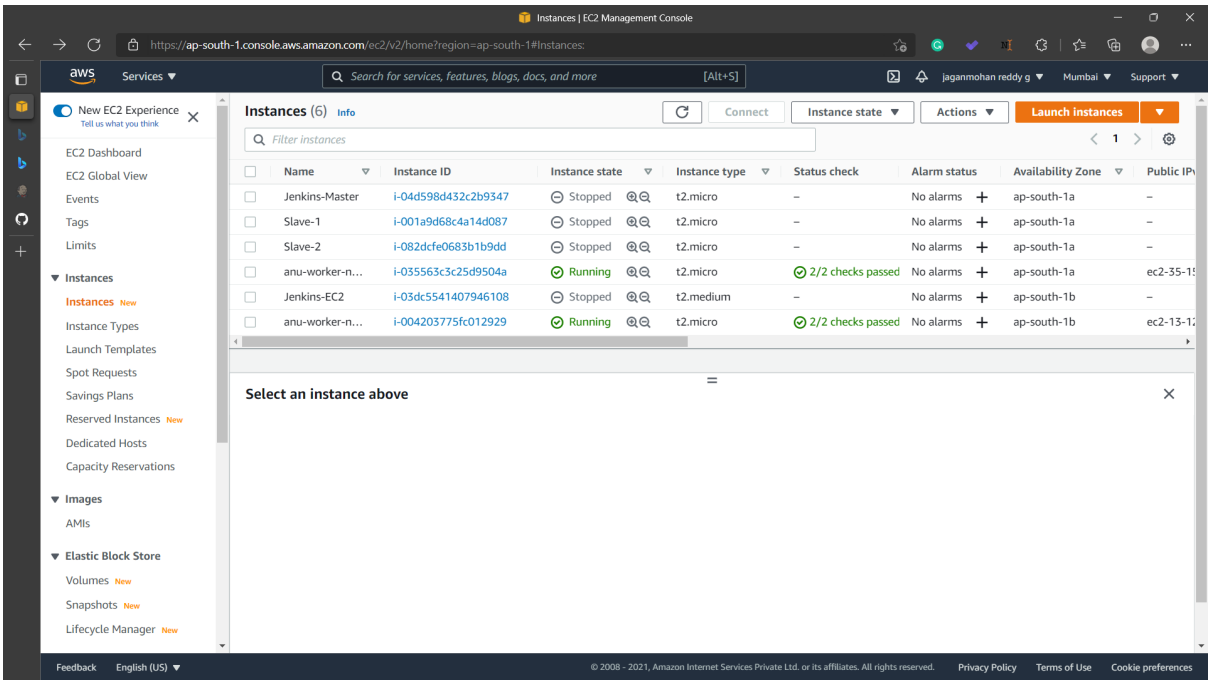
Setting up jenkins master-slave architecture for testing and production servers

1.Setting up master and slave servers in aws.

=>setup 3 nodes of type t2.micro of ubuntu 20.04 os with security group instructions to permit all traffic and keep all other details as default.

=>NOTE : we will be installing Jenkins only on master nodes and monitor slave nodes using master nodes.

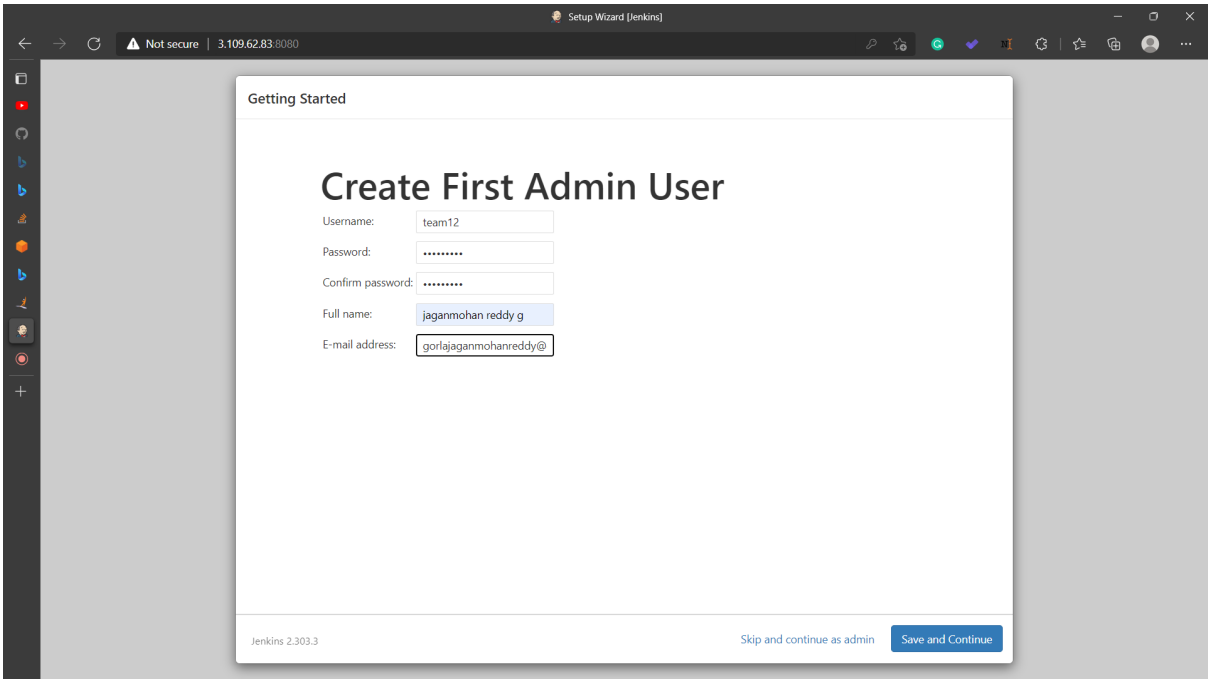
=>On master node execute these instructions

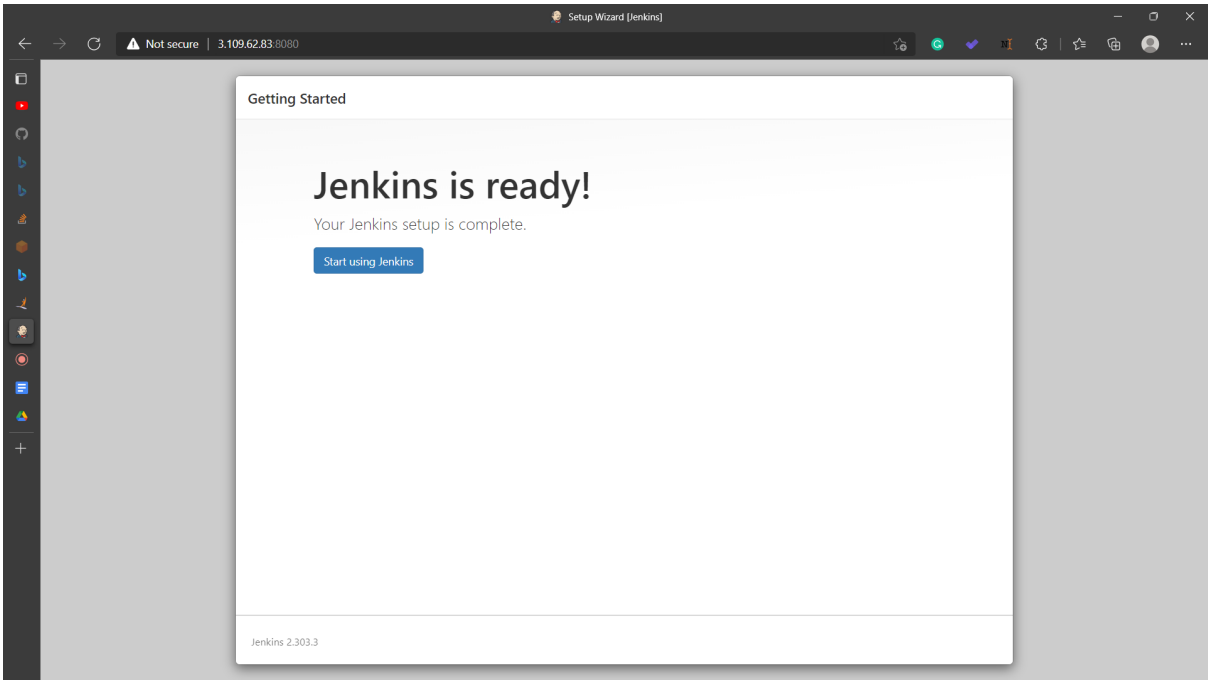


COMMANDS

```
sudo apt install openjdk-8-jdk
wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key | sudo apt-key add -
sudo sh -c 'echo deb http://pkg.jenkins.io/debian-stable binary/ > /etc/apt/sources.list.d/jenkins.list'
sudo apt update
sudo apt install jenkins
```

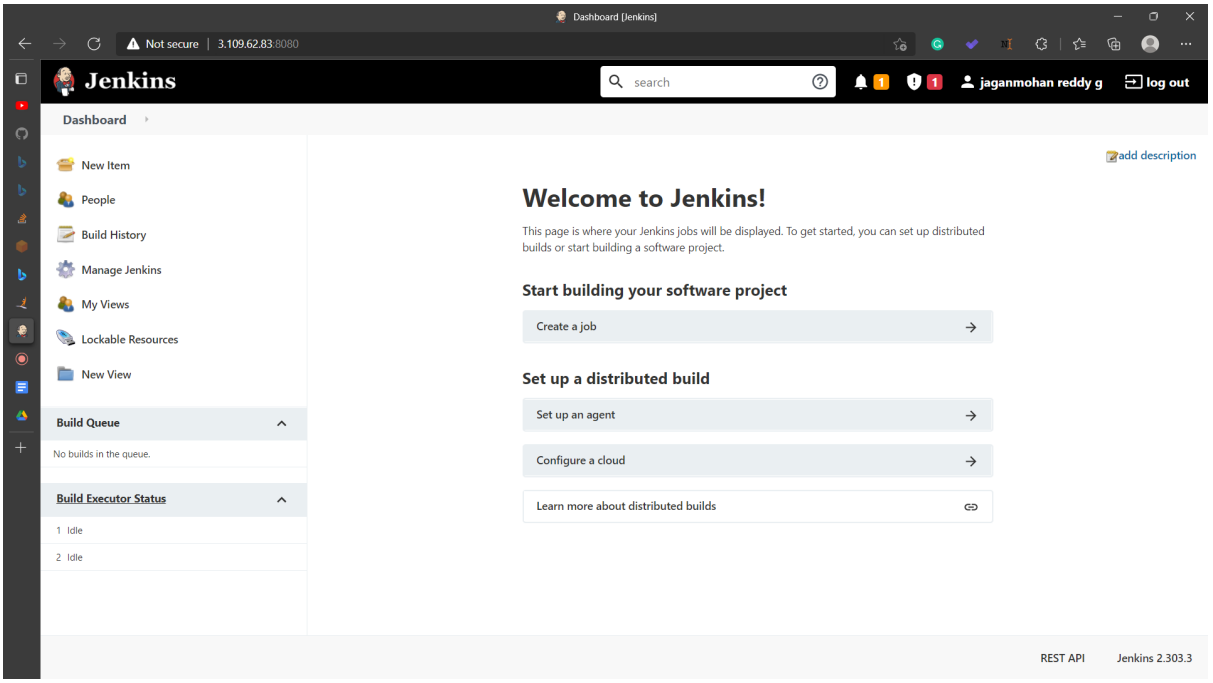
=>On completing the above instructions, access this server on the browser using a public ipv4 address with port number 8080 i.e ipaddress:8080.
=>after opening the above jenkins page login to jenkins to proceed further



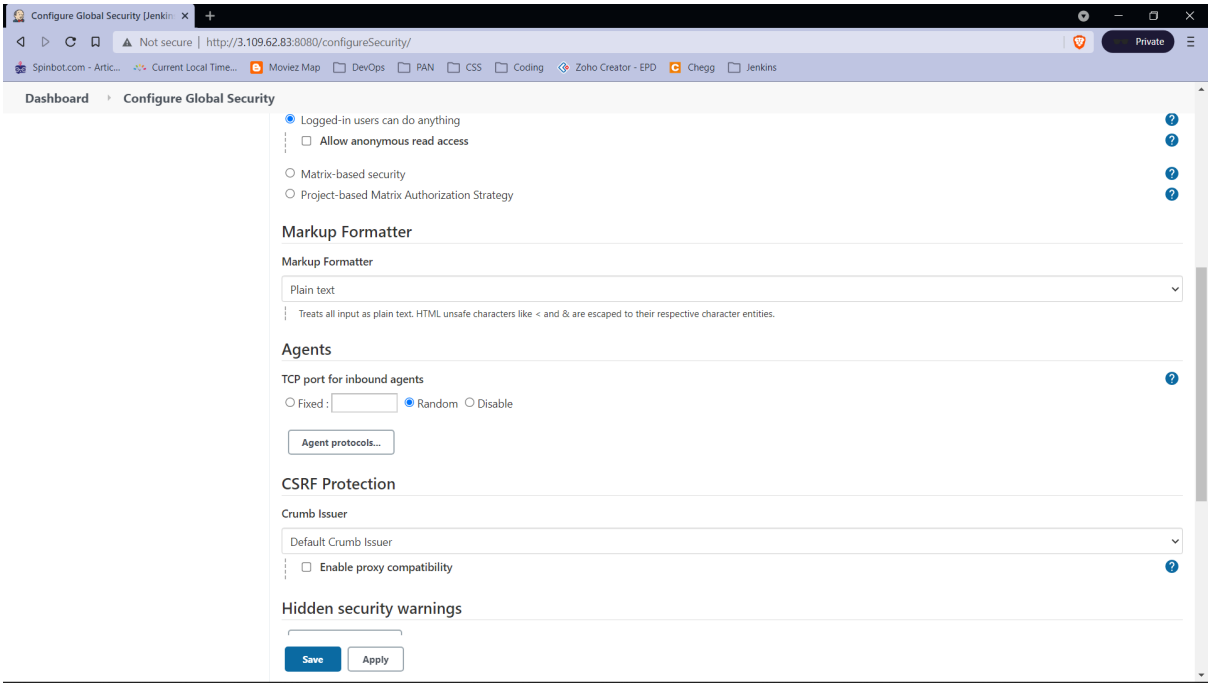


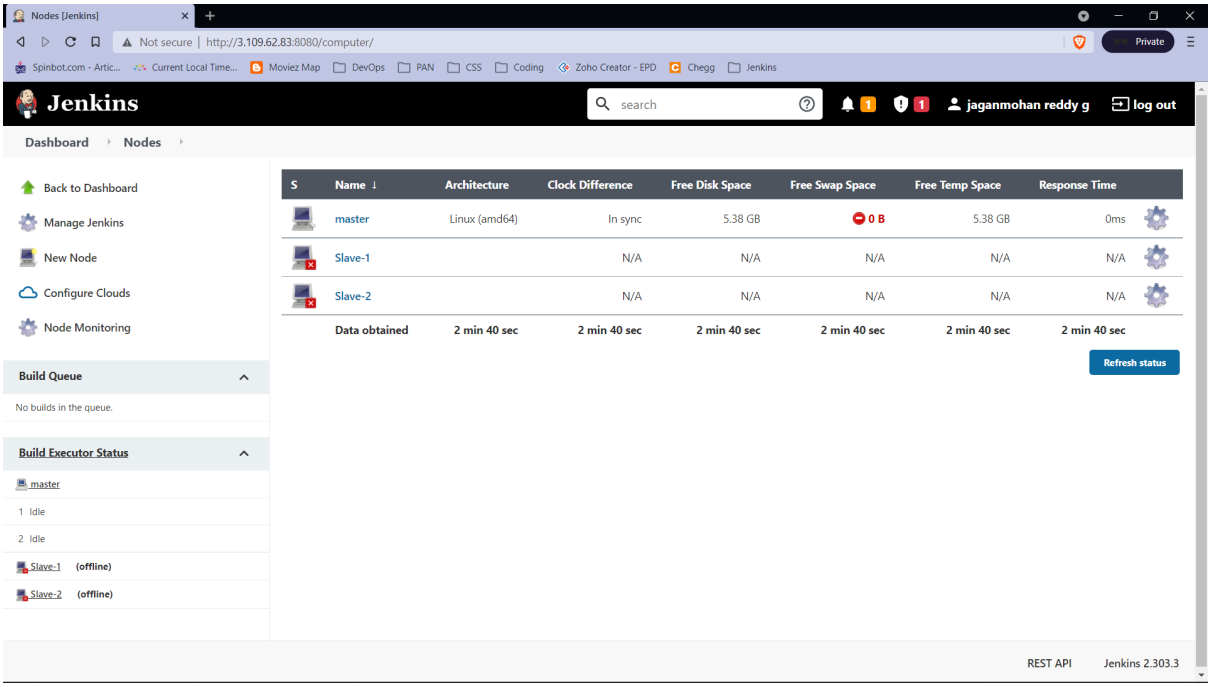
2.configuring jenkins

=>Goto manage jenkins -> configure global settings -> Agents -> random -> click on save.
=>Goto manage jenkins -> manage nodes -> new node.



=>Create 2 slave nodes named slave-1 and slave-2 respectively with permanent agent option enabled and with the launch method as configure when master is triggered.Also add custom workdir path to be /home/ubuntu/jenkins and click on save.

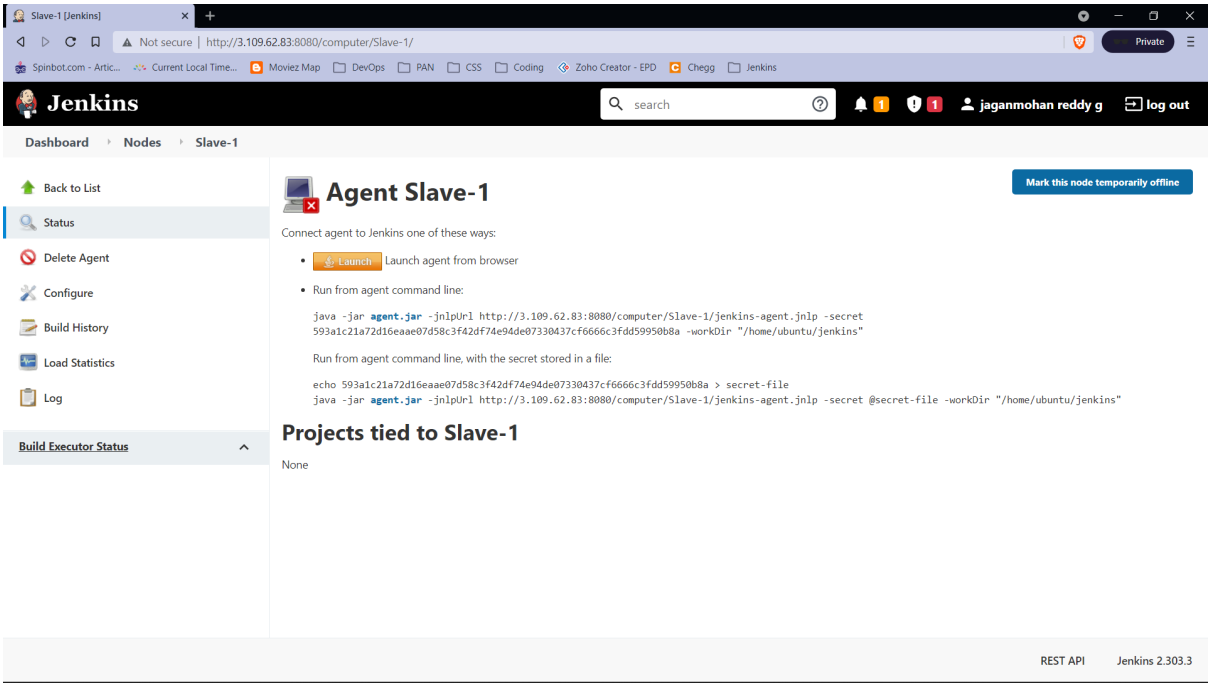


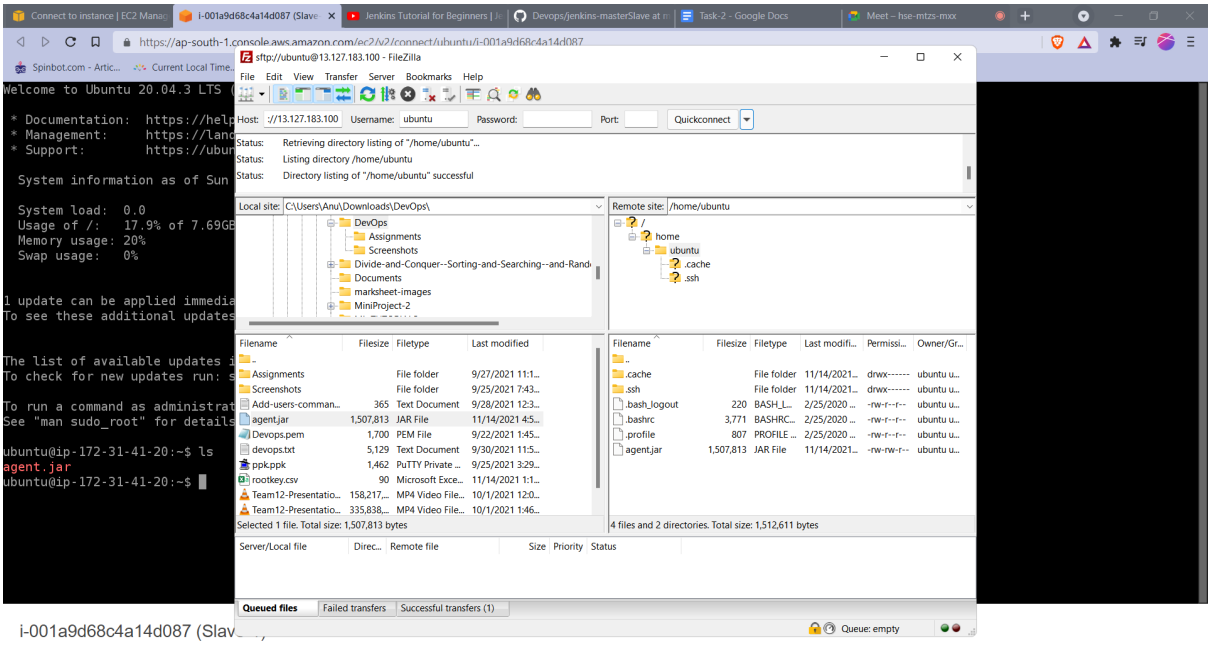


=>click on respective agents and download their agent.jar executable file.
=>Now these agent.jar files are to be sent to the respective slave nodes that were created from above points.For ubuntu os run the following command.

```
scp-i./<pemfileofmasternode>./agent.jar<username>@<ipv4addressofslavenode>:<destinationfolderofslavenode>
```

3.Connect to slave nodes from master nodes.





i-001a9d68c4a14d087 (Slav...

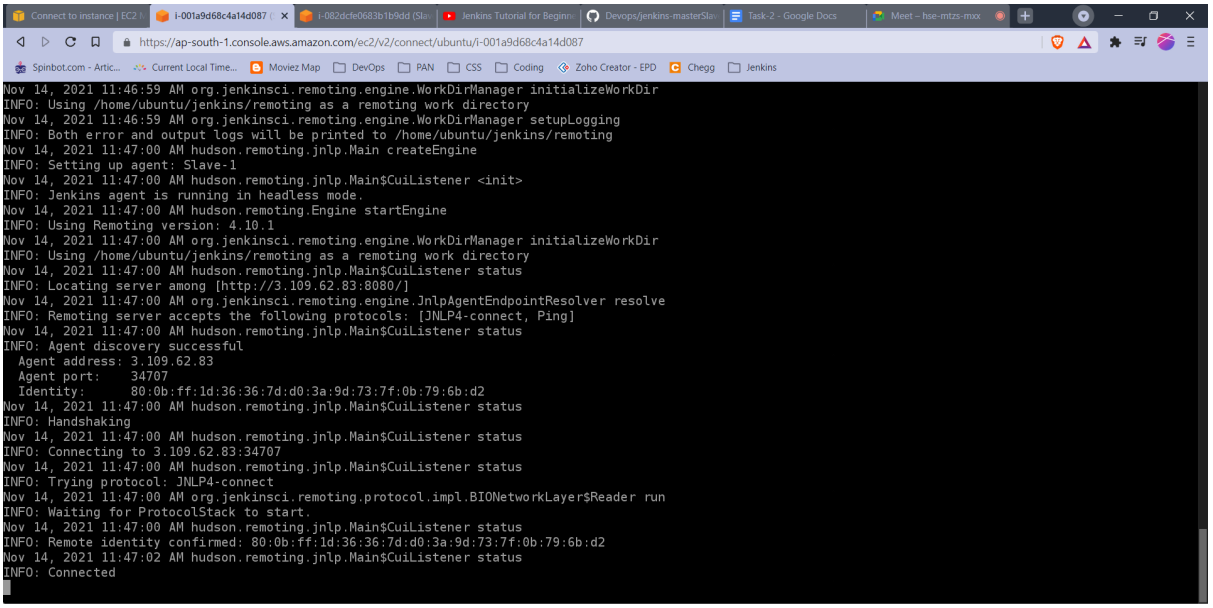
Public IPs: 13.127.183.100 Private IPs: 172.31.41.20

=>Goto manage jenkins -> manage nodes -> click on respective slave and copy paste the code under Run from agent command line.

=>Now copy paste the code in slave nodes.

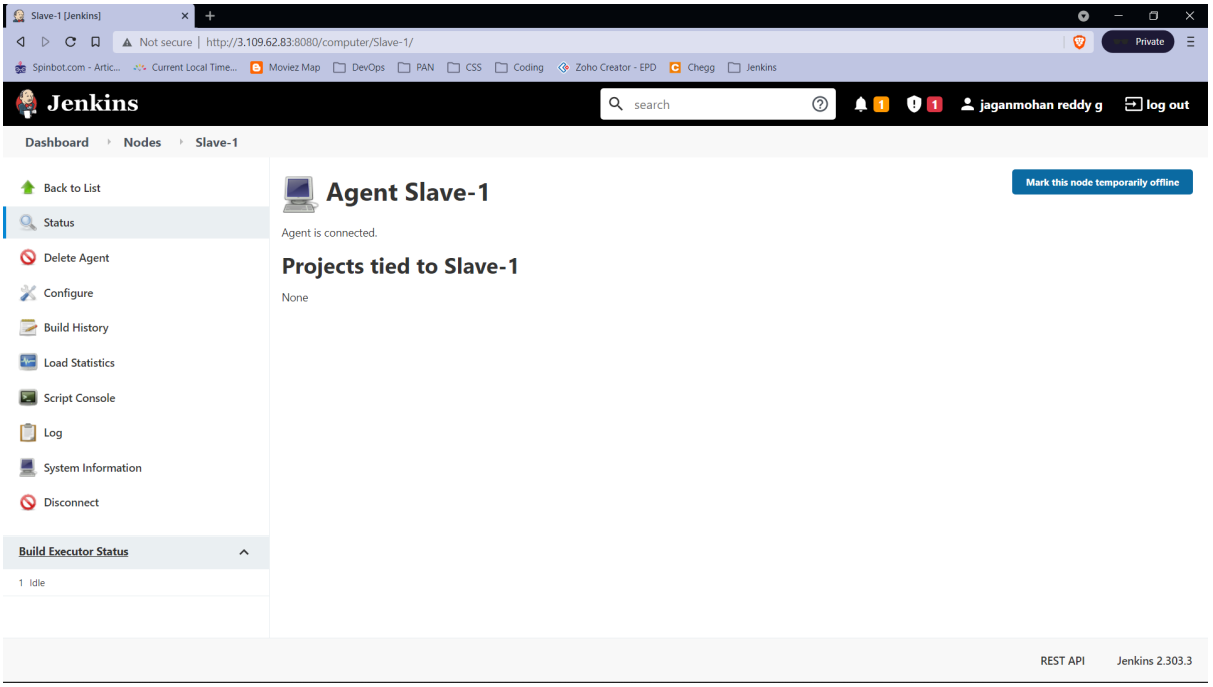
COMMANDS

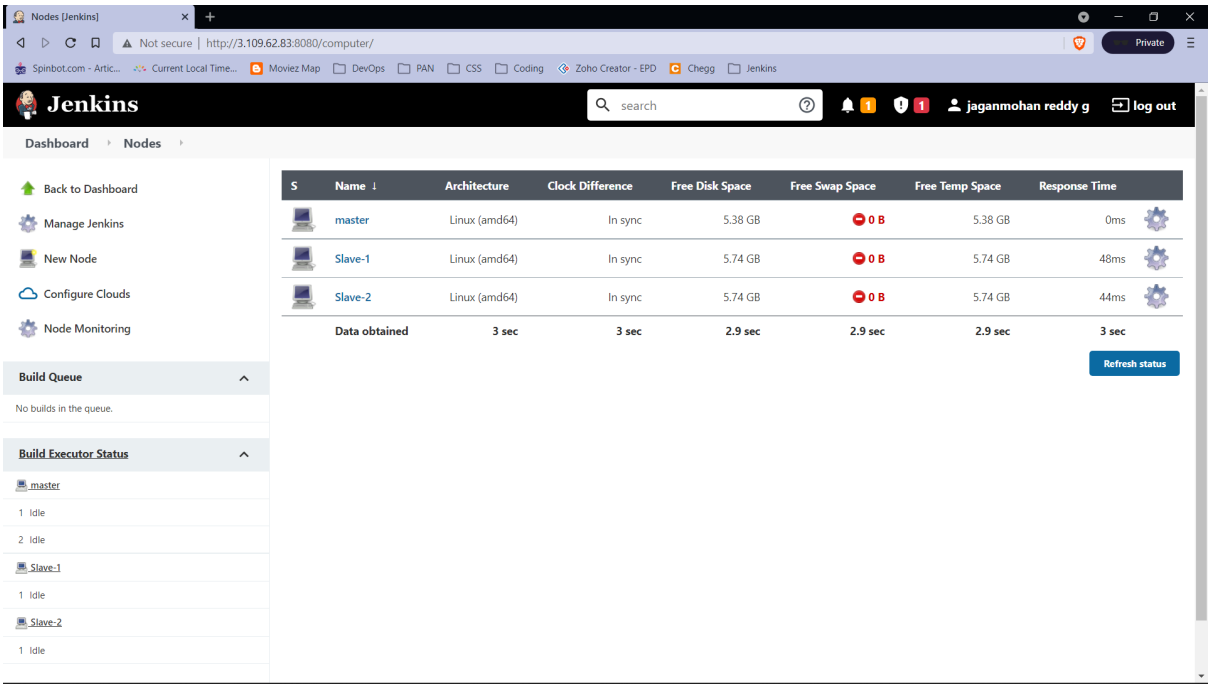
```
sudo apt-get update
sudo apt install openjdk-8-jdk
```



i-001a9d68c4a14d087 (Slave-1)

Public IPs: 13.127.183.100 Private IPs: 172.31.41.20





=>Now verify that the master and slave nodes are connected

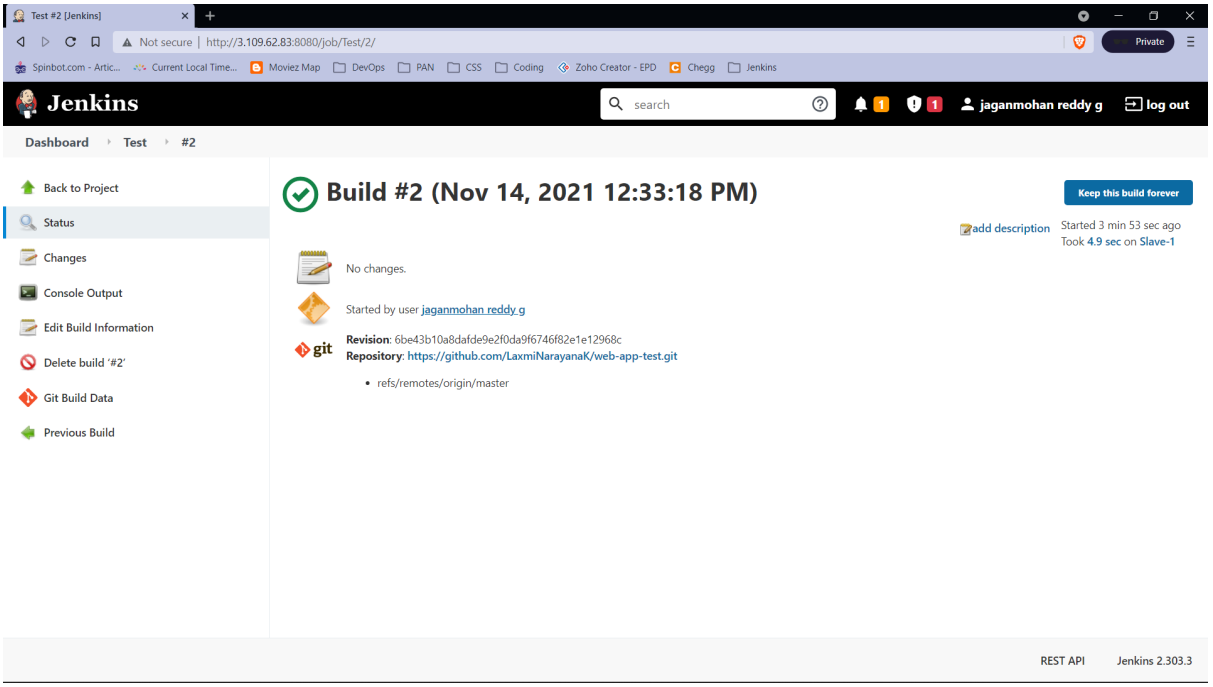
4. Configuring Jenkins to build a project on slave-1(Test server) if successful build on slave-2(Production server).

=>NOTE : make sure to duplicate sessions in the slave node so that connection doesn't terminate.

=>Install Docker on both the slaves.

commands

```
sudo apt-get install docker.io
```

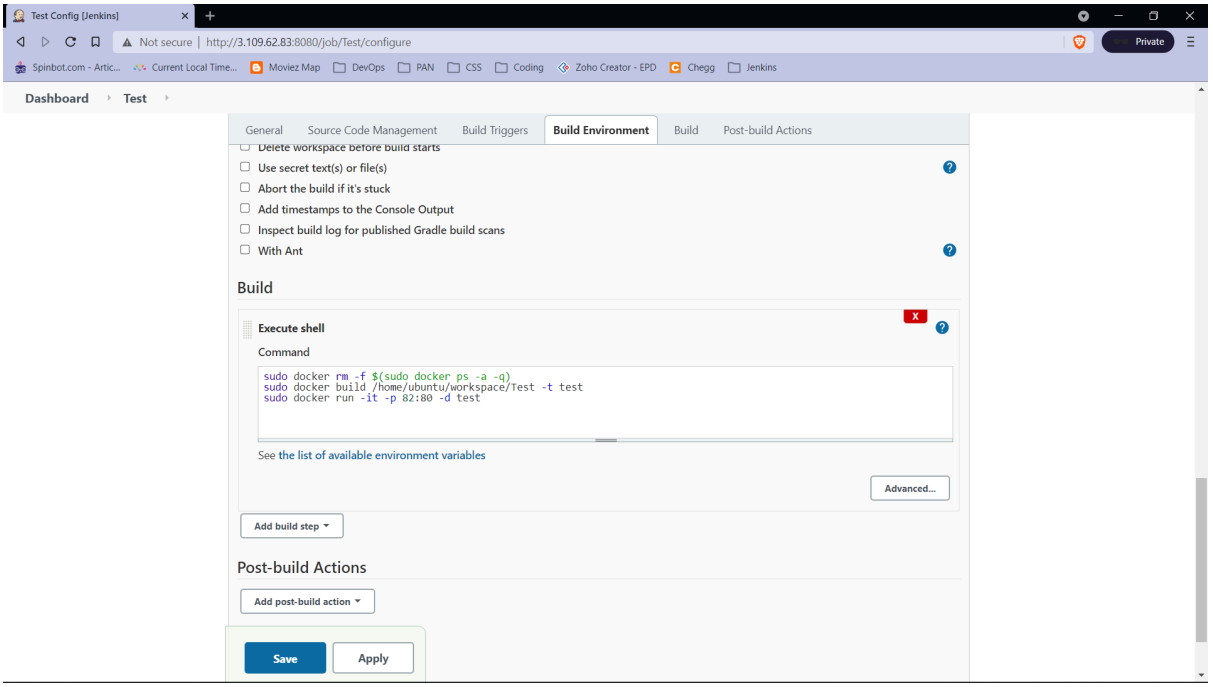


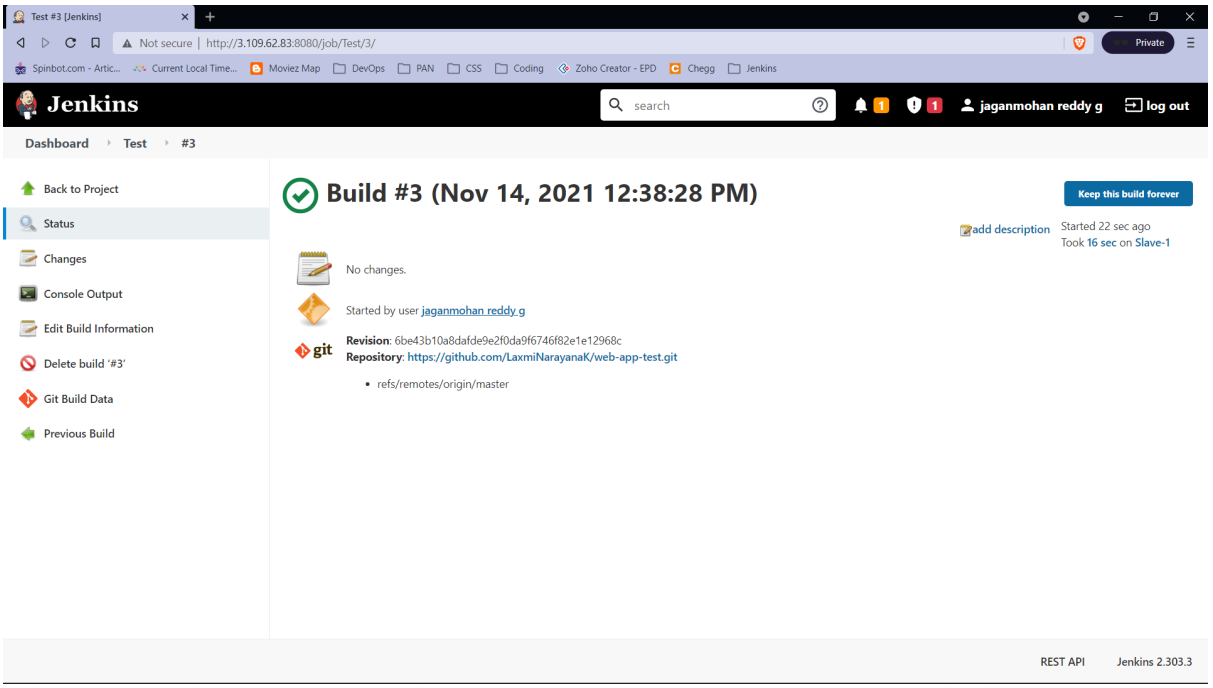
=>Head Back to jenkins. create new job -> make it new freestyle project -> name it slave-1.Now under configure in the general section click on github project and copy paste the url of github project.Also enable the Restrict where this project can be run and type in slave-1 under label expression section.Go to source code management and enable git.
=>Under the build section click Add build step -> Execute shell.Now run the below commands.

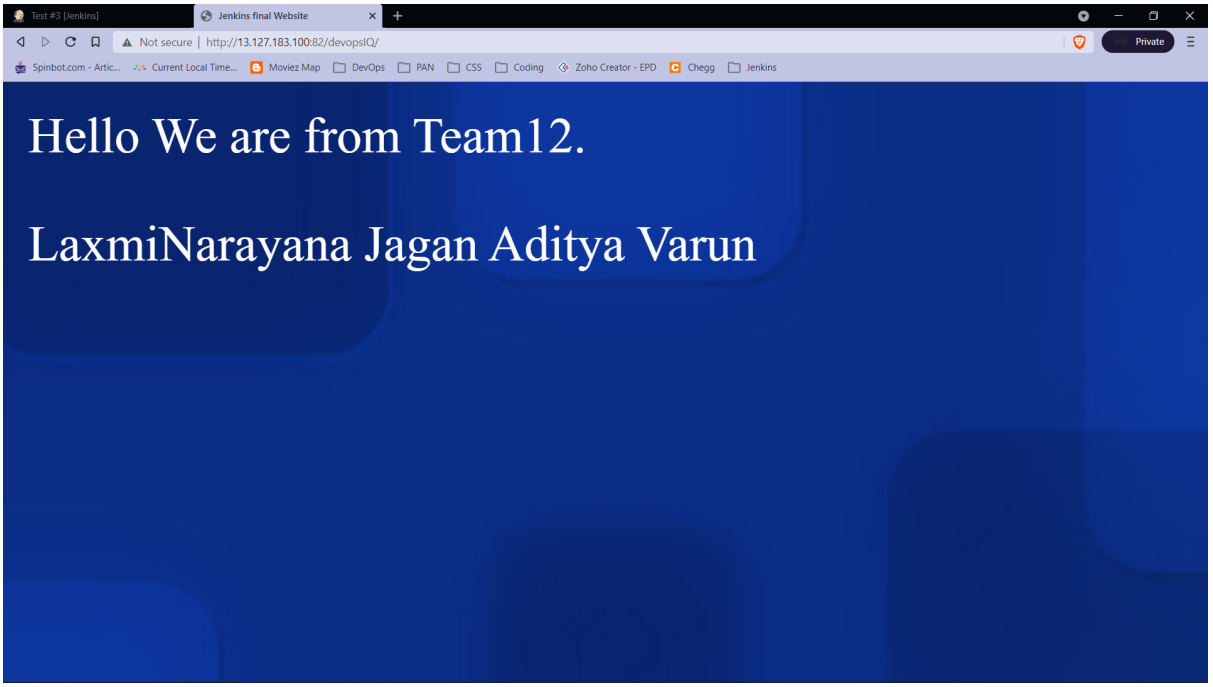
COMMANDS

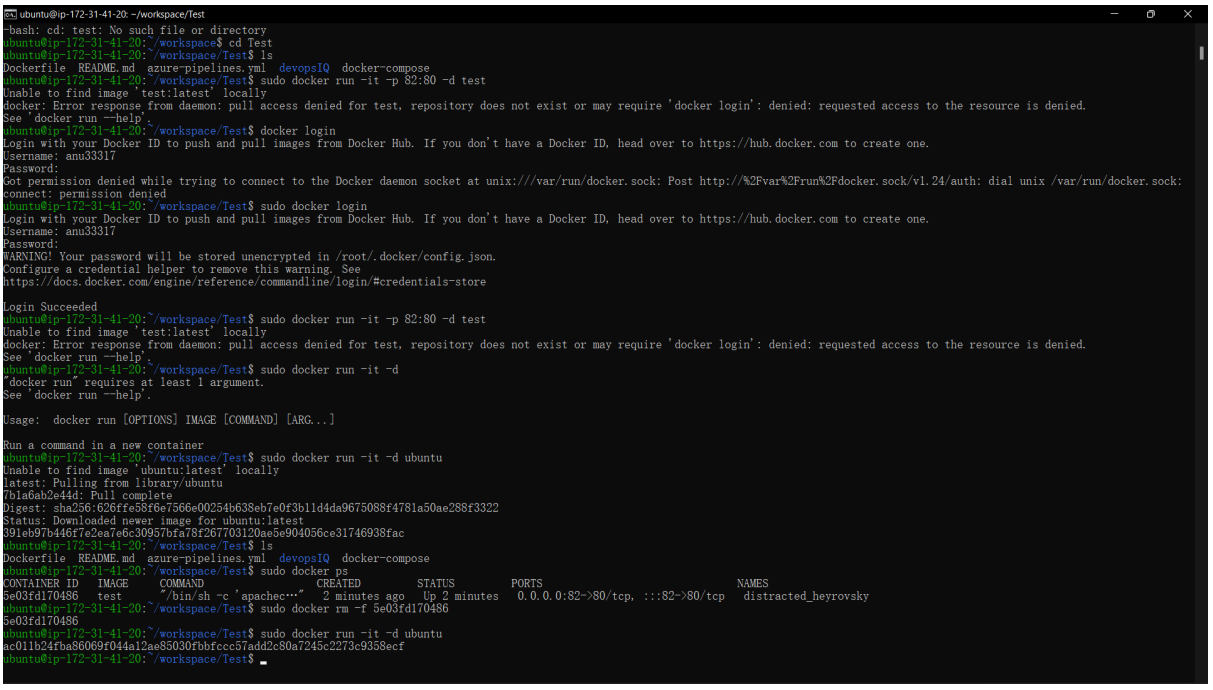
```
sudo docker rm -f $(sudo docker ps -a -q)
sudo docker build /home/ubuntu/workspace/Test -t test
sudo docker run -it -p 82:80 -d test
```

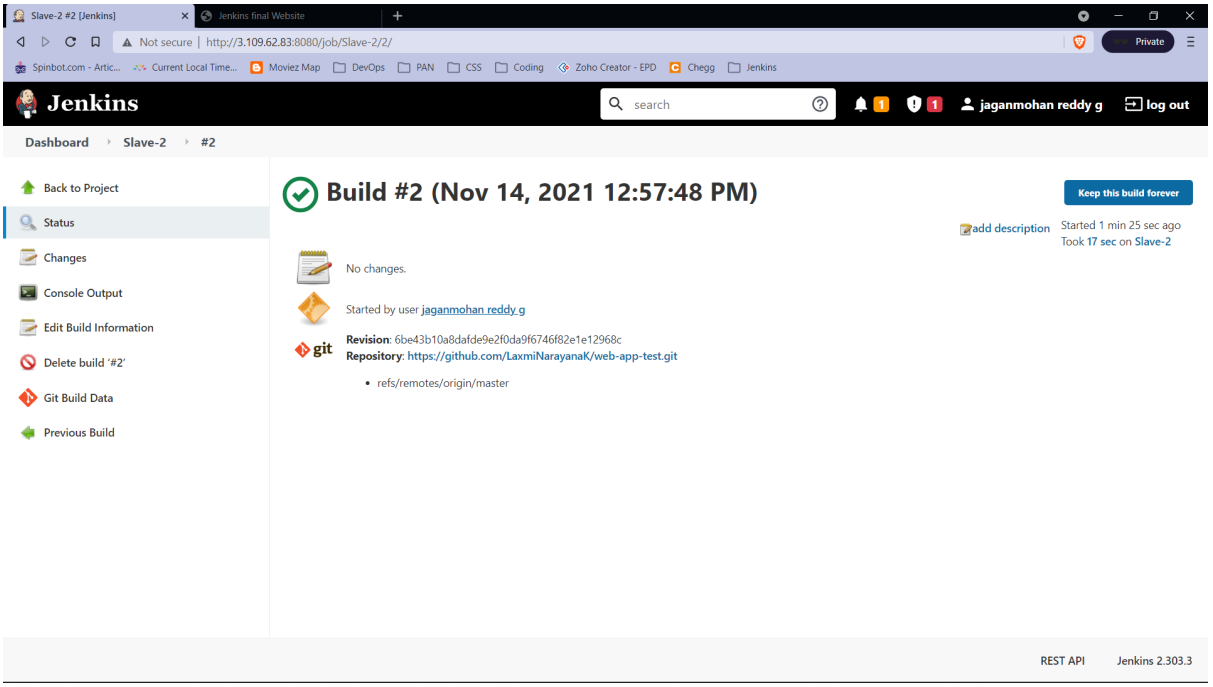
=>NOTE : Make sure to run a custom container on the slave node before executing the above commands.The above steps are to be executed for both test and production server.
=>Now click on build.
=>To check the above build step headover to :/

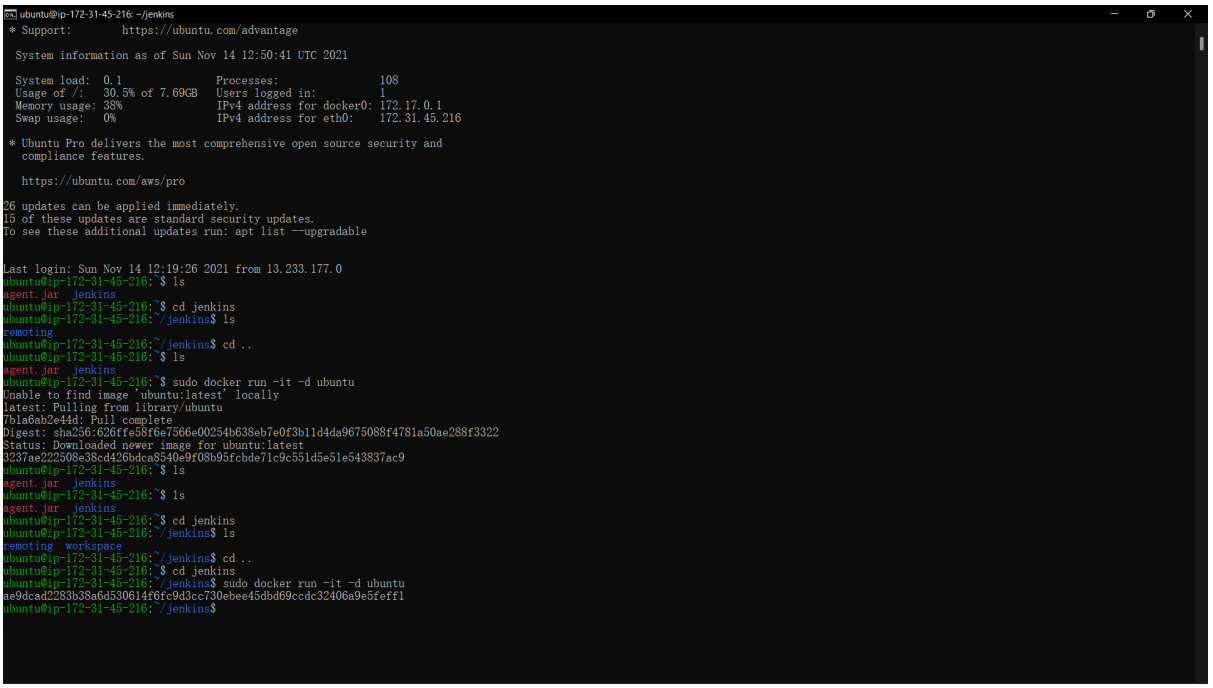

Test Config [Jenkins]
Not secure | http://3.109.62.83:8080/job/Test/configure
Private
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Dashboard
Test
General
Source Code Management
Build Triggers
Build Environment
Build
Post-build Actions
Delete workspace before build starts
Use secret text(s) or file(s)
Abort the build if it's stuck
Add timestamps to the Console Output
Inspect build log for published Gradle build scans
With Ant
Build
Execute shell
Command
sudo docker rm -f $(sudo docker ps -a -q)
sudo docker build /home/ubuntu/workspace/Test -t test
sudo docker run -it -p 82:80 -d test
See the list of available environment variables
Advanced...
Add build step
Post-build Actions
Add post-build action
Save
Apply

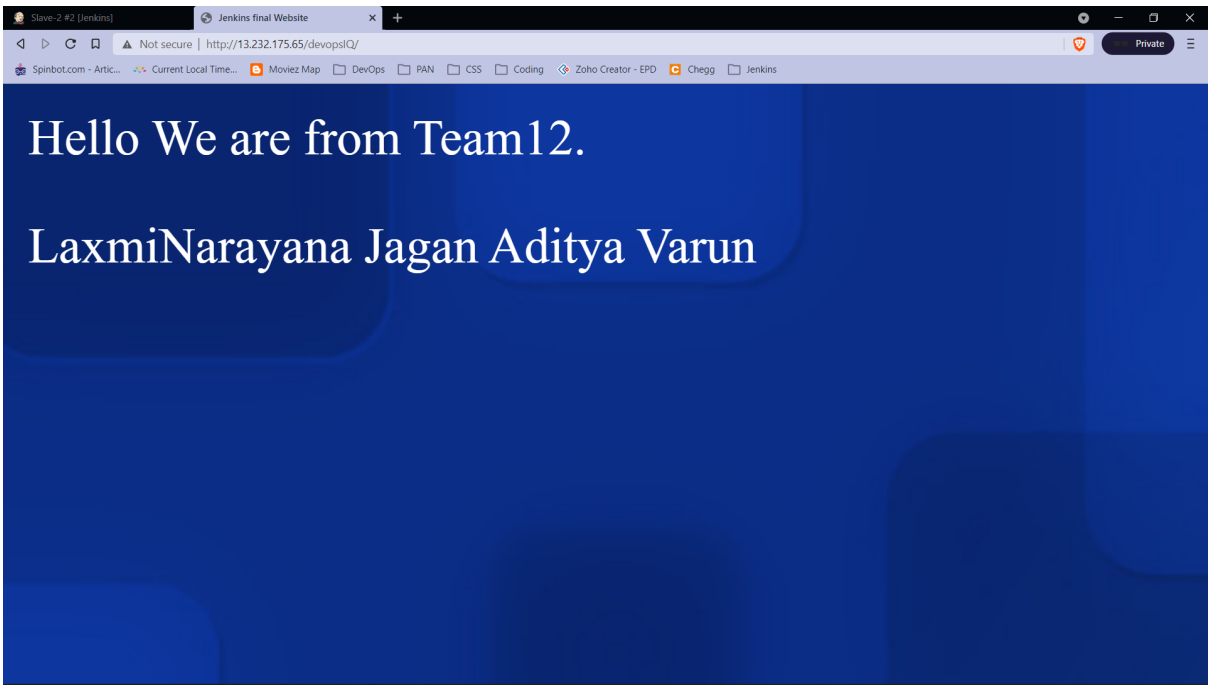

Test #3 [Jenkins]
Not secure | http://3.109.62.83:8080/job/Test/3/
Private
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Jenkins
search
jaganmohan reddy g
log out
Dashboard
Test
#3
Back to Project
Status
Changes
Console Output
Edit Build Information
Delete build '#3'
Git Build Data
Previous Build
Build #3 (Nov 14, 2021 12:38:28 PM)
Keep this build forever
add description
Started 22 sec ago
Took 16 sec on Slave-1
No changes.
Started by user jaganmohan reddy g
git
Revision: 6be43b10a8dafde9e2f0da9f6746f82e1e12968c
Repository: https://github.com/LaxmiNarayanaK/web-app-test.git
refs/remotes/origin/master
REST API
Jenkins 2.303.3


Test #3 [Jenkins]
Jenkins final Website
Not secure | http://13.127.183.100:82/devopsIQ/
Private
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Hello We are from Team12.
LaxmiNarayana Jagan Aditya Varun


ubuntu@ip-172-31-41-20: ~/workspace/Test
-bash: cd: test: No such file or directory
ubuntu@ip-172-31-41-20:~/workspace$ cd Test
ubuntu@ip-172-31-41-20:~/workspace/Test$ ls
Dockerfile README.md azure-pipelines.yml devopsIQ docker-compose
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker run -it -p 82:80 -d test
Unable to find image 'test:latest' locally
docker: Error response from daemon: pull access denied for test, repository does not exist or may require 'docker login': denied: requested access to the resource is denied.
See 'docker run --help'.
ubuntu@ip-172-31-41-20:~/workspace/Test$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anu33317
Password:
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post http://%2Fvar%2Frun%2Fdocker.sock/v1.24/auth: dial unix /var/run/docker.sock: connect: permission denied
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: anu33317
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker run -it -p 82:80 -d test
Unable to find image 'test:latest' locally
docker: Error response from daemon: pull access denied for test, repository does not exist or may require 'docker login': denied: requested access to the resource is denied.
See 'docker run --help'.
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker run -it -d
"docker run" requires at least 1 argument.
See 'docker run --help'.
Usage: docker run [OPTIONS] IMAGE [COMMAND] [ARG...]
Run a command in a new container
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker run -it -d ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
7b1a6ab2e44d: Pull complete
Digest: sha256:626ffe58f6e7566e00254b638eb7e0f3b11d4da9675088f4781a50ae288f3322
Status: Downloaded newer image for ubuntu:latest
391eb97b446f7e2ea7e6c30957bfa78f267703120ae5e904056ce31746938fac
ubuntu@ip-172-31-41-20:~/workspace/Test$ ls
Dockerfile README.md azure-pipelines.yml devopsIQ docker-compose
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
5e03fd170486 test "/bin/sh -c 'apachec…" 2 minutes ago Up 2 minutes 0.0.0.0:82->80/tcp, :::82->80/tcp distracted_heyrovsky
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker rm -f 5e03fd170486
5e03fd170486
ubuntu@ip-172-31-41-20:~/workspace/Test$ sudo docker run -it -d ubuntu
ac011b24fba86069f044a12ae85030fbbfccc57add2c80a7245c2273c9358ecf
ubuntu@ip-172-31-41-20:~/workspace/Test$


Slave-2 #2 [Jenkins]
Jenkins final Website
Not secure | http://3.109.62.83:8080/job/Slave-2/2/
Private
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Jenkins
search
jaganmohan reddy g
log out
Dashboard
Slave-2
#2
Back to Project
Status
Changes
Console Output
Edit Build Information
Delete build '#2'
Git Build Data
Previous Build
Build #2 (Nov 14, 2021 12:57:48 PM)
Keep this build forever
add description
Started 1 min 25 sec ago
Took 17 sec on Slave-2
No changes.
Started by user jaganmohan reddy g
git
Revision: 6be43b10a8dafde9e2f0da9f6746f82e1e12968c
Repository: https://github.com/LaxmiNarayanaK/web-app-test.git
refs/remotes/origin/master
REST API
Jenkins 2.303.3

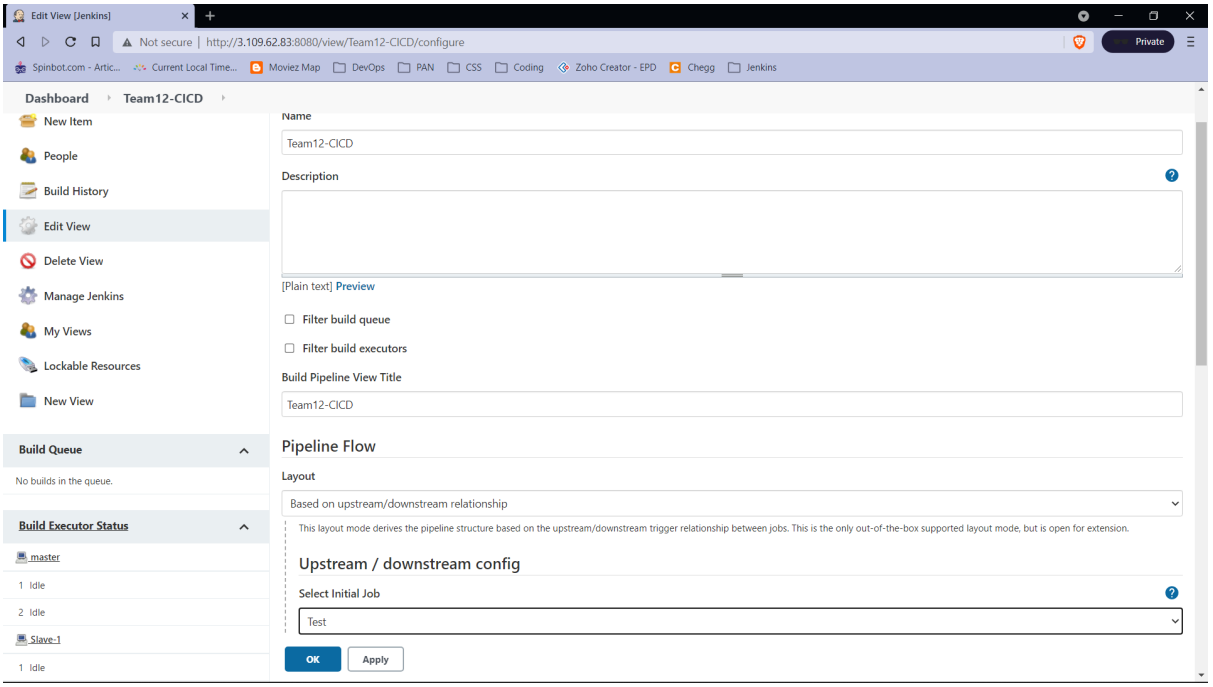

ubuntu@ip-172-31-45-216: ~/jenkins
* Support: https://ubuntu.com/advantage
System information as of Sun Nov 14 12:50:41 UTC 2021
System load: 0.1
Usage of /: 30.5% of 7.69GB
Memory usage: 38%
Swap usage: 0%
Processes: 108
Users logged in: 1
IPv4 address for docker0: 172.17.0.1
IPv4 address for eth0: 172.31.45.216
* Ubuntu Pro delivers the most comprehensive open source security and compliance features.
https://ubuntu.com/aws/pro
26 updates can be applied immediately.
15 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable
Last login: Sun Nov 14 12:19:26 2021 from 13.233.177.0
ubuntu@ip-172-31-45-216:~$ ls
agent.jar jenkins
ubuntu@ip-172-31-45-216:~$ cd jenkins
ubuntu@ip-172-31-45-216:~/jenkins$ ls
remoting
ubuntu@ip-172-31-45-216:~/jenkins$ cd ..
ubuntu@ip-172-31-45-216:~$ ls
agent.jar jenkins
ubuntu@ip-172-31-45-216:~$ sudo docker run -it -d ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
7b1a6ab2e44d: Pull complete
Digest: sha256:626ffe58f6e7566e00254b638eb7e0f3b11d4da9675088f4781a50ae288f3322
Status: Downloaded newer image for ubuntu:latest
3237ae222508e38cd426bdca8540e9f08b95fcbde71c9c551d5e51e543837ac9
ubuntu@ip-172-31-45-216:~$ ls
agent.jar jenkins
ubuntu@ip-172-31-45-216:~$ ls
agent.jar jenkins
ubuntu@ip-172-31-45-216:~$ cd jenkins
ubuntu@ip-172-31-45-216:~/jenkins$ ls
remoting workspace
ubuntu@ip-172-31-45-216:~/jenkins$ cd ..
ubuntu@ip-172-31-45-216:~$ cd jenkins
ubuntu@ip-172-31-45-216:~/jenkins$ sudo docker run -it -d ubuntu
ae9dcad2283b38a6d530614f6fc9d3cc730ebee45dbd69ccdc32406a9e5feff1
ubuntu@ip-172-31-45-216:~/jenkins$

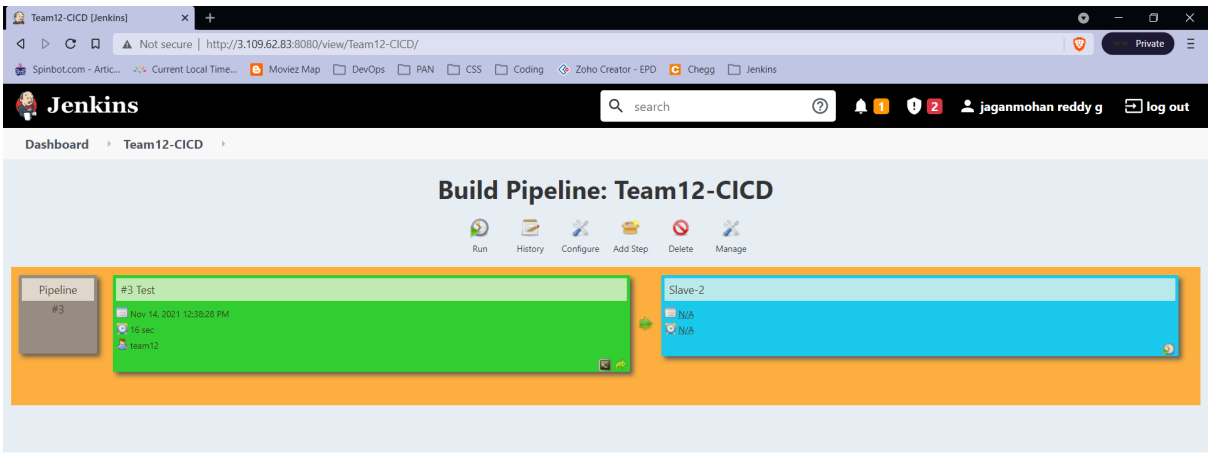


=>Now we need to configure the servers in such a way that after testing production is built.To enable this Goto the test(freestyle project of slave-1) and under the post build actions click on build other projects and enter production(freestyle project of slave-2).

5. Build in the ci-cd pipeline for test and production servers.

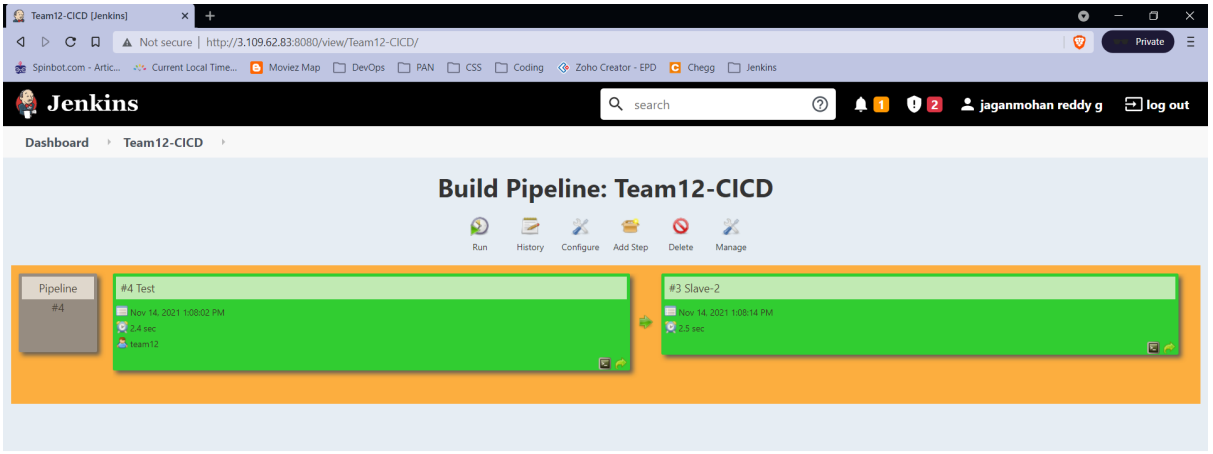
=>Headover to manage jenkins -> manage plugins -> available.Now search for build pipeline,install the plugin.
=>In the jenkins home page click on the + sign near the All.
=>Now click the Build pipeline view, name the view as CiCd.Also under Build pipeline view title give CiCd and with other options as default and click save.



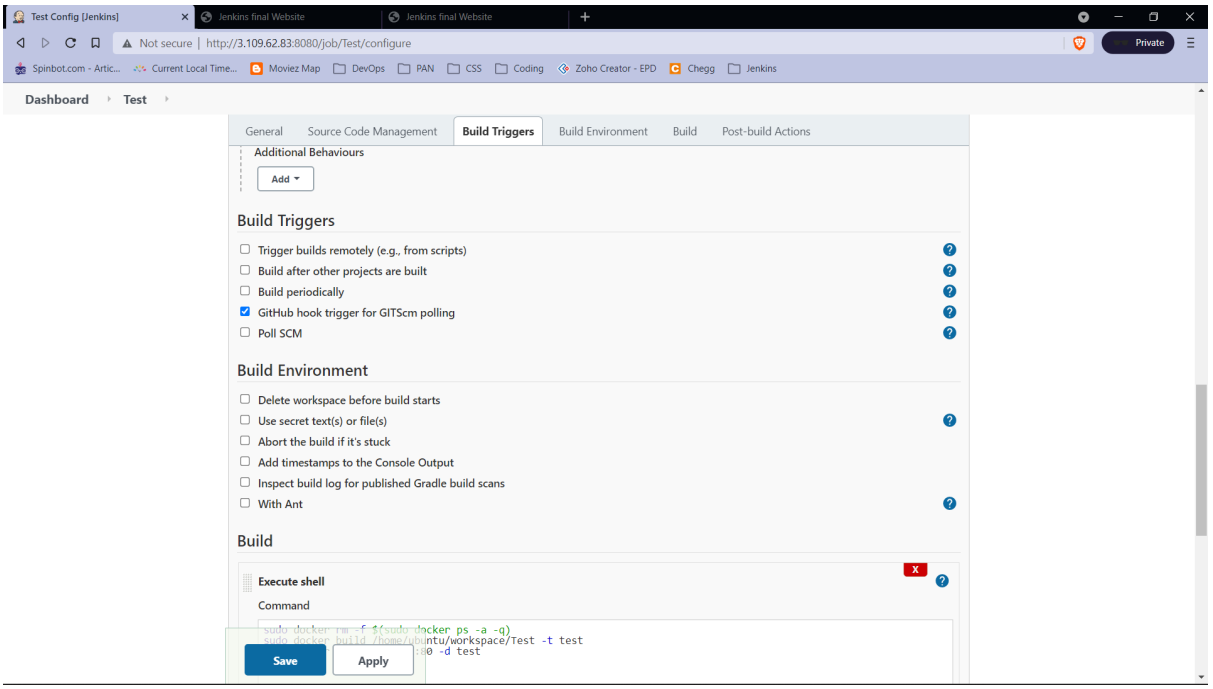


=>Under the Configure section of the CiCd pipeline,make Pipeline flow -> select initial job -> test.

=>Now click on Run to run the respective jobs.



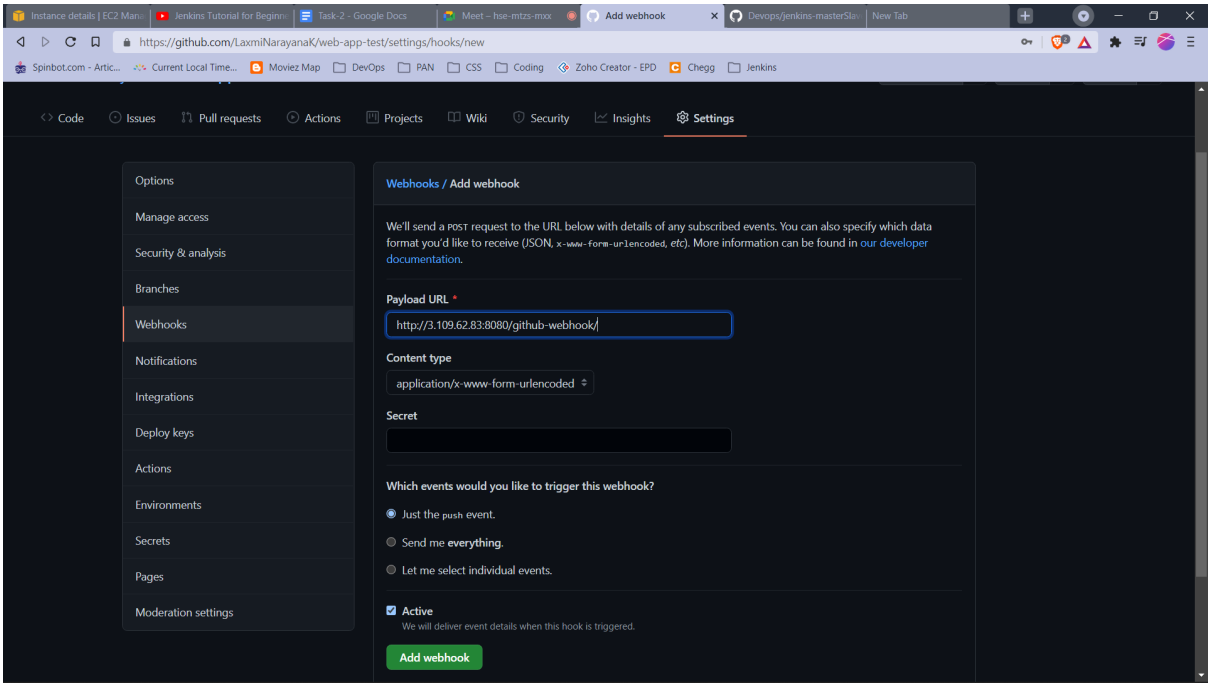
6. Using Github-Webhook to reflect changes made to github projects in the test and production servers.

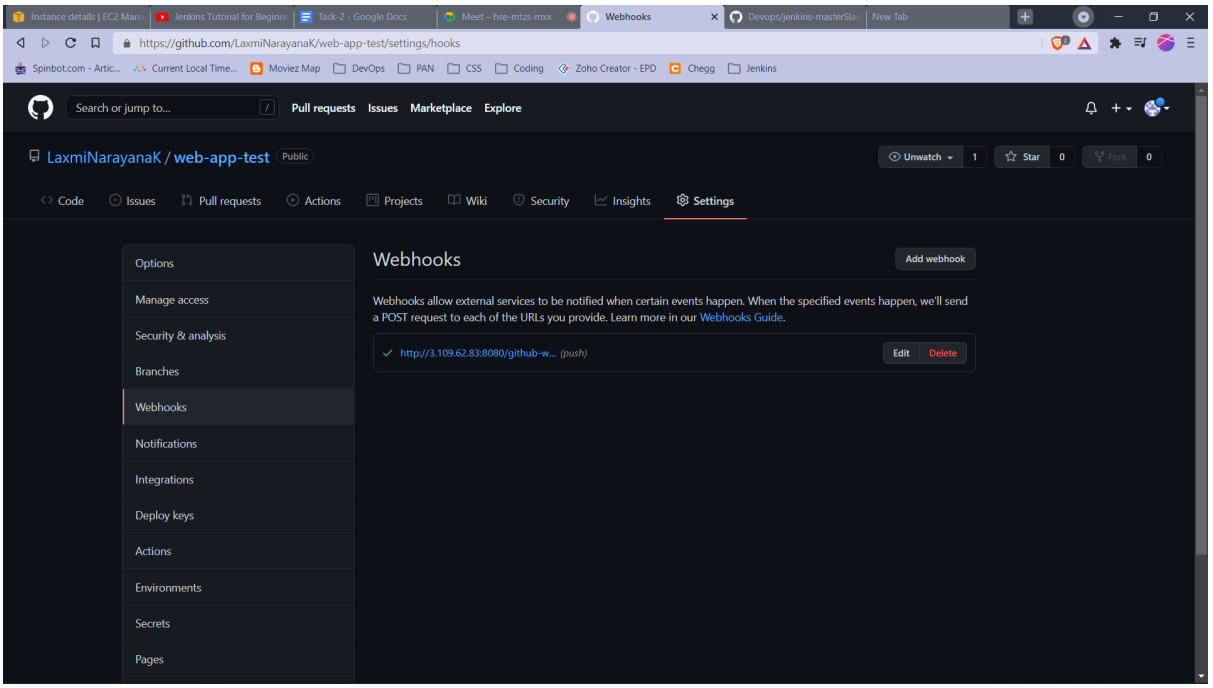


=>Goto jenkins dashboard -> test -> configure -> build triggers.And enable the github hook trigger for GIT-Scm polling option and click save.
=>Headover to your github webapp project and goto settings -> Webhooks -> Add webhook.Now copy paste the ip address of your jenkins server(master node) under the payload url section and click add webhook.
=>NOTE : Verify that you get a tick mark under the webhook section for the url that you copy pasted.
=>Now lets trigger a build by committing port changes to the github webapp project and see the changes made to the test and production server.

COMMANDS

```
git clone <github url>
cd <projectfolder>
ls
nano index.html // make changes to this file
git add .
git commit -m "message"
git push origin master
```


Add webhook
https://github.com/LaxmiNarayanaK/web-app-test/settings/hooks/new
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Options
Manage access
Security & analysis
Branches
Webhooks
Notifications
Integrations
Deploy keys
Actions
Environments
Secrets
Pages
Moderation settings
Webhooks / Add webhook
We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in our developer documentation.
Payload URL *
http://3.109.62.83:8080/github-webhook/
Content type
application/x-www-form-urlencoded
Secret
Which events would you like to trigger this webhook?
Just the push event.
Send me everything.
Let me select individual events.
Active
We will deliver event details when this hook is triggered.
Add webhook


Webhooks
https://github.com/LaxmiNarayanaK/web-app-test/settings/hooks
Search or jump to...
Pull requests
Issues
Marketplace
Explore
LaxmiNarayanaK / web-app-test
Public
Unwatch
1
Star
0
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Code
Issues
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Settings
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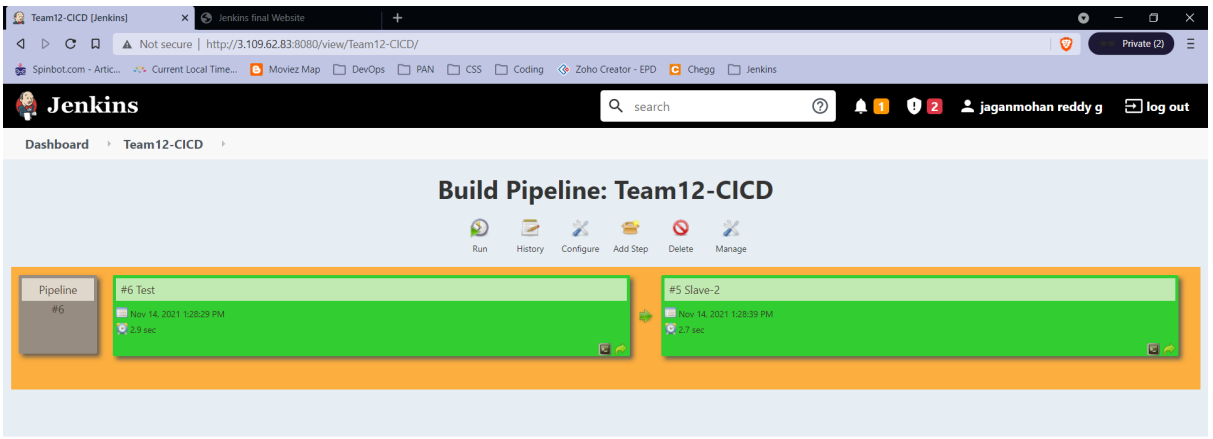
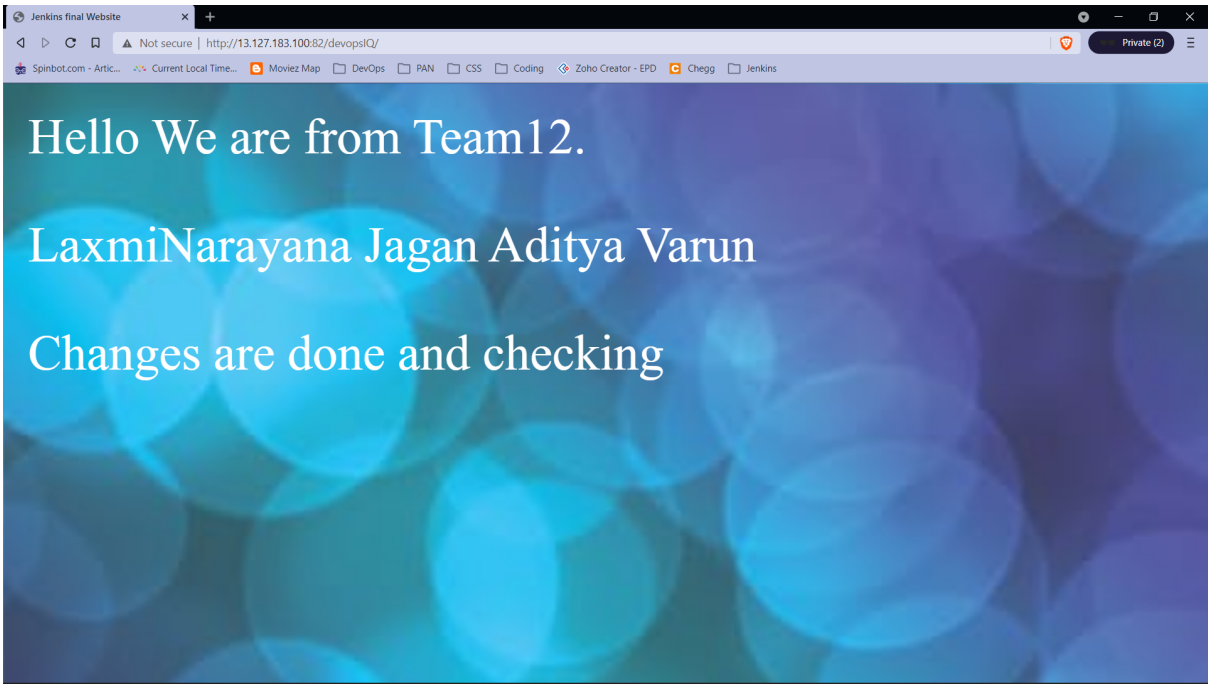
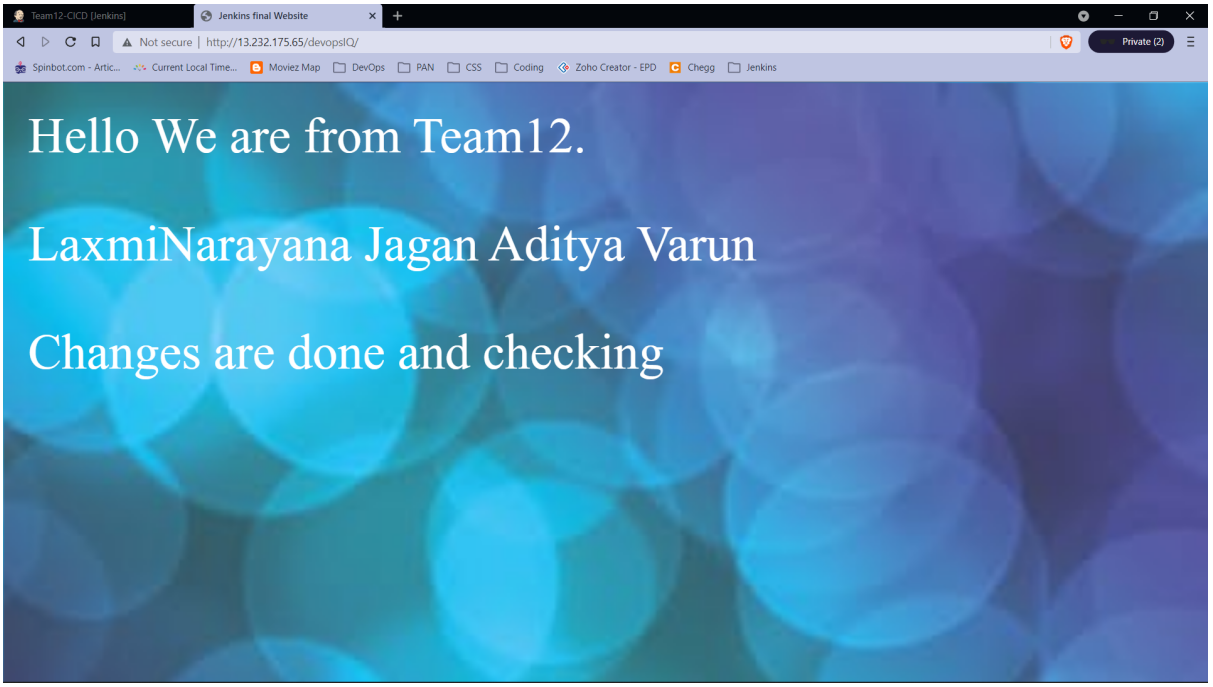
Manage access
Security & analysis
Branches
Webhooks
Notifications
Integrations
Deploy keys
Actions
Environments
Secrets
Pages
Webhooks
Add webhook
Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our Webhooks Guide.
http://3.109.62.83:8080/github-w... (push)
Edit
Delete


Team12-CICD [Jenkins]
Jenkins final Website
Not secure | http://3.109.62.83:8080/view/Team12-CICD/
Private (2)
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Jenkins
search
jaganmohan reddy g
log out
Dashboard
Team12-CICD
Build Pipeline: Team12-CICD
Run
History
Configure
Add Step
Delete
Manage
Pipeline
#6
#6 Test
Nov 14, 2021 1:28:29 PM
2.9 sec
#5 Slave-2
Nov 14, 2021 1:28:39 PM
2.7 sec


Jenkins final Website
Not secure | http://13.127.183.100:82/devopslQ/
Private (2)
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Hello We are from Team12.
LaxmiNarayana Jagan Aditya Varun
Changes are done and checking


Team12-CICD [Jenkins]
Jenkins final Website
Not secure | http://13.232.175.65/devopslQ/
Private (2)
Spinbot.com - Artic...
Current Local Time...
Moviez Map
DevOps
PAN
CSS
Coding
Zoho Creator - EPD
Chegg
Jenkins
Hello We are from Team12.
LaxmiNarayana Jagan Aditya Varun
Changes are done and checking