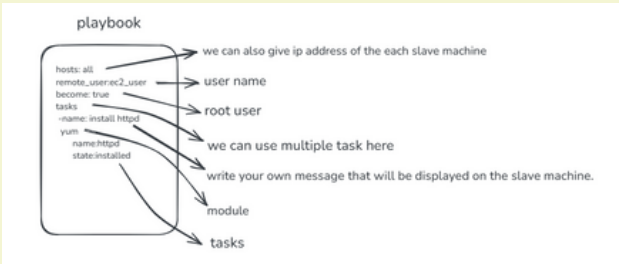
Ansible playbook

- An Ansible playbook is a YAML script used to automate system configurations, deployments, and management tasks.
- it is also used to execute multiple tasks.



playbook:

```
 GNU nano 5.8                          app.yml
- hosts: all
  remote_user: ec2-user
  become: true
  tasks:
    - name: Install httpd
      yum:
        name: httpd
        state: present

    - name: Start httpd service
      service:
        name: httpd
        state: started
        enabled: yes

    - name: Copy index.html file
      copy:
        src: index.html
        dest: /var/www/html/index.html
```

Verify and correct the syntax of the Ansible playbook

ansible-playbook --syntax-check app.yml- The ansible-playbook --syntax-check app.yml command validates YAML syntax without executing the playbook.

```
[ec2-user@ip-172-31-33-218 ~]$ ansible-playbook --syntax-check app.yml
```

output:

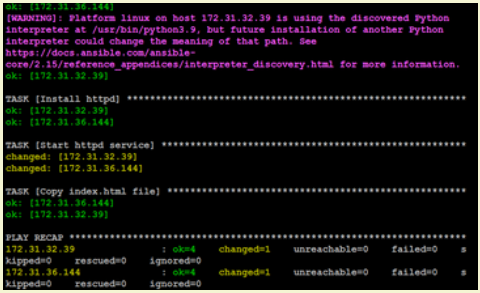
```
[ec2-user@ip-172-31-33-218 ~]$ ansible-playbook --syntax-check app.yml
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot cr
e it, aborting

[WARNING]: Unable to parse /home/ec2-user/.ansible/hosts as an inventory sour
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note th
the implicit localhost does not match 'all'
```

To execute the Ansible playbook:

ansible-playbook -i host app.yml- The command runs the app.yml playbook using the specified host inventory for target machines.

```
[ec2-user@ip-172-31-33-218 ~]$ ansible-playbook -i host app.yml
```

output:



To uninstall software using an Ansible playbook:

ansible all -i host -m yum -a “name=httpd state=absent autoremove=true” -b - It removes httpd package from all hosts using yum with autoremove, running with become privileges.

```
ansible all -i host -m yum -a "name=httpd state=absent autoremove=true" -b
```

output:


```
    "discovered_interpreter_python": "/usr/bin/python3.9"
},
"changed": true,
"msg": "",
"rc": 0,
"results": [
    "Removed: httpd-2.4.62-1.amzn2023.x86_64",
    "Removed: httpd-core-2.4.62-1.amzn2023.x86_64",
    "Removed: generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch",
    "Removed: httpd-filesystem-2.4.62-1.amzn2023.noarch",
    "Removed: httpd-tools-2.4.62-1.amzn2023.x86_64",
    "Removed: mailcap-2.1.49-3.amzn2023.0.3.noarch",
    "Removed: mod_http2-2.0.27-1.amzn2023.0.3.x86_64",
    "Removed: mod_lua-2.4.62-1.amzn2023.x86_64",
    "Removed: apr-1.7.5-1.amzn2023.0.2.x86_64",
    "Removed: apr-util-1.6.3-1.amzn2023.0.1.x86_64",
    "Removed: apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64",
    "Removed: libbrotli-1.0.9-4.amzn2023.0.2.x86_64"
]
```

project 1

To install git software in playbook:

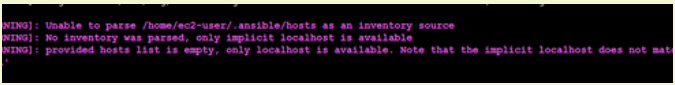
steps:

1.Create an Ansible playbook named hello.yml

2.To check the syntax of ansible playbook

```
]$ ansible-playbook --syntax-check hello.yml
```

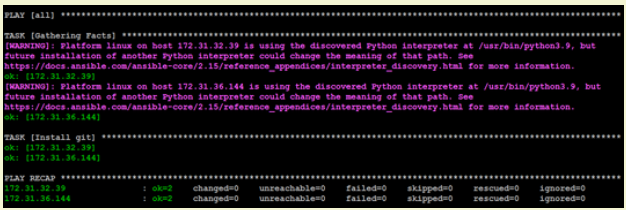
output:



3.To execute the playbook:

```
]$ ansible-playbook -i host hello.yml
```

output:

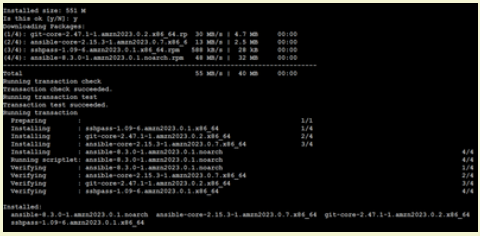


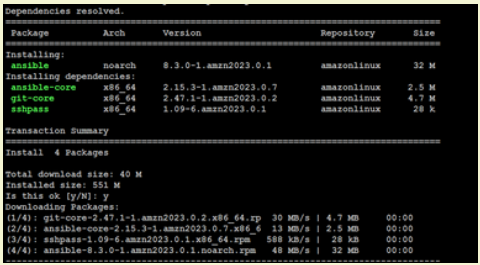
How to install ansible without pip:

1.sudo amazon-linux-extras install ansible2 - This command installs Ansible 2 on Amazon Linux using the amazon-linux-extras repository with sudo.

```
[ec2-user@ip-172-31-42-148 ~]$ sudo amazon-linux-extras install ansible2
```

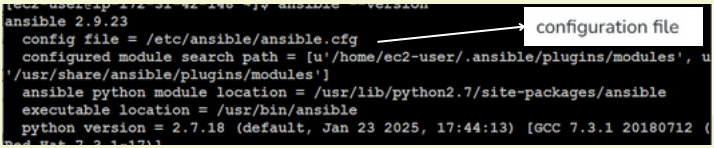
output:





2.ansible --version - We can check the Ansible version and the file that already contains the configuration.

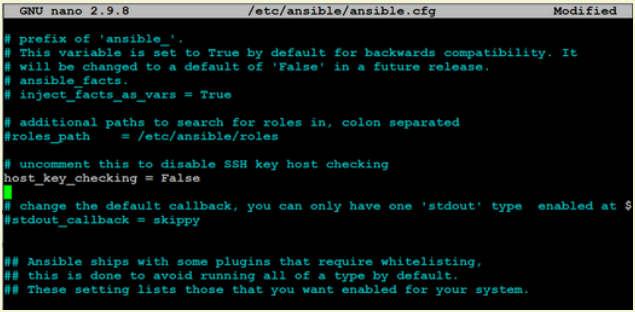
configuration file:



3.sudo nano /etc/ansible/ansible.cfg - This command opens Ansible's configuration file in the Nano editor with superuser privileges for editing.

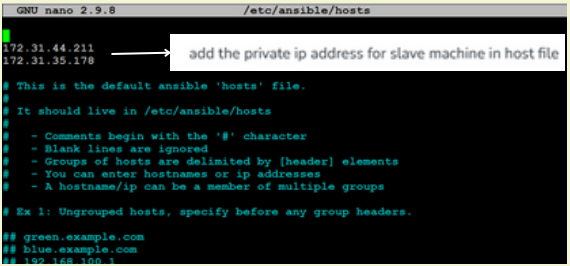
```
user@ip-172-31-40-86 ~]$ sudo nano /etc/ansible/ansible.cfg
```

"Change the setting in the configuration file to host_key_checking = False so that we don't have to specify the inventory file each time."



4.sudo nano /etc/ansible/hosts - This command opens the Ansible inventory file (/etc/ansible/hosts) in the Nano editor with superuser privileges,

```
72-31-33-151 ~]$ sudo nano /etc/ansible/hosts
```



5.ansible all -i host -m ping - used to check connectivity to all hosts listed in the inventory file.

```
[ec2-user@ip-172-31-33-151 ~]$ ansible all -m ping
```

output:

```
[WARNING]: Platform linux on host 172.31.35.178 is using the discovered Python
interpreter at /usr/bin/python, but future installation of another Python
interpreter could change this. See https://docs.ansible.com/ansible/2.9/referen
ce_appendices/interpreter_discovery.html for more information.
172.31.35.178 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.44.211 is using the discovered Python
interpreter at /usr/bin/python, but future installation of another Python
interpreter could change this. See https://docs.ansible.com/ansible/2.9/referen
ce_appendices/interpreter_discovery.html for more information.
172.31.44.211 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
```

6.ansible all -i host -m shell -a “mkdir sample” - This Ansible command runs the mkdir sample shell command on all hosts in the host inventory, creating a directory named "sample".

```
]$ ansible all -m shell -a "mkdir sample"
```

output:

```
ec2-user@ip-172-31-33-151 ~]$ ansible all -m shell -a "mkdir sample"
WARNING]: Consider using the file module with state=directory rather than
unning 'mkdir'.  If you need to use command because file is insufficient you
an add 'warn: false' to this command task or set 'command_warnings=False' in
nsible.cfg to get rid of this message.
WARNING]: Platform linux on host 172.31.44.211 is using the discovered Python
nterpreter at /usr/bin/python, but future installation of another Python
nterpreter could change this. See https://docs.ansible.com/ansible/2.9/referen
e_appendices/interpreter_discovery.html for more information.
72.31.44.211 | CHANGED | rc=0 >>

WARNING]: Platform linux on host 172.31.35.178 is using the discovered Python
nterpreter at /usr/bin/python, but future installation of another Python
nterpreter could change this. See https://docs.ansible.com/ansible/2.9/referen
e_appendices/interpreter_discovery.html for more information.
72.31.35.178 | CHANGED | rc=0 >>
```

7.ansible all -m package -a name=httpd state=installed “-b -install software in slave machine using package module

```
]$ ansible all -m package -a "name=httpd state=installed" -b
```

output:

```
172.31.44.211 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "changes": {
        "installed": [
            "httpd"
        ]
    },
    "msg": "",
    "rc": 0,
    "results": [
```

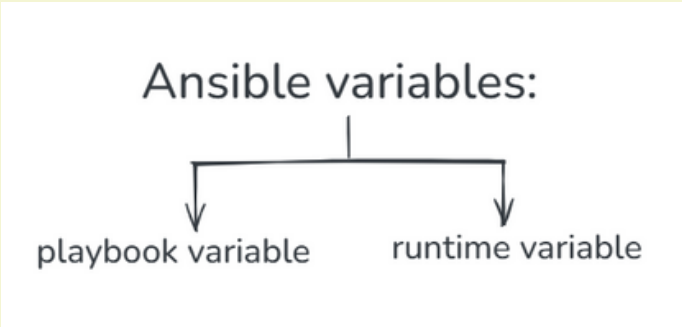
```
172.31.35.178 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "changes": {
        "installed": [
            "httpd"
        ]
    },
    "msg": "",
    "rc": 0,
    "results": [
```

Ansible variables

- Ansible variables control automation, including playbook, inventory, role, extra-vars, facts, environment, and registered values.

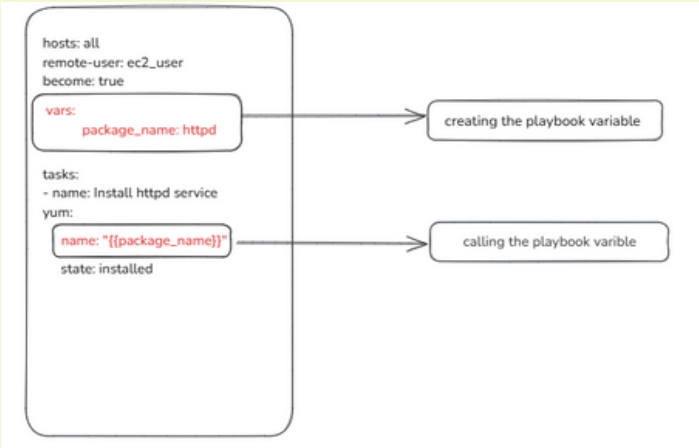
- In Ansible, variables are used to store values that can be referenced throughout playbooks, tasks, and roles.

- They allow for dynamic configurations and make playbooks reusable and flexible.



Playbook variables:

- Playbook variables in Ansible are variables defined directly within a playbook to store dynamic values.
- They help customize tasks and make playbooks reusable.
- In Ansible, variables allow you to store and reuse values dynamically, making playbooks more flexible and scalable.
- Variables can store information such as file paths, usernames, IP addresses, and configuration settings.



1.create a playbook:

```
  GNU nano 2.9.8                                app.yml

- hosts: all
  remote_user: ec2-user
  become: true
  vars:
        package_name: httpd
  tasks:
    - name: Install httpd
      yum:
        name: "{{package_name}}"
        state: installed
```

2.To check the syntax of ansible playbook

```
ser@ip-172-31-33-151 ~]$ ansible-playbook --syntax-check app.yml
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

[WARNING]: Unable to parse /home/ec2-user/.ansible/hosts as an inventory source
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that
the implicit localhost does not match 'all'

playbook: app.yml
```

3.To execute the playbook:

```
)-172-31-33-151 ~]$ ansible-playbook -i host app.yml
```

output:

```
TASK [Install httpd] ***********************************************************
ok: [172.31.35.178]
ok: [172.31.44.211]

PLAY RECAP *********************************************************************
172.31.35.178              : ok=2    changed=0    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
172.31.44.211              : ok=2    changed=0    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
```

project 2

To deploy the index.html file on the slave machine

1.create a playbook:

```
- hosts: all
  remote_user: ec2-user
  become: true
  vars:
      package_name: httpd
  tasks:
    - name: Install httpd
      yum:
        name: "{{package_name}}"
        state: installed

    - name: Start httpd service
      service:
        name: "{{package_name}}"
        state: started
        enabled: yes

    - name: Copy index.html file
      copy:
        src: index.html
        dest: /var/www/html/index.html
```

2.To check the syntax of ansible playbook

```
[ec2-user@ip-172-31-33-151 ~]$ ansible-playbook --syntax-check app1.yml
```

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

[WARNING]: Unable to parse /home/ec2-user/.ansible/hosts as an inventory source
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that
the implicit localhost does not match 'all'

playbook: app1.yml
```

3.Create the index.html:

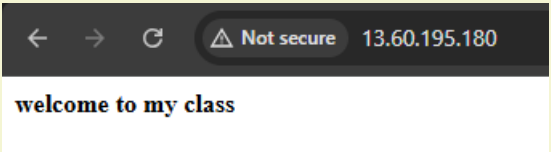
```
  GNU nano 2.9.8                                  index.html

<h4> welcome to my class </h4>
```

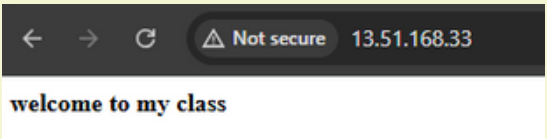
4.To execute the playbook:

```
1-33-151 ~]$ ansible-playbook -i host app1.yml
```

output:

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

TASK [Install httpd] ***********************************************************
ok: [172.31.44.211]
ok: [172.31.35.178]

TASK [Start httpd service] *****************************************************
ok: [172.31.44.211]
ok: [172.31.35.178]

TASK [Copy index.html file] ****************************************************
changed: [172.31.44.211]
changed: [172.31.35.178]

PLAY RECAP *********************************************************************
172.31.35.178              : ok=3    changed=1    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
172.31.44.211              : ok=3    changed=1    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
```





how to use more than one variable in playbook variables

1.Create the playbook :

```
  GNU nano 2.9.8                                app3.yml

- hosts: all
  remote_user: ec2-user
  become: true
  vars:
       package_name: httpd
       state_name: installed
  tasks:
    - name: Install httpd
      yum:
        name: "{{package_name}}"
        state: "{{state_name}}"
```

first variable

second variable

calling the first variable

calling the second variable

2.To execute the playbook:

```
$ ansible-playbook -i host app3.yml
```

output:

```
TASK [Gathering Facts] *********************************************************
[WARNING]: Platform linux on host 172.31.35.178 is using the discovered Python
interpreter at /usr/bin/python, but future installation of another Python
interpreter could change this. See https://docs.ansible.com/ansible/2.9/referen
ce_appendices/interpreter_discovery.html for more information.
ok: [172.31.35.178]
[WARNING]: Platform linux on host 172.31.44.211 is using the discovered Python
interpreter at /usr/bin/python, but future installation of another Python
interpreter could change this. See https://docs.ansible.com/ansible/2.9/referen
ce_appendices/interpreter_discovery.html for more information.
ok: [172.31.44.211]

TASK [Install httpd] ***********************************************************
ok: [172.31.35.178]
ok: [172.31.44.211]

PLAY RECAP *********************************************************************
172.31.35.178              : ok=2    changed=0    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
172.31.44.211              : ok=2    changed=0    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
```

Runtime Variable

- When a playbook is running, you can declare variables
- Runtime variables in Ansible are variables that are defined or provided when executing the playbook, rather than being pre-defined in the playbook or inventory files.

1.Create the playbook :

```
GNU nano 2.9.8                                    app2.yml

- hosts: all
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd
      yum:
        name: "{{package_name}}"
        state: installed
```

2.To execute the playbook:

Executing the Git software at runtime.

```
sible-playbook app2.yml --extra-vars package_name=git
```

3.To check whether Ansible is installed on the slave machine or not.

```
[ec2-user@ip-172-31-33-151 ~]$ ansible all shell -m git --version
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot create it, aborting

ansible 2.9.23
  config file = /home/ec2-user/.ansible.cfg
  configured module search path = [u'/home/ec2-user/.ansible/plugins/modules', u'/usr/share/ansible
gins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible
  python version = 2.7.18 (default, Jan 23 2025, 17:44:13) [GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]
```

how to use more than one variable in playbook

1.Create the playbook :

```
  GNU nano 2.9.8                          app4.yml

- hosts: all
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd
      yum:
        name: "{{package_name}}"
        state: "{{state_name}}"
```

first variable

second variable

2.To check the syntax of ansible playbook

```
$ ansible-playbook --syntax-check app3.yml
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

[WARNING]: Unable to parse /home/ec2-user/.ansible/hosts as an inventory source
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that
the implicit localhost does not match 'all'
```

3.To execute the playbook:

```
[ec2-user@ip-172-31-33-151 ~]$ ansible-playbook app.yml --extra-vars package_name=java --extra-vars sta
te_name=installed
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot create it, aborting

[WARNING]: Unable to parse /home/ec2-user/.ansible/hosts as an inventory source
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost
does not match 'all'

PLAY [all] *********************************************************************************************
skipping: no hosts matched

PLAY RECAP *********************************************************************************************
```