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Reg.no: 2023-BSE-040

Subject: Cloud Computing

LAB # 10

TASK 1:

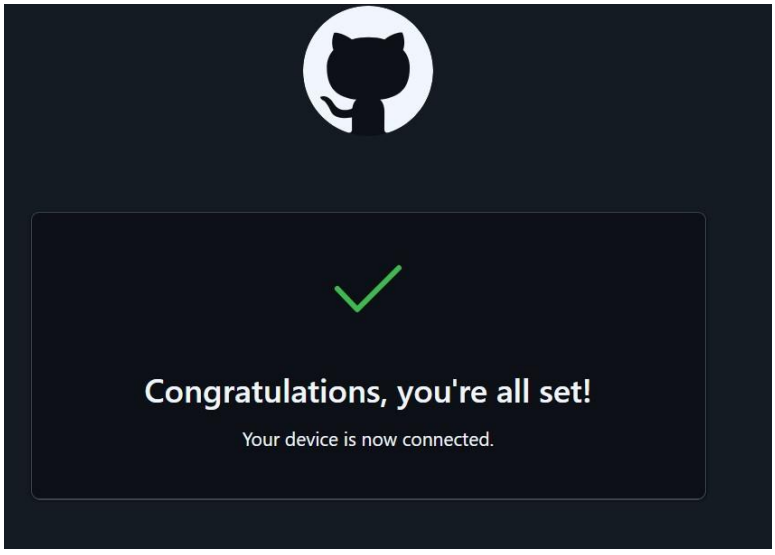
1.

```
C:\Users\BOSS>winget install --id GitHub.cli
Found GitHub CLI [GitHub.cli] Version 2.83.2
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://github.com/cli/cli/releases/download/v2.83.2/gh_2.83.2_windows_amd64.msi
  17.7 MB / 17.7 MB
Successfully verified installer hash
Starting package install...
Successfully installed
```

2.

```
PS C:\Users\BOSS> 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? Login with a web browser
```

3.



4.

```
✓ Authentication complete.
- gh config set -h github.com git_protocol
✓ Configured git protocol
✓ Logged in as Maira222
PS C:\Users\BOSS> gh codespace list
no codespaces found
PS C:\Users\BOSS>
```

5.

```
C:\Users\BOSS>gh codespace list
NAME                              DISPLAY NAME     REPOSITORY       BRANCH  STATE      CREATED AT
sturdy-sniffle-69xgxwq796q93rpp6  sturdy sniffle   Maira222/lab9    main*   Shutdown   about 10 hours ago
effective-lamp-q75q56jg7r6qf467w  effective lamp   Maira222/Lab10   main    Available  about 1 minute ago

C:\Users\BOSS>gh codespace ssh -c effective-lamp-q75q56jg7r6qf467w
```

6.

```
C:\Users\BOSS>gh codespace ssh -c effective-lamp-q75q56jg7r6qf467w
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.

@Maira222 /workspaces/Lab10 (main) $
```

Task 2:

1.

```
@Maira222 /workspaces/Lab10 (main) $ curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "a
ion  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 60.3M  100 60.3M    0     0   180M      0 --:--:-- --:--:-- --:--:--  180M
@Maira222 /workspaces/Lab10 (main) $ unzip awscliv2.zip
Archive:  awscliv2.zip
   creating: aws/
   creating: aws/dist/
  inflating: aws/README.md
  inflating: aws/THIRD_PARTY_LICENSES
  inflating: aws/install
   creating: aws/dist/awscli/
```

2.

```
@Maira222 /workspaces/Lab10 (main) $ sudo ./aws/install
aws --version
You can now run: /usr/local/bin/aws --version
@Maira222 /workspaces/Lab10 (main) $
@Maira222 /workspaces/Lab10 (main) $ aws --version
aws-cli/2.32.22 Python/3.13.11 Linux/6.8.0-1030-azure exe/x86_64.ubuntu.24
@Maira222 /workspaces/Lab10 (main) $ aws configure
```

3.

```
@Maira222 /workspace
AWS Access Key ID [Nor
AWS Secret Access Key
Default region name [N
Default output format
@Maira222 /workspace
[default]
aws_access_key_id = AK
aws_secret_access_key
@Maira222 /workspace
[default]
region = Global
@Maira222 /workspace
```

4.

```
@Maira222 /workspaces/Lab10 (main) $ aws sts get-caller-identity
{
    "UserId": "737230811842",
    "Account": "737230811842",
    "Arn": "arn:aws:iam::737230811842:root"
}
@Maira222 /workspaces/Lab10 (main) $
```

5.

```
@Maira222 /workspaces/Lab10 (main) $ wget -O - https://apt.releases.hashicorp.com/gpg | sudo gpg --de
re/keyrings/hashicorp-archive-keyring.gpg
ho "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg]
ases.hashicorp.com $(grep -oP '(?<=UBUNTU_CODENAME=).*' /etc/os-release || lsb_release -cs) main" | sud
urces.list.d/hashicorp.list
sudo apt update
sudo apt install terraform
which terraform
terraform --version--2025-12-23 08:12:28--  https://apt.releases.hashicorp.com/gpg
Resolving apt.releases.hashicorp.com (apt.releases.hashicorp.com)... 18.172.78.12, 18.172.78.129, 18.17
Connecting to apt.releases.hashicorp.com (apt.releases.hashicorp.com)|18.172.78.12|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3980 (3.9K) [binary/octet-stream]
Saving to: 'STDOUT'

-                           100%[=============================================>]   3.89K  --.-KB/

2025-12-23 08:12:28 (693 MB/s) - written to stdout [3980/3980]
```

6.

```
@Maira222 /workspaces/Lab10 (main) $ echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/sha
orp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(grep -oP '(?<=UBUNTU_CODENAME=).*' /etc/
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.hash
in
@Maira222 /workspaces/Lab10 (main) $ sudo apt update
sudo apt install terraform
which terraform
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 [265 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.
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://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1183 kB]
```

7.

```
@Maira222 /workspaces/Lab10 (main) $ sudo apt update
Hit:1 https://dl.yarnpkg.com/debian stable InRelease
Hit:2 https://apt.releases.hashicorp.com noble InRelease
Hit:3 https://packages.microsoft.com/repos/microsoft-ubuntu-noble-prod noble InRelease
Hit:4 https://repo.anaconda.com/pkgs/misc/debrepo/conda stable InRelease
Hit:5 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:6 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:7 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:8 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
50 packages can be upgraded. Run 'apt list --upgradable' to see them.
@Maira222 /workspaces/Lab10 (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 50 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 1s (38.5 MB/s)
Selecting previously unselected package terraform.
(Reading database ... 58629 files and directories currently installed.)
Preparing to unpack .../terraform_1.14.3-1_amd64.deb ...
Unpacking terraform (1.14.3-1) ...
```

8.

```
@Maira222 /workspaces/Lab10 (main) $ which terraform
/usr/bin/terraform
@Maira222 /workspaces/Lab10 (main) $ terraform --version
Terraform v1.14.3
on linux_amd64
@Maira222 /workspaces/Lab10 (main) $
```

9.

```
provider "aws" {
  shared_config_files      = ["~/.aws/config"]
  shared_credentials_files = ["~/.aws/credentials"]
}
~
~
~
```

10.

```
@Maira222 /workspaces/Lab10 (main) $ 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.
@Maira222 /workspaces/Lab10 (main) $
```

11.

```
@Maira222 /workspaces/Lab10 (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",
  ]
}
```

12.

```
@Maira222 /workspaces/Lab10 (main) $ ls .terraform/
providers
@Maira222 /workspaces/Lab10 (main) $
```

Task 3:

1.

```
provider "aws" {
  shared_config_files      = ["~/.aws/config"]
  shared_credentials_files = ["~/.aws/credentials"]
}
resource "aws_vpc" "development_vpc" {
  cidr_block = "10.0.0.0/16"
}

resource "aws_subnet" "dev_subnet_1" {
  vpc_id     = aws_vpc.development_vpc.id
  cidr_block = "10.0.10.0/24"
  availability_zone = "me-central-1a"
}
~
```

2.

```
@Maira222 /workspaces/Lab10 (main) $ @Maira222 /workspaces/Lab10 (main) $ terraform apply

Terraform used the selected providers to generate the following execution plan. Resource actions are ind
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                              = "me-central-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)
```

```
Plan: 2 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_vpc.development_vpc: Creation complete after 2s [id=vpc-04f3e669fe29c4a1b]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 0s [id=subnet-0dfda8b3d304e4e72]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
```

3.

```
@Maira222 /workspaces/Lab10 (main) $ aws ec2 describe-vpcs --filter "Name=vpc-id,Values=vpc-04f3e669fe29c4a1b"
{
    "Vpcs": [
        {
            "OwnerId": "737230811842",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-06aa69178e8a3a502",
                    "CidrBlock": "10.0.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": false,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-04f3e669fe29c4a1b",
            "State": "available",
            "CidrBlock": "10.0.0.0/16",
            "DhcpOptionsId": "dopt-0ccb75e357914138d"
        }
    ]
}
```

```
@Maira222 /workspaces/Lab10 (main) $ aws ec2 describe-subnets --filter "Name=subnet-id,Values=subnet-0dfda8b3d304e4e72"
{
    "Subnets": [
        {
            "AvailabilityZoneId": "mec1-az1",
            "MapCustomerOwnedIpOnLaunch": false,
            "OwnerId": "737230811842",
            "AssignIpv6AddressOnCreation": false,
            "Ipv6CidrBlockAssociationSet": [],
            "SubnetArn": "arn:aws:ec2:me-central-1:737230811842:subnet/subnet-0dfda8b3d304e4e72",
            "EnableDns64": false,
            "Ipv6Native": false,
            "PrivateDnsNameOptionsOnLaunch": {
                "HostnameType": "ip-name",
                "EnableResourceNameDnsARecord": false,
                "EnableResourceNameDnsAAAARecord": false
            },
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "SubnetId": "subnet-0dfda8b3d304e4e72",
            "State": "available",
            "VpcId": "vpc-04f3e669fe29c4a1b",
            "CidrBlock": "10.0.10.0/24",
            "AvailableIpAddressCount": 251,
            "AvailabilityZone": "me-central-1a",
            "DefaultForAz": false,
            "MapPublicIpOnLaunch": false
        }
    ]
```

TASK 4:

1.

```
}
data "aws_vpc" "existing_vpc" {
  default = true
}

resource "aws_subnet" "dev_subnet_1_existing" {
  vpc_id     = data.aws_vpc.existing_vpc.id
  cidr_block = "172.31.48.0/24"
  availability_zone = "me-central-1a"
}
~
```

2.

```
@Maira222 /workspaces/Lab10 (main) $ @Maira222 /workspaces/Lab10 (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-04f3e669fe29c4a1b]
data.aws_vpc.existing_vpc: Read complete after 0s [id=vpc-0549d3ac398b8e635]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0dfda8b3d304e4e72]

Terraform used the selected providers to generate the following execution plan. Resource actions are
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                              = "me-central-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
```

3.

```
@Maira222 /workspaces/Lab10 (main) $ terraform destroy -target=aws_subnet.dev_subnet_1_existing
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 0s [id=vpc-0549d3ac398b8e635]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-07d55d02a35253a29]

Terraform used the selected providers to generate the following execution plan. Resource actions a
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:me-central-1:737230811842:su
5253a29" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "me-central-1a" -> null
      - availability_zone_id                           = "mec1-az1" -> null
      - cidr_block                                     = "172.31.48.0/24" -> 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-07d55d02a35253a29" -> null
```

4.

```
@Maira222 /workspaces/Lab10 (main) $ terraform refresh
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-04f3e669fe29c4a1b]
data.aws_vpc.existing_vpc: Read complete after 1s [id=vpc-0549d3ac398b8e635]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0dfda8b3d304e4e72]
@Maira222 /workspaces/Lab10 (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-04f3e669fe29c4a1b]
data.aws_vpc.existing_vpc: Read complete after 0s [id=vpc-0549d3ac398b8e635]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0dfda8b3d304e4e72]

Terraform used the selected providers to generate the following execution plan. Resource
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                              = "me-central-1a"
      + availability_zone_id                           = (known after apply)
      + cidr_block                                     = "172.31.48.0/24"
```

5.

```
@Maira222 /workspaces/Lab10 (main) $ terraform destroy
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-04f3e669fe29c4a1b]
data.aws_vpc.existing_vpc: Read complete after 1s [id=vpc-0549d3ac398b8e635]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-0a3eec1472ec2fb9
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0dfda8b3d304e4e72]

Terraform used the selected providers to generate the following execution plan. R
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:me-central-
04e4e72" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "me-central-1a" -> null
      - availability_zone_id                           = "mec1-az1" -> null
      - cidr_block                                     = "10.0.10.0/24" -> null
```

```
  Enter a value: yes

aws_subnet.dev_subnet_1: Destroying... [id=subnet-0dfda8b3d304e4e72]
aws_subnet.dev_subnet_1_existing: Destroying... [id=subnet-0a3eec1472ec2fb95]
aws_subnet.dev_subnet_1_existing: Destruction complete after 1s
aws_subnet.dev_subnet_1: Destruction complete after 1s
aws_vpc.development_vpc: Destroying... [id=vpc-04f3e669fe29c4a1b]
aws_vpc.development_vpc: Destruction complete after 1s

Destroy complete! Resources: 3 destroyed.
```

6.

```
@Maira222 /workspaces/Lab10 (main) $ terraform plan
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 1s [id=vpc-0549d3ac398b8e635]

Terraform used the selected providers to generate the following execution plan. Resource actions are indica
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                              = "me-central-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                                         = "me-central-1"
      + tags_all                                       = (known after apply)
```

7.

```
provider "aws" {
  shared_config_files      = ["~/.aws/config"]
  shared_credentials_files = ["~/.aws/credentials"]
}
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 = "me-central-1a"
  tags = {
     Name: "subnet-1-dev"
  }
}
data "aws_vpc" "existing_vpc" {
  default = true
}

resource "aws_subnet" "dev_subnet_1_existing" {
  vpc_id     = data.aws_vpc.existing_vpc.id
  cidr_block = "172.31.48.0/24"
  availability_zone = "me-central-1a"
  tags = {
     Name: "subnet-1-default"
  }
}
~
~
~
```

8.

```
@Maira222 /workspaces/Lab10 (main) $ terraform refresh
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 0s [id=vpc-0549d3ac398b8e635]

Warning: Empty or non-existent state

There are currently no remote objects tracked in the state, so there is nothing to re

@Maira222 /workspaces/Lab10 (main) $ terraform apply -auto-approve
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 0s [id=vpc-0549d3ac398b8e635]

Terraform used the selected providers to generate the following execution plan. Resourc
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                              = "me-central-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
```

sk4_terraform_apply_remove_tag.png — apply output showing tag deleted.

```
    }

Plan: 3 to add, 0 to change, 0 to destroy.
aws_vpc.development_vpc: Creating...
aws_subnet.dev_subnet_1_existing: Creating...
aws_subnet.dev_subnet_1_existing: Creation complete after 1s [id=subnet-026f184a105cdec65]
aws_vpc.development_vpc: Creation complete after 1s [id=vpc-0f3f4d57b52174fde]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0ba069d66f4f85ac8]

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

TASK 5:

1.

```
@Maira222 /workspaces/Lab10 (main) $ terraform destroy
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-0f3f4d57b52174fde]
data.aws_vpc.existing_vpc: Read complete after 1s [id=vpc-0549d3ac398b8e635]
aws_subnet.dev_subnet_1_existing: Refreshing state... [id=subnet-026f184a105cdec65]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0ba069d66f4f85ac8]

Terraform used the selected providers to generate the following execution plan. Resource actions
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:me-central-1:737230811842:s
4f85ac8" -> null
      - assign_ipv6_address_on_creation                = false -> null
      - availability_zone                              = "me-central-1a" -> null
      - availability_zone_id                           = "mec1-az1" -> null
      - cidr_block                                     = "10.0.10.0/24" -> null
      - enable_dns64                                   = false -> null
```

2.

```
@Maira222 /workspaces/Lab10 (main) $ cat terraform.tfstate
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 24,
  "lineage": "813645b2-b977-c158-4813-a88b5d3f54d0",
  "outputs": {},
  "resources": [],
  "check_results": null
}
```

3.

```
@Maira222 /workspaces/Lab10 (main) $ terraform apply
data.aws_vpc.existing_vpc: Reading...
data.aws_vpc.existing_vpc: Read complete after 1s [id=vpc-0549d3ac398b8e635]

Terraform used the selected providers to generate the following execution plan. Res
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                              = "me-central-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)
```

4.


```
@Maira222 /workspaces/Lab10 (main) $ cat terraform.tfstate
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 28,
  "lineage": "813645b2-b977-c158-4813-a88b5d3f54d0",
  "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:me-central-1:737230811842:vpc/vpc-0549d3ac398b8e635",
            "cidr_block": "172.31.0.0/16",
            "cidr_block_associations": [
              {
                "association_id": "vpc-cidr-assoc-0a71c3f7210aa4452",
                "cidr_block": "172.31.0.0/16",
                "state": "associated"
              }
            ],
            "default": true,
            "dhcp_options_id": "dopt-0ccb75e357914138d",
            "enable_dns_hostnames": true,
```

5.

```
@Maira222 /workspaces/Lab10 (main) $ cat terraform.tfstate.backup
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 24,
  "lineage": "813645b2-b977-c158-4813-a88b5d3f54d0",
  "outputs": {},
  "resources": [],
  "check_results": null
}
```

6.

```
@Maira222 /workspaces/Lab10 (main) $ terraform state list
data.aws_vpc.existing_vpc
aws_subnet.dev_subnet_1
aws_subnet.dev_subnet_1_existing
aws_vpc.development_vpc
@Maira222 /workspaces/Lab10 (main) $
```

7.

```
@Maira222 /workspaces/Lab10 (main) $ terraform state show data.aws_vpc.existing_vpc
# data.aws_vpc.existing_vpc:
data "aws_vpc" "existing_vpc" {
    arn                                 = "arn:aws:ec2:me-central-1:737230811842:vpc/vpc-0549d3ac398b8e635"
    cidr_block                          = "172.31.0.0/16"
    cidr_block_associations             = [
        {
            association_id = "vpc-cidr-assoc-0a71c3f7210aa4452"
            cidr_block     = "172.31.0.0/16"
            state          = "associated"
        },
    ]
    default                             = true
    dhcp_options_id                     = "dopt-0ccb75e357914138d"
    enable_dns_hostnames                = true
    enable_dns_support                  = true
    enable_network_address_usage_metrics = false
    id                                  = "vpc-0549d3ac398b8e635"
    instance_tenancy                    = "default"
    ipv6_association_id                 = null
    ipv6_cidr_block                     = null
    main_route_table_id                 = "rtb-04dc3eefebaceb968"
    owner_id                            = "737230811842"
    region                              = "me-central-1"
    tags                                = {}
}
```

TASK 6:

1.

```
    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
}
-- INSERT --
```

```
output "dev-subnet-arn" {
  value = aws_subnet.dev_subnet_1.arn
}
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
}
output "dev-subnet-tags_name" {
  value = aws_subnet.dev_subnet_1.tags["Name"]
}
output "dev-subnet-tags_all" {
  value = aws_subnet.dev_subnet_1.tags_all
}
```

```
Outputs:

dev-subnet-arn = "arn:aws:ec2:me-central-1:737230811842:subnet/subnet-002bc2500497fba3d"
dev-subnet-cidr_block = "10.0.10.0/24"
dev-subnet-id = "subnet-002bc2500497fba3d"
dev-subnet-region = "me-central-1a"
dev-subnet-tags_all = tomap({
  "Name" = "subnet-1-dev"
})
dev-subnet-tags_name = "subnet-1-dev"
dev-vpc-arn = "arn:aws:ec2:me-central-1:737230811842:vpc/vpc-0be55661412a2188c"
dev-vpc-cidr_block = "10.0.0.0/16"
dev-vpc-id = "vpc-0be55661412a2188c"
dev-vpc-region = "me-central-1"
dev-vpc-tags_all = tomap({
  "Name" = "development"
  "vpc_env" = "dev"
})
dev-vpc-tags_name = "development"
```

CLEAN UP:

```
aws_subnet.dev_subnet_1_existing: Destroying... [id=subnet-0b2c59d7f965736f9]
aws_subnet.dev_subnet_1: Destroying... [id=subnet-002bc2500497fba3d]
aws_subnet.dev_subnet_1: Destruction complete after 1s
aws_vpc.development_vpc: Destroying... [id=vpc-0be55661412a2188c]
aws_subnet.dev_subnet_1_existing: Destruction complete after 1s
aws_vpc.development_vpc: Destruction complete after 1s

Destroy complete! Resources: 3 destroyed.
```

```
@Maira222 /workspaces/Lab10 (main) $ cat terraform.tfstate
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 34,
  "lineage": "813645b2-b977-c158-4813-a88b5d3f54d0",
  "outputs": {},
  "resources": [],
  "check_results": null
}
@Maira222 /workspaces/Lab10 (main) $ cat terraform.tfstate.backup
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 29,
  "lineage": "813645b2-b977-c158-4813-a88b5d3f54d0",
  "outputs": {
    "dev-subnet-arn": {
      "value": "arn:aws:ec2:me-central-1:737230811842:subnet/subnet-002bc2500497fb
      "type": "string"
    },
```