TERRAFORM ASSIGNMENT-1

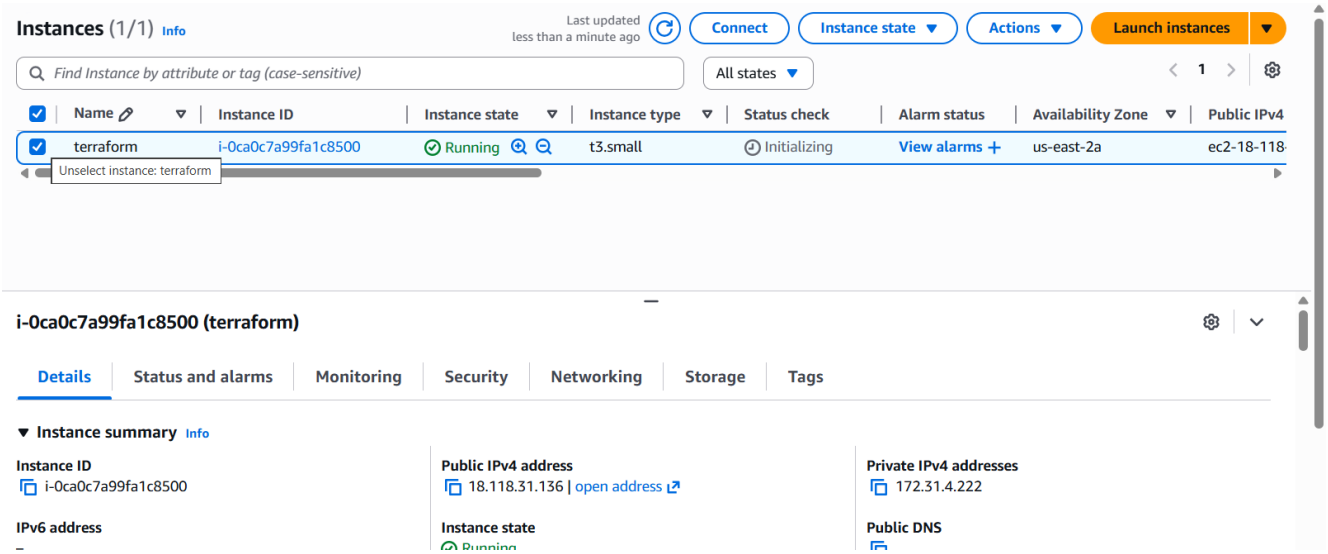
Name: Vikram
Assignment: Create EC2 Instance in Default Subnet using Terraform (Ohio Region)

Problem Statement

Create an EC2 instance in the default subnet of the Ohio region (us-east-2) using Terraform.

TASK 1: Launch Ubuntu EC2 Instance & Connect

Launch one Ubuntu EC2 instance in ohio and connect using EC2 Instance Connect.



TASK 2: Install Terraform

```
sudo apt update
sudo apt install -y gnupg software-properties-common curl
curl -fsSL https://apt.releases.hashicorp.com/gpg | sudo apt-key add -
sudo apt-add-repository "deb https://apt.releases.hashicorp.com $(lsb_release -cs) main"
sudo apt update
sudo apt install -y terraform
terraform -version
```

```
ubuntu@ip-10-0-3-201:~$ sudo apt update
sudo apt install -y gnupg software-properties-common curl
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1684 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [311 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [15.8 kB]
```

```
ubuntu@ip-10-0-3-201:~$ curl -fsSL https://apt.releases.hashicorp.com/gpg | sudo apt-key add -
sudo apt-add-repository "deb https://apt.releases.hashicorp.com $(lsb_release -cs) main"
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
Repository: 'deb https://apt.releases.hashicorp.com noble main'
Description:
Archive for codename: noble components: main
More info: https://apt.releases.hashicorp.com
Adding repository.
Press [ENTER] to continue or Ctrl-c to cancel.
Adding deb entry to /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-noble.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-noble.list
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:4 https://apt.releases.hashicorp.com noble InRelease [12.9 kB]
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:6 https://apt.releases.hashicorp.com noble/main amd64 Packages [215 kB]
```


```
ubuntu@ip-10-0-3-201:~$ curl -fsSL https://apt.releases.hashicorp.com/gpg | sudo apt-key add -
sudo apt-add-repository "deb https://apt.releases.hashicorp.com $(lsb_release -cs) main"
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
Repository: 'deb https://apt.releases.hashicorp.com noble main'
Description:
Archive for codename: noble components: main
More info: https://apt.releases.hashicorp.com
Adding repository.
Press [ENTER] to continue or Ctrl-c to cancel.
Adding deb entry to /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-noble.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive_uri-https_apt_releases_hashicorp_com-noble.list
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:4 https://apt.releases.hashicorp.com noble InRelease [12.9 kB]
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:6 https://apt.releases.hashicorp.com noble/main amd64 Packages [215 kB]
Fetched 228 kB in 1s (375 kB/s)
Reading package lists... Done
W: https://apt.releases.hashicorp.com/dists/noble/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8
) for details.
ubuntu@ip-10-0-3-201:~$
```


```
ubuntu@ip-10-0-3-201:~$ sudo apt update
sudo apt install -y terraform
terraform -version
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 https://apt.releases.hashicorp.com noble InRelease
Hit:5 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
68 packages can be upgraded. Run 'apt list --upgradable' to see them.
W: https://apt.releases.hashicorp.com/dists/noble/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8
) for details.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  terraform
0 upgraded, 1 newly installed, 0 to remove and 68 not upgraded.
Need to get 30.6 MB of archives.
After this operation, 101 MB of additional disk space will be used.
```

```
No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Terraform v1.14.3
on linux_amd64
ubuntu@ip-10-0-3-201:~$
```

i-0109edd2c4a1b622a (terraform)

TASK 3: Configure AWS Credentials

aws configure

Enter:

- AWS Access Key
- AWS Secret Key
- Region: us-east-2
- Output: json

```
ubuntu@ip-172-31-4-222:~$ aws configure
AWS Access Key ID [None]: AKIAQ47TESP3CDYCXWWX
AWS Secret Access Key [None]: 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
Default region name [None]: us-east-2
Default output format [None]: json
ubuntu@ip-172-31-4-222:~$
```

TASK 4: Create Terraform Project

mkdir terraform-ec2

cd terraform-ec2

nano main.tf

main.tf

```
provider "aws" {
  region = "us-east-2"
}

resource "aws_instance" "my_ec2" {
```

```
  ami           = "ami-0f5fcdfbd140e4ab7"
  instance_type = "t3.micro"


  tags = {
    Name = "Terraform-EC2"
  }
}
```

Save and exit

```
ubuntu@ip-172-31-4-222:~$ mkdir terraform-ec2
cd terraform-ec2
ubuntu@ip-172-31-4-222:~/terraform-ec2$ nano main.tf
```

```
  GNU nano 7.2
provider "aws" {
  region = "us-east-2"
}

resource "aws_instance" "my_ec2" {
  ami           = "ami-0f5fcdfbd140e4ab7"
  instance_type = "t3.micro"

  tags = {
    Name = "Terraform-EC2"
  }
}
```

TASK 5: Initialize Terraform

terraform init

```
ubuntu@ip-172-31-4-222:~/terraform-ec2$ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v6.27.0...
- Installed hashicorp/aws v6.27.0 (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!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
ubuntu@ip-172-31-4-222:~/terraform-ec2$
```

TASK 6: Validate Configuration

terraform validate

```
ubuntu@ip-172-31-4-222:~/terraform-ec2$ terraform validate
Success! The configuration is valid.

ubuntu@ip-172-31-4-222:~/terraform-ec2$
```

TASK 7: Create EC2 Instance

terraform plan

terraform apply

Type yes when asked.

```
ubuntu@ip-172-31-4-222:~/terraform-ec2$ terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:

  # aws_instance.my_ec2 will be created
  + resource "aws_instance" "my_ec2" {
      + ami                                  = "ami-0f5fcdfbd140e4ab7"
      + arn                                  = (known after apply)
      + associate_public_ip_address          = (known after apply)
      + availability_zone                    = (known after apply)
      + disable_api_stop                     = (known after apply)
      + disable_api_termination              = (known after apply)
      + ebs_optimized                        = (known after apply)
      + enable_primary_ipv6                  = (known after apply)
      + force_destroy                        = false
      + get_password_data                    = false
      + host_id                              = (known after apply)
      + host_resource_group_arn              = (known after apply)
      + iam_instance_profile                 = (known after apply)
      + id                                   = (known after apply)
      + instance_initiated_shutdown_behavior = (known after apply)
```

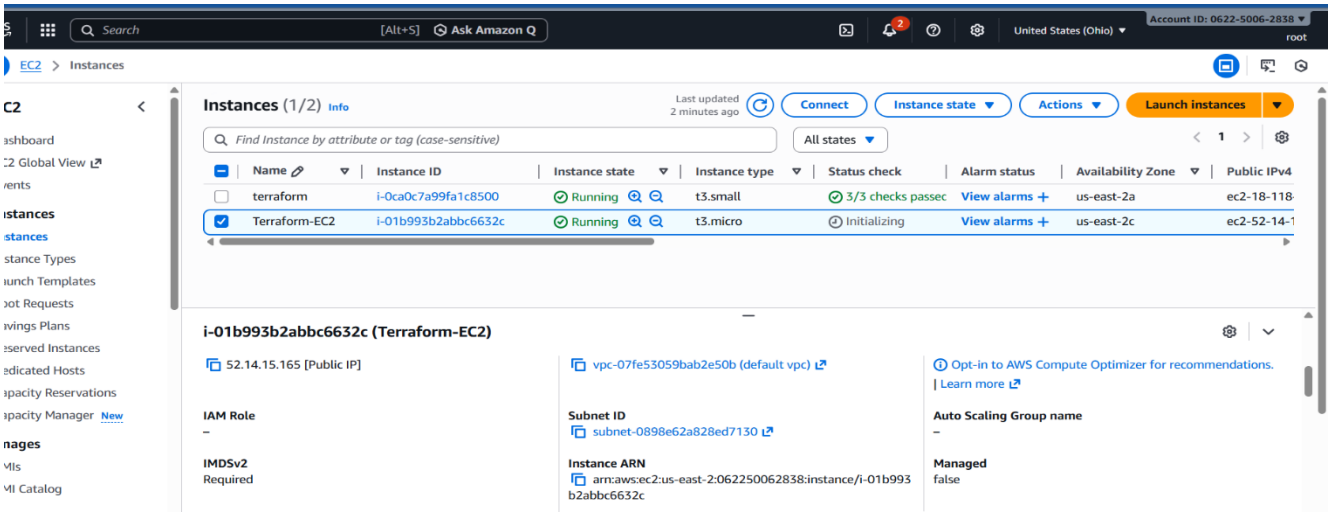
```
ubuntu@ip-172-31-4-222:~/terraform-ec2$ terraform apply

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:

  # aws_instance.my_ec2 will be created
  + resource "aws_instance" "my_ec2" {
      + ami                                  = "ami-0f5fcdfbd140e4ab7"
      + arn                                  = (known after apply)
      + associate_public_ip_address          = (known after apply)
      + availability_zone                    = (known after apply)
      + disable_api_stop                     = (known after apply)
      + disable_api_termination              = (known after apply)
      + ebs_optimized                        = (known after apply)
      + enable_primary_ipv6                  = (known after apply)
      + force_destroy                        = false
      + get_password_data                    = false
      + host_id                              = (known after apply)
      + host_resource_group_arn              = (known after apply)
      + iam_instance_profile                 = (known after apply)
      + id                                   = (known after apply)
      + instance_initiated_shutdown_behavior = (known after apply)
      + instance_lifecycle                   = (known after apply)
      + instance_state                       = (known after apply)
      + private_dns_name_options (known after apply)

      + root_block_device (known after apply)
    }

Plan: 1 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  Enter a value: yes

aws_instance.my_ec2: Creating...
aws_instance.my_ec2: Still creating... [00m10s elapsed]
aws_instance.my_ec2: Creation complete after 12s [id=i-01b993b2abbc6632c]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
ubuntu@ip-172-31-4-222:~/terraform-ec2$
```

Verification

Check in AWS Console → EC2 → Instances

Instance named Terraform-EC2 is created in Ohio (us-east-2)

and placed in default subnet.



Conclusion

Successfully created EC2 instance in the default subnet of Ohio region using Terraform.