

NAME: SANA TARIQ
CLASS: BSE 5B
REG.NO: 058
SUBJECT: CLOUD COMPUTING

LAB#14

TASK 1:

```
@sanaTariq205 /workspaces/terraform_machine (main) $ terraform --version
Terraform v1.14.3
on linux_amd64
@sanaTariq205 /workspaces/terraform_machine (main) $ ansible --version
-bash: ansible: command not found
@sanaTariq205 /workspaces/terraform_machine (main) $ aws sts get-caller-identity
Unable to locate credentials. You can configure credentials by running "aws login".
@sanaTariq205 /workspaces/terraform_machine (main) $ ls ~/.ssh
authorized_keys
@sanaTariq205 /workspaces/terraform_machine (main) $ ssh-keygen -t ed25519 -f ~/.ssh/id_ed25519 -N ""
Generating public/private ed25519 key pair.
Your identification has been saved in /home/codespace/.ssh/id_ed25519
Your public key has been saved in /home/codespace/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:9nkGfFaRAoCjNYRfexwoCQK1PolJySyljdlNjkf61k codespace@codespaces-7ce4f3
The key's randomart image is:
+--[ED25519 256]--+
|o====+ oo.+      |
|o+..+ = ... +    |
|* . = . . . .    |
|.o . . .         |
|o. . . .S.       |
|++ . *... o      |
|*.. . =E.o o     |
|o. .o. o         |
| .o              |
+---[SHA256]-----+
@sanaTariq205 /workspaces/terraform_machine (main) $ ls -la ~/.ssh
total 24
drwxr-xr-x 2 codespace codespace 4096 Jan  9 15:10
drwxr-xr-x 1 codespace codespace 4096 Jan  9 15:08
-rw-r--r-- 1 codespace codespace 184 Jan  9 14:59 authorized_keys
-rw----- 1 codespace codespace 419 Jan  9 15:10 id_ed25519
-rw-r--r-- 1 codespace codespace 109 Jan  9 15:10 id_ed25519.pub
```

```
@sanaTariq205 /workspaces/terraform_machine (main) $ cat terraform.tfvars
vpc_cidr_block = "10.0.0.0/16"
subnet_cidr_block = "10.0.10.0/24"
availability_zone = "us-east-1a"
env_prefix = "dev"
instance_type = "t3.micro"
public_key = "~/.ssh/id_ed25519.pub"
private_key = "~/.ssh/id_ed25519"
@sanaTariq205 /workspaces/terraform_machine (main) $ terraform init
Initializing the backend...
Initializing modules...
- myapp-subnet in modules/subnet
- myapp-webserver in modules/webserver
Initializing provider plugins...
- Finding latest version of hashicorp/http...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/http v3.5.0...
- Installed hashicorp/http v3.5.0 (signed by HashiCorp)
- Installing hashicorp/aws v6.28.0...
- Installed hashicorp/aws v6.28.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!
```

Outputs:

```
webserver_public_ips = [
    "44.199.249.163",
    "44.202.192.83",
]
```

TASK 2:

```
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ pipx install ansible-core
ansible --version
  installed package ansible-core 2.20.1, installed using Python 3.12.1
  These apps are now globally available
    - ansible
    - ansible-config
    - ansible-console
    - ansible-doc
    - ansible-galaxy
    - ansible-inventory
    - ansible-playbook
    - ansible-pull
    - ansible-test
    - ansible-vault
done!  🌟 🌟 🌟
ansible [core 2.20.1]
  config file = None
  configured module search path = ['/home/codespace/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
```

```
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<EOF > hosts
44.199.249.163 ansible_user=ec2-user ansible_ssh_private_key_file=/home/codespace/.ssh/id_ed25519 ansible_ssh_c
common_args='-o StrictHostKeyChecking=no'
44.202.192.83 ansible_user=ec2-user ansible_ssh_private_key_file=/home/codespace/.ssh/id_ed25519 ansible_ssh_co
mmon_args='-o StrictHostKeyChecking=no'
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ls -la hosts
cat hosts
-rw-rw-rw- 1 codespace codespace 303 Jan 11 12:12 hosts
44.199.249.163 ansible_user=ec2-user ansible_ssh_private_key_file=/home/codespace/.ssh/id_ed25519 ansible_ssh_c
common_args='-o StrictHostKeyChecking=no'
44.202.192.83 ansible_user=ec2-user ansible_ssh_private_key_file=/home/codespace/.ssh/id_ed25519 ansible_ssh_co
mmon_args='-o StrictHostKeyChecking=no'
```

```
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible all -i hosts -m ping
[WARNING]: Host '44.202.192.83' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://do
cs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.202.192.83 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Host '44.199.249.163' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://d
ocs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.199.249.163 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $
```

TASK 3:

```

GNU nano 7.2                                main.tf *
availability_zone = var.availability_zone
env_prefix = var.env_prefix
default_route_table_id = aws_vpc.myapp_vpc.default_route_table_id
}

module "myapp-webserver" {
  source = "../modules/webserver"
  env_prefix = var.env_prefix
  instance_type = var.instance_type
  availability_zone = var.availability_zone
  public_key = var.public_key
  my_ip = local.my_ip
  vpc_id = aws_vpc.myapp_vpc.id
  subnet_id = module.myapp-subnet.subnet.id

  count           = 3
  instance_suffix = count.index
}

```

```

Outputs:

webserver_public_ips = [
  "44.199.249.163",
  "44.202.192.83",
  "44.223.82.95",
]
@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<EOF > hosts
[ec2]
44.199.249.163
44.202.192.83

[ec2:vars]
ansible_user=ec2-user
ansible_ssh_private_key_file=/home/codespace/.ssh/id_ed25519
ansible_ssh_common_args='-o StrictHostKeyChecking=no'

[droplet]
44.223.82.95

[droplet:vars]

```

```

@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible ec2 -i hosts -m ping
[WARNING]: Host '44.202.192.83' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://do
cs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.202.192.83 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Host '44.199.249.163' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://d
ocs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.199.249.163 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible 44.199.249.163 -i hosts -m ping
[WARNING]: Host '44.199.249.163' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://d
ocs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.199.249.163 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible droplet -i hosts -m ping
[WARNING]: Host '44.223.82.95' is using the discovered Python interpreter at '/usr/bin/python3.9', but future i
nstallation of another Python interpreter could cause a different interpreter to be discovered. See https://doc
s.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.223.82.95 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}

```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible all -i hosts -m ping
}
[WARNING]: Host '44.199.249.163' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://do
ocs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.199.249.163 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Host '44.202.192.83' is using the discovered Python interpreter at '/usr/bin/python3.9', but future
installation of another Python interpreter could cause a different interpreter to be discovered. See https://do
cs.ansible.com/ansible-core/2.20/reference_appendices/interpreter_discovery.html for more information.
44.202.192.83 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
}
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

TASK 4:

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<EOF > ~/.ansible.cfg
[defaults]
host_key checking = False
interpreter_python = /usr/bin/python3
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ nano hosts
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible all -i hosts -m ping
44.202.192.83 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
44.223.82.95 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
44.199.249.163 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
}
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ touch my-playbook.yaml
ls -la my-playbook.yaml
-rw-rw-rw- 1 codespace codespace 0 Jan 11 12:23 my-playbook.yaml
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<EOF > my-playbook.yaml
---
- name: Configure nginx web server
  hosts: ec2
  become: true
  tasks:
    - name: install nginx and update cache
      yum:
        name: nginx
        state: present
        update_cache: yes

    - name: start nginx server
      service:
        name: nginx
        state: started
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml

PLAY [Configure nginx web server] *****

TASK [Gathering Facts] *****
ok: [44.202.192.83]
ok: [44.199.249.163]

TASK [install nginx and update cache] *****
changed: [44.202.192.83]
changed: [44.199.249.163]

TASK [start nginx server] *****
changed: [44.202.192.83]
changed: [44.199.249.163]

PLAY RECAP *****
44.199.249.163      : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignore
d=0
44.202.192.83      : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignore
d=0
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

http://44.199.249.163

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ nano my-playbook.yml
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml

PLAY [Configure nginx web server] *****

TASK [Gathering Facts] *****
ok: [44.223.82.95]

TASK [install nginx and update cache] *****
changed: [44.223.82.95]

TASK [start nginx server] *****
changed: [44.223.82.95]

PLAY RECAP *****
44.223.82.95      : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignore
d=0

```

http://44.223.82.95

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

TASK 5:

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ touch ansible.cfg
ls -la ansible.cfg
-rw-rw-rw- 1 codespace codespace 0 Jan 11 12:29 ansible.cfg
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<EOF > ansible.cfg
[defaults]
host_key_checking=False
interpreter_python = /usr/bin/python3
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

subnet_id = module.myapp-subnet.subnet.
count      = 1
instance_suffix = count.index
}

```

```

Apply complete! Resources: 0 added, 0 changed, 6 destroyed.

Outputs:

webserver_public_ips = [
  "44.199.249.163",
]
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

GNU nano 7.2 my-playbook.yaml
--
- name: Configure nginx web server
  hosts: nginx
  become: true
  tasks:
    - name: install nginx and update cache
      yum:
        name: nginx
        state: present
        update_cache: yes
    - name: install openssl
      yum:
        name: openssl
        state: present
    - name: start nginx server
      service:
        name: nginx
        state: started

```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.y
aml
[WARNING]: Ansible is being run in a world writable directory (/workspaces/cc_sanatariq_058/terraform_machine),
ignoring it as an ansible.cfg source. For more information see https://docs.ansible.com/ansible/devel/referenc
e_appendices/config.html#cfg-in-world-writable-dir

PLAY [Configure nginx web server] *****

TASK [Gathering Facts] *****
ok: [44.199.249.163]

TASK [install nginx and update cache] *****
ok: [44.199.249.163]

TASK [install openssl] *****
ok: [44.199.249.163]

TASK [start nginx server] *****
changed: [44.199.249.163]

PLAY RECAP *****
44.199.249.163 : ok=4 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignore
d=0
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $

```

http://44.199.249.163

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

TASK 6:

```
@sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml
[WARNING]: Ansible is being run in a world writable directory (/workspaces/cc_sanatariq_058/terraform_machine),
ignoring it as an ansible.cfg source. For more information see https://docs.ansible.com/ansible/devel/reference_appendices/config.html#cfg-in-world-writable-dir

sanatariq_058/Lab5 [re nginx web server] *****

TASK [Gathering Facts] *****
ok: [44.199.249.163]

TASK [install nginx and update cache] *****
ok: [44.199.249.163]

TASK [install openssl] *****
ok: [44.199.249.163]

TASK [start nginx server] *****
ok: [44.199.249.163]

PLAY [Configure SSL certificates] *****

TASK [Gathering Facts] *****
ok: [44.199.249.163]

TASK [Create SSL private directory] *****
changed: [44.199.249.163]

TASK [Create SSL certs directory] *****
changed: [44.199.249.163]
```

```
TASK [Create SSL certs directory] *****
changed: [44.199.249.163]

TASK [Get IMDSv2 token] *****
ok: [44.199.249.163]

TASK [Get current public IP] *****
ok: [44.199.249.163]

TASK [Show current public IP] *****
ok: [44.199.249.163] => {
  "msg": "Public IP: 44.199.249.163"
}

TASK [Generate self-signed SSL certificate] *****
changed: [44.199.249.163]

PLAY RECAP *****
44.199.249.163      : ok=11  changed=3  unreachable=0  failed=0  skipped=0  rescued=0  ignore
d=0

@sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $
```

```

@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ ssh ec2-user@$(terraform output -json w
ebserver_public_ips | jq -r '.[0]') -i ~/.ssh/id_ed25519 "sudo cat /etc/ssl/certs/selfsigned.crt"
-----BEGIN CERTIFICATE-----
MIIDQTCACimgAwIBAgIUT4PI3qfd0glixCsnGNg7F5se9ogwDQYJKoZIhvcNAQEL
BQAwGTEwMBQGA1UEAwONDQU0MTK5LjI0OS4xMTJhMhcnMjYwMTExMTI0NzIxMhcn
MjcwMTExMTI0NzIxMhcnMjYwMTExMTI0NzIxMhcnMjYwMTExMTI0NzIxMhcn
KoZIHvcNAQEBBQADAgEPADCCAQoCggEBAL41k8Je7qgT8KrBus5mLgKyn6S6WR+p
89Mg9gInBukHpe7L/eTd1Xfg3bPaRee7shjbbMpb8fSgTo3Is7wmcFBMFihTKYYT5
/FShnhJ08D1m7H4d1NRTQGLK1RQ6I2D09Am4Wfp1q1trK7fb1YCIbBy1Btegrj7m7
NTC19p4Gd+4yk8AYPCkDfok8K3uR5wrjmrshwD31I7Cb6+FejwKjwLCA9N5LJ38
ApfbtFNtwg6d8wvpvfC0kVebZKGtxQoiVG0lLeLTxdn3vfuyTEMzPSLuhBgpr/9I
BR1Ivwzhjrr+MqaQRjjIhYov0JQ/EwpIQU7r+LgBQ9XG2Bde81imTzIkCAwEAaA0B
gDB+MB0GA1UdDgQMBB8wOBeBh4h3i5P+vywGzDINDLDT5GTAFBgNVHSMGDAKgBTw
OBeBh4h3i5P+vywGzDINDLDT5GTAPBgNVHREECDAGhwQsx/mjMkAGAIUdEwQCAAw
CwYDV0R0PBAQDAGwMBMAIUDJQMMMAoGCCS9GSAQUBwMBMA0GCSCqGSIb3DQEBQwUA
A4IBAQAul7ZryKbEpzKkaHATraqvY1RRysilnck+OK4a6K4IBY8nMrGgtFcZ/C5n
z11T9Hg0B3wdun9vJvy6g95iZabruITHs9Gtfv7gEmyeSpTolce4LzRdtmRk02D
NSFGezQZP7m1qGyMqllg+80A9yh+7j1Ugs2IhnlKludzcfcv8YMKb1ggMo1g0FRS
KKq2NLKBortUqNT7MjVzKLPSh63VAZF+usc0BSXSDdcCuw0/B1x46fE62EMYtWk
tLnXDR0Tg3tKw7fKhqZFKSLa1Wlvv87pj2THLPwZ8gPmQ0G15RN1jxe3hCb+2q
g+9rLMAvf+cQaBD1RvEqwmlTYVo+
-----END CERTIFICATE-----
@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $

```

```

@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ ssh ec2-user@$(terraform output -json w
ebserver_public_ips | jq -r '.[0]') -i ~/.ssh/id_ed25519 "sudo cat /etc/ssl/private/selfsigned.key"
-----BEGIN PRIVATE KEY-----
MIIEvQIBADANBgkqhkiG9w0BAQEFAASCBKcwggSjAgEAAoIBAQC+nZPCXu60E/Cq
wbr0Zi4JG+ku1kfqfTIPYCwbiH6Xuy/3k3ZV34Cwz2kRhu7IY22ZKFh00CKhy
L08MH0QThy1BzGGE+fxuoZ4STASZuox3ZTU081ypU0U0IngzvQuFngvgtbayu3
29MAiGwcpQbXqYsuzWtFaeBnfuPNAQDwInRaJPC7kccK4Sg7ICA9S50mmvh
XoK5t8T8Suu0S0yFA0X28TU810nfML6b3wtJFxmZShrcUKI1RTJ53108XZ9737
skx0M6U17vgYka/SAUZSL8Mx46/jkMEY4y1MD9CTvdMSEF06/14AUPCrtgXX
vNypk85ZagMBAAECggEAASEyLU7/jpTPM41Hk2TW0ARMRzQ1511jj7MBFjxDSHT
y2Kq36v500hq0iNGv1iHUK3uDESAIUDmERCIqCkALsPZvmdQz+chxSL6Ucfj+0
s3wduPAUqWfz0NGNELHheLYSJT19vzgePnPRVC6ZUL3ak60PkfZCNOmUTgodp0r5
Gqj4s+QJ0GoheYg63U0CaSL0wMQLTxP4cJ6IngLx11/9k8UC12V8aiCb11mpzCR
VthKPdyxciyuSRfkyYXcdPoiuhvuphR25tFB/gQ4U0zBF91RFBP4yAHeqdtdj
rtZgXlOQnkt+onpy02dqgrWY3U/Kxp0Y5IwcuMIEQKGBQD30s3jT0tyzi0lwrp
g/FB+/1h0mgY1vGyZhoX6g8c7dvSggNFay/YMhmZRC1DKZNB0NLHvTTQ4CKKMBH
yApCJnZukcuwrtTZ7eEDqpd0n+Ljs3E7ms0FLce59AoePZgQAMKMe16N/pcf6gb
13NFe3Xp7XSZc1xw1w8Q0poxwKBQD0e0JBAK1RBjDZg0x5W0Qz2aRKeuOLOJERN
X254Rj3wZ0f1BnlyGym0MATgC0m1ME8UT111ZuP6f54ak7CKwE8A2UmrdxLe
S/2eqNb31+Qgu1q4bHMFm81/SQKCEmE4n7ywo9c/AVGwJEddtBCprh1X73
Sw0Q0yKRAKqCgCEAShN1Qhu01+H0pWwyo1n1tcc00kh7ZAPX08TgH4cz1P3b4
TZ2UJx1T0L1SwfZC0HhPQ0uzc11CA1Z5EXh8XK1H0H9RC0e0p0h1k87fRQ65
910Cw09Q0Q6+H0iH011V2u0BZHU0h0t4H0Ww0W00c9u7912kccATAGALgry
za0PMZuGfF7cV7jv4g3LHK04K7m1V0iTK6ktDaInCL01SLf1/1IY8fdp50P/NY
1l456w086F3b529w4wsk0x0FpxStcgaWwufG70Fzcx2W0H1/Zum1YAX03SYEH
K00FNRHk0Qfw/af9Wf7c7Syuz4/dm1GygpXtSf0cgvEAj0m00syh1hwK1hAjr0hb
8y11l747rLWwSLjwEwWwssYwYwK82v2021B2Hqj/my1PAjXEE0Ffmhc186/fg
wY655fjWuqlpXcVksPfwLceYX4q/Gaq504Gak6/ja1f0xdhyuasm3DyEdpM4w
CQ2Cw1w0qNSPQ0g09M0w64M=
-----END PRIVATE KEY-----
@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $

```

TASK 7:

```

@SanaTariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ mkdir -p files templates
touch files/index.php templates/nginx.conf.j2
ls -lr
.:
ansible.cfg  hosts      main.tf    my-playbook.yaml  templates  terraform.tfstate.backup  variables.tf
files        locals.tf  modules   outputs.tf         terraform.tfstate  terraform.tfvars

./files:
index.php

./modules:
subnet  webserver

./modules/subnet:
main.tf  outputs.tf  variables.tf

./modules/webserver:
main.tf  outputs.tf  variables.tf

./templates:
nginx.conf.j2

```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS python - terraform_machine + v [ ] [ ] ... | [ ] [x]
@Sanatariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml
aml
[WARNING]: Ansible is being run in a world writable directory (/workspaces/cc_sanatariq_058/terraform_machine),
ignoring it as an ansible.cfg source. For more information see https://docs.ansible.com/ansible/devel/referenc
e_appendices/config.html#cfg-in-world-writable-dir

PLAY [Configure nginx web server] *****

TASK [Gathering Facts] *****
ok: [44.199.249.163]

TASK [install nginx and update cache] *****
ok: [44.199.249.163]

TASK [install openssl] *****
ok: [44.199.249.163]

TASK [start nginx server] *****
ok: [44.199.249.163]

PLAY [Configure SSL certificates] *****

TASK [Gathering Facts] *****
ok: [44.199.249.163]

TASK [Create SSL private directory] *****
ok: [44.199.249.163]

TASK [Create SSL certs directory] *****
ok: [44.199.249.163]
```

```
PROBLEMS          OUTPUT      DEBUG CONSOLE    TERMINAL          PORTS
bash - terraform_machine + + + | x
@Sanatariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml
aml

TASK [Get current public IP] *****
ok: [44.199.249.163]

TASK [Show current public IP] *****
ok: [44.199.249.163] => {
  "msg": "Public IP: 44.199.249.163"
}

TASK [Generate self-signed SSL certificate] *****
ok: [44.199.249.163]

PLAY [Deploy Nginx website and configuration files] *****

TASK [Gathering Facts] *****
ok: [44.199.249.163]

TASK [install php-fpm and php-curl] *****
changed: [44.199.249.163]

TASK [Copy website files] *****
changed: [44.199.249.163]

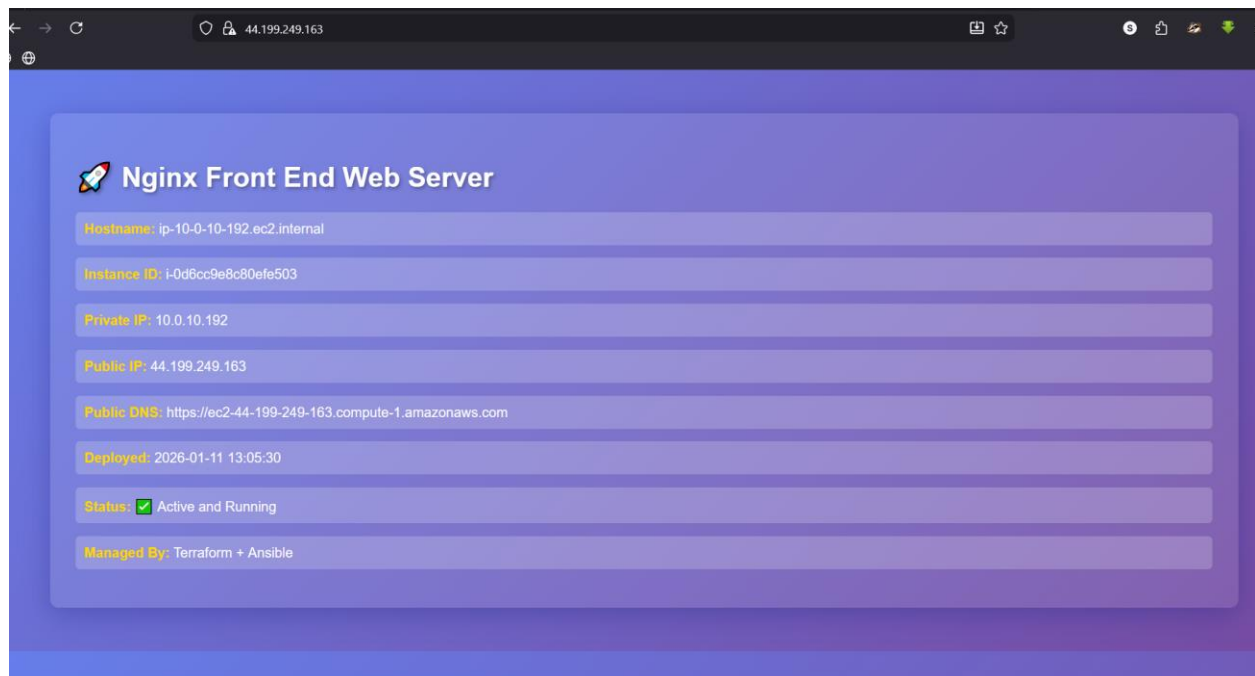
TASK [copy nginx.conf template] *****
changed: [44.199.249.163]

TASK [Restart nginx] *****
changed: [44.199.249.163]
```

```
TASK [Start and enable php-fpm] *****
changed: [44.199.249.163]

PLAY RECAP *****
44.199.249.163      : ok=17   changed=5    unreachable=0    failed=0    skipped=0    rescued=0    ignore
d=0

@SanaTario205 → /workspaces/cc_sanatario_058/terraform machine (main) $
```



TASK 8:

```
module.myapp-subnet.aws_subnet.myapp_subnet_1: Destroying... [id=subnet-0e0
module.myapp-webserver[0].aws_key_pair.ssh-key: Destruction complete after 0
module.myapp-subnet.aws_subnet.myapp_subnet_1: Destruction complete after 1s
module.myapp-webserver[0].aws_security_group.web_sg: Destruction complete a
aws_vpc.myapp_vpc: Destroying... [id=vpc-05fc32c3df8f63e21]
aws_vpc.myapp_vpc: Destruction complete after 1s

Destroy complete! Resources: 7 destroyed.
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $
```

```
Apply complete! Resources: 7 added, 0 changed, 0 destroyed.

Outputs:

webserver_public_ips = [
  "3.80.144.123",
]
```

```
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<EOF > hosts
[docker_servers]
3.80.144.123

[docker_servers:vars]
ansible_user=ec2-user
ansible_ssh_private_key_file=/home/codespace/.ssh/id_ed25519
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $
```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml
[WARNING]: Ansible is being run in a world writable directory (/workspaces/cc_sanatariq_058/terraform_machine),
ignoring it as an ansible.cfg source. For more information see https://docs.ansible.com/ansible/devel/reference_appendices/config.html#cfg-in-world-writable-dir

PLAY [Configure Docker] *****

TASK [Gathering Facts] *****
ok: [3.80.144.123]

TASK [install docker and update cache] *****
changed: [3.80.144.123]

PLAY [Install Docker Compose] *****

TASK [Gathering Facts] *****
ok: [3.80.144.123]

TASK [create docker cli-plugins directory] *****
changed: [3.80.144.123]

TASK [install docker-compose] *****
changed: [3.80.144.123]

TASK [View architecture of the system] *****
ok: [3.80.144.123] => {
  "msg": "System architecture of 3.80.144.123 is x86_64"
}

```

```

}

TASK [Alternate method to view architecture of the system] *****
ok: [3.80.144.123] => {
  "msg": "System architecture of 3.80.144.123 is x86_64"
}

TASK [restart docker service] *****
changed: [3.80.144.123]

PLAY RECAP *****
3.80.144.123      : ok=8   changed=4   unreachable=0   failed=0   skipped=0   rescued=0   ignore
d=0

```

```

@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ssh ec2-user@$(terraform output -json w
ebservers_public_ips | jq -r '.[0]') -i ~/.ssh/id_ed25519 "sudo docker ps"
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES

```

TASK 9:

```

become: true _
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.y
aml

PLAY [Configure Docker] *****

TASK [Gathering Facts] *****
ok: [100.52.173.81]

TASK [install docker and update cache] *****
changed: [100.52.173.81]

PLAY [Install Docker Compose] *****

TASK [Gathering Facts] *****
ok: [100.52.173.81]

TASK [create docker cli-plugins directory] *****
changed: [100.52.173.81]

TASK [install docker-compose] *****
changed: [100.52.173.81]

TASK [View architecture of the system] *****
ok: [100.52.173.81] => {
  "msg": "System architecture of 100.52.173.81 is x86_64"
}

TASK [Alternate method to view architecture of the system] *****
ok: [100.52.173.81] => {
  "msg": "System architecture of 100.52.173.81 is x86_64"
}

```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PARTS bash - terraform_machine + v ☐ ☐ ☐ ... | ☐ ☐ ✕
```

```
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ ansible-playbook -i hosts my-playbook.yml  
am1  
TASK [reconnect to apply group changes] *****  
  
TASK [verify docker access] *****  
ok: [100.52.173.81]  
  
TASK [display docker ps output] *****  
ok: [100.52.173.81] => {  
    "docker_ps.stdout": "CONTAINER ID        IMAGE               COMMAND             CREATED   STATUS    PORTS                               NAMES"  
}  
  
PLAY [Deploy Docker Containers] *****  
  
TASK [Gathering Facts] *****  
ok: [100.52.173.81]  
  
TASK [check if docker-compose file exists] *****  
ok: [100.52.173.81]  
  
TASK [copy docker-compose file] *****  
changed: [100.52.173.81]  
  
TASK [deploy containers using docker-compose] *****  
ok: [100.52.173.81]  
  
PLAY RECAP *****  
100.52.173.81      : ok=16   changed=6    unreachable=0    failed=0    skipped=0    rescued=0    ignore=0  
d=0  
  
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $
```

```
cidr_blocks = [ "0.0.0.0/0" ]
}
ingress {
  from_port = 3000
  to_port   = 3000
  protocol  = "tcp"
  cidr_blocks = [ "0.0.0.0/0" ]
}
```

Not Secure

http://100.52.173.81:3000



Initial Configuration

If you run Gitea inside Docker, please read the [documentation](#) before changing any settings.

Database Settings

Gitea requires MySQL, PostgreSQL, MSSQL, SQLite3 or TiDB (MySQL protocol).

Database Type *

PostgreSQL

Host *

db:5432

Username *

gitea

Password *

•••••

Database Name *

gitea

SSL *

Disable

Schema

Leave blank for database default ("public").

General Settings

Site Title *

Gitea: Git with a cup of tea

You can enter your company name here.


Register

You are registering the first account in the system, which has administrator privileges. Please carefully remember your username and password. If you forget the username or password, please refer to the Gitea documentation to recover the account.

Username *


Email Address *

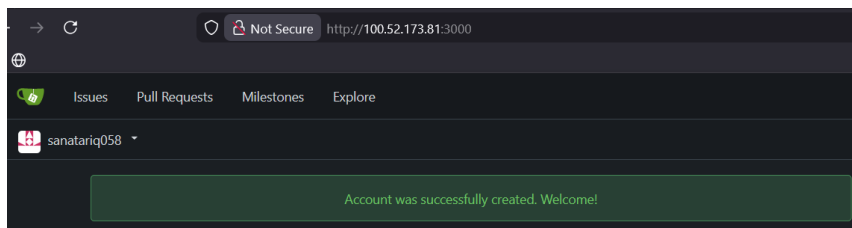
Password *

 This connection is not secure. Logins entered here could be compromised. [Learn More](#)

Register Account

or

 Sign in with OpenID



TASK 10:

```
@Sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ cat <<'EOF' > temp_playbook.yaml
- name: Wait for some time to ensure system readiness
  hosts: all
  gather_facts: false
  tasks:
    - name: Wait 300 seconds for port 22 to become open
      wait_for:
        port: 22
        host: "{{ inventory_hostname }}"
        delay: 10
        timeout: 300
      delegate_to: localhost

EOF
@Sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ cat my-playbook.yaml >> temp_playbook.yaml
mv temp_playbook.yaml my-playbook.yaml
@Sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ cat my-playbook.yaml >> temp_playbook.yaml
mv temp_playbook.yaml my-playbook.yaml
@Sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $ mv temp_playbook.yaml my-playbook.yaml
@Sanatariq205 →/workspaces/cc_sanatariq_058/terraform_machine (main) $
```

```
module.myapp-webserver[0].aws_key_pair.ssh-key: Destruction complete after 1s
module.myapp-subnet.aws_subnet.myapp_subnet_1: Destruction complete after 1s
module.myapp-webserver[0].aws_security_group.web_sg: Destruction complete after 1s
aws_vpc.myapp_vpc: Destroying... [id=vpc-0d08316fd5a2e80b4]
aws_vpc.myapp_vpc: Destruction complete after 1s

Destroy complete! Resources: 7 destroyed.
```


TASK 13:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ terraform apply -auto-approve
module.myapp-webserver[0].aws_instance.myapp-server: Creating...
module.myapp-webserver-aws_instance.myapp-server: Still destroying... [id=i-02410dcad0d11f096, 00m10s elapsed]
module.myapp-webserver-prod.aws_instance.myapp-server: Still destroying... [id=i-0f196337b1d1bfbf9, 00m10s elapsed]
module.myapp-webserver[0].aws_instance.myapp-server: Still creating... [00m10s elapsed]
module.myapp-webserver[0].aws_instance.myapp-server: Creation complete after 15s [id=i-05fb69036c8156ed8]
module.myapp-webserver-prod.aws_instance.myapp-server: Still destroying... [id=i-0f196337b1d1bfbf9, 00m20s elapsed]
module.myapp-webserver-aws_instance.myapp-server: Still destroying... [id=i-02410dcad0d11f096, 00m20s elapsed]
module.myapp-webserver[0].aws_instance.myapp-server: Still destroying... [id=i-02410dcad0d11f096, 00m30s elapsed]
module.myapp-webserver-prod.aws_instance.myapp-server: Still destroying... [id=i-0f196337b1d1bfbf9, 00m30s elapsed]
module.myapp-webserver-prod.aws_instance.myapp-server: Destruction complete after 32s
module.myapp-webserver-prod.aws_key_pair.ssh-key: Destroying... [id=prod-serverkey-prod-0]
module.myapp-webserver-prod.aws_security_group.web_sg: Destroying... [id=sg-0080b7b16dc34ea23]
module.myapp-webserver-prod.aws_key_pair.ssh-key: Destruction complete after 0s
module.myapp-webserver-prod.aws_security_group.web_sg: Destruction complete after 1s
module.myapp-webserver-aws_instance.myapp-server: Still destroying... [id=i-02410dcad0d11f096, 00m40s elapsed]
module.myapp-webserver-aws_instance.myapp-server: Destruction complete after 42s
module.myapp-webserver.aws_key_pair.ssh-key: Destroying... [id=dev-serverkey-dev-0]
module.myapp-webserver.aws_security_group.web_sg: Destroying... [id=sg-0253864bcd5abee77]
module.myapp-webserver.aws_key_pair.ssh-key: Destruction complete after 1s
module.myapp-webserver.aws_security_group.web_sg: Destruction complete after 1s

Apply complete! Resources: 3 added, 0 changed, 6 destroyed.

Outputs:
webserver_public_ips = "44.200.198.68"
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $
```

```
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine (main) $ mkdir -p ansible/inventory ansible/roles
cd ansible
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $ ansible-galaxy role init roles/nginx
ansible-galaxy role init roles/ssl
ansible-galaxy role init roles/webapp
- Role roles/nginx was created successfully
- Role roles/ssl was created successfully
- Role roles/webapp was created successfully
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $ cat <<EOF > ansible.cfg
[defaults]
host_key_checking=False
interpreter_python = /usr/bin/python3
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $ cat <<EOF > inventory/hosts
[nginx]
\$(terraform -chdir=.. output -json webserver_public_ips | jq -r '.[0]')

[nginx:vars]
ansible_ssh_private_key_file=~/.ssh/id_ed25519
ansible_user=ec2-user
EOF
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
- name: Create SSL directory
  file: ...
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $ ANSIBLE_ROLES_PATH=~/roles ANSIBLE_INVENTORY_ENABLED=ini ansible-playbook -i inventory/hosts my-playbook.yaml

PLAY [Deploy NGINX Web Stack with SSL and PHP] *****

TASK [Gathering Facts] *****
ok: [44.200.198.68]

TASK [ssl : Create SSL directory] *****
changed: [44.200.198.68]

TASK [ssl : Generate self-signed SSL certificate] *****
changed: [44.200.198.68]

TASK [webapp : Install PHP and Nginx] *****
changed: [44.200.198.68]

TASK [webapp : Deploy custom index.php] *****
changed: [44.200.198.68]

TASK [webapp : Start services] *****
changed: [44.200.198.68] => (item=nginx)
changed: [44.200.198.68] => (item=php-fpm)

PLAY RECAP *****
44.200.198.68 : ok=6 changed=5 unreachable=0 failed=0 skipped=0 rescued=0 ignore=0
@SanaTariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - ansible + - - - - -
@Sanatariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $ ANSIBLE_ROLES_PATH=../roles ANSIBLE_INVENTORY_ENABLED=ini ansible-playbook -i inventory/hosts my-playbook.yaml

TASK [ssl : Create SSL directory] *****
ok: [44.200.198.68]

TASK [ssl : Generate self-signed SSL certificate] *****
ok: [44.200.198.68]

TASK [webapp : Install Nginx and PHP] *****
ok: [44.200.198.68]

TASK [webapp : Create Nginx SSL Configuration] *****
changed: [44.200.198.68]

TASK [webapp : Restart Nginx and PHP-FPM] *****
changed: [44.200.198.68] => (item=nginx)
changed: [44.200.198.68] => (item=php-fpm)

PLAY RECAP *****
44.200.198.68      : ok=6   changed=2   unreachable=0   failed=0   skipped=0   rescued=0   ignore
d=0

@Sanatariq205 → /workspaces/cc_sanatariq_058/terraform_machine/ansible (main) $ curl -kI https://44.200.198.68
HTTP/1.1 200 OK
Server: nginx/1.28.0
Date: Sun, 11 Jan 2026 16:50:09 GMT
Content-Type: text/html; charset=UTF-8
Connection: keep-alive
```

44.200.198.68

Task 13: Role Based Deployment

IP: 10.0.10.135