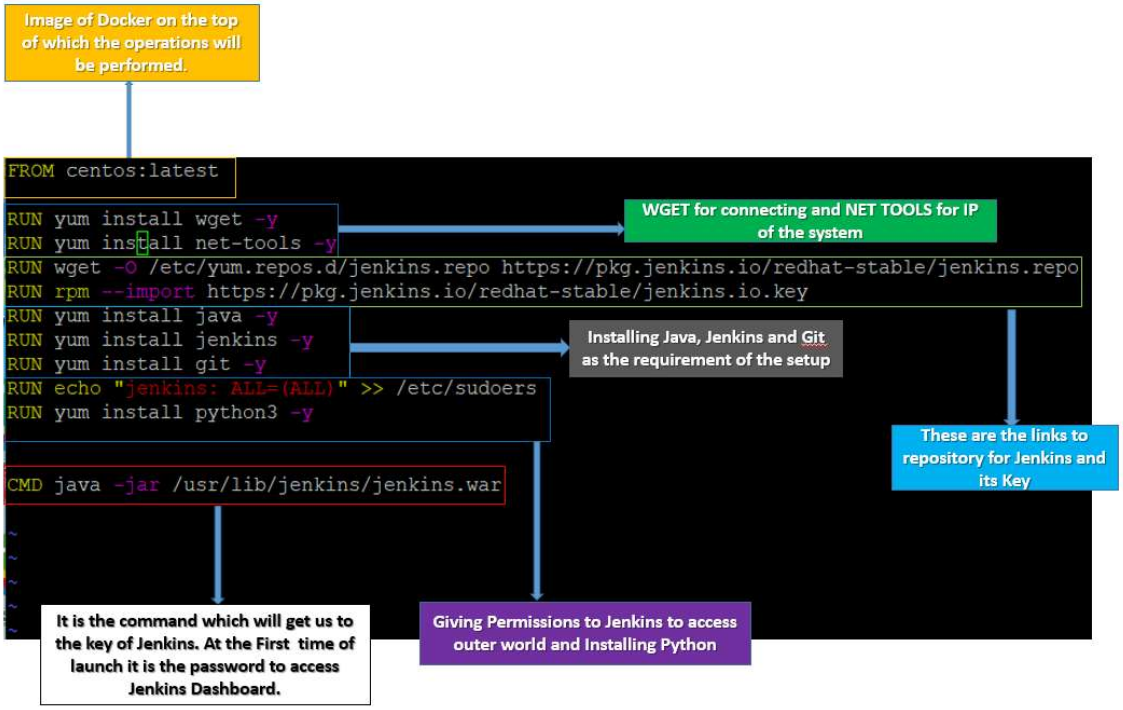
TAKE HOME ASSIGNMENT [CLIFF.AI]

Pre Setup Done

1. SCM and VCS is Jenkins and GitHub, Git
2. RHEL 8 Installed and working.
3. Yum setup and working.
4. Docker Installed and Running.
5. Centos Image downloaded from Docker Hub.
6. Using Putty and Linux Terminal for the setup.
7. Git Installed and Files pushed

STEP -1 First of all we will create a Docker file which will create the image of Jenkins and as to explain each command it is done below.



STEP -2 Now after writing this we need to build the image by the command shown below.

```
[root@localhost jenkins]# docker build -t jenkins:latest .
Sending build context to Docker daemon  2.048kB
Step 1/11 : FROM centos:latest
 ---> 0d120b6ccaa8
Step 2/11 : RUN yum install wget -y
 ---> Using cache
 ---> 3de54ce4cc48
Step 3/11 : RUN yum install net-tools -y
 ---> Running in d5b8aaf8ec9f
Last metadata expiration check: 0:01:50 ago on Thu Aug 19 07:15:52 2021.
Dependencies resolved.
```

STEP -3 Once the command is executed you will be getting a password for Jenkins dashboard which is required for the first time of launching.

```
*************************************************************
*************************************************************

Jenkins initial setup is required. An admin user has been created and a password
 generated.
Please use the following password to proceed to installation:

634e3d0574be49e8bc9760a580e73ced

This may also be found at: /root/.jenkins/secrets/initialAdminPassword

*************************************************************
*************************************************************
*************************************************************
```

STEP-4 Now once it is done we need to launch the container with patting of the container i.e. opening the container for the public world with the command shown below.

```
[root@localhost jenkins]# docker run -it --privileged -p 8081:8080 -v /:/host je
nkins:latest
Running from: /usr/lib/jenkins/jenkins.war
webroot: $user.home/.jenkins
2021-08-19 07:36:45.610+0000 [id=1]     INFO    org.eclipse.jetty.util.log.Log#i
nitialized: Logging initialized @1787ms to org.eclipse.jetty.util.log.JavaUtilLo
g
2021-08-19 07:36:46.693+0000 [id=1]     INFO    winstone.Logger#logInternal: Beg
inning extraction from war file
2021-08-19 07:36:49.672+0000 [id=1]     WARNING o.e.j.s.handler.ContextHandler#s
```

STEP -5 Now once it is done we can check it by the docker ps command as shown below.

```
[root@localhost jenkins]# docker ps
CONTAINER ID        IMAGE               COMMAND                  CREATED
      STATUS              PORTS                    NAMES
b237e54521c5        jenkins:latest      "/bin/sh -c 'java -j…"   About a minute
ago    Up 59 seconds       0.0.0.0:8081->8080/tcp   cocky_ritchie
```

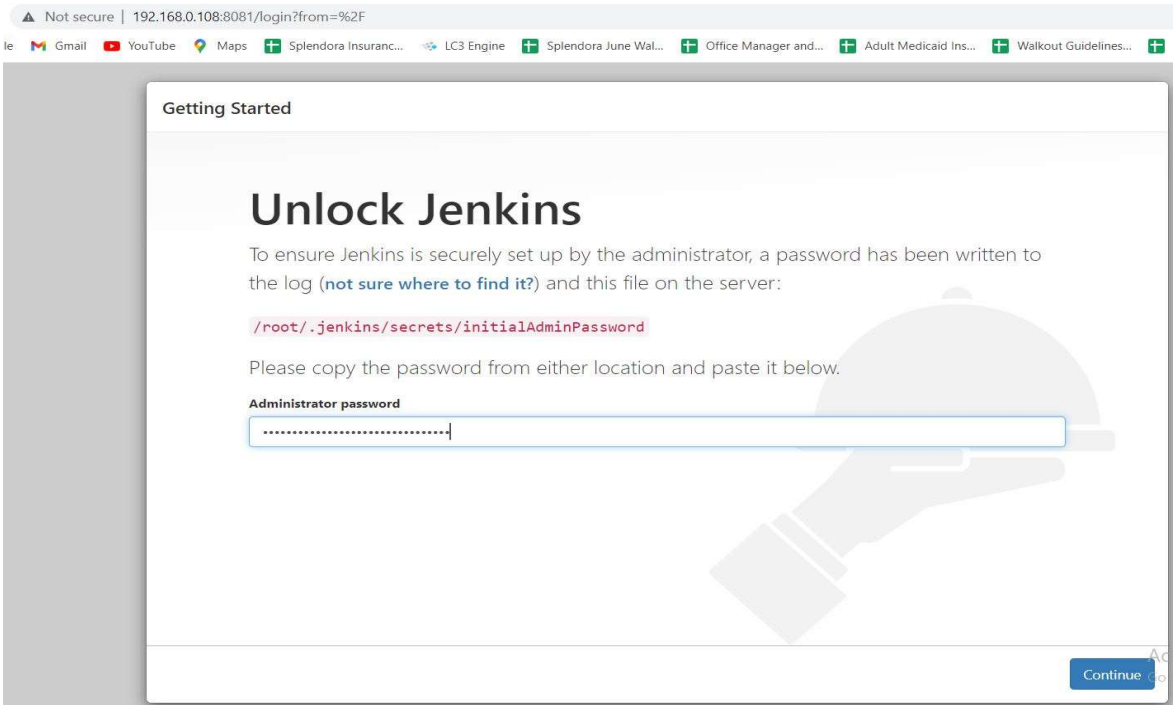
STEP -6 Now take the IP of the RHEL 8 and then with port no. access it on the Chrome Browser as shown below.

A) For knowing the IP of the System : Use the Command below

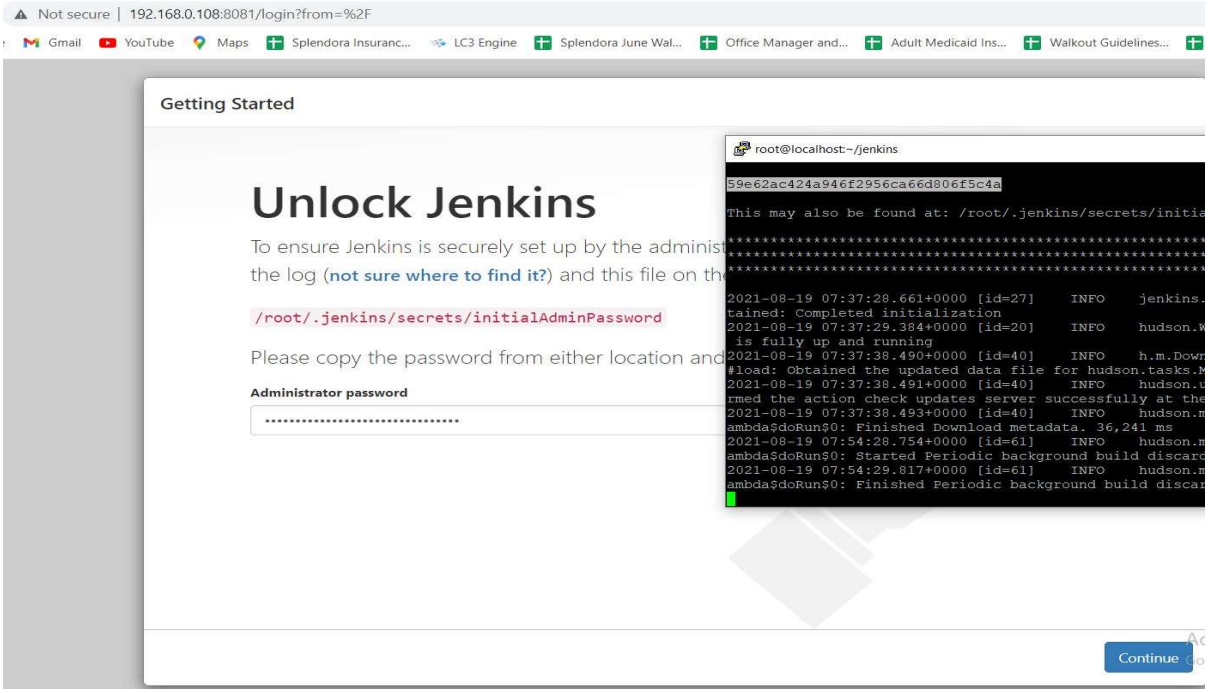
```
[root@localhost jenkins]# ifconfig enp0s3
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.0.108  netmask 255.255.255.0  broadcast 192.168.0.255
        inet6 fe80::7567:71bf:5fa1:7032  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:17:4e:81  txqueuelen 1000  (Ethernet)
        RX packets 9406  bytes 12660965 (12.0 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 2274  bytes 171208 (167.1 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Network Interface Card of the System

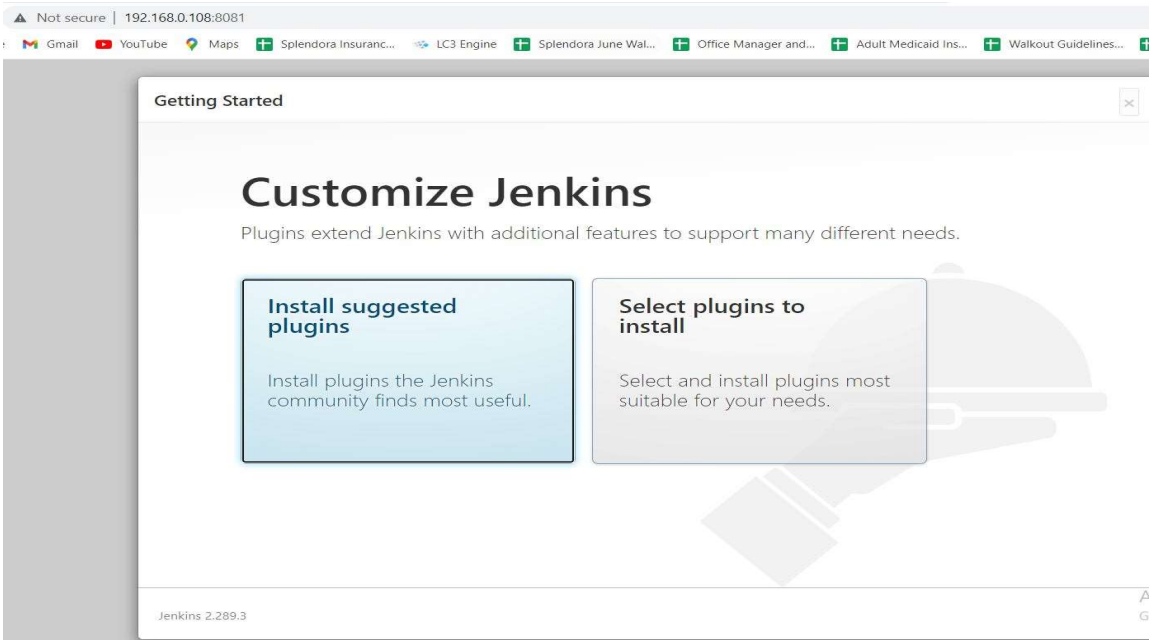
IP of the System



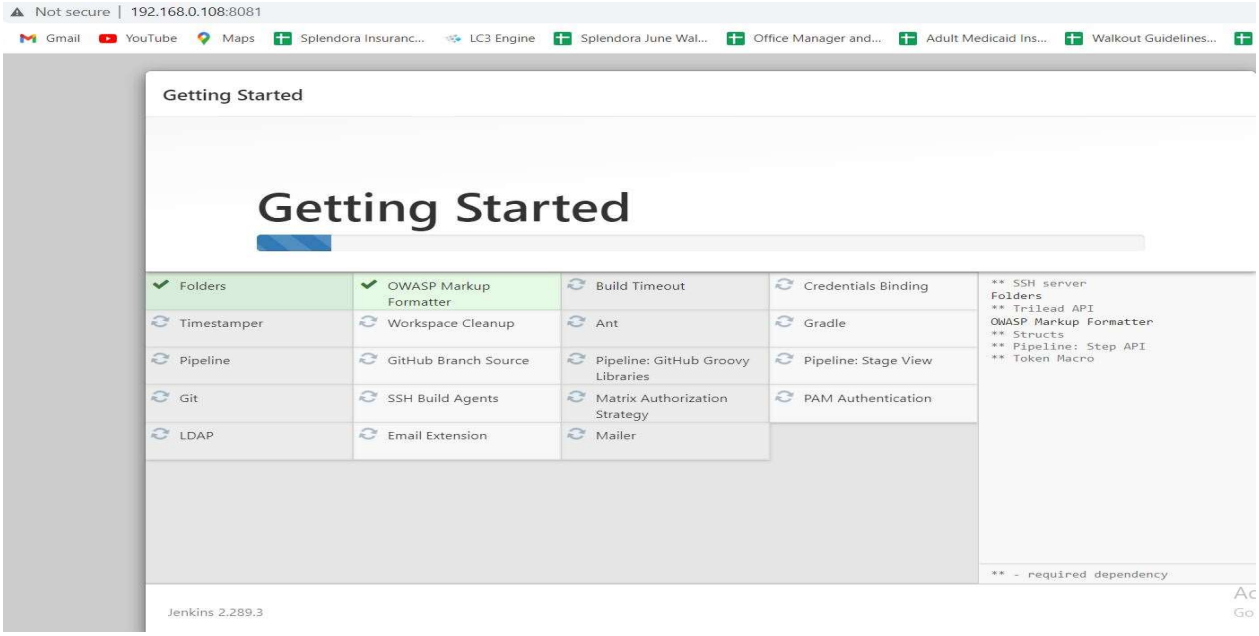
STEP -7 Enter the Password to the column of dashboard as shown below.

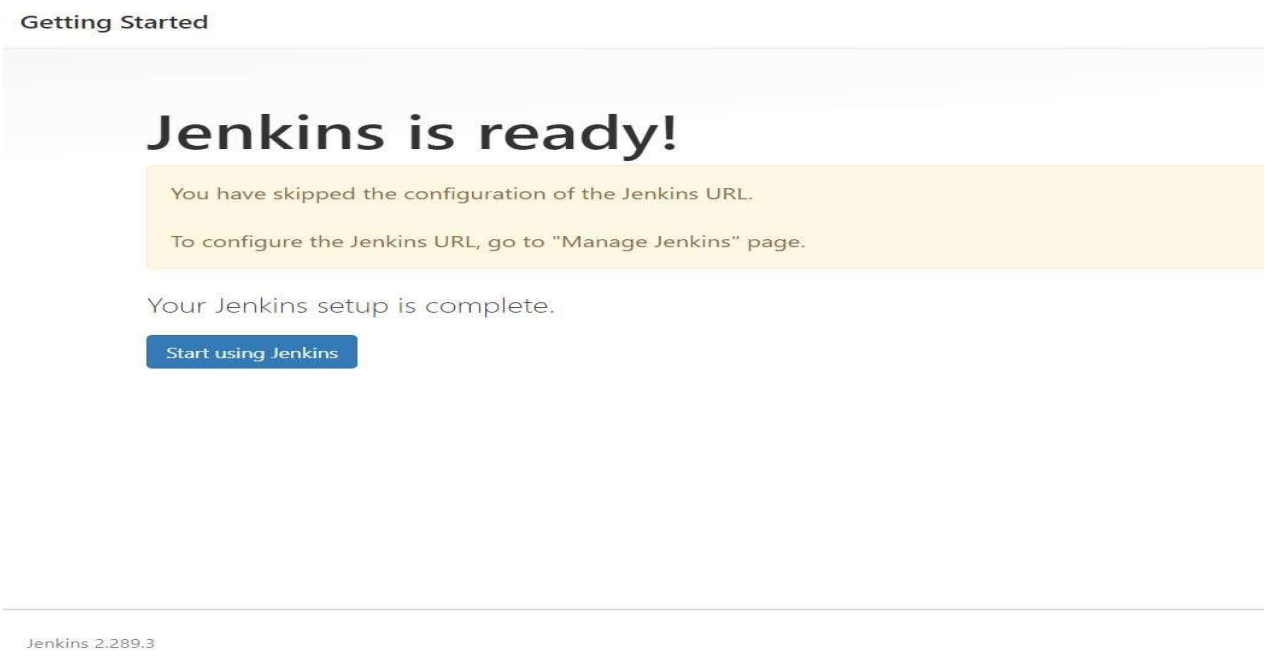


STEP -8 Once it is done and you click on Continue you need to install the plugins. You can choose for selected or suggested plugins that is installed at the time of installation.

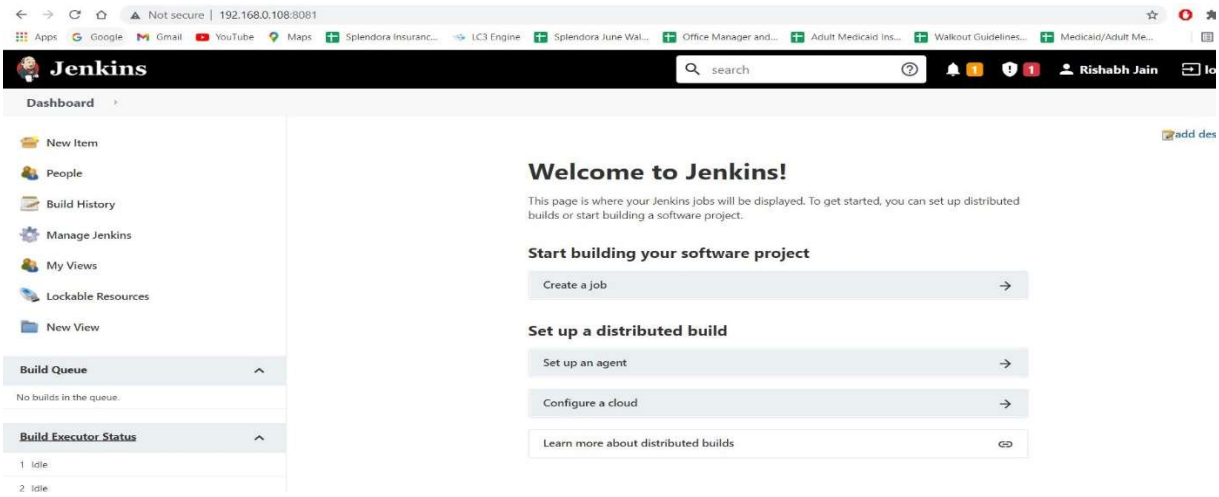


STEP -9 I choose for suggested plugins and then was landed to the page shown below and then set for the credentials to access the Jenkins.





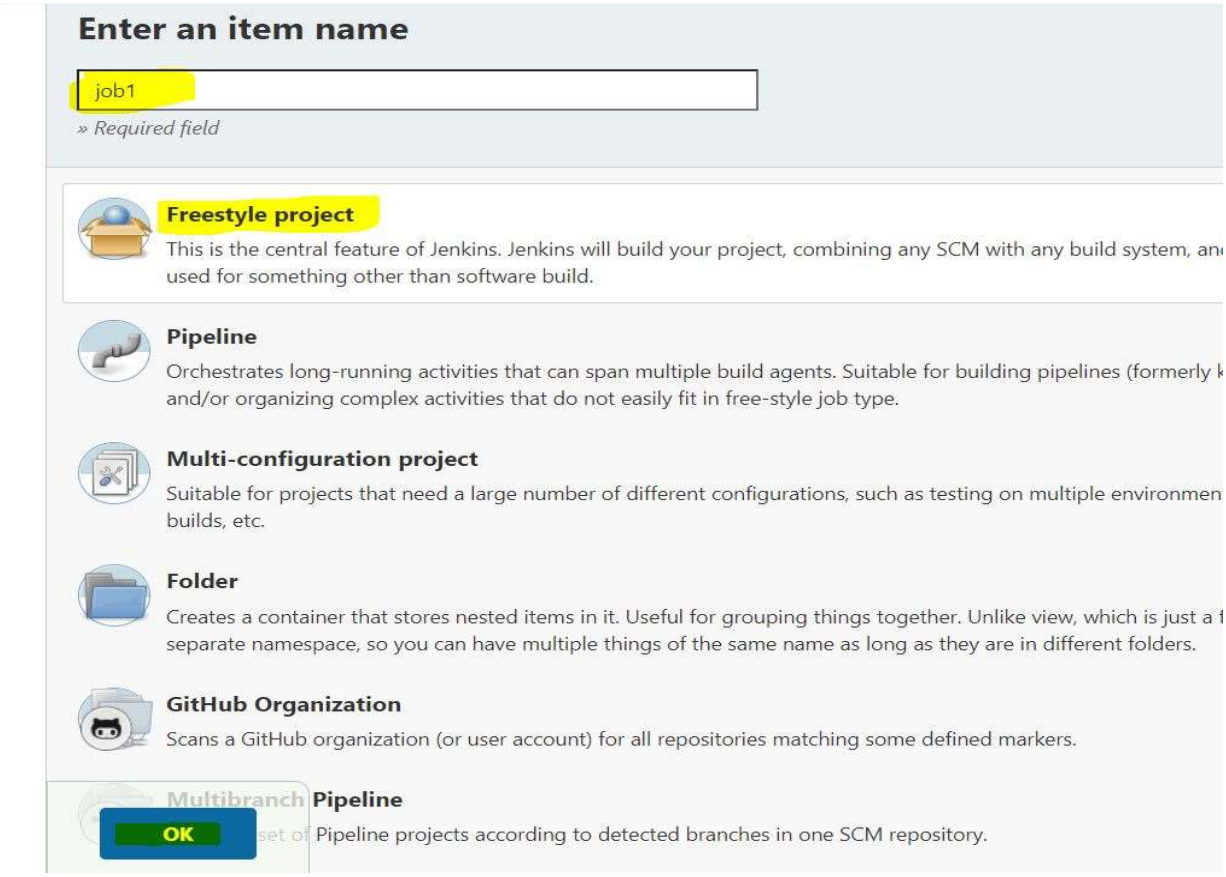
And Here is Your Jenkins Dashboard



STEP -10 Now I will be creating the jobs for the further setup.

#JOB-1

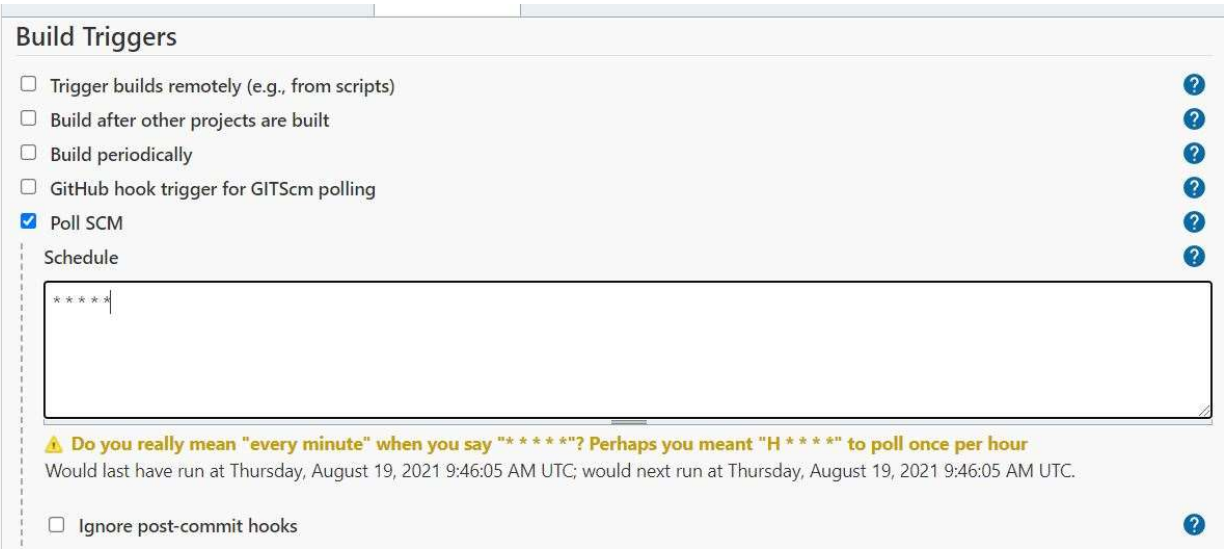
A free style project for making the directory. (It will be done inside a container).



In that I will be connecting it to the GitHub with the link of the repository where the web files are already pushed by Git.

Now I will choose for the Execute Shell option and will write the code for making the directory. (Remove is done as once it is created then for other time job will give an error and then to create the directory and copy all the files to the folder.)

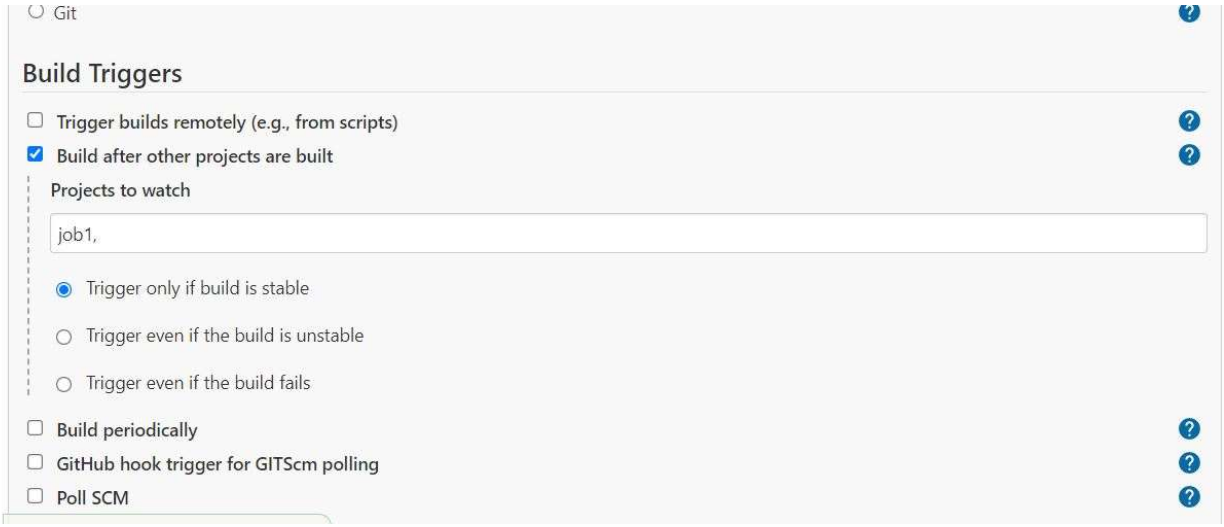
For continuous integration and for every time the code is updated the Jenkins will check to the GitHub Repo and will run the job for updating the web server (Only if there is any new commit in the GitHub).
So, I will be using Poll SCM option (I have set it for every minute one can decide on its need)



Just saved it and will move to create the next job.

#JOB-2

Now in Job 2 we will be connecting it to job 1 that if Job-1 is build successfully then only Job-2 will run and the further deployment will be done.



After this is done we will execute shell code as shown below
In this I have written shell script code put the conditions to first delete the container named as htmlserver and then launch to the new one or if there is no container launch one with patting and used the image of pre created webserver downloaded from docker hub.

Build

Execute shell

Command

```
chroot /host /bin/bash <<"EOT"
export len=$(ls /webserver | grep index | grep html | wc -l)

if [$lenc-gt 0]
then
docker ps  | grep htmlserver
then
docker rm -f htmlwebserver
docker run -dit -p 8085:80 -v /webserver:/var/www/html/ --name htmlwebserver vimal13/webserver
else
docker run -dit -p 8085:80 -v /webserver:/var/www/html/ --name htmlwebserver vimal13/webserver
fi

fi

EOT
```

See the list of available environment variables

Just saved it and will move on Job-3

#JOB-3

Now in Job 3 we will be connecting it to job 2 that if Job-2 is build successfully then only Job-3 will run and the further connection check will be done.

Build Triggers

- [ ] Trigger builds remotely (e.g., from scripts)
- [x] Build after other projects are built

Projects to watch

job2,

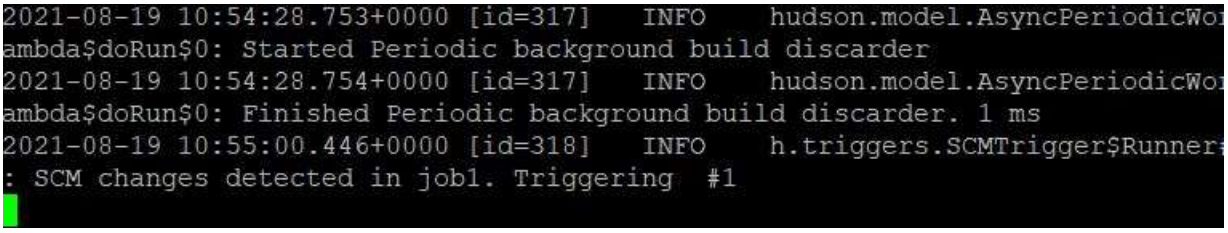
- (•) Trigger only if build is stable
- ( ) Trigger even if the build is unstable
- ( ) Trigger even if the build fails

- [ ] Build periodically
- [ ] GitHub hook trigger for GITScm polling
- [ ] Poll SCM

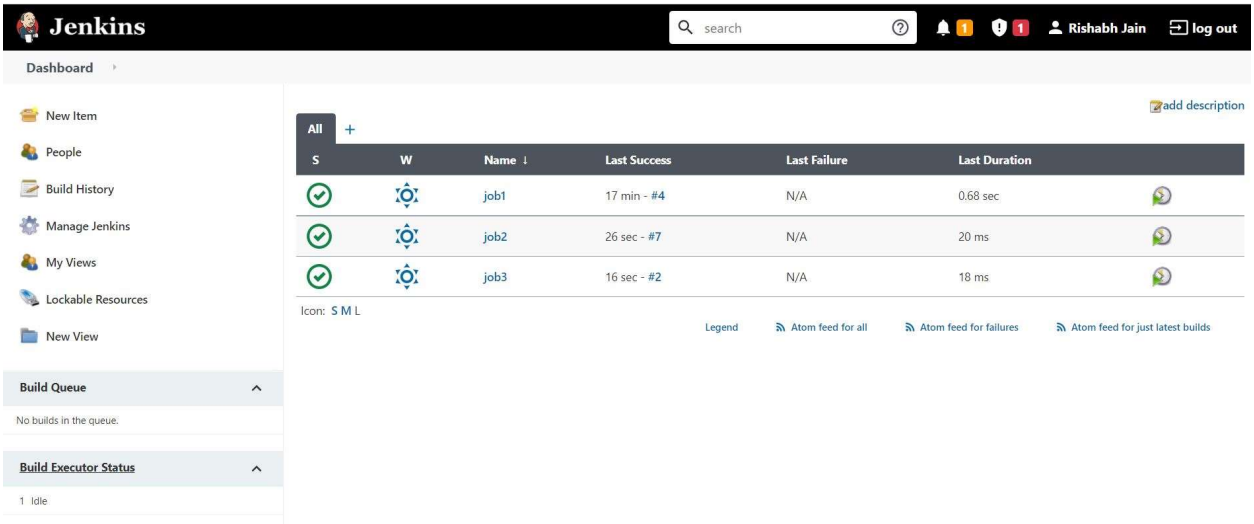
After this is done I will write the code for checking that if the connection is 200 i.e. it is connected it will show that the job is run and deployment is done

successfully.(http_code is a Env. Variable which is used here to check the status as shown below).

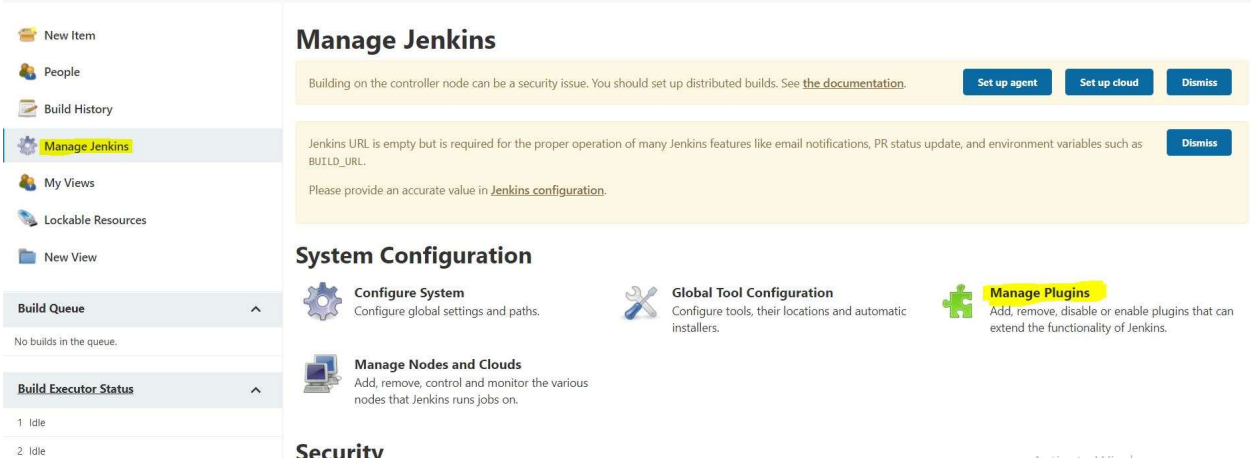
Now we will trigger the jobs one by one as shown in below screenshots.



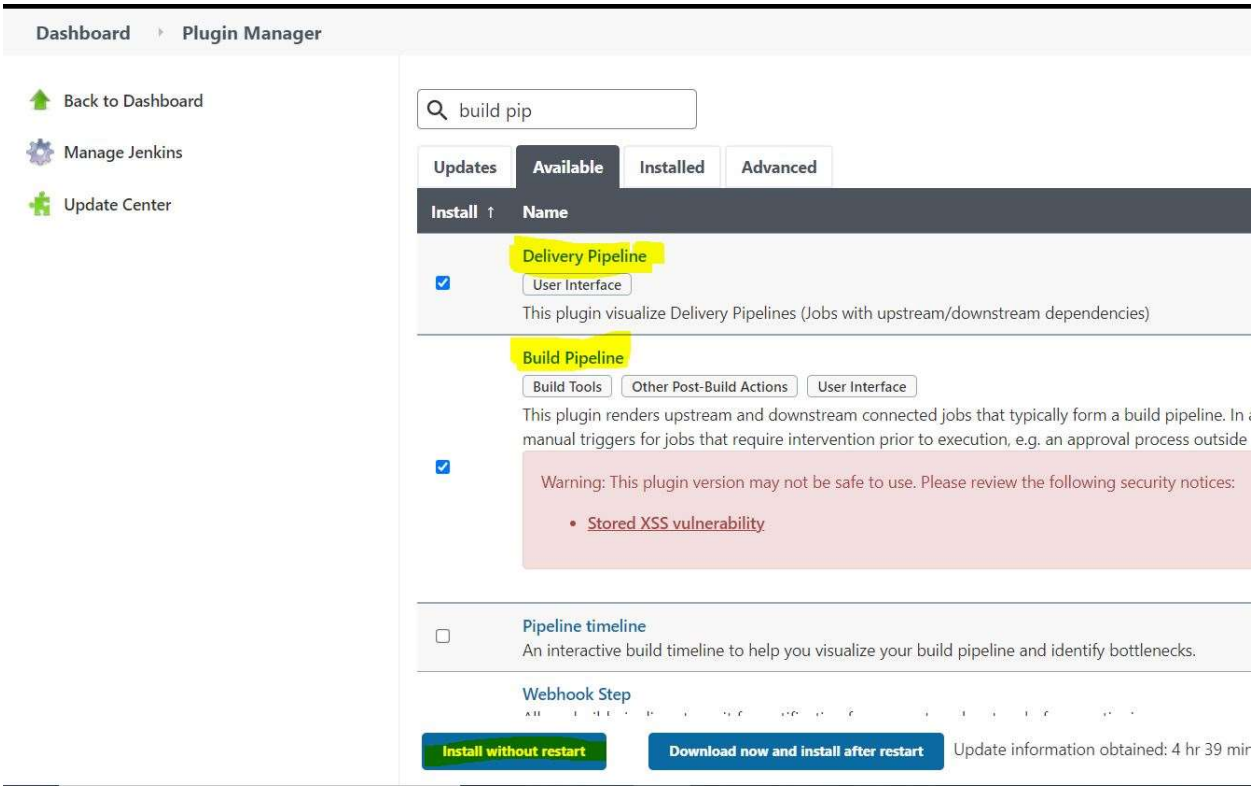
All Jobs are build successfully as we can see on Jenkins Dashboard.

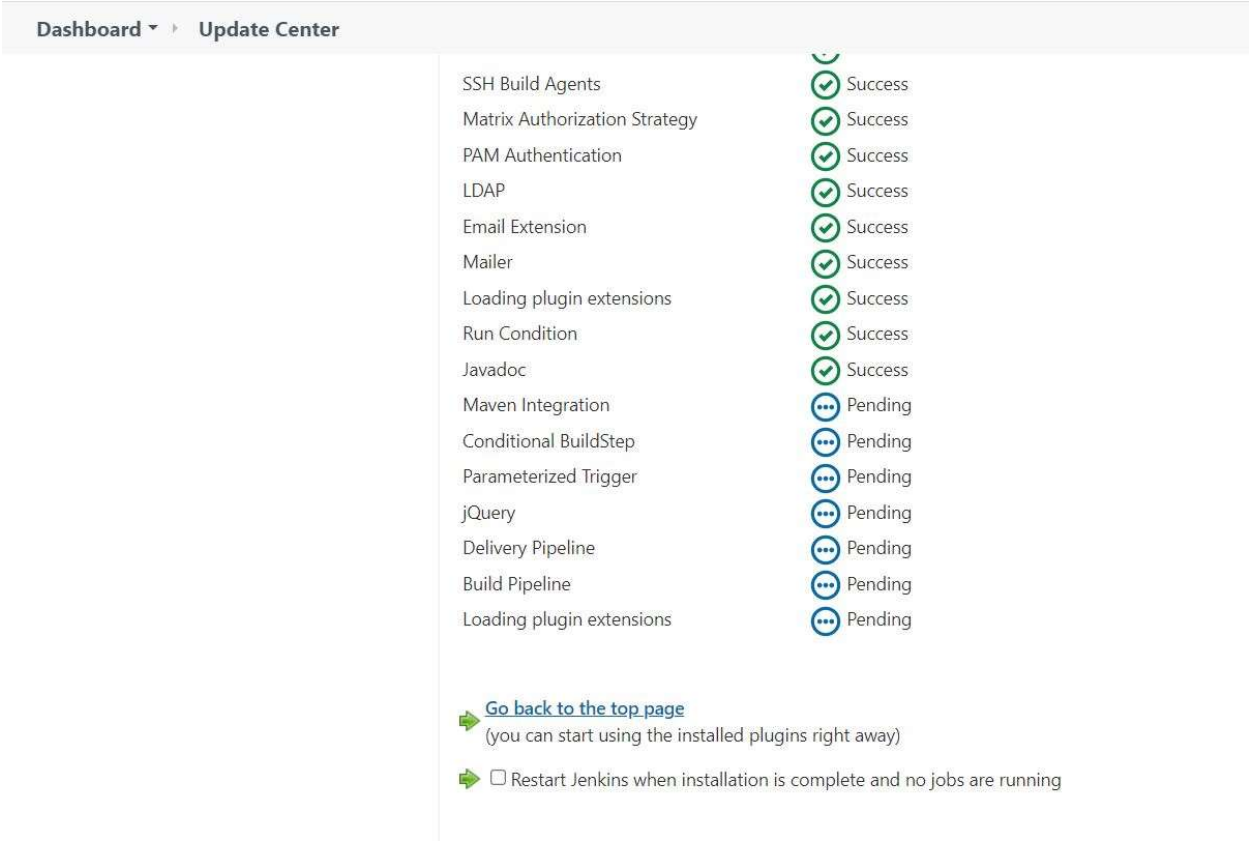


Now for the pipeline we need to install the plugins with the steps mentioned below.

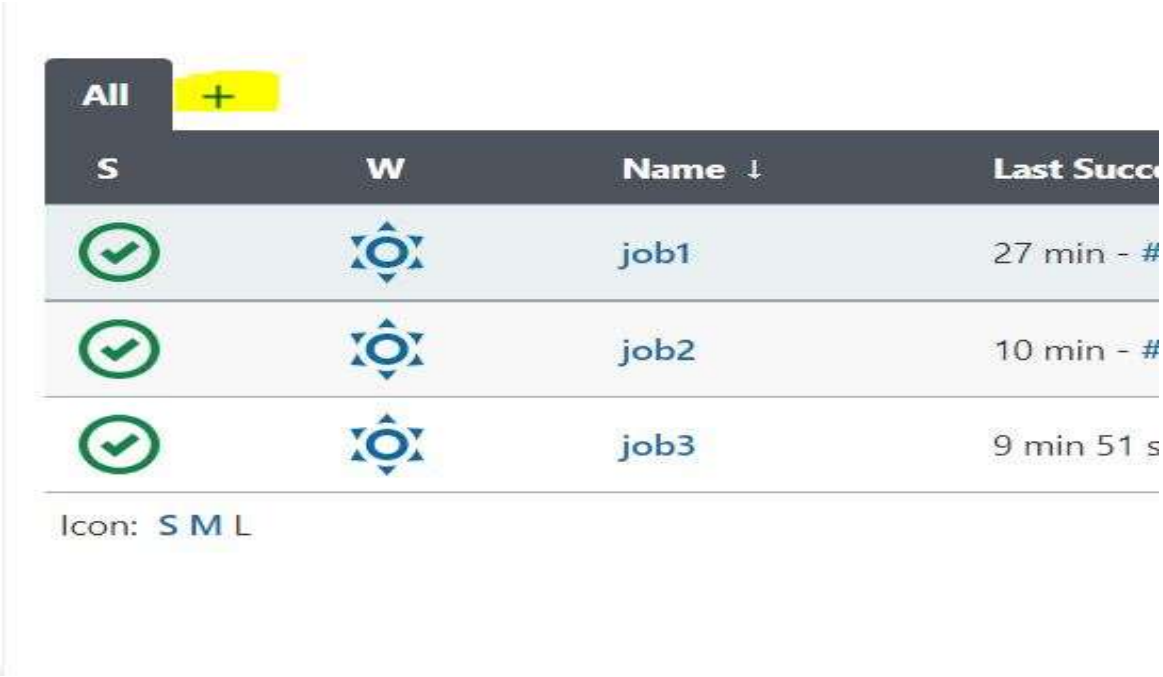


Install the Highlighted plugins

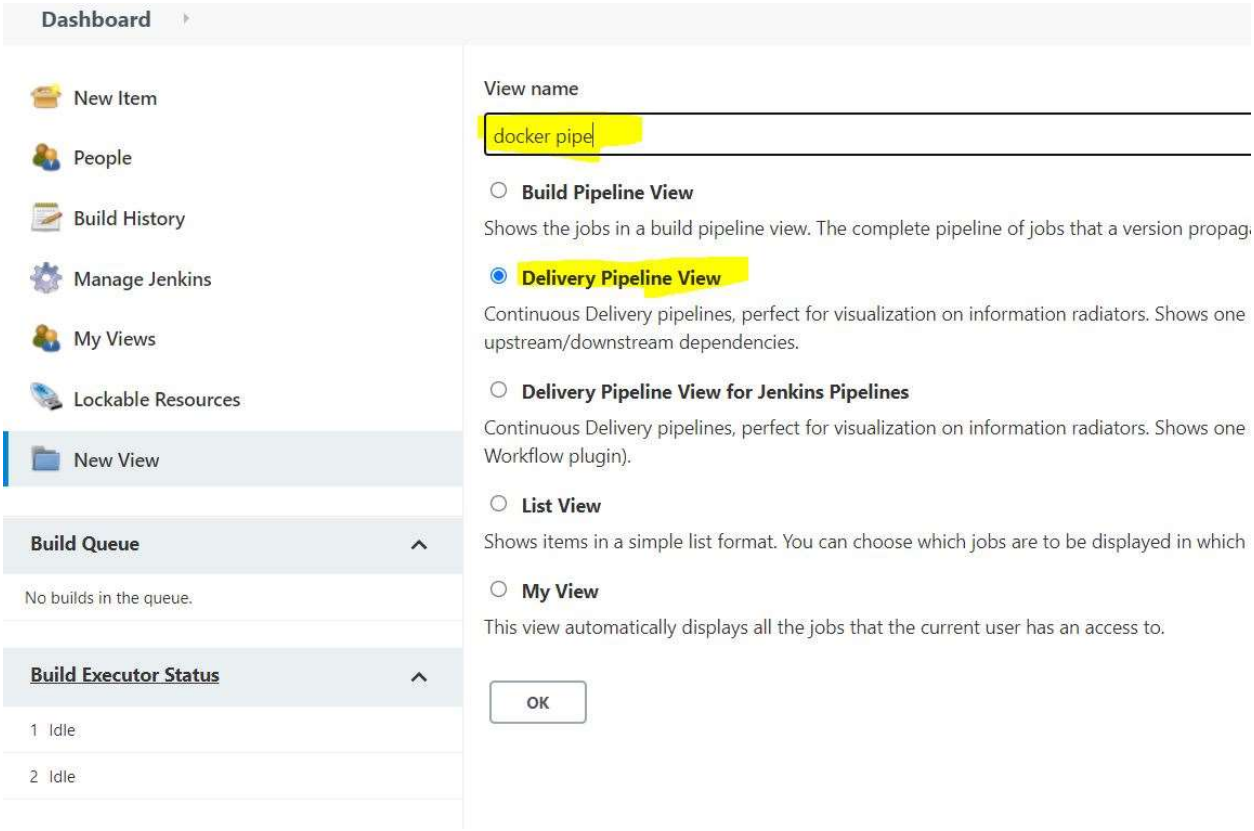




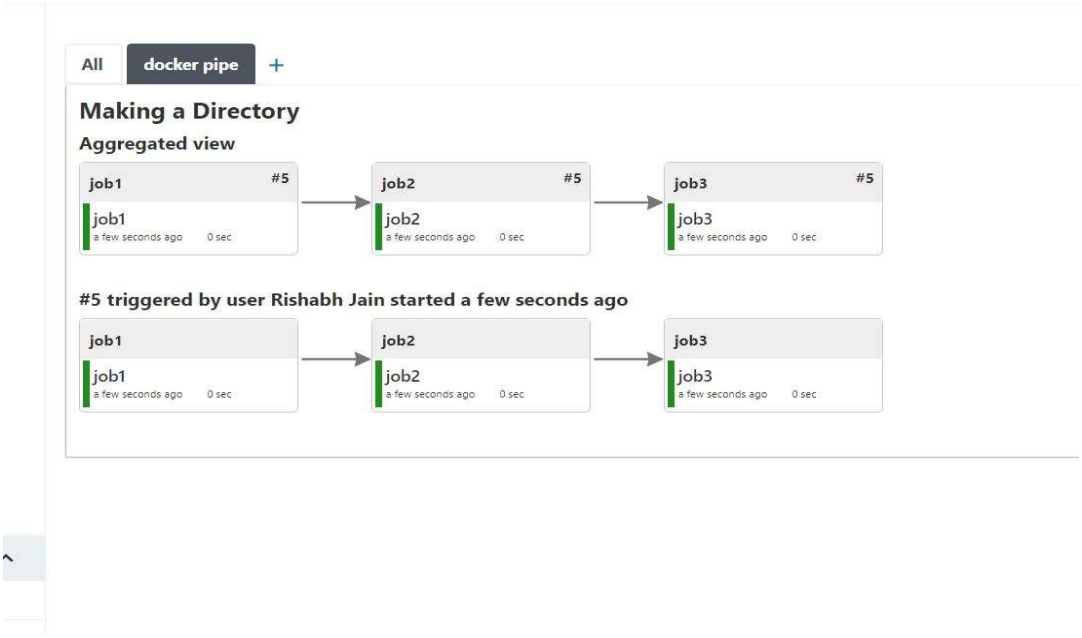
Now click on the (+) tab as shown below.



Now I have named the pipeline and selected the type of pipeline to be used in it as shown below.



And with all the configurations done with connected jobs the pipeline is ready and running as shown below.



Now I will be putting the screenshots of console output which shows that every job run successfully.

#JOB-1

Console Output

```
Started by user Rishabh Jain
Running as SYSTEM
Building in workspace /root/.jenkins/workspace/job1
The recommended git tool is: NONE
No credentials specified
 > git rev-parse --resolve-git-dir /root/.jenkins/workspace/job1/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/rishabhjain1799/ddvops.git # timeout=10
Fetching upstream changes from https://github.com/rishabhjain1799/ddvops.git
 > git --version # timeout=10
 > git --version # 'git version 2.27.0'
 > git fetch --tags --force --progress -- https://github.com/rishabhjain1799/ddvops.git +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision 45787ea73e005727be76e7a2486455711dfd3771 (refs/remotes/origin/master)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 45787ea73e005727be76e7a2486455711dfd3771 # timeout=10
Commit message: "Update web.html"
 > git rev-list --no-walk 45787ea73e005727be76e7a2486455711dfd3771 # timeout=10
[job1] $ /bin/sh -xe /tmp/jenkins6719165859533777189.sh
+ rm -rf /host/webserver
+ mkdir /host/webserver
+ cp rishu.html web.html /host/webserver
Triggering a new build of job2
Finished: SUCCESS
```

#JOB-2

Console Output

```
Started by upstream project "job1" build number 5
originally caused by:
 Started by user Rishabh Jain
Started by user Rishabh Jain
Running as SYSTEM
Building in workspace /root/.jenkins/workspace/job2
[job2] $ /bin/sh -xe /tmp/jenkins7345046740816756307.sh
+ chroot /host /bin/bash
/bin/bash: line 3: [-gt: command not found
Triggering a new build of job3
Finished: SUCCESS
```

#JOB-3

Console Output

```
Started by upstream project "job2" build number 8
originally caused by:
 Started by upstream project "job1" build number 5
 originally caused by:
  Started by user Rishabh Jain
 Started by user Rishabh Jain
Running as SYSTEM
Building in workspace /root/.jenkins/workspace/job3
[job3] $ /bin/sh -xe /tmp/jenkins6852960893460882368.sh
++ curl -s -i -w '%{http_code}' -o /dev/null 172.17.0.2:8085
+ export status=000
+ status=000
+ '[' status==200 ']'
+ exit 0
Finished: SUCCESS
```

Now with the below I entered in the docker container as shown below.

```
[root@localhost ~]# docker exec -it b237e54 /bin/bash
[root@b237e54521c5 /]# cd /host/
abc/        etc/        media/      proc/       srv/        var/
bin/        home/       mnt/        root/       sys/        webserver/
boot/       lib/        nn/         run/        tmp/
dev/        lib64/      opt/        sbin/       usr/
[root@b237e54521c5 /]# cd /host/
abc/        etc/        media/      proc/       srv/        var/
bin/        home/       mnt/        root/       sys/        webserver/
boot/       lib/        nn/         run/        tmp/
dev/        lib64/      opt/        sbin/       usr/
```

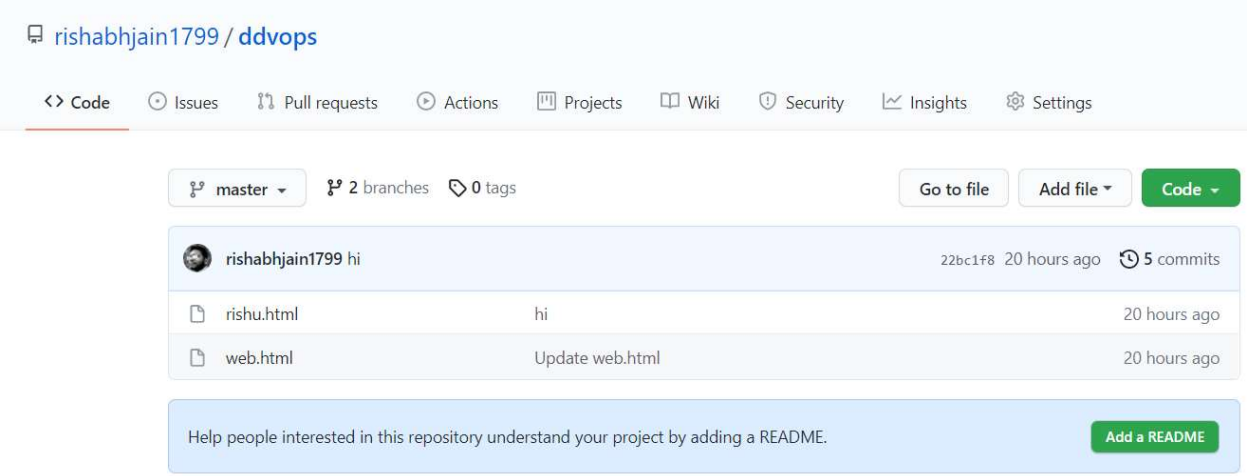
The Directory proposed to be created in the docker

```
[root@b237e54521c5 /]# cd /host/
abc/        etc/        media/      proc/       srv/        var/
bin/        home/       mnt/        root/       sys/        webserver/
boot/       lib/        nn/         run/        tmp/
dev/        lib64/      opt/        sbin/       usr/
[root@b237e54521c5 /]# cd /host/webserver/
```

The Files taken from GitHub shown below.

```
[root@b237e54521c5 webserver]# ls
rishu.html  web.html
```

Files in GitHub Repository



Server is accessed in the docker by the curl command as shown below
(For IP of Docker I used the **docker inspect** command).

```
[root@b237e54521c5 webserver]# curl 172.17.0.2:8080
<html><head><meta http-equiv='refresh' content='1;url=/login?from=%2F'/><script>
window.location.replace('/login?from=%2F');</script></head><body style='backgrou
nd-color:white; color:white;'>
```

The proposed setup is now running and working.
Thanks a lot for your time and opportunity.