Ansible Assignment

Name : Azizur Rahman
ID   : 11406
Roll   : 30

A simple website automate deployment using Ansible playbook or yml. Firstly, deployment of the environment will test in the manual or traditional way. Letter this deployment will be done in automated way using Ansible playbook or yml.

Pre-Requisites: 1.Install Firewall
Manual command to install firewall
$sudo yum install -y firewalld && sudo service firewalld start && sudo systemctl enable firewalld

Install firewall & python using ansible playbook or yml
- name: Deploy ecommerce application
  yum:
    name:
      - libselinux-python
      - libsemanage-python
      - firewalld
    state: installed

yml code to start and enabled the firewalld
- name: Start firewalld
  service: name=firewalld state=started enabled=yes

Deploy and Configure Database: 1. Install MariaDB server

Manual command to install the MariaDB sever
$ sudo yum install -y mariadb-server
$ sudo vi /etc/my.cnf
$ sudo service mariadb start
$ sudo systemctl enable mariadb

yml code to install the MariaDB
- name: Install MariaDB package
  yum:
    name:

```
    - mariadb-server
    - MySQL-python
   state: installed
```

###create the mysql configuration file
```
- name: Create Mysql configuration file
  copy: src=files/my.cnf dest=/etc/my.cnf
```

###start and enabled the mysql sever
```
- name: Start MariaDB Service
  service: name=mariadb state=started enabled=yes
```

2. Provide the DB sever access in the firewall
Manual command to provide the access deafult port 3306
```
$ sudo firewall-cmd --permanent --zone=public --add-port=3306/tcp
$ sudo firewall-cmd –reload
```

###yml code to provide the mysql_port access in the firewall
```
- name: insert firewalld rule
  firewalld: port={{ mysql_port }}/tcp permanent=true state=enabled immediate=yes
```

3. Configure Database
##Manual command to configure database
```
$ mysql
MariaDB > CREATE DATABASE ecomdb;
MariaDB > CREATE USER 'ecomuser'@'localhost' IDENTIFIED BY 'ecompassword';
MariaDB > GRANT ALL PRIVILEGES ON *.* TO 'ecomuser'@'localhost';
MariaDB > FLUSH PRIVILEGES;
```

note: on a multi-node setup remember to provide the IP address of the web server here: 'ecomuser'@'web-server-ip'

###yml code to create database and
```
- name: Create Application Database
  mysql_db: name={{ dbname }} state=present

- name: Create Application DB User
    mysql_user: name={{ dbuser }} password={{ dbpassword }} priv=*.*:ALL host='localhost' state=present
```

4. Load Product Inventory Information to database
cat > db-load-script.sql <<-EOF
USE ecomdb;
CREATE TABLE products (id mediumint(8) unsigned NOT NULL auto_increment,Name varchar(255) default NULL,Price varchar(255) default NULL, ImageUrl varchar(255) default NULL,PRIMARY KEY (id)) AUTO_INCREMENT=1;

INSERT INTO products (Name,Price,ImageUrl) VALUES ("Laptop","100","c-1.png"), ("Drone","200","c-2.png"),("VR","300","c-3.png"),("Tablet","50","c-5.png"), ("Watch","90","c-6.png"),("Phone   Covers","20","c-7.png"),("Phone","80","c-8.png"), ("Laptop","150","c-4.png");

EOF

Run the sql script
mysql < db-load-script.sql

###yml code to load the db-load-script.sql
- name: Move db-load-script to db host
  copy:
    src: files/db-load-script.sql
    dest: /tmp/db-load-script.sql

- name: Load Inventory Data
  shell: mysql -f < /tmp/db-load-script.sql

Deploy and Configure Web: 1. Install required package and provide access of httpd port in the firwewall.
manual commands to install httpd
$ sudo yum install -y httpd php php-mysql
$ sudo firewall-cmd --permanent --zone=public --add-port=80/tcp
$ sudo firewall-cmd –reload

###yml code to install the required package for httpd
- name: Install httpd and php
  yum:
    name:
      - httpd
      - php
      - php-mysql
    stateb: present

###yml firewall configuration for httpd

```yaml
- name: insert firewalld rule for httpd
  firewalld: port={{ httpd_port }}/tcp permanent=true state=enabled immediate=yes

- name: Start firewalld
  service: name=firewalld state=started enabled=yes
```

2. Configure and start the Httpd sevice

##Manual command to start the httpd service

```
$ sudo service httpd start
$ sudo systemctl enable httpd
```

Note: if need to change the httpd port then have to edit /etc/httpd/conf/httpd.conf file.

###yml to set the index.php as default page

```yaml
- name: Set index.php as the default page
  tags: "Set index.php as the default page"
  replace:
    path: /etc/httpd/conf/httpd.conf
    regexp: 'DirectoryIndex index.html'
    replace: 'DirectoryIndex index.php'
```

###yml to change the default port of the httpd (optional)

```yaml
- name: Httpd port chnage
  replace:
    path: /etc/httpd/conf/httpd.conf
    regexp: 'Listen 80'
    replace: 'Listen 8008'
  tags: httpd port chnage
```

###yml code to start the httpd service

```yaml
- name: http service state
  service: name=httpd state=started enabled=yes
```

3. Install git and download the code

manual command for git install and code download

```
$ sudo yum install -y git
$ git clone https://github.com/Debaice06/Ansible_Projects_Ecommerce.git
/var/www/html/
```

- name: Install web role specific dependencies
  yum: name=git state=installed

- name: Copy the code from repository
  git: repo={{ repository }} dest=/var/www/html/ force=yes

4. Create the index.php file
manual command to update index.php file to connect the DB server
sudo sed -i 's/172.20.1.101/localhost/g' /var/www/html/index.php

```php
        <?php
                $link = mysqli_connect('172.20.1.101', 'ecomuser', 'ecompassword',
'ecomdb');
                if ($link) {
                $res = mysqli_query($link, "select * from products;");
                while ($row = mysqli_fetch_assoc($res)) { ?>
```

Note: on a multi-node setup remember to provide the IP address of the database server instead localhost.

yml code to create the index.php file
- name: Creates the index.php file
  copy: src=templates/index.php.j2 dest=/var/www/html/index.php

###change the remote server ip in index.php file
- name: update remote server ip in index.php
  command: sed *-i* 's/172.20.1.101/192.168.0.132/g' /var/www/html/index.php
  tags: change the remote server ip in index.php

Project Directory Layout

The directory defining how this role works for the playbook will have the following directory structure:

#file directory structure of the project
```
Ansible_Project_Ecommerce/
                        project.yml
                    roles/
                        projects/
                            files/
                               db-load-script.sql
                               my.cnf
                            tasks/
                               main.yml
                               mysql_pass.yml
                            templates/
                                index.php.j2
                            vars/
                                main.yml
```

#content of the project.yml file
```
-
  name: Project
  hosts: Ansible-Client
  remote_user: root
  become_user: true
  roles:
    - projects
```

#content of main.yml file of the vars directory.
```
---
mysql_port: 3306
dbname: ecomdb
dbuser: ecomuser
dbpassword: ecompassword
httpd_port: 8008
repository: https://github.com/Debaice06/Ansible_Projects_Ecommerce.git
```

content of the main.yml of the tasks directory

```yaml
- name: Deploy ecommerce application
  yum:
    name:
      - libselinux-python
      - libsemanage-python
      - firewalld
    state: installed
    tags: install dependencies and firewall

- name: Install MariaDB package
  yum:
    name:
    - mariadb-server
    - MySQL-python
    state: installed
    tags: install dbserver

- name: Create Mysql configuration file
  copy: src=files/my.cnf dest=/etc/my.cnf
  tags: create mysql configuration file

- name: Start MariaDB Service
  service: name=mariadb state=started enabled=yes
  tags: start mariadb server

- name: Start firewalld
  service: name=firewalld state=started enabled=yes
  tags: start firewall

- name: insert firewalld rule
  firewalld: port={{ mysql_port }}/tcp permanent=true state=enabled immediate=yes
  tags: insert mysql port in firewall

- name: Create Application Database
  mysql_db: name={{ dbname }} state=present
  tags: crate app database

- name: Create Application DB User
  mysql_user: name={{ dbuser }} password={{ dbpassword }} priv=*.*:ALL host='localhost' state=present
  tags: create dbuser
```

```yaml
- name: Move db-load-script to db host
  copy:
    src: files/db-load-script.sql
    dest: /tmp/db-load-script.sql
  tags: move db-load-script

- name: Load Inventory Data
  shell: mysql -f < /tmp/db-load-script.sql


- name: Install httpd and php
  yum:
    name:
      - httpd
      - php
      - php-mysql
    state: present
    tags: install httpd

- name: Install web role specific dependencies
  yum: name=git state=installed
  tags: install git

- name: Start firewalld
  service: name=firewalld state=started enabled=yes

- name: insert firewalld rule for httpd
  firewalld: port={{ httpd_port }}/tcp permanent=true state=enabled immediate=yes
  tags: insert httpd port in firewall

- name: Set index.php as the default page
  tags: "Set index.php as the default page"
  replace:
    path: /etc/httpd/conf/httpd.conf
    regexp: 'DirectoryIndex index.html'
    replace: 'DirectoryIndex index.php'

- name: Httpd port chnage
  replace:
    path: /etc/httpd/conf/httpd.conf
    regexp: 'Listen 80'
```

```
      replace: 'Listen 8008'
    tags: httpd port chnage

  - name: http service state
    service: name=httpd state=started enabled=yes

  - name: Copy the code from repository
    git: repo={{ repository }} dest=/var/www/html/  force=yes
    tags: download the code from github

  - name: Creates the index.php file
    copy: src=templates/index.php.j2 dest=/var/www/html/index.php
    tags: create index file

  - name: update remote server ip in index.php
    command: sed -i  's/172.20.1.101/192.168.0.132/g'  /var/www/html/index.php
    tags: change the remote server ip in index.php
```

##configuraton of the host /*etc*/ansible/hosts directory

```
# Ex 1: Ungrouped hosts, specify before any group headers:
[Ansible-Client]
#192.168.0.120
192.168.0.132
```

```
aziz@aziz-VirtualBox:/etc/ansible$ ansible -m ping all -u root
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details
192.168.0.132 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
```
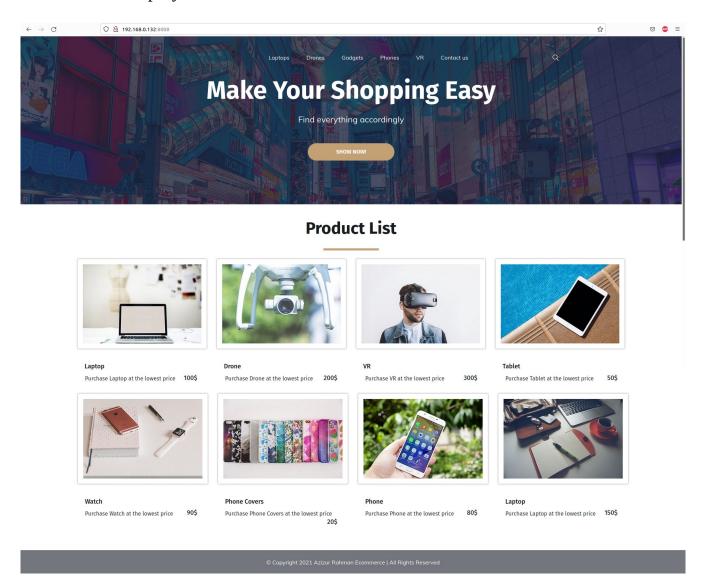
check the yml syntax

```
aziz@aziz-VirtualBox:~/Ansible_Project_ECommerce$ ansible-playbook project.yml --syntax-check
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details

playbook: project.yml
```

Deploy the project in 192.168.0.132 server.

```
playbook: project.yml
aziz@aziz-VirtualBox:~/Ansible_Project_ECommerce$ ansible-playbook project.yml
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details

PLAY [Project] *********************************************************************************

TASK [Gathering Facts] ************************************************************************
ok: [192.168.0.132]

TASK [projects : Deploy ecommerce application] **********************************************
changed: [192.168.0.132]

TASK [projects : Install MariaDB package] ***************************************************
changed: [192.168.0.132]

TASK [projects : Create Mysql configuration file] ******************************************
ok: [192.168.0.132]

TASK [projects : Start MariaDB Service] ****************************************************
changed: [192.168.0.132]

TASK [projects : Start firewalld] **********************************************************
ok: [192.168.0.132]

TASK [projects : insert firewalld rule] ****************************************************
changed: [192.168.0.132]

TASK [projects : Create Application Database] **********************************************
changed: [192.168.0.132]

TASK [projects : Create Application DB User] ***********************************************
changed: [192.168.0.132]

TASK [projects : Move db-load-script to db host] ******************************************
changed: [192.168.0.132]

TASK [projects : Load Inventory Data] ******************************************************
changed: [192.168.0.132]

TASK [projects : Install httpd and php] ****************************************************
changed: [192.168.0.132]

TASK [projects : Install web role specific dependencies] **********************************
changed: [192.168.0.132]

TASK [projects : Start firewalld] **********************************************************
ok: [192.168.0.132]

TASK [projects : insert firewalld rule for httpd] ****************************************
changed: [192.168.0.132]

TASK [projects : Set index.php as the default page] **************************************
changed: [192.168.0.132]

TASK [projects : Httpd port chnage] *******************************************************
changed: [192.168.0.132]

TASK [projects : http service state] *****************************************************
changed: [192.168.0.132]

TASK [projects : Copy the code from repository] *****************************************
changed: [192.168.0.132]

TASK [projects : Creates the index.php file] *******************************************
changed: [192.168.0.132]

PLAY RECAP ***************************************************************************************
192.168.0.132              : ok=20    changed=16    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

#website after deployment

Note: Also changed the index.php file in the copyright section.

###It can be also check by using
$curl http://localhost or http://server_ip:http_port
for this project command is
S curl http://192.168.0.132:8008