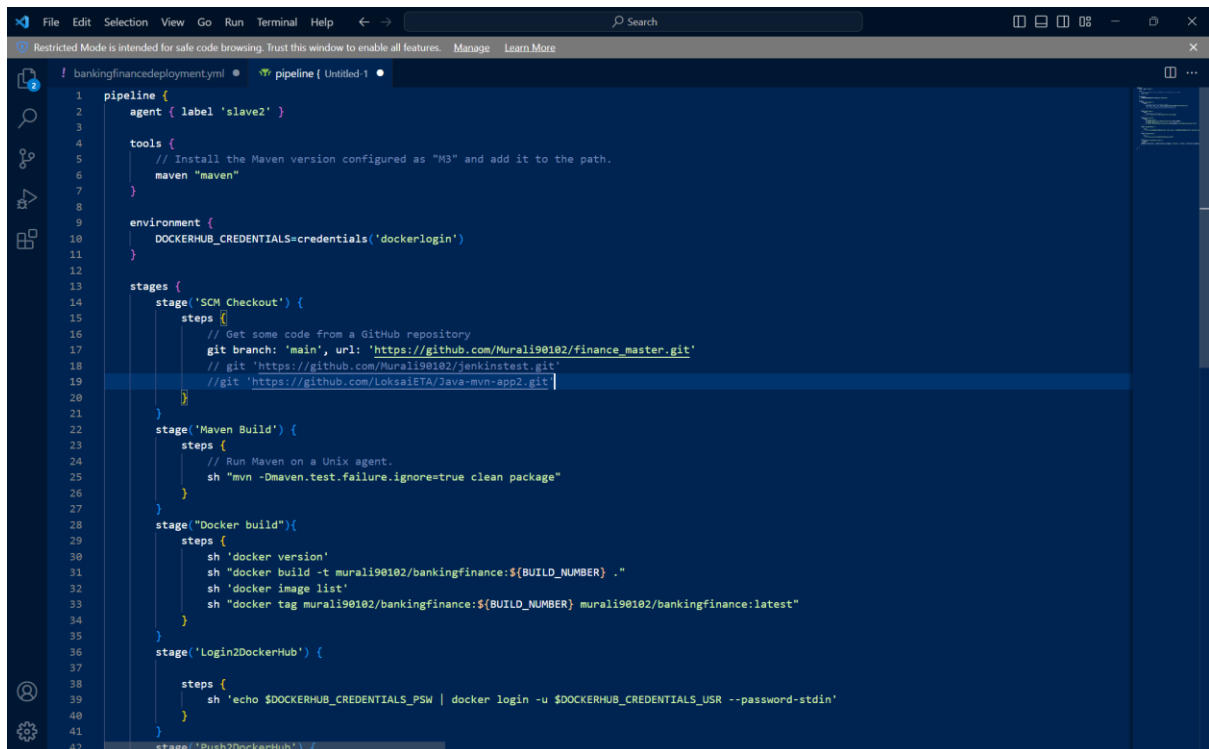
sshPublisher(publishers: [sshPublisherDesc(configName: 'kubernetes', transfers: [sshTransfer(cleanRemote: false, excludes: '', execCommand: 'kubectl apply -f bankingfinancedeployment.yml', execTimeout: 120000, flatten: false, makeEmptyDirs: false, noDefaultExcludes: false, patternSeparator: '[,]+', remoteDirectory: '', remoteDirectorySDF: false, removePrefix: '', sourceFiles: 'bankingfinancedeployment.yml')], usePromotionTimestamp: false, useWorkspaceInPromotion: false, verbose: false)])

Global Variables

There are many features of the Pipeline that are not steps. These are often exposed via global variables, which are not supported by the snippet generator. See the [Global Variables Reference](#) for details.

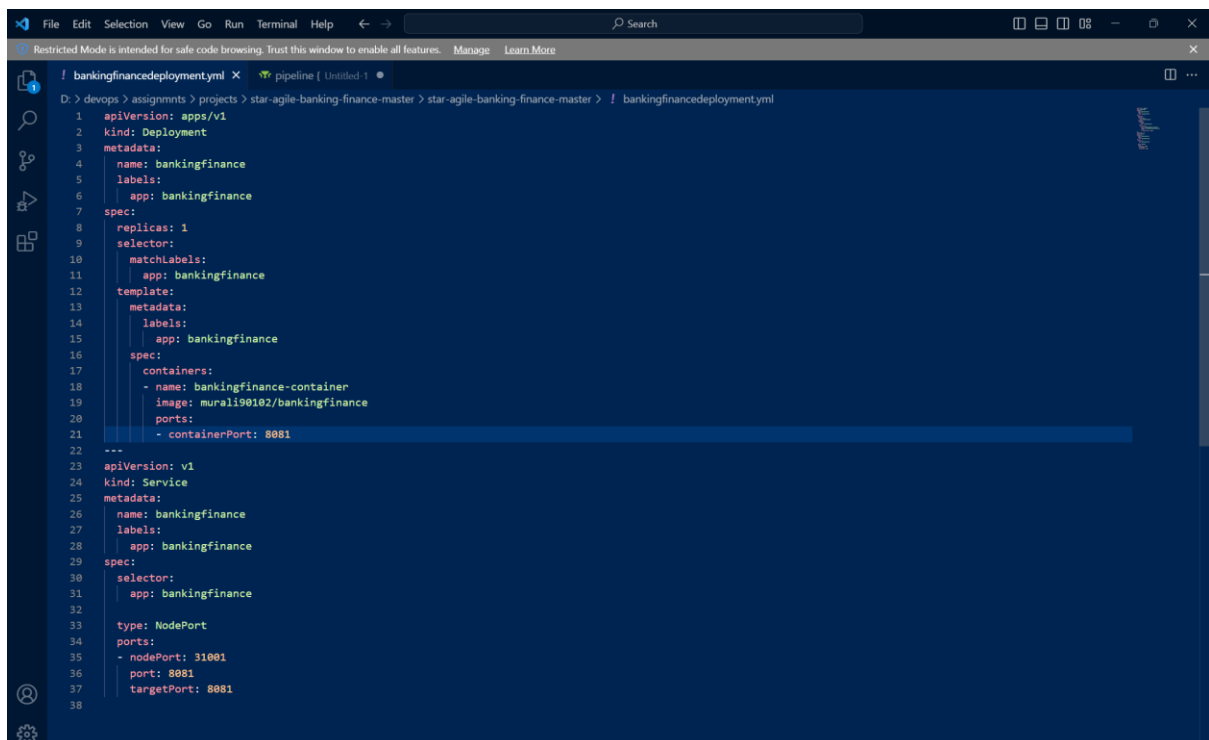
Jenkins 2.401.2

Coding the script in VS Code where we enter all the required commands for the source code to checkout, to build the project using Maven and to create a Docker image and push it into the Docker hub using the given credentials.



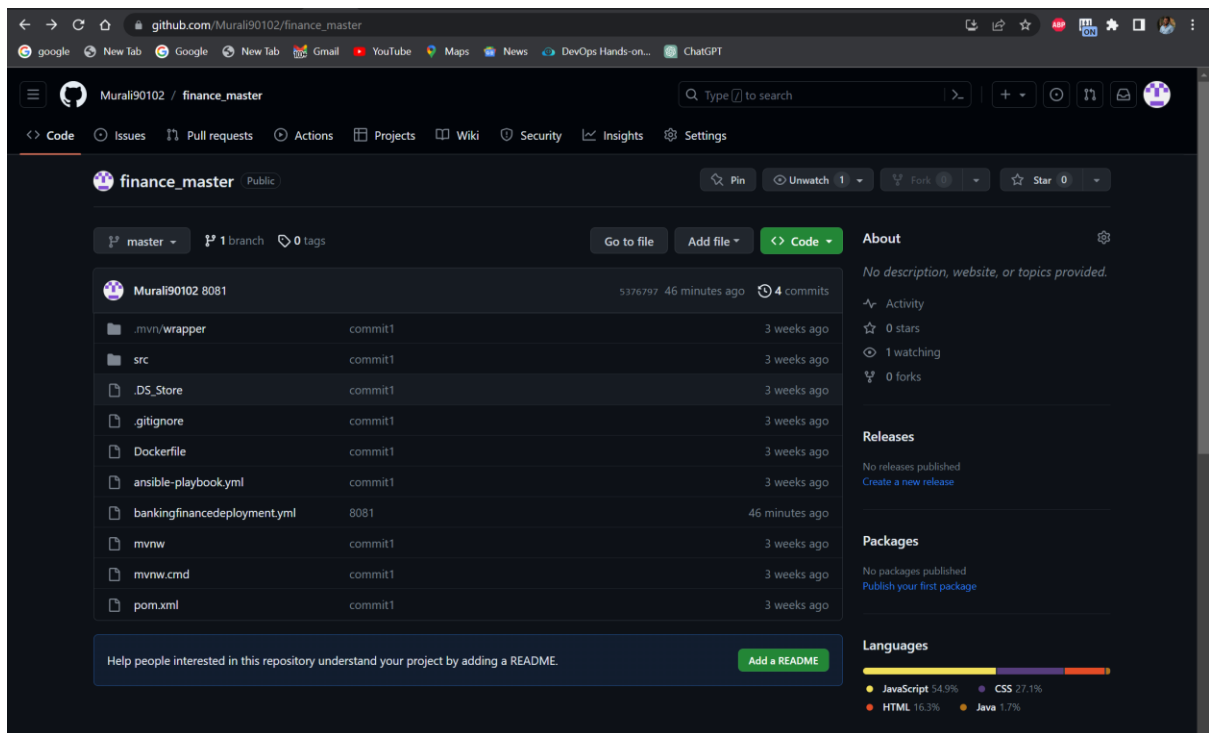
```
1 pipeline {
2   agent { label 'slave2' }
3
4   tools {
5     // Install the Maven version configured as "M3" and add it to the path.
6     maven "maven"
7   }
8
9   environment {
10    DOCKERHUB_CREDENTIALS=credentials('dockerlogin')
11  }
12
13  stages {
14    stage('SCM Checkout') {
15      steps {
16        // Get some code from a GitHub repository
17        git branch: 'main', url: 'https://github.com/Murali90102/finance_master.git'
18        // git 'https://github.com/Murali90102/jenkinstest.git'
19        // git 'https://github.com/LoksaIETA/Java-mvn-app2.git'
20      }
21    }
22    stage('Maven Build') {
23      steps {
24        // Run Maven on a Unix agent.
25        sh "mvn -Dmaven.test.failure.ignore=true clean package"
26      }
27    }
28    stage('Docker build'){
29      steps {
30        sh 'docker version'
31        sh "docker build -t murali90102/bankingfinance:${BUILD_NUMBER} ."
32        sh 'docker image list'
33        sh "docker tag murali90102/bankingfinance:${BUILD_NUMBER} murali90102/bankingfinance:latest"
34      }
35    }
36    stage('Login2DockerHub') {
37      steps {
38        sh 'echo $DOCKERHUB_CREDENTIALS_PSW | docker login -u $DOCKERHUB_CREDENTIALS_USR --password-stdin'
39      }
40    }
41  }
42  stage('Push2DockerHub') {
```

Creation of Manifest file for deployment of the application using Kubernetes

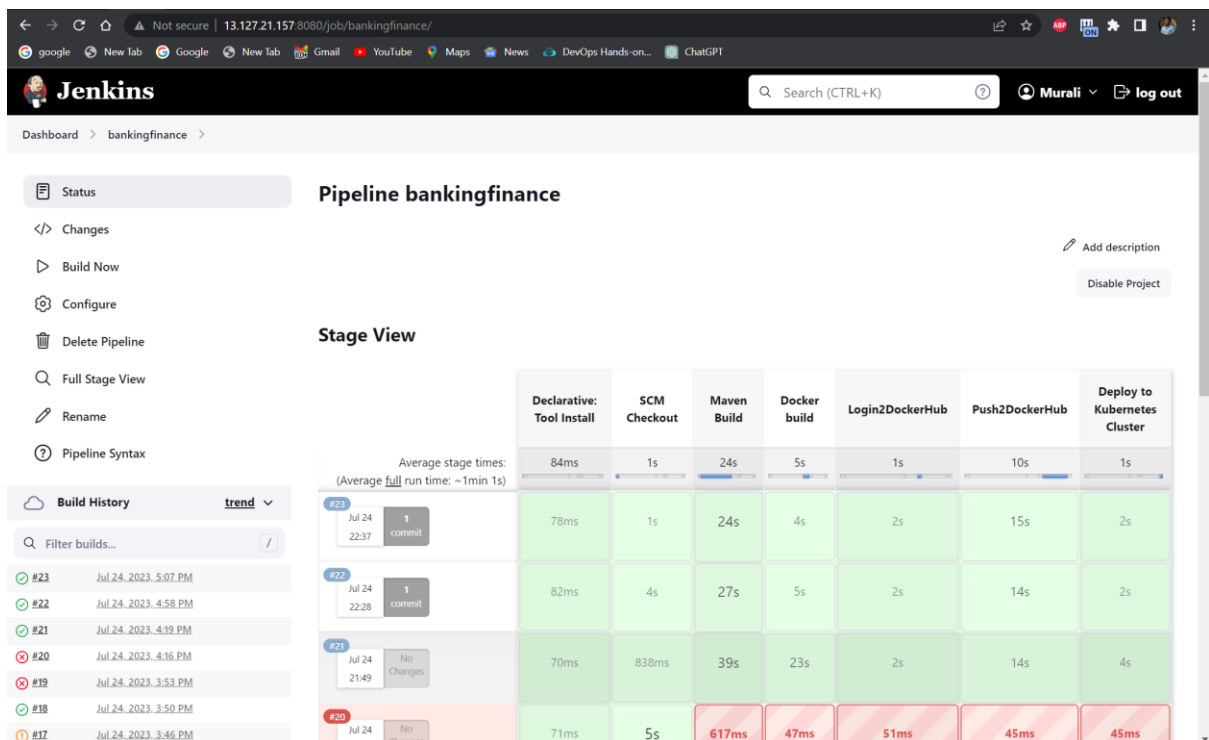


```
1 D:\> devops > assignments > projects > star-agile-banking-finance-master > star-agile-banking-finance-master > ! bankingfinancedeployment.yml
2 apiVersion: apps/v1
3 kind: Deployment
4 metadata:
5   name: bankingfinance
6   labels:
7     app: bankingfinance
8 spec:
9   replicas: 1
10  selector:
11    matchLabels:
12      app: bankingfinance
13  template:
14    metadata:
15      labels:
16        app: bankingfinance
17    spec:
18      containers:
19        - name: bankingfinance-container
20          image: murali90102/bankingfinance
21          ports:
22            - containerPort: 8081
23 ---
24 apiVersion: v1
25 kind: Service
26 metadata:
27   name: bankingfinance
28   labels:
29     app: bankingfinance
30 spec:
31   selector:
32     app: bankingfinance
33   type: NodePort
34   ports:
35     - nodePort: 31001
36     port: 8081
37     targetPort: 8081
38
```

Pushing all the files into GitHub.



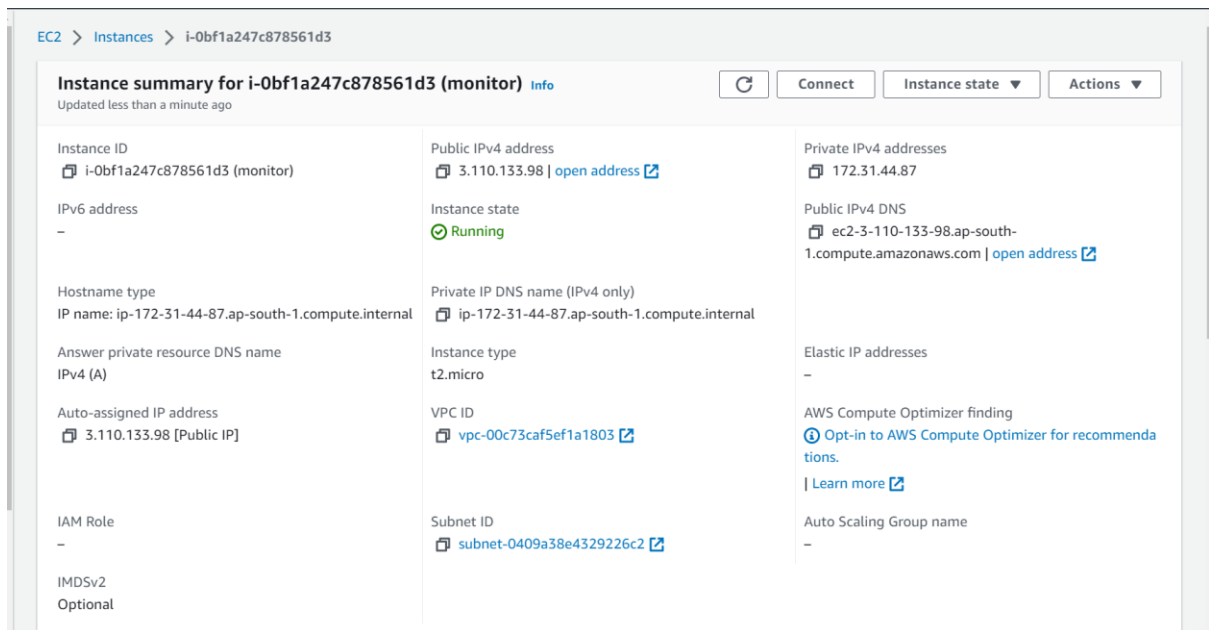
Started building the CI/CD pipeline, executed and deployed successfully after some hiccups. Check the logs for verification of all activities.



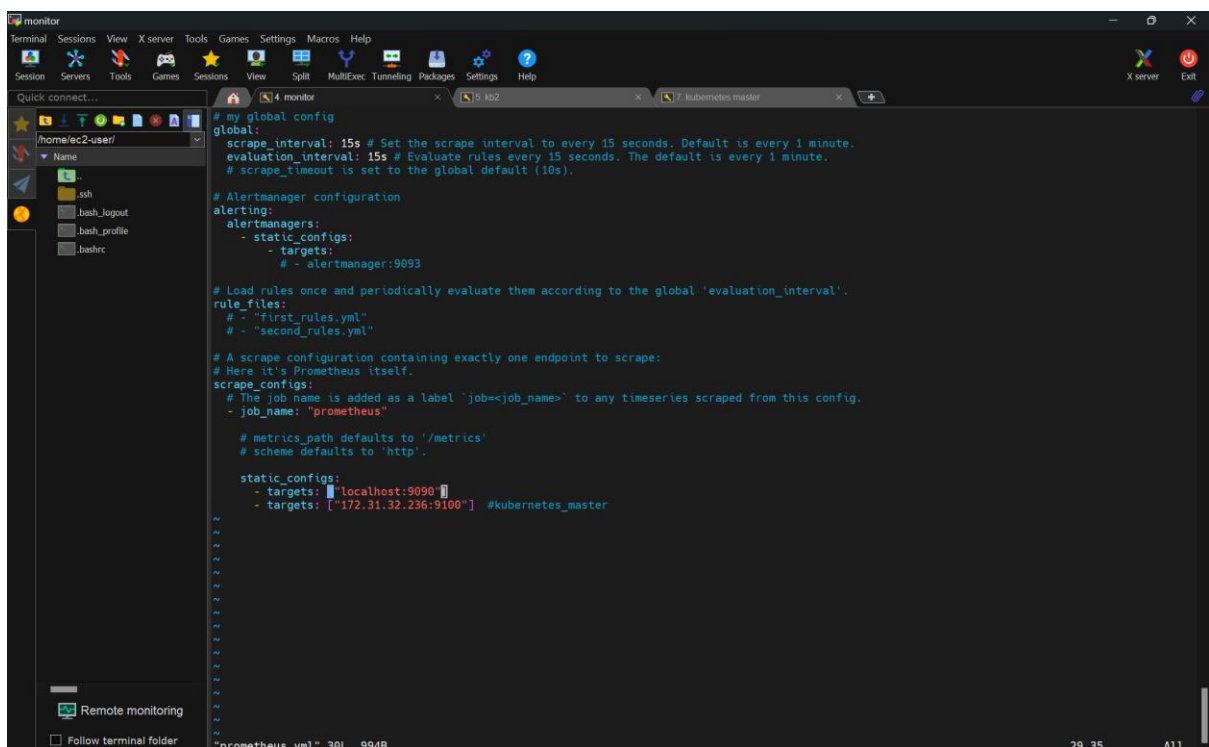
```
[0:1:34mINFO][m]
[0:1:34mINFO][m] [0:1m--- [0:32mmaven-surefire-plugin:2.22.2:test[0:m [0:1m(default-test)[0:m @ [0:36mbanking[0:0:1m ---[0:m
[0:1:34mINFO][m]
[0:1:34mINFO][m] -----
[0:1:34mINFO][m] T E S T S
[0:1:34mINFO][m] -----
[0:1:34mINFO][m] Running com.project.staragile.banking.[0:1mBankingApplicationTests[0:m
17:07:28.781 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating CacheAwareContextLoaderDelegate from class
[org.springframework.test.context.cache.DefaultCacheAwareContextLoaderDelegate]
17:07:28.805 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating BootstrapContext using constructor [public
org.springframework.test.context.support.DefaultBootstrapContext(java.lang.Class,org.springframework.test.context.CacheAwareContextLoad
erDelegate)]
17:07:28.875 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating TestContextBootstrapper for test class
[com.project.staragile.banking.BankingApplicationTests] from class
[org.springframework.boot.test.context.SpringBootTestContextBootstrapper]
17:07:28.903 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstrapper - Neither @ContextConfiguration nor
@ContextHierarchy found for test class [com.project.staragile.banking.BankingApplicationTests], using SpringBootTestContextLoader
17:07:28.914 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - Did not detect default resource location for
test class [com.project.staragile.banking.BankingApplicationTests]: class path resource
[com/project/staragile/banking/BankingApplicationTests-context.xml] does not exist
17:07:28.917 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - Did not detect default resource location for
test class [com.project.staragile.banking.BankingApplicationTests]: class path resource
[com/project/staragile/banking/BankingApplicationTestsContext.groovy] does not exist
17:07:28.920 [main] INFO org.springframework.test.context.support.AbstractContextLoader - Could not detect default resource locations
for test class [com.project.staragile.banking.BankingApplicationTests]: no resource found for suffixes {-context.xml, Context.groovy}.
17:07:28.923 [main] INFO org.springframework.test.context.support.AnnotationConfigContextLoaderUtils - Could not detect default
configuration classes for test class [com.project.staragile.banking.BankingApplicationTests]: BankingApplicationTests does not declare
any static, non-private, non-final, nested classes annotated with @Configuration.
17:07:29.035 [main] DEBUG org.springframework.test.context.support.ActiveProfilesUtils - Could not find an 'annotation declaring class'
for annotation type [org.springframework.test.context.ActiveProfiles] and class [com.project.staragile.banking.BankingApplicationTests]
17:07:29.206 [main] DEBUG org.springframework.context.annotation.ClassPathScanningCandidateComponentProvider - Identified candidate
component class: file [/home/devtest/workspace/bankingfinance/target/classes/com/project/staragile/banking/BankingApplication.class]
17:07:29.208 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstrapper - Found @SpringBootTestConfiguration
com.project.staragile.banking.BankingApplication for test class com.project.staragile.banking.BankingApplicationTests
17:07:29.433 [main] DEBUG org.springframework.boot.test.context.SpringBootTestContextBootstrapper - @TestExecutionListeners is not
```

```
SSH: SFTP channel open
SSH: Connecting SFTP channel ...
SSH: Connected
SSH: cd [/root]
SSH: OK
SSH: cd [/root]
SSH: OK
SSH: put [ansible-playbook.yml]
SSH: put [bankingfinancedeployment.yml]
SSH: Opening exec channel ...
SSH: EXEC: channel open
SSH: EXEC: STDOUT/STDERR from command [kubectl apply -f bankingfinancedeployment.yml] ...
SSH: EXEC: connected
deployment.apps/bankingfinance configured
service/bankingfinance configured
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

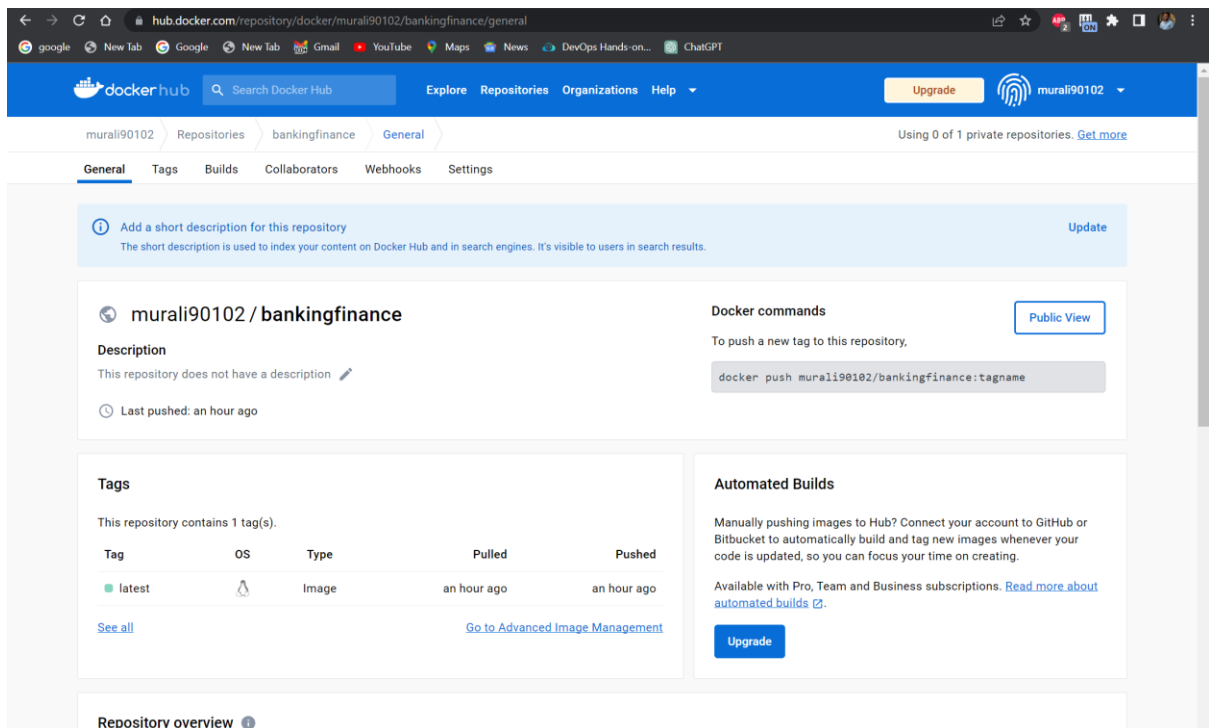
Launching the Monitoring server to monitor the deployment.



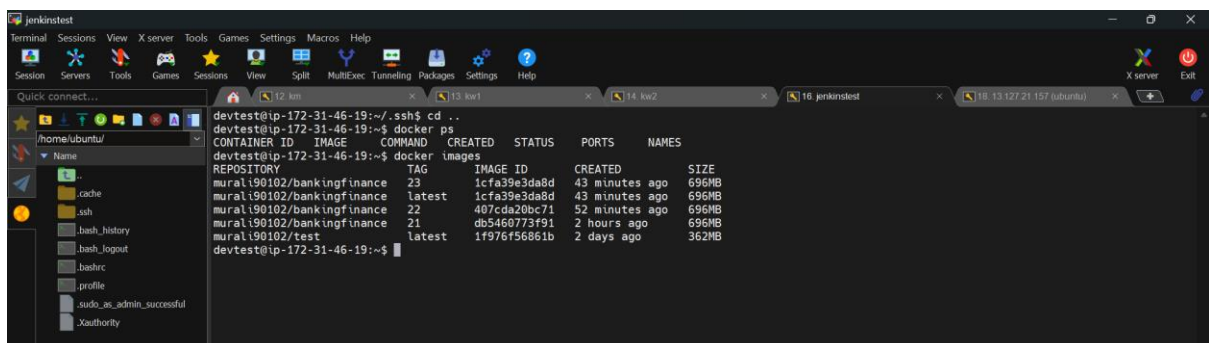
Installing Prometheus and configuring the Kubernetes server with Prometheus server, which we want to Monitor.



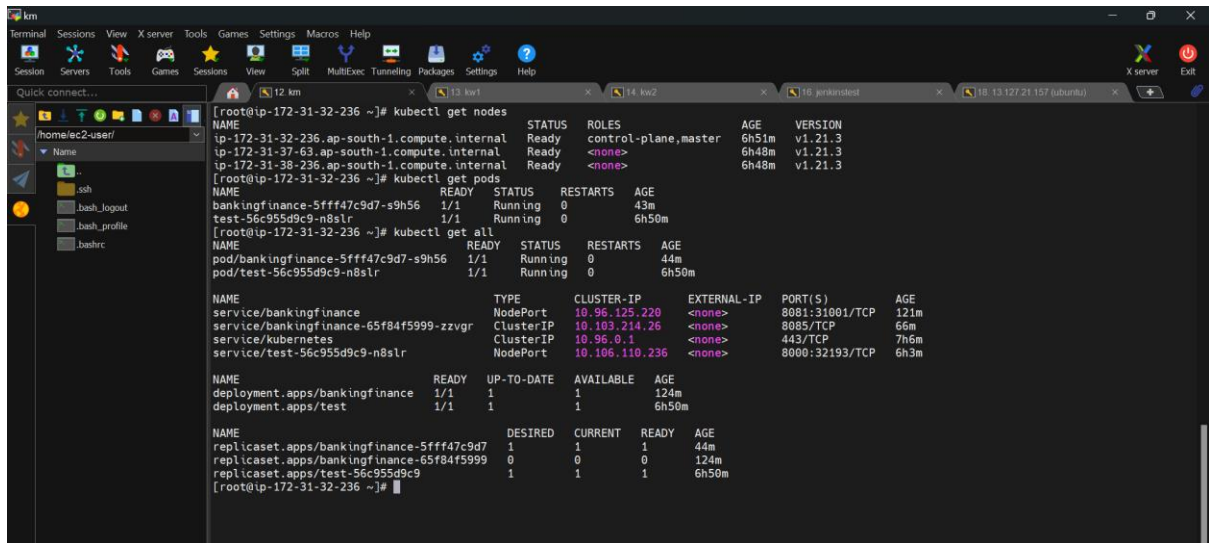
Verifying Dockerhub for the successful creation of Docker image and publishment in Dockerhub.



Verifying the creation of Docker image in server.



Verifying the deployment in Kubernetes server



```
[root@ip-172-31-32-236 ~]# kubectl get nodes
NAME                                STATUS    ROLES    AGE     VERSION
ip-172-31-32-236.ap-south-1.compute.internal Ready    control-plane,master 6h51m v1.21.3
ip-172-31-37-63.ap-south-1.compute.internal Ready    <none>             6h48m v1.21.3
ip-172-31-38-236.ap-south-1.compute.internal Ready    <none>             6h48m v1.21.3

[root@ip-172-31-32-236 ~]# kubectl get pods
NAME                                READY    STATUS    RESTARTS   AGE
bankingfinance-5fff47c9d7-s9h56     1/1      Running   0           43m
test-56c955d9c9-n8slr               1/1      Running   0           6h50m

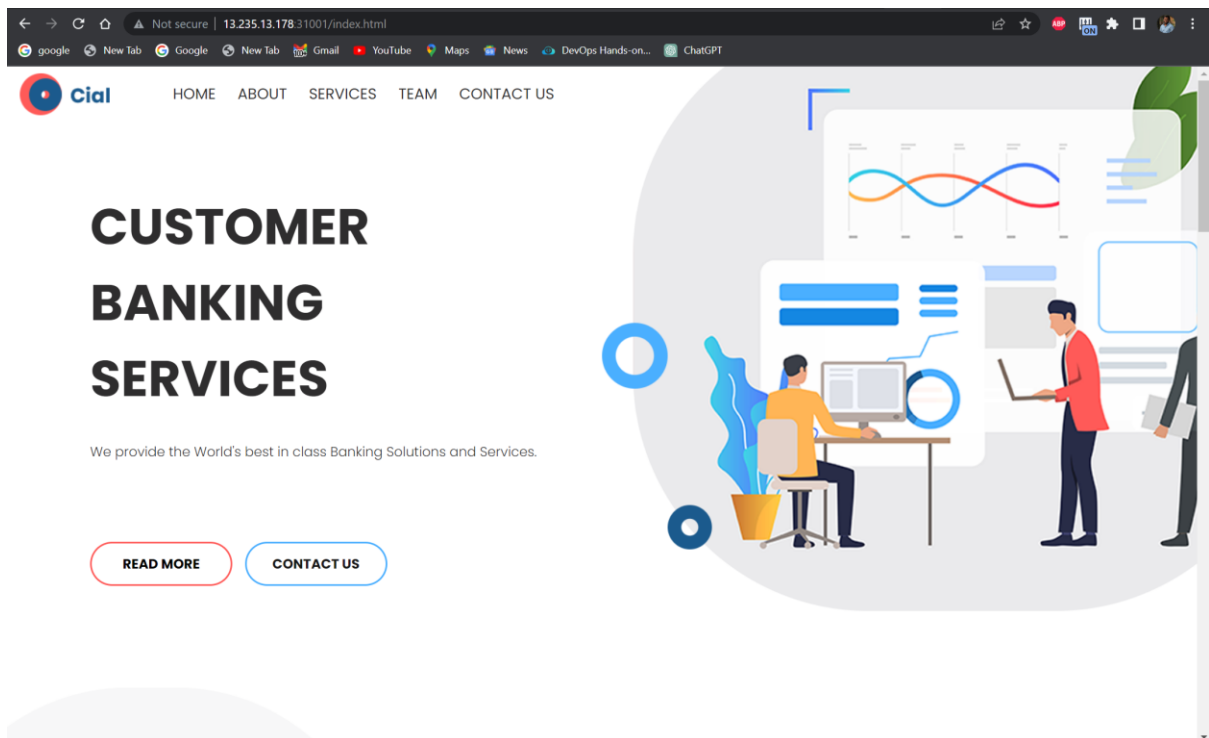
[root@ip-172-31-32-236 ~]# kubectl get all
NAME                                READY    STATUS    RESTARTS   AGE
pod/bankingfinance-5fff47c9d7-s9h56 1/1      Running   0           44m
pod/test-56c955d9c9-n8slr           1/1      Running   0           6h50m

NAME                                TYPE          CLUSTER-IP    EXTERNAL-IP  PORT(S)          AGE
service/bankingfinance              NodePort      10.96.125.220 <none>       8081:31001/TCP   121m
service/bankingfinance-zzvgr        ClusterIP     10.103.214.26 <none>       8085/TCP         66m
service/kubernetes                  ClusterIP     10.96.0.1     <none>       443/TCP         7h6m
service/test-56c955d9c9-n8slr       NodePort      10.106.110.236 <none>       8080:32193/TCP   6h3m

NAME                                READY    UP-TO-DATE   AVAILABLE   AGE
deployment.apps/bankingfinance      1/1      1             1           124m
deployment.apps/test                 1/1      1             1           6h50m

NAME                                DESIRED    CURRENT   READY   AGE
replicaset.apps/bankingfinance-5fff47c9d7 1          1         1       44m
replicaset.apps/bankingfinance-65f84f5999 0          0         0       124m
replicaset.apps/test-56c955d9c9           1          1         1       6h50m
```

Accessing the application with the Node IP address and port number.



Prometheus and Grafana monitoring graphs of Kubernetes worker Node where the application is Deployed.

