Academic Year: 2024-25 **Semester: V Class /**
Branch: TE IT
Subject: DevOPs Lab (DL)
Subject Lab In-charge: Prof. Sujata Oak

EXPERIMENT NO.11

Aim: To deploy a web application by provisioning LAMP Stack using ansible playbook.

Theory: A LAMP stack is a bundle of four different software technologies that developers use to build websites and web applications. LAMP is an acronym for the operating system, Linux; the web server, Apache; the database server, MySQL; and the programming language, PHP. All four of these technologies are open source, which means they are community maintained and freely available for anyone to use. Developers use LAMP stacks to create, host, and maintain web content. It is a popular solution that powers many of the websites you commonly use today.

ANSIBLE PLAYBOOK:

Ansible playbooks are a vital part of Ansible and the core component of every Ansible configuration. An Ansible playbook is a file that contains a set of instructions that Ansible can use to automate tasks on remote hosts. Playbooks are written in YAML, a human-readable markup language.

A playbook typically consists of one or more plays, a collection of tasks run in sequence. Each task is a single instruction that Ansible can execute, such as installing a package, configuring a service, or copying a file.

By using Ansible playbooks, IT operations teams can automate infrastructure provisioning, configuration management, application deployment, and other operational tasks. Playbooks provide a concise and human-readable way to describe the desired automation workflows, making managing and scaling infrastructure configurations easier.

STEP1: Clone ansible code from my github repository

Ansible-master:

```
root@ip-172-31-18-177:~/.ssh# cd ~
root@ip-172-31-18-177:~# ls
snap
root@ip-172-31-18-177:~# mkdir ansible-lab
root@ip-172-31-18-177:~# cd ansible-lab/
root@ip-172-31-18-177:~/ansible-lab# git clone https://github.com/sujataoak799/ansible-codes.git
Cloning into 'ansible-codes'...
```

remote: Enumerating objects: 23, done.
remote: Counting objects: 100% (6/6), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 23 (delta 1), reused 4 (delta 1), pack-reused 17 (from 1)
Receiving objects: 100% (23/23), 8.63 KiB | 1.73 MiB/s, done.
Resolving deltas: 100% (6/6), done.
root@ip-172-31-18-177:~/ansible-lab# ls
ansible-codes
root@ip-172-31-18-177:~/ansible-lab# cd ansible-codes/
root@ip-172-31-18-177:~/ansible-lab/ansible-codes# ls
config.php lampstack_1.yml mysqlmodule.yml reset-password.php
deploywebsite.yml login.php readme.txt users.sql
index.html logout.php register.php welcome.php

```
root@ip-172-31-18-177:~/.ssh# cd ~
root@ip-172-31-18-177:~# ls
snap
root@ip-172-31-18-177:~# mkdir ansible-lab
root@ip-172-31-18-177:~# cd ansible-lab/
root@ip-172-31-18-177:~/ansible-lab# git clone https://github.com/sujataoak799/ansible-
codes.git
Cloning into 'ansible-codes'...
remote: Enumerating objects: 23, done.
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remote: Total 23 (delta 1), reused 4 (delta 1), pack-reused 17 (from 1)
Receiving objects: 100% (23/23), 8.63 KiB | 1.73 MiB/s, done.
Resolving deltas: 100% (6/6), done.
root@ip-172-31-18-177:~/ansible-lab# ls
ansible-codes
root@ip-172-31-18-177:~/ansible-lab# cd ansible-codes/
root@ip-172-31-18-177:~/ansible-lab/ansible-codes# ls
config.php          lampstack_1.yml   mysqlmodule.yml   reset-password.php
deploywebsite.yml   login.php         readme.txt        users.sql
index.html          logout.php        register.php      welcome.php
```

STEP2:

Now all my files are in ansible-master machine and I need to deploy it on my ansible-slave machine. So we will be configuring our ansible-slave machine to host our full stack application.

The first playbook which I am going to setup on ansible-slave machine is lampstack_1.yml

root@ip-172-31-18-177:~/ansible-lab/ansible-codes# nano lampstack_1.yml

```
root@ip-172-31-18-177:~/ansible-lab/ansible-codes# nano lampstack_1.yml
```

```
File  Edit  View  Search  Terminal  Help
  GNU nano 7.2                                  lampstack_1.yml
---
# Setup LAMP Stack
- hosts: client_1
  tasks:
    - name: install lamp stack
      become: yes
      become_user: root
      apt:
        pkg:
          - apache2
          - mysql-server
          - php
          - libapache2-mod-php
          - php-mysql
        state: present
        update_cache: yes

    - name: start apache service
      become: yes
      become_user: root
      service:
        name: apache2
        state: started
        enabled: yes
```

```
  - name: start mysql service
    become: yes
    become_user: root
    service:
      name: mysql
      state: started
      enabled: yes

  - name: create target directory
    file: path=/var/www/html state=directory mode=0755

  - name: deploy index.html
    become: yes
    become_user: root
    copy:
      src: index.html
      dest: /var/www/html/index.html
```

Save it.

STEP3: How to Run/Execute a playbook.

root@ip-172-31-18-177:~/ansible-lab/ansible-codes# ansible-playbook lampstack_1.yml

```
root@ip-172-31-18-177:~/ansible-lab/ansible-codes# ansible-playbook lampstack_1.yml

PLAY [client_1] ****************************************************************

TASK [Gathering Facts] *********************************************************
ok: [172.31.16.10]

TASK [install lamp stack] ******************************************************
changed: [172.31.16.10]

TASK [start apache service] ****************************************************
ok: [172.31.16.10]

TASK [start mysql service] *****************************************************
ok: [172.31.16.10]

TASK [create target directory] *************************************************
ok: [172.31.16.10]

TASK [deploy index.html] *******************************************************
changed: [172.31.16.10]

PLAY RECAP *********************************************************************
172.31.16.10               : ok=6    changed=2    unreachable=0    failed=0    skipped=
0    rescued=0    ignored=0
```

Ansible-slave:

root@ip-172-31-16-10:~# mysql

```
root@ip-172-31-16-10:~# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.39-0ubuntu0.24.04.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

root@ip-172-31-16-10:~# php --version

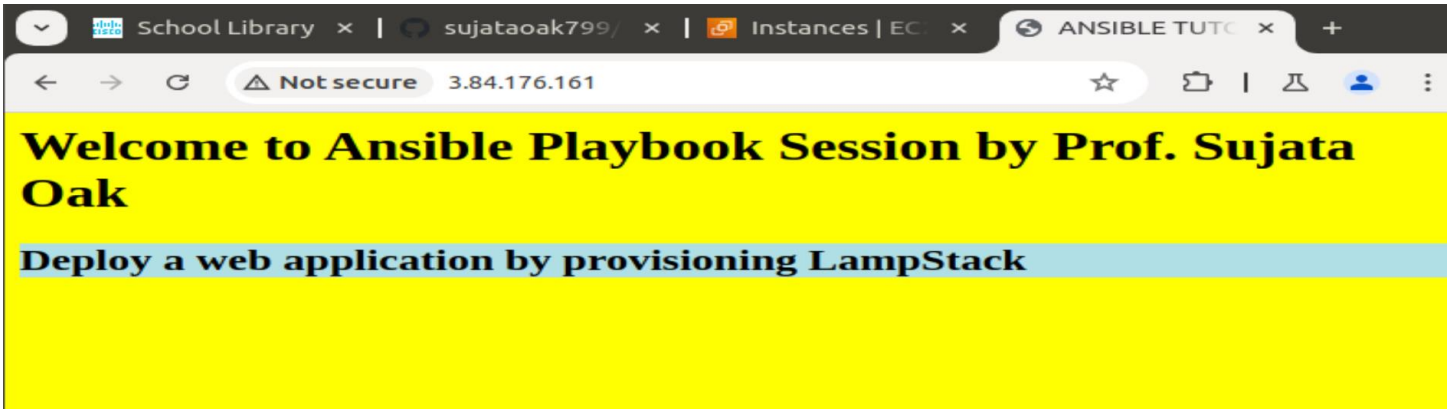
```
root@ip-172-31-16-10:~# php --version
PHP 8.3.6 (cli) (built: Jun 13 2024 15:23:20) (NTS)
Copyright (c) The PHP Group
Zend Engine v4.3.6, Copyright (c) Zend Technologies
    with Zend OPcache v8.3.6, Copyright (c), by Zend Technologies
```

root@ip-172-31-16-10:~# service apache2 status

```
root@ip-172-31-16-10:~# service apache2 status
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: >
     Active: active (running) since Sat 2024-09-14 18:44:55 UTC; 4min 45s ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 11759 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/S>
   Main PID: 11762 (apache2)
      Tasks: 6 (limit: 1130)
     Memory: 10.9M (peak: 11.1M)
        CPU: 63ms
     CGroup: /system.slice/apache2.service
             ├─11762 /usr/sbin/apache2 -k start
             ├─11765 /usr/sbin/apache2 -k start
             ├─11766 /usr/sbin/apache2 -k start
             ├─11767 /usr/sbin/apache2 -k start
             ├─11768 /usr/sbin/apache2 -k start
             └─11769 /usr/sbin/apache2 -k start

Sep 14 18:44:55 ip-172-31-16-10 systemd[1]: Starting apache2.service - The Apac>
```

Once apache service status is active. Copy IPv4 address of ansible-slave machine in browser and you can see the deployment of index.html page.



Conclusion: In the experiment, successfully implemented provisioning lamp stack on ubuntu machine using ansible playbook.

https://aws.amazon.com/what-is/lamp-stack/

https://www.simplilearn.com/what-is-ansible-playbook-article#how_to_write_an_ansible_playbook