Name: Abigail Laxamana	Date Performed: November 6, 2023
Course/Section: CPE 232 - CPE31S6	Date Submitted: November 6, 2023
Instructor: Dr. Jonathan Taylar	Semester and SY: 1st sem, SY: 2023-2024

Midterm Skills Exam: Install, Configure, and Manage Log Monitoring tools

1. Objectives

Create and design a workflow that installs, configure and manage enterprise availability, performance and log monitoring tools using Ansible as an Infrastructure as Code (IaC) tool.

2. Instructions

1. Create a repository in your GitHub account and label it CPE_MIDEXAM_SURNAME.
2. Clone the repository and do the following:
    2.1. Create an Ansible playbook that does the following with an input of a config.yaml file and arranged Inventory file:
    2.2. Install and configure Elastic Stack in separate hosts (Elastic Search, Kibana, Logstash) • Install Nagios in one host
    2.3. Install Grafana,Prometheus and Influxdb in seperate hosts (Influxdb,Grafana,Prometheus)
    2.4. Install Lamp Stack in separate hosts (Httpd + Php,Mariadb)
3. Document all your tasks using this document. Provide proofs of all the ansible playbooks codes and successful installations.
4. Document the push and commit from the local repository to GitHub.
5. Finally, paste also the link of your GitHub repository in the documentation.

3. Output (screenshots and explanations)

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ tree
.
├── ansible.cfg
├── config.yml
├── inventory
├── README.md
└── roles
    ├── centos-ElasticStack
    │   └── tasks
    │       └── main.yml
    ├── centos-httpd_php_mariadb
    │   └── tasks
    │       └── main.yml
    ├── centos-Influxdb_Grafana_Prometheus
    │   └── tasks
    │       ├── main.yml
    │       └── prometheus.service
    ├── ubuntu-ElasticStack
    │   └── tasks
    │       └── main.yml
    ├── ubuntu-httpd_php_mariadb
    │   └── tasks
    │       └── main.yml
    ├── ubuntu-Influxdb_Grafana_Prometheus
    │   └── tasks
    │       ├── main.yml
    │       └── prometheus.service
    └── ubuntu-nagios
        └── tasks
            └── main.yml

15 directories, 13 files
```

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ansible.cfg
[defaults]

inventory = inventory
host_key_checking = False

deprecation_warnings = False

remote_user = laxamana_ubuntu

private_key_file = ~/.ssh/
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat inventory
[ubuntu]
192.168.56.103

[centos]
Laxamana@192.168.56.110
```

Elastic Stack for centos

```
laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA

 File  Edit  View  Search  Terminal  Help
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/centos-ElasticSta
ck/tasks/main.yml
 - name: install required packages (CentOS)
   yum:
     name: epel-release
     state: present

 - name: Add Elasticsearch YUM repository (CentOS)
   yum_repository:
     name: elasticsearch
     description: Elasticsearch repository
     baseurl: https://artifacts.elastic.co/packages/7.x/yum
     gpgcheck: yes
     gpgkey: https://artifacts.elastic.co/GPG-KEY-elasticsearch
     enabled: yes
   when: not (ansible_facts['yum_repos']|default([]) | select('match', 'elasticsearch') | list)

 - name: Install Elasticsearch (Centos)
   package:
     name: elasticsearch
     state: present

 - name: updating the configuration file to allow outside access
   lineinfile:
     destfile: /etc/elasticsearch/elasticsearch.yml
     regexp: 'network.host:'
     line: 'network.host: 0.0.0.0'
```

```
- name: updating port in configuration file
  lineinfile:
    destfile: /etc/elasticsearch/elasticsearch.yml
    regexp: 'http.port:'
    line: 'http.port: 9200'

- name: Install Kibana (Centos)
  yum:
    name: kibana
    state: present

- name: Install Logstash (Centos)
  yum:
    name: logstash
    state: present

- name: Enable / Start Logstash (Centos)
  systemd:
    name: logstash
    state: started
    enabled: true

- name: Enable / Start Elasticsearch (Centos)
  service:
    name: elasticsearch
    state: started
    enabled: true

- name: Enable / Start Kibana (Centos)
  service:
    name: kibana
    state: started
    enabled: true
```

Elastic Stack for ubuntu


```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/ubuntu-ElasticStack/tasks/main.yml
- name: install required packages (Ubuntu)
  apt:
    name: apt-transport-https
    state: present

- name: Install the Elasticsearch GPG key (Ubuntu)
  apt_key:
    url: https://artifacts.elastic.co/GPG-KEY-elasticsearch
  when: not (ansible_facts['apt_keys']|default([]) | select('match', 'elasticsearch') | list)

- name: Add Elasticsearch APT repository (Ubuntu)
  apt_repository:
    repo: deb https://artifacts.elastic.co/packages/7.x/apt stable main
    state: present
  when: not (ansible_facts['file_exists']|default({}))['/etc/apt/sources.list.d/elastic-7.x.list']|default(False)

- name: Install Elasticsearch (Ubuntu)
  apt:
    name: elasticsearch
    state: present

- name: updating the configuration file to allow outside access
  lineinfile:
    destfile: /etc/elasticsearch/elasticsearch.yml
    regexp: 'network.host:'
    line: 'network.host: 0.0.0.0'
```

```
                    laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA
 File  Edit  View  Search  Terminal  Help
  - name: updating port in configuration file
    lineinfile:
      destfile: /etc/elasticsearch/elasticsearch.yml
      regexp: 'http.port:'
      line: 'http.port: 9200'
```

```
                    laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA
 File  Edit  View  Search  Terminal  Help
  - name: updating the config file to allow outside access
    lineinfile:
      destfile: /etc/elasticsearch/elasticsearch.yml
      regexp: 'cluster.initial_master_nodes:'
      line: 'cluster.initial_master_nodes: ["{{ ansible_default_ipv4.address }}"]'

  - name: Install Kibana (Ubuntu)
    apt:
      name: kibana
      state: present

  - name: Install Logstash (Ubuntu)
    apt:
      name: logstash
      state: present

  - name: Enable / Start Elasticsearch (Ubuntu)
    service:
      name: elasticsearch
      state: started
      enabled: true

  - name: Enable / Start Kibana (Ubuntu)
    service:
      name: kibana
      state: started
      enabled: true

  - name: Enable / Start Logstash (Ubuntu)
    service:
      name: logstash
      state: started
      enabled: true
```

Httpd_php_mariadb for centos

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/centos-httpd_php_
mariadb/tasks/main.yml
  - name: install httpd and php (CentOS)
    dnf:
      name:
        - httpd
        - php
      state: present

  - name: install mariadb package (CentOS)
    yum:
      name: mariadb-server
      state: present

  - name: start httpd (CentOS)
    service:
      name: httpd
      state: started

  - name: start MariaDB (CentOS)
    service:
      name: mariadb
      state: started

  - name: enable httpd (CentOS)
    service:
      name: httpd
      enabled: true

  - name: enable MariaDB (CentOS)
    service:
      name: mariadb
      enabled: true
```

Httpd_php_mariadb for ubuntu

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/ubuntu-httpd_php_
mariadb/tasks/main.yml
  - name: install httpd and php (Ubuntu)
    apt:
      name:
        - apache2
        - libapache2-mod-php
      state: present

  - name: install mariadb package (Ubuntu)
    apt:
      name: mariadb-server
      state: present

  - name: start httpd (Ubuntu)
    service:
      name: apache2
      state: started

  - name: start MariaDB (Ubuntu)
    service:
      name: mariadb
      state: started

  - name: enable httpd (Ubuntu)
    service:
      name: apache2
      enabled: true

  - name: enable MariaDB (Ubuntu)
    service:
      name: mariadb
      enabled: true
```

Influxdb_Grafana_Prometheus for centos

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/ubuntu-Influxdb_G
rafana_Prometheus/tasks/main.yml
 - name: install InfluxDB package (Ubuntu)
   apt:
     name: influxdb
     state: present

 - name: Install required packages for Grafana (Ubuntu)
   apt:
     name: apt-transport-https
     state: present

 - name: Install the Grafana GPG key (Ubuntu)
   apt_key:
     url: https://packages.grafana.com/gpg.key
   when: not (ansible_facts['apt_keys']|default([]) | select('match', 'grafana') | list)

 - name: Add Grafana APT repository (Ubuntu)
   apt_repository:
     repo: deb https://packages.grafana.com/oss/deb stable main
     state: present
   when: not (ansible_facts['apt_sources']|default([]) | select('match', 'grafana') | list)

 - name: Install Grafana (Ubuntu)
   apt:
     name: grafana
     state: present

 - name: Update Grafana configuration to allow network host
   lineinfile:
     dest: /etc/grafana/grafana.ini
     regexp: '^;http_addr ='
     line: 'http_addr = 0.0.0.0'
```

```
      line: 'http_addr = 0.0.0.0'

- name: Update Grafana configuration to change the default port to 3000
  lineinfile:
    dest: /etc/grafana/grafana.ini
    regexp: '^;http_port ='
    line: 'http_port = 3000'

- name: install necessary packages for Prometheus (Ubuntu)
  apt:
    name: prometheus
    state: present

- name: Copying the Prometheus Configuration (Ubuntu)
  copy:
    src: prometheus.service
    dest: /etc/systemd/system/prometheus.service
    owner: root
    group: root
    mode: 777

- name: enable / start InfluxDB (Ubuntu)
  service:
    name: influxdb
    state: started
    enabled: true

- name: Start and enable Grafana service (Ubuntu)
  service:
    name: grafana-server
    state: started
    enabled: true
```

```
- name: enable / start prometheus (Ubuntu)
  service:
    name: prometheus
    state: started
    enabled: yes
```

Influxdb_Grafana_Prometheus for centos (prometheus.service)

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/centos-Influxdb_G
rafana_Prometheus/tasks/prometheus.service
[Unit]
Description=Prometheus
After=network.target

[Service]
Type=simple
ExecStart=/usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml

[Install]
WantedBy=multi-user.target
```

Influxdb_Grafana_Prometheus for ubuntu

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/ubuntu-Influxdb_G
rafana_Prometheus/tasks/main.yml
  - name: install InfluxDB package (Ubuntu)
    apt:
      name: influxdb
      state: present

  - name: Install required packages for Grafana (Ubuntu)
    apt:
      name: apt-transport-https
      state: present

  - name: Install the Grafana GPG key (Ubuntu)
    apt_key:
      url: https://packages.grafana.com/gpg.key
    when: not (ansible_facts['apt_keys']|default([]) | select('match', 'grafana') | list)

  - name: Add Grafana APT repository (Ubuntu)
    apt_repository:
      repo: deb https://packages.grafana.com/oss/deb stable main
      state: present
    when: not (ansible_facts['apt_sources']|default([]) | select('match', 'grafana') | list)

  - name: Install Grafana (Ubuntu)
    apt:
      name: grafana
      state: present
```

```
  - name: Update Grafana configuration to allow network host
    lineinfile:
      dest: /etc/grafana/grafana.ini
      regexp: '^;http_addr ='
      line: 'http_addr = 0.0.0.0'

  - name: Update Grafana configuration to change the default port to 3000
    lineinfile:
      dest: /etc/grafana/grafana.ini
      regexp: '^;http_port ='
      line: 'http_port = 3000'

  - name: install necessary packages for Prometheus (Ubuntu)
    apt:
      name: prometheus
      state: present

  - name: Copying the Prometheus Configuration (Ubuntu)
    copy:
      src: prometheus.service
      dest: /etc/systemd/system/prometheus.service
      owner: root
      group: root
      mode: 777

  - name: enable / start InfluxDB (Ubuntu)
    service:
      name: influxdb
      state: started
      enabled: true
```

```
 - name: Start and enable Grafana service (Ubuntu)
   service:
     name: grafana-server
     state: started
     enabled: true

 - name: enable / start prometheus (Ubuntu)
   service:
     name: prometheus
     state: started
     enabled: yes
```

Influxdb_Grafana_Prometheus for ubuntu (prometheus.service)

```
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ cat ~/CPE_MIDEXAM_LAXAMANA/roles/ubuntu-Influxdb_G
rafana_Prometheus/tasks/prometheus.service
[Unit]
Description=Prometheus
After=network.target

[Service]
Type=simple
ExecStart=/usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml

[Install]
WantedBy=multi-user.target
```

PLAYBOOK PROCESS:

```
laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA

File  Edit  View  Search  Terminal  Help

laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA/roles/centos-ElasticStack/tasks$ cd ~/CPE_MIDEXAM_L
AXAMANA
laxamana_ubuntu@workstation:~/CPE_MIDEXAM_LAXAMANA$ ansible-playbook --ask-become-pass config.yml
BECOME password:

PLAY [all] ************************************************************************

TASK [Gathering Facts] ***********************************************************
ok: [Laxamana@192.168.56.110]
ok: [192.168.56.103]

TASK [Ensure dpkg is configured (Ubuntu)] ****************************************
skipping: [Laxamana@192.168.56.110]
ok: [192.168.56.103]

TASK [install update and repositories (Ubuntu)] *********************************
skipping: [Laxamana@192.168.56.110]
ok: [192.168.56.103]

PLAY [ubuntu] ********************************************************************

TASK [Gathering Facts] **********************************************************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : install required packages (Ubuntu)] *****************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Install the Elasticsearch GPG key (Ubuntu)] ********
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Add Elasticsearch APT repository (Ubuntu)] *********
ok: [192.168.56.103]
```

```
TASK [ubuntu-ElasticStack : Install Elasticsearch (Ubuntu)] ********************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : updating the configuration file to allow outside access] ***
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : updating port in configuration file] ***************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : updating the config file to allow outside access] ***
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Install Kibana (Ubuntu)] ***************************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Install Logstash (Ubuntu)] *************************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Enable / Start Elasticsearch (Ubuntu)] *************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Enable / Start Kibana (Ubuntu)] ********************
ok: [192.168.56.103]

TASK [ubuntu-ElasticStack : Enable / Start Logstash (Ubuntu)] ******************
ok: [192.168.56.103]

TASK [ubuntu-httpd_php_mariadb : install httpd and php (Ubuntu)] ***************
ok: [192.168.56.103]

TASK [ubuntu-httpd_php_mariadb : install mariadb package (Ubuntu)] *************
ok: [192.168.56.103]
```

```
laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA

File  Edit  View  Search  Terminal  Help

TASK [ubuntu-httpd_php_mariadb : start MariaDB (Ubuntu)] ***********************
ok: [192.168.56.103]

TASK [ubuntu-httpd_php_mariadb : enable httpd (Ubuntu)] ************************
ok: [192.168.56.103]

TASK [ubuntu-httpd_php_mariadb : enable MariaDB (Ubuntu)] **********************
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : install InfluxDB package (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Install required packages for Grafana (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Install the Grafana GPG key (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Add Grafana APT repository (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Install Grafana (Ubuntu)] ***********
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Update Grafana configuration to allow network host] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Update Grafana configuration to change the default port to
3000] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : install necessary packages for Prometheus (Ubuntu)] ***
ok: [192.168.56.103]
```

File   Edit   View   Search   Terminal   Help

```
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : enable / start InfluxDB (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : Start and enable Grafana service (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-Influxdb_Grafana_Prometheus : enable / start prometheus (Ubuntu)] ***
ok: [192.168.56.103]

TASK [ubuntu-nagios : nagios libraries and dependencies (Ubuntu)] **************
ok: [192.168.56.103]

TASK [ubuntu-nagios : passlib package (Ubuntu)] *******************************
ok: [192.168.56.103]

TASK [ubuntu-nagios : Creating a directory for nagios (Ubuntu)] ****************
ok: [192.168.56.103]

TASK [ubuntu-nagios : Downloading and extracting Nagios (Ubuntu)] **************
ok: [192.168.56.103]

TASK [ubuntu-nagios : Downloading and extracting Nagios plugins (Ubuntu)] ******
ok: [192.168.56.103]

TASK [ubuntu-nagios : install, compile, adding users and groups in Nagios (Ubuntu)] ***
changed: [192.168.56.103]

TASK [ubuntu-nagios : compile and install plugins (Ubuntu)] *******************
changed: [192.168.56.103]

TASK [ubuntu-nagios : Add a user and permissions  (Ubuntu)] *******************
ok: [192.168.56.103]
```

File Edit View Search Terminal Help

```
TASK [ubuntu-nagios : Add a user and permissions  (Ubuntu)] ********************
ok: [192.168.56.103]

TASK [ubuntu-nagios : starting/enabling nagios (Ubuntu)] ***********************
ok: [192.168.56.103]

TASK [ubuntu-nagios : starting/enabling apache2 (Ubuntu)] **********************
ok: [192.168.56.103]

PLAY [centos] *****************************************************************

TASK [Gathering Facts] ********************************************************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : install required packages (CentOS)] ****************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Add Elasticsearch YUM repository (CentOS)] *********
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Install Elasticsearch (Centos)] ********************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : updating the configuration file to allow outside access] ***
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : updating port in configuration file] ***************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Install Kibana (Centos)] ***************************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Install Logstash (Centos)] *************************
ok: [Laxamana@192.168.56.110]
```

laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA

File Edit View Search Terminal Help

TASK [centos-ElasticStack : Install Logstash (Centos)] **************************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Enable / Start Logstash (Centos)] ******************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Enable / Start Elasticsearch (Centos)] *************
ok: [Laxamana@192.168.56.110]

TASK [centos-ElasticStack : Enable / Start Kibana (Centos)] ********************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : install httpd and php (CentOS)] ***************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : install mariadb package (CentOS)] *************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : start httpd (CentOS)] *************************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : start MariaDB (CentOS)] ***********************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : enable httpd (CentOS)] ************************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : enable MariaDB (CentOS)] **********************
ok: [Laxamana@192.168.56.110]

TASK [centos-Influxdb_Grafana_Prometheus : install InfluxDB package (CentOS)] ***
changed: [Laxamana@192.168.56.110]

TASK [centos-Influxdb_Grafana_Prometheus : install InfluxDB package (CentOS)] ***

laxamana_ubuntu@workstation: ~/CPE_MIDEXAM_LAXAMANA

File Edit View Search Terminal Help

TASK [centos-httpd_php_mariadb : enable httpd (CentOS)] ************************
ok: [Laxamana@192.168.56.110]

TASK [centos-httpd_php_mariadb : enable MariaDB (CentOS)] **********************
ok: [Laxamana@192.168.56.110]

TASK [centos-Influxdb_Grafana_Prometheus : install InfluxDB package (CentOS)] ***
changed: [Laxamana@192.168.56.110]

TASK [centos-Influxdb_Grafana_Prometheus : install InfluxDB package (CentOS)] ***
fatal: [Laxamana@192.168.56.110]: FAILED! => {"changed": false, "failures": ["No package influxdb avai
lable."], "msg": "Failed to install some of the specified packages", "rc": 1, "results": []}

PLAY RECAP ***
192.168.56.103   : ok=44   changed=2   unreachable=0   failed=0   skipped=0   rescued=0
    ignored=0
Laxamana@192.168.56.110   : ok=19   changed=1   unreachable=0   failed=1   skipped=2   rescued=0
    ignored=0

GitHub link:

https://github.com/Abigaiiiil/abby_midterm.git

Conclusions: (link your conclusion from the objective)

Ansible playbooks were developed for this task in order to automate the setup and installation of different software components on different hosts. An inventory file that was structured and a config.yaml file were used as input by the playbook. The goal was to put up a reliable infrastructure that comprised Grafana, Prometheus, and InfluxDB on separate hosts, Nagios on a dedicated host, and Elastic Stack (which consists of Elasticsearch, Kibana, and Logstash) dispersed across many hosts. Furthermore, a Lamp Stack that included PHP, MariaDB, and the Apache HTTP Server was set up on several sites. By streamlining and expediting the deployment process, this playbook improves system administration and guarantees that the designated software components are easily accessible for their intended uses.