After creating the Docker image should test with the following steps

1. Start the image with “run”

```
risa@Risas-MBP Ansible % docker run -d -p 2022:22 --name ansible-1 ansible
8e2a0ddfa26e9a93980f614fc4da513fe5c68fe21f3701e2776fb5fabe50a330
risa@Risas-MBP Ansible %
```

2. Check what is the IP address of the host (e.g. docker exec ifconfig)

```
risa@Risas-MBP Ansible % docker exec ansible-1 ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.17.0.2  netmask 255.255.0.0  broadcast 172.17.255.255
        ether 02:42:ac:11:00:02  txqueuelen 0  (Ethernet)
        RX packets 12  bytes 1016 (1.0 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

3. Do the ssh-login to the host (ssh ssluser@ipaddress)

```
risa@Risas-MBP Ansible % ssh sslthaoho@127.0.0.1 -p 2022
The authenticity of host '[127.0.0.1]:2022 ([127.0.0.1]:2022)' can't be established.
ED25519 key fingerprint is SHA256:36xHfuFi6D7KbVKYDnjOGDbwx4yTwTRvc7Uoab6hMqs.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[127.0.0.1]:2022' (ED25519) to the list of known hosts.
sslthaoho@127.0.0.1's password:
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.10.104-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.

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.

sslthaoho@8e2a0ddfa26e:~$
```

4. Test that Python works

```
sslthaoho@8e2a0ddfa26e:~$ python3
Python 3.10.6 (main, Aug 10 2022, 11:40:04) [GCC 11.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Create an Ansible playbook that has two tasks (plays)

1. Ensure that the image has the latest version of git version management system
2. Queries the uptime (linux command uptime) of target host

Ansible > ! ansible.yml

```yaml
---
# Playbook for installing Git and checking uptime
- hosts: docker_server
  become: yes
  tasks:
  - name: Ensure that the image has the latest version of git version management system
    apt:
      name: git
      state: latest

  - name: Check Git version
    command: git --version
    register: output

  - name: Print Git version output to console
    debug:
      msg: "{{ output.stdout }}"

  - name: Check hosts's uptime info
    command: uptime
    register: output

  - name: Print hosts's uptime info to console
    debug:
      msg: "{{ output.stdout }}"
```

Test the playbook as follows

1. Start one container from the image, get its IP-address.
   (in case of password-based authentication you need a manual login after start)

```
risa@Risas-MBP Ansible % docker run -d -p 2022:22 --name ansible-1 ansible
8e2a0ddfa26e9a93980f614fc4da513fe5c68fe21f3701e2776fb5fabe50a330
risa@Risas-MBP Ansible %
```

2. Ensure that the IP address is in /etc/ansible/hosts (or some other Ansible configuration file you decide to use).
   - Container 1 – port 2022

Ansible > inv > hosts

```
docker_server ansible_host=127.0.0.1 ansible_user=sslthaoho ansible_port=2022 ansible_ssh_private_key_file=./.ssh/id_rsa
```

3. Run the playbook and copy the output (O1) – including output of “uptime”

```
risa@Risas-MBP Ansible % ansible-playbook ansible.yml

PLAY [docker_server] ***********************************************************************************************

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

TASK [Ensure that the image has the latest version of git version management system] *******************************
changed: [docker_server]

TASK [Check Git version] *******************************************************************************************
changed: [docker_server]

TASK [Print Git version output to console] *************************************************************************
ok: [docker_server] => {
    "msg": "git version 2.34.1"
}

TASK [Check hosts's uptime info] ***********************************************************************************
changed: [docker_server]

TASK [Print hosts's uptime info to console] ************************************************************************
ok: [docker_server] => {
    "msg": " 22:48:01 up 53 min,  0 users,  load average: 0.05, 0.02, 0.00"
}

PLAY RECAP *********************************************************************************************************
docker_server              : ok=6    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

4. Run the playbook again and copy that output, too (O2) – including output of “uptime”

```
risa@Risas-MBP Ansible % ansible-playbook ansible.yml

PLAY [docker_server] ***********************************************************************************************

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

TASK [Ensure that the image has the latest version of git version management system] *******************************
ok: [docker_server]

TASK [Check Git version] *******************************************************************************************
changed: [docker_server]

TASK [Print Git version output to console] *************************************************************************
ok: [docker_server] => {
    "msg": "git version 2.34.1"
}

TASK [Check hosts's uptime info] ***********************************************************************************
changed: [docker_server]

TASK [Print hosts's uptime info to console] ************************************************************************
ok: [docker_server] => {
    "msg": " 22:49:22 up 54 min,  0 users,  load average: 0.01, 0.02, 0.00"
}

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

5. Start a second contained from the image, get its IP-address.

```
risa@Risas-MBP Ansible % docker run -d -p 2222:22 --name ansible-2 ansible
1d6866bb333efd9223b32ede9ce6959b79a8e85b40cff36f1b835607ab0ec280
risa@Risas-MBP Ansible %
```

6. Ensure that this IP address is in /etc/ansible/hosts (or…) too.
    - Container 2 – port 2022

```
Ansible > inv > ≡ hosts
1   docker_server ansible_host=127.0.0.1 ansible_user=sslthaoho ansible_port=2222 ansible_ssh_private_key_file=./.ssh/id_rsa
2
```

7. Run the playbook and copy the output (O3) – including output of “uptime”

```
risa@Risas-MBP Ansible % ansible-playbook ansible.yml

PLAY [docker_server] ***********************************************************************************************************

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

TASK [Ensure that the image has the latest version of git version management system] ***************************************
changed: [docker_server]

TASK [Check Git version] *******************************************************************************************************
changed: [docker_server]

TASK [Print Git version output to console] **************************************************************************************
ok: [docker_server] => {
    "msg": "git version 2.34.1"
}

TASK [Check hosts's uptime info] ***********************************************************************************************
changed: [docker_server]

TASK [Print hosts's uptime info to console] *************************************************************************************
ok: [docker_server] => {
    "msg": " 22:53:14 up 58 min,  0 users,  load average: 0.08, 0.03, 0.01"
}

PLAY RECAP *********************************************************************************************************************
docker_server              : ok=6    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

8. Run the playbook again and copy that output, too (O4) – including output of “uptime”

```
risa@Risas-MBP Ansible % ansible-playbook ansible.yml

PLAY [docker_server] ***********************************************************************************************************

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

TASK [Ensure that the image has the latest version of git version management system] ***************************************
ok: [docker_server]

TASK [Check Git version] *******************************************************************************************************
changed: [docker_server]

TASK [Print Git version output to console] **************************************************************************************
ok: [docker_server] => {
    "msg": "git version 2.34.1"
}

TASK [Check hosts's uptime info] ***********************************************************************************************
changed: [docker_server]

TASK [Print hosts's uptime info to console] *************************************************************************************
ok: [docker_server] => {
    "msg": " 22:54:50 up 59 min,  0 users,  load average: 0.15, 0.06, 0.01"
}

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