

Hands-on Prelim Exam	
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Course/Section: CPE31S2CPE212	Date Submitted: 09/18/24
Subject: Automating Server Management	Instructor: Engr. Robin Valenzuela
Tools Needed:	
1. Control Node (CN) - 1 2. Manage Node (MN) - 2 Ubuntu	
Procedure:	
<ol style="list-style-type: none"> 1. Note: You are required to create a document report of the steps you will do for this exam. All screenshots should be labeled and explained properly. LABELED AND EXPLAIN EACH CODE (PLAYBOOK) No explanation = Minus Points 2. Create a repository in your GitHub account and label it as Surname_PrelimExam 3. Clone your new repository in your CN. 4. In your CN, create an inventory file and ansible.cfg files. 5. Create an Ansible playbook that does the following with an input of a config.yaml file for both Manage Nodes <ul style="list-style-type: none"> ○ Installs the latest python3 and pip3 ○ use pip3 as default pip ○ use python3 as default python ○ Install Java open-jdk ○ Install MariaDB as well as starting the server, create a database and a table using mariaDB and input one record into a table USING ANSIBLE ONLY ○ Create Motd containing the text defined by a variable defined in config.yaml file and if there is no variable input the default motd is "Ansible Managed node by (your user name)" <ul style="list-style-type: none"> ○ Create a user with a variable defined in config.yaml 5. PUSH and COMMIT your PrelimExam in your GitHub repo 6. Your document report should be submitted here. 7. For your prelim exam to be counted, please paste your repository link here. (Failure to submit will result in ZERO) 8. NO USE OF EXTERNAL WEBSITES SUCH AS , REDDIT, CHATGPT, GITHUB, GEMINI, CLAUDE, FORUMS, AND DOCUMENTATIONS. FAILURE TO COMPLY WITH RESULT IN ZERO. 	

Answers:

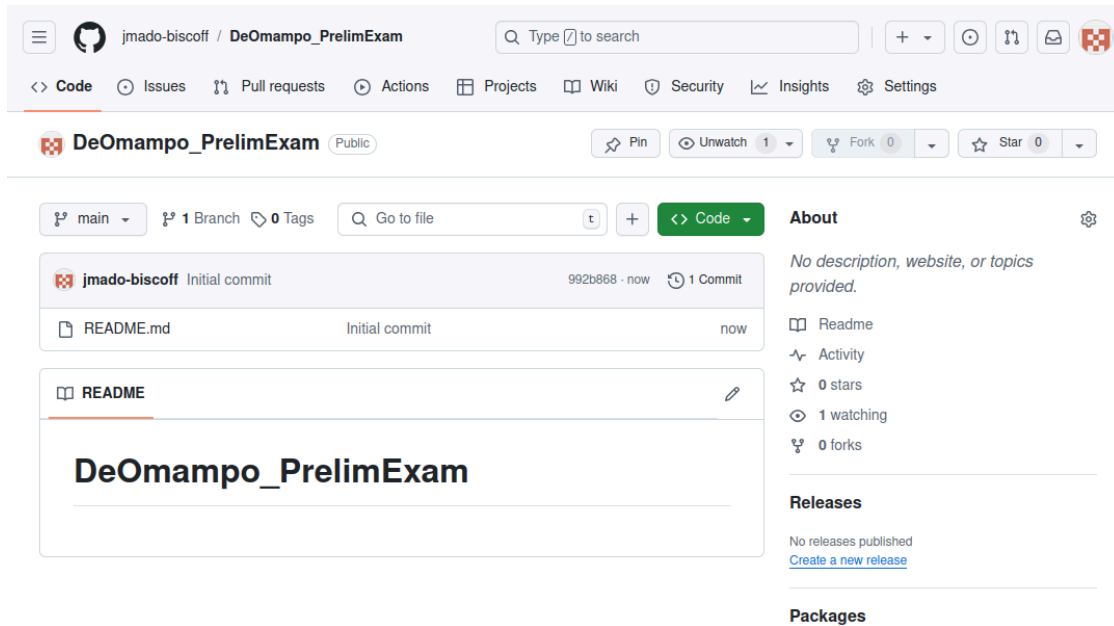


Figure 1. Creating GitHub Repository

Creates a GitHub repository for the Prelim Exam which will contain files required within it.

```
jmado@workstation:~$ git clone git@github.com:jmado-biscoff/DeOmapo_PrelimExam
git
Cloning into 'DeOmapo_PrelimExam'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
jmado@workstation:~$ ls
4.1-Hands-on-Activity-Ansible-Basics  Downloads  Pictures  Videos
DeOmapo_PrelimExam                    install_apache.yml  Public
Desktop                               inventory.yaml      snap
Documents                             Music             Templates
jmado@workstation:~$
```

Figure 2. Cloning GitHub Repository to Local Machine Terminal

Clones the GitHub repository in the browser to the Ubuntu CLI

```
GNU nano 6.2          ansible.cfg
[defaults]
inventory = ~/inventory.yaml
remote_user = jmodo
host_key_checking = True

[ Read 4 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 Line
```

- *Figure 3.1. Configuration of 'ansible.cfg'*

File configuration for the ansible.cfg file

```
GNU nano 6.2          inventory.yaml
all:
  hosts:
    server1:
      ansible_host: 192.168.56.109
      ansible_user: jmodo
    server2:
      ansible_host: 192.168.56.108
      ansible_user: jmodo

[ Read 9 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 Line
```

Figure 3.2. Inventory File

File configuration for the inventory file

```
jnado@workstation:~/De0nampo_PrelimExam$ sudo nano config.yaml
```

Figure 4. Creating Playbook 'config.yaml'

Creating the ansible playbook config.yaml

```
GNU nano 6.2 config.yaml *
---
- hosts: all
  become: true
  tasks:

    - name: Install latest python3
      apt:
        name: python3

    - name: Install pip3
      apt:
        name: python-pip3

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

Figure 5.1. Installing 'python3' and 'pip3'

Within the ansible playbook, it prompts to install python3 and pip3

```
jnado@workstation:~/De0nampo_PrelimExam$ ansible-playbook --ask-become-pass ~/De0nampo_PrelimExam/config.yaml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [server1]
ok: [server2]

TASK [Install latest python3] *****
ok: [server2]
ok: [server1]

TASK [Install pip3] *****
changed: [server2]
changed: [server1]

PLAY RECAP *****
server1      : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
server2      : ok=3    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

jnado@workstation:~/De0nampo_PrelimExam$
```

Figure 5.2. Ansible Playbook Progress Report(1)

Ansible playbook reports the states of changes made to the managed nodes.

```
jnado@server1:~$ python3 --version
Python 3.10.12
jnado@server1:~$ pip3 --version
pip 22.0.2 from /usr/lib/python3/dist-packages/pip (python 3.10)

jnado@server2:~$ python3 --version
Python 3.10.12
jnado@server2:~$ pip3 --version
pip 22.0.2 from /usr/lib/python3/dist-packages/pip (python 3.10)
jnado@server2:~$
```

Figure 5.3. Python and Pip Server Installation Confirmation

Confirmation in the managed nodes.

```
GNU nano 6.2 config.yaml
---
- hosts: all
  become: true
  tasks:
    - name: Install latest python3
      apt:
        name: python3
    - name: Install pip3
      apt:
        name: python3-pip
        update_cache: yes
    - name: Set python3 as default python
      shell: "alias python=python3"
    - name: Set pip3 as default pip
      shell: "alias pip=pip3"
```

Figure 6.1. Set 'python3' and 'pip3' as Defaults

In the ansible playbook, prompts python3 and pip3 as defaults.

```
Jmado@workstation: ~/DeOmanpo_PrelimExam
jmado@workstation:~/DeOmanpo_PrelimExam$ pip3 --version
pip 22.0.2 from /usr/lib/python3/dist-packages/pip (python 3.10)
jmado@workstation:~/DeOmanpo_PrelimExam$ sudo nano config.yaml
jmado@workstation:~/DeOmanpo_PrelimExam$ sudo nano config.yaml
jmado@workstation:~/DeOmanpo_PrelimExam$ ansible-playbook --ask-become-pass ~/DeOmanpo_PrelimExam/config.yaml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [server2]
ok: [server1]

TASK [Install latest python3] *****
ok: [server1]
ok: [server2]

TASK [Install pip3] *****
ok: [server1]
ok: [server2]

TASK [Set python3 as default python] *****
changed: [server1]
changed: [server2]

TASK [Set pip3 as default pip] *****
changed: [server1]
changed: [server2]

TASK [Install Java open-jdk v21] *****
ok: [server2]
ok: [server1]

PLAY RECAP *****
server1      : ok=6   changed=2   unreachable=0   failed=0   skipped=0   rescued=0   ignored=0
server2      : ok=6   changed=2   unreachable=0   failed=0   skipped=0   rescued=0   ignored=0
```

Figure 6.2. Ansible Playbook Progress Report(2)

Ansible playbook reports the states of changes made to the managed nodes.

```
GNU nano 6.2 config.yaml *
---
- hosts: all
  become: true
  tasks:

    - name: Install latest python3
      apt:
        name: python3

    - name: Install pip3
      apt:
        name: python3-pip
        update_cache: yes

    - name: Install Java open-jdk v21
      apt:
        name: openjdk-21-jre-headless

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

Figure 7.1. Installing Java OpenJDK

Prompting to install Java OpenJDK version 21.

```

jnado@workstation:~/De0mampo_PrelimExam$ ansible-playbook --ask-become-pass ~/De0mampo_PrelimExam/config.yaml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [server2]
ok: [server1]

TASK [Install latest python3] *****
ok: [server1]
ok: [server2]

TASK [Install pip3] *****
ok: [server2]
ok: [server1]

TASK [Install Java open-jdk v21] *****
changed: [server2]
changed: [server1]

PLAY RECAP *****
server1      : ok=4    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
server2      : ok=4    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

jnado@workstation:~/De0mampo_PrelimExam$

```

Figure 7.2. Ansible Playbook Progress Report(3)

Ansible playbook reports the states of changes made to the managed nodes.

```

jnado@server1:~$ java --version
openjdk 21.0.4 2024-07-16
OpenJDK Runtime Environment (build 21.0.4+7-Ubuntu-1ubuntu222.04)
OpenJDK 64-Bit Server VM (build 21.0.4+7-Ubuntu-1ubuntu222.04, mixed mode, sharing)
jnado@server1:~$

jnado@server2:~$ java --version
openjdk 21.0.4 2024-07-16
OpenJDK Runtime Environment (build 21.0.4+7-Ubuntu-1ubuntu222.04)
OpenJDK 64-Bit Server VM (build 21.0.4+7-Ubuntu-1ubuntu222.04, mixed mode, sharing)
jnado@server2:~$

```

Figure 7.3. Java OpenJDK Server Installation Confirmation

Confirmation with regards to the Java OpenJDK installation to the managed nodes.

```

GNU nano 6.2                                config.yaml *

- name: Install pip3
  apt:
    name: python3-pip
    update_cache: yes

- name: Set python3 as default python
  shell: "alias python=python3"

- name: Set pip3 as default pip
  shell: "alias pip=pip3"

- name: Install Java open-jdk v21
  apt:
    name: openjdk-21-jre-headless

- name: Installing MariaDB
  apt:
    name: mariadb-client-core-10.6

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^L Replace   ^U Paste     ^J Justify   ^_ Go To Line

```

Figure 8.1 Installing MariaDB

Installing MariaDB for database management

```
jnado@workstation:~/De0mampo_PrelimExam$ ansible-playbook --ask-become-pass ~/De0mampo_PrelimExam/config.yaml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [server2]
ok: [server1]

TASK [Install latest python3] *****
ok: [server2]
ok: [server1]

TASK [Install pip3] *****
ok: [server2]
ok: [server1]

TASK [Set python3 as default python] *****
changed: [server2]
changed: [server1]

TASK [Set pip3 as default pip] *****
changed: [server1]
changed: [server2]

TASK [Install Java open-jdk v21] *****
ok: [server1]
ok: [server2]

TASK [Installing MariaDB] *****
changed: [server2]
changed: [server1]

PLAY RECAP *****
server1      : ok=7    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
server2      : ok=7    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

jnado@workstation:~/De0mampo_PrelimExam$
```

Figure 8.2 Ansible Playbook Progress Report(4)

Ansible playbook reports the states of changes made to the managed nodes.

```
jnado@server1:~$ mariadb --version
mariadb Ver 15.1 Distrib 10.6.18-MariaDB, for debian-linux-gnu (x86_64) using
EditLine wrapper

jnado@server2:~$ mariadb --version
mariadb Ver 15.1 Distrib 10.6.18-MariaDB, for debian-linux-gnu (x86_64) using
EditLine wrapper
```

Figure 8.3. MariaDB Server Installation Confirmation

Confirmaiton of the managed nodes for installing MariaDB


```
---
- hosts: all
  become: true
  tasks:

    - name: Install latest python3
      apt:
        name: python3

    - name: Install pip3
      apt:
        name: python3-pip
        update_cache: yes

    - name: Set python3 as default python
      shell: "alias python=python3"

    - name: Set pip3 as default pip
      shell: "alias pip=pip3"

    - name: Install Java open-jdk v21
      apt:
        name: openjdk-21-jre-headless

    - name: Installing MariaDB
      apt:
        name: mariadb-client-core-10.6

    - name: Installing MariaDB Server
      apt:
        name: mariadb-server
```

Help Write Out Where Is Cut Execute Location Undo Set Mark
Exit Read File Replace Paste Justify Go To Line Redo Copy

Wrote 31 lines

Figure 8.4. Installing MariaDB Server

Installs MariaDB server package

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

TASK [Gathering Facts] *****
ok: [server1]
ok: [server2]

TASK [Install latest python3] *****
ok: [server2]
ok: [server1]

TASK [Install pip3] *****
ok: [server1]
ok: [server2]

TASK [Set python3 as default python] *****
changed: [server2]
changed: [server1]

TASK [Set pip3 as default pip] *****
changed: [server1]
changed: [server2]

TASK [Install Java open-jdk v21] *****
ok: [server2]
ok: [server1]

TASK [Installing MariaDB] *****
ok: [server1]
ok: [server2]

TASK [Installing MariaDB Server] *****
ok: [server1]
ok: [server2]

PLAY RECAP *****
server1 : ok=8 changed=2 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
server2 : ok=8 changed=2 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

jmad@workstation:~/De0nmp3_PrelimExe$
```

Figure 8.5. Ansible Playbook Progress Report(5)

Ansible playbook reports the states of changes made to the managed nodes.

```
jnado@server1:~$ sudo apt install mariadb-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
mariadb-server is already the newest version (1:10.6.18-0ubuntu0.22.04.1).
0 upgraded, 0 newly installed, 0 to remove and 17 not upgraded.
```

```
jnado@server2:~$ sudo apt install mariadb-server
[sudo] password for jnado:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
mariadb-server is already the newest version (1:10.6.18-0ubuntu0.22.04.1).
0 upgraded, 0 newly installed, 0 to remove and 17 not upgraded.
jnado@server2:~$
```

Figure 8.6. MariaDB Server Servers Installation Confirmation

Confirmations from the managed nodes.

```
become: true
vars:
  username: "jnado"
tasks:
  - name: Install latest python3
    apt:
      name: python3

  - name: Install pip3
    apt:
      name: python3-pip
      update_cache: yes

  - name: Set python3 as default python
    shell: "alias python=python3"

  - name: Set pip3 as default pip
    shell: "alias pip=pip3"

  - name: Install Java open-jdk v21
    apt:
      name: openjdk-21-jre-headless

  - name: Installing MariaDB
    apt:
      name: mariadb-client-core-10.6

  - name: Installing MariaDB Server
    apt:
      name: mariadb-server

  - name: Message of the day
    debug:
      msg: "Ansible Managed node by {{username}}"
```

Figure 9. Creating a Motd

Creates message while using variables

```

ok: [server1]

TASK [Install pip3] *****
ok: [server2]
ok: [server1]

TASK [Set python3 as default python] *****
changed: [server1]
changed: [server2]

TASK [Set pip3 as default pip] *****
changed: [server1]
changed: [server2]

TASK [Install Java open-jdk v21] *****
ok: [server2]
ok: [server1]

TASK [Installing MariaDB] *****
ok: [server2]
ok: [server1]

TASK [Installing MariaDB Server] *****
ok: [server2]
ok: [server1]

TASK [Message of the day] *****
ok: [server1] => {
  "msg": "Ansible Managed node by jnado"
}
ok: [server2] => {
  "msg": "Ansible Managed node by jnado"
}

PLAY RECAP *****
server1      : ok=9    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
server2      : ok=9    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

jnado@workstation:~/De0manpo_PrelinExan$ sudo nano config.yaml
jnado@workstation:~/De0manpo_PrelinExan$

```

Figure 9.1. Ansible Playbook Progress Report(6)

Displays the message