

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

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-016baeb5dcdb0ff0d2	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-060efcafa739044	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

Instances 1/2 Info									
Find Instance by attribute or tag (case-sensitive)									
Instance state = running ✕ Clear filters									
	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Elastic IP
	Master	i-016baeb5ddc0ffid2	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-54-152-56-52.comp...	54.152.56.52

[illegible]

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)

- ```
[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.ext.classess=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 04:10:22.244+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=50] INFO jenkins.InitReactorRunner$1:onAttained: Completed initialization
Nov 23 04:10:22 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:22.461+0000 [id=24] INFO hudson.lifecycle.Lifecycle$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$1:Obtained the updated data file for hudson.tasks.Maven
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.734+0000 [id=50] INFO h.m.DownloadService$Downloadable$1:Obtained the updated data file for hudson.tasks.Ant
Nov 23 04:10:47 ip-172-31-45-243.ec2.internal jenkins[1978]: 2023-11-23 04:10:47.918+0000 [id=50] INFO h.m.DownloadService$Downloadable$1: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:Performed the action check updates server successfully at the at
Lines 1-29/29 (END)
```

**Instances** 1/2 Info

Find Instance by attribute or tag (case-sensitive)

Instance state = running X 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 |
|---------|----------------------|----------------|---------------|-------------------|--------------|-------------------|--------------------------|------------------|------------|----------|
| Master  | i-016baeb5ddcb0ff4d2 | 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-060dfcefaa739044   | Running        | t2.micro      | 2/2 checks passed | No alarms +  | us-east-1b        | ec2-54-83-249-142.com... | 54.83.249.142    | -          | -        |

```

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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 ~]$

```

to install

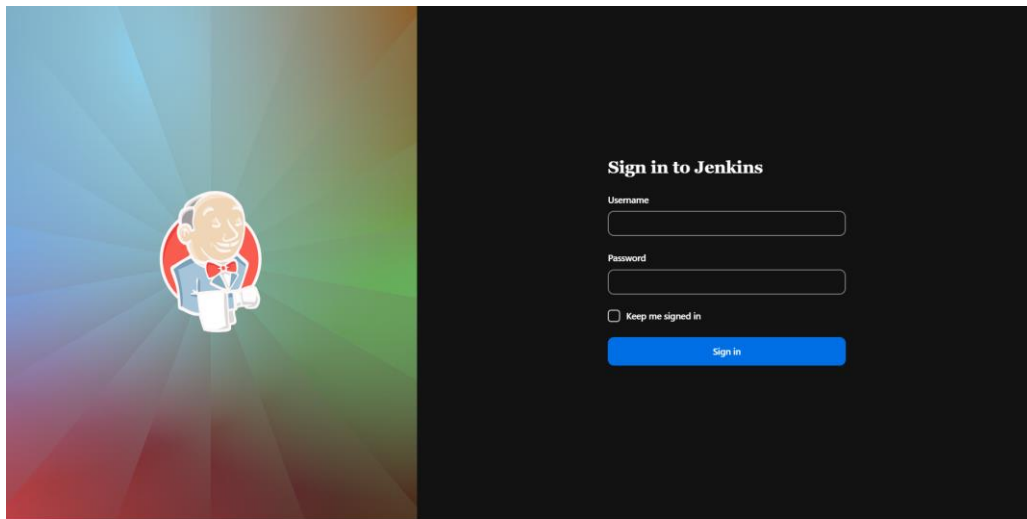
to Check : version of **java**, whether installed or not. cmd : ( `java -version` )

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

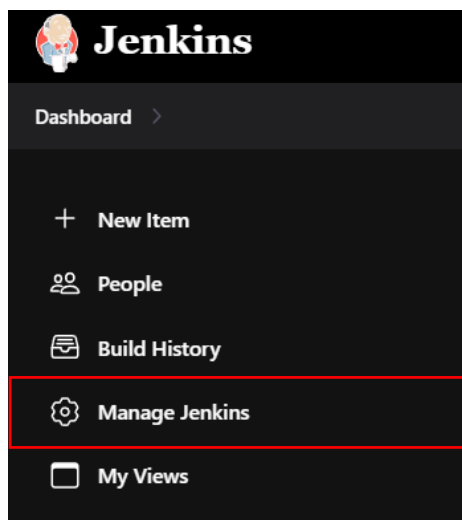
```
[ec2-user@ip-172-31-45-243 ~]$ mkdir Slave1
[ec2-user@ip-172-31-45-243 ~]$ cd Slave1/
[ec2-user@ip-172-31-45-243 Slave1]$ pwd
/home/ec2-user/Slave1
[ec2-user@ip-172-31-45-243 Slave1]$
```

Step-7 : connect to Jenkins.

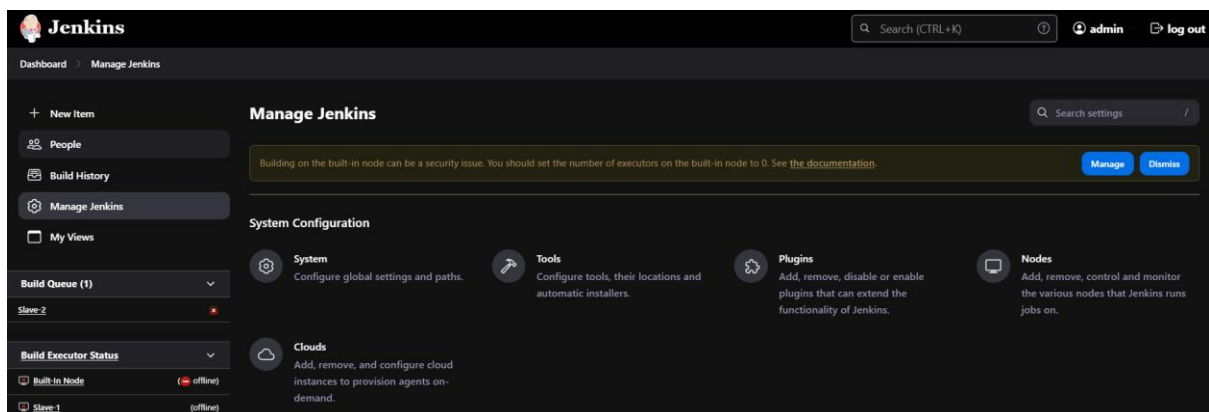
( with the help of **Master** instance public IP with :8080 )



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



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

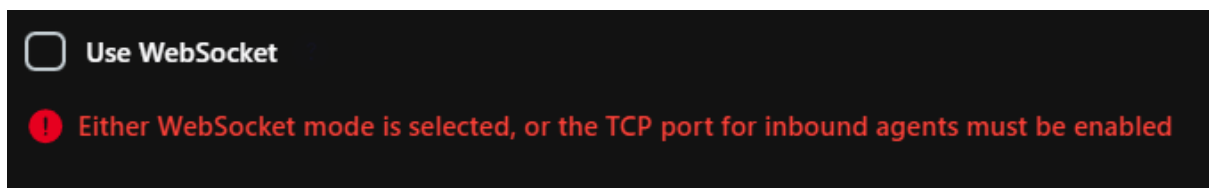




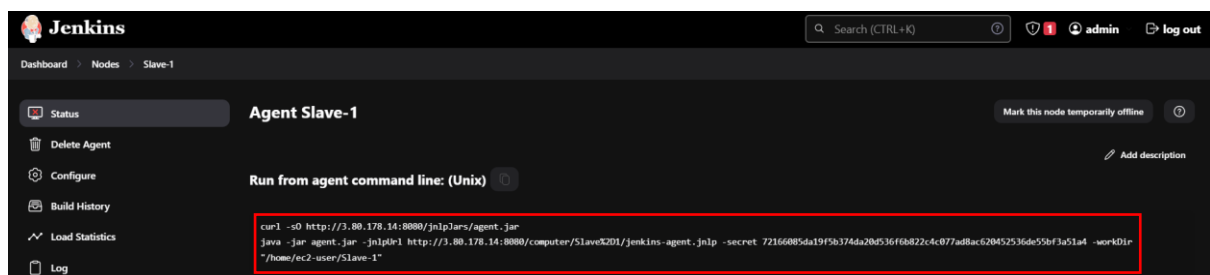
- in Remote Root Directory give path which we have created in [slave-1](#).



- Check Websocket.



- Save.



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

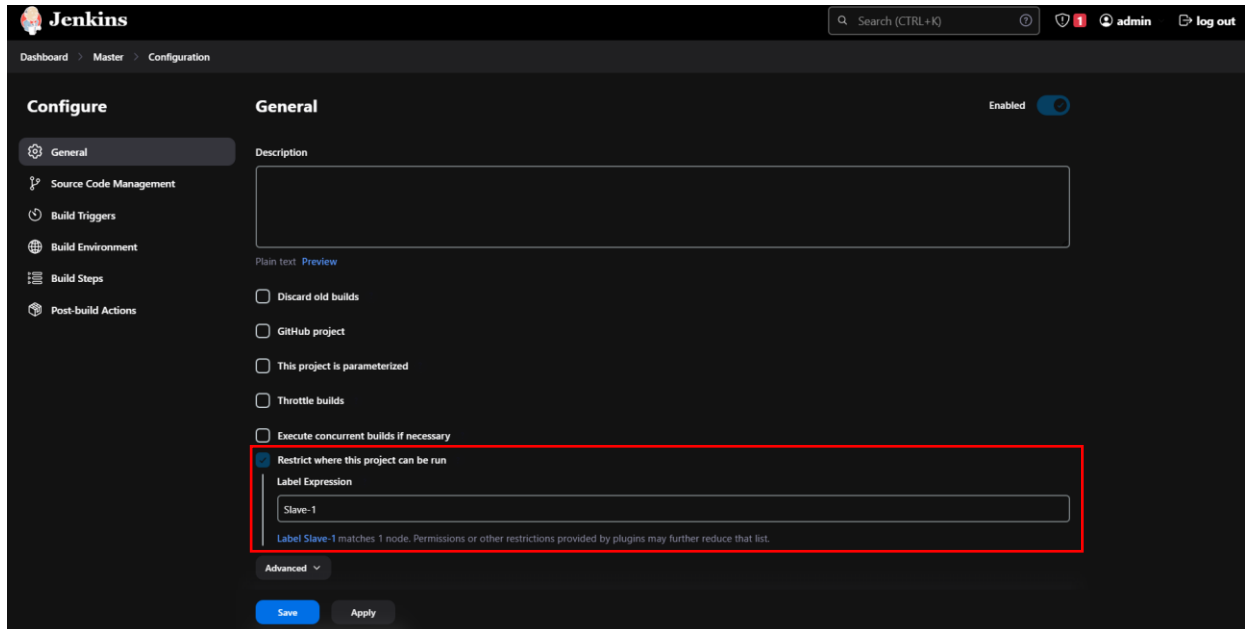
```
[root@ip-172-31-41-200 slave-1]# ls
agent.jar remoting secret-file workspace
[root@ip-172-31-41-200 slave-1]# pwd
```

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

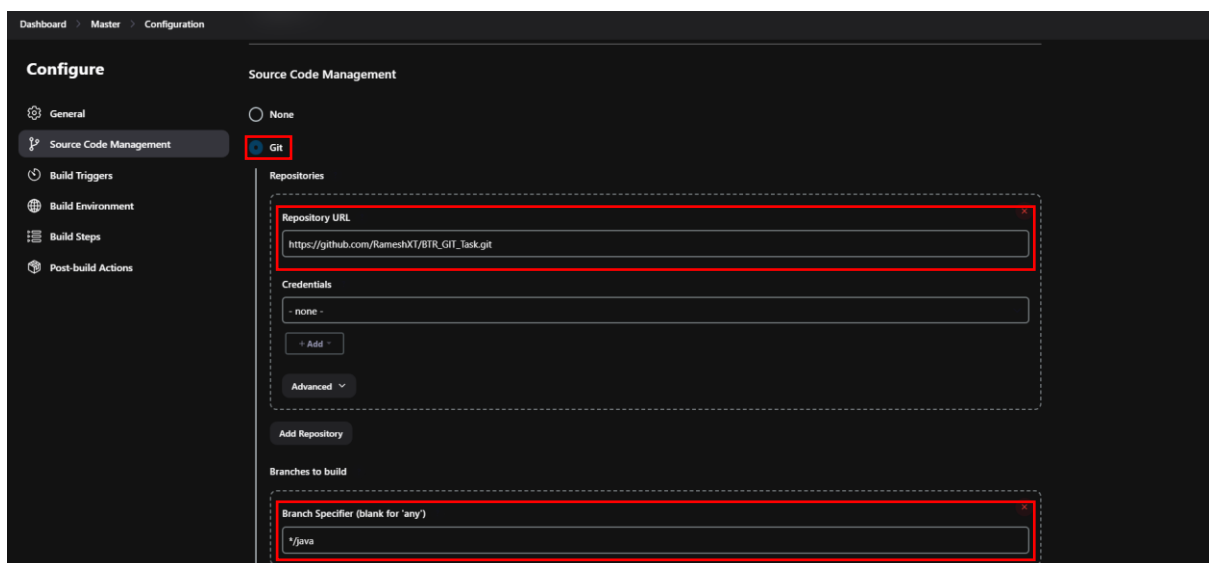
### Step-9 : Create a Freestyle Project in Jenkins.

After creating a Jenkins project we need to configure that.

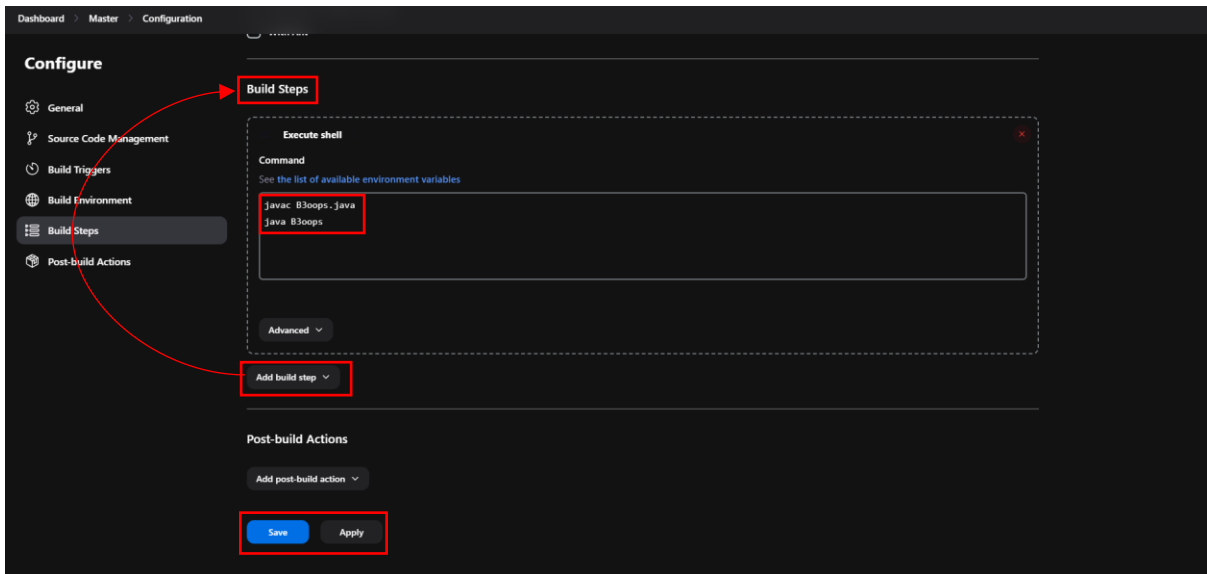
1. Restrict where this project can be run. ( label **Slave-1** )



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



5. in add build steps
6. execute shell command

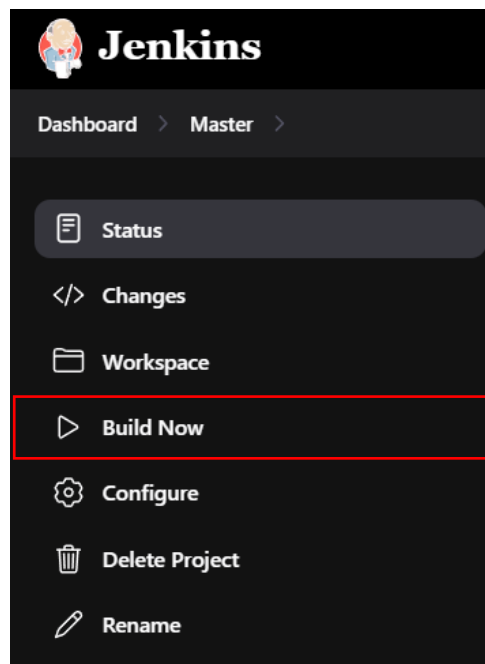


7. to compile `java` file, to run `java` file

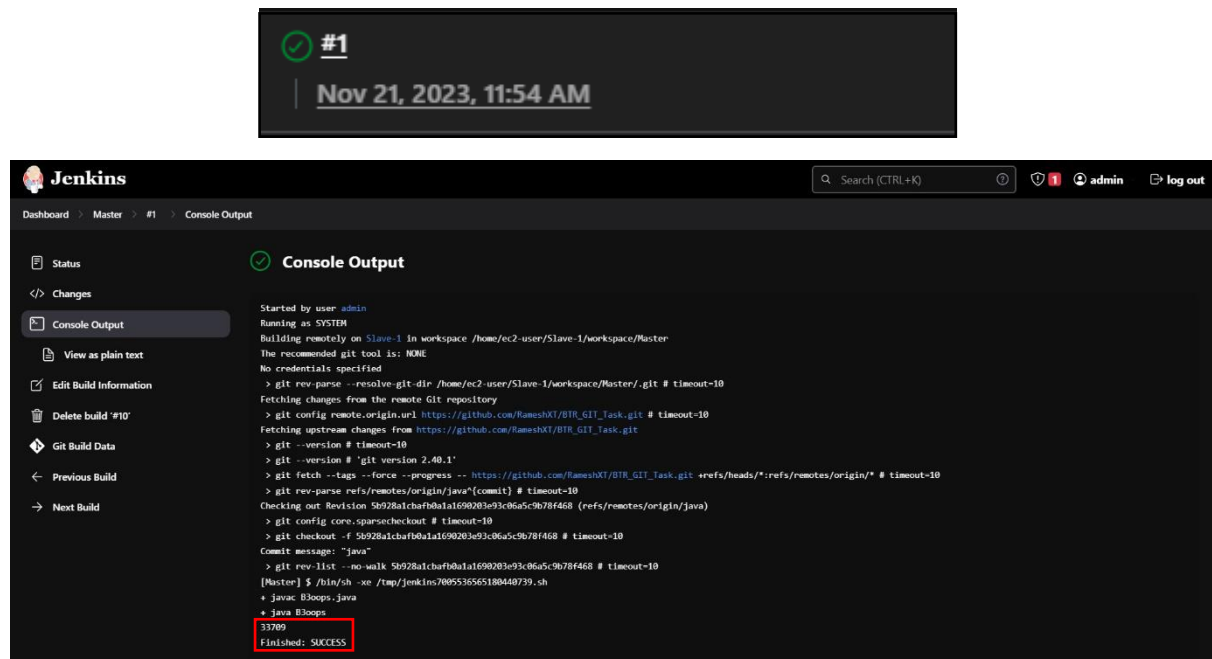
```
javac B3oops.java
java B3oops
```

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 settings, and the execution of git commands to fetch and checkout code. The build concludes with the command 'java 8loops' and a final status of 'Finished: SUCCESS' highlighted in a red box.

```
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 5b928a1cbaf6b0a1a1690203e93c06a5c9b78f468 (refs/remotes/origin/java)
> git config core.sparsecheckout # timeout=10
> git checkout -f 5b928a1cbaf6b0a1a1690203e93c06a5c9b78f468 # timeout=10
Commit message: "java"
> git rev-list --no-walk 5b928a1cbaf6b0a1a1690203e93c06a5c9b78f468 # timeout=10
[Master] $ /bin/sh -xe /tmp/jenkins7005536565180440/39.sh
+ javac 8loops.java
+ java 8loops
33700
Finished: SUCCESS
```

Successfully java Program running.

## Master to Slaves-2

Step-1 : Create 2 instance in AWS Linux.

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

Instances (1/2) [Info](#)

Find Instance by attribute or tag (case-sensitive)

Instance state: **running** 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 |
|-------------------------------------|---------|--------------------|----------------|---------------|-------------------|--------------|-------------------|--------------------------|------------------|------------|----------|
| <input checked="" type="checkbox"/> | Slave-2 | i-01dd3a975a3bde11 | Running        | t2.micro      | 2/2 checks passed | No alarms +  | us-east-1a        | ec2-52-91-143-19.com...  | 52.91.143.19     | -          | -        |
| <input checked="" type="checkbox"/> | Master  | i-0bf3fad33efcc19  | 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

Instances (1/2) Info

Find instance by attribute or tag (case-sensitive)

Instance state = running Clear filters

Refresh

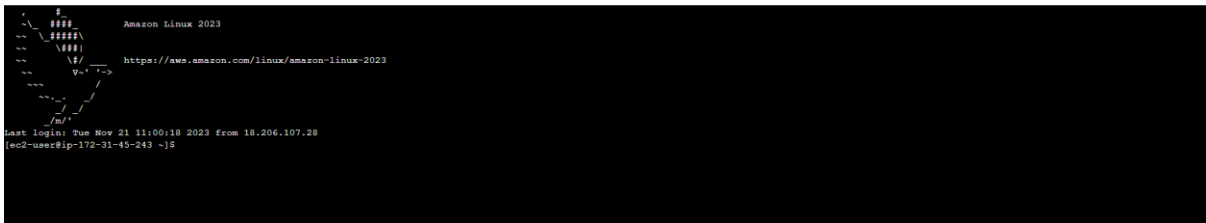
Connect

Instance state

Actions

Launch instances

| 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-010baab5ddcb0ff0d2 | Running        | t2.micro      | 2/2 checks passed | No alarms +  | us-east-1b        | ec2-54-152-56-52.comp... | 54.152.56.52     | -          | -        |



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$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-2

The screenshot shows the Jenkins 'Instances' page with two instances: 'Slave-2' and 'Master'. 'Slave-2' is highlighted with a red box. Below it, a terminal window shows the command to connect to the Slave-2 instance via SSH.

| 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-0bf3fad55efdcfc19 | Running        | t2.micro      | 2/2 checks passed | No alarms +  | us-east-1a        | ec2-18-209-18-161.com... | 18.209.18.161    | -          | -        |

```

$ ssh -i /path/to/key.pem ec2-user@ip-172-31-24-167
Last login: Sun Nov 26 08:42:02 2023 from 18.206.107.29
[ec2-user@ip-172-31-24-167 ~]$

```

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

to install : httpd

```
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
```

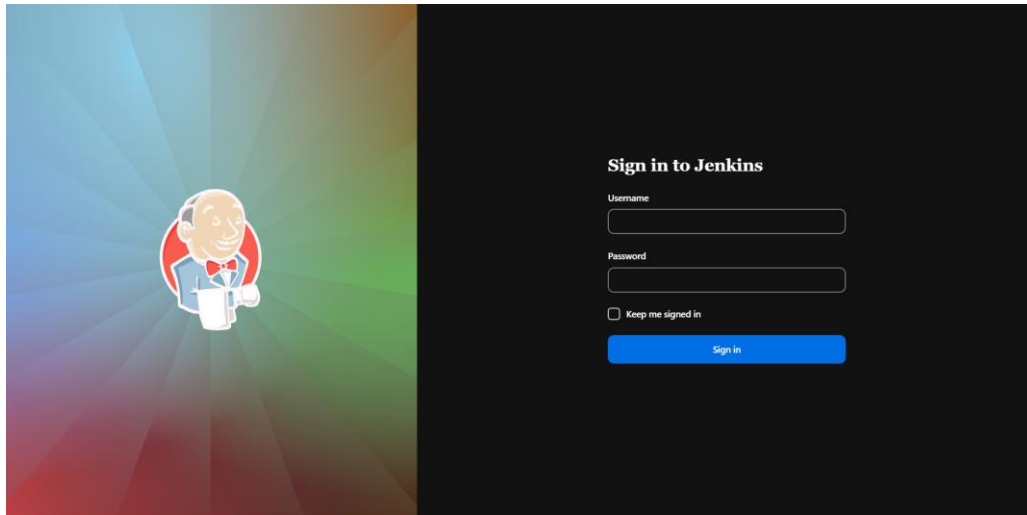
to Check : version of git, whether installed or not. cmd : ( git --version )

#### Step-6 : Create 1 directory ( Slave-2 ) go inside, copy current absolute path.

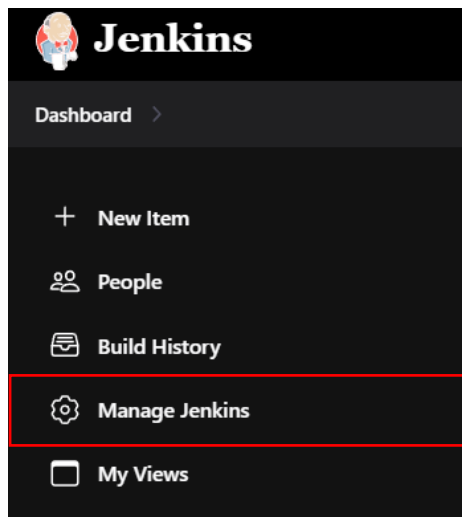
```
[ec2-user@ip-172-31-24-167 ~]$ mkdir slave-2
[ec2-user@ip-172-31-24-167 ~]$ cd slave-2/
[ec2-user@ip-172-31-24-167 slave-2]$ pwd
/home/ec2-user/slave-2
[ec2-user@ip-172-31-24-167 slave-2]$
```

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

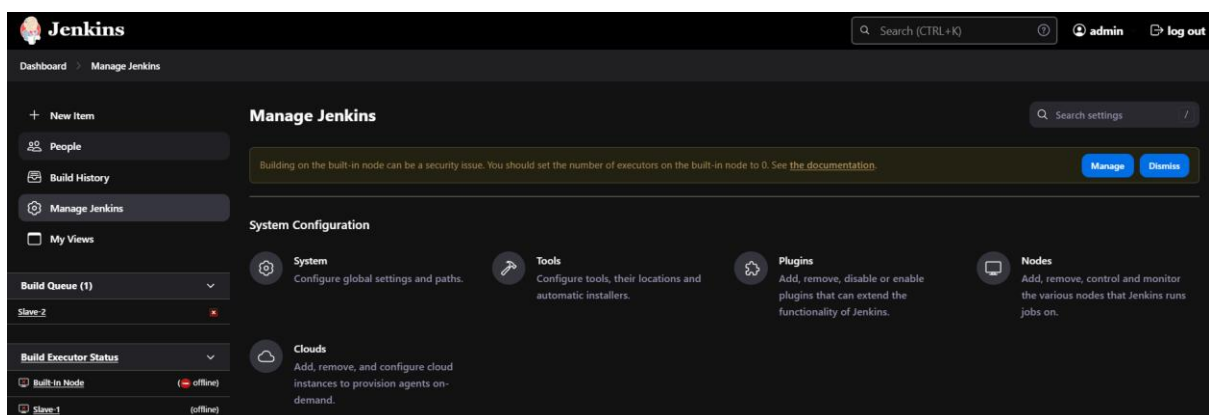
( with the help of Master instance public IP with :8080 )



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



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

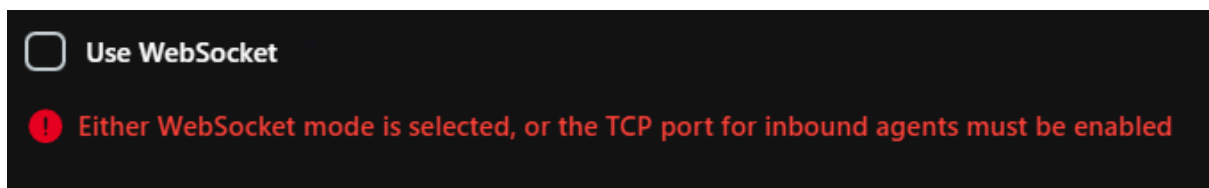




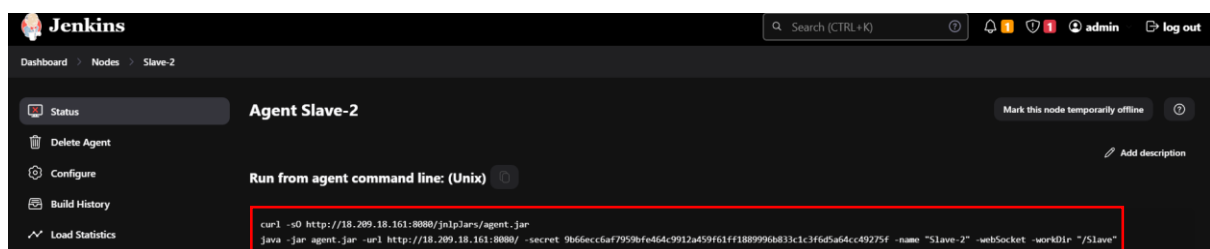
10. in Remote Root Directory give that path which we have created in [slave-1](#).



11. Check Websocket.



12. Save.



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

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

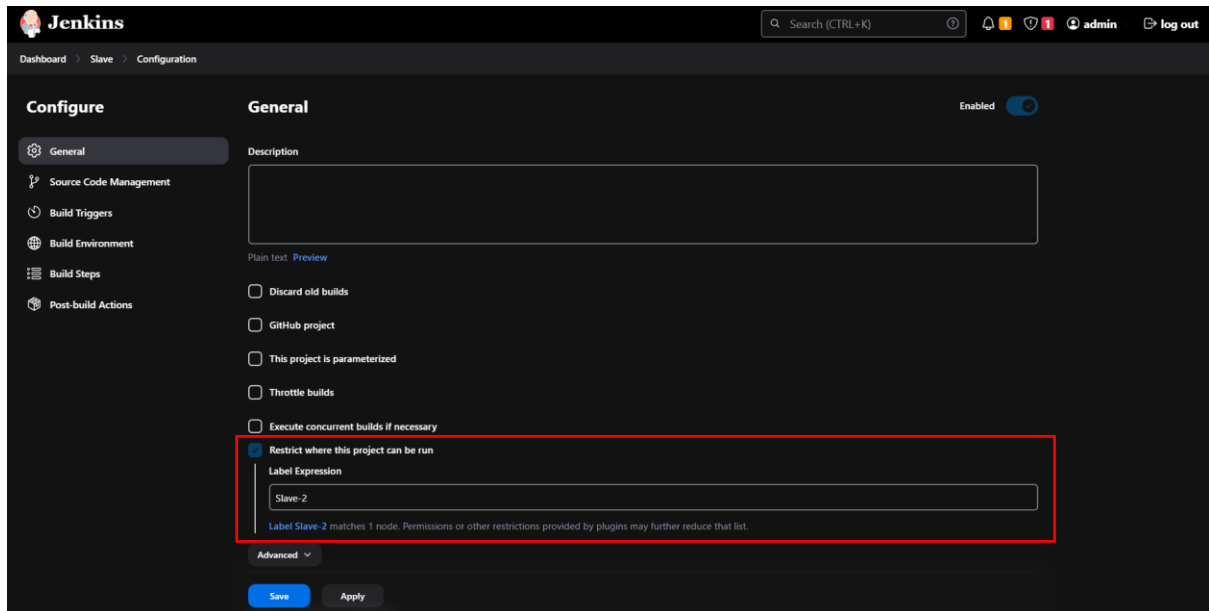
```
[root@ip-172-31-24-167 Slave-2]# ls
agent.jar remoting workspace
[root@ip-172-31-24-167 Slave-2]#
```

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.

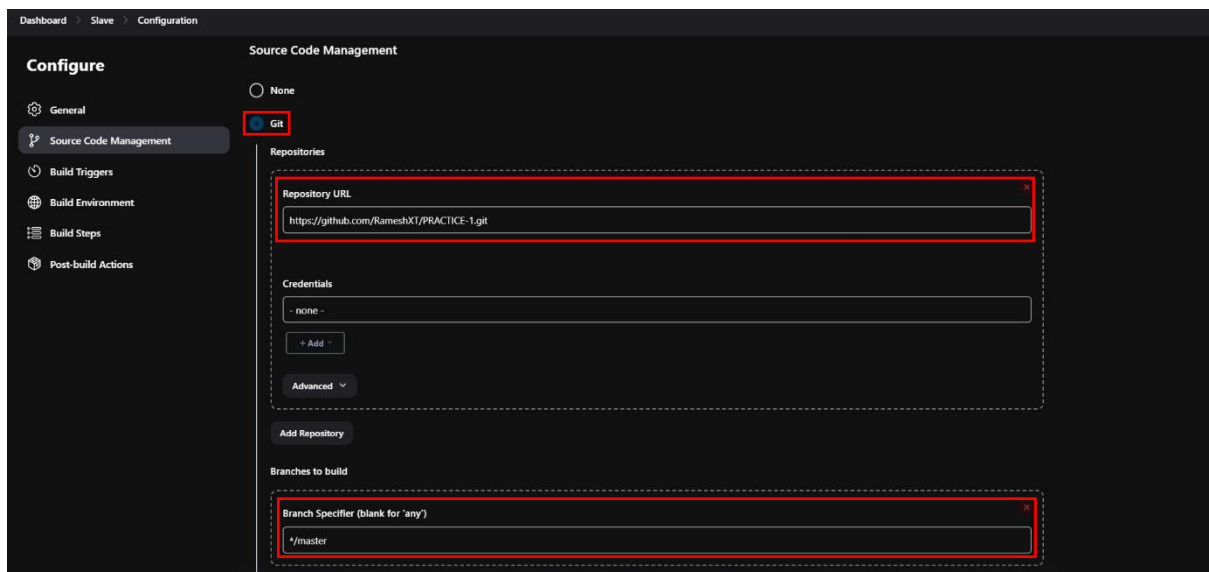
9. Restrict where this project can be run. ( label **Slave-2** )



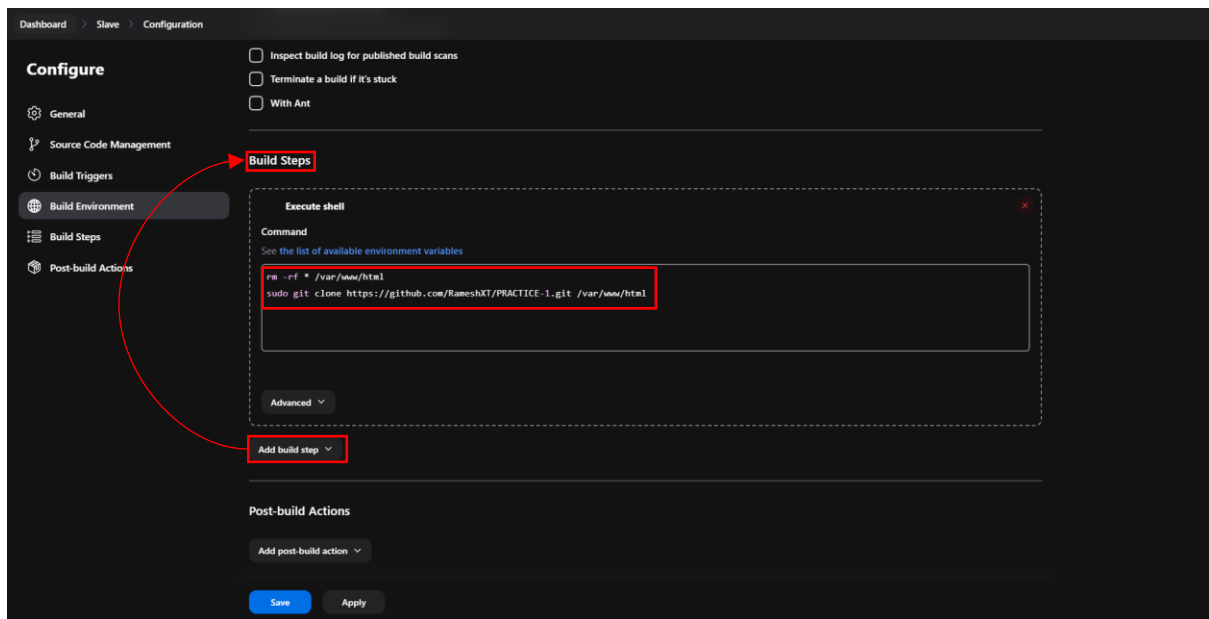
10. Click **git** ( Source code management )

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 )

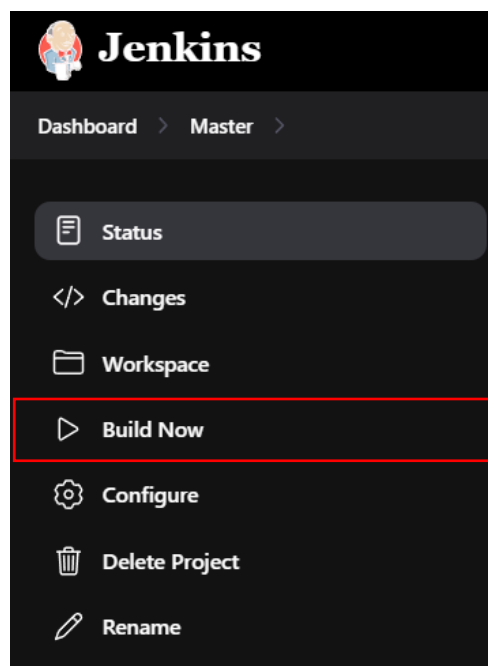
```
rm -rf * /var/www/html
```

16. Clone a web project and move to html path then only it will expose in webpage.

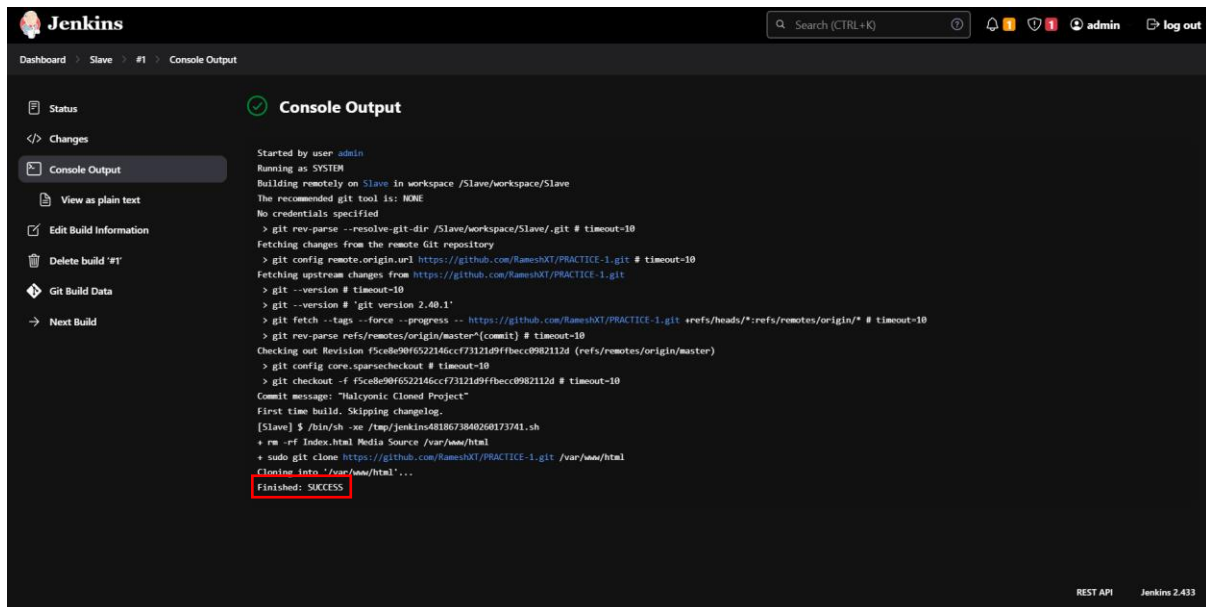
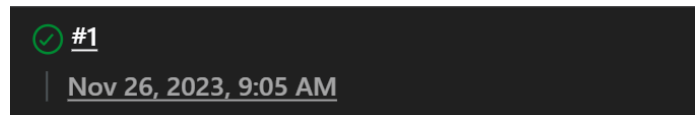
```
sudo git clone https://github.com/RameshXT/PRACTICE-1.git /var/www/html
```

17. Save and apply.

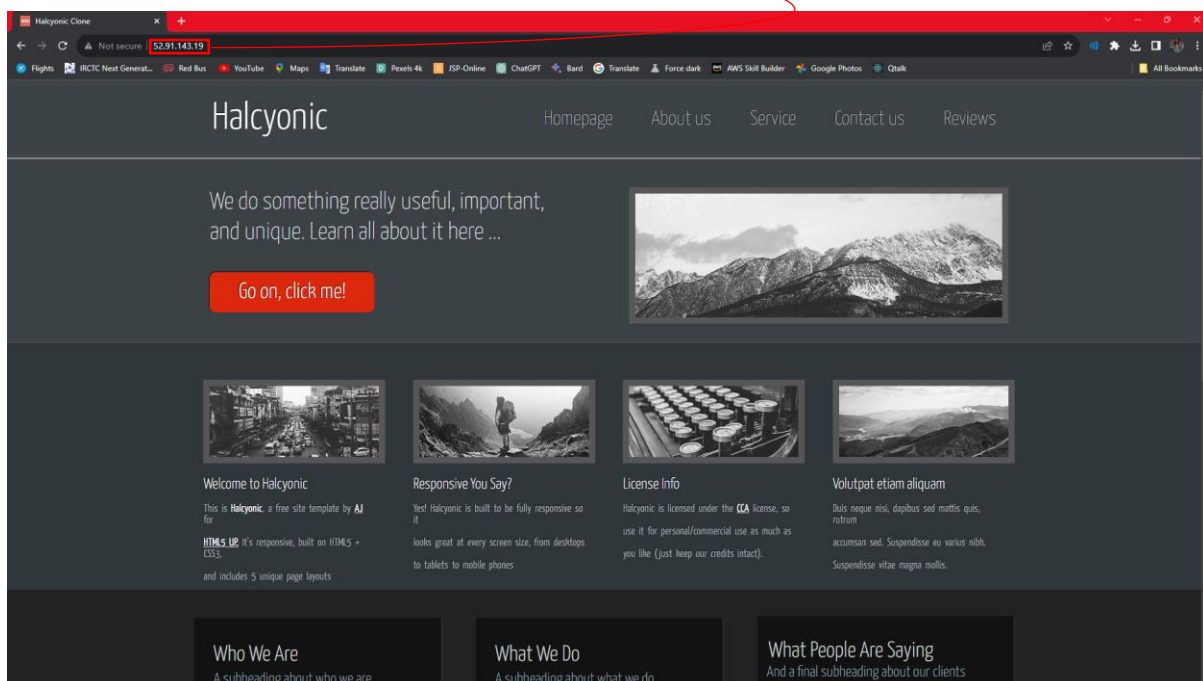
**Step-10** : once finish with configuration build our project in project dashboard.



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



1. then, ( copy Slave-2 instance public IP with :80 )



Successfully running our application..