Jenkins-Zero-To-Hero

Are you looking forward to learn Jenkins right from Zero(installation) to Hero (Build end to end pipelines)? then you are at the right place.

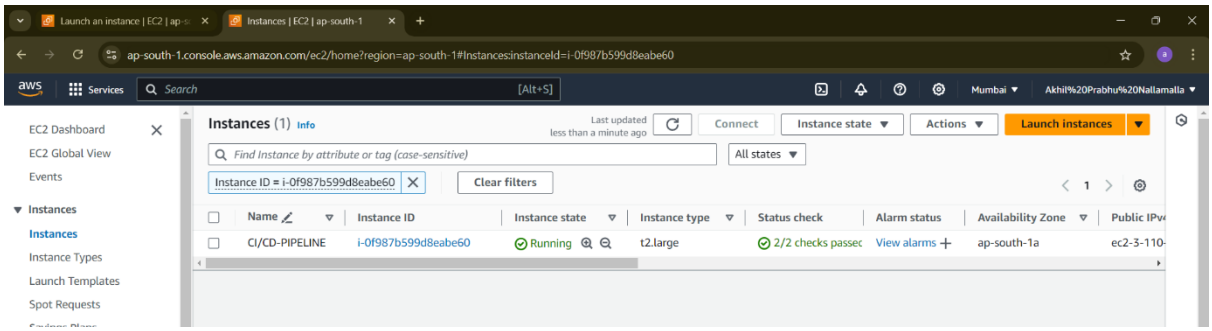
Installation on EC2 Instance

YouTube Video -
> https://www.youtube.com/watch?v=zZfhAXfBvVA&list=RDCMUCnnQ3ybuyFdzvgv2Ky5jnAA&index=1

Install Jenkins, configure Docker as agent, set up cicd, deploy applications to k8s and much more.

AWS EC2 Instance

- Go to AWS Console
- Instances(running)
- Launch instances



Install Jenkins.

Pre-Requisites:

- Java (JDK)

Run the below commands to install Java and Jenkins

Install Java

sudo apt update

sudo apt install openjdk-17-jre

Verify Java is Installed

java -version

Now, you can proceed with installing Jenkins

- curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee \

/usr/share/keyrings/jenkins-keyring.asc > /dev/null

- echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \

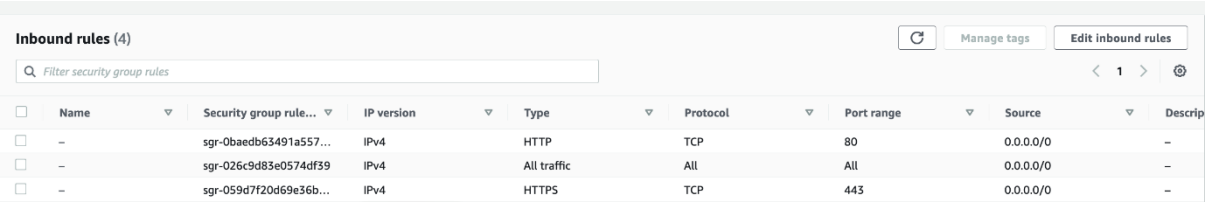
https://pkg.jenkins.io/debian binary/ | sudo tee \

/etc/apt/sources.list.d/jenkins.list > /dev/null

- sudo apt-get update
- sudo apt-get install jenkins

**Note: ** By default, Jenkins will not be accessible to the external world due to the inbound traffic restriction by AWS. Open port 8080 in the inbound traffic rules as show below.

- EC2 > Instances > Click on
- In the bottom tabs -> Click on Security
- Security groups
- Add inbound traffic rules as shown in the image (you can just allow TCP 8080 as well, in my case, I allowed All traffic).



Inbound rules (4)

Manage tags | Edit inbound rules

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Descrip
–	sgr-0baedb63491a557...	IPv4	HTTP	TCP	80	0.0.0.0/0	–
–	sgr-026c9d83e0574df39	IPv4	All traffic	All	All	0.0.0.0/0	–
–	sgr-059d7f20d69e36b...	IPv4	HTTPS	TCP	443	0.0.0.0/0	–

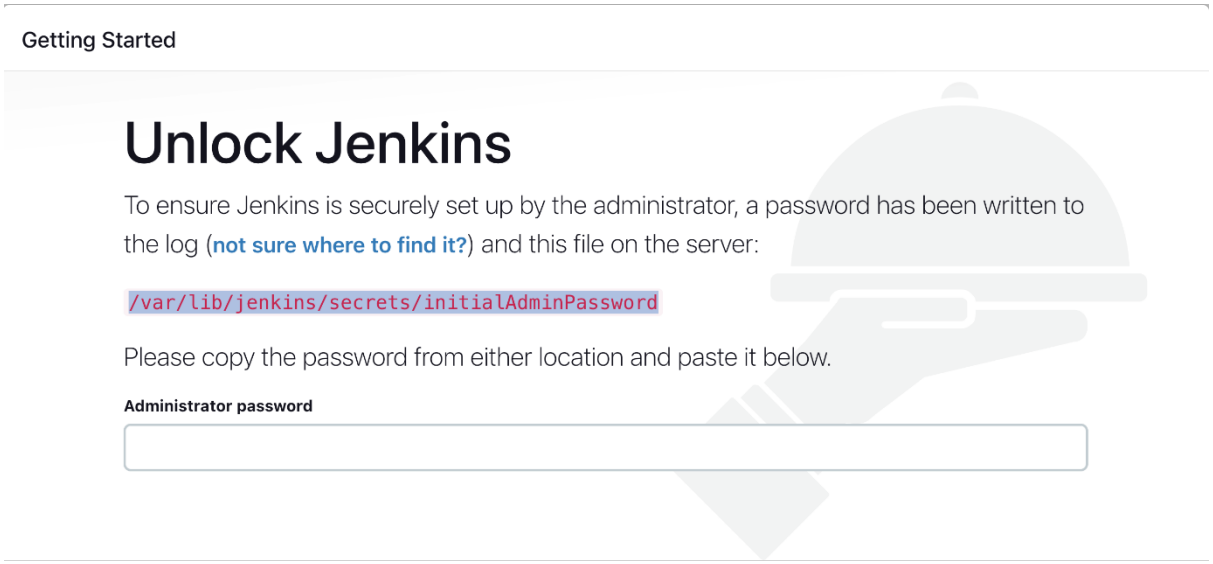
Login to Jenkins using the below URL:

http://:8080 [You can get the ec2-instance-public-ip-address from your AWS EC2 console page]

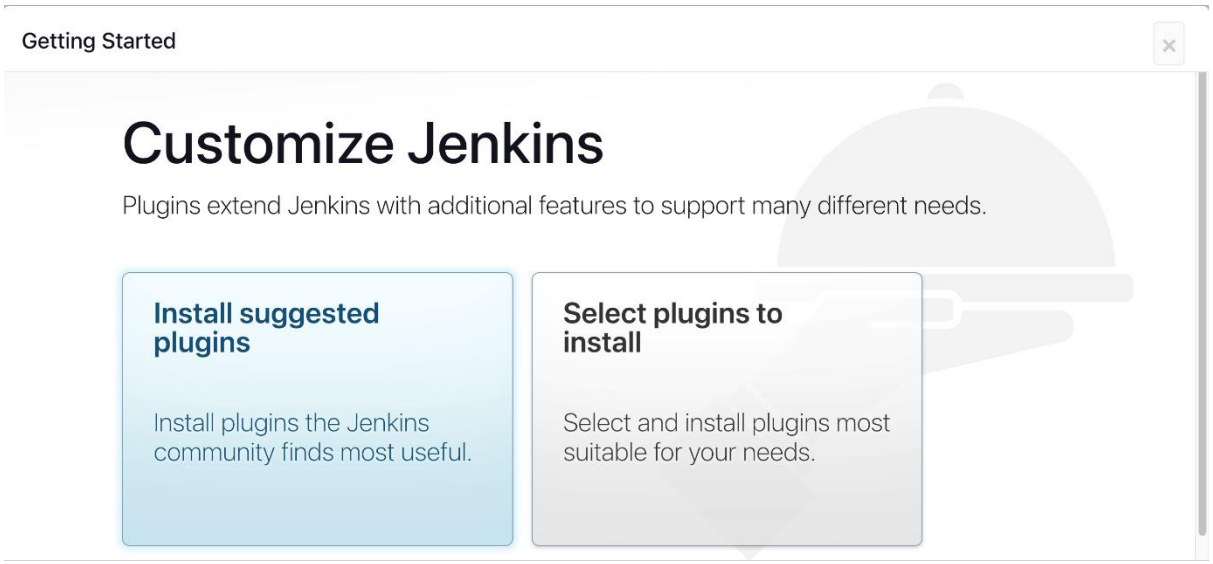
Note: If you are not interested in allowing All Traffic to your EC2 instance 1. Delete the inbound traffic rule for your instance 2. Edit the inbound traffic rule to only allow custom TCP port 8080

After you login to Jenkins, - Run the command to copy the Jenkins Admin Password - sudo cat /var/lib/jenkins/secrets/initialAdminPassword - Enter the Administrator password

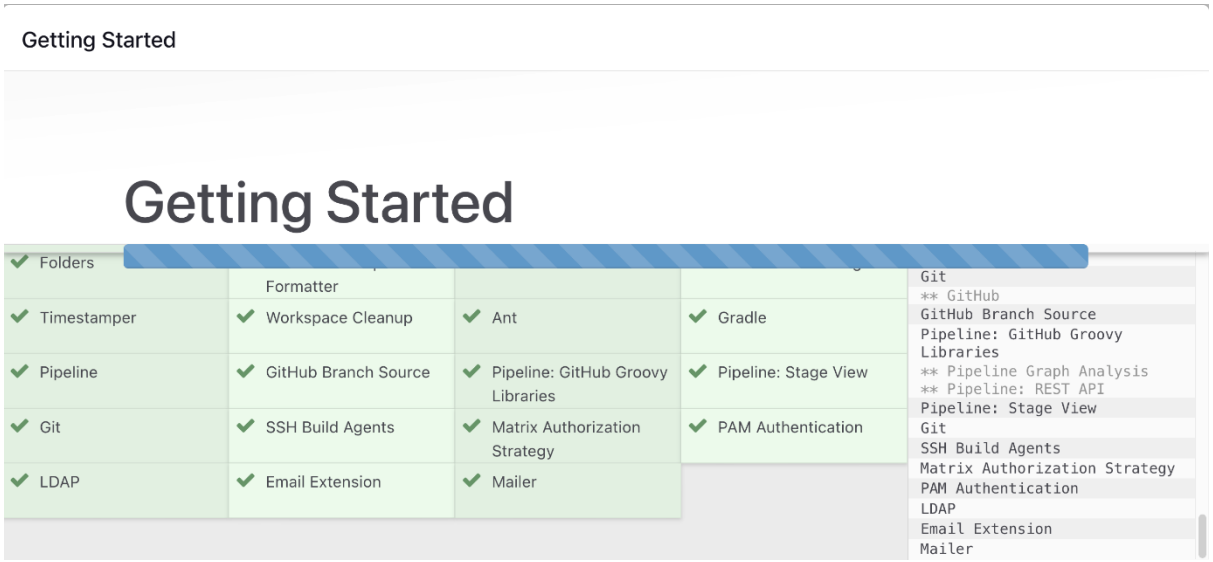
```
ubuntu@ip-172-31-47-125:~$ java -version
openjdk version "17.0.12" 2024-07-16
OpenJDK Runtime Environment (build 17.0.12+7-Ubuntu-1ubuntu224.04)
OpenJDK 64-Bit Server VM (build 17.0.12+7-Ubuntu-1ubuntu224.04, mixed mode, sharing)
ubuntu@ip-172-31-47-125:~$ jenkins --version
2.477
ubuntu@ip-172-31-47-125:~$ ps -ef | grep jenkins
jenkins     3958       1 48 06:41 ?        00:00:20 /usr/bin/java -Djava.awt.headless=true -ja
r /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080
ubuntu      4158    1145  0 06:42 pts/0    00:00:00 grep --color=auto jenkins
```



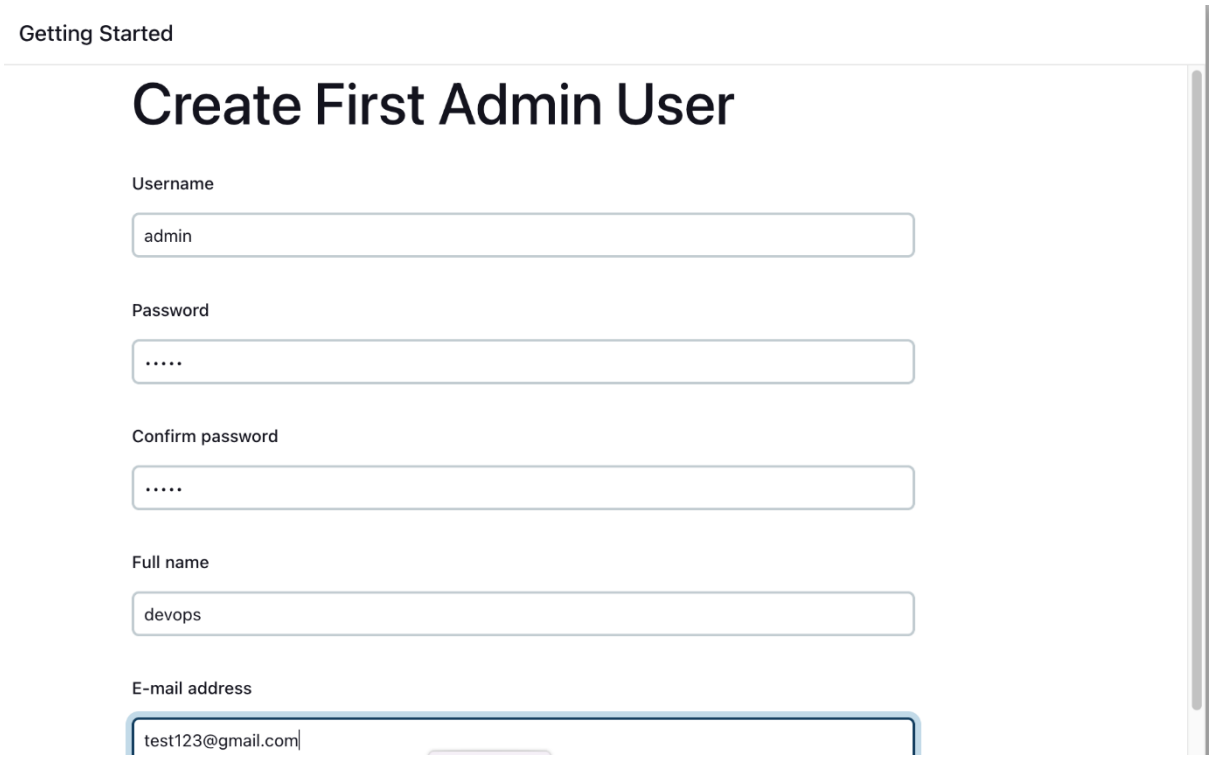
Click on Install suggested plugins



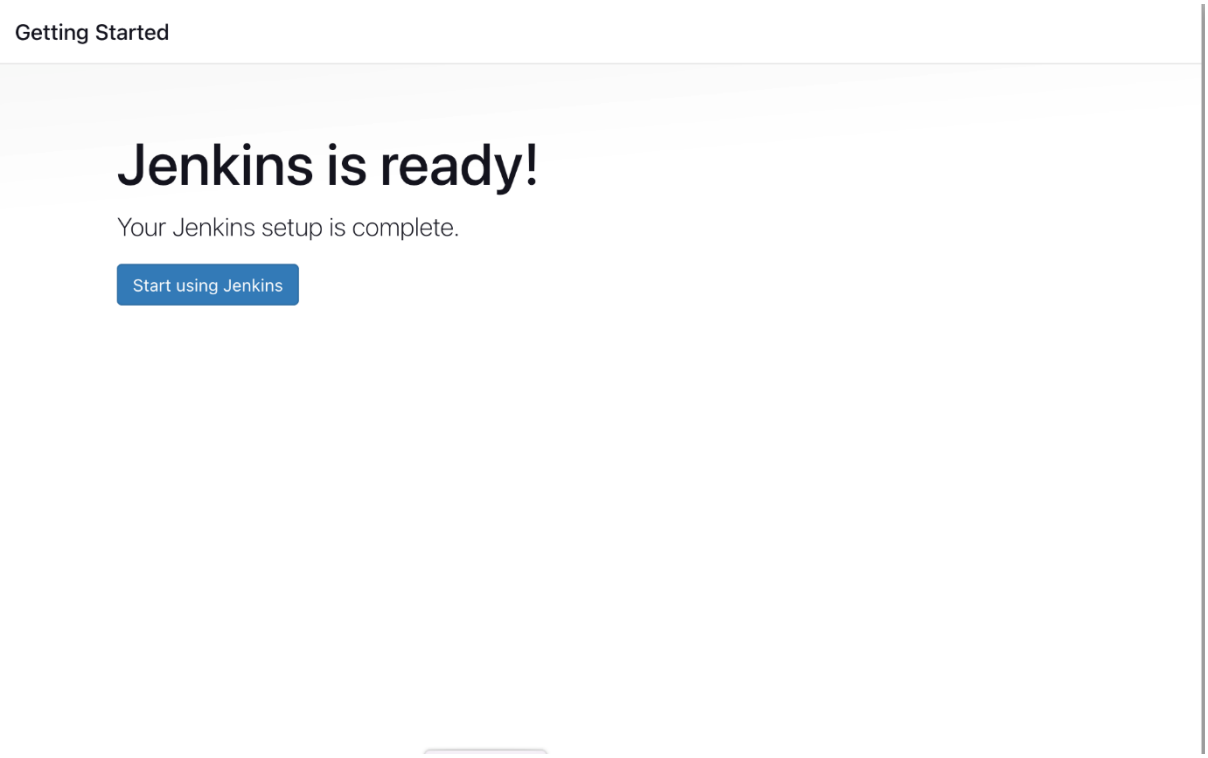
Wait for the Jenkins to Install suggested plugins



Create First Admin User or Skip the step [If you want to use this Jenkins instance for future use-cases as well, better to create admin user]

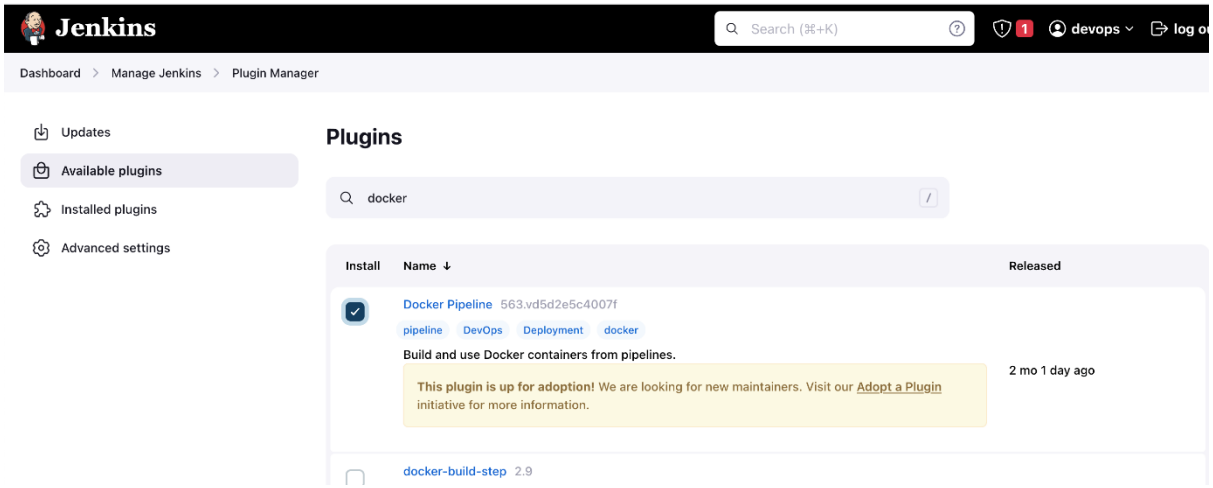


Jenkins Installation is Successful. You can now starting using the Jenkins



Install the Docker Pipeline plugin in Jenkins:

- Log in to Jenkins.
- Go to Manage Jenkins > Manage Plugins.
- In the Available tab, search for "Docker Pipeline".
- Select the plugin and click the Install button.
- Restart Jenkins after the plugin is installed.



Wait for the Jenkins to be restarted.

Docker Slave Configuration

Run the below command to Install Docker

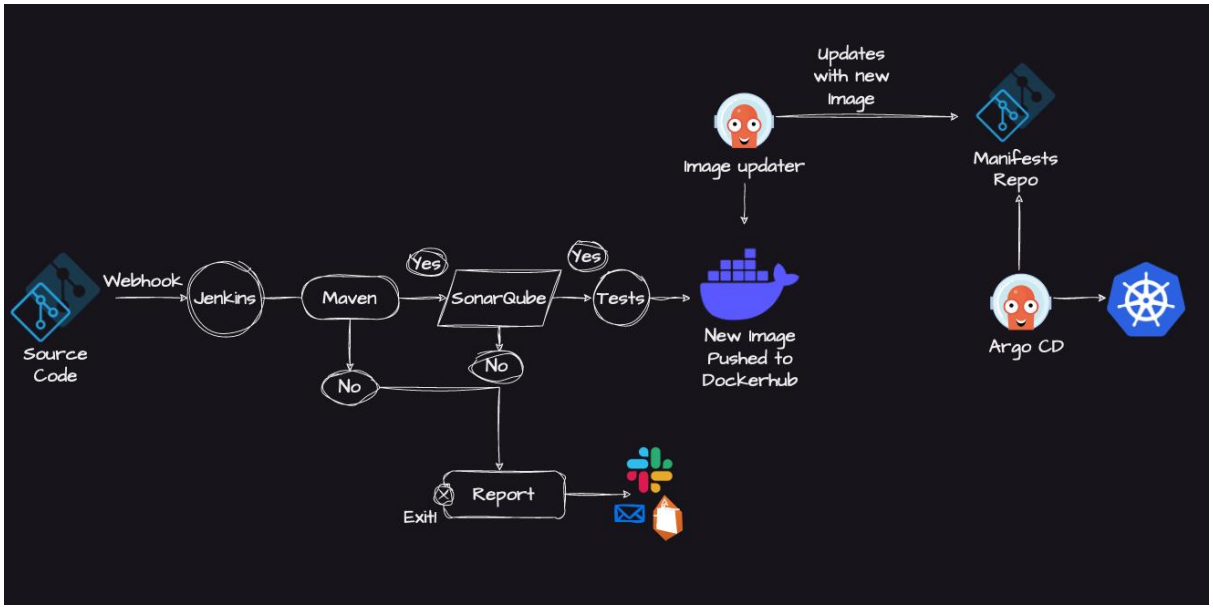
- sudo apt update

- sudo apt install docker.io

Grant Jenkins user and Ubuntu user permission to docker deamon.

- sudo su –
- usermod -aG docker Jenkins
- usermod -aG docker ubuntu
- systemctl restart docker
- Once you are done with the above steps, it is better to restart Jenkins.
- http://<ec2-instance-public-ip>:8080/restart
- The docker agent configuration is now successful.

Jenkins Pipeline for Java based application using Maven, SonarQube, Argo CD, Helm and Kubernetes



Here are the step-by-step details to set up an end-to-end Jenkins pipeline for a Java application using SonarQube, Argo CD, Helm, and Kubernetes:

Prerequisites:

- Java application code hosted on a Git repository
- Jenkins server
- Kubernetes cluster
- Argo CD

Steps:

1. Install the necessary Jenkins plugins:

1.1 Git plugin

1.2 Maven Integration plugin

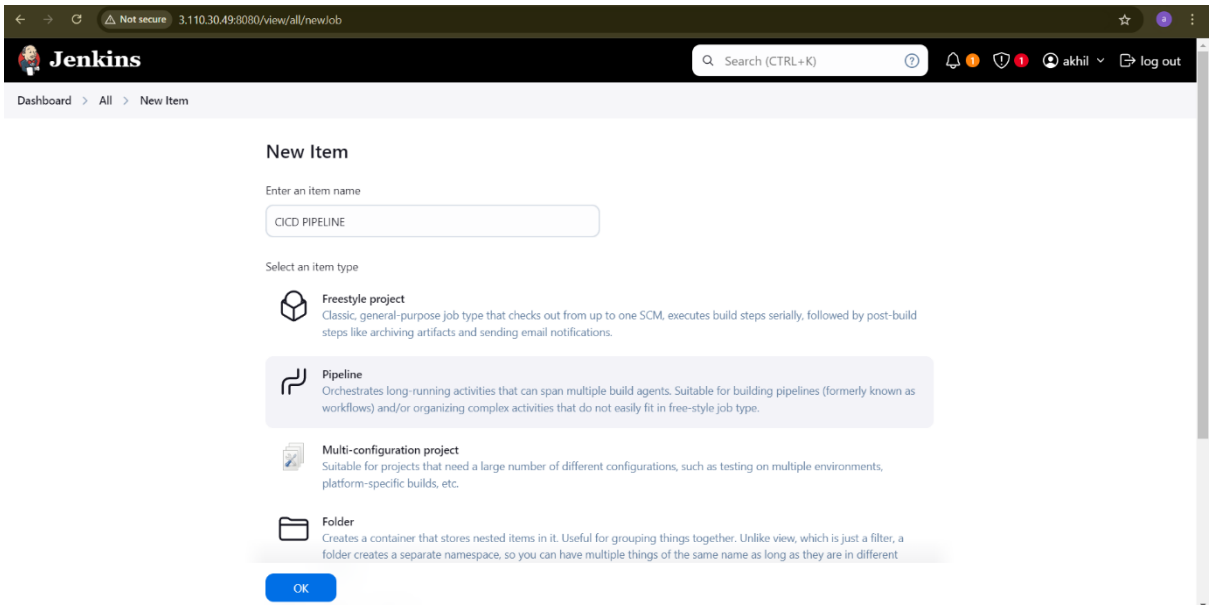
1.3 Pipeline plugin

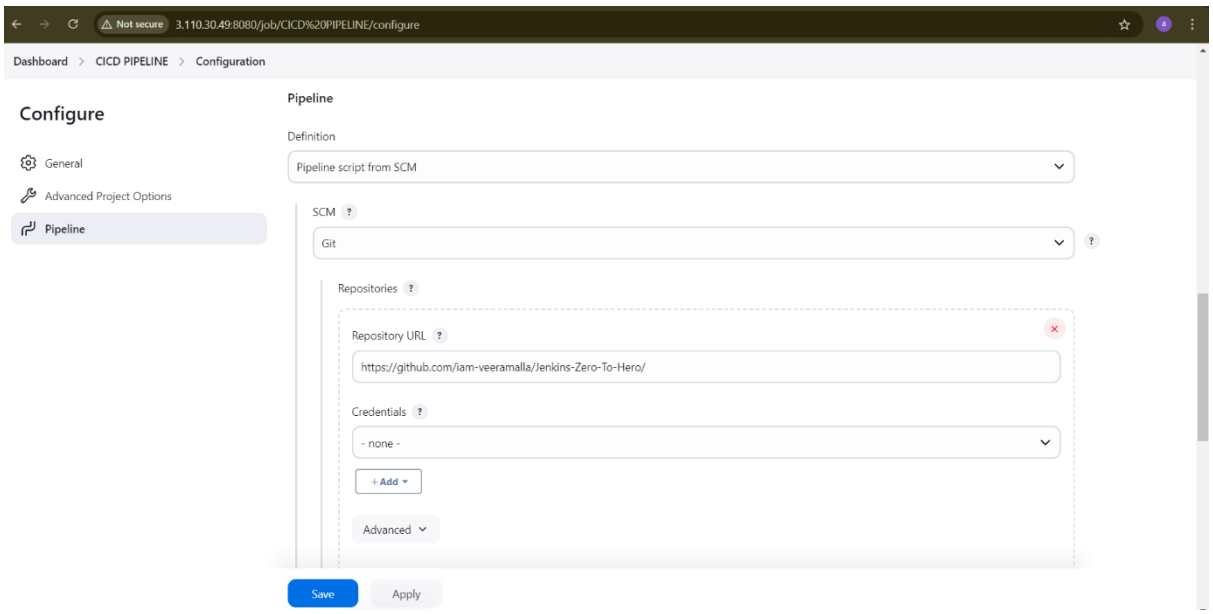
1.4 Kubernetes Continuous Deploy plugin

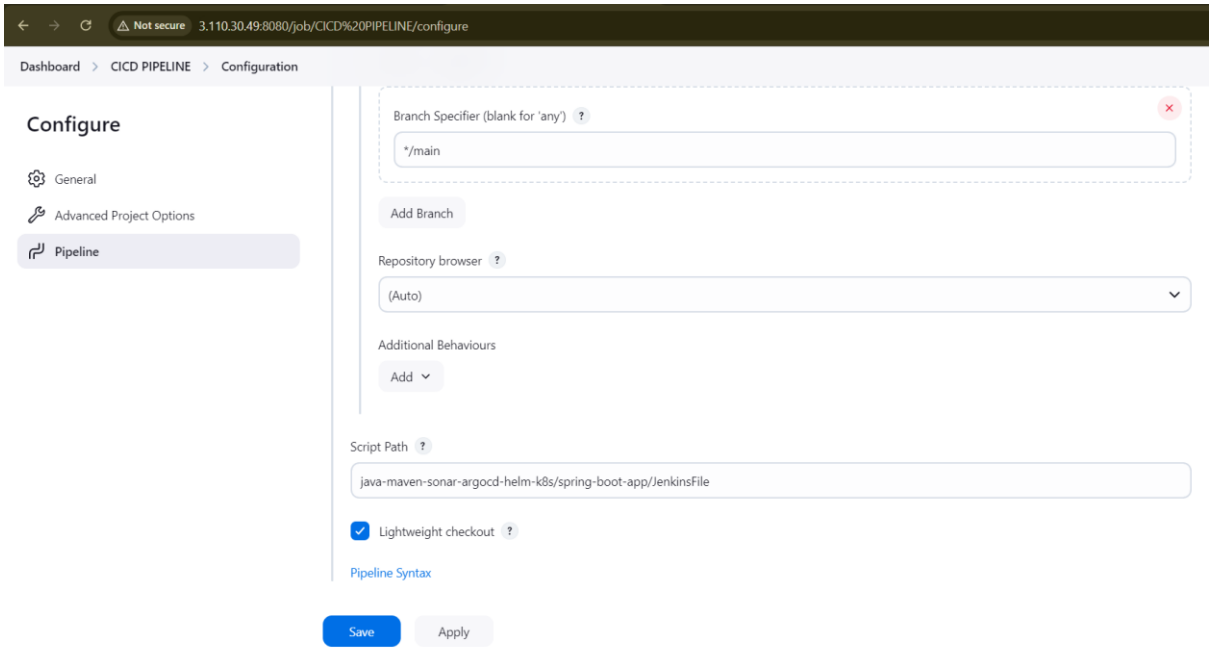
2. Create a new Jenkins pipeline:

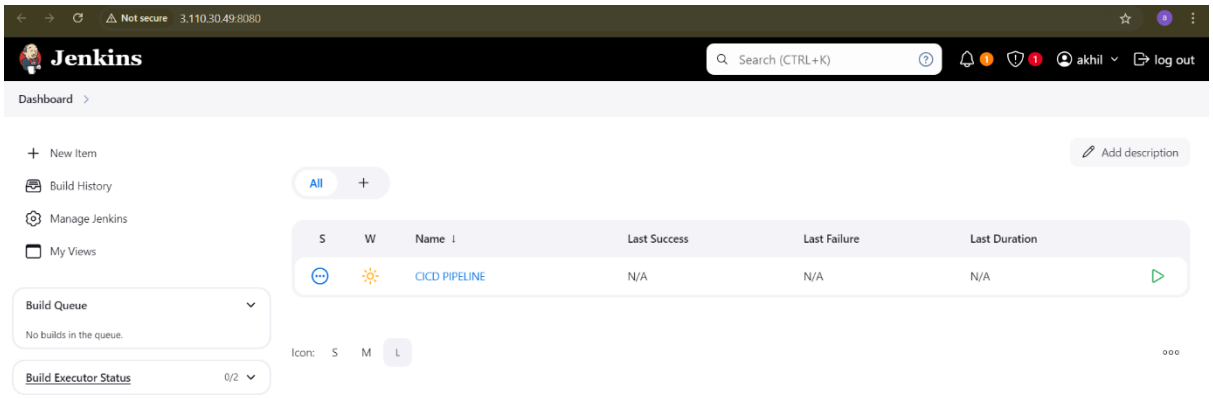
2.1 In Jenkins, create a new pipeline job and configure it with the Git repository URL for the Java application.

2.2 Add a Jenkinsfile to the Git repository to define the pipeline stages.









3. Define the pipeline stages:

Stage 1: Checkout the source code from Git.

Stage 2: Build the Java application using Maven.

Stage 3: Run SonarQube analysis to check the code quality.

Stage 4: Package the application into a JAR file.

Stage 5: Run user acceptance tests on the deployed application.

Stage 6: Promote the application to a production environment using Argo CD.

INTERVIEW QUESTIONS:

1. Can JenkinsFile can be in any location?

a. Yes, It can be in any location.

2. JenkinsFile can have any different names?

a. Obviously can have a different name.

Yes Jenkins file can be in any location and can have any name.

3. How to create a Jenkins file and what is its purpose?

a. In Jenkins we can write jenkinsfile from jobs of pipeline or we can import it using GitHub.

The purpose of it is to execute the steps of Continuous Integration.

4. Difference between add user and user add?

a. In summary, adduser is more interactive and easier for general use, while useradd is more flexible but requires more manual steps.

This is a **low-level command** for adding users.

This is a **higher-level script** that is more user-friendly and often provides defaults for user creation.

Maven:

5. Difference between mvn clean package and mvn clean install?

a. If you want to push your enterprise archive, java archive, eb archive to the artifactory / nexus in such cases we can use mvn clean install.

In my case i dont need to push to any artifactery i need to push the image to docker registry so i used mvn clean package.

Basically we have pom.xml in our projects directory, it is responsible for getting the dependencies runtime and building the application.

Here using maven our application will complete the process of build, by this artifacts will be generated into jar/war files.

We can see the target folder where the archive of web s present. In DockerFile we may use jar file by copying it.

Static Code Analysis:

Here we need to configure the URL of our SonarQube configured with public ip and port. And also mention credentials and token. Here we use another maven target.

Docker:

Here we build and push the image by using the docker registry credentials.

Update Deployment File:

Here we can use argocd updater/shell script, we are using a shell script file.

We are using Docker as agent for containers, Jenkins uses master-slave architecture instead of docker we can have used ec2 instances as worker nodes. But these instances should run for a long time. We may get more cost. And also the configuration will need to be done on all the instances.

The efficient way is to use docker as agent where we include all of our stages in pipeline that will containerize and run.

Once all the stages are passed the container will be deleted by the pipeline. So that the resources can be used by another stages.

* Install Docker Pipeline Plugin.

- Docker Pipeline

* Install SonarQube plugin and also install SonarQube severit on ec2 instance

- SonarQube Scanner

Configure a Sonar Server:

apt install unzip

adduser SonarQube

sudo su - sonarqube

wget https://binaries.sonarsource.com/Distribution/sonarqube/sonarqube-9.4.0.54424.zip

unzip *

chmod -R 755 /home/sonarqube/sonarqube-9.4.0.54424

chown -R sonarqube:sonarqube /home/sonarqube/sonarqube-9.4.0.54424

cd sonarqube-9.4.0.54424/bin/linux-x86-64/

./sonar.sh start

```
root@ip-172-31-47-125:/home/ubuntu# adduser sonarqube
info: Adding user `sonarqube' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `sonarqube' (1001) ...
info: Adding new user `sonarqube' (1001) with group `sonarqube (1001)' ...
info: Creating home directory `/home/sonarqube' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for sonarqube
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
info: Adding new user `sonarqube' to supplemental / extra groups `users' ...
info: Adding user `sonarqube' to group `users' ...
root@ip-172-31-47-125:/home/ubuntu#
```

```
sonarqube@ip-172-31-47-125:~$ ls
sonarqube-9.4.0.54424  sonarqube-9.4.0.54424.zip
sonarqube@ip-172-31-47-125:~$ chmod -R 755 /home/sonarqube/sonarqube-9.4.0.54424
sonarqube@ip-172-31-47-125:~$ chown -R sonarqube:sonarqube /home/sonarqube/sonarqube-9.4.0.544
24
sonarqube@ip-172-31-47-125:~$ cd sonarqube-9.4.0.54424/bin/linux-x86-64/
sonarqube@ip-172-31-47-125:~/sonarqube-9.4.0.54424/bin/linux-x86-64$ ls
lib  sonar.sh  wrapper
sonarqube@ip-172-31-47-125:~/sonarqube-9.4.0.54424/bin/linux-x86-64$ ./sonar.sh
Usage: ./sonar.sh { console | start | stop | force-stop | restart | status | dump }
sonarqube@ip-172-31-47-125:~/sonarqube-9.4.0.54424/bin/linux-x86-64$ ^C
sonarqube@ip-172-31-47-125:~/sonarqube-9.4.0.54424/bin/linux-x86-64$ ./sonar.sh start
Starting SonarQube...
Started SonarQube.
sonarqube@ip-172-31-47-125:~/sonarqube-9.4.0.54424/bin/linux-x86-64$
```

We can launch SonarQube using 3.110.30.49:9000. In login admin as username and password. And change the password.

Maven need not to install on instance because it is already integrated with docker container.

To make connection between Jenkins and SonarQube, SonarQube >> My account >> security >> generate token – Jenkins

Now go to manage Jenkins >> Credentials >> System >> Global >> Secret text >> paste and save it.

sudo su -

exit

Install Docker On ec2 instance.

sudo apt update

sudo apt install docker.io

Grant Jenkins user and Ubuntu user permission to docker deamon.

sudo su -

usermod -aG docker jenkins

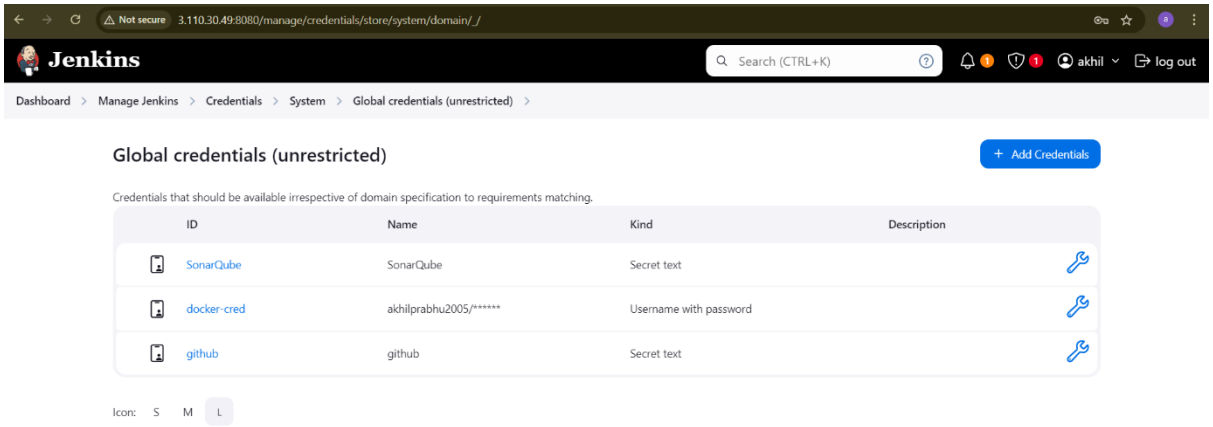
usermod -aG docker ubuntu

systemctl restart docker

Once you are done with the above steps, it is better to restart Jenkins.

http://<ec2-instance-public-ip>:8080/restart

The docker agent configuration is now successful.



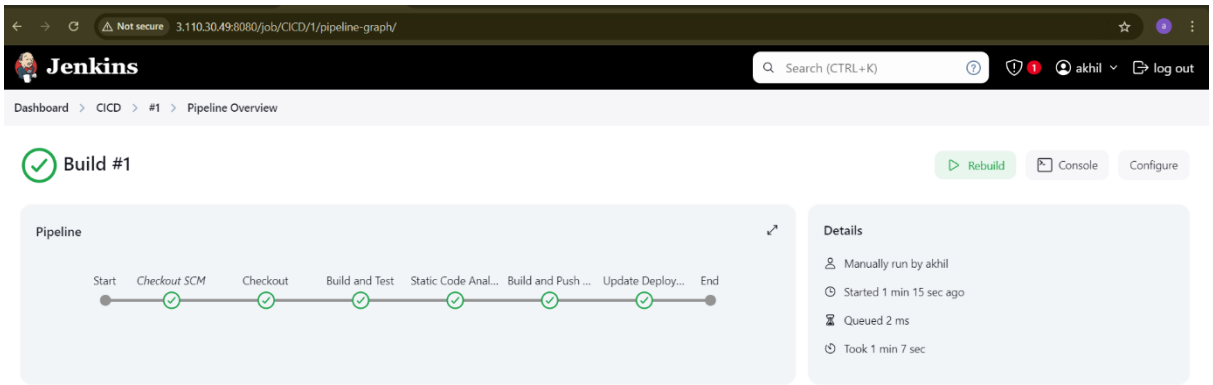
4. Configure Jenkins pipeline stages:

Stage 1: Use the Git plugin to check out the source code from the Git repository.

Stage 2: Use the Maven Integration plugin to build the Java application.

Stage 3: Use the SonarQube plugin to analyse the code quality of the Java application.

Stage 4: Use the Maven Integration plugin to package the application into a JAR file



Stage 5: Use the Kubernetes Continuous Deploy plugin to deploy the application to a test environment using Minikube and ArgoCD.

Stage 6: Use Argo CD to promote the application to a production environment.

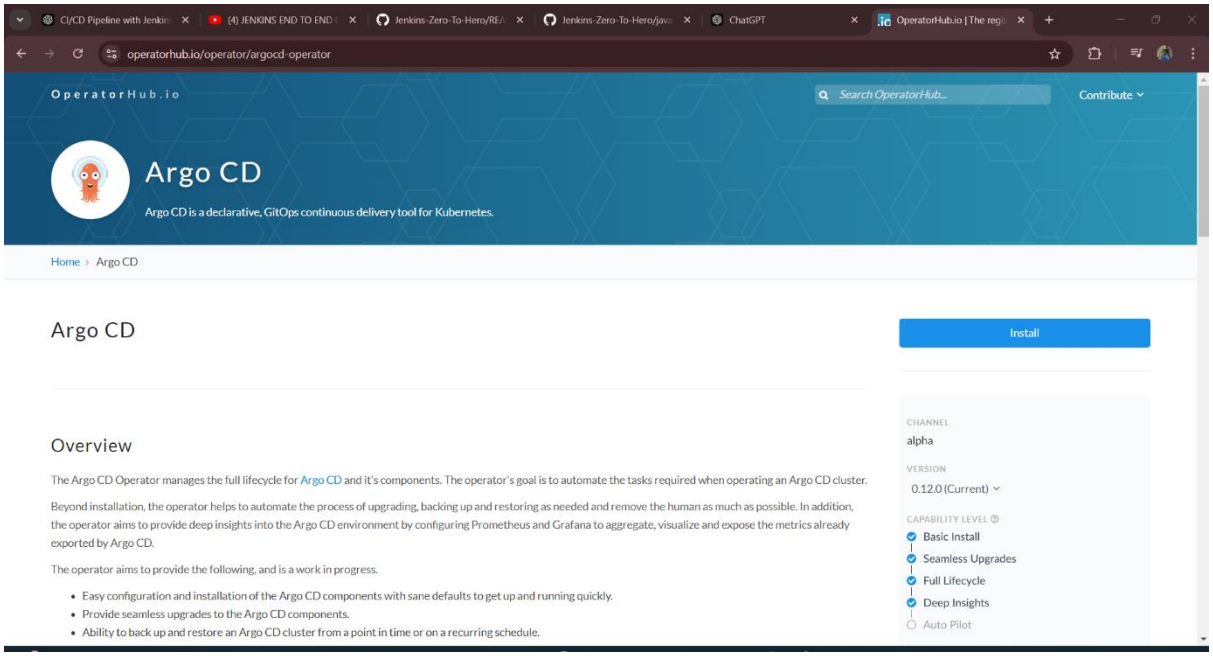
```
commit: 210b148df93a80eb872ecbeb7e35281b3c582c61
akhil@LAPTOP-ARIT216A:~$ minikube start --driver=docker --memory=2200mb --cpus=2
😄  minikube v1.34.0 on Ubuntu 22.04 (amd64)
✨  Using the docker driver based on user configuration

🧯  The requested memory allocation of 2200MiB does not leave room for system overhead (total system memory: 2934MiB). You may face stability is
sues.
💡  Suggestion: Start minikube with less memory allocated: 'minikube start --memory=2200mb'

📌  Using Docker driver with root privileges
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.45 ...
💾  Downloading Kubernetes v1.31.0 preload ...
    > preloaded-images-k8s-v18-v1...:  326.69 MiB / 326.69 MiB  100.00% 4.49 Mi
    > gcr.io/k8s-minikube/kicbase...:  487.90 MiB / 487.90 MiB  100.00% 2.85 Mi
🔥  Creating docker container (CPUs=2, Memory=2200MB) ...
🌐  Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...
    ▪ Generating certificates and keys ...
    ▪ Booting up control plane ...
    ▪ Configuring RBAC rules ...
🔗  Configuring bridge CNI (Container Networking Interface) ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: default-storageclass, storage-provisioner
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
akhil@LAPTOP-ARIT216A:~$ minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

akhil@LAPTOP-ARIT216A:~$ kubectl get nodes
NAME       STATUS   ROLES           AGE   VERSION
minikube   Ready    control-plane   24s   v1.31.0
akhil@LAPTOP-ARIT216A:~$
```

minikube start --memory=2200mb --driver=docker

5. Set up Argo CD:

Install Argo CD on the Kubernetes cluster.

Set up a Git repository for Argo CD to track the changes in the Kubernetes manifests.



Argo CD

0.12.0 provided by Argo CD Community

Install on Kubernetes

1. Install Operator Lifecycle Manager (OLM), a tool to help manage the Operators running on your cluster.

```
$ curl -sL https://github.com/operator-framework/operator-lifecycle-manager/releases/download/v0.28.0/install.sh | bash -s v0.28.0
```

2. Install the operator by running the following command: What happens when I execute this command?

```
$ kubectl create -f https://operatorhub.io/install/argocd-operator.yaml
```

This Operator will be installed in the "**operators**" namespace and will be usable from all namespaces in the cluster.

3. After install, watch your operator come up using next command.

```
$ kubectl get csv -n operators
```

To use it, checkout the custom resource definitions (CRDs) introduced by this operator to start using it.

```
akhil@LAPTOP-ARIT216A:~$ kubectl get pods -n operators -w
^Cakhil@LAPTOP-ARIT216A:~kubectl get csv -n operators
NAME                      DISPLAY   VERSION   REPLACES                   PHASE
argocd-operator.v0.12.0   Argo CD   0.12.0    argocd-operator.v0.11.0   Installing
akhil@LAPTOP-ARIT216A:~$ kubectl get csv -n operators
NAME                      DISPLAY   VERSION   REPLACES                   PHASE
argocd-operator.v0.12.0   Argo CD   0.12.0    argocd-operator.v0.11.0   Succeeded
akhil@LAPTOP-ARIT216A:~$ ls
Deployment           admin.sh          cronlog      inventory.ini         openshift-client-linux.tar.gz  pullfail.sh  terraform
Docker-Zero-to-Hero  ansible-prac.pem  dead.letter  kubectl               professional-scripts           pullwarn.sh
README.md            cpu_usage.log     file.sh      minikube-linux-amd64  pullerror.sh                  snap
akhil@LAPTOP-ARIT216A:~$ pwd
```

vim argocd-basic.yml

apiVersion: argoproj.io/v1alpha1

kind: ArgoCD

metadata:

  name: example-argocd

  labels:

    example: basic

spec: {}

```
akhil@LAPTOP-ARIT216A:~$ vim argocd-basic.yml
akhil@LAPTOP-ARIT216A:~$ kubectl apply -f argocd-basic.yml
Warning: ArgoCD v1alpha1 version is deprecated and will be converted to v1beta1 automatically. Moving forward, please use v1beta1 as the ArgoCD API version.
argocd.argoproj.io/example-argocd created
akhil@LAPTOP-ARIT216A:~$ kubectl get pods
NAME                                      READY   STATUS              RESTARTS   AGE
example-argocd-application-controller-0   0/1     ContainerCreating   0          28s
example-argocd-redis-6545fd6d6c-6pklc     0/1     ContainerCreating   0          29s
example-argocd-repo-server-869d5757c7-s9kt8   0/1     Init:0/1            0          29s
example-argocd-server-76bb84cddc-7tt9j    0/1     ContainerCreating   0          29s
akhil@LAPTOP-ARIT216A:~$ kubectl get svc
NAME                          TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)             AGE
example-argocd-metrics        ClusterIP   10.98.14.87      <none>        8082/TCP            112s
example-argocd-redis          ClusterIP   10.110.106.151   <none>        6379/TCP            112s
example-argocd-repo-server    ClusterIP   10.109.12.57     <none>        8081/TCP,8084/TCP   112s
example-argocd-server         ClusterIP   10.104.242.29    <none>        80/TCP,443/TCP      112s
example-argocd-server-metrics ClusterIP   10.105.158.37    <none>        8083/TCP            112s
kubernetes                    ClusterIP   10.96.0.1        <none>        443/TCP             9h
akhil@LAPTOP-ARIT216A:~$ kubectl edit svc example-argocd-server
service/example-argocd-server edited
akhil@LAPTOP-ARIT216A:~$ kubectl get svc
NAME                          TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)                     AGE
example-argocd-metrics        ClusterIP   10.98.14.87      <none>        8082/TCP                    3m23s
example-argocd-redis          ClusterIP   10.110.106.151   <none>        6379/TCP                    3m23s
example-argocd-repo-server    ClusterIP   10.109.12.57     <none>        8081/TCP,8084/TCP           3m23s
example-argocd-server         NodePort    10.104.242.29    <none>        80:32098/TCP,443:31599/TCP  3m23s
example-argocd-server-metrics ClusterIP   10.105.158.37    <none>        8083/TCP                    3m23s
kubernetes                    ClusterIP   10.96.0.1        <none>        443/TCP                     9h
```

kubectl get pods

kubectl get svc

kubectl edit svc example-argocd-server

kubectl get svc

minikube service argocd-server

minikube service example-argocd-server

minikube service list

kubectl port-forward svc/example-argocd-server 8080:80

kubectl port-forward svc/example-argocd-server 8443:443

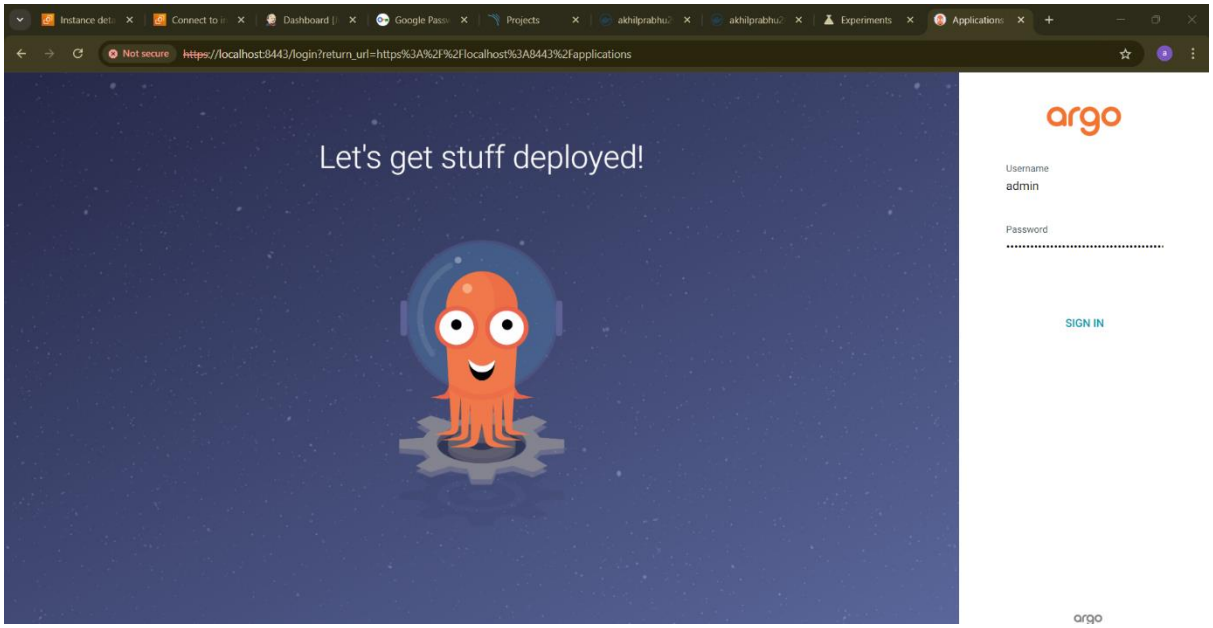
kubectl get secret

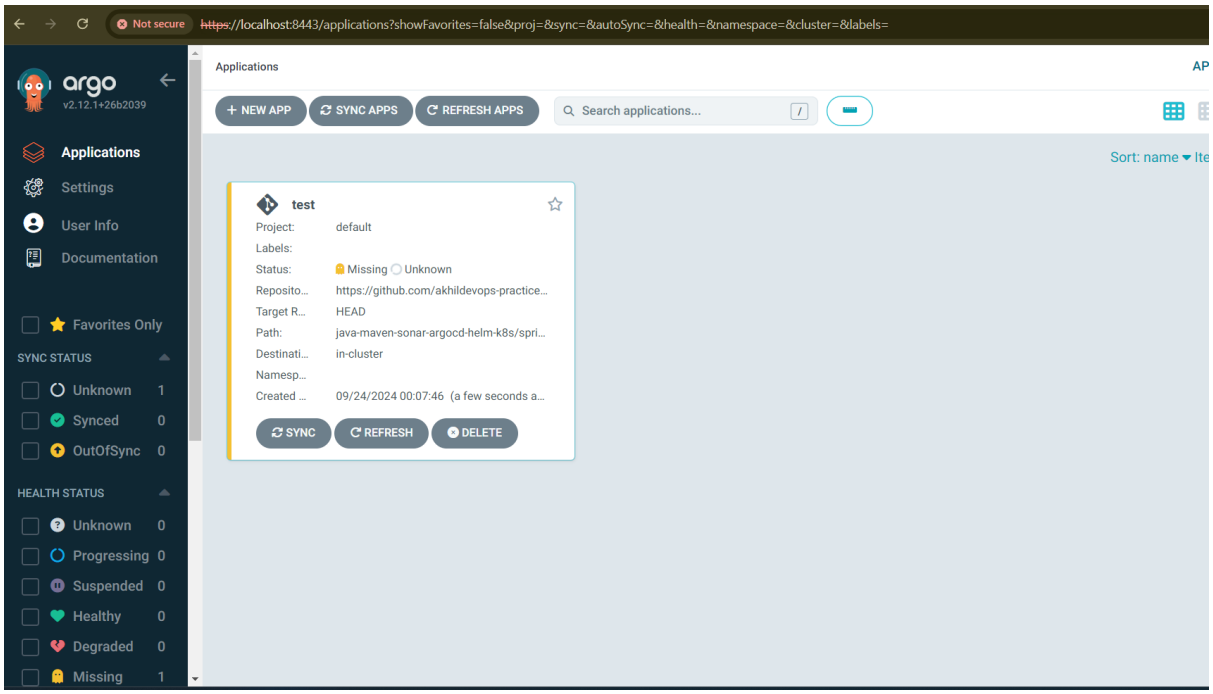
kubectl edit secret example-argocd-cluster

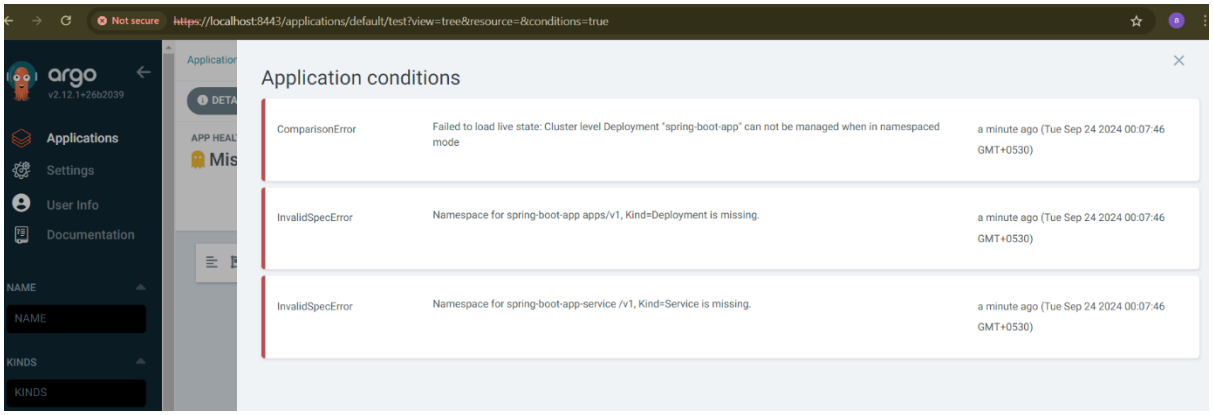
echo OFhaNEZyTGxIcFJvOTN5T25UbWFDanZnSTBlUURQZkc= | base64 -d

```
akhil@LAPTOP-ARIT216A:~$ minikube service example-argocd-server
|-----------|----------------------|-------------|--------------------------|
| NAMESPACE |         NAME         | TARGET PORT |           URL            |
|-----------|----------------------|-------------|--------------------------|
| default   | example-argocd-server | http/80     | http://192.168.49.2:32098 |
|           |                      | https/443   | http://192.168.49.2:31599 |
|-----------|----------------------|-------------|--------------------------|
[default example-argocd-server http/80
https/443 http://192.168.49.2:32098
http://192.168.49.2:31599]
akhil@LAPTOP-ARIT216A:~$ minikube service list
|-------------|-----------------------------------------------------|--------------|--------------------------|
|  NAMESPACE  |                       NAME                          | TARGET PORT  |           URL            |
|-------------|-----------------------------------------------------|--------------|--------------------------|
| default     | example-argocd-metrics                              | No node port |                          |
| default     | example-argocd-redis                                | No node port |                          |
| default     | example-argocd-repo-server                          | No node port |                          |
| default     | example-argocd-server                               | http/80      | http://192.168.49.2:32098 |
|             |                                                     | https/443    | http://192.168.49.2:31599 |
| default     | example-argocd-server-metrics                       | No node port |                          |
| default     | kubernetes                                          | No node port |                          |
| kube-system | kube-dns                                            | No node port |                          |
| olm         | operatorhubio-catalog                               | No node port |                          |
| olm         | packageserver-service                               | No node port |                          |
| operators   | argocd-operator-controller-manager-metrics-service  | No node port |                          |
| operators   | argocd-operator-controller-manager-service          | No node port |                          |
| operators   | argocd-operator-webhook-service                     | No node port |                          |
|-------------|-----------------------------------------------------|--------------|--------------------------|
akhil@LAPTOP-ARIT216A:~$ kubectl get pods
NAME                                      READY   STATUS    RESTARTS   AGE
example-argocd-application-controller-0   1/1     Running   0          5m41s
example-argocd-redis-6545fd6d6c-6pklc     1/1     Running   0          5m42s
example-argocd-repo-server-869d5757c7-s9kt8   1/1     Running   0          5m42s
example-argocd-server-76bb84cddc-7tt9j    1/1     Running   0          5m42s
```

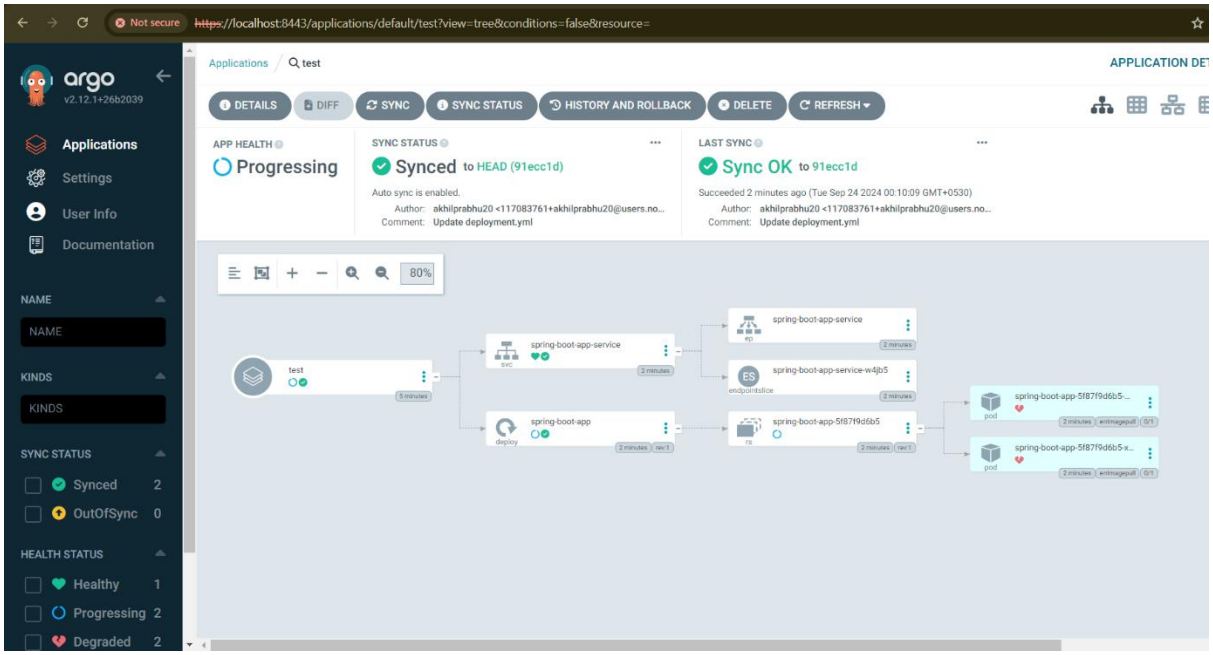
kubectl port-forward svc/example-argocd-server 8443:443

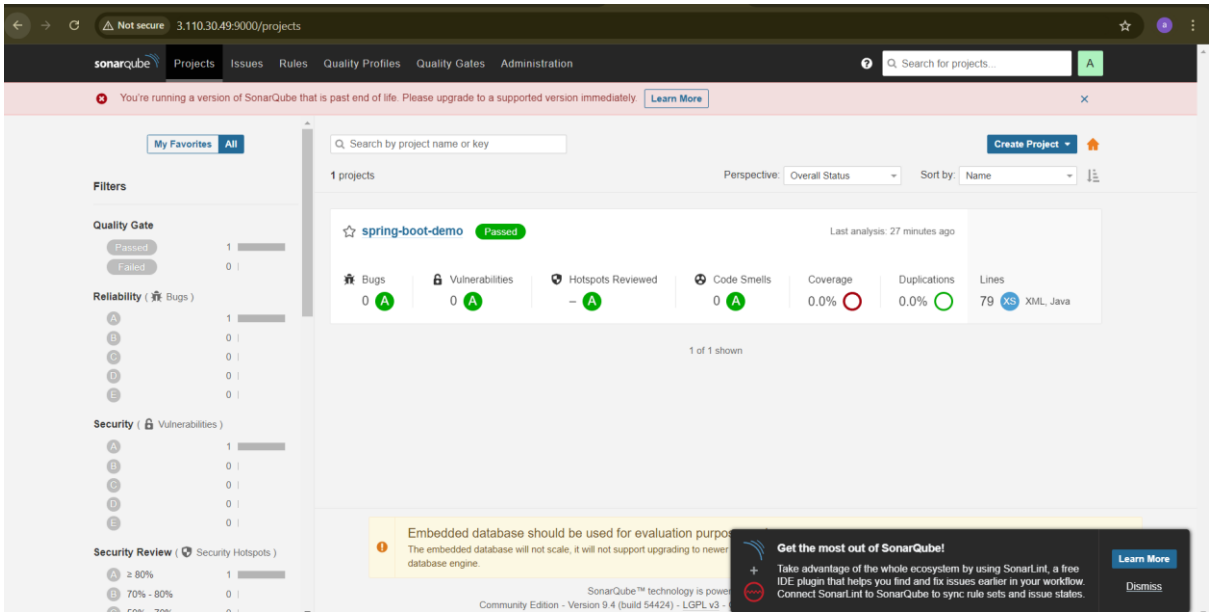


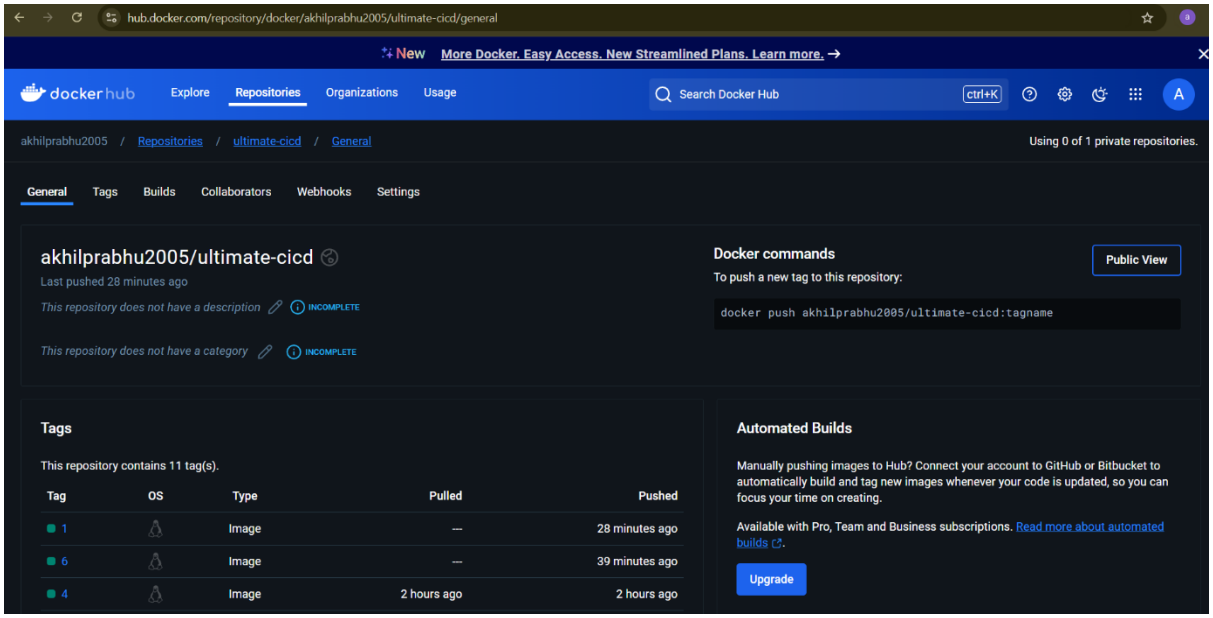


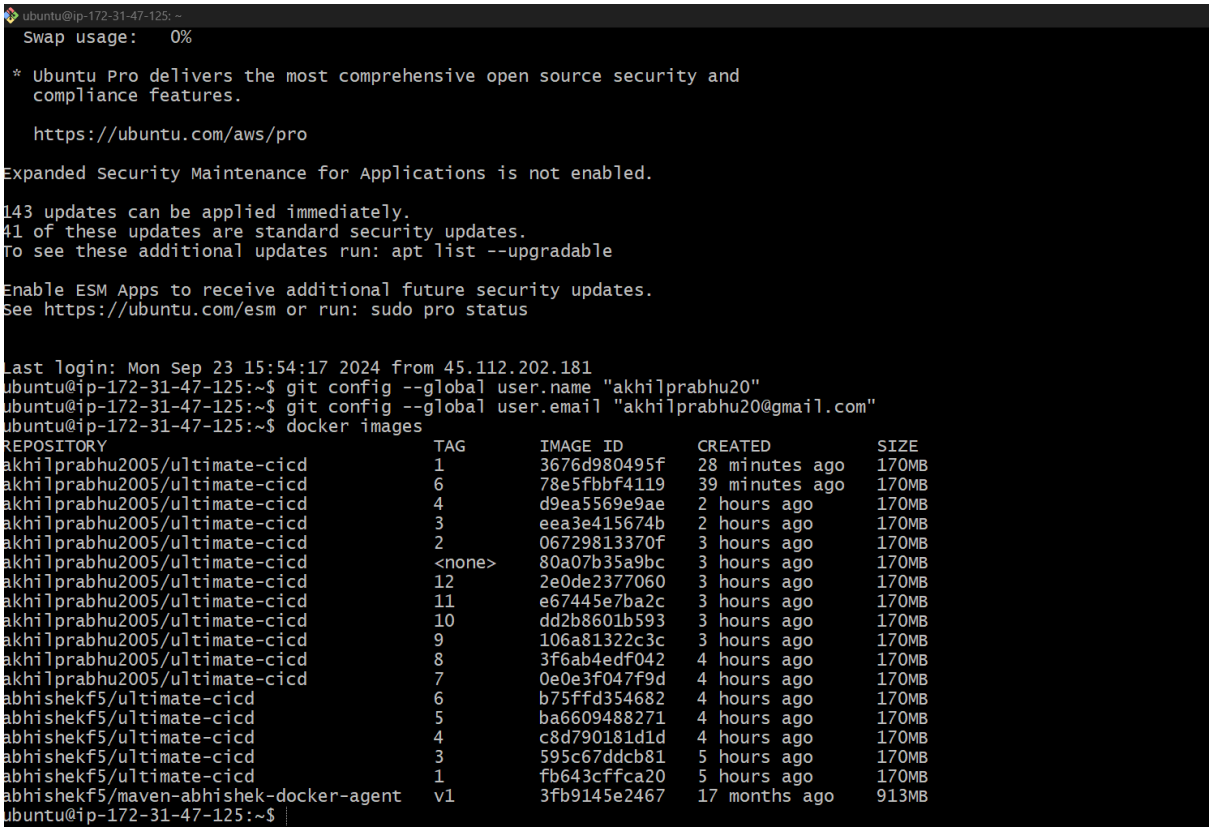


Mention the namespace as default.


Not secure
https://localhost:8443/applications/default/test?view=tree&conditions=false&resource=
argo
v2.12.1+26b2039
Applications
Settings
User Info
Documentation
NAME
KINDS
SYNC STATUS
Synced 2
OutOfSync 0
HEALTH STATUS
Healthy 1
Progressing 2
Degraded 2
Applications / test
APPLICATION DET
DETAILS
DIFF
SYNC
SYNC STATUS
HISTORY AND ROLLBACK
DELETE
REFRESH
APP HEALTH
Progressing
SYNC STATUS
Synced to HEAD (91ecc1d)
Auto sync is enabled.
Author: akhilprabhu20 <117083761+akhilprabhu20@users.no...
Comment: Update deployment.yml
LAST SYNC
Sync OK to 91ecc1d
Succeeded 2 minutes ago (Tue Sep 24 2024 00:10:09 GMT+0530)
Author: akhilprabhu20 <117083761+akhilprabhu20@users.no...
Comment: Update deployment.yml
80%
test
spring-boot-app-service
spring-boot-app
spring-boot-app-service-w4jb5
spring-boot-app-5f87f9d6b5


Not secure
3.110.30.49:9000/projects
sonarqube
Projects
Issues
Rules
Quality Profiles
Quality Gates
Administration
Search for projects...
You're running a version of SonarQube that is past end of life. Please upgrade to a supported version immediately.
Learn More
My Favorites
All
Filters
Quality Gate
Passed 1
Failed 0
Reliability (Bugs)
Security (Vulnerabilities)
Security Review (Security Hotspots)
≥ 80% 1
70% - 80% 0
Search by project name or key
Create Project
1 projects
Perspective: Overall Status
Sort by: Name
spring-boot-demo
Passed
Last analysis: 27 minutes ago
Bugs 0 A
Vulnerabilities 0 A
Hotspots Reviewed – A
Code Smells 0 A
Coverage 0.0%
Duplications 0.0%
Lines 79 XS XML, Java
1 of 1 shown
Embedded database should be used for evaluation purpos
The embedded database will not scale, it will not support upgrading to newer
database engine.
Get the most out of SonarQube!
Take advantage of the whole ecosystem by using SonarLint, a free IDE plugin that helps you find and fix issues earlier in your workflow. Connect SonarLint to SonarQube to sync rule sets and issue states.
Learn More
Dismiss
SonarQube™ technology is power
Community Edition - Version 9.4 (build 54424) - LGPL v3





```
ubuntu@ip-172-31-47-125: ~
  Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

143 updates can be applied immediately.
41 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


Last login: Mon Sep 23 15:54:17 2024 from 45.112.202.181
ubuntu@ip-172-31-47-125:~$ git config --global user.name "akhilprabhu20"
ubuntu@ip-172-31-47-125:~$ git config --global user.email "akhilprabhu20@gmail.com"
ubuntu@ip-172-31-47-125:~$ docker images
REPOSITORY                                TAG       IMAGE ID       CREATED          SIZE
akhilprabhu2005/ultimate-cicd             1         3676d980495f   28 minutes ago   170MB
akhilprabhu2005/ultimate-cicd             6         78e5fbbf4119   39 minutes ago   170MB
akhilprabhu2005/ultimate-cicd             4         d9ea5569e9ae   2 hours ago      170MB
akhilprabhu2005/ultimate-cicd             3         eea3e415674b   2 hours ago      170MB
akhilprabhu2005/ultimate-cicd             2         06729813370f   3 hours ago      170MB
akhilprabhu2005/ultimate-cicd             <none>    80a07b35a9bc   3 hours ago      170MB
akhilprabhu2005/ultimate-cicd             12        2e0de2377060   3 hours ago      170MB
akhilprabhu2005/ultimate-cicd             11        e67445e7ba2c   3 hours ago      170MB
akhilprabhu2005/ultimate-cicd             10        dd2b8601b593   3 hours ago      170MB
akhilprabhu2005/ultimate-cicd             9         106a81322c3c   3 hours ago      170MB
akhilprabhu2005/ultimate-cicd             8         3f6ab4edf042   4 hours ago      170MB
akhilprabhu2005/ultimate-cicd             7         0e0e3f047f9d   4 hours ago      170MB
abhishekf5/ultimate-cicd                  6         b75ffd354682   4 hours ago      170MB
abhishekf5/ultimate-cicd                  5         ba6609488271   4 hours ago      170MB
abhishekf5/ultimate-cicd                  4         c8d790181d1d   4 hours ago      170MB
abhishekf5/ultimate-cicd                  3         595c67ddcb81   5 hours ago      170MB
abhishekf5/ultimate-cicd                  1         fb643cffca20   5 hours ago      170MB
abhishekf5/maven-abhishek-docker-agent    v1        3fb9145e2467   17 months ago    913MB
ubuntu@ip-172-31-47-125:~$
```

kubectl get deploy

kubectl get pods

6. Configure Jenkins pipeline to integrate with Argo CD:

   6.1 Add the Argo CD API token to Jenkins credentials.

   6.2 Update the Jenkins pipeline to include the Argo CD deployment stage.

7. Run the Jenkins pipeline:

7.1 Trigger the Jenkins pipeline to start the CI/CD process for the Java application.

7.2 Monitor the pipeline stages and fix any issues that arise.

This end-to-end Jenkins pipeline will automate the entire CI/CD process for a Java application, from code checkout to production deployment, using popular tools like SonarQube, Argo CD, Helm, and Kubernetes.

Errors:

1. Got an Issue of at the stage of SonarQube url?

a. I have changed the url based on my ip address, committed and pushed. And i also added the SonarQube security issue by adding the credentials of SonarQube at credentials by adding token and all.

2. Got an issue of docker image at build and push docker image?

a. Solved it by changing the docker registry of my account to it. Because we are using our docker credentials.

3. Got an issue at last deployment stage?

a. Solved it by configuring my GitHub username and email in ec2 instance.

Forked the repository and updated my credentials in Jenkins File and deleted the present token and created fine grained token with all the permissions.

4. After configuring argocd we need to host it in browser but it is not worked?

a. First made a port forwarding to http and https, to local host.

Add an Exception for the Self-Signed Certificate

If you must use HTTPS, you can add an exception for the self-signed certificate. In Chrome:

Go to chrome://flags/#allow-insecure-localhost.

Set Allow invalid certificates for resources loaded from localhost to Enabled.