Module 5: Ansible Assignment – 1

Pre reqisites: 3 instances in AWS

Ansible master node Ip: 172.31.37.202

Ansible slave1 Ip: 172.31.36.186

Ansible slave2 ip: 172.31.40.104

1. Setup Ansible cluster with 3 nodes

   Connect to the 1st instance and rename it as a master node.

   Step 1: Install python in it using command "$ sudo apt-get install python3"

```
*** System restart required ***
Last login: Tue Dec 12 14:11:49 2023 from 18.206.107.28
ubuntu@ansible-master:~$ sudo apt-get install python3
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
python3 is already the newest version (3.10.6-1~22.04).
python3 set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 32 not upgraded.
ubuntu@ansible-master:~$
```

   Step2:We have to enable keyless SSH access between Ansible Master and Slav.

   - generate ssh key in master node $ ssh-keygen

```
ubuntu@ansible-master:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
/home/ubuntu/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:OvZfSkGtpQRhVC+xLNxvXXLHorABVx/xNM+W/UwoKfw ubuntu@ansible-master
The key's randomart image is:
+---[RSA 3072]----+
|       .*o+.. oo.|
|       o B = o B=|
|        o % * =.%|
|         + % + Oo|
|        S = E . o|
|       .   o     |
|      +    . .   |
|     . o . o     |
```

   - Once done print id_rsa.pub $ sudo cat ./.ssh/id_rsa.pub

```
ubuntu@ansible-master:~$ sudo cat ./.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDAVu15emAaWwQjHFlFnPVrQ4MlED7Pb3eeTEhcn+QgUlJoSKNDxtQDy9nI90ZRd4x0NehKhybZtI2m/5klR01lGAu285hvQ0WHMbjVX
3c9lWlnRWzJs5UxBzZkmWYbt3ssJB5Efv0RY7O9yBsldMwBdnX8CqqsxPbC/SCfSTYIkhW7j8v9JilZOcOQq2DUiWTfsvuiKHVgWfKNt2EIp4ACuLopKpPOmlANimaKkOC/Ug9yq19ZaW
v0nmvkvRucBq6Sp/CcwDBRIaHD8RW4UealnIXMOj6QWw2gjGrAMfwUUVFqTpgrBY0Zep9SXUaApXU6bJgclPiDLygOjr06ld04194NdDV9uy9IU/ClOOQuwDxZiiERV6cvxV9y0P/ZLWf
pEL3wunFwNOk3N0i6ju7hWRYGWGGLxYuzgLXYY7tuK3IdSw0pdZxDrjJaR0ig2akplGG+TbE0ypU03/N4Y7C7DOBFgkoBIUWWwxAje0N24JBdVtJgOzQYH5MJ3TfpFYU= ubuntu@ansi
ble-master
ubuntu@ansible-master:~$
```

   - The key is copied and pasted in both slave machine's authorised keys. Command $ sudo nano ./.ssh/authorized_keys

   In slave2

```
ubuntu@ip-172-31-40-104:~$ sudo nano ./.ssh/authorized_keys
ubuntu@ip-172-31-40-104:~$ cat ./.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQCl4lrLTG5t+o5SGVB4SdAQZtnFu7wHbxhFsXyh8d5Hv19SalWeZG6JZwnAiJ8SFc27Y4k7plT5LC7pwYgutYsNylMEjThAbv2pGE3p4
SX9wupbMjtGOonm6lYmCsmnEjLqxubIhEADubmQi8Myvgss0WCTlAXthjnQRVkFzXa+fzpUod/lxgtIFahyqinAG+yRDnxXou04WHBACBrzYbUBS22vC6NS7DBZtRrZ2YaOjdcZTl/zan
N/uh6lQyNWuhBNuJ/kWDMKmzLUVaLzUIiqrefIMRcMKVdKv+LWKLEaAutq+sv4RoFh3CzZ8Kq/Q0V1Q/jqbFG+50Vzl1qpD8sP venkat
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDAVu15emAaWwQjHFlFnPVrQ4MlED7Pb3eeTEhcn+QgUlJoSKNDxtQDy9nI90ZRd4x0NehKhybZtI2m/5klR01lGAu285hvQ0WHMbjVX
3c9lWlnRWzJs5UxBzZkmWYbt3ssJB5Efv0RY7O9yBsldMwBdnX8CqqsxPbC/SCfSTYIkhW7j8v9JilZOcOQq2DUiWTfsvuiKHVgWfKNt2EIp4ACuLopKpPOmlANimaKkOC/Ug9yq19ZaW
v0nmvkvRucBq6Sp/CcwDBRIaHD8RW4UealnIXMOj6QWw2gjGrAMfwUUVFqTpgrBY0Zep9SXUaApXU6bJgclPiDLygOjr06ld04194NdDV9uy9IU/ClOOQuwDxZiiERV6cvxV9y0P/ZLWf
pEL3wunFwNOk3N0i6ju7hWRYGWGGLxYuzgLXYY7tuK3IdSw0pdZxDrjJaR0ig2akplGG+TbE0ypU03/N4Y7C7DOBFgkoBIUWWwxAje0N24JBdVtJgOzQYH5MJ3TfpFYU= ubuntu@ansi
ble-master
```

In slave1

```
ubuntu@ansible:~$ sudo nano ./.ssh/authorized_keys
ubuntu@ansible:~$ cat ./.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQCl4lrLTG5t+o5SGVB4SdAQZtnFu7wHbxhFsXyh8d5Hvl9Sa1WeZG6JZwnAiJ8SFc27Y4k7plT5LC7pwYgutYsNylMEjThAbv2pGE3p4
SX9wupbMjtGOonm6lYmCsmnEjLqxubIhEADubmQi8Myvgss0WCTlAXthjnQRVkFzXa+fzpUod/lxgtIFahyqinAG+yRDnxXou04WHBACBrzYbUBS22vC6NS7DBZtRrZ2YaOjdcZT1/zan
N/uh6lQyNWuhBNuJ/kWDMKmzLUVaLzUIiqrefIMRcMKVdKv+LWKLEaAutq+sv4RoFh3CzZ8Kq/Q0V1Q/jqbFG+50Vzl1qpD8sP venkat
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQC5p1UFv95APAU94YEc/omIVymD2C1wlEAjrMC4Qwk9bYG14YUag4t1dG2XTS3rIExvy2pR7rLyPQkgh79LrAIOTr25z647ZwgiLxdjo
oE/uuelqMWp1Ob4Kq9mo9ttykIkqFTNxZWsxSKctdkrrG5KNkDEUvqauCP6WAtRc0oLgAmQ4Bs/l4faUtsi9/OEc59mlCsr37S0WYjDOZ+/qDSUaDnQB/FEIJoZoSLZrSMMYL7PdyCk3/
zOXe6b7beGo2uBnCxdRRmrWIbSkFSxyXVwRRTvMjS68f5gAZZC4IseU4qLR//IajUkiazo/ydiZZy4OrHnKlKS/sO9/eYhS6kxqSALYvJTCW3n/sHI1nUdAuIZA1878g0rf7qp526amqh
f8XXhxgA65oW2Nh6kOTaYtOa7QG0tzbxQJZJLCRKzPXTG5To0zSNWJZVcV4n9CMLNAVFySRsYhx9Y5RbfXiaUZPliUhKVUcTGBl/fEswy59a9DHklfSGaPSMz4iOU9zs= ubuntu@ip-1
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDAVul5emAaWwQjHFlFnPVrQ4MlED7Pb3eeTEhcn+QgUlJoSKNDxtQDy9nI90ZRd4x0NehKhybZtI2m/5klR01lGAu285hvQ0WHMbjVX
3c9lWlnRWzJs5UxBzZkmWYbt3ssJB5Efv0RY7O9yBsldMwBdnX8CqqsxPbC/SCfSTYIkhW7j8v9JilZOcOQq2DUiWTfsvuiKHVqWfKNt2EIp4ACuLopKpPOmlANimaKkOC/Ug9yq19ZaW
v0nmvkvRucBq6Sp/CcwDBRIaHD8RW4UealnIXMOj6QWw2gjGrAMfwUUVFqTpgrBYOZep9SXUaApXU6bJgclPiDLyg0jr06ld04194NdDV9uy9IU/C1OOQuwDxZiiERV6cvxV9y0P/ZLWf
pEL3wunFwNOk3NOi6ju7hWRYGWGGLxYuzgLXYY7tuK3IdSw0pdZxDrjJaROig2akplGG+TbE0ypUO3/N4Y7C7DOBFgkoBIUWWwxAje0N24JBdVtJgOzQYH5MJ3TfpFYU= ubuntu@ansi
ble-master
ubuntu@ansible:~$
```

Keyless access has now been configured between Ansible master and slave. We can verify by doing a SSH from your master to slave. In master node

$ ssh ubuntu@<slave_Ip>

- Slave2

```
ubuntu@ansible-master:~$ ssh ubuntu@172.31.40.104
The authenticity of host '172.31.40.104 (172.31.40.104)' can't be established.
ED25519 key fingerprint is SHA256:sUhNDP8MFwINvOsgIBkl4eGDtq/zpVOibxHI3kNOEHY.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.31.40.104' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1012-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Tue Dec 12 14:44:00 UTC 2023

  System load:  0.0               Processes:             98
  Usage of /:   30.7% of 7.57GB   Users logged in:       1
  Memory usage: 25%               IPv4 address for eth0: 172.31.40.104
  Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

31 updates can be applied immediately.
To see these additional updates run: apt list --upgradable
```

Slave1

```
ubuntu@ansible-master:~$ ssh ubuntu@172.31.36.186
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1012-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Tue Dec 12 17:03:02 UTC 2023

  System load:  0.0               Processes:             106
  Usage of /:   37.0% of 7.57GB   Users logged in:       1
  Memory usage: 27%               IPv4 address for eth0: 172.31.36.186
  Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

31 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

1 additional security update can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm
```

Step3: Installation of ansible on master

$ sudo apt update

```
*** System restart required ***
Last login: Tue Dec 12 16:58:37 2023 from 18.206.107.29
ubuntu@ansible-master:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1257 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [258 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [1242 kB]
Get:8 https://ppa.launchpadcontent.net/ansible/ansible/ubuntu jammy InRelease [18.0 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [202 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1018 kB]
Get:11 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1037 kB]
Get:12 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [197 kB]
Get:13 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [815 kB]
Get:14 https://ppa.launchpadcontent.net/ansible/ansible/ubuntu jammy/main amd64 Packages [1136 B]
Fetched 6275 kB in 2s (3065 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
36 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ansible-master:~$
```

$ sudo apt install software-properties-common

```
ubuntu@ansible-master:~$ 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 (0.99.22.8).
0 upgraded, 0 newly installed, 0 to remove and 36 not upgraded.
ubuntu@ansible-master:~$
```

$ sudo apt-add-repository --yes –update ppa:ansible/ansible

```
ubuntu@ansible-master:~$ sudo apt-add-repository --yes --update  ppa:ansible/ansible
Repository: 'deb https://ppa.launchpadcontent.net/ansible/ansible/ubuntu/ jammy main'
Description:
Ansible is a radically simple IT automation platform that makes your applications and systems easier to deploy. Avoid writing scripts or cust
om code to deploy and update your applications— automate in a language that approaches plain English, using SSH, with no agents to install on
 remote systems.

http://ansible.com/

If you face any issues while installing Ansible PPA, file an issue here:
https://github.com/ansible-community/ppa/issues
More info: https://launchpad.net/~ansible/+archive/ubuntu/ansible
Adding repository.
Found existing deb entry in /etc/apt/sources.list.d/ansible-ubuntu-ansible-jammy.list
Adding deb entry to /etc/apt/sources.list.d/ansible-ubuntu-ansible-jammy.list
Found existing deb-src entry in /etc/apt/sources.list.d/ansible-ubuntu-ansible-jammy.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/ansible-ubuntu-ansible-jammy.list
Adding key to /etc/apt/trusted.gpg.d/ansible-ubuntu-ansible.gpg with fingerprint 6125E2A8C77F2818FB7BD15B93C4A3FD7BB9C367
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://ppa.launchpadcontent.net/ansible/ansible/ubuntu jammy InRelease
Reading package lists... Done
ubuntu@ansible-master:~$
```

$ sudo apt install ansible

```
ubuntu@ansible-master:~$ sudo apt install ansible
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be upgraded:
Progress: [ 80%] [##############################################################################################################.....................]
1 upgraded, 0 newly installed, 0 to remove and 35 not upgraded.
Need to get 16.5 MB of archives.
After this operation, 229 kB of additional disk space will be used.
Get:1 https://ppa.launchpadcontent.net/ansible/ansible/ubuntu jammy/main amd64 ansible all 8.7.0-1ppa~jammy [16.5 MB]
Fetched 16.5 MB in 17s (1000 kB/s)
Scanning processes...
```

$ sudo nano /etc/ansible/hosts

```
  GNU nano 6.2                                    /etc/ansible/hosts


# Ex4: Multiple hosts arranged into groups such as 'Debian' and 'openSUSE':

## [Debian]
## alpha.example.org
## beta.example.org

## [openSUSE]
## green.example.com
## blue.example.com

[servers]
slave1 ansible_host=172.31.36.186
slave2 ansible_host=172.31.40.104

^G Help          ^O Write Out     ^W Where Is      ^K Cut           ^T Execute       ^C Location      M-U Undo         M-A Set Mark
^X Exit          ^R Read File     ^\ Replace       ^U Paste         ^J Justify       ^/ Go To Line    M-E Redo         M-6 Copy
```

Finally, we can test the Ansible Master-Slave connection by passing the following command

$ ansible -m ping all

```
ubuntu@ansible-master:~$ ansible -m ping all
slave2 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
slave1 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
ubuntu@ansible-master:~$
```

2. On slave 1 install Java

- Write a playbook.yml file for java installation as hosts: slave1

  $ sudo nano assignment1.yml

```
ubuntu@ansible-master:~$ cat assignment1.yml
---
- hosts: slave1
  become: yes
  tasks:
    - name: java installation
      apt:
        name: openjdk-11-jdk
        state: present
ubuntu@ansible-master:~$
```

- Check the syntax errors in the playbook assignment1.yml using command

  $ ansible-playbook assignment1.yml –syntax-check

```
ubuntu@ansible-master:~$ ansible-playbook assignment1.yml --syntax-check

playbook: assignment1.yml
```

- Now executing the playbook assignment1.yml

  $ ansible-playbook assignment1.yml

```
ubuntu@ansible-master:~$ ansible-playbook assignment1.yml

PLAY [slave1] ***********************************************************************************************************************************************

TASK [Gathering Facts] **************************************************************************************************************************************
ok: [slave1]

TASK [java installation] ************************************************************************************************************************************
ok: [slave1]

PLAY RECAP **************************************************************************************************************************************************
slave1                     : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Java installation is successful in slave1 , we can check that in slave 1

```
ubuntu@ansible:~$ java --version
openjdk 11.0.21 2023-10-17
OpenJDK Runtime Environment (build 11.0.21+9-post-Ubuntu-0ubuntu122.04)
OpenJDK 64-Bit Server VM (build 11.0.21+9-post-Ubuntu-0ubuntu122.04, mixed mode, sharing)
ubuntu@ansible:~$
```

i-0f369369a7c286221 (A.slave1)

PublicIPs: 54.86.9.49 PrivateIPs: 172.31.36.186

3. On slave 2 install MySQL server Do the above tasks using Ansible Playbook

To install the mysql in slave2, write a playbook mysqlinstallation.yml

$ sudo nano sqlinstallation.yml

```
---
- hosts: slave2
  become: yes
  tasks:
    - name: mysql installation
      apt:
        name: mysql-server
        state: present

    - name: start mysql service
      service:
        name: mysql
        state: started
```

```
File Name to Write: sqlinstallation.yml
^G Help          M-D DOS Format    M-A Append        M-B Backup File
^C Cancel        M-M Mac Format    M-P Prepend       ^T Browse
```

Check the syntax using command $ ansible-playbook sqlinstallation.yml –syntax-check

Run the playbook using the command $ ansible-playbook sqlinstallation.yml

```
ubuntu@ansible-master:~$ ansible-playbook sqlinstallation.yml --syntax-check

playbook: sqlinstallation.yml
ubuntu@ansible-master:~$ ansible-playbook sqlinstallation.yml

PLAY [slave2] ******************************************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************
ok: [slave2]

TASK [mysql installation] ******************************************************************************************************************************
ok: [slave2]

TASK [start mysql service] *****************************************************************************************************************************
ok: [slave2]

PLAY RECAP *********************************************************************************************************************************************
slave2                     : ok=3    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

ubuntu@ansible-master:~$
```