



INDIAN INSTITUTE OF  
INFORMATION  
TECHNOLOGY

## DevOps (CS457)

### ASSIGNMENT 2: Task 3

#### Ansible Git Example

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## STEP 1: Ansible Installation on RHEL8

We are performing the assignment on Red Hat Enterprise Linux server.

### Step 1.1: Add a Custom TCP rule on port:5000 and launch the AWS EC2 – RHEL instance.

1. Choose AMI   2. Choose Instance Type   3. Configure Instance   4. Add Storage   5. Add Tags   6. Configure Security Group   7. Review

#### Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group:  Create a new security group

Select an existing security group

Security group name:

Description:

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom <input style="width: 10px; height: 15px; vertical-align: middle;" type="button" value="..."/> 0.0.0.0/0	e.g. SSH for Admin Desktop
Custom TCP	TCP	5000	Anywhere <input style="width: 10px; height: 15px; vertical-align: middle;" type="button" value="..."/> 0.0.0.0/0, ::/0	e.g. SSH for Admin Desktop

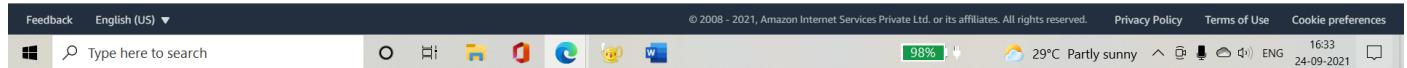
Add Rule



Warning

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

[Cancel](#) [Previous](#) [Review and Launch](#)



https://us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#Instances:

New EC2 Experience  Tell us what you think

Feedback English (US) ▾

Services ▾

Instances (1/2)

Filter instances

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
Team_1	i-088e3c11af6ed7e3c	<span>Running</span> <input type="button" value="Details"/>	t2.micro	<span>2/2 checks passed</span> <input type="button" value="View details"/>	No alarms <input type="button" value="View"/>	us-east-2a	ec2-18-218-150-
Task_3	i-02f06b648650cf0ac	<span>Running</span> <input type="button" value="Details"/>	t2.micro	- <input type="button" value="View details"/>	No alarms <input type="button" value="View"/>	us-east-2b	ec2-3-16-42-164

Instance: i-02f06b648650cf0ac

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

Instance ID <input type="button" value="i-02f06b648650cf0ac"/>	Public IPv4 address <input type="button" value="3.16.42.164   open address"/>	Private IPv4 addresses <input type="button" value="172.31.29.148"/>
IPv6 address -	Instance state <span>Running</span>	Public IPv4 DNS <input type="button" value="ec2-3-16-42-164.us-east-2.compute.amazonaws.com   open address"/>

Feedback English (US) ▾

Type here to search

98% 29°C Partly sunny ENG 16:33 24-09-2021

## Step 1.2: Connect to the EC2 instance, add a new user and install the required libraries

```
root@ip-172-31-29-148:~$ ssh -i "Team_1.pem" ec2-user@ec2-3-16-42-164.us-east-2.compute.amazonaws.com
The authenticity of host 'ec2-3-16-42-164.us-east-2.compute.amazonaws.com (3.16.42.164)' can't be established.
EDSA key fingerprint is SHA256:EMstqf08j4lxuxmm+dggrwlDuKWhp/5bMxZd8Sk69RE.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-16-42-164.us-east-2.compute.amazonaws.com,3.16.42.164' (EDSA) to the list of known hosts.
[ec2-user@ip-172-31-29-148 ~]$ sudo su -
[root@ip-172-31-29-148 ~]# yum install python3 -y
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.

Red Hat Update Infrastructure 3 Client Configuration Server 8
Red Hat Enterprise Linux 8 for x86_64 - AppStream from RHUI (RPMs)
Red Hat Enterprise Linux 8 for x86_64 - BaseOS from RHUI (RPMs)
Dependencies resolved.
=====
 Package                               Architecture     Version
=====
Installing:
 python36                           x86_64          3.6.8-2.module+el8.1.0+3334+5cb623d7
Installing dependencies:
 python3-pip                          noarch          9.0.3-19.el8
 python3-setuptools                   noarch          39.2.0-6.el8
Enabling module streams:
 python36                           3.6
Transaction Summary
=====
Install 3 Packages

Total download size: 201 k
Installed size: 466 k
[100%]
```

```
root@ip-172-31-29-148:~$ 
Downloading Packages:
(1/3): python36-3.6.8-2.module+el8.1.0+3334+5cb623d7.x86_64.rpm
(2/3): python3-pip-9.0.3-19.el8.noarch.rpm
(3/3): python3-setuptools-39.2.0-6.el8.noarch.rpm
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing :
Installing : python3-setuptools-39.2.0-6.el8.noarch
Installing : python36-3.6.8-2.module+el8.1.0+3334+5cb623d7.x86_64
Running scriptlet: python36-3.6.8-2.module+el8.1.0+3334+5cb623d7.x86_64
Installing : python3-pip-9.0.3-19.el8.noarch
Running scriptlet: python3-pip-9.0.3-19.el8.noarch
Verifying : python3-pip-9.0.3-19.el8.noarch
Verifying : python36-3.6.8-2.module+el8.1.0+3334+5cb623d7.x86_64
Verifying : python3-setuptools-39.2.0-6.el8.noarch
Installed products updated.

Installed:
 python3-pip-9.0.3-19.el8.noarch           python3-setuptools-39.2.0-6.el8.noarch           python36-3.6.8-2.module+el8.1.0+3334+5cb623d7.x86_64

Complete!
[root@ip-172-31-29-148 ~]# alternatives --set python /usr/bin/python3
[root@ip-172-31-29-148 ~]# python --version
Python 3.6.8
[root@ip-172-31-29-148 ~]# yum -y install python3-pip
Updating Subscription Management repositories.
Unable to read consumer identity
```

```
root@ip-172-31-29-148:~# Updating Subscription Management repositories.
root@ip-172-31-29-148:~# Unable to read consumer identity

This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.

Last metadata expiration check: 0:00:58 ago on Fri 24 Sep 2021 11:07:58 AM UTC.
Package python3-pip-9.0.3-19.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-29-148 ~]# useradd parvati
[root@ip-172-31-29-148 ~]# passwd parvati
Changing password for user parvati.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@ip-172-31-29-148 ~]# echo "parvati ALL=(ALL) NOPASSWD: ALL" >> /etc/sudoers
[root@ip-172-31-29-148 ~]# sed -ie 's/PasswordAuthentication no/PasswordAuthentication yes/' /etc/ssh/sshd_config
[root@ip-172-31-29-148 ~]# sudo service sshd reload
Redirecting to /bin/systemctl reload sshd.service
[root@ip-172-31-29-148 ~]#
```

### Step 1.3: Install ansible on Control mode

```
parvati@ip-172-31-29-148:~/Team1
Retype new password:
passwd: all authentication tokens updated successfully.
[root@ip-172-31-29-148 ~]# echo "parvati ALL=(ALL) NOPASSWD: ALL" >> /etc/sudoers
[root@ip-172-31-29-148 ~]# sed -ie 's/PasswordAuthentication no/PasswordAuthentication yes/' /etc/ssh/sshd_config
[root@ip-172-31-29-148 ~]# sudo service sshd reload
Redirecting to /bin/systemctl reload sshd.service
[root@ip-172-31-29-148 ~]# su - parvati
[parvati@ip-172-31-29-148 ~]$ mkdir Team1
[parvati@ip-172-31-29-148 ~]$ cd Team1
[parvati@ip-172-31-29-148 Team1]$ pip3 install ansible --user
Collecting ansible
  Downloading https://files.pythonhosted.org/packages/81/b6/2f27c1b1b61b12b718375e79620da9d7b2cb9a07331fd455ee36cfb17734/ansible-4.6.0.
    100% |██████████| 35.6MB 35kB/s
Collecting ansible-core<2.12,>=2.11.5 (from ansible)
  Downloading https://files.pythonhosted.org/packages/19/c0/d7d23d4bfa04857cab82d2773d68290ce16941b7511163e611d196303bf9/ansible-core-2.
    100% |██████████| 6.9MB 189kB/s
Requirement already satisfied: jinja2 in /usr/lib/python3.6/site-packages (from ansible-core<2.12,>=2.11.5->ansible)
Requirement already satisfied: PyYAML in /usr/lib64/python3.6/site-packages (from ansible-core<2.12,>=2.11.5->ansible)
Requirement already satisfied: cryptography in /usr/lib64/python3.6/site-packages (from ansible-core<2.12,>=2.11.5->ansible)
Collecting packaging (from ansible-core<2.12,>=2.11.5->ansible)
  Downloading https://files.pythonhosted.org/packages/3c/77/e2362b676dc5008d81be423070dd9577fa03be5da2ba1105811900fda546/packaging-21.0.
    100% |██████████| 40kB 9.9MB/s
Collecting resolvelib<0.6.0,>=0.5.3 (from ansible-core<2.12,>=2.11.5->ansible)
  Downloading https://files.pythonhosted.org/packages/6b/f5/1b4375dbe7e3dddf074d206054ab3e27de0fdb2d32e64a1d5da25f813927/resolvelib-0.5.
Requirement already satisfied: MarkupSafe>=0.23 in /usr/lib64/python3.6/site-packages (from jinja2->ansible-core<2.12,>=2.11.5->ansible)
Requirement already satisfied: six>=1.4.1 in /usr/lib/python3.6/site-packages (from cryptography->ansible-core<2.12,>=2.11.5->ansible)
Requirement already satisfied: cffi!=1.11.3,>=1.8 in /usr/lib64/python3.6/site-packages (from cryptography->ansible-core<2.12,>=2.11.5->ansible)
Collecting pyparsing<2.0.2 (from packaging->ansible-core<2.12,>=2.11.5->ansible)
  Downloading https://files.pythonhosted.org/packages/8a/bb/488841f56197b13700af5658fc279a2025a39e22449b7cf29864669b15d/pyparsing-2.4.
    100% |██████████| 71kB 10.3MB/s
Requirement already satisfied: pycparser in /usr/lib/python3.6/site-packages (from cffi!=1.11.3,>=1.8->cryptography->ansible-core<2.12,>=2.11.5->ansible)
Installing collected packages: pyparsing, packaging, resolvelib, ansible-core, ansible
  Running setup.py install for ansible-core ... done
parvati@ip-172-31-29-148:~/Team1$
```

#### Step 1.4: Generate the SSH key

```
[parvati@ip-172-31-29-148 Team1]$ ansible --version
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 3.6.8 (de
feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False i
ansible [core 2.11.5]
  config file = None
  configured module search path = ['/home/parvati/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /home/parvati/.local/lib/python3.6/site-packages/ansible
  ansible collection location = /home/parvati/.ansible/collections:/usr/share/ansible/collections
  executable location = /home/parvati/.local/bin/ansible
  python version = 3.6.8 (default, Mar 18 2021, 08:58:41) [GCC 8.4.1 20200928 (Red Hat 8.4.1-1)]
  jinja version = 2.10.1
  libyaml = True
[parvati@ip-172-31-29-148 Team1]$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/parvati/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/parvati/.ssh/id_rsa.
Your public key has been saved in /home/parvati/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:H/9jRdz7Fj0ju55/7BABAab/bMkzEeGPFq3p0Zy3g parvati@ip-172-31-29-148.us-east-2.compute.internal
The key's randomart image is:
+---[RSA 3072]----+
| . +.... |
| + = . |
| . = = . |
| o * = . . |
| S O o .+ |
| o o O =.=o |
| . + E B.o |
| . +=B |
| o*=o= |
+---[SHA256]----+
[parvati@ip-172-31-29-148 Team1]$ 94% 29°C Partly sunny ENG 24-09-2021 16:47
```

#### Step 1.5: Create the inventory file hosts in etc/ansible/. Store the public IP address in it.

```
[parvati@ip-172-31-29-148 Team1]$ ssh-copy-id parvati@3.16.42.164
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/parvati/.ssh/id_rsa.pub"
The authenticity of host '3.16.42.164 (3.16.42.164)' can't be established.
EDSA key fingerprint is SHA256:EMstqf08j4lxuxmm+dgrwlDukWhp/5bMxZd8sk69RE.
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
parvati@3.16.42.164's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'parvati@3.16.42.164'"
and check to make sure that only the key(s) you wanted were added.

[parvati@ip-172-31-29-148 Team1]$ ssh 'parvati@3.16.42.164'
Enter passphrase for key '/home/parvati/.ssh/id_rsa':
Last login: Fri Sep 24 11:12:00 2021
[parvati@ip-172-31-29-148 ~]$ sudo su -
Last login: Fri Sep 24 11:07:21 UTC 2021 on pts/0
[root@ip-172-31-29-148 ~]# cd ../..
[root@ip-172-31-29-148 /]# cd etc
[root@ip-172-31-29-148 etc]# mkdir ansible
[root@ip-172-31-29-148 etc]# cd ansible
[root@ip-172-31-29-148 ansible]# sudo vi hosts
[root@ip-172-31-29-148 ansible]# cat hosts
3.16.42.164
[root@ip-172-31-29-148 ansible]# su - parvati
Last login: Fri Sep 24 11:19:00 UTC 2021 from 3.16.42.164 on pts/1
[parvati@ip-172-31-29-148 ~]$ cd Team1
[parvati@ip-172-31-29-148 Team1]$ ansible all -m ping
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 3.6.8 (de
feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False
Enter passphrase for key '/home/parvati/.ssh/id_rsa': 92% 29°C Partly sunny ENG 24-09-2021 16:51
```

### Step 1.6: Ping to check if the connection is successful

```
① Select parvati@ip-172-31-29-148:~/Team1
[parvati@ip-172-31-29-148 Team1]$ ansible all -m ping
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 3.6.8 (d
feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False
Enter passphrase for key '/home/parvati/.ssh/id_rsa':
[DEPRECATION WARNING]: Distribution redhat 8.4 on host 3.16.42.164 should use /usr/libexec/platform-python, but is using /usr/bin/python
release will default to using the discovered platform python for this host. See https://docs.ansible.com/ansible-core/2.11/reference_ap
be removed in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
3.16.42.164 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
[parvati@ip-172-31-29-148 Team1]$
```

A screenshot of a Windows desktop environment. At the top, there's a taskbar with various icons for Microsoft Office applications like Word, Excel, and PowerPoint. To the right of the taskbar, system status indicators show battery level at 92%, weather as 29°C Partly sunny, language as ENG, and the date/time as 24-09-2021 16:52. Below the taskbar is a large black terminal window. The terminal shows a command-line session where the user runs 'ansible all -m ping' on a host named 'Team1'. The output includes several deprecation warnings about Python versions and distribution details, followed by a single line of JSON output indicating a successful ping to the host.

## STEP 2: Create and explore a ansible vault 'secrets.yml'

### Step 2.1: Generate a Personal Access Token (GitHub)

The screenshot shows the GitHub 'Developer settings' page under 'Personal access tokens'. A new token is being generated with the identifier 'gph\_2DI0oZHTMlbNnaQLmCLNSa0ckhZu25BTB'. The token is noted to expire on Sun, Oct 24 2021. It is associated with the note 'Team1' and the scope 'repo'. The token is highlighted in red.

### Step 2.2: Create an ansible vault 'secrets.yml' by entering the gituser and gitpass (token) to it.

```
parvati@LAPTOP-S2R1236D:~/Team1$ touch ~/.ssh/config
parvati@LAPTOP-S2R1236D:~/Team1$ vim ../.ssh/config
parvati@LAPTOP-S2R1236D:~/Team1$ cat ../.ssh/config
Host *
  AddKeysToAgent yes
  IdentityFile ~/.ssh/id_ed25519
parvati@LAPTOP-S2R1236D:~/Team1$ ssh-add ~/.ssh/id_ed25519
Enter passphrase for /home/parvati/.ssh/id_ed25519:
Identity added: /home/parvati/.ssh/id_ed25519 (parvatijay2901@gmail.com)
parvati@LAPTOP-S2R1236D:~/Team1$ ansible-vault create secrets.yml
New Vault password:
Confirm New Vault password:
parvati@LAPTOP-S2R1236D:~/Team1$ cat secrets.yml
$ANSIBLE_VAULT;1.1;AES256
3937032366130306436636236386339633635373532316265303031323964336566343337313730
3263353233373562383964323934386535366532626363630a356335303437303134643130333430
34336233623935353561336635613665623632643664386138366635356634306661343832646539
376637353231366331037383863636437306236636462306266383233643346562363938386134
3639393365643439633562643036386335386365633861333963395326637306565666533623635
31643961626232616335653334313365363464373638366264386161623434653731386430333631
303735303839366266323965353164356165306236333234306561613965356163623838313531
65366436356232666462656636633432393737613332656339613233353461373865656439396261
6664
parvati@LAPTOP-S2R1236D:~/Team1$ echo "This is encrypted now."|cowsay
Command 'cowsay' not found, but can be installed with:
sudo apt install cowsay
parvati@LAPTOP-S2R1236D:~/Team1$ sudo apt install cowsay
[sudo] password for parvati:
Reading package lists... Done
```

### Step 2.3: Encrypt, Decrypt and edit the ansible vault created

```
parvati@LAPTOP-S2R1236D:~/Team1$ 
The following NEW packages will be installed:
  cowsay
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 18.5 kB of archives.
After this operation, 93.2 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/universe amd64 cowsay all 3.03+dfsg2-7 [18.5 kB]
Fetched 18.5 kB in 1s (20.7 kB/s)
Selecting previously unselected package cowsay.
(Reading database ... 55253 files and directories currently installed.)
Preparing to unpack .../cowsay_3.03+dfsg2-7_all.deb ...
Unpacking cowsay (3.03+dfsg2-7) ...
Setting up cowsay (3.03+dfsg2-7) ...
Processing triggers for man-db (2.9.1-1) ...
parvati@LAPTOP-S2R1236D:~/Team1$ echo "This is encrypted now."|cowsay
< This is encrypted now. >
-----
  \  ^__^
   (oo)\_____
    (__)\ )\/\
     ||----w |
      ||     |
parvati@LAPTOP-S2R1236D:~/Team1$ echo "To decrypt it, you can use decrypt command."|cowsay
/ To decrypt it, you can use decrypt \
\ command. /
-----
  \  ^__^
   (oo)\_____
    (__)\ )\/\
     ||----w |
      ||     |
parvati@LAPTOP-S2R1236D:~ Type here to search 0 29°C Cloudy 16:44 21-09-2021
```

```
parvati@LAPTOP-S2R1236D:~/Team1$ 
parvati@LAPTOP-S2R1236D:~/Team1$ ansible-vault decrypt secrets.yml
Vault password:
Decryption successful
parvati@LAPTOP-S2R1236D:~/Team1$ cat secrets.yml
gituser: parvatijay2901
gitpass: SHA256:FT98A98UBoCVdQRmXApHHT3ZEdfx9iFS5CUEKLCRqv4
parvati@LAPTOP-S2R1236D:~/Team1$ echo "See this is decrypted."|cowsay
< See this is decrypted. >
-----
  \  ^__^
   (oo)\_____
    (__)\ )\/\
     ||----w |
      ||     |
parvati@LAPTOP-S2R1236D:~/Team1$ echo "To edit it, use edit with vault command."|cowsay
/ To edit it, use edit with vault \
\ command. /
-----
  \  ^__^
   (oo)\_____
    (__)\ )\/\
     ||----w |
      ||     |
parvati@LAPTOP-S2R1236D:~/Team1$ ansible-vault edit secrets.yml
Vault password:
ERROR! input is not vault encrypted data for /home/parvati/Team1/secrets.yml
parvati@LAPTOP-S2R1236D:~/Team1$ ansible-vault encrypt secrets.yml
New Vault password:
Confirm New Vault password:
Encryption successful
parvati@LAPTOP-S2R1236D:~ Type here to search 0 29°C Cloudy 16:44 21-09-2021
```

```
parvati@LAPTOP-S2R1236D:~/Team1$ ansible-vault edit secrets.yml
Vault password:
parvati@LAPTOP-S2R1236D:~/Team1$ echo "Whenever you decrypt, you need to encrypt it for further access."|cowsay
/ Whenever you decrypt, you need to \
\ encrypt it for further access. /
-----
\ ^ ^
 \ (oo)\_____
 (--)\\ )\/\
 ||----w |
 || |
parvati@LAPTOP-S2R1236D:~/Team1$ echo "ansible-vault edit command will work only if the file is encrypted."|cowsay
/ ansible-vault edit command will work \
\ only if the file is encrypted. /
-----
\ ^ ^
 \ (oo)\_____
 (--)\\ )\/\
 ||----w |
 || |
parvati@LAPTOP-S2R1236D:~/Team1$ echo "Now the file is encrypted and we were able to edit. Lets just verify and wrap this up!"|cowsay
/ Now the file is encrypted and we were \
| able to edit. Lets just verify and wrap |
\ this up!
-----
\ ^ ^
 \ (oo)\_____
 (--)\\ )\/\
 ||----w |
 || |

```

```
parvati@LAPTOP-S2R1236D:~/Team1$ echo "Now the file is encrypted and we were able to edit. Lets just verify and wrap this up!"|cowsay
/ Now the file is encrypted and we were \
| able to edit. Lets just verify and wrap |
\ this up!
-----
\ ^ ^
 \ (oo)\_____
 (--)\\ )\/\
 ||----w |
 || |
parvati@LAPTOP-S2R1236D:~/Team1$ cat secrets.yml
$ANSIBLE_VAULT;1;AES256
6162333837623863233306434623537346139636533306137336230613538376337353435633535
3435633633643339643764623662326465316361353363370a636361373663663864653234393839
62653236376435633536656465376164373132376162316431646234613061666333323738346462
3339643137396338630a3630666362363537333326236313164343964663363623333033626436
6262363539633364393643432326336633366663331663263653866383931656137396633613530
646631323731636261663364363465373564331363663393663361663034306338336462303431
38326363653339306261363564623731323736363665383331336163636336366666383930333430
6230323935613733336665663563303066383139383662333353666623362386165343235396164
3236
parvati@LAPTOP-S2R1236D:~/Team1$ echo "Yes! This is encrypted."|cowsay
< Yes! This is encrypted. >
-----
\ ^ ^
 \ (oo)\_____
 (--)\\ )\/\
 ||----w |
 || |

```

## STEP 3: Create the playbook 'gitexample.yml'

### Step 3.1: Create the .yml file

```
parvati@ip-172-31-29-148:~/Team1
[parvati@ip-172-31-29-148 Team1]$ sudo vi gitexample.yml
[parvati@ip-172-31-29-148 Team1]$ cat gitexample.yml
---
- name: Install and Launch the Simple NodeJS Application
  hosts: nodeserver
  vars_files:
    - secrets.yml
  vars:
    - destdir: /apps/SampleNodeApp
  tasks:
    - name : install Node and NPM
      become: yes
      register: ymrepo
      yum:
        name: nodejs
        state: latest

    - name : validate the nodejs installation
      debug: msg="Installation of node is Successfull"
      when: ymrepo is changed

    - name: Version of Node and NPM
      shell:
        "npm -v && node -v"
      register: versioninfo

    - name: Version Info
      debug:
        msg: "Version info {{ versioninfo.stdout_lines }}"
      when: versioninfo is changed

    - name: Download the NodeJS code from the GitRepo
      git:
        repo: 'https://{{gituser}}:{{gitpass}}@github.com/parvatijay2901/SampleNodeApp.git'
        dest: "{{ destdir }}"

    - name: Change the ownership of the directory
      become: yes
      file:
        path: "{{destdir}}"
        owner: "ec2-user"
      register: chgrpout.stdout

    - name: Install Dependencies with NPM install command
      shell:
        "npm install"
      args:
        chdir: "{{ destdir }}"
      register: npminstlout

    - name: Debug npm install command
      debug: msg="{{npminstlout.stdout_lines}}"

    - name: Start the App
      async: 10
      poll: 0
      shell:
        "(node index.js > nodesrv.log 2>&1 &)"
      args:
        chdir: "{{ destdir }}"
      register: appstart
```

```
parvati@ip-172-31-29-148:~/Team1
[parvati@ip-172-31-29-148 Team1]$ sudo vi gitexample.yml
[parvati@ip-172-31-29-148 Team1]$ cat gitexample.yml
---
- name: Download the NodeJS code from the GitRepo
  become: yes
  git:
    repo: 'https://{{gituser}}:{{gitpass}}@github.com/parvatijay2901/SampleNodeApp.git'
    dest: "{{ destdir }}"

- name: Change the ownership of the directory
  become: yes
  file:
    path: "{{destdir}}"
    owner: "ec2-user"
  register: chgrpout.stdout

- name: Install Dependencies with NPM install command
  shell:
    "npm install"
  args:
    chdir: "{{ destdir }}"
  register: npminstlout

- name: Debug npm install command
  debug: msg="{{npminstlout.stdout_lines}}"

- name: Start the App
  async: 10
  poll: 0
  shell:
    "(node index.js > nodesrv.log 2>&1 &)"
  args:
    chdir: "{{ destdir }}"
  register: appstart
```

```
parvati@ip-172-31-29-148:~/Team1
[parvati@ip-172-31-29-148 Team1]$ sudo vi gitexample.yml
[parvati@ip-172-31-29-148 Team1]$ cat gitexample.yml
---
- name: Download the NodeJS code from the GitRepo
  become: yes
  git:
    repo: 'https://{{gituser}}:{{gitpass}}@github.com/parvatijay2901/SampleNodeApp.git'
    dest: "{{ destdir }}"

- name: Change the ownership of the directory
  become: yes
  file:
    path: "{{destdir}}"
    owner: "ec2-user"
  register: chgrpout.stdout

- name: Install Dependencies with NPM install command
  shell:
    "npm install"
  args:
    chdir: "{{ destdir }}"
  register: npminstlout

- name: Debug npm install command
  debug: msg="{{npminstlout.stdout_lines}}"

- name: Start the App
  async: 10
  poll: 0
  shell:
    "(node index.js > nodesrv.log 2>&1 &)"
  args:
    chdir: "{{ destdir }}"
  register: appstart
```

## Step 3.2: It is always a good option to check the syntax error of the playbook created on online platforms

The screenshot shows a web-based YAML checker interface. At the top, there's a logo and the text "YAML Checker" followed by "The YAML Syntax Validator". Below this is a code editor window containing a YAML playbook. The code is as follows:

```
49
50     - name: Start the App
51         async: 10
52         poll: 0
53         shell:
54             "(node index.js > nodesrv.log 2>&1 &)"
55         args:
56             chdir: "{{destdir}}"
57         register: appstart
58
59     - name: Validating the port is open
60         tags: nodevalidate
61         wait_for:
62             host: "localhost"
63             port: 5000
64             delay: 10
65             timeout: 30
66             state: started
67             msg: "NodeJS server is not running"
```

Below the code editor, a green bar displays the message "Valid YAML!". To the left of this bar, the text "What is YAML?" is visible. Further down, under the heading "Advantages of YAML", there are two bullet points:

- Concise syntax eliminates many syntax errors common in other markup languages, such as missing closing brackets
- YAML allows easy reuse of redundant configuration simply by creating a named anchor with an "&" and referencing with "\*"

The status bar at the bottom of the browser window shows various icons and system information, including battery level (55%), weather (31°C Partly sunny), and date/time (21-09-2021).

## Step 3.3: Create an inventory file 'ansible\_hosts'. Also make sure that the private key (Team\_1.pem) is in the same location/ is accessible using address.

The screenshot shows a terminal window on a Windows operating system. The command history includes:

- register: npminstlout
- name: Debug npm install command  
debug: msg='{{npminstlout.stdout\_lines}}'
- name: Start the App  
async: 10  
poll: 0  
shell:  
 "(node index.js > nodesrv.log 2>&1 &)"  
args:  
 chdir: "{{ destdir }}"  
register: appstart
- name: Validating the port is open  
tags: nodevalidate  
wait\_for:  
 host: "localhost"  
 port: 5000  
 delay: 10  
 timeout: 30  
 state: started  
 msg: "NodeJS server is not running"

After the playbook is run, the terminal shows the creation of an inventory file:

```
[parvati@ip-172-31-29-148 Team1]$ sudo vi Team_1.pem
[parvati@ip-172-31-29-148 Team1]$ sudo vi ansible_hosts
[parvati@ip-172-31-29-148 Team1]$ cat ansible_hosts
[nodeserver]
3.16.42.164 ansible_user=ec2-user ansible_port=22

[nodeserver:vars]
ansible_ssh_common_args="-o StrictHostKeyChecking=no"
[parvati@ip-172-31-29-148 Team1]$
```

The status bar at the bottom of the terminal window shows the date/time (24-09-2021), battery level (83%), and system information.

## **STEP 4: Create and upload a sample Nodejs app to GitHub.**

[Step 4.1:](#) Install the dependencies, create ‘index.js’ and check if the app is working.

```
parvati@LAPTOP-S2R1236D:~/Team1$ mkdir Sample
parvati@LAPTOP-S2R1236D:~/Team1$ sudo apt install npm
[sudo] password for parvati:
Reading package lists... Done
Building dependency tree
Reading state information... Done
npm is already the newest version (6.14.4+ds-1ubuntu2).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
parvati@LAPTOP-S2R1236D:~/Team1$ cd Sample
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help json` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (sample)
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to /home/parvati/Team1/Sample/package.json:

{
  "name": "sample",
  "version": "1.0.0",
  "description": ""
```

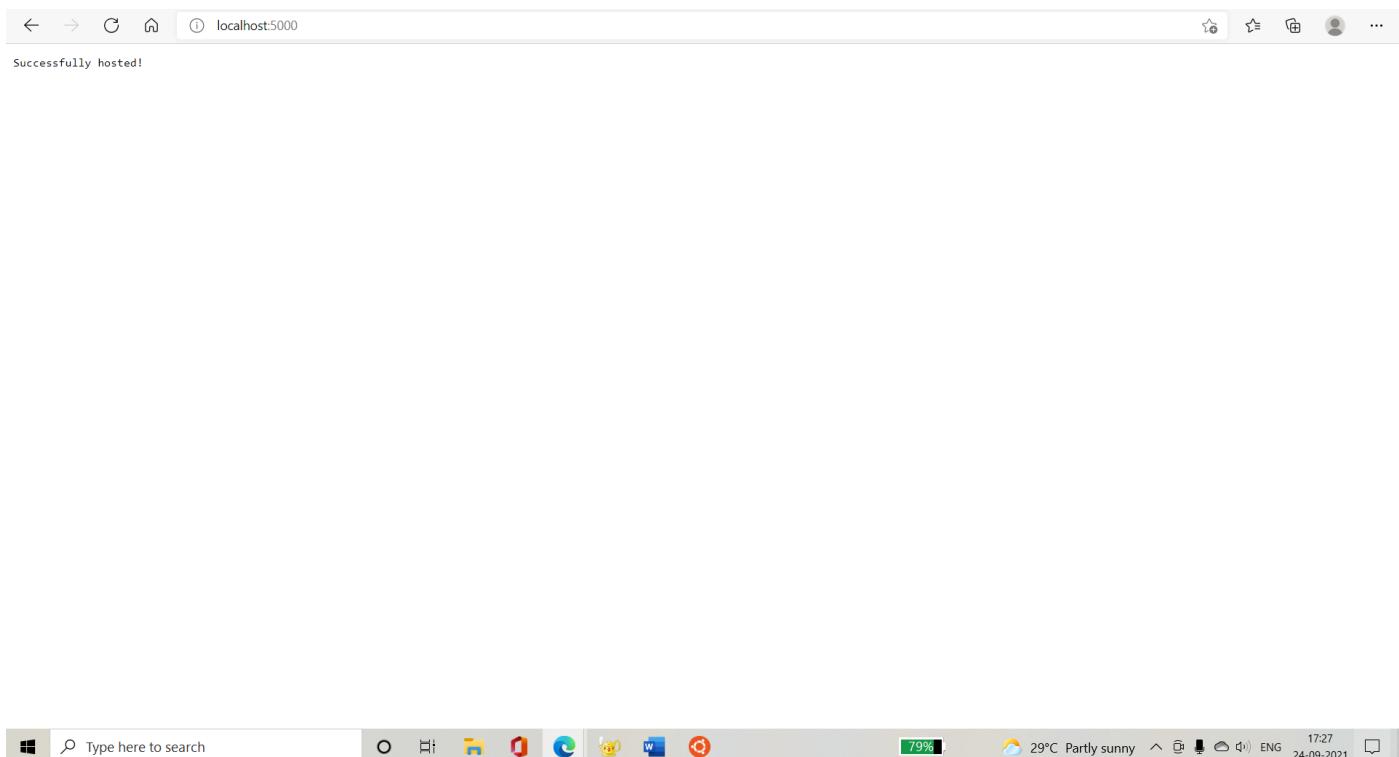
```
parvati@LAPTOP-S2R1236D: ~/Team1/Sample
"description": "",
"main": "index.js",
"scripts": {
  "test": "echo \"Error: no test specified\" && exit 1"
},
"author": "",
"license": "ISC"
}

Is this OK? (yes) yes
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ sudo vi index.js
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ cat index.js
const http = require('http');

const server = http.createServer((request, response) => {
    response.writeHead(200, {"Content-Type": "text/plain"});
    response.end("Successfully hosted!");
});

const port = process.env.PORT || 5000;
server.listen(port);

console.log("Server running at http://localhost:%d", port);
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ node index.js
Server running at http://localhost:5000
```



Here we can say that the app has successfully got hosted.

#### Step 4.2: Upload the files to a private repository 'SampleNodeApp'

```
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ git init
Reinitialized existing Git repository in /home/parvati/Team1/Sample/.git/
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ git add .
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ git status
On branch master

No commits yet

Changes to be committed:
(use "git rm --cached <file>..." to unstage)
  new file: index.js
  new file: node_modules/.bin/mime
  new file: node_modules/accepts/HISTORY.md
  new file: node_modules/accepts/LICENSE
  new file: node_modules/accepts/README.md
  new file: node_modules/accepts/index.js
  new file: node_modules/accepts/package.json
  new file: node_modules/array-flatten/LICENSE
  new file: node_modules/array-flatten/README.md
  new file: node_modules/array-flatten/array-flatten.js
  new file: node_modules/array-flatten/package.json
  new file: node_modules/body-parser/HISTORY.md
  new file: node_modules/body-parser/LICENSE
  new file: node_modules/body-parser/README.md
  new file: node_modules/body-parser/index.js
  new file: node_modules/body-parser/lib/read.js
  new file: node_modules/body-parser/lib/types/json.js
  new file: node_modules/body-parser/lib/types/raw.js
  new file: node_modules/body-parser/lib/types/text.js
  new file: node_modules/body-parser/lib/types/urlencoded.js
  new file: node_modules/body-parser/package.json
  new file: node_modules/bytes/History.md
  new file: node_modules/bytes/LICENSE
  new file: node_modules/bytes/Readme.md
  new file: node_modules/bytes/index.js
create mode 100644 node_modules/unpipe/index.js
```



```
parvati@LAPTOP-S2R1236D:~/Team1/Sample
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ git commit -m "Committing all files"
[master (root-commit) 25f5755] Committing all files
 329 files changed, 54324 insertions(+)
create mode 100644 index.js
create mode 120000 node_modules/.bin/mime
create mode 100644 node_modules/accepts/HISTORY.md
create mode 100644 node_modules/accepts/LICENSE
create mode 100644 node_modules/accepts/README.md
create mode 100644 node_modules/accepts/index.js
create mode 100644 node_modules/accepts/package.json
create mode 100644 node_modules/array-flatten/LICENSE
create mode 100644 node_modules/array-flatten/README.md
create mode 100644 node_modules/array-flatten/array-flatten.js
create mode 100644 node_modules/array-flatten/package.json
create mode 100644 node_modules/body-parser/HISTORY.md
create mode 100644 node_modules/body-parser/LICENSE
create mode 100644 node_modules/body-parser/README.md
create mode 100644 node_modules/body-parser/index.js
create mode 100644 node_modules/body-parser/lib/read.js
create mode 100644 node_modules/body-parser/lib/types/json.js
create mode 100644 node_modules/body-parser/lib/types/raw.js
create mode 100644 node_modules/body-parser/lib/types/text.js
create mode 100644 node_modules/body-parser/lib/types/urlencoded.js
create mode 100644 node_modules/body-parser/package.json
create mode 100644 node_modules/bytes/History.md
create mode 100644 node_modules/bytes/LICENSE
create mode 100644 node_modules/bytes/Readme.md
create mode 100644 node_modules/bytes/index.js
create mode 100644 node_modules/bytes/package.json
create mode 100644 node_modules/content-disposition/HISTORY.md
create mode 100644 node_modules/content-disposition/LICENSE
create mode 100644 node_modules/content-disposition/README.md
create mode 100644 node_modules/content-disposition/index.js
create mode 100644 node_modules/content-disposition/package.json
create mode 100644 node_modules/content-type/HISTORY.md
create mode 100644 node_modules/unpipe/index.js
```

```
parvati@LAPTOP-S2R1236D:~/Team1/Sample
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ git remote add ans https://github.com/parvatijay2901/SampleNodeApp.git
parvati@LAPTOP-S2R1236D:~/Team1/Sample$ git push -u ans master
Username for 'https://github.com': parvatijay2901
Password for 'https://parvatijay2901@github.com':
Enumerating objects: 393, done.
Counting objects: 100% (393/393), done.
Delta compression using up to 8 threads
Compressing objects: 100% (382/382), done.
Writing objects: 100% (393/393), 563.17 KiB | 4.27 MiB/s, done.
Total 393 (delta 72), reused 0 (delta 0)
remote: Resolving deltas: 100% (72/72), done.
To https://github.com/parvatijay2901/SampleNodeApp.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'ans'.
parvati@LAPTOP-S2R1236D:~/Team1/Sample$
```

Now, we have successfully uploaded all the files to GitHub.

## **STEP 5: Execute the ansible playbook**

Step 5.1: Check if the hostgroup is reachable.

```
parvati@LAPTOP-S2R1236D:~/Team1$ echo "First let us check if the hostgroup is reachable"|cowsay
/ First let us check if the hostgroup is \
\ reachable
-----
 \ ^ ^
 (oo)\_____
 (_)\_____)\/\
 ||----w |
 ||      |
parvati@LAPTOP-S2R1236D:~/Team1$
```

```
[parvati@ip-172-31-29-148:~/Team1]$ ansible nodeserver -i ansible_hosts -m ping --key-file ~/Team1/Team_1.pem --user parvati
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 3.6.8 (de
feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in
[DEPRECATION WARNING]: Distribution redhat 8.4 on host 3.16.42.164 should use /usr/libexec/platform-python, but is using /usr/bin/pytho
release will default to using the discovered platform python for this host. See https://docs.ansible.com/ansible-core/2.11/reference_ap
be removed in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
3.16.42.164 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
[parvati@ip-172-31-29-148:~/Team1]$
```

Yes, we can see that it is reachable.

## Step 5.2: Lists the hosts used in the playbook

```
parvati@LAPTOP-S2R1236D:~/Team1$ echo "Let us list the hosts used in the ansible playbook"|cowsay
/ Let us list the hosts used in the \
\ ansible playbook
   \
   \  ^__^
     (oo)\_____
       (__)\ )\/\
         ||----w |
         ||     |
parvati@LAPTOP-S2R1236D:~/Team1$
```

```
parvati@ip-172-31-29-148:~/Team1
[parvati@ip-172-31-29-148 Team1]$ ansible-playbook gitexample.yml -i ansible_hosts --list-hosts --ask-vault-pass
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 3.6.8 (deprecation warning)
feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in
Vault password:
playbook: gitexample.yml
play #1 (nodeserver): Install and Launch the Simple NodeJS Application          TAGS: []
  pattern: ['nodeserver']
  hosts (1):
    3.16.42.164
[parvati@ip-172-31-29-148 Team1]$
```

We can have multiple hosts and test if the app is deployed automatically on all, but for simplicity I've used just one host.

### Step 5.3: Execute the playbook using the ‘ansible playbook’ command.

```
parvati@LAPTOP-S2R1236D:~/Team1$ echo "You can see the I had to use the Vault password as my playbook has secret vars"|cowsay
\ You can see the I had to use the Vault \
\ password as my playbook has secret vars /
-----^
 \ \ (oo)\_____
   (--)\\_____)\\\
    ||----w |
    ||      ||
parvati@LAPTOP-S2R1236D:~/Team1$ echo "Let us start the Playbook, Launch the playbook" |cowsay
\ Let us start the Playbook, Launch the \
\ playbook
-----^
 \ \ (oo)\_____
   (--)\\_____)\\\
    ||----w |
    ||      ||
parvati@LAPTOP-S2R1236D:~/Team1$
```

```
parvati@ip-172-31-29-148:~/Team1$ ansible-playbook gitexample.yml -i ansible_hosts --user ubuntu --key-file ~/Team1/Team1.pem --ask-vault-pass
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 3.6.8 (default, Mar 18 2021, 08:58:41) [GCC 8.4.1 20200928 (Red Hat 8.4.1-1)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
Vault password:
PLAY [Install and Launch the Simple NodeJS Application] ****
TASK [Gathering Facts] ****
[DEPRECATION WARNING]: Distribution redhat 8.4 on host 3.16.42.164 should use /usr/libexec/platform-python, but is using /usr/bin/python for backward compatibility with prior Ansible releases. A future Ansible release will default to using the discovered platform python for this host. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information. This feature will be removed in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
ok: [3.16.42.164]
TASK [Install Node and NPM] ****
ok: [3.16.42.164]
TASK [validate the nodejs installation] ****
skipping: [3.16.42.164]
TASK [Version of Node and NPM] ****
changed: [3.16.42.164]
TASK [Version Info] ****
ok: [3.16.42.164] => {
    "msg": "Version info ['6.14.11', 'v10.24.0']"
}
TASK [Download the NodeJS code from the GitRepo] ****
ok: [3.16.42.164]
TASK [Change the ownership of the directory] ****
ok: [3.16.42.164]
TASK [Install Dependencies with NPM install command] ****
changed: [3.16.42.164]
TASK [Debug npm install command] ****
ok: [3.16.42.164] => {
    "msg": [
        "audited 50 packages in 0.747s",
        "found 0 vulnerabilities"
    ]
}
TASK [Start the App] ****
changed: [3.16.42.164]
TASK [Validating the port is open] ****
ok: [3.16.42.164]
```



```
parvati@ip-172-31-29-148:~/Team1
3.16.42.164 : ok=10  changed=3  unreachable=0  failed=0  skipped=1  rescued=0  ignored=0
[parvati@ip-172-31-29-148 Team1]$ curl -v http://3.16.42.164:5000
* Rebuilt URL to: http://3.16.42.164:5000/
*   Trying 3.16.42.164...
* TCP_NODELAY set
* Connected to 3.16.42.164 (3.16.42.164) port 5000 (#0)
> GET / HTTP/1.1
> Host: 3.16.42.164:5000
> User-Agent: curl/7.61.1
> Accept: /*
>
< HTTP/1.1 200 OK
< Content-Type: text/plain
< Date: Fri, 24 Sep 2021 12:31:30 GMT
< Connection: keep-alive
< Transfer-Encoding: chunked
<
* Connection #0 to host 3.16.42.164 left intact
Successfully hosted![parvati@ip-172-31-29-148 Team1]$
```

```
parvati@LAPTOP-S2R1236D:~/Team1$ echo "The Application is running now and you can see the response"|cowsay  
/ The Application is running now and you  
\ can see the response /  
-----  
 \ ^__^  
  \ oo)\_____  
   (__)\       )\/\  
    ||----w |  
    ||     ||  
parvati@LAPTOP-S2R1236D:~/Team1$ echo "We have successfully hosted the NodeJS app."|cowsay  
/ We have successfully hosted the NodeJS  
\ app. /  
-----  
 \ ^__^  
  \ oo)\_____  
   (__)\       )\/\  
    ||----w |  
    ||     ||  
parvati@LAPTOP-S2R1236D:~/Team1$
```

## **REFERENCES:**

- <https://www.middlewareinventory.com/blog/ansible-git-example/>
- [https://github.com/ValaxyTech/DevOpsDemos/blob/master/Ansible\\_Installation\\_on\\_RHEL8.MD](https://github.com/ValaxyTech/DevOpsDemos/blob/master/Ansible_Installation_on_RHEL8.MD)