BCDV4033 – LAB3

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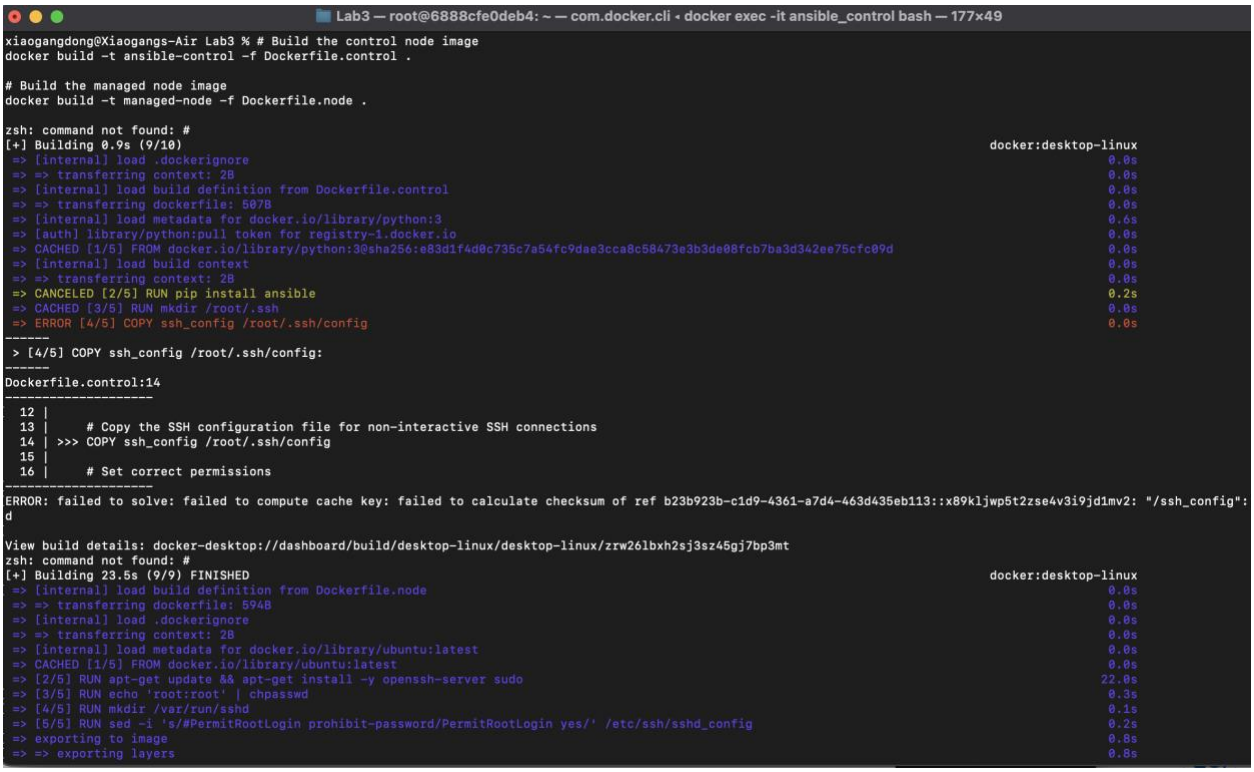
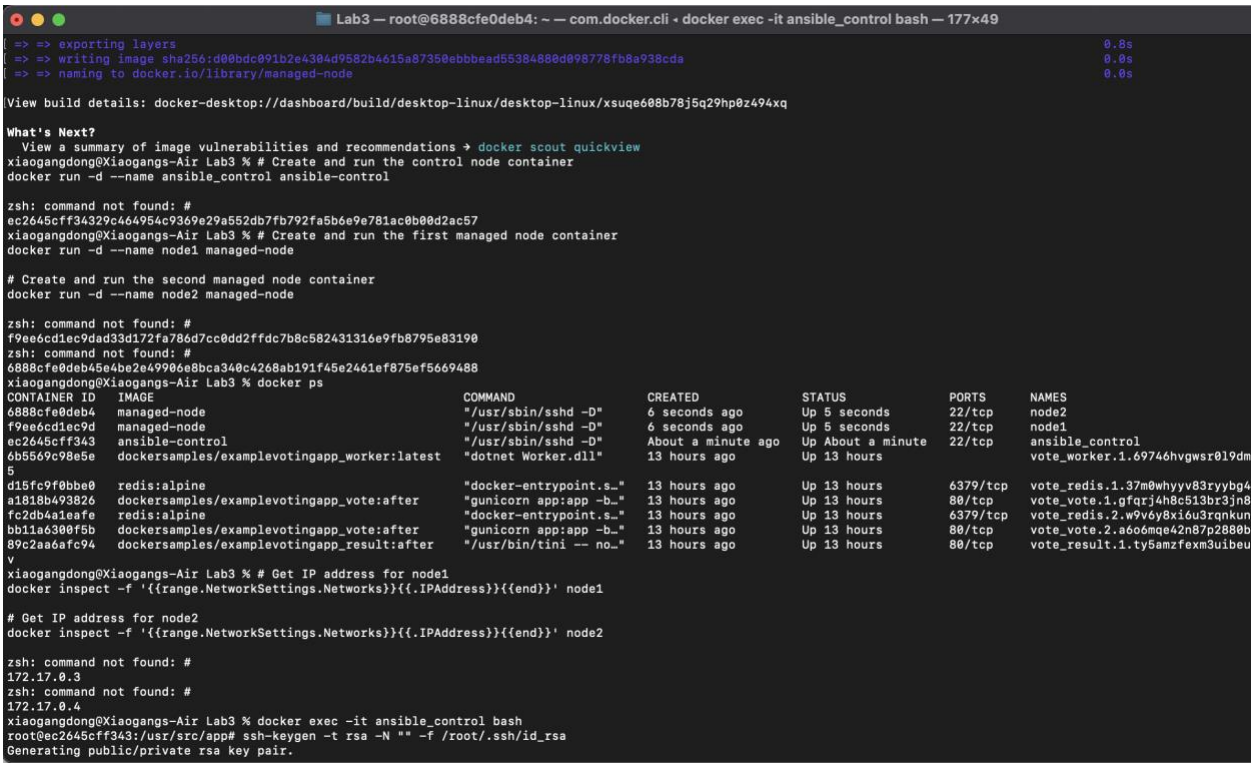
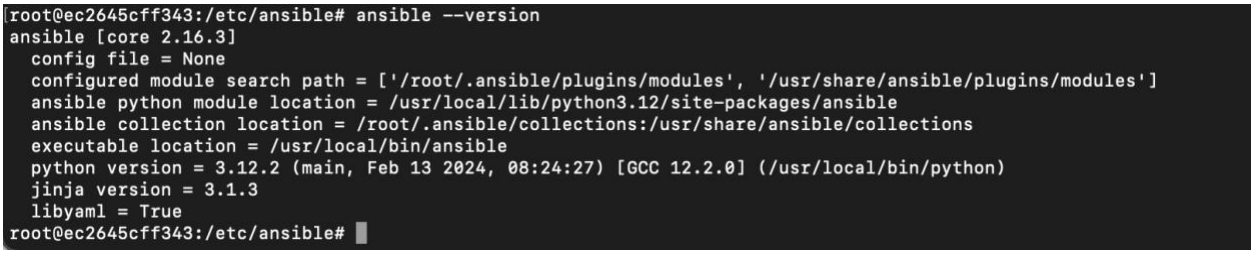
Setup docker container and check ansible is installed.

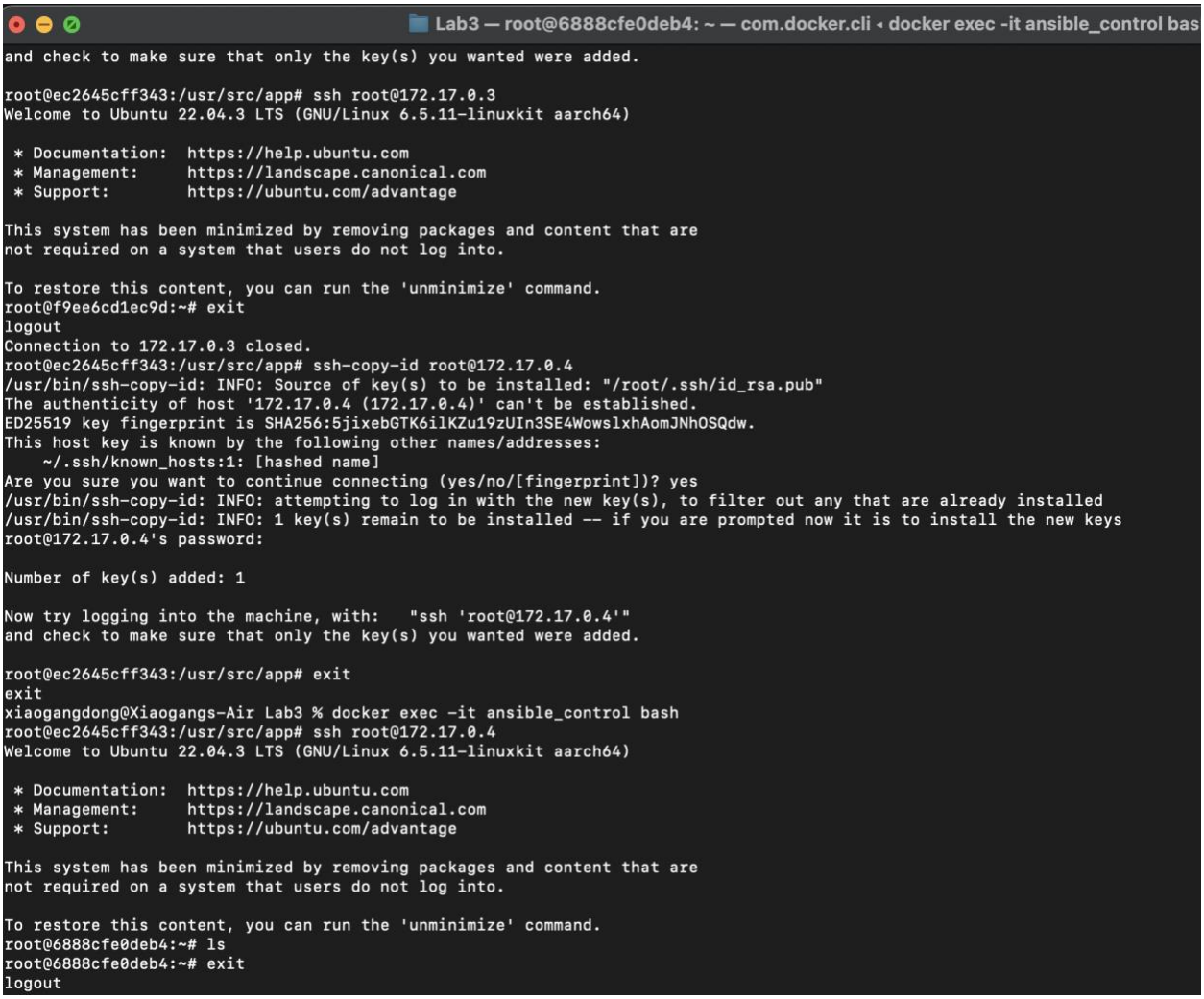


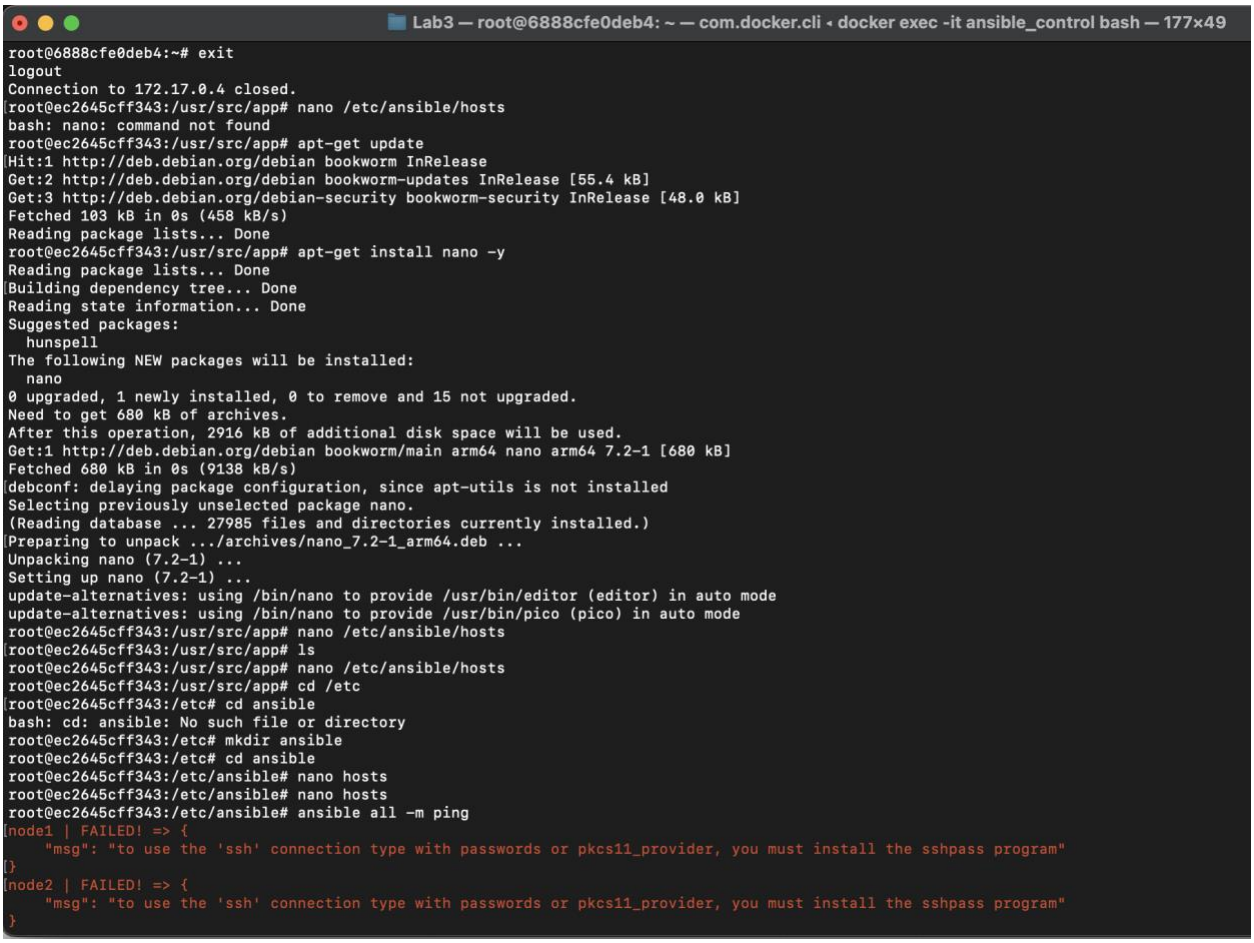


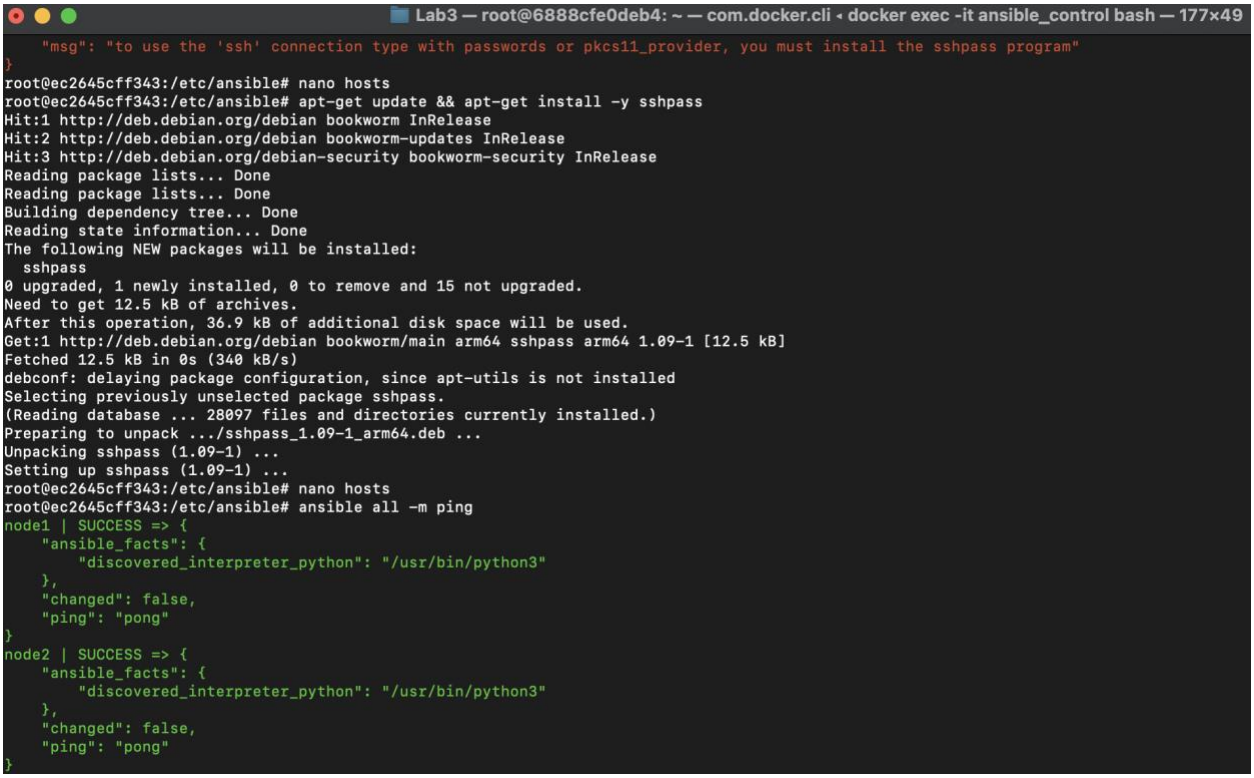


Set up SSH connection and connect from control node to managed nodes

```
Generating public/private rsa key pair.
/root/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Your identification has been saved in /root/.ssh/id_rsa
Your public key has been saved in /root/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:RIxkTmXtbtxcuatRQNGKM5QXfuymbCWyzeUZvQMntoE root@ec2645cff343
The key's randomart image is:
+---[RSA 3072]----+
|     .+++. .++   |
|     +.o. +o...  |
|      . .o oo.o. |
|       .  = o+o. |
|        So.E.*Bo.|
|          +*+OBo.|
|         .. B.o+ |
|           . .. .|
|             ..  |
+----[SHA256]-----+
root@ec2645cff343:/usr/src/app# ssh-copy-id root@node1_ip_address
ssh-copy-id root@node2_ip_address
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

/usr/bin/ssh-copy-id: ERROR: ssh: Could not resolve hostname node1_ip_address: Name or service not known

/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

/usr/bin/ssh-copy-id: ERROR: ssh: Could not resolve hostname node2_ip_address: Name or service not known

root@ec2645cff343:/usr/src/app# ssh-copy-id root@172.17.0.3
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
The authenticity of host '172.17.0.3 (172.17.0.3)' can't be established.
ED25519 key fingerprint is SHA256:5jixebGTK6ilKZu19zUIn3SE4WowslxhAomJNhOSQdw.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
root@172.17.0.3's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'root@172.17.0.3'"
and check to make sure that only the key(s) you wanted were added.

root@ec2645cff343:/usr/src/app# ssh root@172.17.0.3
```


Lab3 — root@6888cfe0deb4: ~ — com.docker.cli ◂ docker exec -it ansible_control bas
and check to make sure that only the key(s) you wanted were added.
root@ec2645cff343:/usr/src/app# ssh root@172.17.0.3
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.5.11-linuxkit aarch64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
This system has been minimized by removing packages and content that are
not required on a system that users do not log into.
To restore this content, you can run the 'unminimize' command.
root@f9ee6cd1ec9d:~# exit
logout
Connection to 172.17.0.3 closed.
root@ec2645cff343:/usr/src/app# ssh-copy-id root@172.17.0.4
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
The authenticity of host '172.17.0.4 (172.17.0.4)' can't be established.
ED25519 key fingerprint is SHA256:5jixebGTK6ilKZu19zUIn3SE4WowslxhAomJNhOSQdw.
This host key is known by the following other names/addresses:
~/.ssh/known_hosts:1: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
root@172.17.0.4's password:
Number of key(s) added: 1
Now try logging into the machine, with: "ssh 'root@172.17.0.4'"
and check to make sure that only the key(s) you wanted were added.
root@ec2645cff343:/usr/src/app# exit
exit
xiaogangdong@Xiaogangs-Air Lab3 % docker exec -it ansible_control bash
root@ec2645cff343:/usr/src/app# ssh root@172.17.0.4
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.5.11-linuxkit aarch64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
This system has been minimized by removing packages and content that are
not required on a system that users do not log into.
To restore this content, you can run the 'unminimize' command.
root@6888cfe0deb4:~# ls
root@6888cfe0deb4:~# exit
logout

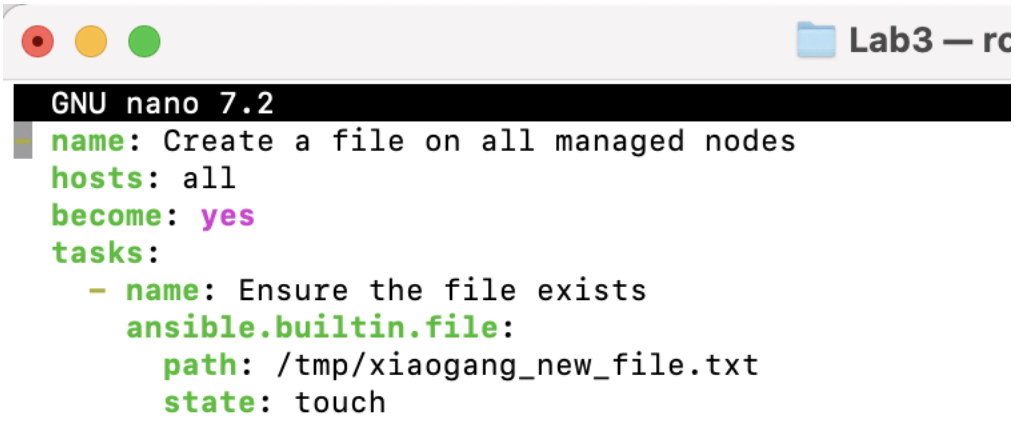

Lab3 — root@6888cfe0deb4: ~ — com.docker.cli ◂ docker exec -it ansible_control bash — 177×49
root@6888cfe0deb4:~# exit
logout
Connection to 172.17.0.4 closed.
root@ec2645cff343:/usr/src/app# nano /etc/ansible/hosts
bash: nano: command not found
root@ec2645cff343:/usr/src/app# apt-get update
Hit:1 http://deb.debian.org/debian bookworm InRelease
Get:2 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:3 http://deb.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Fetched 103 kB in 0s (458 kB/s)
Reading package lists... Done
root@ec2645cff343:/usr/src/app# apt-get install nano -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
hunspell
The following NEW packages will be installed:
nano
0 upgraded, 1 newly installed, 0 to remove and 15 not upgraded.
Need to get 680 kB of archives.
After this operation, 2916 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bookworm/main arm64 nano arm64 7.2-1 [680 kB]
Fetched 680 kB in 0s (9138 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package nano.
(Reading database ... 27985 files and directories currently installed.)
Preparing to unpack .../archives/nano_7.2-1_arm64.deb ...
Unpacking nano (7.2-1) ...
Setting up nano (7.2-1) ...
update-alternatives: using /bin/nano to provide /usr/bin/editor (editor) in auto mode
update-alternatives: using /bin/nano to provide /usr/bin/pico (pico) in auto mode
root@ec2645cff343:/usr/src/app# nano /etc/ansible/hosts
root@ec2645cff343:/usr/src/app# ls
root@ec2645cff343:/usr/src/app# nano /etc/ansible/hosts
root@ec2645cff343:/usr/src/app# cd /etc
root@ec2645cff343:/etc# cd ansible
bash: cd: ansible: No such file or directory
root@ec2645cff343:/etc# mkdir ansible
root@ec2645cff343:/etc# cd ansible
root@ec2645cff343:/etc/ansible# nano hosts
root@ec2645cff343:/etc/ansible# nano hosts
root@ec2645cff343:/etc/ansible# ansible all -m ping
node1 | FAILED! => {
"msg": "to use the 'ssh' connection type with passwords or pkcs11_provider, you must install the sshpass program"
}
node2 | FAILED! => {
"msg": "to use the 'ssh' connection type with passwords or pkcs11_provider, you must install the sshpass program"
}

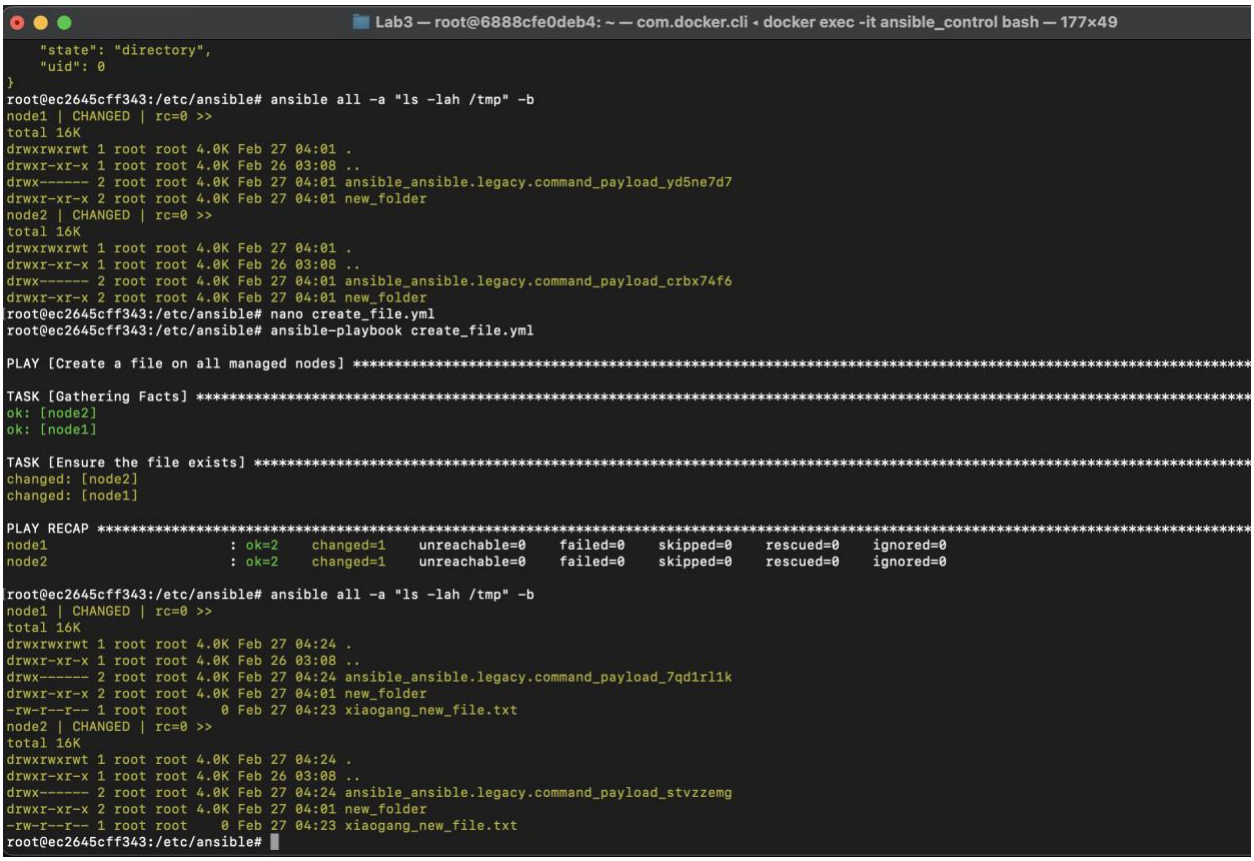


Lab3 - Try to create a directory uisng the ad-hoc command. PResent screenshots of the sucessful ansible run and directory in the nodes.

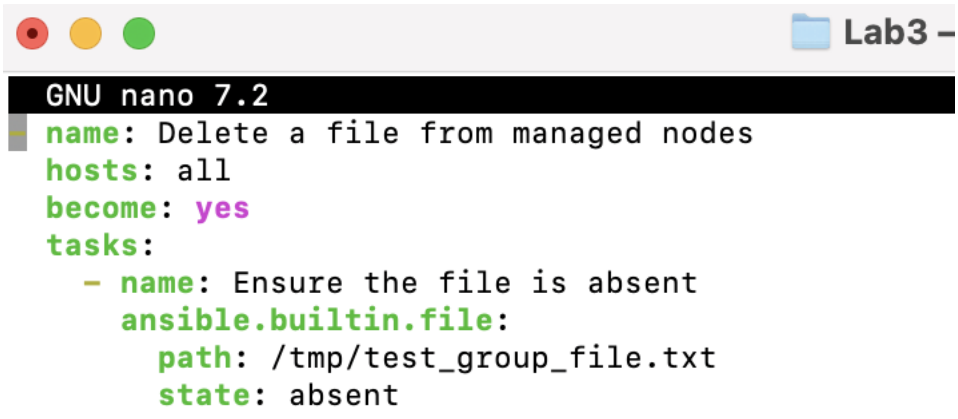
```
root@ec2645cff343:/etc/ansible# ansible all -m file -a "path=/tmp/new_folder state=directory" -b
node1 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": true,
    "gid": 0,
    "group": "root",
    "mode": "0755",
    "owner": "root",
    "path": "/tmp/new_folder",
    "size": 4096,
    "state": "directory",
    "uid": 0
}
node2 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": true,
    "gid": 0,
    "group": "root",
    "mode": "0755",
    "owner": "root",
    "path": "/tmp/new_folder",
    "size": 4096,
    "state": "directory",
    "uid": 0
}
root@ec2645cff343:/etc/ansible# ansible all -a "ls -lah /tmp" -b
node1 | CHANGED | rc=0 >>
total 16K
drwxrwxrwt 1 root root 4.0K Feb 27 04:01 .
drwxr-xr-x 1 root root 4.0K Feb 26 03:08 ..
drwx------ 2 root root 4.0K Feb 27 04:01 ansible_ansible.legacy.command_payload_yd5ne7d7
drwxr-xr-x 2 root root 4.0K Feb 27 04:01 new_folder
node2 | CHANGED | rc=0 >>
total 16K
drwxrwxrwt 1 root root 4.0K Feb 27 04:01 .
drwxr-xr-x 1 root root 4.0K Feb 26 03:08 ..
drwx------ 2 root root 4.0K Feb 27 04:01 ansible_ansible.legacy.command_payload_crbx74f6
drwxr-xr-x 2 root root 4.0K Feb 27 04:01 new_folder
root@ec2645cff343:/etc/ansible#
```

Lab 3 - Create the file playbook yml and create file in both nodes. Show using screenshot that you have successfully created the file using playbook





Lab3 - Create a new playbook to delete the file you created previously. Submit screenshots for the playbook run and screenshots that the file has been deleted from both nodes



```
root@ec2645cff343:/etc/ansible# nano delete.yml
root@ec2645cff343:/etc/ansible# ansible-playbook delete_file.yml
ERROR! the playbook: delete_file.yml could not be found
root@ec2645cff343:/etc/ansible# ansible-playbook delete.yml

PLAY [Delete a file from managed nodes] ****************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [node1]
ok: [node2]

TASK [Ensure the file is absent] ***********************************************************************************
changed: [node2]
changed: [node1]

PLAY RECAP *********************************************************************************************************
node1                      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
node2                      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@ec2645cff343:/etc/ansible# ansible all -a "ls -lah /tmp" -b
node1 | CHANGED | rc=0 >>
total 16K
drwxrwxrwt 1 root root 4.0K Feb 27 04:27 .
drwxr-xr-x 1 root root 4.0K Feb 26 03:08 ..
drwx------ 2 root root 4.0K Feb 27 04:27 ansible_ansible.legacy.command_payload_dz3jm45i
drwxr-xr-x 2 root root 4.0K Feb 27 04:01 new_folder
node2 | CHANGED | rc=0 >>
total 16K
drwxrwxrwt 1 root root 4.0K Feb 27 04:27 .
drwxr-xr-x 1 root root 4.0K Feb 26 03:08 ..
drwx------ 2 root root 4.0K Feb 27 04:27 ansible_ansible.legacy.command_payload_gc77_ses
drwxr-xr-x 2 root root 4.0K Feb 27 04:01 new_folder
root@ec2645cff343:/etc/ansible#
```

Lab3 - Create a new playbook for test group and demonstrate using the playbook output that you have updated only the test node

Lab3 — root@6888cfe0deb4: ~

```
  GNU nano 7.2
[managed_nodes]
node1 ansible_host=172.17.0.3 ansible_user=root ansible_ssh_pass=root
node2 ansible_host=172.17.0.4 ansible_user=root ansible_ssh_pass=root

[test]
node2 ansible_host=172.17.0.4
```

Lab3 — ro

```
  GNU nano 7.2
- name: Update test group nodes
  hosts: test
  become: yes
  tasks:
    - name: Create a file on test group nodes
      ansible.builtin.file:
        path: /tmp/test_group_file.txt
        state: touch
```

```
[root@ec2645cff343:/etc/ansible# nano /etc/ansible/hosts
[root@ec2645cff343:/etc/ansible# nano update_test_group.yml
[root@ec2645cff343:/etc/ansible# ansible-playbook update_test_group.yml

PLAY [Update test group nodes] ************************************************************************************************

TASK [Gathering Facts] ********************************************************************************************************
ok: [node2]

TASK [Create a file on test group nodes] **************************************************************************************
changed: [node2]

PLAY RECAP ********************************************************************************************************************
node2                      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

[root@ec2645cff343:/etc/ansible# ansible all -a "ls -lah /tmp" -b
node1 | CHANGED | rc=0 >>
total 16K
drwxrwxrwt 1 root root 4.0K Feb 27 04:37 .
drwxr-xr-x 1 root root 4.0K Feb 26 03:08 ..
drwx------ 2 root root 4.0K Feb 27 04:37 ansible_ansible.legacy.command_payload_3fz08whw
drwxr-xr-x 2 root root 4.0K Feb 27 04:01 new_folder
node2 | CHANGED | rc=0 >>
total 16K
drwxrwxrwt 1 root root 4.0K Feb 27 04:37 .
drwxr-xr-x 1 root root 4.0K Feb 26 03:08 ..
drwx------ 2 root root 4.0K Feb 27 04:37 ansible_ansible.legacy.command_payload_j6pyigdn
drwxr-xr-x 2 root root 4.0K Feb 27 04:01 new_folder
-rw-r--r-- 1 root root    0 Feb 27 04:37 test_group_file.txt
root@ec2645cff343:/etc/ansible#
```

Lab3 - Install Nodejs using nodejs yaml. There is a issue with yaml file you need to fix it. Once installed you will get the node and npm version screenshots. Also, the successful playbook run screenshot.


Lab3 — root@6888cfe0deb4: ~ — com.docker.cli ◂ docke
GNU nano 7.2 nodejs.yml

- hosts: all
gather_facts: yes
become: yes
tasks:
- name: Update apt cache
apt:
update_cache: yes
when: ansible_os_family == "Debian"
- name: Install Node.js dependencies
apt:
name: "{{ item }}"
state: present
loop:
- curl
- software-properties-common
when: ansible_os_family == "Debian"
- name: Import NodeSource GPG key
ansible.builtin.apt_key:
url: https://deb.nodesource.com/gpgkey/nodesource.gpg.key
state: present
when: ansible_os_family == "Debian"
- name: Add NodeSource repository
apt_repository:
repo: "deb https://deb.nodesource.com/node_14.x {{ ansible_distribution_release }} main"
state: present
update_cache: yes
when: ansible_os_family == "Debian"
- name: Install Node.js
apt:
name: nodejs
state: present
when: ansible_os_family == "Debian"
- name: Install build-essential
apt:
name: build-essential
state: present
when: ansible_os_family == "Debian"
- name: Get Node version
[Read 58 lines]
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Lin

```
  - name: Install build-essential
    apt:
      name: build-essential
      state: present
    when: ansible_os_family == "Debian"

  - name: Get Node version
    command: node -v
    register: node_version
    changed_when: false

  - name: Get npm version
    command: npm -v
    register: npm_version
    changed_when: false

  - debug:
      msg:
        - "Node version: {{ node_version.stdout }}"
        - "npm version: {{ npm_version.stdout }}"
```

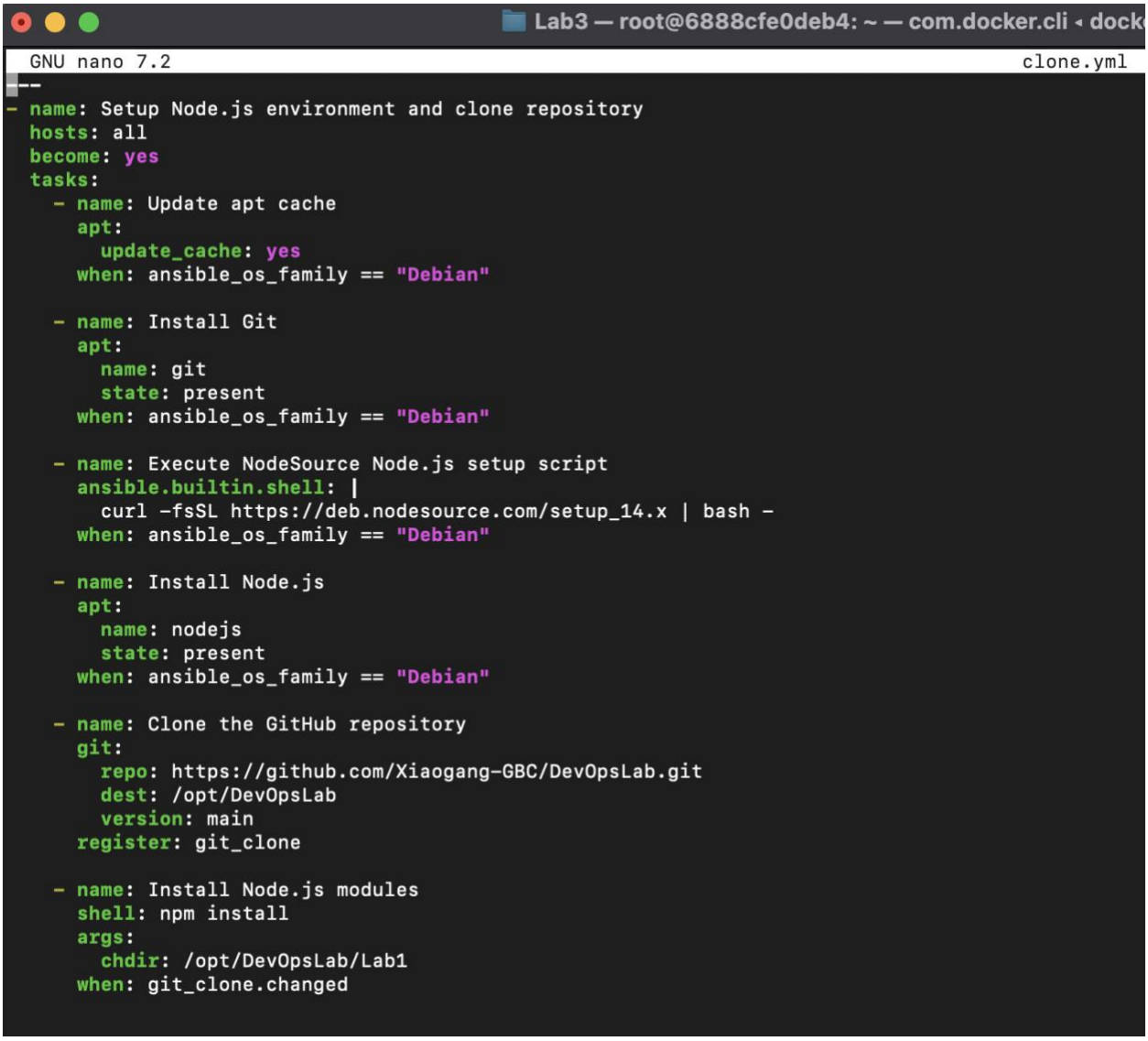
```
^G Help          ^O Write Out     ^W Where Is      ^K Cut           ^T Execute
^X Exit          ^R Read File     ^\ Replace       ^U Paste         ^J Justify
```

Lab3 — root@6888cfe0deb4: ~ — com.doc

```
root@ec2645cff343:/etc/ansible# nano nodejs.yml
root@ec2645cff343:/etc/ansible# rm nodejs.yml
root@ec2645cff343:/etc/ansible# nano nodejs.yml
root@ec2645cff343:/etc/ansible# ansible-playbook nodejs.yml

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

TASK [Gathering Facts] *********************************************************
ok: [node1]
ok: [node2]

TASK [Update apt cache] ********************************************************
ok: [node1]
ok: [node2]

TASK [Install Node.js dependencies] ********************************************
ok: [node1] => (item=curl)
ok: [node2] => (item=curl)
ok: [node1] => (item=software-properties-common)
ok: [node2] => (item=software-properties-common)

TASK [Import NodeSource GPG key] ***********************************************
changed: [node1]
changed: [node2]

TASK [Add NodeSource repository] ***********************************************
changed: [node1]
changed: [node2]

TASK [Install Node.js] *********************************************************
changed: [node2]
changed: [node1]

TASK [Install build-essential] *************************************************
changed: [node2]
changed: [node1]

TASK [Get Node version] *********************************************************
ok: [node1]
ok: [node2]

TASK [Get npm version] **********************************************************
ok: [node2]
ok: [node1]

TASK [debug] ********************************************************************
ok: [node2] => {
    "msg": [
```

```
TASK [Get npm version] *********************************************************************************************
ok: [node2]
ok: [node1]

TASK [debug] *******************************************************************************************************
ok: [node2] => {
    "msg": [
        "Node version: v14.21.3",
        "npm version: 6.14.18"
    ]
}
ok: [node1] => {
    "msg": [
        "Node version: v14.21.3",
        "npm version: 6.14.18"
    ]
}

PLAY RECAP *********************************************************************************************************
node1                      : ok=10   changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
node2                      : ok=10   changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@ec2645cff343:/etc/ansible#
```

Lab3 - Use the example node.yaml and clone the Lab 1 repo to both the nodes. Build the node modules


Lab3 — root@6888cfe0deb4: ~ — com.docker.cli
GNU nano 7.2
clone.yml

- name: Setup Node.js environment and clone repository
hosts: all
become: yes
tasks:
- name: Update apt cache
apt:
update_cache: yes
when: ansible_os_family == "Debian"
- name: Install Git
apt:
name: git
state: present
when: ansible_os_family == "Debian"
- name: Execute NodeSource Node.js setup script
ansible.builtin.shell: |
curl -fsSL https://deb.nodesource.com/setup_14.x | bash -
when: ansible_os_family == "Debian"
- name: Install Node.js
apt:
name: nodejs
state: present
when: ansible_os_family == "Debian"
- name: Clone the GitHub repository
git:
repo: https://github.com/Xiaogang-GBC/DevOpsLab.git
dest: /opt/DevOpsLab
version: main
register: git_clone
- name: Install Node.js modules
shell: npm install
args:
chdir: /opt/DevOpsLab/Lab1
when: git_clone.changed

```
root@ec2645cff343:/etc/ansible# nano clone.yml
root@ec2645cff343:/etc/ansible# ansible-playbook clone.yml

PLAY [Setup Node.js environment and clone repository] ***************************************************************************

TASK [Gathering Facts] **********************************************************************************************************
ok: [node2]
ok: [node1]

TASK [Update apt cache] *********************************************************************************************************
changed: [node1]
changed: [node2]

TASK [Install Git] **************************************************************************************************************
ok: [node2]
ok: [node1]

TASK [Execute NodeSource Node.js setup script] **********************************************************************************
changed: [node2]
changed: [node1]

TASK [Install Node.js] **********************************************************************************************************
ok: [node2]
ok: [node1]

TASK [Clone the GitHub repository] **********************************************************************************************
changed: [node2]
changed: [node1]

TASK [Install Node.js modules] **************************************************************************************************
changed: [node1]
changed: [node2]

PLAY RECAP **********************************************************************************************************************
node1                      : ok=7    changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
node2                      : ok=7    changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@ec2645cff343:/etc/ansible# nano clone.yml
root@ec2645cff343:/etc/ansible#
```