

# Part 1

## 1. Install ansible

```
spot@spot-pc:~$ ansible --version
ansible 2.10.8
  config file = None
  configured module search path = ['/home/spot/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.10.6 (main, Mar 10 2023, 10:55:28) [GCC 11.3.0]
spot@spot-pc:~$
```

## 2. Create a new user on control machine and new user on host 1

## 3. Make sure you can ssh into host 1 (using password)

```
dockerfile > ...
1 FROM ubuntu
2 RUN apt-get update && apt-get install -y ssh && apt install sudo -y
3 RUN adduser ansible
4 RUN echo 'ansible:123' | chpasswd
5 RUN usermod -s /bin/bash ansible
6 ENTRYPOINT service ssh restart && bash

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL POLYGLOT NOTEBOOK Python

spot@spot-pc:~/Downloads$ sudo docker build -t my-ubuntu-image .
[sudo] password for spot:
[+] Building 57.9s (9/9) FINISHED
=> [internal] load build definition from dockerfile
=> => transferring dockerfile: 240B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/ubuntu:latest
=> [1/5] FROM docker.io/library/ubuntu
=> [2/5] RUN apt-get update && apt-get install -y ssh && apt install sudo -y
=> [3/5] RUN adduser ansible
=> [4/5] RUN echo 'ansible:123' | chpasswd

spot@spot-pc:~/Downloads$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
my-ubuntu-image latest 56b40a7f40db 2 minutes ago 235MB
ubuntu latest 08d22c0ceb15 7 weeks ago 77.8MB
```

```
spot@spot-pc:~/Downloads$ sudo docker run -itd --name my-ubuntu my-ubuntu-image
b663ce34e035dfdd4794b0f1455e6642bdd48203488177c3ec958551e09ad4ab
```

```
spot@spot-pc:~/Downloads$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
b663ce34e035 my-ubuntu-image "/bin/sh -c 'service..." 2 minutes ago Up 2 minutes my-ubuntu

spot@spot-pc:~/Downloads$ sudo docker inspect my-ubuntu
[
  {
    "Id": "b663ce34e035dfdd4794b0f1455e6642bdd48203488177c3ec958551e09ad4ab"
```

```

"Networks": {
  "bridge": {
    "IPAMConfig": null,
    "Links": null,
    "Aliases": null,
    "NetworkID": "1fbf45735e09497108ef6b2e21e4e243de409a618e98f84879015edd9fe27e5f",
    "EndpointID": "3fc5907fb60ac7c9ac5e1aed18cb8e4401e3151d348f3d4437cb550296b02a65",
    "Gateway": "172.17.0.1",
    "IPAddress": "172.17.0.3",
    "IPPrefixLen": 16,
    "IPv6Gateway": "",
    "GlobalIPv6Address": "",
    "GlobalIPv6PrefixLen": 0,
    "MacAddress": "02:42:ac:11:00:03",
    "DriverOpts": null
  }
}
}
]

```

```

spot@spot-pc:~/Downloads$ ssh ansible@172.17.0.3
The authenticity of host '172.17.0.3 (172.17.0.3)' can't be established.
ED25519 key fingerprint is SHA256:SOPHwIEc5R3FmSYwlvSjzirHfuspuYxt1ELUuk6oIW8.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '172.17.0.3' (ED25519) to the list of known hosts.
ansible@172.17.0.3's password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-41-generic x86_64)

 * 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.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ansible@b663ce34e035:~$

```

#### 4. Generate SSH key pair on control machine

```

spot@spot-pc:~/.ssh$ ssh-keygen -t rsa -f /home/spot/.ssh/key
Generating public/private rsa key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/spot/.ssh/key
Your public key has been saved in /home/spot/.ssh/key.pub
The key fingerprint is:
SHA256:DovMSAF0V3sHPxLV6L5TWxrZrINcWZ2b817XxIGQM84 spot@spot-pc
The key's randomart image is:
+---[RSA 3072]---+
|.. ... ..0+.. |
|O.. . 0 0=.. |
|.. .. =+ 0. .O|
|.. .. .E +O|
|.. .. S . * =|
|. + . + . * 0.|
|. + . . . = * *|
|.. .. = = +|
|.. .. . ...|
+----[SHA256]-----+
spot@spot-pc:~/.ssh$ cd /home/spot/.ssh
spot@spot-pc:~/.ssh$ ls
key key.pub known_hosts known_hosts.old
spot@spot-pc:~/.ssh$

```

#### 5. Copy the public key to host 1

```

spot@spot-pc:~/.ssh$ ssh-copy-id -i /home/spot/.ssh/key.pub ansible@172.17.0.3
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/spot/.ssh/key.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: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
ansible@172.17.0.3's password:

Number of key(s) added: 1

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

spot@spot-pc:~/.ssh$

```

#### 6. Make sure you can ssh into host 1 (using prv/pub)

```
o spot@spot-pc: ~/.ssh$ ssh ansible@172.17.0.3
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-41-generic x86_64)

 * 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.
Last login: Mon May 1 08:48:09 2023 from 172.17.0.1
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ansible@b663ce34e035: ~$
```

## Part 2

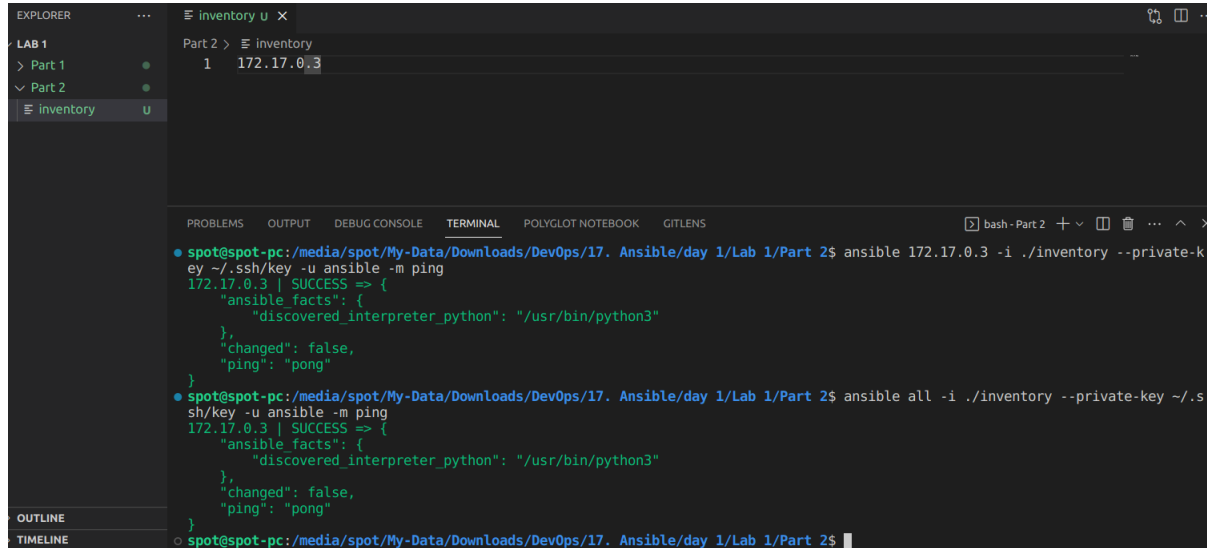
- Create the inventory file

Put the IP of host 1 in the inventory file

Use the inventory file path in your ad-hoc command instead of using the IP hard-coded

Example:

ansible all -i inventory --private-key ~/.ssh/devops -u ubuntu -m ping



The screenshot shows a VS Code editor with a file explorer on the left showing a project structure with 'LAB 1' and 'Part 2'. The main editor shows a file named 'inventory' with the content: '1 172.17.0.3'. Below the editor is a terminal window showing the execution of an Ansible command. The command is: 'ansible 172.17.0.3 -i ./inventory --private-key ~/.ssh/key -u ansible -m ping'. The output shows a successful ping to 172.17.0.3. The terminal also shows the command: 'ansible all -i ./inventory --private-key ~/.ssh/key -u ansible -m ping' and its output, which is also successful.

```
EXPLORER
...
LAB 1
> Part 1
v Part 2
  inventory
  u

Part 2 > inventory
1 172.17.0.3

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL POLYGLOT NOTEBOOK GITLENS
bash - Part 2
spot@spot-pc: /media/spot/My-Data/Downloads/DevOps/17. Ansible/day 1/Lab 1/Part 2$ ansible 172.17.0.3 -i ./inventory --private-key ~/.ssh/key -u ansible -m ping
172.17.0.3 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
spot@spot-pc: /media/spot/My-Data/Downloads/DevOps/17. Ansible/day 1/Lab 1/Part 2$ ansible all -i ./inventory --private-key ~/.ssh/key -u ansible -m ping
172.17.0.3 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
spot@spot-pc: /media/spot/My-Data/Downloads/DevOps/17. Ansible/day 1/Lab 1/Part 2$
```

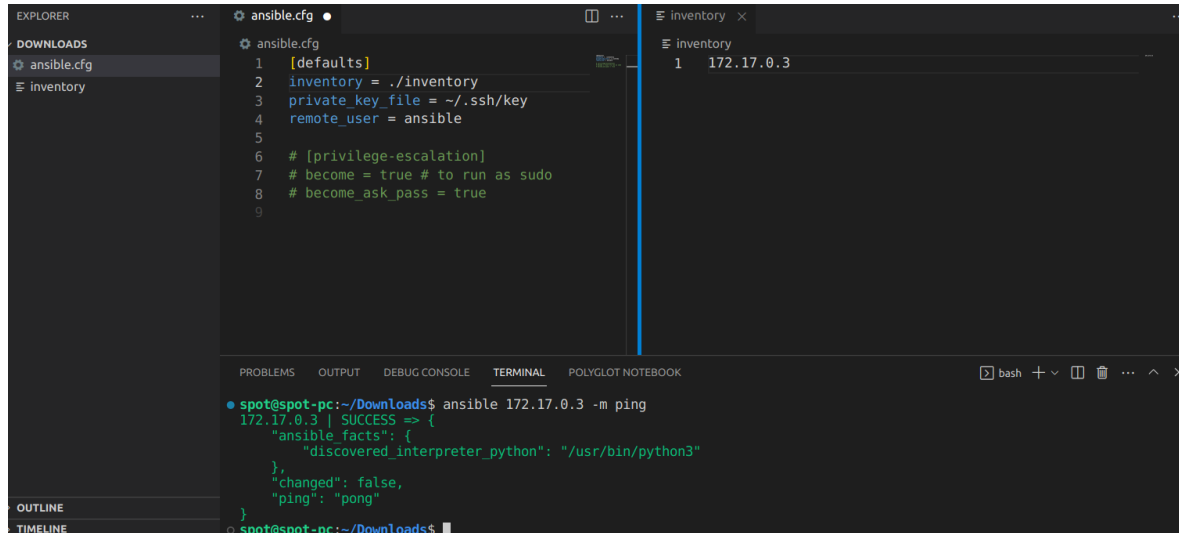
## Part 3

- Create the configuration file

Insert some values in the configuration file

Run the minimized ad-hoc command

Example: ansible all -m ping



The screenshot shows a VS Code editor with a file explorer on the left showing a project structure with 'DOWNLOADS' and 'inventory'. The main editor shows a file named 'ansible.cfg' with the content: '[defaults]', 'inventory = ./inventory', 'private\_key\_file = ~/.ssh/key', 'remote\_user = ansible', '# [privilege-escalation]', '# become = true # to run as sudo', '# become\_ask\_pass = true'. Below the editor is a terminal window showing the execution of an Ansible command. The command is: 'ansible 172.17.0.3 -m ping'. The output shows a successful ping to 172.17.0.3. The terminal also shows the command: 'ansible all -m ping' and its output, which is also successful.

```
EXPLORER
...
DOWNLOADS
  ansible.cfg
  inventory

ansible.cfg
1 [defaults]
2 inventory = ./inventory
3 private_key_file = ~/.ssh/key
4 remote_user = ansible
5
6 # [privilege-escalation]
7 # become = true # to run as sudo
8 # become_ask_pass = true
9

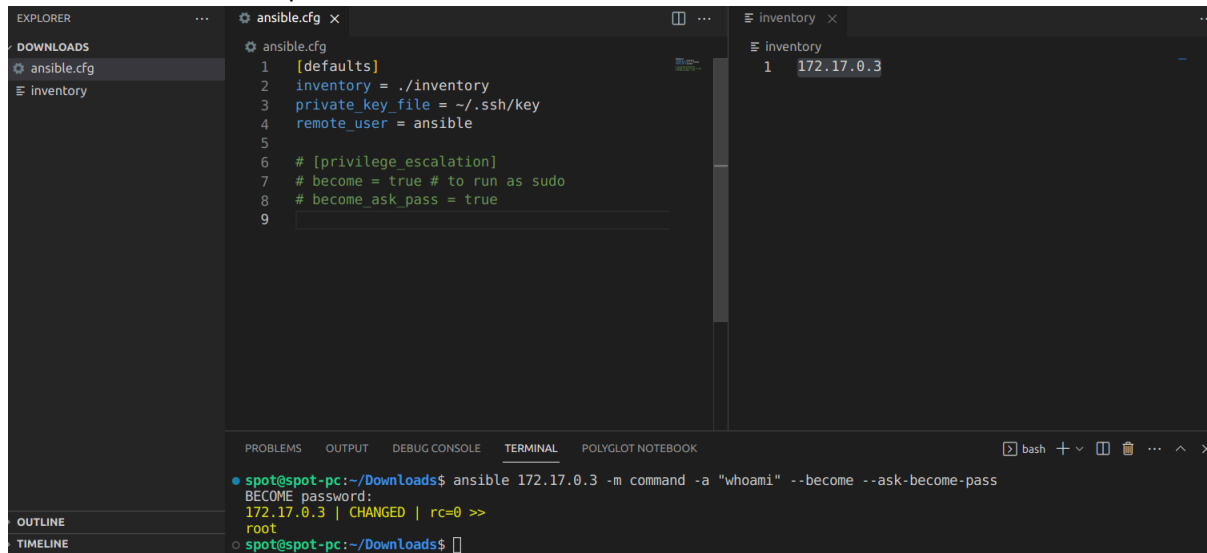
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL POLYGLOT NOTEBOOK GITLENS
bash
spot@spot-pc: ~/Downloads$ ansible 172.17.0.3 -m ping
172.17.0.3 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
spot@spot-pc: ~/Downloads$
```

## Part 4

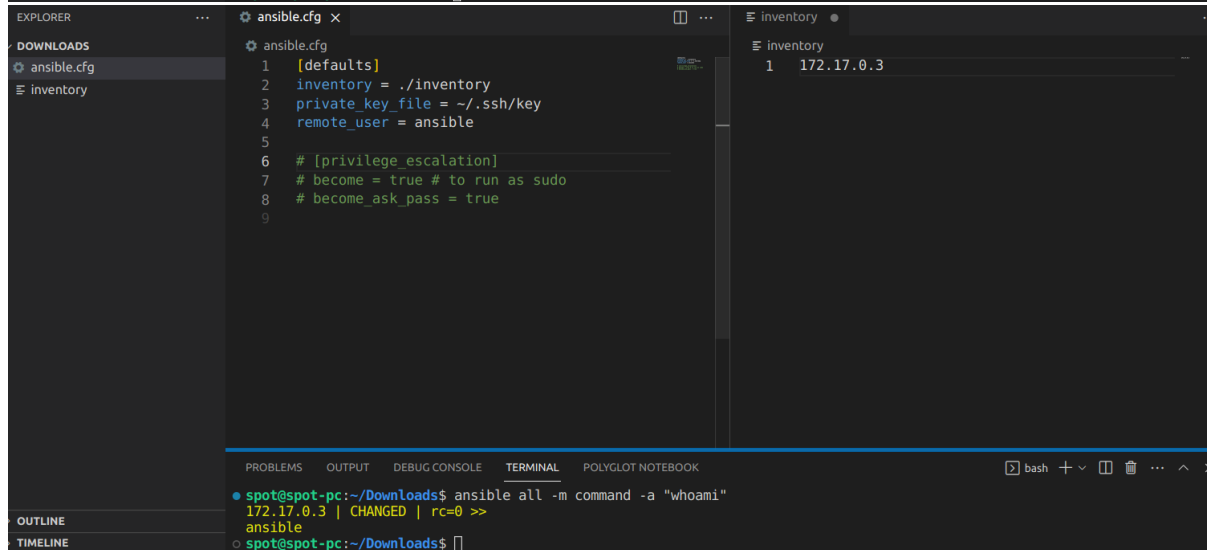
- Insert the correct values in the configuration file

Example: `ansible all -m command -a "whoami"`

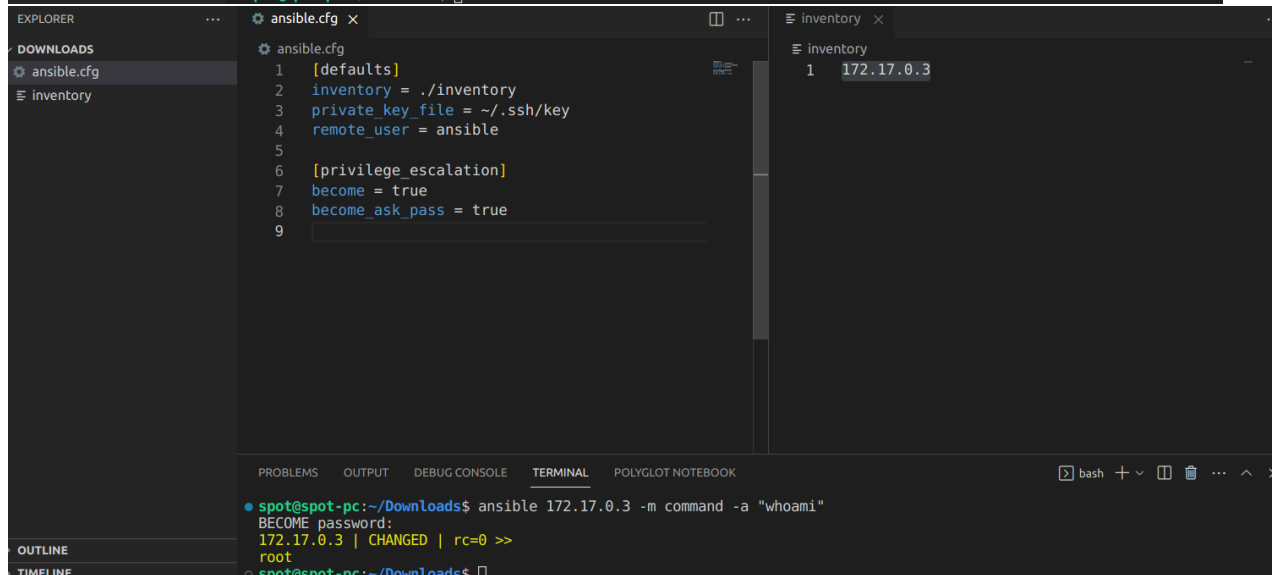
What is the output of the command ?



```
EXPLORER  ...  ansible.cfg x  ...  inventory x  ...  
DOWNLOADS  
ansible.cfg  
inventory  
ansible.cfg  
1 [defaults]  
2 inventory = ./inventory  
3 private_key_file = ~/.ssh/key  
4 remote_user = ansible  
5  
6 # [privilege_escalation]  
7 # become = true # to run as sudo  
8 # become_ask_pass = true  
9  
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  POLYGLOT NOTEBOOK  
spot@spot-pc:~/Downloads$ ansible 172.17.0.3 -m command -a "whoami" --become --ask-become-pass  
BECOME password:  
172.17.0.3 | CHANGED | rc=0 >>  
root  
spot@spot-pc:~/Downloads$
```



```
EXPLORER  ...  ansible.cfg x  ...  inventory x  ...  
DOWNLOADS  
ansible.cfg  
inventory  
ansible.cfg  
1 [defaults]  
2 inventory = ./inventory  
3 private_key_file = ~/.ssh/key  
4 remote_user = ansible  
5  
6 # [privilege_escalation]  
7 # become = true # to run as sudo  
8 # become_ask_pass = true  
9  
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  POLYGLOT NOTEBOOK  
spot@spot-pc:~/Downloads$ ansible all -m command -a "whoami"  
172.17.0.3 | CHANGED | rc=0 >>  
ansible  
spot@spot-pc:~/Downloads$
```



```
EXPLORER  ...  ansible.cfg x  ...  inventory x  ...  
DOWNLOADS  
ansible.cfg  
inventory  
ansible.cfg  
1 [defaults]  
2 inventory = ./inventory  
3 private_key_file = ~/.ssh/key  
4 remote_user = ansible  
5  
6 [privilege_escalation]  
7 become = true  
8 become_ask_pass = true  
9  
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  POLYGLOT NOTEBOOK  
spot@spot-pc:~/Downloads$ ansible 172.17.0.3 -m command -a "whoami"  
BECOME password:  
172.17.0.3 | CHANGED | rc=0 >>  
root  
spot@spot-pc:~/Downloads$
```

## Part 5

- Write your first playbook file  
Stop gather\_facts and update cache

The screenshot shows an IDE with four panels. The Explorer panel on the left shows a file tree with 'ansible.cfg', 'inventory', and 'new\_playbook.yml'. The main editor area has three tabs: 'ansible.cfg', 'inventory', and 'new\_playbook.yml'. The 'ansible.cfg' tab is active, showing configuration for defaults, inventory, private\_key\_file, remote\_user, privilege\_escalation, become, and become\_ask\_pass. The 'inventory' tab shows a single host '1' with IP '172.17.0.3'. The 'new\_playbook.yml' tab shows a play named 'play1' with 'gather\_facts: false', 'hosts: 172.17.0.3', and a task 'apt' with 'update\_cache: true'. The bottom panel is a terminal window showing the command 'ansible-playbook new\_playbook.yml' and its output, including a warning about updating cache and installing missing dependencies, and a recap of the play results.

```
ansible.cfg
1 [defaults]
2 inventory = ../inventory
3 private_key_file = ~/.ssh/ke
4 remote_user = ansible
5
6 [privilege_escalation]
7 become = true
8 become_ask_pass = true
9
10 # become --> to run as sudo

inventory
1 172.17.0.3

new_playbook.yml
1 - name: play1
2   gather_facts: false
3   hosts: 172.17.0.3
4   tasks:
5     - apt:
6       update_cache: true

spot@spot-pc:~/Downloads$ ansible-playbook new_playbook.yml
BECOME password:

PLAY [play1]
TASK [apt]
[WARNING]: Updating cache and auto-installing missing dependency: python3-apt
ok: [172.17.0.3]

PLAY RECAP
172.17.0.3 : ok=1 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

spot@spot-pc:~/Downloads$
```

## Part 6

- Explore some built-in modules like:
- (apt, dnf, package, service, command, copy, user, group, lineinfile, authorized\_key, etc.)

ansible-builtin modules

- Update cache
- Install latest nginx
- Copy index.html from controller to host 1
- Restart nginx service
- Can you see your index.html file when you hit host 1 on port 80 ?