FA24: CMPE-272 Sec 49 - Enterprise SW Plat
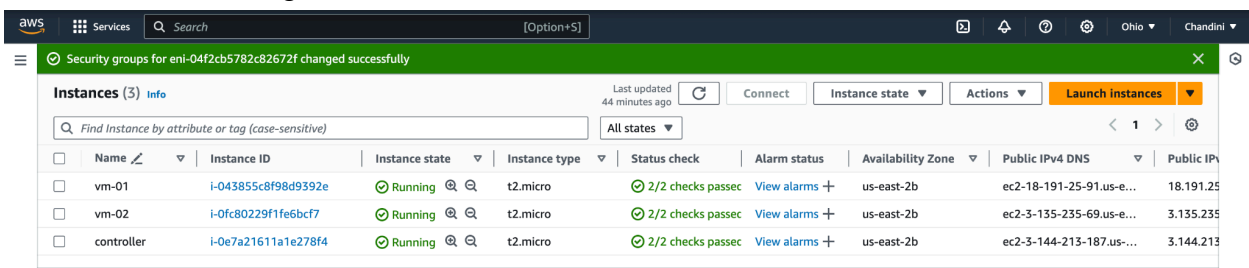
Assignment 1:

Configure two VMs, **VM1** and **VM2** either on your own hardware, or in a cloud environment. Configure Ansible to deploy a webserver on *VM1* and *VM2* on port 8080 with a web page that is accessible from a web browser, and displays the message: "Hello World from SJSU-X" where X is 1 or 2 depending on which webserver instance, VM1 or VM2.

Include in the Ansible playbook, plays to **deploy** and **un-deploy** the webserver resources

Submit a Word document, with screenshots showing your work, and a demo, and all ansible code/scripts via github

Steps:

1. Created 3 VMs using Amazon ECS, one for controller other two are for hosts.

2. Connect controller via local machine terminal

```
[(base) chandini@Chandinis-MBP Downloads % sudo chmod 700 OHIO_KP.pem
[Password:
[(base) chandini@Chandinis-MBP Downloads % ssh -i OHIO_KP.pem ec2-user@3.144.213.187
      ,        #_
    ~\_  ####_          Amazon Linux 2023
   ~~  \_#####\
   ~~      \###|
   ~~       \#/ ___     https://aws.amazon.com/linux/amazon-linux-2023
    ~~       V~' '->
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        _/m/'
[ec2-user@ip-172-31-25-145 ~]$
[[ec2-user@ip-172-31-25-145 ~]$ ls
[[ec2-user@ip-172-31-25-145 ~]$ ping 172.31.29.117
PING 172.31.29.117 (172.31.29.117) 56(84) bytes of data.
^C
--- 172.31.29.117 ping statistics ---
3 packets transmitted, 0 received, 100% packet loss, time 2069ms

[[ec2-user@ip-172-31-25-145 ~]$ ping 172.31.29.117
PING 172.31.29.117 (172.31.29.117) 56(84) bytes of data.
64 bytes from 172.31.29.117: icmp_seq=1 ttl=127 time=0.726 ms
64 bytes from 172.31.29.117: icmp_seq=2 ttl=127 time=0.568 ms
^C
--- 172.31.29.117 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1073ms
rtt min/avg/max/mdev = 0.568/0.647/0.726/0.079 ms
[[ec2-user@ip-172-31-25-145 ~]$ ^C
[[ec2-user@ip-172-31-25-145 ~]$ ping 172.31.30.78
PING 172.31.30.78 (172.31.30.78) 56(84) bytes of data.
64 bytes from 172.31.30.78: icmp_seq=1 ttl=127 time=1.96 ms
64 bytes from 172.31.30.78: icmp_seq=2 ttl=127 time=0.767 ms
^C
--- 172.31.30.78 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 0.767/1.361/1.955/0.594 ms
```

3. Install ansible on controller machine and configure hosts (hosts.ini) file to connect to vms through their ip addresses and playbook to deploy Apache webservers (deploy_webservers.yml)

```
[ec2-user@ip-172-31-25-145 ~]$ sudo yum update -y
Last metadata expiration check: 18:55:51 ago on Sun Sep  8 00:16:25 2024.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-25-145 ~]$ sudo yum install ansible -y
Last metadata expiration check: 18:55:54 ago on Sun Sep  8 00:16:25 2024.
Package ansible-8.3.0-1.amzn2023.0.1.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-25-145 ~]$
```

```ini
[webservers]
vm1 ansible_host=172.31.29.117 ansible_user=ec2-user server_id=01
vm2 ansible_host=172.31.30.78 ansible_user=ec2-user server_id=0
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"hosts.ini" 3L, 145B                                              3,64        All
```

```yaml
---
- name: Deploy webservers
  hosts: webservers
  become: yes
  vars:
    ansible_python_interpreter: /usr/bin/python3   # Ensure the correct Python interpreter is used
  tasks:
    - name: Ensure firewalld is installed
      package:
        name: firewalld
        state: present

    - name: Start and enable firewalld
      service:
        name: firewalld
        state: started
        enabled: yes

    - name: Ensure Apache is installed
      package:
        name: httpd
        state: present

    - name: Configure Apache to listen on port 8080
      lineinfile:
        path: /etc/httpd/conf/httpd.conf
        regexp: '^Listen '
        line: 'Listen 8080'
        state: present

    - name: Start and enable Apache service
      service:
        name: httpd
        state: restarted
        enabled: yes

    - name: Create custom web page
      copy:
        dest: /var/www/html/index.html
        content: |
          Hello World from SJSU-{{ server_iD }}

    - name: Open port 8080 in firewalld
      firewalld:
        port: 8080/tcp
        permanent: yes
        state: enabled
        immediate: yes

    - name: Reload firewalld to apply changes
      command: firewall-cmd --reload
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"deploy_webservers.yml" 52L, 1211B                                41,47       All
```

4. Pinging VM1 and VM2 to check whether connection is established between controller and VM1 and VM2

```
[ec2-user@ip-172-31-25-145 ~]$ ansible all -i hosts.ini -m ping
[WARNING]: Platform linux on host vm2 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another
Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
vm2 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host vm1 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another
Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
vm1 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
```

5. Run the ansible playbook to deploy webservers in vm1 and vm2 via command
ansible-playbook -i hosts.ini deploy_webservers.yml
This represents that the webservers are successfully installed in vm1 and vm2

```
[ec2-user@ip-172-31-25-145 ~]$ ansible-playbook -i hosts.ini deploy_webservers.yml

PLAY [Deploy webservers] ********************************************************************************

TASK [Gathering Facts] **********************************************************************************
ok: [vm1]
ok: [vm2]

TASK [Ensure firewalld is installed] ********************************************************************
ok: [vm1]
ok: [vm2]

TASK [Start and enable firewalld] ***********************************************************************
ok: [vm1]
ok: [vm2]

TASK [Ensure Apache is installed] ***********************************************************************
ok: [vm1]
ok: [vm2]

TASK [Configure Apache to listen on port 8080] *********************************************************
ok: [vm2]
ok: [vm1]

TASK [Start and enable Apache service] ****************************************************************
changed: [vm1]
changed: [vm2]

TASK [Create custom web page] ***************************************************************************
ok: [vm1]
ok: [vm2]

TASK [Open port 8080 in firewalld] **********************************************************************
ok: [vm1]
ok: [vm2]

TASK [Reload firewalld to apply changes] **************************************************************
changed: [vm1]
changed: [vm2]

PLAY RECAP **********************************************************************************************
vm1                        : ok=9    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
vm2                        : ok=9    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

6. Outputs of webpage that is accessible from a web browser, and displays the output message.

Hello World from SJSU-01

Hello World from SJSU-02
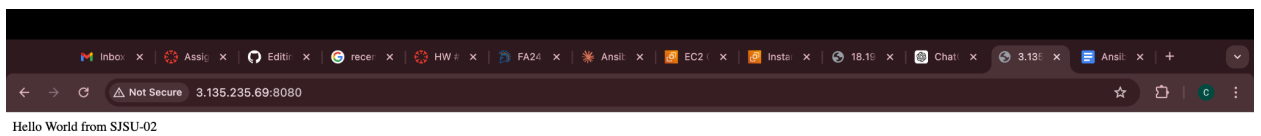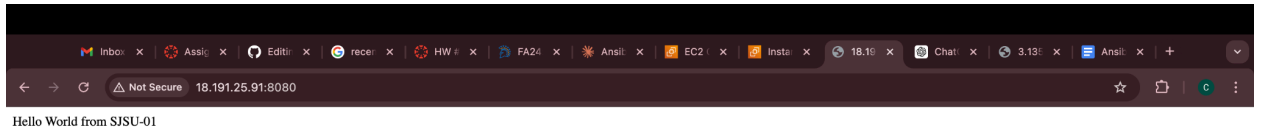
7. Create a playbook to undeploy webservers (undeploy_webservers.yml)

```yaml
---
- name: Un-deploy webservers
  hosts: webservers
  become: yes
  tasks:
    - name: Stop and disable Apache service
      service:
        name: httpd
        state: stopped
        enabled: no

    - name: Remove Apache package
      package:
        name: httpd
        state: absent

    - name: Remove custom web page
      file:
        path: /var/www/html/index.html
        state: absent

    - name: Remove port 8080 from firewalld
      firewalld:
        port: 8080/tcp
        state: disabled
        permanent: yes

    - name: Reload firewalld to apply changes
      command: firewall-cmd --reload

    - name: Stop and disable firewalld
      service:
        name: firewalld
        state: stopped
        enabled: no
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~
"undeploy_webservers.yml" 35L, 737B
```

8. Run the ansible playbook to undeploy webservers in vm1 and vm2 via command
   ansible-playbook -i hosts.ini undeploy_webservers.yml
   This represents that the webservers are successfully uninstalled in vm1 and vm2

```
[ec2-user@ip-172-31-25-145 ~]$ ansible-playbook -i hosts.ini undeploy_webservers.yml

PLAY [Un-deploy webservers] ******************************************************************************

TASK [Gathering Facts] ***********************************************************************************
[WARNING]: Platform linux on host vm2 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.15/reference_appendices/interpreter_discovery.html
for more information.
ok: [vm2]
[WARNING]: Platform linux on host vm1 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.15/reference_appendices/interpreter_discovery.html
for more information.
ok: [vm1]

TASK [Stop and disable Apache service] *******************************************************************
changed: [vm2]
changed: [vm1]

TASK [Remove Apache package] *****************************************************************************
changed: [vm2]
changed: [vm1]

TASK [Remove custom web page] ****************************************************************************
changed: [vm2]
changed: [vm1]

TASK [Remove port 8080 from firewalld] *******************************************************************
changed: [vm2]
changed: [vm1]

TASK [Reload firewalld to apply changes] *****************************************************************
changed: [vm2]
changed: [vm1]

TASK [Stop and disable firewalld] ************************************************************************
changed: [vm1]
changed: [vm2]

PLAY RECAP ***********************************************************************************************
vm1                        : ok=7    changed=6    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
vm2                        : ok=7    changed=6    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

18.191.25.91:8080

This site can't be reached

18.191.25.91 refused to connect.

Try:
- Checking the connection
- Checking the proxy and the firewall

ERR_CONNECTION_REFUSED

Details   Reload
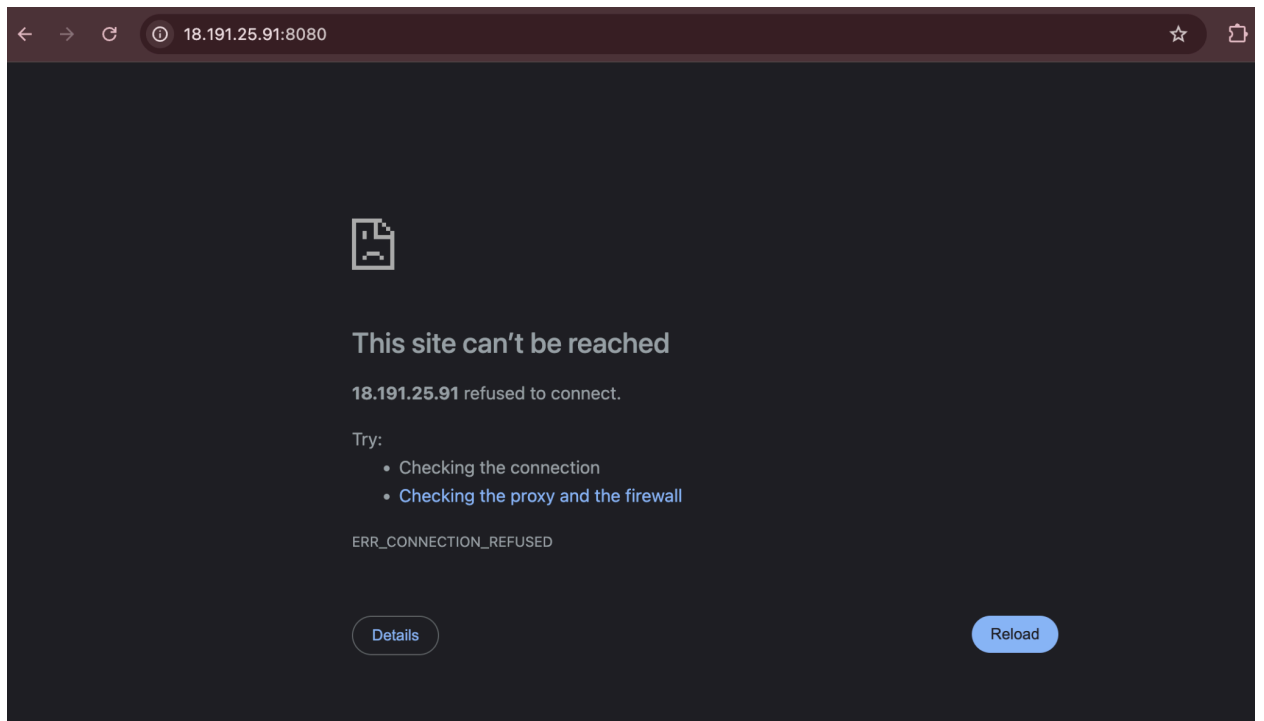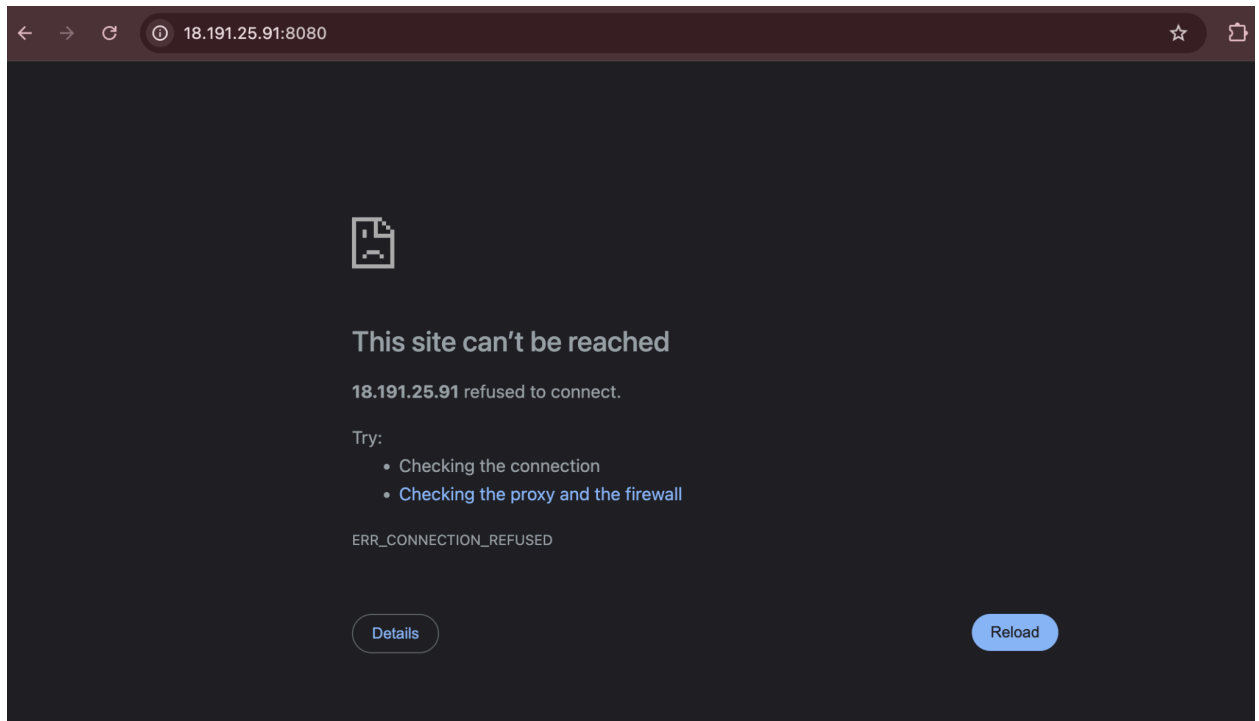
All the files are uploaded in github

Link: https://github.com/chandini2595/CMPE-272-Assignment1