

## Capestone Project -1

You have been hired as a Sr. DevOps Engineer in Abode Software. They want to implement DevOps Lifecycle in their company. You have been asked to implement this lifecycle as fast as possible. Abode Software is a product-based company and their product is available on this GitHub link.

<https://github.com/hshar/website.git>

Following are the specifications of the lifecycle:

1. Install the necessary software on the machines using a configuration management tool
2. Git workflow has to be implemented
3. CodeBuild should automatically be triggered once a commit is made to master branch or develop branch.
  - a. If a commit is made to master branch, test and push to prod
  - b. If a commit is made to develop branch, just test the product, do not push to prod
4. The code should be containerized with the help of a Dockerfile. The Dockerfile should be built every time there is a push to GitHub. Use the following pre-built container for your application: hshar/webapp. The code should reside in /var/www/html.
5. The above tasks should be defined in a Jenkins Pipeline with the following jobs:
  - a. Job1: build
  - b. Job2: test
  - c. Job3: prod

### Solution:

**Step-1:** Create Three Instances as Master, Slave1 & Slave2.

**Launch an instance** Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

The screenshot shows the 'Name and tags' step of the AWS instance launch wizard. A 'Name' field contains 'master'. An 'Add additional tags' button is visible. Below the form, a note says 'required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below'. A search bar follows. At the bottom, tabs for 'Recents' and 'Quick Start' are shown, with 'Quick Start' being active. Under 'Quick Start', several AMI icons are displayed: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, and SUSE Linux. To the right, a 'Browse more AMIs' link is present. At the very bottom, an 'Amazon Machine Image (AMI)' section shows 'Ubuntu Server 24.04 LTS (HVM), SSD Volume Type' with AMI IDs and details like 'Virtualization: hvm', 'ENA enabled: true', and 'Root device type: ebs'. A 'Free tier eligible' dropdown is also at the bottom right.

**Network settings**

Network: vpc-0995b83c350e4afca

Subnet: No preference (Default subnet in any availability zone)

Auto-assign public IP: Enable

Firewall (security groups): Create security group (radio button)

Common security groups: Select security groups (dropdown menu)

Instances (3) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status
slave -1	i-01dd6f3c492636b95	Running	t2.micro	2/2 checks passed	<a href="#">View alarms</a>
slave -2	i-08d527d286bcab1ac	Running	t2.micro	Initializing	<a href="#">View alarms</a>
master	i-04d2826e2c0d861d2	Running	t2.medium	2/2 checks passed	<a href="#">View alarms</a>

## Step-2: Connect 3 instances and Install “Ansible” Over Master machine.

```
ubuntu@ip-172-31-3-49:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [835 kB]
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [190 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [994 kB]
Get:17 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [247 kB]
Get:18 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [313 kB]

i-04d2826e2c0d861d2 (master)
PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

ubuntu@ip-172-31-3-49:~$ python3 --version
Python 3.12.3
ubuntu@ip-172-31-3-49:~$ sudo apt install software-properties-common
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
software-properties-common is already the newest version (0.99.49.1).
software-properties-common set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 76 not upgraded.
ubuntu@ip-172-31-3-49:~$ sudo add-apt-repository --yes --update ppa:ansible/ansible
Repository: 'Types: deb
URIs: https://ppa.launchpadcontent.net/ansible/ansible/ubuntu/
Suites: noble
Components: main
'
Description:
Ansible is a radically simple IT automation platform that makes your applications and
tom code to deploy and update your applications— automate in a language that approach
on remote systems.
```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```
ubuntu@ip-172-31-3-49:~$ sudo apt install ansible -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ansible-core python3-kerberos python3-nacl python3-ntlm-auth python3-paramiko
  python3-xmldict sshpass
Suggested packages:
  python-nacl-doc python3-gssapi python3-invoke
The following NEW packages will be installed:
  ansible ansible-core python3-kerberos python3-nacl python3-ntlm-auth python3-paramiko
  python3-winrm python3-xmldict sshpass
0 upgraded, 11 newly installed, 0 to remove and 76 not upgraded.
Need to get 19.2 MB of archives.
After this operation, 213 MB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Ansible [19.2 MB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 python3-paramiko [1.0 MB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 python3-paramiko [1.0 MB]
```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```
ubuntu@ip-172-31-3-49:~$ ansible --version
ansible [core 2.17.8]
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['~/home/ubuntu/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /home/ubuntu/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.12.3 (main, Nov 6 2024, 18:32:19) [GCC 13.2.0] (/usr/bin/python3)
  jinja version = 3.1.2
  libyaml = True
ubuntu@ip-172-31-3-49:~$
```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```
ubuntu@ip-172-31-3-49:~$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_ed25519
Your public key has been saved in /home/ubuntu/.ssh/id_ed25519.pub
The key's fingerprint is:
SHA256:0ICWVFCphPsL+G/LcMQBnerWr/jVAFONiXOMc4MVqCA ubuntu@ip-172-31-3-49
The key's randomart image is:
+--[ED25519 256]--+
| .o+=.++X=.
| Eooo+. *+.
| o=oo+...
| o..o= .
| o .+ . s
| o... o
| +...-
```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```
ubuntu@ip-172-31-1-48:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [835 kB]
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [190 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [994 kB]
```

### i-01dd6f3c492636b95 (slave -1)

PublicIPs: 13.232.68.216 PrivateIPs: 172.31.1.48

```
ubuntu@ip-172-31-10-76:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [835 kB]
Get:14 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [190 kB]
Get:15 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]
Get:16 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [994 kB]
Get:17 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [247 kB]
Get:18 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [313 kB]
```

### i-08d527d286bcab1ac (slave -2)

PublicIPs: 13.235.75.195 PrivateIPs: 172.31.10.76

**Step-3:** Create the keys to “Master” instance & Paste to “Slave1” & “Slave2”. Put the “Slave IP’s” into the “Ansible Host File”.

```
GNU nano 7.2
authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAQABQDKqDBE4MTRFtCarM3AVDu6KxQs/bwKx8DYq1N9lu55+gSg6HkQXRG7z8bm+0wF9xJKMvkoUe27uMy1hhLkxvUy/+QjPqFB54d6qDn
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIKLrLPomzP02UVj+z0wFstx7f+2PUnc5C1DJ6j3zL/oO ubuntu@ip-172-31-3-49
```

### i-01dd6f3c492636b95 (slave -1)

PublicIPs: 13.232.68.216 PrivateIPs: 172.31.1.48

```

GNU nano 7.2
authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQDKqDbe4MTRFLGarM3AVDu6KsQs7bwkx8DyqlN9iu55+gSg6HkQXRG7z0bm10wF9xJKMvkoU27uMy1hhLkxvUy/+QjPqFB54d6c...
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIKLrLPomzP82UVj+Z0wFstx7f+2PUNc5CIDJ6j3zL/oO ubuntu@ip-172-31-3-49

i-08d527d286bcab1ac (slave)
PublicIPs: 13.235.75.195 PrivateIPs: 172.31.10.76

ubuntu@ip-172-31-3-49:~$ sudo nano /home/ubuntu/.ssh/id_ed25519.pub
ubuntu@ip-172-31-3-49:~$ sudo cat /home/ubuntu/.ssh/id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIKLrLPomzP82UVj+Z0wFstx7f+2PUNc5CIDJ6j3zL/oO ubuntu@ip-172-31-3-49
ubuntu@ip-172-31-3-49:~$ sudo cat /home/ubuntu/.ssh/id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIKLrLPomzP82UVj+Z0wFstx7f+2PUNc5CIDJ6j3zL/oO ubuntu@ip-172-31-3-49
ubuntu@ip-172-31-3-49:~$ cd /etc/ansible/
ubuntu@ip-172-31-3-49:/etc/ansible$ ls
ansible.cfg hosts roles
ubuntu@ip-172-31-3-49:/etc/ansible$ 

```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```

GNU nano 7.2
hosts *
[slave]
172.31.1.48
172.31.10.76

This is the default ansible 'hosts' file.
It should live in /etc/ansible/hosts

- Comments begin with the '#' character
- Blank lines are ignored
- Groups of hosts are delimited by [header] elements
- You can enter hostnames or ip addresses

i-04d2826e2c0d861d2 (master)
PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```

**Step-4:** Run this ansible command to ping the machines: ansible -m ping all. Type “Yes” & your “slaves” will be successfully pinged.

```

ubuntu@ip-172-31-3-49:/etc/ansible$ sudo nano hosts
ubuntu@ip-172-31-3-49:/etc/ansible$ ansible -m ping all
The authenticity of host '172.31.1.48 (172.31.1.48)' can't be established.
ED25519 key fingerprint is SHA256:0Cq+fX/d96HpC4atmm6TbDquv4leB+ZhZFlgi/sml4A.
This key is not known by any other names.
The authenticity of host '172.31.10.76 (172.31.10.76)' can't be established.
ED25519 key fingerprint is SHA256:NE8kGsvfngIRfl+d09rQAbqhXO06vDLWAGemSpnQFx.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
[WARNING]: Platform linux on host 172.31.1.48 is using the discovered Python interpreter a
another Python interpreter could change the meaning of that path. See https://docs.ansible
core/2.17/reference_appendices/interpreter_discovery.html for more information.
172.31.1.48 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}

i-04d2826e2c0d861d2 (master)

```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```

172.31.1.48 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
yes
[WARNING]: Platform linux on host 172.31.10.76 is using the discovered Python
of another Python interpreter could change the meaning of that path. See ht
core/2.17/reference_appendices/interpreter_discovery.html for more informat
172.31.10.76 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
ubuntu@ip-172-31-3-49:/etc/ansible$ █

```

**i-04d2826e2c0d861d2 (master)**

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

**Step-5:** Create an yaml File to run “master.sh” & “slave.sh” File to Install Much Needed Tools on Instances.

```

GNU nano 7.2
---
- name: task for master
  hosts: localhost
  become: true
  tasks:
    - name: executing script on master
      script: master.sh

- name: task for slaves
  hosts: slave
  become: true
  tasks:
    - name: executing script on slaves
      script: slave.sh

^G Help          ^O Write Out      ^W Where Is      ^K Cut
^X Exit         ^R Read File      ^\ Replace       ^U Paste

```

**i-04d2826e2c0d861d2 (master)**

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

**Step-6:** Create “master.sh” & “slave.sh” File to Install Much Needed Tools on Instances.

```

GNU nano 7.2
sudo apt update
sudo apt install openjdk-11-jdk -y
sudo apt install docker.io -y

```

The terminal window includes standard nano key bindings at the bottom: Help (^G), Write Out (^O), Where Is (^W), Cut (^K), Exit (^X), Read File (^R), Replace (^V), Paste (^U), Execute (^T), Location (^C), Undo (^U), Set Mark (^A), To Bracket (^I), Go To Line (^L), Redo (^R), Copy (^C), and Where Was (^Q).

**i-04d2826e2c0d861d2 (master)**

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```

GNU nano 1.2
sudo apt update
sudo apt install openjdk-11-jdk -y
sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
  https://pkg.jenkins.io/debian/jenkins.io-2023.key
echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] " \
  https://pkg.jenkins.io/debian binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get install jenkins -y

^G Help      ^O Write Out    ^W Where Is      ^K Cut        ^T Exec
^X Exit      ^R Read File    ^\ Replace       ^U Paste      ^J Just

```

**i-04d2826e2c0d861d2 (master)**

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

**Step-7:** Type this command to execute the “master.sh” & “slave.sh” using “ans.yaml” file. ansible-playbook ans.yaml. All the mentioned tools in “master” & “slaves” has been successfully installed, if status is “Ok”. Verified All Tools Have Been Successfully Installed on Master & Slaves or Not.

```

ubuntu@ip-172-31-3-49:~$ sudo nano slave.sh
ubuntu@ip-172-31-3-49:~$ ansible-playbook play.yaml --syntax-check
playbook: play.yaml
ubuntu@ip-172-31-3-49:~$ ansible-playbook play.yaml --check
PLAY [task for master] *****
TASK [Gathering Facts] *****
ok: [localhost]
TASK [executing script on master] *****
skipping: [localhost]
PLAY [task for slaves] *****
TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.10.76 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.10.76]
[WARNING]: Platform linux on host 172.31.1.48 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.1.48]

i-04d2826e2c0d861d2 (master)
PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49
ubuntu@ip-172-31-3-49:~$ ansible-playbook play.yaml
PLAY [task for master] *****
TASK [Gathering Facts] *****
ok: [localhost]
TASK [executing script on master] *****
changed: [localhost]
PLAY [task for slaves] *****
TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.10.76 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.10.76]
[WARNING]: Platform linux on host 172.31.1.48 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.1.48]

i-04d2826e2c0d861d2 (master)
PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49
[WARNING]: Platform linux on host 172.31.10.76 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.10.76]
[WARNING]: Platform linux on host 172.31.1.48 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.1.48]

TASK [executing script on slaves] *****
changed: [172.31.10.76]
changed: [172.31.1.48]

PLAY RECAP *****
172.31.1.48 : ok=2    changed=1    unreachable=0   failed=0    skipped=0    rescued=0    ignored=0
172.31.10.76 : ok=2    changed=1    unreachable=0   failed=0    skipped=0    rescued=0    ignored=0
localhost    : ok=2    changed=1    unreachable=0   failed=0    skipped=0    rescued=0    ignored=0

```

```
ubuntu@ip-172-31-3-49:~$ java --version
openjdk 11.0.25 2024-10-15
OpenJDK Runtime Environment (build 11.0.25+9-post-Ubuntu-1ubuntu124.04)
OpenJDK 64-Bit Server VM (build 11.0.25+9-post-Ubuntu-1ubuntu124.04, mixed mode, sharing)
ubuntu@ip-172-31-3-49:~$ jenkins --version
Running with Java 11 from /usr/lib/jvm/java-11-openjdk-amd64, which is older than the minimum required version (Java 17).
Supported Java versions are: [17, 21]
See https://jenkins.io/redirect/java-support/ for more information.
ubuntu@ip-172-31-3-49:~$ jenkins --version
Running with Java 11 from /usr/lib/jvm/java-11-openjdk-amd64, which is older than the minimum required version (Java 17).
Supported Java versions are: [17, 21]
See https://jenkins.io/redirect/java-support/ for more information.
ubuntu@ip-172-31-3-49:~$
```

### i-04d2826e2c0d861d2 (master)

PublicIPs: 52.66.252.157 PrivateIPs: 172.31.3.49

```
ubuntu@ip-172-31-10-76:~$ java --version
openjdk 11.0.25 2024-10-15
OpenJDK Runtime Environment (build 11.0.25+9-post-Ubuntu-1ubuntu124.04)
OpenJDK 64-Bit Server VM (build 11.0.25+9-post-Ubuntu-1ubuntu124.04, mixed mode, sharing)
ubuntu@ip-172-31-10-76:~$
```

### i-08d527d286bcab1ac (slave -2)

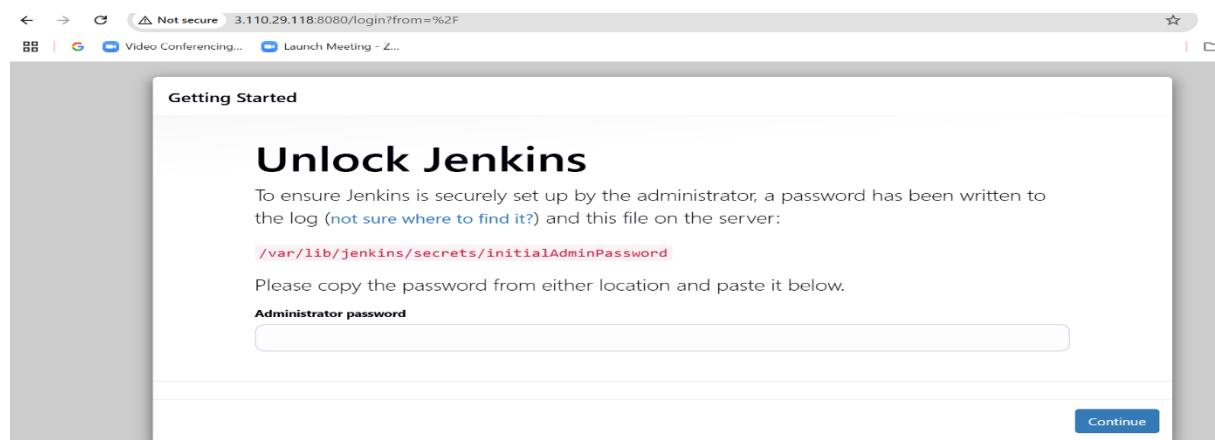
PublicIPs: 13.235.75.195 PrivateIPs: 172.31.10.76

```
ubuntu@ip-172-31-1-48:~/ssh$ cd
ubuntu@ip-172-31-1-48:~$ java --version
openjdk 11.0.25 2024-10-15
OpenJDK Runtime Environment (build 11.0.25+9-post-Ubuntu-1ubuntu124.04)
OpenJDK 64-Bit Server VM (build 11.0.25+9-post-Ubuntu-1ubuntu124.04, mixed mode, sharing)
ubuntu@ip-172-31-1-48:~$
```

### i-01dd6f3c492636b95 (slave -1)

PublicIPs: 13.232.68.216 PrivateIPs: 172.31.1.48

**Step-8:** Copy the master public ip and paste in new tab run with port 80. Set up Jenkins Dashboard Over “Master” Server.



```
ubuntu@ip-172-31-33-104:~$ java --version
openjdk 21.0.6 2025-01-21
OpenJDK Runtime Environment (build 21.0.6+7-Ubuntu-124.04.1)
OpenJDK 64-Bit Server VM (build 21.0.6+7-Ubuntu-124.04.1, mixed mode, sharing)
ubuntu@ip-172-31-33-104:~$ jenkins --version
2.496
ubuntu@ip-172-31-33-104:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
f8f436c3c1f249d0a1a1528dbf5501bd
ubuntu@ip-172-31-33-104:~$
```

### i-051c2896c4dc18faf (project)

PublicIPs: 3.110.29.118 PrivateIPs: 172.31.33.104

Not secure 3.110.29.118:8080

Video Conferencing... Launch Meeting - ...

## Getting Started

# Create First Admin User

Username

Password

Confirm password

Jenkins 2.496 Skip and continue as admin Save and Continue

**Step-9:** Install the required plugins and create nodes with names slave1 and slave2.

Nodes	Clouds	Nodes							
		+ New Node Configure Monitors ⌂							
Build Queue		Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time	
		Built-in Node	Linux (amd64)	In sync	3.43 GiB	0 B	3.43 GiB	0ms	⌚
		Data obtained	14 min	14 min	14 min	14 min	14 min	14 min	14 min

Icon: S M L

Legend

## New node

Node name

slave1

Type

Permanent Agent

Adds a plain, permanent agent to Jenkins. This is called "permanent" because Jenkins doesn't provide higher level of integration with these agents, such as dynamic provisioning. Select this type if no other agent types apply — for example such as when you are adding a physical computer, virtual machines managed outside Jenkins, etc.

**Create**

Dashboard > Manage Jenkins > Nodes >

Remote root directory ?

/home/ubuntu/jenkins

Labels ?

Usage ?

Use this node as much as possible

Launch method ?

Launch agents via SSH

Host ?

172.31.12.83 |

**Save**

Jenkins Credentials Provider: Jenkins

**Add Credentials**

Domain

Global credentials (unrestricted)

Kind

SSH Username with private key

Scope ?

Global (Jenkins, nodes, items, all child items, etc)

ID ?

**Save**

Jenkins Credentials Provider: Jenkins

Private Key

Enter directly

Key

```
-----BEGIN RSA PRIVATE KEY-----
MIIIEPAIASAKCAQEAyqg2x0DE9RbRmqzNwFQ7uisUL028JMfA2KtTfdbuefoEoOh5
EFORu8/GsvvthMBfcs5jL5KFdu7JMtYSS5Mb1Mv/kIz6hOeeHeaqg5xhs6101jsoN
-----
```

Enter New Secret Below

Passphrase

**Cancel** **Add**

Credentials ?

ubuntu

+ Add

Host Key Verification Strategy ?

Non verifying Verification Strategy

Advanced ▾

Availability ?

Keep this agent online as much as possible

**Save**

The screenshot shows the Jenkins 'Nodes' configuration page. At the top, there are sections for 'Build Queue' (empty), 'Build Executor Status' (two entries: 'Built-In Node' and 'slave1'), and 'Data obtained' (empty). Below this is a 'Host' section with 'HOST' set to '172.31.7.246', 'Credentials' set to 'ubuntu', and 'Host Key Verification Strategy' set to 'Non verifying Verification Strategy'. The main table lists three nodes: 'Built-In Node' (Architecture: Linux (amd64), Clock Difference: In sync, Free Disk Space: 3.21 GiB, Free Swap Space: 0 B, Free Temp Space: 3.21 GiB, Response Time: 0ms) and two slaves ('slave1' and 'slave2'). Both slaves have the same architecture and clock difference. Slave 1 has 3.85 GiB free disk space, 0 B swap, 3.85 GiB temp, and a 53ms response time. Slave 2 has N/A values for all metrics. Buttons at the bottom include 'Save' and 'Apply'.

## Step-10: Create 3 jobs with specified requirements and verify the slaves.

The screenshot shows the Jenkins 'Manage Jenkins' interface. Under 'System Configuration', there is a note: 'Building on the built-in node can be a security issue. You should set the node to 0. See [the documentation](#)'. The 'New Item' section shows 'job1' entered in the 'Enter an item name' field. Under 'Select an item type', 'Freestyle project' is selected. The 'Configure' section shows 'General' settings: 'GitHub project' checked, 'Project url' set to 'https://github.com/Obul-Reddy/website.git', and 'Restrict where this project can be run' checked with 'Label Expression' set to 'slave1'. The 'Git' section shows 'Repository URL' set to 'https://github.com/Obul-Reddy/website.git' and 'Credentials' set to '- none -'. Buttons at the bottom include 'Save' and 'Apply'.

Dashboard > job1 >

**PERMISSIONS**

- Workspace
- Build Now
- Configure
- Delete Project
- GitHub Hook Log
- GitHub
- Rename

**Builds**

Today #1 10:04 AM

Dashboard > All > New Item

folders.

**Multibranch Pipeline**  
Creates a set of Pipeline projects according to detected branches in one SCM repository.

**Organization Folder**  
Creates a set of multibranch project subfolders by scanning for repositories.

If you want to create a new item from other existing, you can use this option:

Copy from job1

**OK**

Dashboard > job2 > Configuration

**Configure**

- General
- Source Code Management**
- Triggers
- Environment
- Build Steps
- Post-build Actions

**Branches to build**

Branch Specifier (blank for 'any') ?  
\*/master

Add Branch

Repository browser ?  
(Auto)

Additional Behaviours  
Add

Save Apply

Enter an item name  
job3

Select an item type

**Freestyle project**  
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build actions like archiving artifacts and sending email notifications.

**Pipeline**  
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as流水线) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**  
Suitable for projects that need a large number of different configurations, such as testing on multiple environments or platform-specific builds, etc.

**OK**

Dashboard > job3 > Configuration

**Configure**

- General**
- Source Code Management
- Triggers
- Environment
- Build Steps
- Post-build Actions

**Advanced**

This project is parameterized ?

Throttle builds ?

Execute concurrent builds if necessary ?

Restrict where this project can be run ?

Label Expression ?  
slave2 |

Label slave2 matches 1 node. Permissions or other restrictions provided by plugins may further reduce that list.

**Advanced**

Save Apply

```
ubuntu@ip-172-31-12-83:~$ ls
jenkins
ubuntu@ip-172-31-12-83:~$ cd jenkins
ubuntu@ip-172-31-12-83:~/jenkins$ ls
remoting  remoting.jar  workspace
ubuntu@ip-172-31-12-83:~/jenkins$ cd workspace
ubuntu@ip-172-31-12-83:~/jenkins/workspace$ ls
job1  job2
ubuntu@ip-172-31-12-83:~/jenkins/workspace$
```

### i-0df35724d77da1b8a (project slave-1)

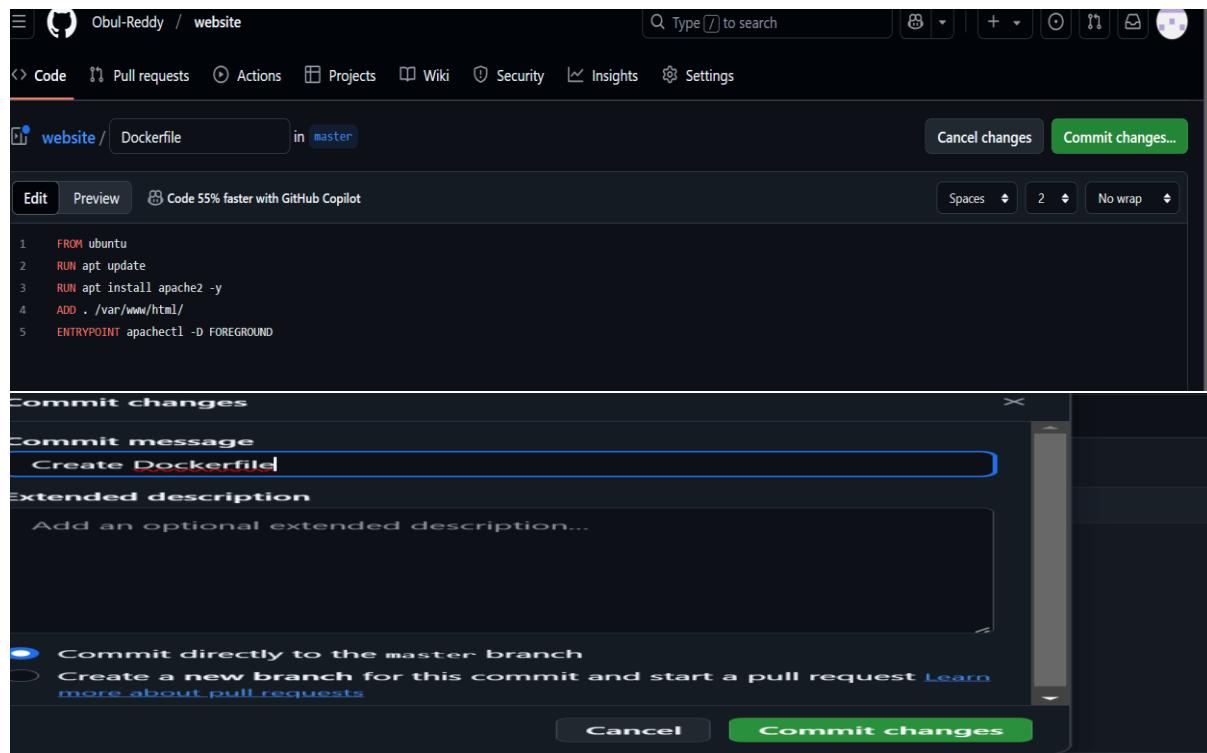
Public IPs: 13.126.56.93 Private IPs: 172.31.12.83

```
ubuntu@ip-172-31-7-246:~$ ls
jenkins
ubuntu@ip-172-31-7-246:~$ cd jenkins
ubuntu@ip-172-31-7-246:~/jenkins$ ls
remoting  remoting.jar  workspace
ubuntu@ip-172-31-7-246:~/jenkins$ cd workspace
ubuntu@ip-172-31-7-246:~/jenkins/workspace$ ls
job3
ubuntu@ip-172-31-7-246:~/jenkins/workspace$
```

### i-0b3505741d025f7e4 (project slave-2)

Public IPs: 3.109.108.240 Private IPs: 172.31.7.246

**Step-11:** Create a Dockerfile & Push it into “Master” Branch. Do change in "index.html" file & create a job again automatically.



**Step-12:** Do changes in docker file also in "Jenkins" also. Your container will be successfully created everytime & website will be successfully deployed. Copy the public ip of slave1 and run in new tab.

Dashboard >

- + New Item
- Build History
- Project Relationship
- Check File Fingerprint
- Manage Jenkins
- My Views

All +

S	W	Name	Last Success	Last Failure	Last Duration
		job1	24 min #1	N/A	6.8 sec
		job2	6 min 55 sec #2	N/A	0.97 sec
		job3	6 min 55 sec #2	N/A	1 sec

Add description

Build Queue

No builds in the queue.

Dashboard > job1 >

Status Changes Workspace Build Now Configure Delete Project GitHub Hook Log GitHub Rename Environment Build Steps Post-build Actions

### job1

Permalinks

- Last build (#1), 25 min ago
- Last stable build (#1), 25 min ago
- Last successful build (#1), 25 min ago
- Last completed build (#1), 25 min ago

Add build step ^

Filter

- Execute Windows batch command
- Execute shell**
- Invoke Ant
- Invoke Gradle script
- Invoke top-level Maven targets
- Run with timeout
- Set build status to "pending" on GitHub commit

sending notifications

Dashboard > job1 > Configuration

Configure

- General
- Source Code Management
- Triggers
- Environment
- Build Steps**
- Post-build Actions

Job Agents

- Terminate a build if it's stuck
- With Ant ?

Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

**Execute shell** ?

Command

See the list of available environment variables

```
sudo docker build . -t image1
sudo docker run -itd --name C1 82|80 image1
```

Save Apply

Builds

Filter

Today

- #6 10:45 AM
- #5 10:44 AM
- #4 10:42 AM
- #3 10:37 AM
- #2 10:37 AM
- #1 10:04 AM

Not secure 13.126.56.93:82

Hello world!



Dashboard > job1 > Configuration

### Configure

- General
- Source Code Management
- Triggers
- Environment**
- Build Steps
- Post-build Actions

Inspect build log for published build scans  
 SSH Agent  
 Terminate a build if it's stuck  
 With Ant ?

#### Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

Execute shell

Command

See the list of available environment variables

```
sudo docker rm -f C1
sudo docker build . -t image1
sudo docker run -itd --name C1 -p 82:80 image1
```

Save      Apply

### Builds

Filter

Today

<input checked="" type="checkbox"/>	#9	10:51 AM
<input checked="" type="checkbox"/>	#8	10:50 AM
<input checked="" type="checkbox"/>	#7	10:50 AM
<input checked="" type="checkbox"/>	#6	10:45 AM
<input checked="" type="checkbox"/>	#5	10:44 AM
<input checked="" type="checkbox"/>	#4	10:42 AM
<input checked="" type="checkbox"/>	#3	10:37 AM
<input checked="" type="checkbox"/>	#2	10:37 AM
<input checked="" type="checkbox"/>	#1	10:04 AM

**Step-13:** Run for all 3 jobs and copy the public ip's of slaves and paste and run with it port number mention in slaves.

Dashboard > job2 > Configuration

### Configure

- General
- Source Code Management
- Triggers
- Environment**
- Build Steps
- Post-build Actions

Inspect build log for published build scans  
 SSH Agent  
 Terminate a build if it's stuck  
 With Ant ?

#### Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

Execute shell

Command

See the list of available environment variables

```
sudo docker build . -t image2
sudo docker run -itd --name C2 -p 83:80 image2
```

Advanced ▾

Save      Apply

Not secure 13.126.56.93:83

Video Conferencing... Launch Meeting - Z...

Hello world!



Github

## Configure

### Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

- General
- Source Code Management
- Triggers
- Environment
- Build Steps
- Post-build Actions

#### Execute shell ?

Command

See the [list of available environment variables](#)

```
sudo docker build . -t image3  
sudo docker run -itd --name C3 -p 84:80 image3
```

Advanced ▾

Save

Apply

← → ⌂ ⚠ Not secure 3.109.108.240:84

SSL Video Conferencing... Launch Meeting - Z...

**Hello world!**



Github