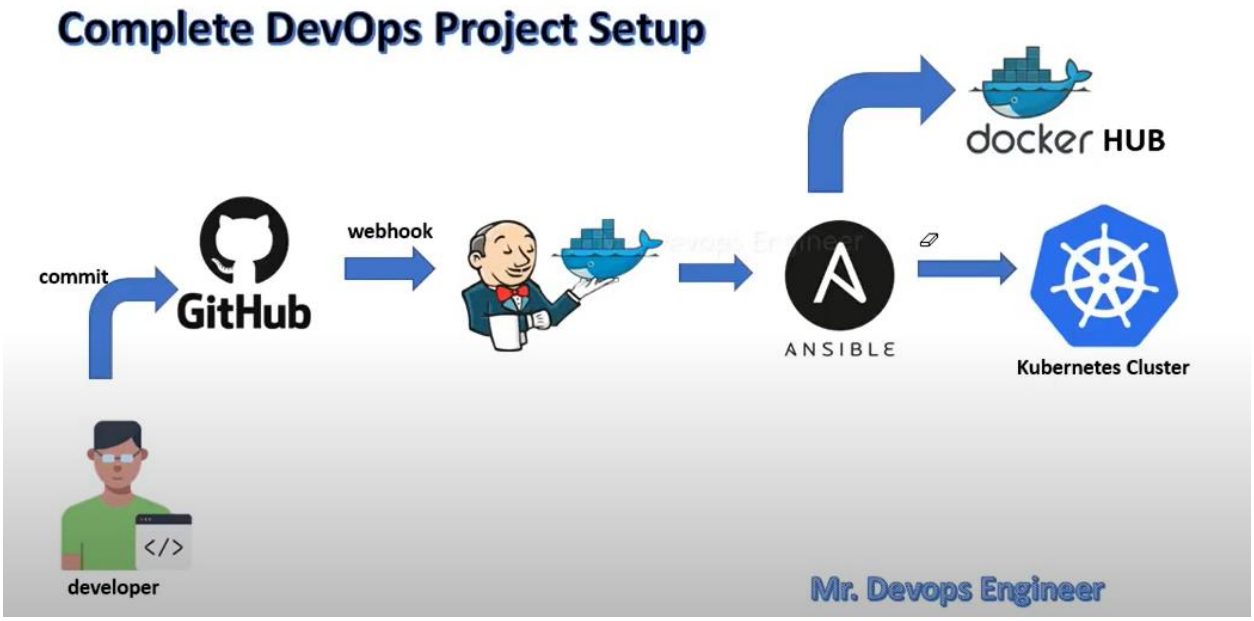


We will have deployment on Kubernetes cluster using Jenkins CICD pipeline .

CODE pushed to GITHUB -> NEW COMMITS WILL BE NOTIFIED TO JENKINS USING WEBHOOK -> JENKINS WILL SSH CODE TO ANSIBLE AND KUBERNETES SERVER -> ANSIBLE WILL READ DOCKERFILE FROM CODE , BUILD THE IMAGE , TAG IT , PUSH to docker hub -> ansible will run playbook to fetch latest image that will run Kubernetes service and deployment .

From image container will be built and application accessible will be done on Kubernetes using service.yml .

PRE – REQS :
GITHUB , LINUX , JENKINS , DOCKER , DOCKERHUB , ANSIBLE , KUBERNETES .

3 ec2 instances :

---

1. Jenkins (default-jre+ jenkins)
2.Ansible (python+ansible+docker)
3.Webapp(kubernetes cluster) -->(docker+minikube)

Dockerfile, Git Commit and Trigger Jenkins Job using Webhook -03

Jenkins will be notified of new commit by web hooks and it will trigger job automatically .

Create pipeline . – we will write descriptive pipeline .

New item > pipeline

STAGE 1 IN PIPELINE :

Write pipeline script or we can use pipeline syntax also .

First let's do git checkout of code using pipeline :

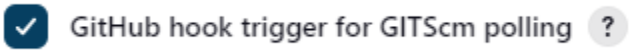
Pipeline script

Script ?

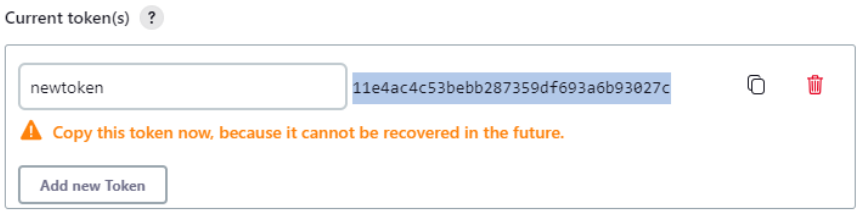
```
node{
    stage('GIT_CHECKOUT'){
        git 'https://github.com/sapnarsy2612/KUBERNETES_DEPLOYMENT_USING_JENKINS.git'
    }
}
```

Once done .

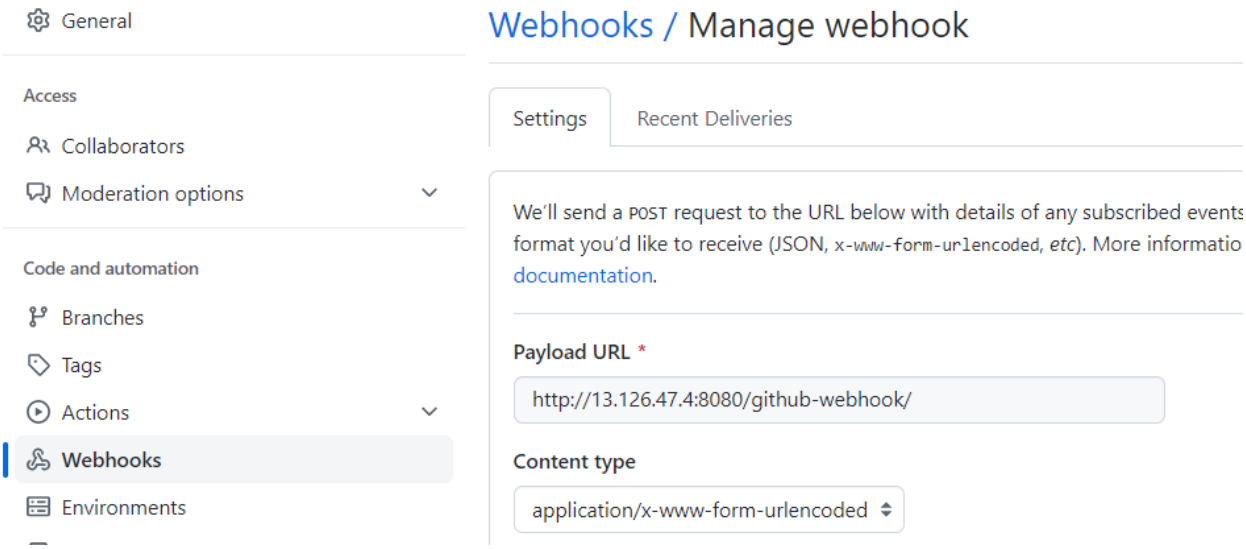
To initiate webhook enable below property in pipeline .



Create Jenkins API token to add in webhook :



Also add webhook in github .

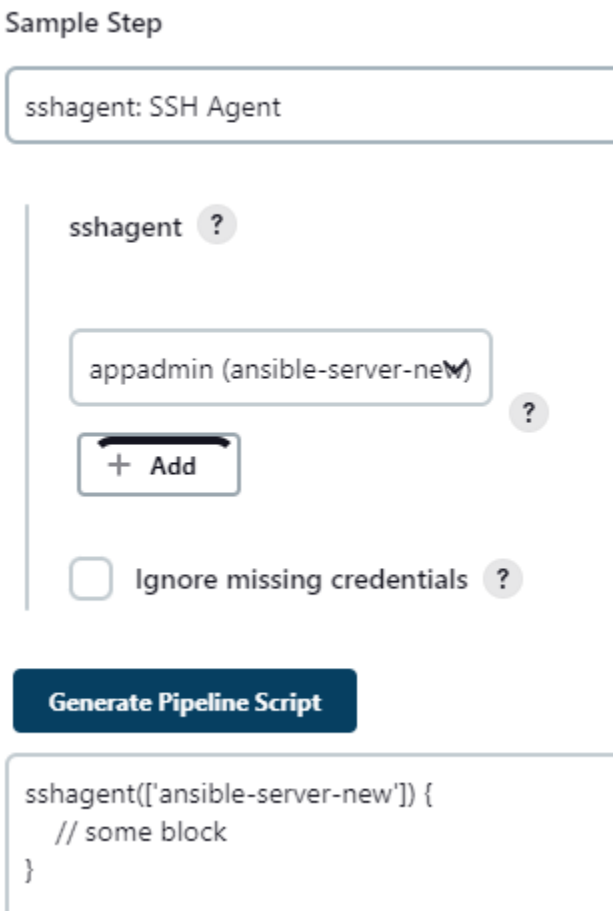


Add Jenkins API as secret in webhook , note the URL – http://Jenkins-url/github-webhook

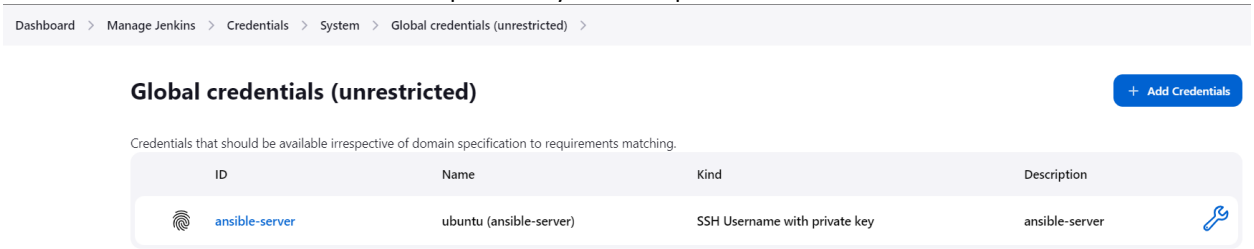
STAGE 2 IN PIPELINE:

Now, Sending Docker file to ansible using ssh agent and build docker images.
Add 1 more stage in pipeline:

Check pipeline syntax:



Add ansible server creds in Jenkins – add private key of rsa of .pem file .



In this stage we will scp all files from Jenkins workspace to ansible server using pipeline .

Pipeline script

Script ?

```
node{
    stage('GIT_CHECKOUT'){
        git 'https://github.com/sapnarsy2612/KUBERNETES_DEPLOYMENT_USING_JENKINS.git'
    }
    stage('SENDING_DOCKERFILE_TO_ANSIBLE_SERVER'){
        sshagent(['ansible-server']) {
          sh 'ssh -T -o StrictHostKeyChecking=no ubuntu@13.233.96.242 pwd'
          sh 'scp /var/lib/jenkins/workspace/KUBERNETES_DEPLOYMENT_PIPELINE/* ubuntu@13.233.96.242:/home/ubuntu'
}
    }
}
```

Now scp is done to ansible server .

Ssh -o stricthostkeychecking :

command is used to set the level of strictness for checking the host key of a remote server when connecting throug h SSH. By default, SSH will prompt the user to confirm the host key fingerprint when connecting to a new server for the first time. This prompt is designed to protect against man-in-the-
middle attacks, which can occur when an attacker intercepts the SSH connection and poses as the remote server.W hen you use the "ssh -
o stricthostkeychecking" command, you can set the level of strictness for checking the host key of the remote serve r to either "yes", "no", or "ask"."yes" will cause SSH to automatically reject the connection if the host key does not match the known key for the remote server."no" will cause SSH to automatically accept any host key presented by t he remote server, without checking it against the known key."ask" will cause SSH to prompt the user to confirm wh ether they want to connect to the remote server, based on the host key presented by the server.It's important to n ote that setting the "stricthostkeychecking" option to "no" can be dangerous, as it removes the protection against man-in-the-
middle attacks. Therefore, it's recommended to use the "ask" or "yes" options, unless you have a specific reason to use "no".has context menu .

STAGE 3 BUILD AND TAG DOCKER IMAGE

Ansible will build and tag images using dockerfile that is transferred from Jenkins .
To maintain version of images , we will use tag docker image based on build number .

Now add 1 more stage in pipeline .

Pipeline script

Script ?

```
node{
    stage('GIT_CHECKOUT'){
        git 'https://github.com/sapnarsy2612/KUBERNETES_DEPLOYMENT_USING_JENKINS.git'
    }
    stage('SENDING_DOCKERFILE_TO_ANSIBLE_SERVER'){
        sshagent(['ansible-server']) {
          sh 'ssh -T -o StrictHostKeyChecking=no ubuntu@13.233.96.242 pwd'
          sh 'scp /var/lib/jenkins/workspace/KUBERNETES_DEPLOYMENT_PIPELINE/* ubuntu@13.233.96.242:/home/ubuntu'
}
    }
    stage('BUILD_DOCKERIMAGE'){
        sshagent(['ansible-server']) {
            sh 'ssh -T -o StrictHostKeyChecking=no ubuntu@13.233.96.242 cd /home/ubuntu'
            sh 'ssh -T -o StrictHostKeyChecking=no ubuntu@13.233.96.242 docker image build -t $JOB_NAME:v1.$BUILD_ID .'
        }
    }
}
```

$JOB_NAME – it will use job name of this particular pipeline as docker image name.
$BUILD_ID – it will use build number of this build as version for tagging docker image .

Once build is successful go to ansible server and check docker image :
docker image ls .

```
ubuntu@ip-172-31-7-122:~$ docker image ls
REPOSITORY                          TAG       IMAGE ID       CREATED          SIZE
kubernetes_deployment_pipeline      v1.17     7192a9cf466f   3 days ago       336MB
kubernetes_deployment_pipeline      v1.19     7192a9cf466f   3 days ago       336MB
hello-world                         latest    feb5d9fea6a5   18 months ago    13.3kB
centos                              latest    5d0da3dc9764   18 months ago    231MB
```

TAG DOCKER IMAGE :

Push Docker image to Dockerhub : Create account in Dockerhub .

```
ubuntu@ip-172-31-7-122:~$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't hav
o create one.
Username: sravtar
Password:
WARNING! Your password will be stored unencrypted in /home/ubuntu/.docker/config.js
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-7-122:~$
```

Login to Docker hub from ansible server.

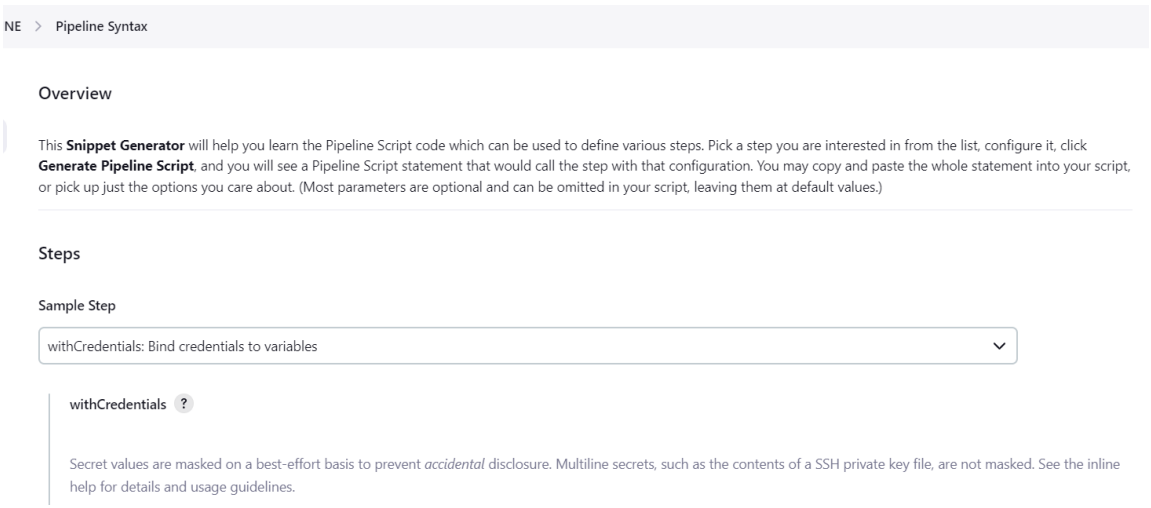
First tag the image:
Add stage to tag image in Jenkins pipeline:

```
stage('TAG_IMAGE'){
    sshagent(['ansible-server']){
        sh 'ssh -T -o StrictHostKeyChecking=no ubuntu@43.204.233.113 cd /home/ubuntu'
        sh '''
        JOB_SMALL=$(echo "$JOB_NAME" | tr '[:upper:]' '[:lower:]')
        ssh -T -o StrictHostKeyChecking=no ubuntu@43.204.233.113 docker image tag $JOB_SMALL:v1.$BUILD_ID sravtar/$JOB_SMALL:v1.$BUILD_ID
        ssh -T -o StrictHostKeyChecking=no ubuntu@43.204.233.113 docker image tag $JOB_SMALL:v1.$BUILD_ID sravtar/$JOB_SMALL:latest
        '''
    }
}
```

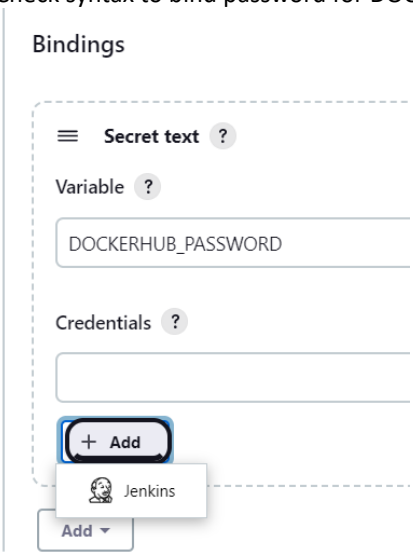
Tag the image to your profile name, e.g.: sravtar for my account name.

PUSH IMAGE TO DOCKER HUB FROM ANSIBLE SERVER:

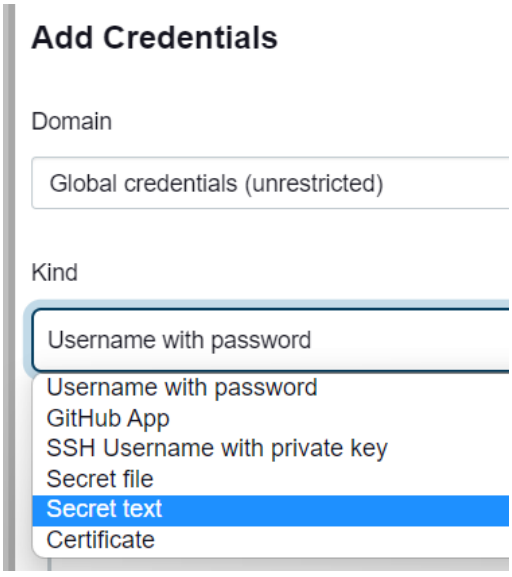
Add new stage in pipeline. As our image reside in ansible server first we have to ssh to ansible server from jenkins , after that login to docker hub from ansible . We have to provide password for dockerhub in jenkins script but we can't provide password as it is so we can check syntax for creds in Jenkins .



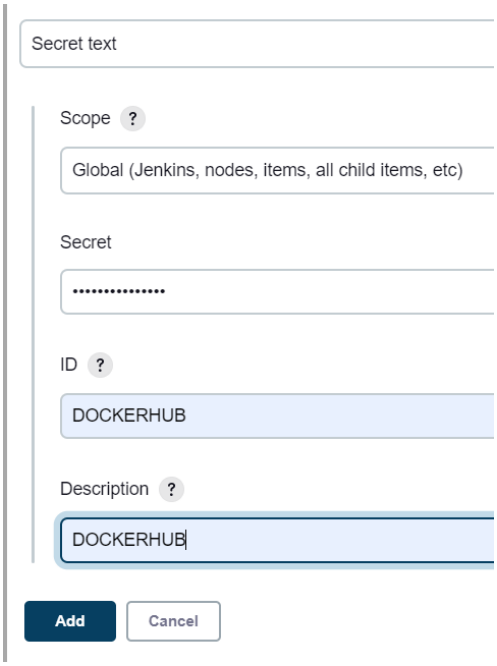
Check syntax to bind password for DOCKERHUB .

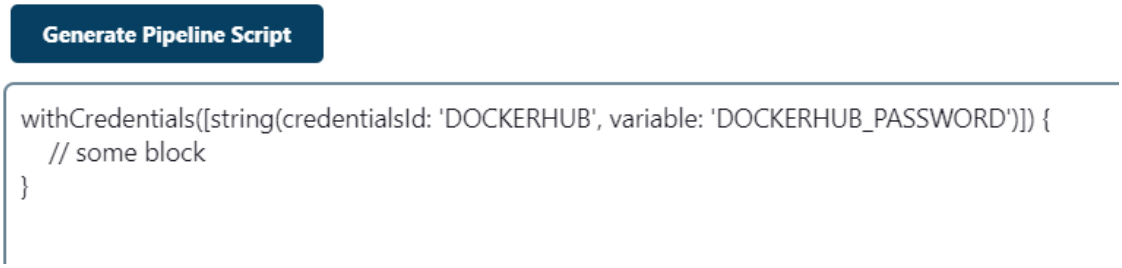


Now add credentials .



Add creds as : Secret text .





Syntax.

withCredentials ([string(credentialsId: 'DOCKERHUB', variable: 'DOCKERHUB_PASSWORD')]) {
  // some block
}

Pipeline script :

```
    }
    stage('PUSH_DOCKERIMAGE_TO_DOCKERHUB'){
        sshagent(['ansible-server']){
            withCredentials([string(credentialsId: 'DOCKERHUB', variable: 'DOCKERHUB_PASSWORD')]) {
                sh 'ssh -T -o StrictHostKeyChecking=no ubuntu@43.204.233.113 docker login -u sravtar -p $DOCKERHUB_PASSWORD'
                sh '''
                JOB_SMALL=$(echo "$JOB_NAME" | tr '[:upper:]' '[:lower:]')
                ssh -T -o StrictHostKeyChecking=no ubuntu@43.204.233.113 docker image push sravtar/$JOB_SMALL:v1.$BUILD_ID
                ssh -T -o StrictHostKeyChecking=no ubuntu@43.204.233.113 docker image push sravtar/$JOB_SMALL:latest
                '''
}
        }
    }
}
```

Using above script we can login to docker hub and push docker image .

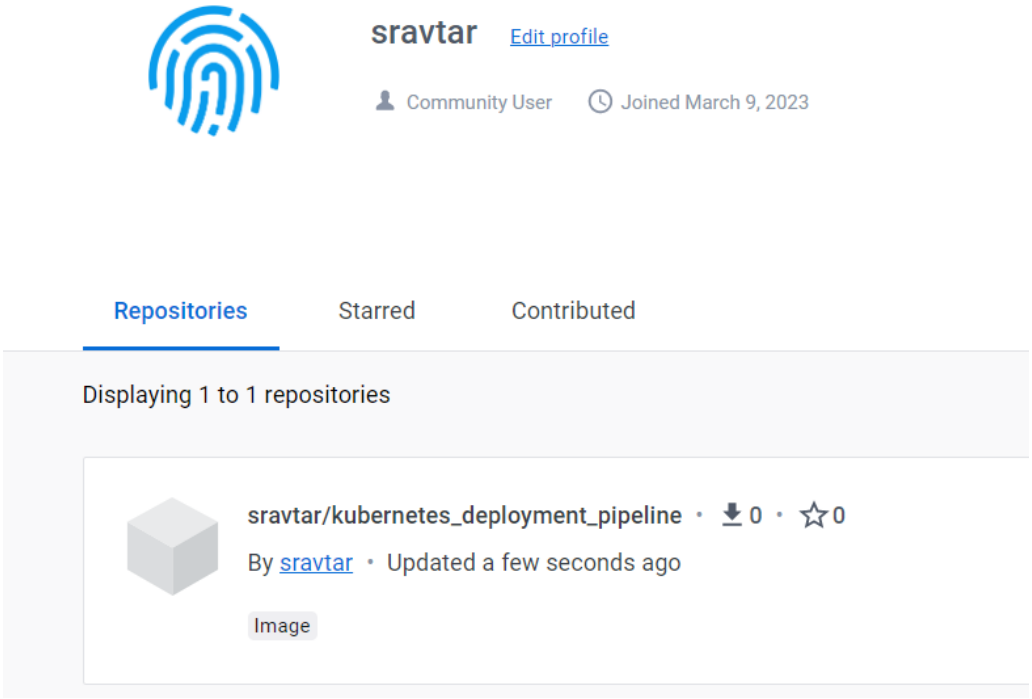


Image pushed to docker hub.