LAB 10

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REGISTRATION #: 2023-BSE-061

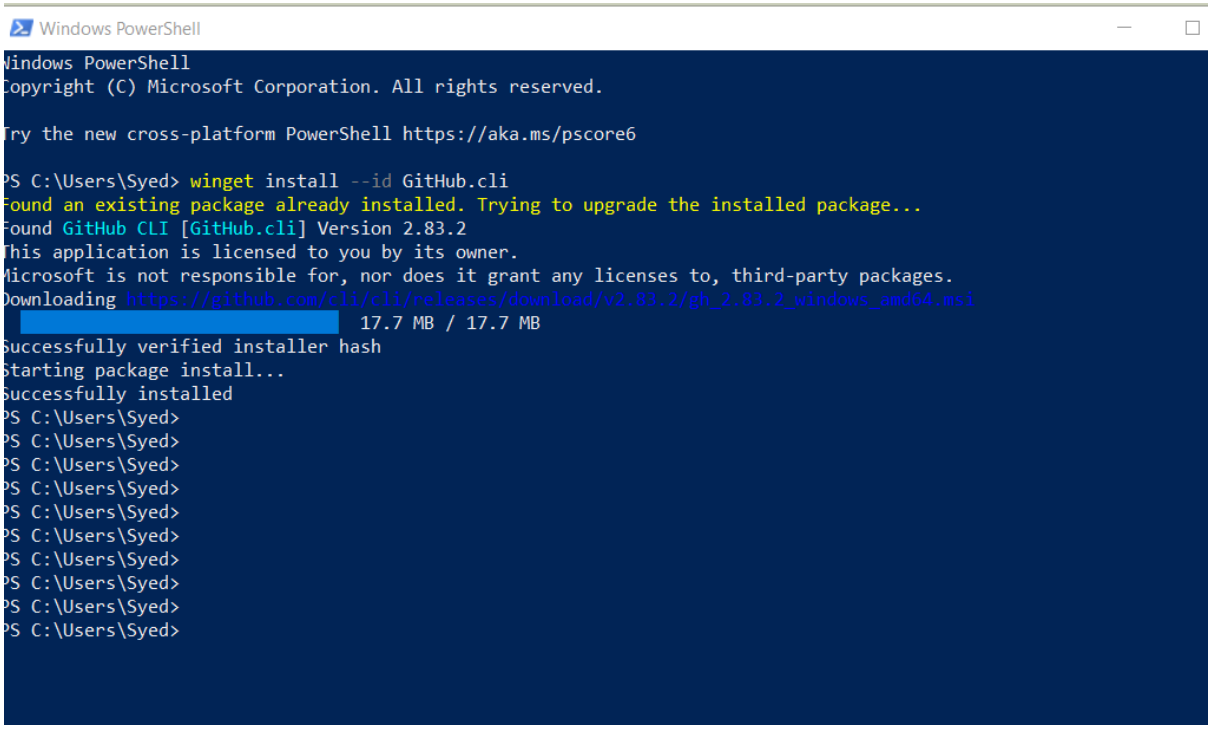
DEPARTMENT: BSE(5B)

LAB TASK

GH CLI Codespaces + AWS + Terraform: CLI Automation of VPC/Subnet Creation

Task 1 — GitHub CLI Codespace Setup & Authentication

task1_gh_install



task1_gh_auth_login

```
PS C:\Users\Syed> gh auth login -s codespace
? Where do you use GitHub? GitHub.com
? What is your preferred protocol for Git operations on this host? HTTPS
? Authenticate Git with your GitHub credentials? Yes
? How would you like to authenticate GitHub CLI? Paste an authentication token
Tip: you can generate a Personal Access Token here https://github.com/settings/tokens
The minimum required scopes are 'repo', 'read:org', 'workflow'.
? Paste your authentication token:
X Sorry, your reply was invalid: Value is required
? Paste your authentication token: ****************************************
- gh config set -h github.com git_protocol https
✓ Configured git protocol
✓ Logged in as 23-22411-061-rgb
! You were already logged in to this account
PS C:\Users\Syed>
```

task1_codespace_list

```
PS C:\Users\Syed> gh codespace list
NAME                                DISPLAY NAME                REPOSITORY                                    BRANCH  STATE     CREATED AT
special-space-funicular-97g7wxvqr97x2pgxr  special space funicular  23-22411-061-rgb/CC_-Shumail-zahra-_-2023-BSE-061-  main    Shutdown  about 15 days ago
studious-spork-5g7g59647wv4cvjg     studious spork              23-22411-061-rgb/CC_-Shumail-zahra-_-2023-BSE-061-  main*  Shutdown  about 15 days ago
PS C:\Users\Syed>
```

task1_codespace_ssh_connected

```
PS C:\Users\Syed> gh codespace ssh -c special-space-funicular-97g7wxvqr97x2pgxr
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-1030-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

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.

Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-1030-azure x86_64)

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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.

@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```
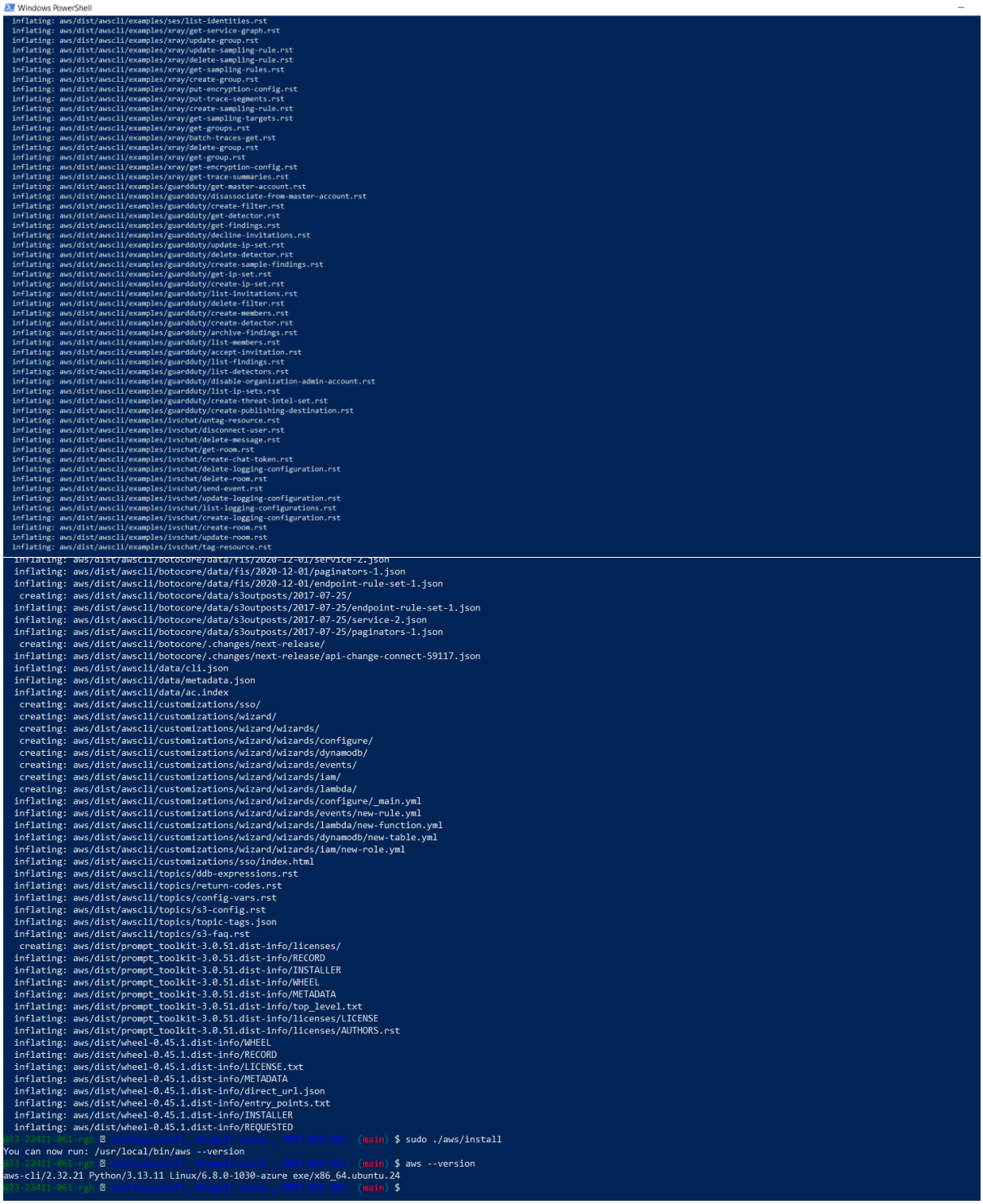

Task 2 — Install AWS CLI, Terraform CLI, Provider Setup

A. Install AWS CLI (Skip if already installed)

task2_aws_install_and_version



task2_aws_configure_and_files

```
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ aws configure
AWS Access Key ID [None]: A[redacted]
AWS Secret Access Key [None]: [redacted]
Default region name [None]: us-east-1
Default output format [None]: json
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat ~/.aws/credentials
[default]
aws_access_key_id = [redacted]
aws_secret_access_key = [redacted]
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat ~/.aws/config
[default]
region = us-east-1
output = json
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

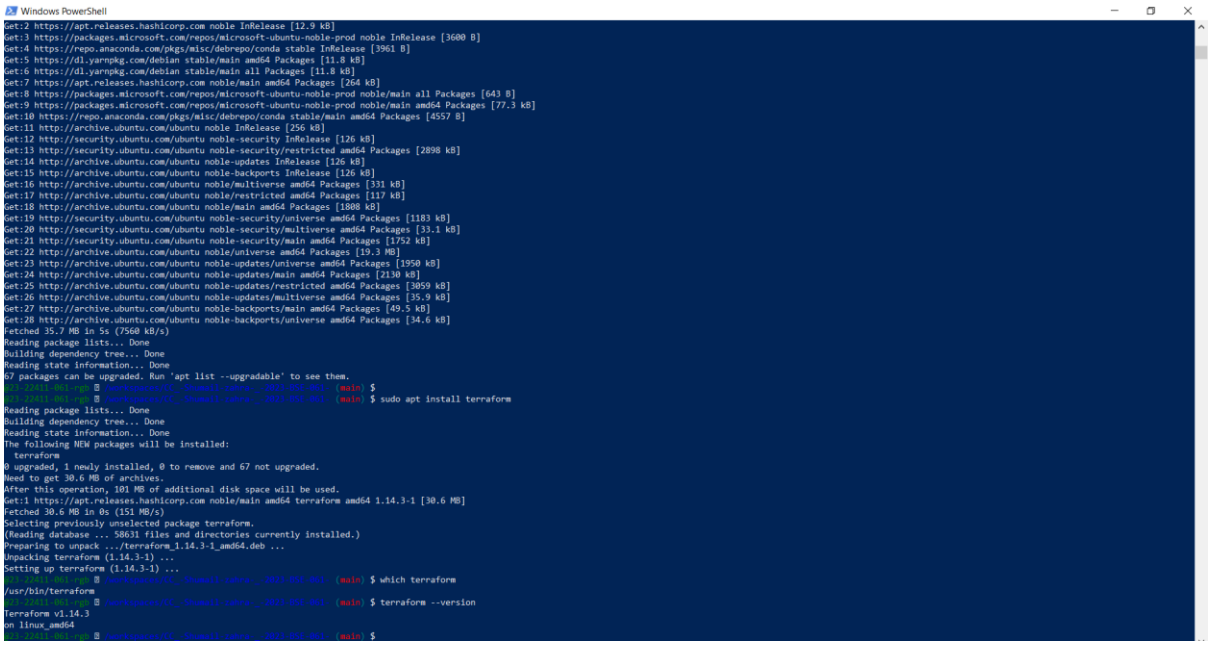
task2_aws_get_caller_identity

```
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ aws sts get-caller-identity
{
    "UserId": "AIDARC5V6TLZX2OEULWJY",
    "Account": "075006647027",
    "Arn": "arn:aws:iam::075006647027:user/terraform-user"
}
```

B. Install Terraform CLI

task2_terraform_install_and_version

```
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(grep -oP '(?<=UBUNTU_CODENAME=).*' /etc/os-release || lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp.list
deb [arch=amd64 signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com noble main
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ sudo apt update
Get:1 https://dl.yarnpkg.com/debian stable InRelease
Get:2 https://apt.releases.hashicorp.com noble InRelease [12.9 kB]
Get:3 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble InRelease [3600 B]
Get:4 https://repo.anaconda.com/pkgs/misc/debrepo/conda stable InRelease [3961 B]
Get:5 https://dl.yarnpkg.com/debian stable/main amd64 Packages [11.8 kB]
Get:6 https://dl.yarnpkg.com/debian stable/main all Packages [11.8 kB]
Get:7 https://apt.releases.hashicorp.com noble/main amd64 Packages [264 kB]
Get:8 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble/main all Packages [643 B]
Get:9 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble/main amd64 Packages [77.3 kB]
Get:10 https://repo.anaconda.com/pkgs/misc/debrepo/conda stable/main amd64 Packages [4557 B]
Get:11 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:12 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2898 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:18 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:19 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1183 kB]
Get:20 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [33.1 kB]
Get:21 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1752 kB]
Get:22 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [19.3 MB]
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1950 kB]
Get:24 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [2130 kB]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [3059 kB]
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [35.9 kB]
Get:27 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [49.5 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [34.6 kB]
Fetched 35.7 MB in 5s (7560 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
67 packages can be upgraded. Run 'apt list --upgradable' to see them.
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
@23-22411-061-rgb 🗄 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ sudo apt install terraform
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 67 not upgraded.
Need to get 30.6 MB of archives.
After this operation, 101 MB of additional disk space will be used.
Get:1 https://apt.releases.hashicorp.com noble/main amd64 terraform amd64 1.14.3-1 [30.6 MB]
Fetched 30.6 MB in 0s (151 MB/s)
Selecting previously unselected package terraform.
(Reading database ... 90%
```



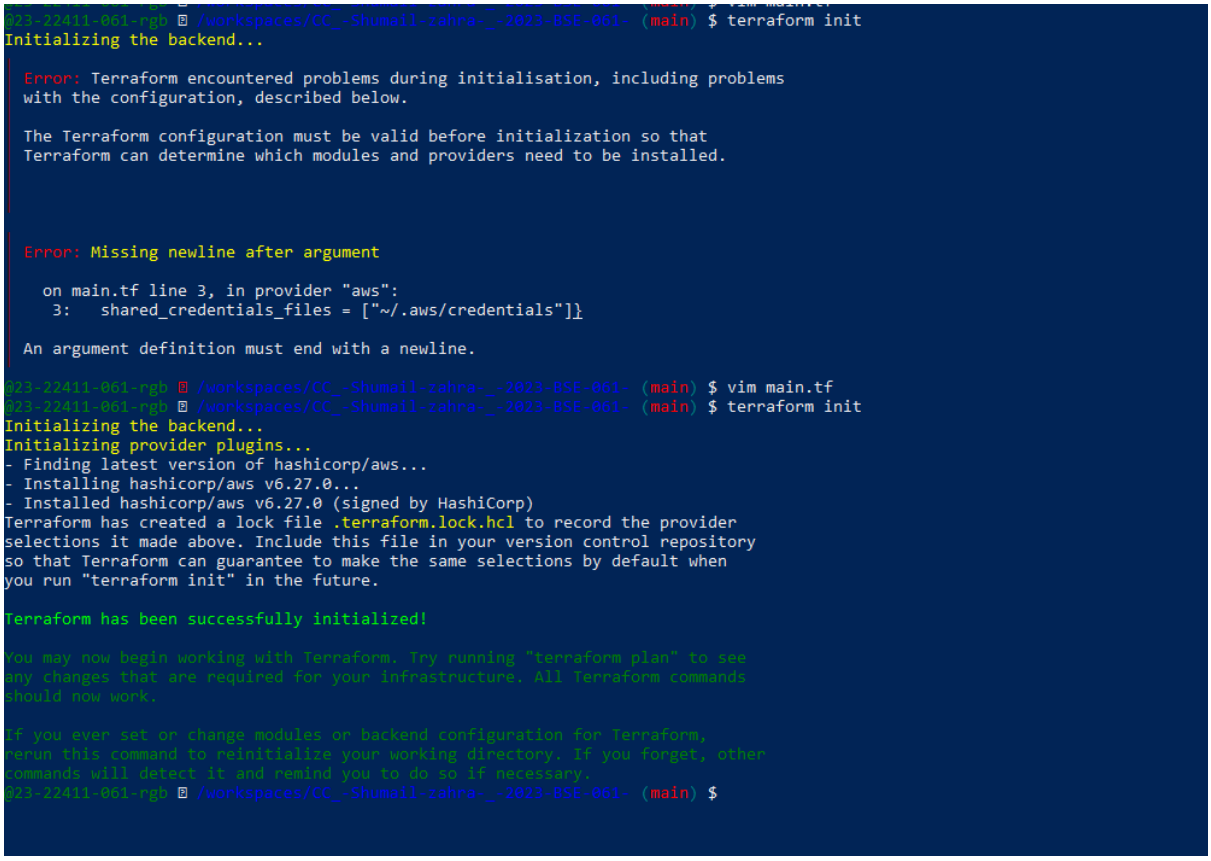
C. Provider Configuration (main.tf)

task2_provider_file_creation

task2_provider_block

task2_vim_save_main_tf

task2_terraform_init_output



task2_terraform_lock_hcl

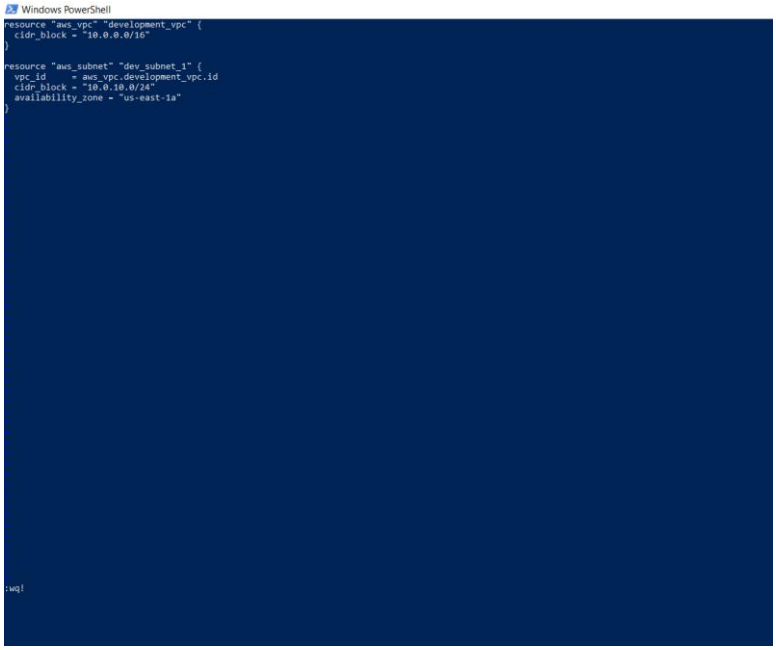
```
@23-22411-061-rgb 🖹 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat .terraform.lock.hcl
# This file is maintained automatically by "terraform init".
# Manual edits may be lost in future updates.

provider "registry.terraform.io/hashicorp/aws" {
  version = "6.27.0"
  hashes = [
    "h1:bixp2PSsP5ZGBczGCxcbSDn6lF5QFlUXlNroq9cdab4=",
    "zh:177a24b806c72e8484b5cabc93b2b38e3d770ae6f745a998b54d6619fd0e8129",
    "zh:4ac4a85c14fb868a3306b542e6a56c10bd6c6d5a67bc0c9b8f6a9060cf5f3be7",
    "zh:552652185bc85c8ba1da1d65dea47c454728a5c6839c458b6dcd3ce71c19ccfc",
    "zh:60284b8172d09aee91eae0856f09855eaf040ce3a58d6933602ae17c53f8ed04",
    "zh:6be38d156756ca61fb8e7c752cc5d769cd709686700ac4b230f40a6e95b5dbc9",
    "zh:7a409138fae4ef42e3a637e37cb9efedf96459e28a3c764fc4e855e8db9a7485",
    "zh:8070cf5224ed1ed3a3e9a59f7c30ff88bf071c7567165275d477c1738a56c064",
    "zh:894439ef340a9a79f69cd759e27ad11c7826adeca27be1b1ca82b3c9702fa300",
    "zh:89d035eebf08a97c89374ff06040955ddc09f275ecca609d0c9d58d149bef5cf",
    "zh:985b1145d724fc1f38369099e4a5087141885740fd6c0b1dbc492171e73c2e49",
    "zh:9b12af85486a96aedd8d7984b0ff811a4b42e3d88dad1a3fb4c0b580d04fa425",
    "zh:a80b47ae8d1475201c86bd94a5dcb9dd4da5e8b73102a90820b68b66b76d50fd",
    "zh:d3395be1556210f82199b9166a6b2e677cee9c4b67e96e63f6c3a98325ad7ab0",
    "zh:db0b869d09657f6f1e4110b56093c5fcdf9dbdd97c020db1e577b239c0adcbce",
    "zh:ffc72e680370ae7c21f9bd3082c6317730df805c6797427839a6b6b7e9a26a01",
  ]
}
@23-22411-061-rgb 🖹 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

task2_terraform_dir_ls

```
  ]
}
@23-22411-061-rgb 🖹 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ ls .terraform/
providers
@23-22411-061-rgb 🖹 /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

Task 3 — VPC/Subnet Creation, Initialization, Verification

task3_main_tf_resource_add



task3_terraform_apply_vpc_subnet

```
b23-22411-061-rgb /workspaces/CC_-Shumail-zahra-__-2023-BSE-061- (main) $ vim main.tf
b23-22411-061-rgb /workspaces/CC_-Shumail-zahra-__-2023-BSE-061- (main) $ terraform apply
aws_vpc.development_vpc: Refreshing state... [id=vpc-07247fc26abe28036]

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_subnet.dev_subnet_1 will be created
  + resource "aws_subnet" "dev_subnet_1" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "10.0.10.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-07247fc26abe28036"
    }

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_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0c94fd37eeb79ea89]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
b23-22411-061-rgb /workspaces/CC_-Shumail-zahra-__-2023-BSE-061- (main) $
```

task3_aws_cli_verify_subnet

```
b23-22411-061-rgb /workspaces/CC_-Shumail-zahra-__-2023-BSE-061- (main) $ aws ec2 describe-subnets --filter "Name=subnet-id,Values=subnet-0c94fd37eeb79ea89"
{
    "Subnets": [
        {
            "AvailabilityZoneId": "use1-az1",
            "MapCustomerOwnedIpOnLaunch": false,
            "OwnerId": "075006647027",
            "AssignIpv6AddressOnCreation": false,
            "Ipv6CidrBlockAssociationSet": [],
            "SubnetArn": "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0c94fd37eeb79ea89",
            "EnableDns64": false,
            "Ipv6Native": false,
            "PrivateDnsNameOptionsOnLaunch": {
                "HostnameType": "ip-name",
                "EnableResourceNameDnsARecord": false,
                "EnableResourceNameDnsAAAARecord": false
            },
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "SubnetId": "subnet-0c94fd37eeb79ea89",
            "State": "available",
            "VpcId": "vpc-07247fc26abe28036",
            "CidrBlock": "10.0.10.0/24",
            "AvailableIpAddressCount": 251,
```

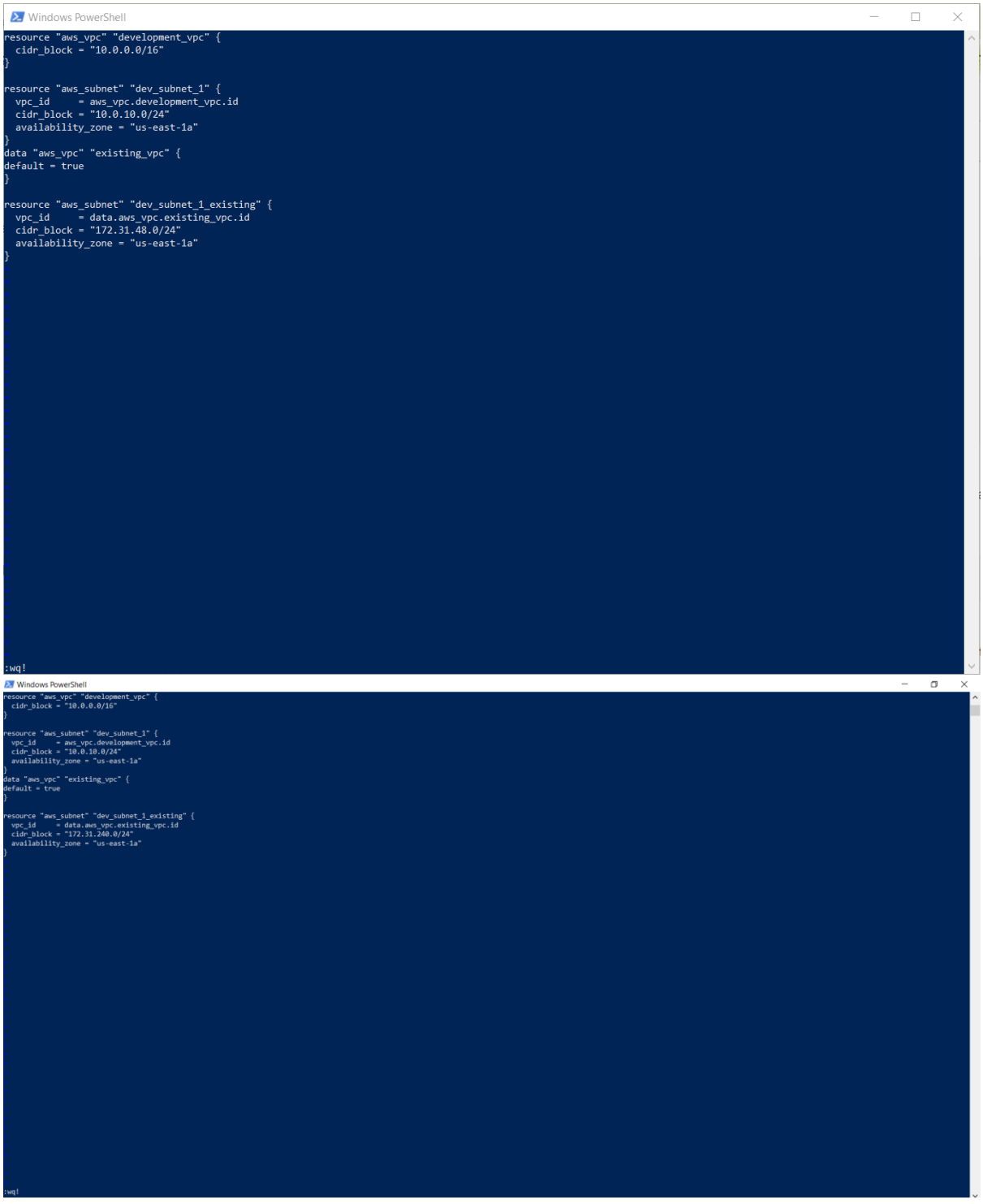
task3_aws_cli_verify_vpc

```
b23-22411-061-rgb /workspaces/CC_-Shumail-zahra-__-2023-BSE-061- (main) $ aws ec2 describe-vpcs --filter "Name=vpc-id,Values=vpc-07247fc26abe28036"
{
    "Vpcs": [
        {
            "OwnerId": "075006647027",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-089b2e5c3a01463de",
                    "CidrBlock": "10.0.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": false,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-07247fc26abe28036",
```

Task 4 — Data Source, Targeted Destroy, Tags

A. Data Source & Resource Creation

task4_main_tf_datasource_resource_add



task4_terraform_apply_datasource_resource

```
b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $ vim main.tf
b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-07247fc26abe28036]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0c94fd37eeb79ea89]

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_subnet.dev_subnet_1_existing will be created
  + resource "aws_subnet" "dev_subnet_1_existing" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.48.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-0cc0868d02cdd5863"
    }

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_subnet.dev_subnet_1_existing: Creating...

╷
│ Error: creating EC2 Subnet: operation error EC2: CreateSubnet, https response error StatusCode: 400, RequestID: 8553c422-1bd0-4429-9e7f-6d486abb6d41, api error InvalidSubnet.Conflict: The CIDR '172.31.48.0/24' conflicts with another
bnet
│
│   with aws_subnet.dev_subnet_1_existing,
│   on main.tf line 14, in resource "aws_subnet" "dev_subnet_1_existing":
│   14: resource "aws_subnet" "dev_subnet_1_existing" {
│
╵

b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $ vim main.tf
b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
```

```
[
b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $ vim main.tf
b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-07247fc26abe28036]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0c94fd37eeb79ea89]

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_subnet.dev_subnet_1_existing will be created
  + resource "aws_subnet" "dev_subnet_1_existing" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.240.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-0cc0868d02cdd5863"
    }

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_subnet.dev_subnet_1_existing: Creating...
aws_subnet.dev_subnet_1_existing: Creation complete after 2s [id=subnet-0aeb798fc35b4eafa]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
b23-22411-061-rgb /workspaces/CC_Shumail-zahra_-_2023-BSE-061_ (main) $
```

B. Targeted Destroy & Refresh

task4_terraform_destroy_targeted

```
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform destroy -target=aws_subnet.dev_subnet_1_existing
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-0aeb798fc35b4eafa]

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

Terraform will perform the following actions:

  # aws_subnet.dev_subnet_1_existing will be destroyed
    resource "aws_subnet" "dev_subnet_1_existing" {
        arn                                            = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0aeb798fc35b4eafa" -> null
        assign_ipv6_address_on_creation                = false -> null
        availability_zone                              = "us-east-1a" -> null
        availability_zone_id                           = "use1-az1" -> null
        cidr_block                                     = "172.31.240.0/24" -> null
        enable_dns64                                   = false -> null
        enable_lni_at_device_index                     = 0 -> null
        enable_resource_name_dns_a_record_on_launch    = false -> null
        enable_resource_name_dns_aaaa_record_on_launch = false -> null
        id                                             = "subnet-0aeb798fc35b4eafa" -> null
        ipv6_native                                    = false -> null
        map_customer_owned_ip_on_launch                = false -> null
        map_public_ip_on_launch                        = false -> null
        owner_id                                       = "075006647027" -> null
        private_dns_hostname_type_on_launch            = "ip-name" -> null
        region                                         = "us-east-1" -> null
        tags                                           = {} -> null
        tags_all                                       = {} -> null
        vpc_id                                         = "vpc-0cc0868d02cdd5863" -> null
        # (4 unchanged attributes hidden)
    }

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

  Warning: Resource targeting is in effect

  You are creating a plan with the -target option, which means that the result of this plan may not represent all of the changes requested by the current configuration.

  The -target option is not for routine use, and is provided only for exceptional situations such as recovering from errors or mistakes, or when Terraform specifically suggests to use it as part of an error message.


Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes

aws_subnet.dev_subnet_1_existing: Destroying... [id=subnet-0aeb798fc35b4eafa]
aws_subnet.dev_subnet_1_existing: Destruction complete after 1s

  Warning: Applied changes may be incomplete

  Warning: Resource targeting is in effect

  You are creating a plan with the -target option, which means that the result of this plan may not represent all of the changes requested by the current configuration.

  The -target option is not for routine use, and is provided only for exceptional situations such as recovering from errors or mistakes, or when Terraform specifically suggests to use it as part of an error message.


Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes

aws_subnet.dev_subnet_1_existing: Destroying... [id=subnet-0aeb798fc35b4eafa]
aws_subnet.dev_subnet_1_existing: Destruction complete after 1s

  Warning: Applied changes may be incomplete

  The plan was created with the -target option in effect, so some changes requested in the configuration may have been ignored and the output values may not be fully updated. Run the following command to verify that no other changes are
  pending:
      terraform plan

  Note that the -target option is not suitable for routine use, and is provided only for exceptional situations such as recovering from errors or mistakes, or when Terraform specifically suggests to use it as part of an error message.


Destroy complete! Resources: 1 destroyed.
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

task4_terraform_refresh_state

```
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform refresh
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-07247fc26abe28036]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0c94fd37eeb79ea89]
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

task4_terraform_apply_after_refresh

```
g23-22411-061-rgh 🅱 /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-07247fc26abe28036]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0c94fd37eeb79ea89]

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_subnet.dev_subnet_1_existing will be created
  + resource "aws_subnet" "dev_subnet_1_existing" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.240.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-0cc0868d02cdd5863"
    }

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_subnet.dev_subnet_1_existing: Creating...
aws_subnet.dev_subnet_1_existing: Creation complete after 2s [id=subnet-073e11ef6a14665a0]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
g23-22411-061-rgh 🅱 /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $
```

task4_terraform_destroy_all

```
g23-22411-061-rgh 🅱 /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $ terraform destroy
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-07247fc26abe28036]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-073e11ef6a14665a0]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0c94fd37eeb79ea89]

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

Terraform will perform the following actions:

  # aws_subnet.dev_subnet_1 will be destroyed
  - resource "aws_subnet" "dev_subnet_1" {
      - arn                                            = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0c94fd37eeb79ea89" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "us-east-1a" -> null
      - availability_zone_id                           = "use1-az1" -> null
      - cidr_block                                     = "10.0.10.0/24" -> null
      - enable_dns64                                   = false -> null
      - enable_lni_at_device_index                     = 0 -> null
      - enable_resource_name_dns_a_record_on_launch    = false -> null
      - enable_resource_name_dns_aaaa_record_on_launch = false -> null
      - id                                             = "subnet-0c94fd37eeb79ea89" -> null
      - ipv6_native                                    = false -> null
      - map_customer_owned_ip_on_launch                = false -> null
      - map_public_ip_on_launch                        = false -> null
      - owner_id                                       = "075006647027" -> null
      - private_dns_hostname_type_on_launch            = "ip-name" -> null
      - region                                         = "us-east-1" -> null
      - tags                                           = {} -> null
      - tags_all                                       = {} -> null
      - vpc_id                                         = "vpc-07247fc26abe28036" -> null
      # (4 unchanged attributes hidden)
    }

  # aws_subnet.dev_subnet_1_existing will be destroyed
  - resource "aws_subnet" "dev_subnet_1_existing" {
      - arn                                            = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-073e11ef6a14665a0" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "us-east-1a" -> null
      - availability_zone_id                           = "use1-az1" -> null
      - cidr_block                                     = "172.31.240.0/24" -> null
      - enable_dns64                                   = false -> null
      - enable_lni_at_device_index                     = 0 -> null
      - enable_resource_name_dns_a_record_on_launch    = false -> null
      - enable_resource_name_dns_aaaa_record_on_launch = false -> null
      - id                                             = "subnet-073e11ef6a14665a0" -> null
      - ipv6_native                                    = false -> null
      - map_customer_owned_ip_on_launch                = false -> null
      - map_public_ip_on_launch                        = false -> null
      - owner_id                                       = "075006647027" -> null
```

```
      ipv6_native                                  = false -> null
      map_customer_owned_ip_on_launch              = false -> null
      map_public_ip_on_launch                      = false -> null
      owner_id                                     = "075006647027" -> null
      private_dns_hostname_type_on_launch          = "ip-name" -> null
      region                                       = "us-east-1" -> null
      tags                                         = {} -> null
      tags_all                                     = {} -> null
      vpc_id                                       = "vpc-0cc0868d02cdd5863" -> null
      # (4 unchanged attributes hidden)
  }

# aws_vpc.development_vpc will be destroyed
  resource "aws_vpc" "development_vpc" {
      arn                                  = "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-07247fc26abe28036" -> null
      assign_generated_ipv6_cidr_block     = false -> null
      cidr_block                           = "10.0.0.0/16" -> null
      default_network_acl_id               = "acl-0b11e583c5ad12cf3" -> null
      default_route_table_id               = "rtb-0ed043ce7674474dd" -> null
      default_security_group_id            = "sg-06a613c667ba1d775" -> null
      dhcp_options_id                      = "dopt-03c04818ffb45a2df" -> null
      enable_dns_hostnames                 = false -> null
      enable_dns_support                   = true -> null
      enable_network_address_usage_metrics = false -> null
      id                                   = "vpc-07247fc26abe28036" -> null
      instance_tenancy                     = "default" -> null
      ipv6_netmask_length                  = 0 -> null
      main_route_table_id                  = "rtb-0ed043ce7674474dd" -> null
      owner_id                             = "075006647027" -> null
      region                               = "us-east-1" -> null
      tags                                 = {} -> null
      tags_all                             = {} -> null
      # (4 unchanged attributes hidden)
  }

Plan: 0 to add, 0 to change, 3 to destroy.

Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes

aws_subnet.dev_subnet_1: Destroying... [id=subnet-0c94fd37eeb79ea89]
aws_subnet.dev_subnet_1_existing: Destroying... [id=subnet-073e11ef6a14665a0]
aws_subnet.dev_subnet_1: Destruction complete after 2s
aws_vpc.development_vpc: Destroying... [id=vpc-07247fc26abe28036]
aws_subnet.dev_subnet_1_existing: Destruction complete after 2s
aws_vpc.development_vpc: Destruction complete after 1s

Destroy complete! Resources: 3 destroyed.
```

task4_terraform_plan_output

```
Destroy complete! Resources: 3 destroyed.
(main) $ terraform plan
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]

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_subnet.dev_subnet_1 will be created
  + resource "aws_subnet" "dev_subnet_1" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "10.0.10.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = (known after apply)
    }

  # aws_subnet.dev_subnet_1_existing will be created
  + resource "aws_subnet" "dev_subnet_1_existing" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.240.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-0cc0868d02cdd5863"
    }

  # aws_vpc.development_vpc will be created
  + resource "aws_vpc" "development_vpc" {
```

```
      + owner_id                                     = (known after apply)
      + private_dns_hostname_type_on_launch          = (known after apply)
      + region                                       = "us-east-1"
      + tags_all                                     = (known after apply)
      + vpc_id                                       = "vpc-0cc0868d02cdd5863"
    }

  # aws_vpc.development_vpc will be created
  + resource "aws_vpc" "development_vpc" {
      + arn                                = (known after apply)
      + cidr_block                         = "10.0.0.0/16"
      + default_network_acl_id             = (known after apply)
      + default_route_table_id             = (known after apply)
      + default_security_group_id          = (known after apply)
      + dhcp_options_id                    = (known after apply)
      + enable_dns_hostnames               = (known after apply)
      + enable_dns_support                 = true
      + enable_network_address_usage_metrics = (known after apply)
      + id                                 = (known after apply)
      + instance_tenancy                   = "default"
      + ipv6_association_id                = (known after apply)
      + ipv6_cidr_block                    = (known after apply)
      + ipv6_cidr_block_network_border_group = (known after apply)
      + main_route_table_id                = (known after apply)
      + owner_id                           = (known after apply)
      + region                             = "us-east-1"
      + tags_all                           = (known after apply)
    }

Plan: 3 to add, 0 to change, 0 to destroy.

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
@23-22411-061-rgb  /workspaces/CC_Shumail-zahra_2023-BSE-061  (main) $
```

task4_terraform_apply_after_destroy

```
Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
@23-22411-061-rgb  /workspaces/CC_Shumail-zahra_2023-BSE-061  (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]

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_subnet.dev_subnet_1 will be created
  + resource "aws_subnet" "dev_subnet_1" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "10.0.10.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = (known after apply)
    }

  # aws_subnet.dev_subnet_1_existing will be created
  + resource "aws_subnet" "dev_subnet_1_existing" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.240.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-0cc0868d02cdd5863"
    }

  # aws_vpc.development_vpc will be created
  + resource "aws_vpc" "development_vpc" {
      + arn                                = (known after apply)
      + cidr_block                         = "10.0.0.0/16"
      + default_network_acl_id             = (known after apply)
      + default_route_table_id             = (known after apply)
      + default_security_group_id          = (known after apply)
      + dhcp_options_id                    = (known after apply)
      + enable_dns_hostnames               = (known after apply)
```

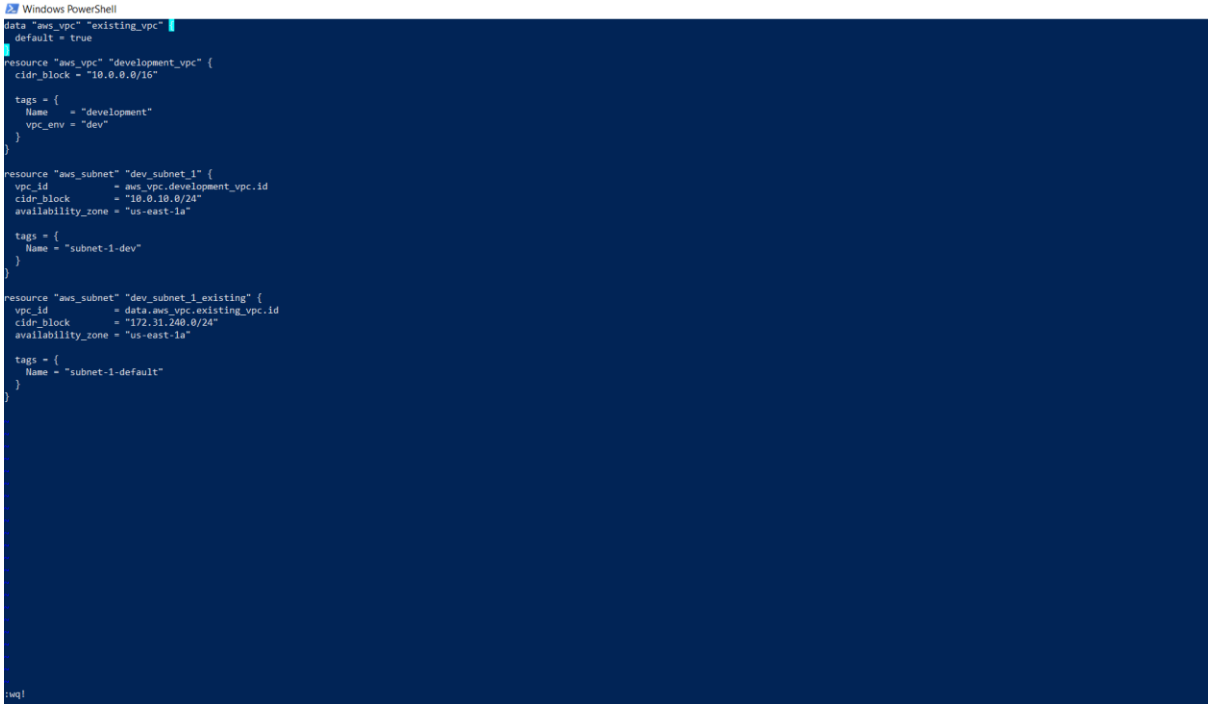
```
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags_all                                       = (known after apply)
      + vpc_id                                         = "vpc-0cc0868d02cdd5863"
    }

  # aws_vpc.development_vpc will be created
  + resource "aws_vpc" "development_vpc" {
      + arn                                  = (known after apply)
      + cidr_block                           = "10.0.0.0/16"
      + default_network_acl_id               = (known after apply)
      + default_route_table_id               = (known after apply)
      + default_security_group_id            = (known after apply)
      + dhcp_options_id                      = (known after apply)
      + enable_dns_hostnames                 = (known after apply)
      + enable_dns_support                   = true
      + enable_network_address_usage_metrics = (known after apply)
      + id                                   = (known after apply)
      + instance_tenancy                     = "default"
      + ipv6_association_id                  = (known after apply)
      + ipv6_cidr_block                      = (known after apply)
      + ipv6_cidr_block_network_border_group = (known after apply)
      + main_route_table_id                  = (known after apply)
      + owner_id                             = (known after apply)
      + region                               = "us-east-1"
      + tags_all                             = (known after apply)
    }

Plan: 3 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_subnet.dev_subnet_1_existing: Creating...
aws_vpc.development_vpc: Creating...
aws_subnet.dev_subnet_1_existing: Creation complete after 2s [id=subnet-003896b7c0fc729fd]
aws_vpc.development_vpc: Creation complete after 3s [id=vpc-0de3a57dcd315b6a5]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0f289c8b436bf2012]

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.
@23-22411-061-rgb ➜ /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

C. Tagging Resources

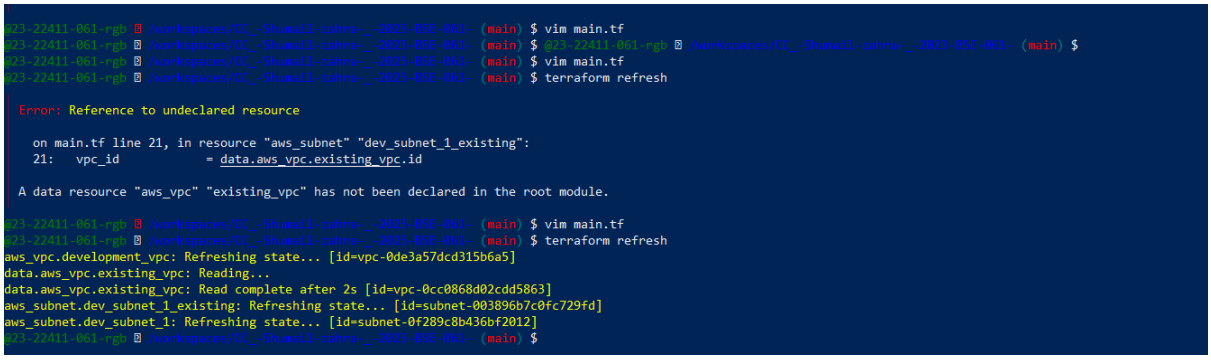
task4_main_tf_tagging

Windows PowerShell

```
resource "aws_vpc" "development_vpc" {
  cidr_block = "10.0.0.0/16"

  tags = {
    Name    = "development"
    vpc_env = "dev"
  }
}

resource "aws_subnet" "dev_subnet_1" {
  vpc_id            = aws_vpc.development_vpc.id
  cidr_block        = "10.0.10.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "subnet-1-dev"
  }
}

resource "aws_subnet" "dev_subnet_1_existing" {
  vpc_id            = data.aws_vpc.existing_vpc.id
  cidr_block        = "172.31.240.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "subnet-1-default"
  }
}
:wq!
```



task4_terraform_apply_tagging



```
aws_vpc.development_vpc: Refreshing state... [id=vpc-0de3a57dcd315b6a5]
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-003896b7c0fc729fd]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0f289c8b436bf2012]
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform apply -auto-approve
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-0de3a57dcd315b6a5]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-003896b7c0fc729fd]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0f289c8b436bf2012]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  ~ update in-place

Terraform will perform the following actions:

  # aws_subnet.dev_subnet_1 will be updated in-place
  ~ resource "aws_subnet" "dev_subnet_1" {
        id                                             = "subnet-0f289c8b436bf2012"
      ~ tags                                           = {
          + "Name" = "subnet-1-dev"
        }
      ~ tags_all                                       = {
          + "Name" = "subnet-1-dev"
        }
        # (20 unchanged attributes hidden)
    }

  # aws_subnet.dev_subnet_1_existing will be updated in-place
  ~ resource "aws_subnet" "dev_subnet_1_existing" {
        id                                             = "subnet-003896b7c0fc729fd"
      ~ tags                                           = {
          + "Name" = "subnet-1-default"
        }
      ~ tags_all                                       = {
          + "Name" = "subnet-1-default"
        }
        # (20 unchanged attributes hidden)
    }

  # aws_vpc.development_vpc will be updated in-place
  ~ resource "aws_vpc" "development_vpc" {
        id                                 = "vpc-0de3a57dcd315b6a5"
      ~ tags                               = {
          + "Name"    = "development"
          + "vpc_env" = "dev"
        }
      ~ tags_all                           = {
          + "Name"    = "development"
          + "vpc_env" = "dev"
        }
        # (19 unchanged attributes hidden)
    }
```

```
      ~ tags_all                                       = {
          + "Name" = "subnet-1-default"
        }
        # (20 unchanged attributes hidden)
    }

  # aws_vpc.development_vpc will be updated in-place
  ~ resource "aws_vpc" "development_vpc" {
        id                                 = "vpc-0de3a57dcd315b6a5"
      ~ tags                               = {
          + "Name"    = "development"
          + "vpc_env" = "dev"
        }
      ~ tags_all                           = {
          + "Name"    = "development"
          + "vpc_env" = "dev"
        }
        # (19 unchanged attributes hidden)
    }

Plan: 0 to add, 3 to change, 0 to destroy.
aws_subnet.dev_subnet_1_existing: Modifying... [id=subnet-003896b7c0fc729fd]
aws_vpc.development_vpc: Modifying... [id=vpc-0de3a57dcd315b6a5]
aws_subnet.dev_subnet_1_existing: Modifications complete after 2s [id=subnet-003896b7c0fc729fd]
aws_vpc.development_vpc: Modifications complete after 3s [id=vpc-0de3a57dcd315b6a5]
aws_subnet.dev_subnet_1: Modifying... [id=subnet-0f289c8b436bf2012]
aws_subnet.dev_subnet_1: Modifications complete after 1s [id=subnet-0f289c8b436bf2012]

Apply complete! Resources: 0 added, 3 changed, 0 destroyed.
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

task4_terraform_plan_remove_tag

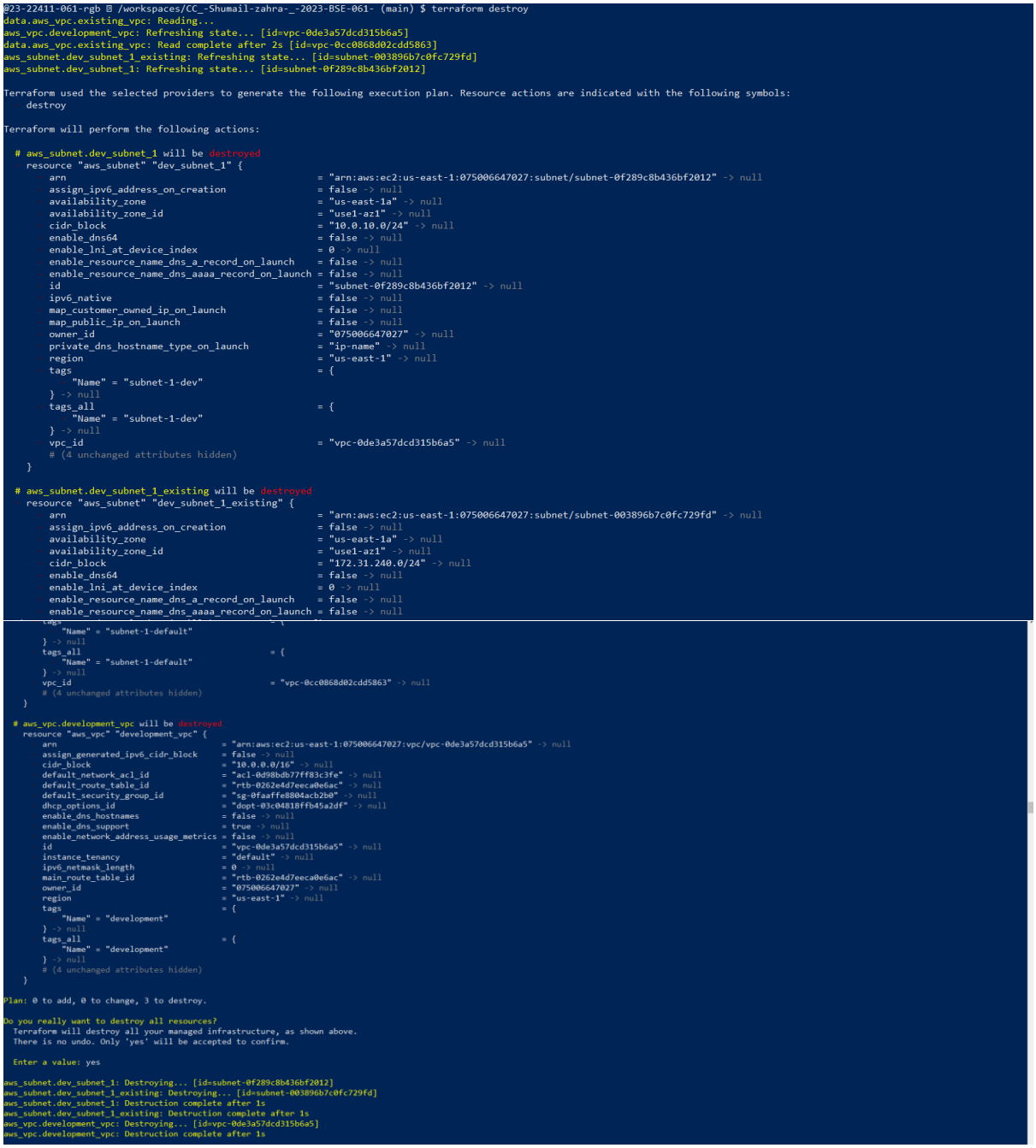
```
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-0de3a57dcd315b6a5]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-003896b7c0fc729fd]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0f289c8b436bf2012]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  ~ update in-place

Terraform will perform the following actions:

  # aws_vpc.development_vpc will be updated in-place
  ~ resource "aws_vpc" "development_vpc" {
        id                                   = "vpc-0de3a57dcd315b6a5"
      ~ tags                                 = {
            "Name"    = "development"
            "vpc_env" = "dev" -> null
        }
      ~ tags_all                             = {
            "vpc_env" = "dev" -> null
            # (1 unchanged element hidden)
        }
        # (19 unchanged attributes hidden)
    }

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


Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
```

task4_terraform_apply_remove_tag

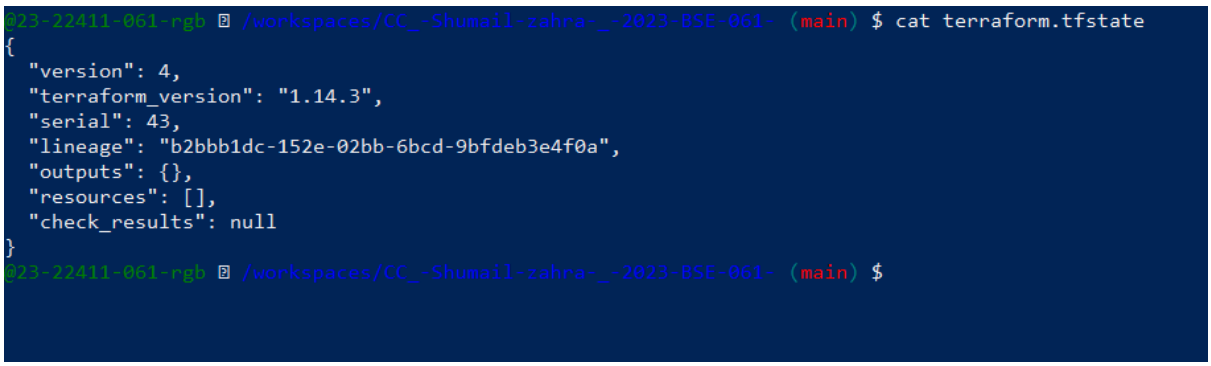
```
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-0de3a57dcd315b6a5]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-003896b7c0fc729fd]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0f289c8b436bf2012]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  ~ update in-place

Terraform will perform the following actions:

  # aws_vpc.development_vpc will be updated in-place
  ~ resource "aws_vpc" "development_vpc" {
        id                                   = "vpc-0de3a57dcd315b6a5"
      ~ tags                                 = {
            "Name"    = "development"
          - "vpc_env" = "dev" -> null
        }
      ~ tags_all                             = {
          - "vpc_env" = "dev" -> null
            # (1 unchanged element hidden)
        }
        # (19 unchanged attributes hidden)
    }

Plan: 0 to add, 1 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_vpc.development_vpc: Modifying... [id=vpc-0de3a57dcd315b6a5]
aws_vpc.development_vpc: Modifications complete after 3s [id=vpc-0de3a57dcd315b6a5]

Apply complete! Resources: 0 added, 1 changed, 0 destroyed.
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

Task 5 — State File Inspection & Terraform State Commands

task5_terraform_destroy



task5_terraform_state_file_empty



task5_terraform_state_backup_prev

```
}
023-22411-061-rgh  /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat terraform.tfstate.backup
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 38,
  "lineage": "b2bbb1dc-152e-02bb-6bcd-9bfdeb3e4f0a",
  "outputs": {},
  "resources": [
    {
      "mode": "data",
      "type": "aws_vpc",
      "name": "existing_vpc",
      "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
      "instances": [
        {
          "schema_version": 0,
          "attributes": {
            "arn": "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-0cc0868d02cdd5863",
            "cidr_block": "172.31.0.0/16",
            "cidr_block_associations": [
              {
                "association_id": "vpc-cidr-assoc-0fc958c81ad4ea610",
                "cidr_block": "172.31.0.0/16",
                "state": "associated"
              }
            ],
            "default": true,
            "dhcp_options_id": "dopt-03c04818ffb45a2df",
            "enable_dns_hostnames": true,
            "enable_dns_support": true,
            "enable_network_address_usage_metrics": false,
            "filter": null,
            "id": "vpc-0cc0868d02cdd5863",
            "instance_tenancy": "default",
            "ipv6_association_id": "",
            "ipv6_cidr_block": "",
            "main_route_table_id": "rtb-0dd69f9eeaffa80ff",
            "owner_id": "075006647027",
            "region": "us-east-1",
            "state": null,
            "tags": {},
            "timeouts": null
          },
          "sensitive_attributes": [],
          "identity_schema_version": 0
        }
      ]
    },
    {
      "mode": "managed",
      "type": "aws_subnet",
  "check_results": null
```

```
      "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
      "instances": [
        {
          "schema_version": 1,
          "attributes": {
            "arn": "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0f289c8b436bf2012",
            "assign_ipv6_address_on_creation": false,
            "availability_zone": "us-east-1a",
            "availability_zone_id": "use1-az1",
            "cidr_block": "10.0.10.0/24",
            "customer_owned_ipv4_pool": "",
            "enable_dns64": false,
            "enable_lni_at_device_index": 0,
            "enable_resource_name_dns_a_record_on_launch": false,
            "enable_resource_name_dns_aaaa_record_on_launch": false,
            "id": "subnet-0f289c8b436bf2012",
            "ipv6_cidr_block": "",
            "ipv6_cidr_block_association_id": "",
            "ipv6_native": false,
            "map_customer_owned_ip_on_launch": false,
            "map_public_ip_on_launch": false,
            "outpost_arn": "",
            "owner_id": "075006647027",
            "private_dns_hostname_type_on_launch": "ip-name",
            "region": "us-east-1",
            "tags": {
              "Name": "subnet-1-dev"
            },
            "tags_all": {
              "Name": "subnet-1-dev"
            },
            "timeouts": null,
            "vpc_id": "vpc-0de3a57dcd315b6a5"
          },
          "sensitive_attributes": [],
          "identity_schema_version": 0,
          "identity": {
            "account_id": "075006647027",
            "id": "subnet-0f289c8b436bf2012",
            "region": "us-east-1"
          },
          "private": "eyJlMmJmYjczMC11Y2FhLTExZTYtOGY4OC0zNDM2M2JjN2M0YzAiOnsiY3JlYXRlIjo2MDAwMDAwMDAwMDAsImRlbGV0ZSI6MTIwMDAwMDAwMDAwMH0sInNjaGVtYV92ZXJzaW9uIjoiMSJ9",
          "dependencies": [
            "aws_vpc.development_vpc"
          ]
        }
  "check_results": null
```

```
    {
      "mode": "managed",
      "type": "aws_subnet",
      "name": "dev_subnet_1_existing",
      "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
      "instances": [
        {
          "schema_version": 1,
          "attributes": {
            "arn": "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-003896b7c0fc729fd",
            "assign_ipv6_address_on_creation": false,
            "availability_zone": "us-east-1a",
            "availability_zone_id": "use1-az1",
            "cidr_block": "172.31.240.0/24",
            "customer_owned_ipv4_pool": "",
            "enable_dns64": false,
            "enable_lni_at_device_index": 0,
            "enable_resource_name_dns_a_record_on_launch": false,
            "enable_resource_name_dns_aaaa_record_on_launch": false,
            "id": "subnet-003896b7c0fc729fd",
            "ipv6_cidr_block": "",
            "ipv6_cidr_block_association_id": "",
            "ipv6_native": false,
            "map_customer_owned_ip_on_launch": false,
            "map_public_ip_on_launch": false,
            "outpost_arn": "",
            "owner_id": "075006647027",
            "private_dns_hostname_type_on_launch": "ip-name",
            "region": "us-east-1",
            "tags": {
              "Name": "subnet-1-default"
            },
            "tags_all": {
              "Name": "subnet-1-default"
            },
            "timeouts": null,
            "vpc_id": "vpc-0cc0868d02cdd5863"
          },
          "sensitive_attributes": [],
          "identity_schema_version": 0,
          "identity": {
            "account_id": "075006647027",
            "id": "subnet-003896b7c0fc729fd",
            "region": "us-east-1"
          },
          "private": "eyJlMmJmYjczMC1lY2FhLTExZTYtOGY4OC0zNDM2M2JjN2M0YzAiOnsiY3JlYXRlIjo2MDAwMDAwMDAsImRlbGV0ZSI6MTIwMDAwMDAwMDAsMH0sInNjaGVtYV92ZXJzaW9uIjoiMSJ9",
          "dependencies": [
            "data.aws_vpc.existing_vpc"
          ]
        }
      ]
    }
```


Windows PowerShell


```
    "type": "aws_vpc",
    "name": "development_vpc",
    "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
    "instances": [
      {
        "schema_version": 1,
        "attributes": {
          "arn": "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-0de3a57dcd315b6a5",
          "assign_generated_ipv6_cidr_block": false,
          "cidr_block": "10.0.0.0/16",
          "default_network_acl_id": "acl-0d98bdb77ff83c3fe",
          "default_route_table_id": "rtb-0262e4d7eeca0e6ac",
          "default_security_group_id": "sg-0faaffe8804acb2b0",
          "dhcp_options_id": "dopt-03c04818ffb45a2df",
          "enable_dns_hostnames": false,
          "enable_dns_support": true,
          "enable_network_address_usage_metrics": false,
          "id": "vpc-0de3a57dcd315b6a5",
          "instance_tenancy": "default",
          "ipv4_ipam_pool_id": null,
          "ipv4_netmask_length": null,
          "ipv6_association_id": "",
          "ipv6_cidr_block": "",
          "ipv6_cidr_block_network_border_group": "",
          "ipv6_ipam_pool_id": "",
          "ipv6_netmask_length": 0,
          "main_route_table_id": "rtb-0262e4d7eeca0e6ac",
          "owner_id": "075006647027",
          "region": "us-east-1",
          "tags": {
            "Name": "development"
          },
          "tags_all": {
            "Name": "development"
          }
        },
        "sensitive_attributes": [],
        "identity_schema_version": 0,
        "identity": {
          "account_id": "075006647027",
          "id": "vpc-0de3a57dcd315b6a5",
          "region": "us-east-1"
        },
        "private": "eyJzY2hlbWFfdmVyc2lvbiI6IjEifQ=="
      }
    ]
  }
 ],
 "check_results": null
}
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```


task5_terraform_apply_recreated

```
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]

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_subnet.dev_subnet_1 will be created
  + resource "aws_subnet" "dev_subnet_1" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "10.0.10.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
      + region                                         = "us-east-1"
      + tags                                           = {
          + "Name" = "subnet-1-dev"
        }
      + tags_all                                       = {
          + "Name" = "subnet-1-dev"
        }
      + vpc_id                                         = (known after apply)
    }

  # aws_subnet.dev_subnet_1_existing will be created
  + resource "aws_subnet" "dev_subnet_1_existing" {
      + arn                                            = (known after apply)
      + assign_ipv6_address_on_creation                = false
      + availability_zone                              = "us-east-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.240.0/24"
      + enable_dns64                                   = false
      + enable_resource_name_dns_a_record_on_launch    = false
      + enable_resource_name_dns_aaaa_record_on_launch = false
      + id                                             = (known after apply)
      + ipv6_cidr_block_association_id                 = (known after apply)
      + ipv6_native                                    = false
      + map_public_ip_on_launch                        = false
      + owner_id                                       = (known after apply)
      + private_dns_hostname_type_on_launch            = (known after apply)
  Only 'yes' will be accepted to approve.
```

```
  + resource "aws_vpc" "development_vpc" {
      + arn                                  = (known after apply)
      + cidr_block                           = "10.0.0.0/16"
      + default_network_acl_id               = (known after apply)
      + default_route_table_id               = (known after apply)
      + default_security_group_id            = (known after apply)
      + dhcp_options_id                      = (known after apply)
      + enable_dns_hostnames                 = (known after apply)
      + enable_dns_support                   = true
      + enable_network_address_usage_metrics = (known after apply)
      + id                                   = (known after apply)
      + instance_tenancy                     = "default"
      + ipv6_association_id                  = (known after apply)
      + ipv6_cidr_block                      = (known after apply)
      + ipv6_cidr_block_network_border_group = (known after apply)
      + main_route_table_id                  = (known after apply)
      + owner_id                             = (known after apply)
      + region                               = "us-east-1"
      + tags                                 = {
          + "Name" = "development"
        }
      + tags_all                             = {
          + "Name" = "development"
        }
    }

Plan: 3 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_vpc.development_vpc: Creating...
aws_subnet.dev_subnet_1_existing: Creating...
aws_subnet.dev_subnet_1_existing: Creation complete after 2s [id=subnet-087bb9ce4639b318e]
aws_vpc.development_vpc: Creation complete after 4s [id=vpc-06707647cde717658]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0bd212b6a8a657171]

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

task5_terraform_state_file_populated

```
Apply complete! Resources: 3 added, 0 changed, 0 destroyed.
23-22411-061-rgb  /workspaces/CC_Shumail zahra__2023-BSE-061  (main) $ cat terraform.tfstate
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 47,
  "lineage": "b2bbb1dc-152e-02bb-6bcd-9bfdeb3e4f0a",
  "outputs": {},
  "resources": [
    {
      "mode": "data",
      "type": "aws_vpc",
      "name": "existing_vpc",
      "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
      "instances": [
        {
          "schema_version": 0,
          "attributes": {
            "arn": "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-0cc0868d02cdd5863",
            "cidr_block": "172.31.0.0/16",
            "cidr_block_associations": [
              {
                "association_id": "vpc-cidr-assoc-0fc958c81ad4ea610",
                "cidr_block": "172.31.0.0/16",
                "state": "associated"
              }
            ],
            "default": true,
            "dhcp_options_id": "dopt-03c04818ffb45a2df",
            "enable_dns_hostnames": true,
            "enable_dns_support": true,
            "enable_network_address_usage_metrics": false,
            "filter": null,
            "id": "vpc-0cc0868d02cdd5863",
            "instance_tenancy": "default",
            "ipv6_association_id": "",
            "ipv6_cidr_block": "",
            "main_route_table_id": "rtb-0dd69f9eeaffa80ff",
            "owner_id": "075006647027",
            "region": "us-east-1",
            "state": null,
            "tags": {},
            "timeouts": null
          },
          "sensitive_attributes": [],
          "identity_schema_version": 0
        }
      ]
    },
    {
      "mode": "managed",
      "type": "aws_subnet",
      "name": "dev_subnet_1",
      "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
      "instances": [
        {
          "schema_version": 1,
          "attributes": {
            "arn": "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0bd212b6a8a657171",
            "assign_ipv6_address_on_creation": false,
            "availability_zone": "us-east-1a",
            "availability_zone_id": "use1-az1",
            "cidr_block": "10.0.10.0/24",
            "customer_owned_ipv4_pool": "",
            "enable_dns64": false,
            "enable_lni_at_device_index": 0,
            "enable_resource_name_dns_a_record_on_launch": false,
            "enable_resource_name_dns_aaaa_record_on_launch": false,
            "id": "subnet-0bd212b6a8a657171",
            "ipv6_cidr_block": "",
            "ipv6_cidr_block_association_id": "",
            "ipv6_native": false,
            "map_customer_owned_ip_on_launch": false,
            "map_public_ip_on_launch": false,
            "outpost_arn": "",
            "owner_id": "075006647027",
            "private_dns_hostname_type_on_launch": "ip-name",
            "region": "us-east-1",
            "tags": {
              "Name": "subnet-1-dev"
            },
            "tags_all": {
              "Name": "subnet-1-dev"
            },
            "timeouts": null,
            "vpc_id": "vpc-06707647cde717658"
          },
          "sensitive_attributes": [],
          "identity_schema_version": 0,
          "identity": {
            "account_id": "075006647027",
            "id": "subnet-0bd212b6a8a657171",
            "region": "us-east-1"
          },
          "private": "eyJlMmJmYjczMC11lY2FhLTExZTYtOGY4OC0zNDM2M2JjN2M0YzAiOnsiY3JlYXRlIjo2MDAwMDAwMDAwMDAsImRlbGV0ZSI6MTIwMDAwMDAwMDAwMH0sInNjaGVtYV92ZXJzaW9uIjoiMSJ9",
          "dependencies": [
            "aws_vpc.development_vpc"
          ]
        }
      ]
    }
  ]
}
```

```
    "mode": "managed",
    "type": "aws_vpc",
    "name": "development_vpc",
    "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",
    "instances": [
      {
        "schema_version": 1,
        "attributes": {
          "arn": "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-06707647cde717658",
          "assign_generated_ipv6_cidr_block": false,
          "cidr_block": "10.0.0.0/16",
          "default_network_acl_id": "acl-0fa6be3ca9b02b734",
          "default_route_table_id": "rtb-0bb4dd2adbc0d2a7e",
          "default_security_group_id": "sg-019401c1b86d6f94e",
          "dhcp_options_id": "dopt-03c04818ffb45a2df",
          "enable_dns_hostnames": false,
          "enable_dns_support": true,
          "enable_network_address_usage_metrics": false,
          "id": "vpc-06707647cde717658",
          "instance_tenancy": "default",
          "ipv4_ipam_pool_id": null,
          "ipv4_netmask_length": null,
          "ipv6_association_id": "",
          "ipv6_cidr_block": "",
          "ipv6_cidr_block_network_border_group": "",
          "ipv6_ipam_pool_id": "",
          "ipv6_netmask_length": 0,
          "main_route_table_id": "rtb-0bb4dd2adbc0d2a7e",
          "owner_id": "075006647027",
          "region": "us-east-1",
          "tags": {
            "Name": "development"
          },
          "tags_all": {
            "Name": "development"
          }
        },
        "sensitive_attributes": [],
        "identity_schema_version": 0,
        "identity": {
          "account_id": "075006647027",
          "id": "vpc-06707647cde717658",
          "region": "us-east-1"
        },
        "private": "eyJzY2hlbWFfdmVyc2lvbiI6IjEifQ=="
      }
    ]
  }
 ],
 "check_results": null
}
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
 "check_results": null
```


task5_terraform_state_backup_empty


```
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat terraform.tfstate.backup
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 43,
  "lineage": "b2bbb1dc-152e-02bb-6bcd-9bfdeb3e4f0a",
  "outputs": {},
  "resources": [],
  "check_results": null
}
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```


task5_terraform_state_list


```
}
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform state list
data.aws_vpc.existing_vpc
aws_subnet.dev_subnet_1
aws_subnet.dev_subnet_1_existing
aws_vpc.development_vpc
@23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```


task5_terraform_state_show_resource

```
aws_vpc.development_vpc
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform state show aws_vpc.development_vpc
# aws_vpc.development_vpc:
resource "aws_vpc" "development_vpc" {
    arn                                  = "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-06707647cde717658"
    assign_generated_ipv6_cidr_block     = false
    cidr_block                           = "10.0.0.0/16"
    default_network_acl_id               = "acl-0fa6be3ca9b02b734"
    default_route_table_id               = "rtb-0bb4dd2adbc0d2a7e"
    default_security_group_id            = "sg-019401c1b86d6f94e"
    dhcp_options_id                      = "dopt-03c04818ffb45a2df"
    enable_dns_hostnames                 = false
    enable_dns_support                   = true
    enable_network_address_usage_metrics = false
    id                                   = "vpc-06707647cde717658"
    instance_tenancy                     = "default"
    ipv6_association_id                  = null
    ipv6_cidr_block                      = null
    ipv6_cidr_block_network_border_group = null
    ipv6_ipam_pool_id                    = null
    ipv6_netmask_length                  = 0
    main_route_table_id                  = "rtb-0bb4dd2adbc0d2a7e"
    owner_id                             = "075006647027"
    region                               = "us-east-1"
    tags                                 = {
        "Name" = "development"
    }
    tags_all                             = {
        "Name" = "development"
    }
}
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

Task 6 — Terraform Outputs & Attributes Reporting

task6_terraform_outputs_basic

Windows PowerShell

```
provider "aws" {
  region = "us-east-1"
}
data "aws_vpc" "existing_vpc" {
  default = true
}
resource "aws_vpc" "development_vpc" {
  cidr_block = "10.0.0.0/16"

  tags = {
    Name    = "development"
  }
}

resource "aws_subnet" "dev_subnet_1" {
  vpc_id            = aws_vpc.development_vpc.id
  cidr_block        = "10.0.10.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "subnet-1-dev"
  }
}

resource "aws_subnet" "dev_subnet_1_existing" {
  vpc_id            = data.aws_vpc.existing_vpc.id
  cidr_block        = "172.31.240.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "subnet-1-default"
  }
}
output "dev-vpc-id" {
  value = aws_vpc.development_vpc.id
}

output "dev-subnet-id" {
  value = aws_subnet.dev_subnet_1.id
}

output "dev-vpc-arn" {
  value = aws_vpc.development_vpc.arn
}

output "dev-subnet-arn" {
  value = aws_subnet.dev_subnet_1.arn
}


~
~
"main.tf" 49L, 895B
```

```
023-22411-061-rgb 🖹 /workspaces/CC_-Shumail-zahra-__2023-BSE-061- (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-06707647cde717658]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-087bb9ce4639b318e]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0bd212b6a8a657171]

Changes to Outputs:
  + dev-subnet-arn = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0bd212b6a8a657171"
  + dev-subnet-id  = "subnet-0bd212b6a8a657171"
  + dev-vpc-arn    = "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-06707647cde717658"
  + dev-vpc-id     = "vpc-06707647cde717658"

You can apply this plan to save these new output values to the Terraform state, without changing any real infrastructure.

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


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

Outputs:

dev-subnet-arn = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0bd212b6a8a657171"
dev-subnet-id = "subnet-0bd212b6a8a657171"
dev-vpc-arn = "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-06707647cde717658"
dev-vpc-id = "vpc-06707647cde717658"
023-22411-061-rgb 🖹 /workspaces/CC_-Shumail-zahra-__2023-BSE-061- (main) $
```

task6_expanded_outputs

```
provider "aws" {
  region = "us-east-1"
}
data "aws_vpc" "existing_vpc" {
  default = true
}
resource "aws_vpc" "development_vpc" {
  cidr_block = "10.0.0.0/16"

  tags = {
    Name    = "development"
  }
}

resource "aws_subnet" "dev_subnet_1" {
  vpc_id            = aws_vpc.development_vpc.id
  cidr_block        = "10.0.10.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "subnet-1-dev"
  }
}

resource "aws_subnet" "dev_subnet_1_existing" {
  vpc_id            = data.aws_vpc.existing_vpc.id
  cidr_block        = "172.31.240.0/24"
  availability_zone = "us-east-1a"

  tags = {
    Name = "subnet-1-default"
  }
}
output "dev-vpc-cidr_block" {
  value = aws_vpc.development_vpc.cidr_block
}
output "dev-vpc-region" {
  value = aws_vpc.development_vpc.region
}
output "dev-vpc-tags_name" {
  value = aws_vpc.development_vpc.tags["Name"]
}
output "dev-vpc-tags_all" {
  value = aws_vpc.development_vpc.tags_all
}
output "dev-subnet-cidr_block" {
  value = aws_subnet.dev_subnet_1.cidr_block
}
output "dev-subnet-region" {
  value = aws_subnet.dev_subnet_1.availability_zone
}
:wq!
```

```
023-22411-061-rgb  /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ vim main.tf
023-22411-061-rgb  /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-06707647cde717658]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-087bb9ce4639b318e]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0bd212b6a8a657171]

Changes to Outputs:
  - dev-subnet-arn        = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0bd212b6a8a657171" -> null
  + dev-subnet-cidr_block = "10.0.10.0/24"
  - dev-subnet-id         = "subnet-0bd212b6a8a657171" -> null
  + dev-subnet-region     = "us-east-1a"
  + dev-subnet-tags_all   = {
      + Name = "subnet-1-dev"
    }
  + dev-subnet-tags_name  = "subnet-1-dev"
  - dev-vpc-arn           = "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-06707647cde717658" -> null
  + dev-vpc-cidr_block    = "10.0.0.0/16"
  - dev-vpc-id            = "vpc-06707647cde717658" -> null
  + dev-vpc-region        = "us-east-1"
  + dev-vpc-tags_all      = {
      + Name = "development"
    }
  + dev-vpc-tags_name     = "development"

You can apply this plan to save these new output values to the Terraform state, without changing any real infrastructure.

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


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

Outputs:

dev-subnet-cidr_block = "10.0.10.0/24"
dev-subnet-region = "us-east-1a"
dev-subnet-tags_all = tomap({
  "Name" = "subnet-1-dev"
})
dev-subnet-tags_name = "subnet-1-dev"
dev-vpc-cidr_block = "10.0.0.0/16"
dev-vpc-region = "us-east-1"
dev-vpc-tags_all = tomap({
  "Name" = "development"
})
dev-vpc-tags_name = "development"
023-22411-061-rgb  /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

Cleanup — Delete Resources & State Verification

cleanup_destroy_resources

```
dev_vpc_tags_name = "development"
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ terraform destroy
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-06707647cde717658]
data.aws_vpc.existing_vpc: Read complete after 2s [id=vpc-0cc0868d02cdd5863]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-087bb9ce4639b318e]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0bd212b6a8a657171]

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

Terraform will perform the following actions:

  # aws_subnet.dev_subnet_1 will be destroyed
  - resource "aws_subnet" "dev_subnet_1" {
      - arn                                            = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-0bd212b6a8a657171" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "us-east-1a" -> null
      - availability_zone_id                           = "use1-az1" -> null
      - cidr_block                                     = "10.0.10.0/24" -> null
      - enable_dns64                                   = false -> null
      - enable_lni_at_device_index                     = 0 -> null
      - enable_resource_name_dns_a_record_on_launch    = false -> null
      - enable_resource_name_dns_aaaa_record_on_launch = false -> null
      - id                                             = "subnet-0bd212b6a8a657171" -> null
      - ipv6_native                                    = false -> null
      - map_customer_owned_ip_on_launch                = false -> null
      - map_public_ip_on_launch                        = false -> null
      - owner_id                                       = "075006647027" -> null
      - private_dns_hostname_type_on_launch            = "ip-name" -> null
      - region                                         = "us-east-1" -> null
      - tags                                           = {
          - "Name" = "subnet-1-dev"
        } -> null
      - tags_all                                       = {
          - "Name" = "subnet-1-dev"
        } -> null
      - vpc_id                                         = "vpc-06707647cde717658" -> null
      # (4 unchanged attributes hidden)
    }

  # aws_subnet.dev_subnet_1_existing will be destroyed
  - resource "aws_subnet" "dev_subnet_1_existing" {
      - arn                                            = "arn:aws:ec2:us-east-1:075006647027:subnet/subnet-087bb9ce4639b318e" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "us-east-1a" -> null
      - availability_zone_id                           = "use1-az1" -> null
      - cidr_block                                     = "172.31.240.0/24" -> null
      - enable_dns64                                   = false -> null
```

cleanup_state_files

```
Destroy complete! Resources: 3 destroyed.
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat terraform.tfstate
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 54,
  "lineage": "b2bbb1dc-152e-02bb-6bcd-9bfdeb3e4f0a",
  "outputs": {},
  "resources": [],
  "check_results": null
}
023-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ cat terraform.tfstate.backup
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 49,
  "lineage": "b2bbb1dc-152e-02bb-6bcd-9bfdeb3e4f0a",
  "outputs": {
    "dev-subnet-cidr_block": {
      "value": "10.0.10.0/24",
      "type": "string"
    },
    "dev-subnet-region": {
      "value": "us-east-1a",
      "type": "string"
    },
    "dev-subnet-tags_all": {
      "value": {
        "Name": "subnet-1-dev"
      },
      "type": [
        "map",
        "string"
      ]
    },
    "dev-subnet-tags_name": {
      "value": "subnet-1-dev",
      "type": "string"
```

Windows PowerShell


```
        "schema_version": 1,
        "attributes": {
          "arn": "arn:aws:ec2:us-east-1:075006647027:vpc/vpc-06707647cde717658",
          "assign_generated_ipv6_cidr_block": false,
          "cidr_block": "10.0.0.0/16",
          "default_network_acl_id": "acl-0fa6be3ca9b02b734",
          "default_route_table_id": "rtb-0bb4dd2adbc0d2a7e",
          "default_security_group_id": "sg-019401c1b86d6f94e",
          "dhcp_options_id": "dopt-03c04818ffb45a2df",
          "enable_dns_hostnames": false,
          "enable_dns_support": true,
          "enable_network_address_usage_metrics": false,
          "id": "vpc-06707647cde717658",
          "instance_tenancy": "default",
          "ipv4_ipam_pool_id": null,
          "ipv4_netmask_length": null,
          "ipv6_association_id": "",
          "ipv6_cidr_block": "",
          "ipv6_cidr_block_network_border_group": "",
          "ipv6_ipam_pool_id": "",
          "ipv6_netmask_length": 0,
          "main_route_table_id": "rtb-0bb4dd2adbc0d2a7e",
          "owner_id": "075006647027",
          "region": "us-east-1",
          "tags": {
            "Name": "development"
          },
          "tags_all": {
            "Name": "development"
          }
        },
        "sensitive_attributes": [],
        "identity_schema_version": 0,
        "identity": {
          "account_id": "075006647027",
          "id": "vpc-06707647cde717658",
          "region": "us-east-1"
        },
        "private": "eyJzY2hlbWFfdmVyc2lvbiI6IjEifQ=="
      }
    ]
  }
],
"check_results": null

23-22411-061-rgb /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```