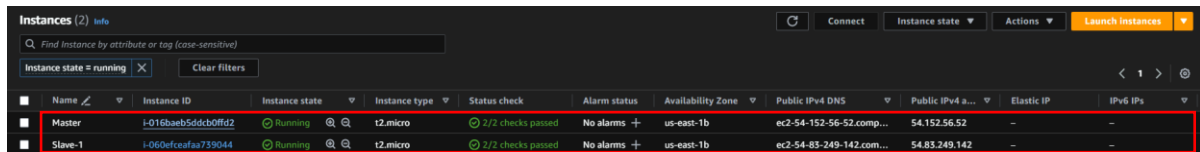


# Jenkins Master Slave Architecture

## Master to Slaves

Step-1 : Create 2 instance in AWS Linux.

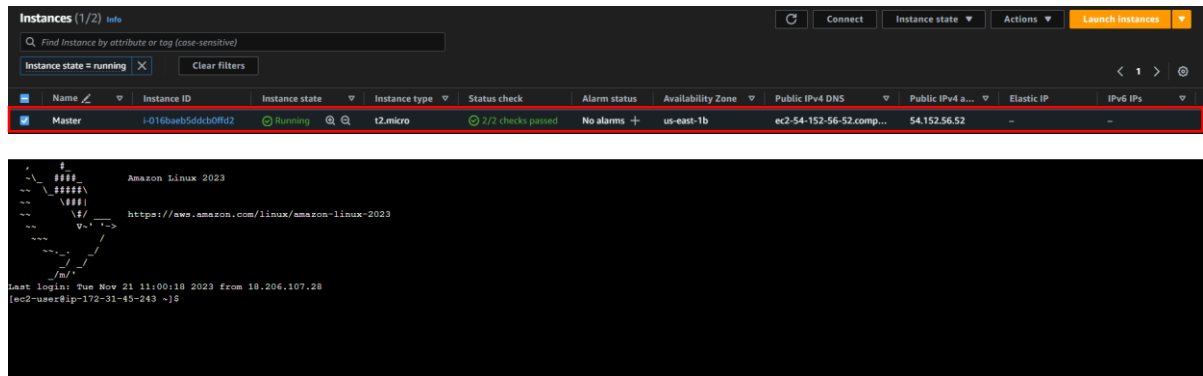
1. EC2-1 is Master
2. EC2-2 is Slave



The screenshot shows the AWS Management Console 'Instances' page with two instances listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 a...	Elastic IP	IPv6 IPs
Master	i-016baeb5ddcb0ff0d2	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-54-152-56-52.comp...	54.152.56.52	-	-
Slave-1	i-060efceafaa739044	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-54-83-249-142.com...	54.83.249.142	-	-

Step-2 : connect Master



The screenshot shows the AWS Management Console 'Instances' page with the Master instance selected. Below it, a terminal window displays the AWS CLI command to connect to the Master instance:

```
aws ssm start-session --target i-016baeb5ddcb0ff0d2
```

The terminal output shows the connection to the Master instance, displaying the Amazon Linux 2023 logo and the command prompt.

Step-3 : Install java and Jenkins in Master.

to install : java

```
sudo yum install java-17-amazon-corretto-devel
```

to Check : version of java whether installed or not. cmd : ( java -version )

to install : Jenkins

```
sudo yum update -y
sudo wget -O /etc/yum.repos.d/jenkins.repo http://pkg.jenkins.io/redhat/jenkins.repo
sudo rpm --import https://pkg.jenkins.io/redhat/jenkins.io-2023.key
sudo yum install jenkins -y
systemctl daemon-reload
sudo systemctl start jenkins
sudo systemctl enable jenkins
systemctl status jenkins
```

to Check : version of Jenkins whether installed or not. cmd : ( jenkins --version )

- Jenkins status is running.

```
[root@ip-172-31-45-243 ec2-user]# systemctl status jenkins
jenkins.service - Jenkins Continuous Integration Server
Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: disabled)
Active: active (running) since Thu 2023-11-23 04:10:22 UTC; 50min ago
Main PID: 1978 (java)
Tasks: 41 (limit: 1114)
Memory: 540.5M
CPU: 59.937s
CGroup: /system.slice/jenkins.service
└─1978 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.126+0000 [id=31] INFO jenkins.InitReactorRunner$1:onAttained: Loaded all jobs
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.137+0000 [id=31] INFO jenkins.InitReactorRunner$1:onAttained: Configuration for all jobs updated
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.246+0000 [id=50] INFO hudson.util.Retrier$1:Attempt #1 to do the action check updates server
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.375+0000 [id=31] INFO jenkins.InitReactorRunner$1:onAttained: Completed initialization
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.481+0000 [id=24] INFO hudson.lifecycle.Lifecycle$onReady: Jenkins is fully up and running
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.636+0000 [id=50] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.tasks.Maven
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.736+0000 [id=50] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.tasks.Ant
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.918+0000 [id=50] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.plugins.git
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.919+0000 [id=50] INFO hudson.util.Retrier$1:Attempt #1 to do the action check updates server successfully at the at
```

#### Step-4 : Connect Slave-1

The screenshot shows the Jenkins 'Instances' page with a table of instances. 'Slave-1' is highlighted in red. Below the table is a terminal window showing the login prompt for 'ec2-user' on 'ip-172-31-41-200'.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 a...	Elastic IP	IPv6 IPs
Master	i-016baeb5ddcb0ff02	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-54-152-56-52.com...	54.152.56.52	-	-
Slave-1	i-060efcafa759044	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-54-83-249-142.com...	54.83.249.142	-	-

```

  ____      _
 / ___|  __| | | |
 \___ \  | | | | | |
  ___) | | | | | | |
 |_____|_|_|_|_|_|_|

Amazon Linux 2023

https://aws.amazon.com/linux/amazon-linux-2023

Last login: Thu Nov 23 04:27:15 2023 from 18.206.107.28
[ec2-user@ip-172-31-41-200 ~]$

```

#### Step-5 : install java, git.

to install

```
sudo yum install java-17-amazon-corretto-devel
```

to Check : version of java whether installed or not. cmd : ( java -version )

to install

```
sudo yum install git -y
```

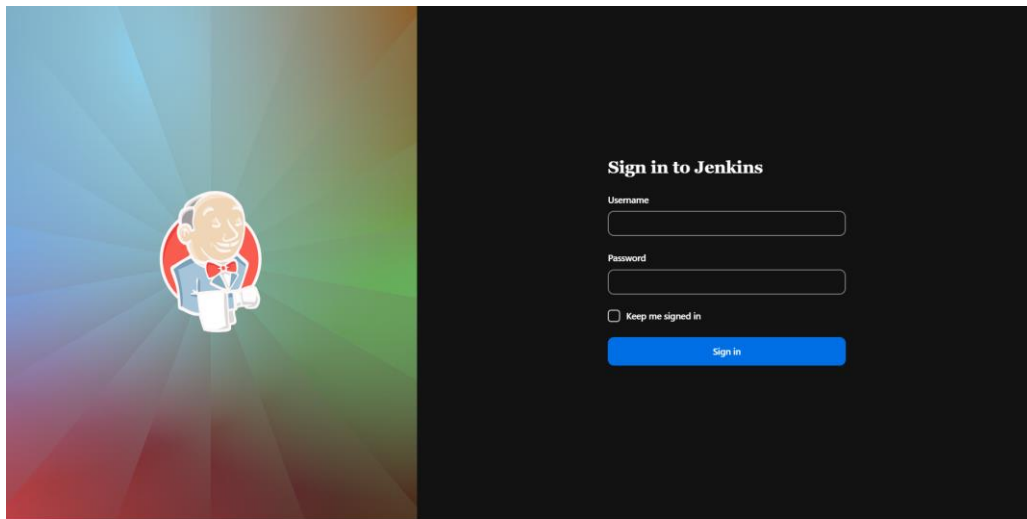
to Check : version of git whether installed or not. cmd : ( git --version )

#### Step-6 : Create 1 directory ( Slave-1 ), go inside, copy current absolute path.

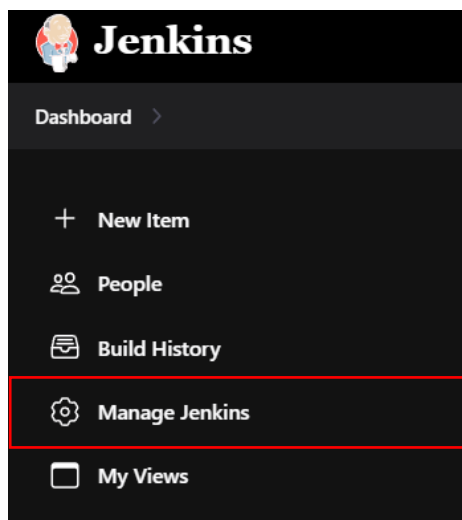
```
[ec2-user@ip-172-31-45-243 ~]$ mkdir Slave1
[ec2-user@ip-172-31-45-243 ~]$ cd Slave1/
[ec2-user@ip-172-31-45-243 Slave1]$ pwd
/home/ec2-user/Slave1
[ec2-user@ip-172-31-45-243 Slave1]$
```

Step-7 : connect to Jenkins.

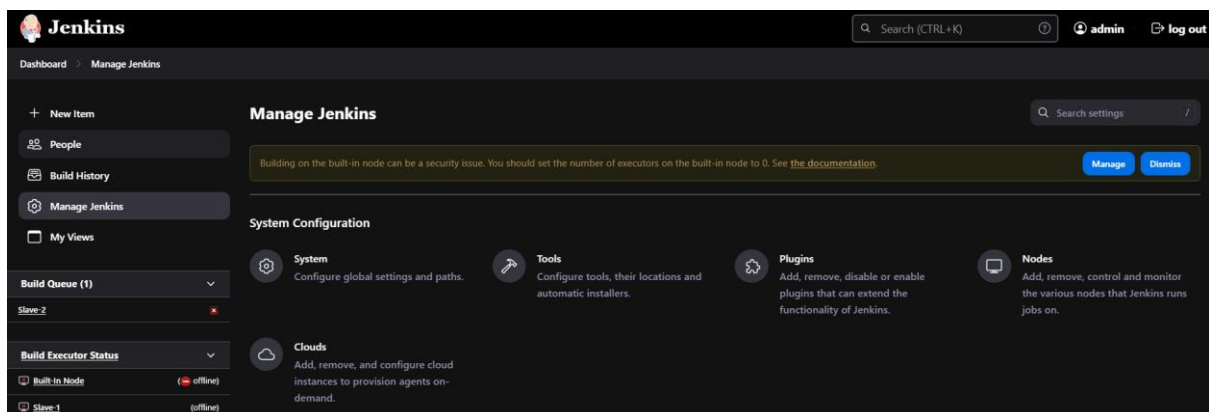
( with the help of **Master** instance public IP with :8080 )



Step-8 : Create Node and connect to **slave-1**.



1. Go to manage **Jenkins**.
2. Node, New node.

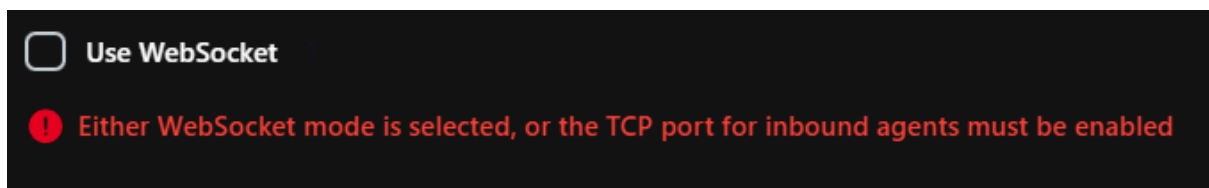




3. in Remote Root Directory give path which we have created in [slave-1](#).



4. Check Websocket.



5. Save.



6. Copy unix command and paste in Slave-1 ( paste here: /home/ec2-user/Slave-1 )
7. After paste [agent.jar](#), [remoting](#), [secret-file](#), [workspace](#) will be create in that directory.

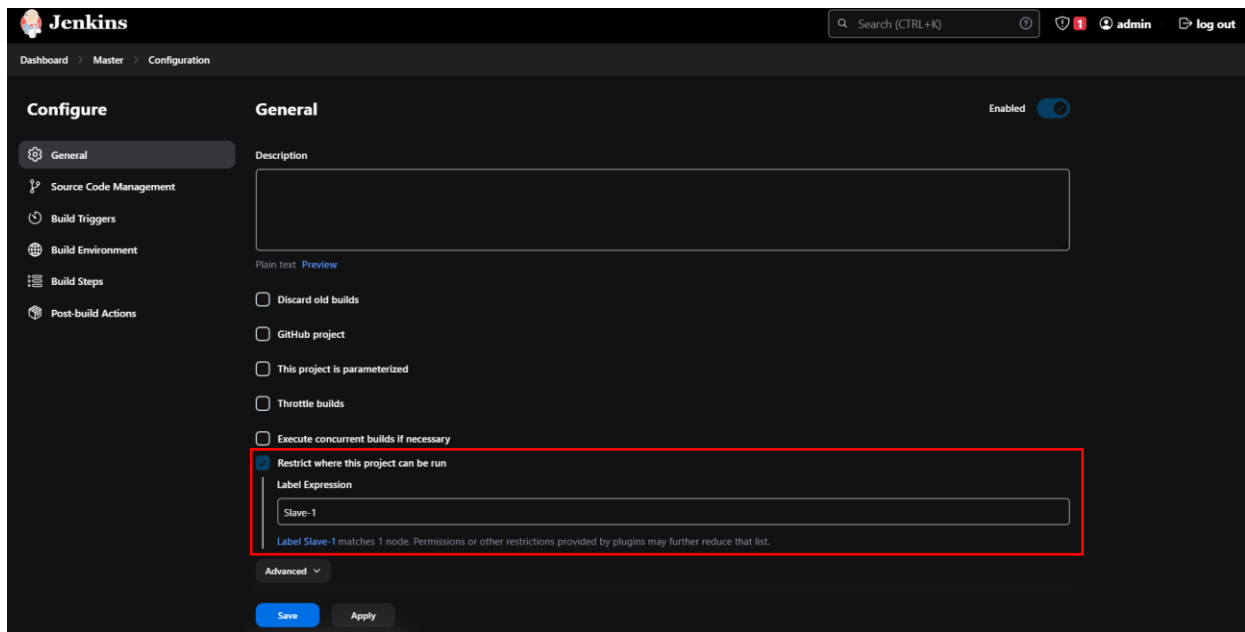
```
[root@ip-172-31-41-200 slave-1]# ls
agent.jar  remoting  secret-file  workspace
[root@ip-172-31-41-200 slave-1]# pwd
```

Note : Make sure your [slave-1](#) is in online.

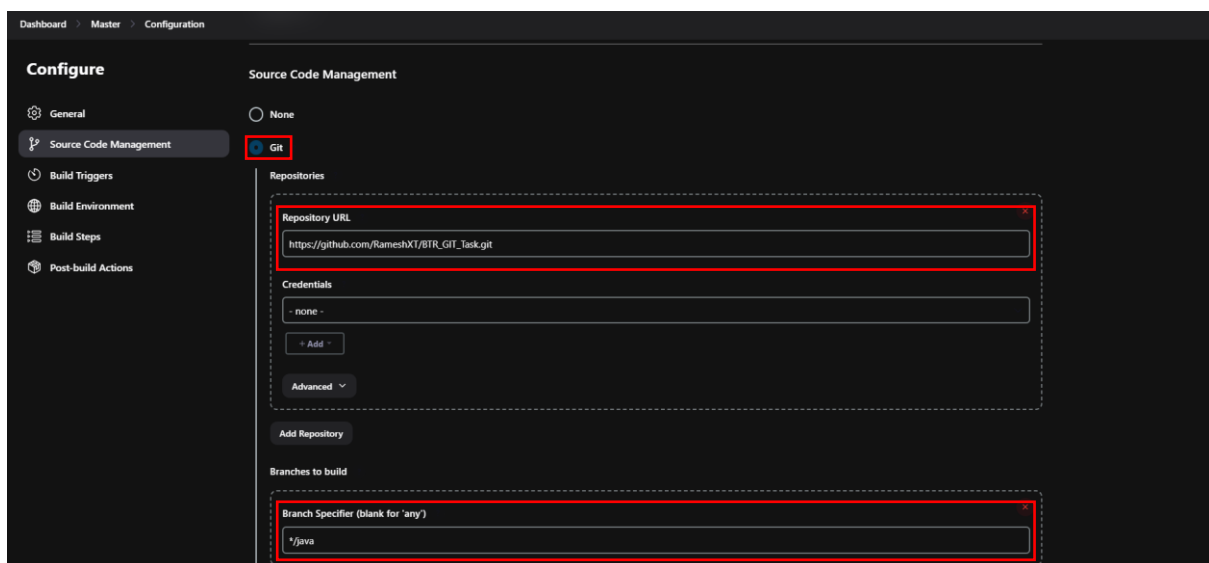
### Step-9 : Create a Freestyle Project in Jenkins.

After creating a Jenkins project we need to configure that.

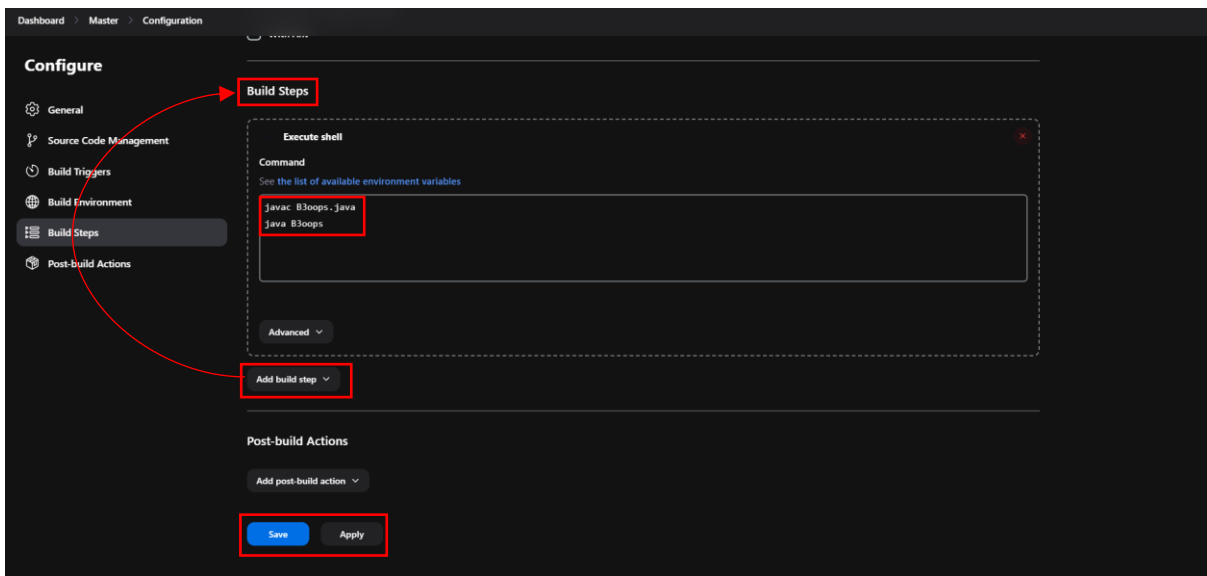
1. Restrict where this project can be run. ( label **Slave-1** )



2. Click **git** ( Source code management )
3. Add you repository link there.
4. Add branch.



5. in add build steps
6. execute shell command

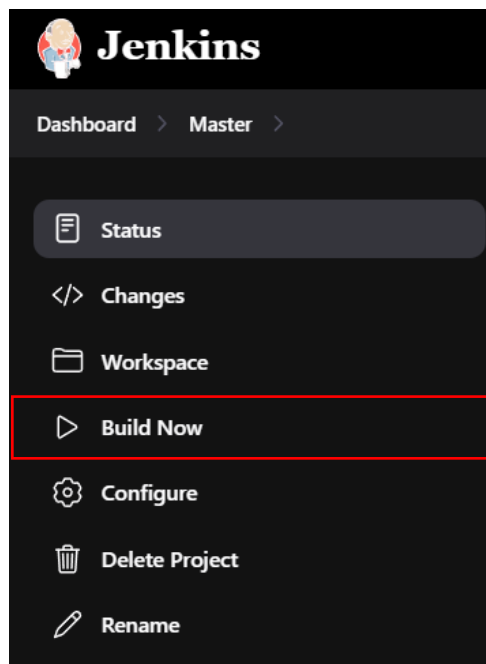


7. to compile `java` file, to run `java` file

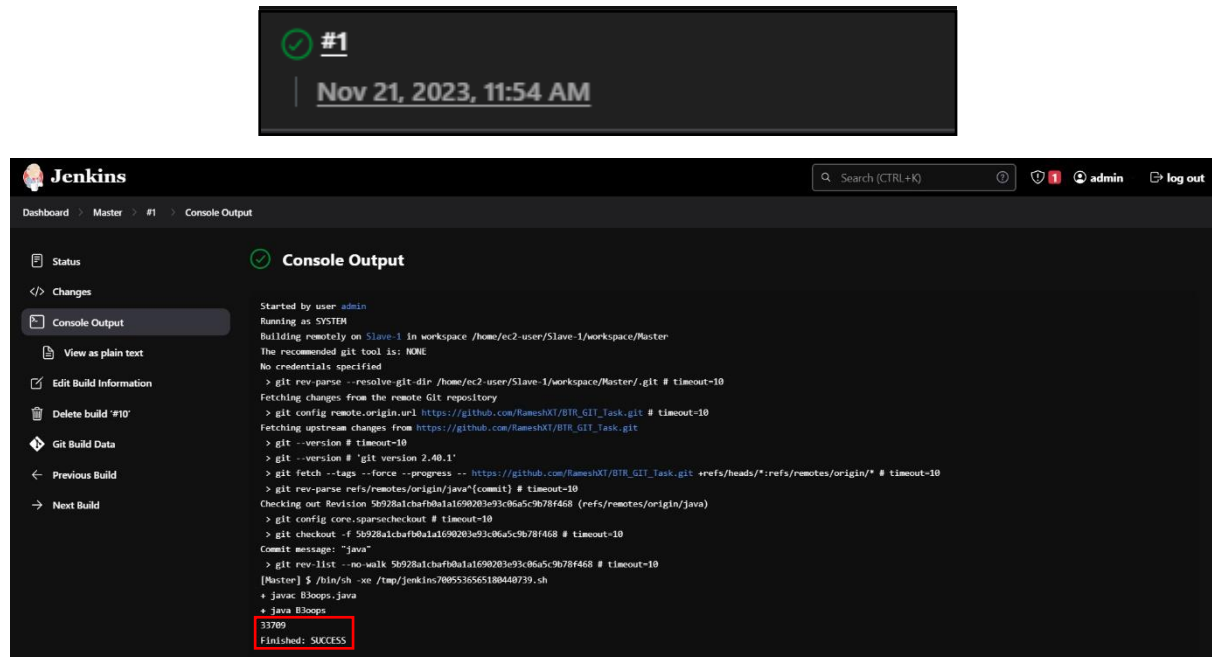
```
javac B3oops.java
java B3oops
```

8. save, and apply.

**Step-10** : once finish with configuration build our project in project dashboard.



Step-11 : if our Build is success output will be shown in below.



The image shows a Jenkins build interface. At the top, a dark banner displays a green checkmark icon, the build number **#1**, and the timestamp **Nov 21, 2023, 11:54 AM**. Below this, the Jenkins dashboard is visible with the 'Console Output' tab selected. The console output shows the build process starting with 'Started by user admin' and 'Running as SYSTEM'. It details the workspace path, git tool configuration, and the execution of git commands to fetch and checkout code. The build concludes with the execution of 'javac @loops.java' and 'java @loops', followed by a red box highlighting the final status: **33700** and **Finished: SUCCESS**.

```
Started by user admin
Running as SYSTEM
Building remotely on Slave-1 In workspace /home/ec2-user/Slave-1/workspace/Master
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /home/ec2-user/Slave-1/workspace/Master/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/RameshX1/BTR_GIT_Task.git # timeout=10
Fetching upstream changes from https://github.com/RameshX1/BTR_GIT_Task.git
> git --version # timeout=10
> git --version # 'git version 2.40.1'
> git fetch --tags --force --progress -- https://github.com/RameshX1/BTR_GIT_Task.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/java^{commit} # timeout=10
Checking out Revision 5b928a1cbafbb0a1a1690203e93c06a5c9b78f468 (refs/remotes/origin/java)
> git config core.sparsecheckout # timeout=10
> git checkout -f 5b928a1cbafbb0a1a1690203e93c06a5c9b78f468 # timeout=10
Commit message: "java"
> git rev-list --no-walk 5b928a1cbafbb0a1a1690203e93c06a5c9b78f468 # timeout=10
[Master] $ /bin/sh -xe /tmp/jenkins7005536565180440739.sh
+ javac @loops.java
+ java @loops
33700
Finished: SUCCESS
```

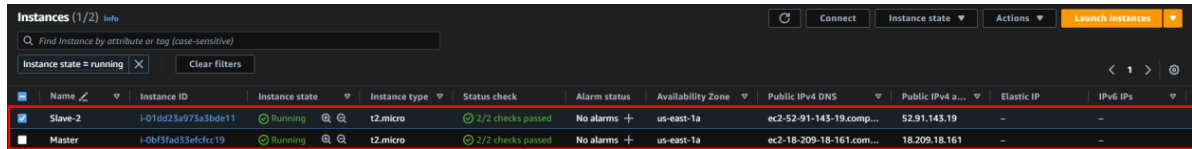
Successfully java Program run.

---

## Master to Slaves -2

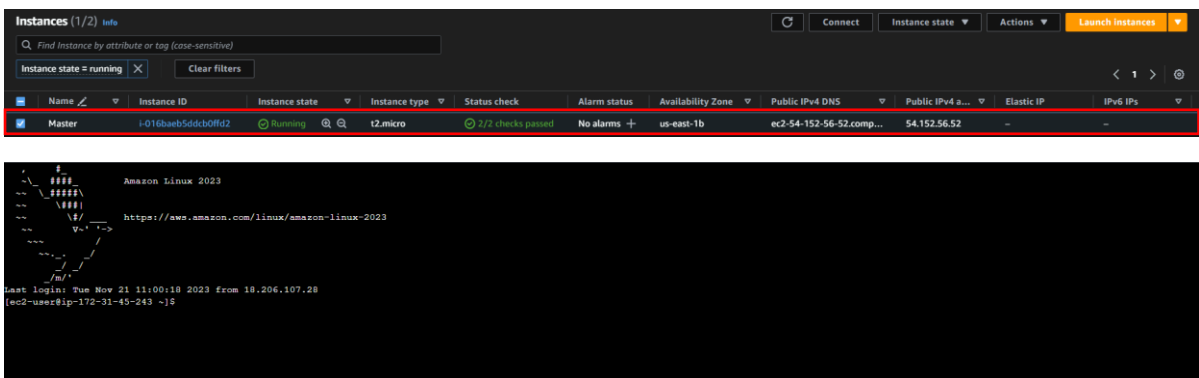
Step-1 : Create 2 instance in AWS Linux.

1. EC2-1 is Master
2. EC2-2 is Slave



Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 a...	Elastic IP	IPv6 IPs
Slave-2	i-01dd23a973a3bde11	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-52-91-143-19.com...	52.91.143.19	-	-
Master	i-0bf3fad53efccf19	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-18-209-18-161.com...	18.209.18.161	-	-

Step-2 : connect Master



```
Amazon Linux 2023
[ec2-user@ip-172-31-45-243 ~]$
https://aws.amazon.com/linux/amazon-linux-2023
Last login: Tue Nov 21 11:00:10 2023 from 18.206.107.28
[ec2-user@ip-172-31-45-243 ~]$
```

Step-3 : Install java and Jenkins in Master.

to install : java

```
sudo yum install java-17-amazon-corretto-devel
```

to Check : version of java whether installed or not. cmd : ( java -version )

to install : Jenkins

```
sudo yum update -y
sudo wget -O /etc/yum.repos.d/jenkins.repo http://pkg.jenkins.io/redhat/jenkins.repo
sudo rpm --import https://pkg.jenkins.io/redhat/jenkins.io-2023.key
sudo yum install jenkins -y
systemctl daemon-reload
sudo systemctl start jenkins
sudo systemctl enable jenkins
systemctl status jenkins
```

to Check : version of Jenkins whether installed or not. cmd : ( jenkins --version )



- Jenkins status is running.

```

[root@ip-172-31-49-243 ec2-user]# systemctl status jenkins
jenkins.service - Jenkins Continuous Integration Server
Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: disabled)
Active: active (running) since Thu 2023-11-23 04:10:22 UTC; 50min ago
Main PID: 1978 (java)
Tasks: 41 (limit: 1114)
Memory: 540.5M
CPU: 59.937s
CGroup: /system.slice/jenkins.service
└─1978 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.126+0000 [id=31] INFO jenkins.InitReactorRunner$1onAttained: Loaded all jobs
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.137+0000 [id=31] INFO jenkins.InitReactorRunner$1onAttained: Configuration for all jobs updated
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.246+0000 [id=50] INFO hudson.util.Retrier$1start: Attempt #1 to do the action check updates server
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.375+0000 [id=31] INFO jenkins.InitReactorRunner$1onAttained: Completed initialization
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.481+0000 [id=24] INFO hudson.lifecycle.Lifecycle$onReady: Jenkins is fully up and running
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.036+0000 [id=50] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.tasks.Maven
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.736+0000 [id=50] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.tasks.Ant
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.918+0000 [id=50] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.plugins.git
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.919+0000 [id=50] INFO hudson.util.Retrier$1start: Performed the action check updates server successfully at the at

```

#### Step-4 : Connect Slave-1

Instances (1/2) <a href="#">help</a>										
Find Instance by attribute or tag (case-sensitive)										
Instance state = running <input type="button" value="Clear filters"/>										
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 a...	Elastic IP	IPv6 IPs
Slave-2	i-01dd23a973a3bde11	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1a	ec2-52-91-143-19.comp...	52.91.143.19	-	-
Master	i-0bf3fad55efccf19	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1a	ec2-18-209-18-161.com...	18.209.18.161	-	-

```

Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Sun Nov 26 08:42:02 2023 from 18.204.107.29
[ec2-user@ip-172-31-24-167 ~]$

```

#### Step-5 : install apache2(httpd), git.

to install

```

yum install httpd -y
systemctl start httpd
systemctl status httpd

```

to Check : version of apache2(httpd) whether installed or not. cmd : ( httpd --version )

to install git

```

sudo yum install git -y

```

to Check : version of git whether installed or not. cmd : ( git --version )

#### Step-6 : Create 1 directory ( Slave-1 ), go inside, copy current absolute path.

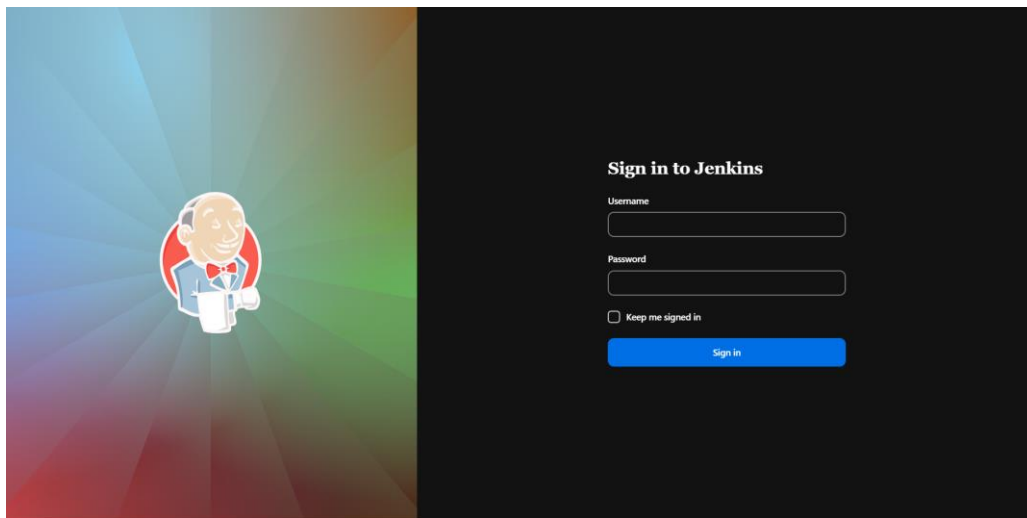
```

[ec2-user@ip-172-31-24-167 ~]$ mkdir slave-2
[ec2-user@ip-172-31-24-167 ~]$ cd slave-2/
[ec2-user@ip-172-31-24-167 slave-2]$ pwd
/home/ec2-user/slave-2
[ec2-user@ip-172-31-24-167 slave-2]$

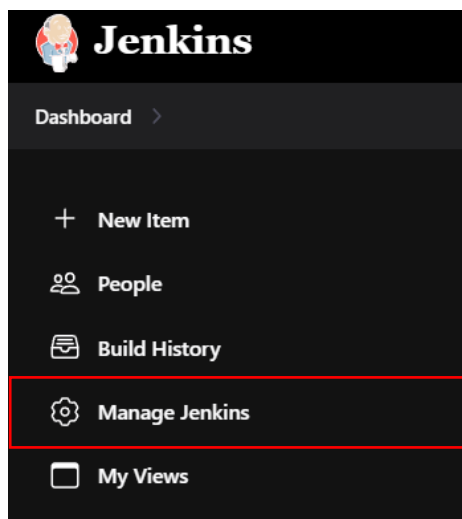
```

#### Step-7 : connect to Jenkins.

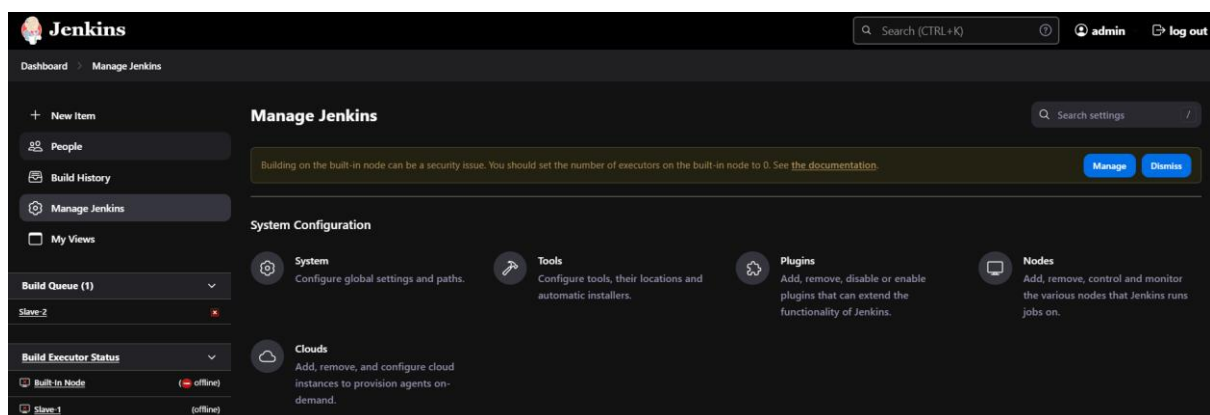
( with the help of Master instance public IP with :8080 )



Step-8 : Create Node and connect to [slave-2](#).



8. Go to manage **Jenkins**.
9. Node, New node.

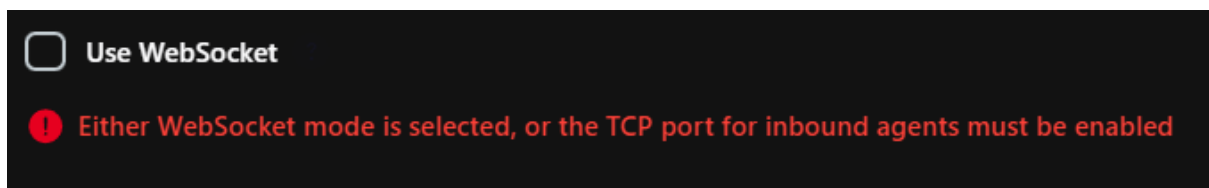




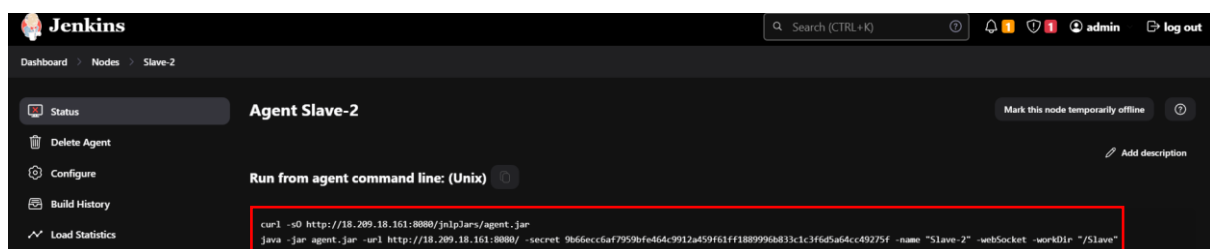
10. in Remote Root Directory give path which we have created in [slave-1](#).



11. Check Websocket.



12. Save.



13. Copy unix command and paste in [Slave-2](#) ( paste here: /home/ec2-user/Slave-1 )

14. After paste [agent.jar](#), [remoting](#), [secret-file](#), [workspace](#) will be create in that directory.

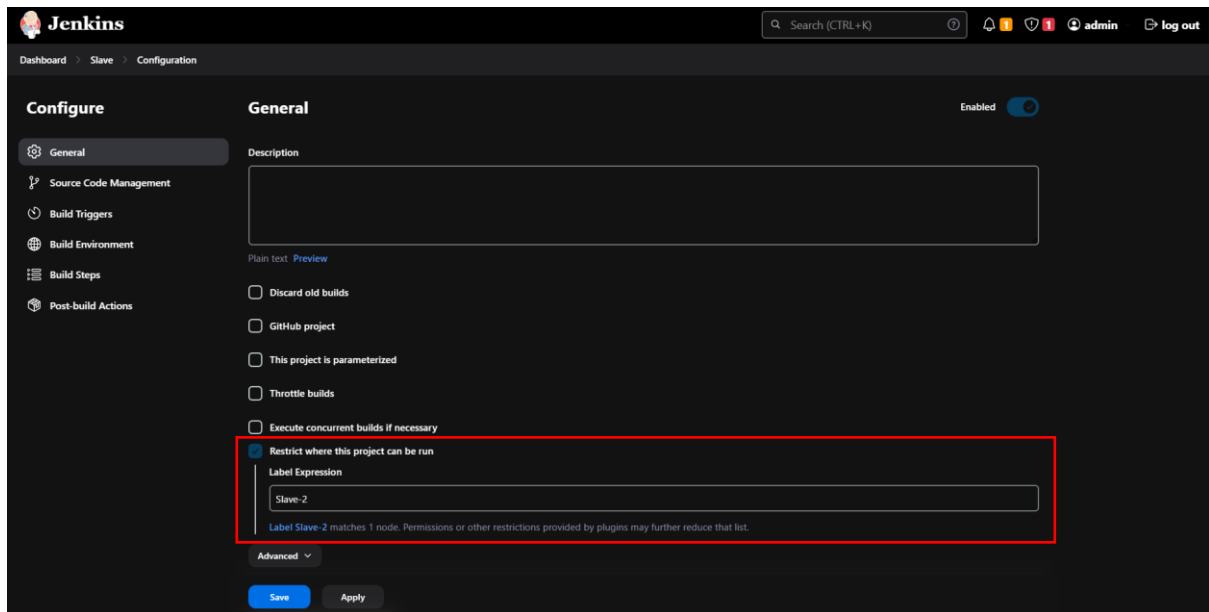
```
[root@ip-172-31-24-167 Slave-2]# ls
agent.jar  remoting  workspace
[root@ip-172-31-24-167 Slave-2]#
```

Note : Make sure your [slave-1](#) is in online.

**Step-9** : Create a Freestyle Project in **Jenkins**.

After creating a **Jenkins** project we need to configure that.

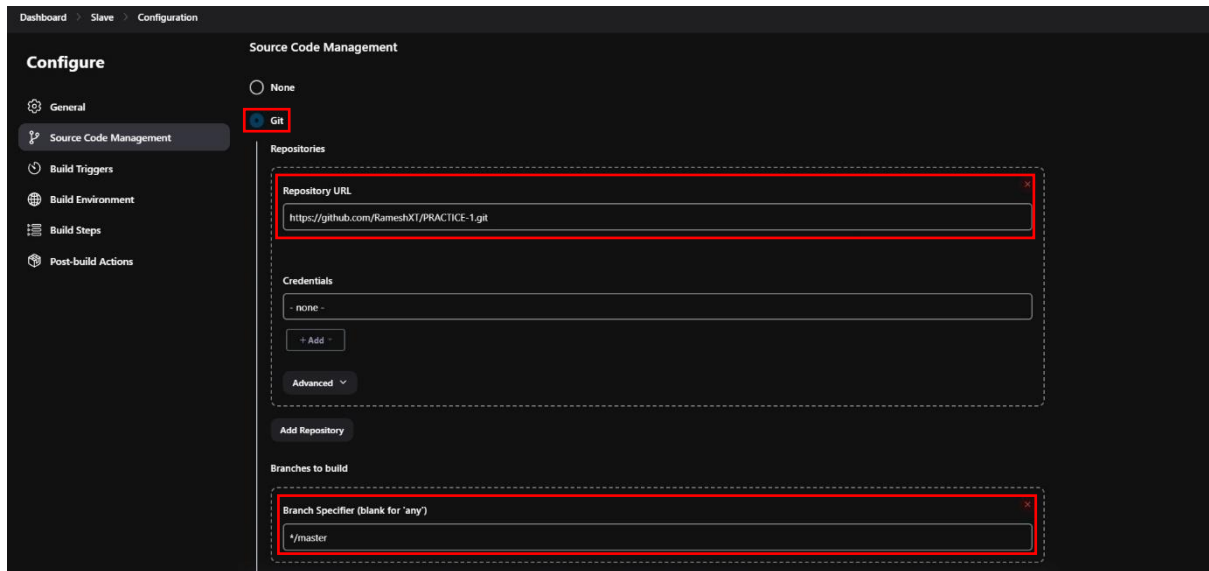
9. Restrict where this project can be run. ( label [Slave-2](#) )



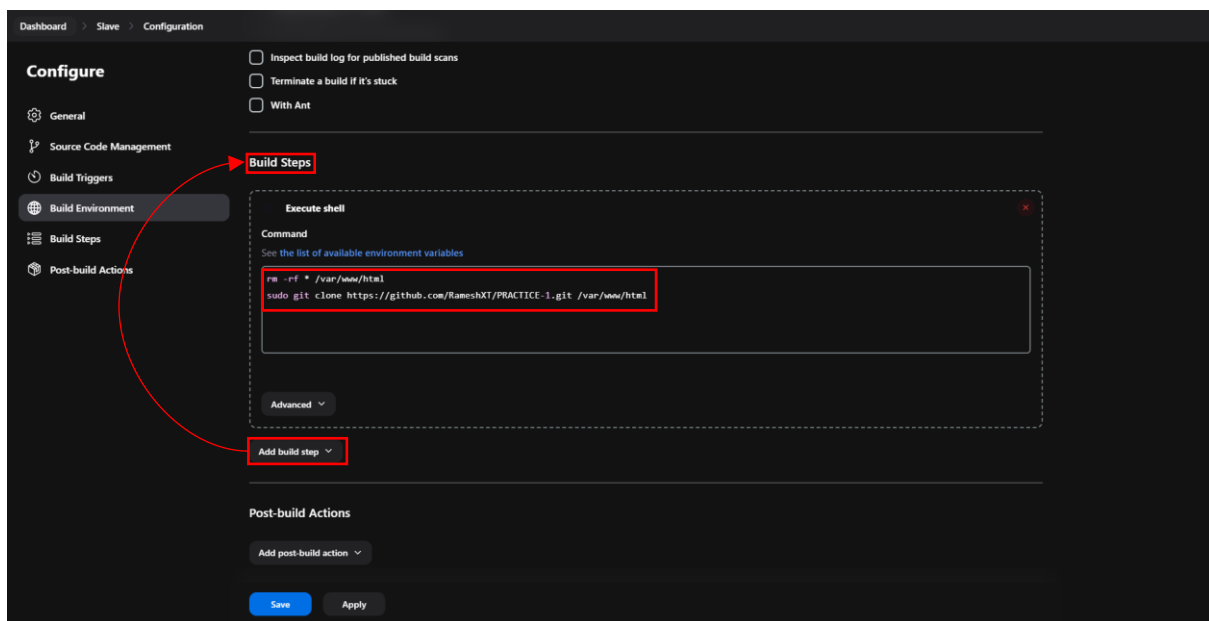
10. Click [git](#) ( Source code management )

11. Add you repository link there.

12. Add branch.



13. in add build steps
14. execute shell command

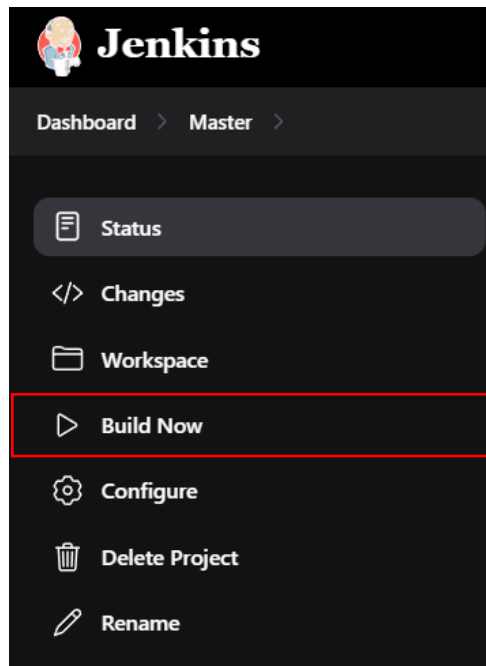


15. 1<sup>st</sup> we need clean a html directory ( path : /var/www/html )
16. Clone a project html and move to html path then only it will expose in webpage.

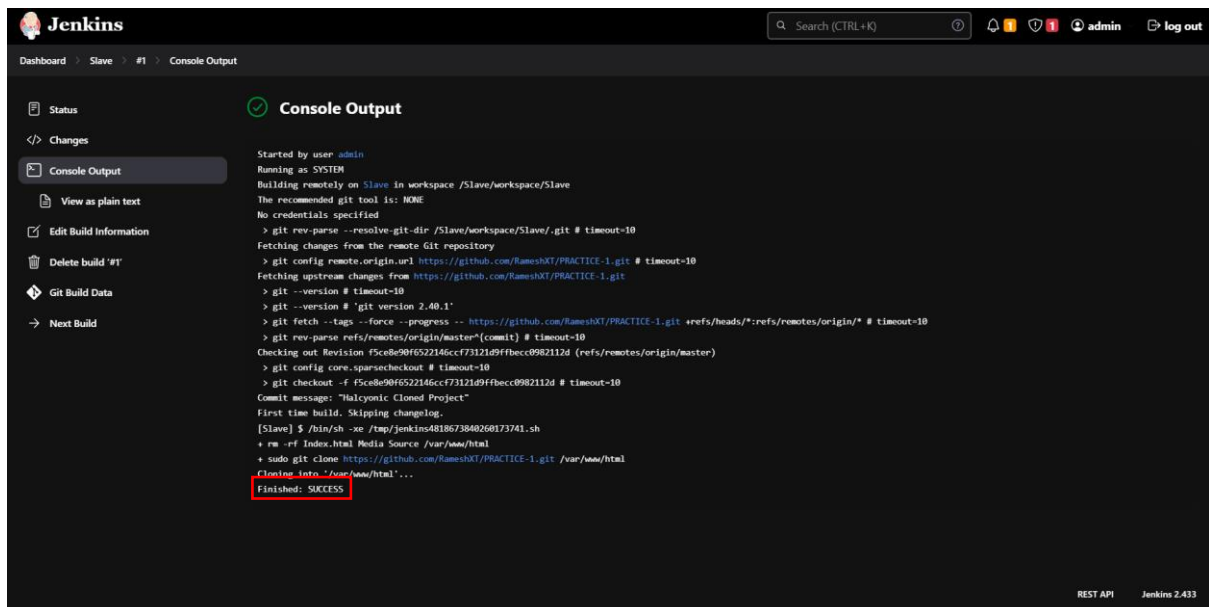
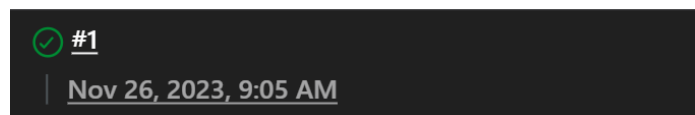
```
sudo git clone https://github.com/RameshXT/PRACTICE-1.git /var/www/html
```

17. Save and apply.

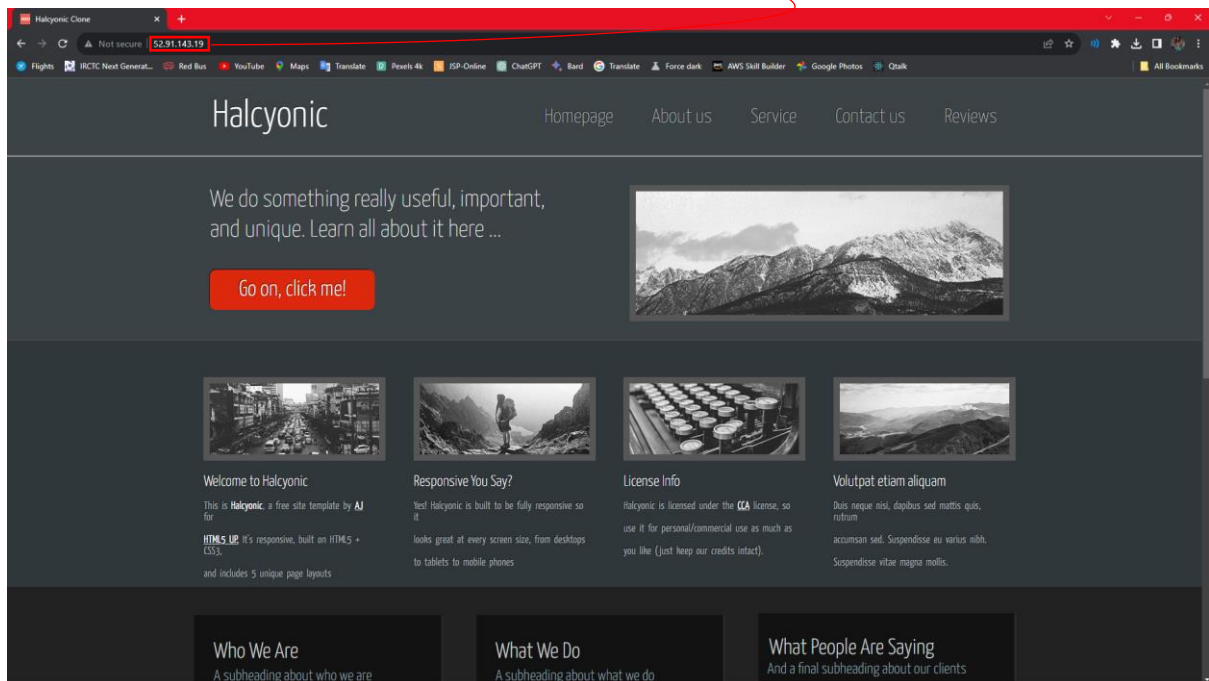
**Step-10** : once finish with configuration build our project in project dashboard.



Step-11 : if our Build is success output will be shown in below.



1. ( copy Slave instance public IP with :80 )



Successfully running our application.

---