DEPARTMENT OF SOFTWARE ENGINEERING

LAB#10

SUBMITTED TO:

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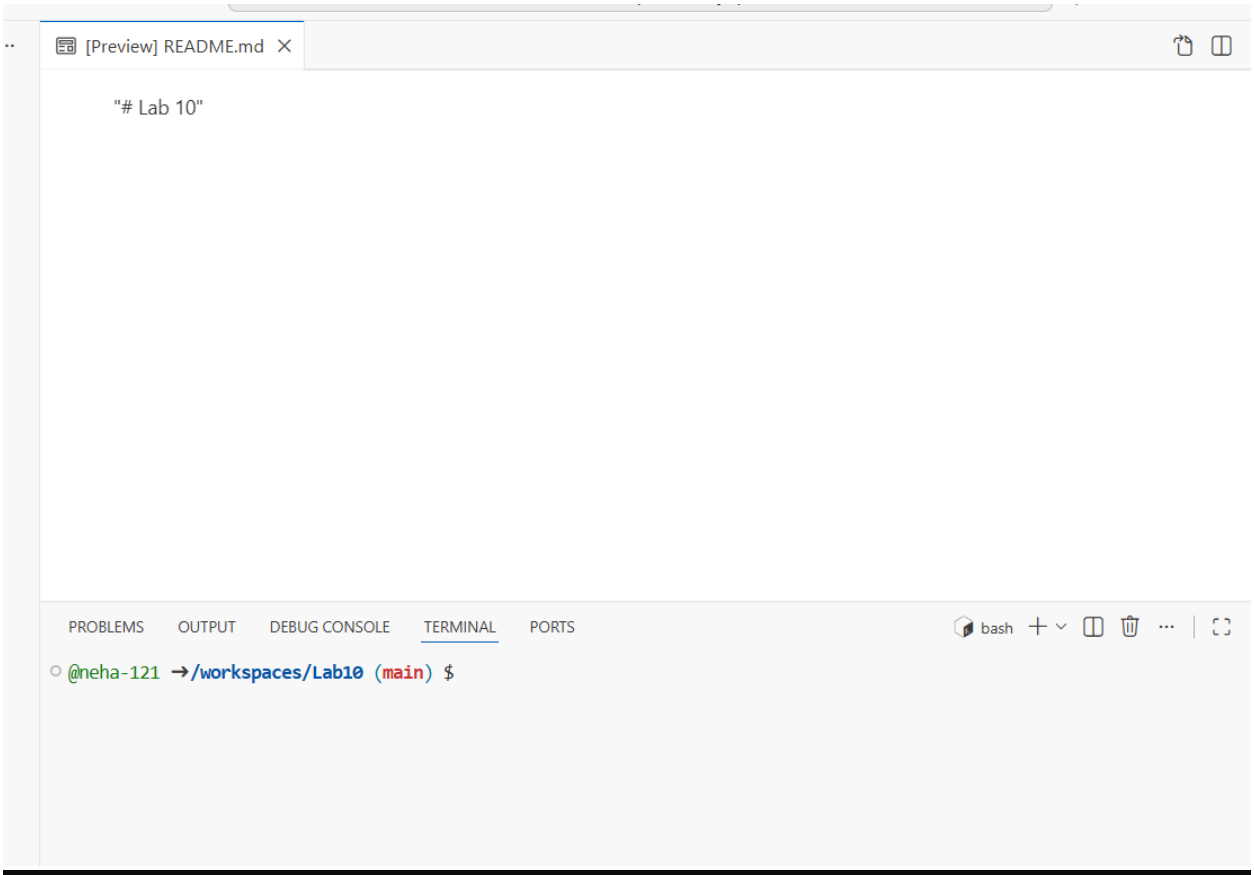
REG NO: 2021-BSE-024




```
C:\Users\nehaa>gh codespace list
NAME                                DISPLAY NAME   REPOSITORY           BRANCH  STATE     CREATED AT
expert-lamp-jjqjvgqwqj4x3q749       expert lamp    neha-121/Lab9        main*   Shutdown  about 1 day ago
shiny-journey-4jwj5rw9wjjg3jxpp     shiny journey  neha-121/Lab9        main*   Shutdown  about 1 day ago
glowing-lamp-pjpj46pqgxwpc9w65      glowing lamp   neha-121/Lab-Exam    main*   Shutdown  about 57 minutes ago
```

```
NAME                                DISPLAY NAME   REPOSITORY           BRANCH  STATE      CREATED
expert-lamp-jjqjvgqwqj4x3q749       expert lamp    neha-121/Lab9        main*   Shutdown   about 1
shiny-journey-4jwj5rw9wjjg3jxpp     shiny journey  neha-121/Lab9        main*   Shutdown   about 1
glowing-lamp-pjpj46pqgxwpc9w65      glowing lamp   neha-121/Lab-Exam    main*   Shutdown   about 1
obscure-cod-5gxgj9xpxvgjcvp5w       obscure cod    neha-121/Lab10       main    Available  less tha

C:\Users\nehaa\Lab10>gh codespace ssh -c obscure-cod-5gxgj9xpxvgjcvp5w
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)

 * Documentation:  https://help.ubuntu.com
```

Command Prompt

```
C:\Users\nehaa>winget install --id GitHub.cli
Found an existing package already installed. Trying to upgrade the installed package...
No available upgrade found.
No newer package versions are available from the configured sources.

C:\Users\nehaa>
C:\Users\nehaa>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

! First copy your one-time code: 3DBD-AE75
Press Enter to open https://github.com/login/device in your browser...
✓ Authentication complete.
- gh config set -h github.com git_protocol https
✓ Configured git protocol
✓ Logged in as neha-121
! You were already logged in to this account
```

Command Prompt

```
Microsoft Windows [Version 10.0.19045.6466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\nehaa>winget install --id GitHub.cli
Found an existing package already installed. Trying to upgrade the installed package...
No available upgrade found.
No newer package versions are available from the configured sources.
```

```
AWS Access Key ID [****************WARV]: AKIAYGZVAOQUXB7AFA4K
AWS Secret Access Key [****************q1XP]: 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
Default region name [None]: ap-east-1
Default output format [None]: json
@neha-121 ➜ /workspaces/Lab10 (main) $ cat ~/.aws/credentials
[default]
aws_access_key_id = AKIAYGZVAOQUXB7AFA4K
aws_secret_access_key = 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
@neha-121 ➜ /workspaces/Lab10 (main) $ cat ~/.aws/config
[default]
region = ap-east-1
output = json
@neha-121 ➜ /workspaces/Lab10 (main) $
```

```
aws_secret_access_key = 55AxUGRPkhRcmuK6IMMoBLK087ncXg1wf6s2qT2Q
@neha-121 /workspaces/Lab10 (main) $ cat ~/.aws/config
[default]
region = ap-east-1
output = json
@neha-121 /workspaces/Lab10 (main) $ aws sts get-caller-identity
{
    "UserId": "AIDAYGZVAOQUTW5QEFTXD",
    "Account": "564362507305",
    "Arn": "arn:aws:iam::564362507305:user/terraform-user"
}
@neha-121 /workspaces/Lab10 (main) $
```

```
@neha-121 ➜ /workspaces/Lab10 (main) $ curl "https://awscli.amazonaws.com/awscli-exe-linux

  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 63.7M  100 63.7M    0     0   139M      0 --:--:-- --:--:-- --:--:--  138M
@neha-121 ➜ /workspaces/Lab10 (main) $
```

```
 inflating: aws/dist/wheel-0.45.1.dist-info/entry_points.txt
 inflating: aws/dist/wheel-0.45.1.dist-info/direct_url.json
 inflating: aws/dist/wheel-0.45.1.dist-info/RECORD
 inflating: aws/dist/wheel-0.45.1.dist-info/INSTALLER
 inflating: aws/dist/wheel-0.45.1.dist-info/WHEEL
 inflating: aws/dist/wheel-0.45.1.dist-info/LICENSE.txt
 inflating: aws/dist/wheel-0.45.1.dist-info/METADATA
 inflating: aws/dist/wheel-0.45.1.dist-info/REQUESTED
neha-121 /workspaces/Lab10 (main) $ sudo ./aws/install
ws --version
ou can now run: /usr/local/bin/aws --version
neha-121 /workspaces/Lab10 (main) $ aws --version
ws-cli/2.33.2 Python/3.13.11 Linux/6.8.0-1030-azure exe/x86_64.ubuntu.24
neha-121 /workspaces/Lab10 (main) $
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
@neha-121 ➜ /workspaces/Lab10 (main) $ find /workspaces -name main.tf
@neha-121 ➜ /workspaces/Lab10 (main) $ vim main.tf
@neha-121 ➜ /workspaces/Lab10 (main) $ ls
cat main.tf
README.md  main.tf
provider "aws" {
  shared_config_files      = ["~/.aws/config"]
  shared_credentials_files = ["~/.aws/credentials"]
}

@neha-121 ➜ /workspaces/Lab10 (main) $
```


```
@neha-121 →/workspaces/Lab10 (main) $ ls .terraform/
cat .terraform.lock.hcl
providers
# This file is maintained automatically by "terraform init".
# Manual edits may be lost in future updates.

provider "registry.terraform.io/hashicorp/aws" {
  version = "6.28.0"
```

```
@neha-121 →/workspaces/Lab10 (main) $ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v6.28.0...
- Installed hashicorp/aws v6.28.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

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.
```

```
Get:8 https://dl.yarnpkg.com/debian stable InRelease
Get:9 https://dl.yarnpkg.com/debian stable/main amd64 Packages [11.8 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:11 https://dl.yarnpkg.com/debian stable/main all Packages [11.8 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [33.1 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1769 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:18 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2919 kB]
Get:19 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1191 kB]
Get:20 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:21 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 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 [1959 kB]
Get:24 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [3077 kB]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [2142 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/universe amd64 Packages [34.6 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [49.5 kB]
Fetched 35.8 MB in 5s (7459 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
74 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
@neha-121 →/workspaces/Lab10 (main) $ ls .terraform/
cat .terraform.lock.hcl
providers
# This file is maintained automatically by "terraform init".
# Manual edits may be lost in future updates.

provider "registry.terraform.io/hashicorp/aws" {
  version = "6.28.0"
```

```
@neha-121 →/workspaces/Lab10 (main) $ aws ec2 describe-subnets --filter "Name=subnet-id,Values=subnet-0fb584d597fa7e3
87"
{
    "Subnets": [
        {
            "AvailabilityZoneId": "mec1-az1",
            "MapCustomerOwnedIpOnLaunch": false,
            "OwnerId": "564362507305",
            "AssignIpv6AddressOnCreation": false,
            "Ipv6CidrBlockAssociationSet": [],
            "SubnetArn": "arn:aws:ec2:me-central-1:564362507305:subnet/subnet-0fb584d597fa7e387",
            "EnableDns64": false,
            "Ipv6Native": false,
            "PrivateDnsNameOptionsOnLaunch": {
                "HostnameType": "ip-name",
                "EnableResourceNameDnsARecord": false,
                "EnableResourceNameDnsAAAARecord": false
            },
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "SubnetId": "subnet-0fb584d597fa7e387",
            "State": "available",
            "VpcId": "vpc-00c235734dab9fbf4",
            "CidrBlock": "10.0.10.0/24",
            "AvailableIpAddressCount": 251,
            "AvailabilityZone": "me-central-1a",
            "DefaultForAz": false,
            "MapPublicIpOnLaunch": false
        }
    ]
}
```

```
@neha-121 →/workspaces/Lab10 (main) $ aws ec2 describe-vpcs --filter "Name=vpc-id,Values=vpc-00c235734dab9fbf4"
{
    "Vpcs": [
        {
            "OwnerId": "564362507305",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0c58907c95e76d72d",
                    "CidrBlock": "10.0.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": false,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-00c235734dab9fbf4",
            "State": "available",
            "CidrBlock": "10.0.0.0/16",
            "DhcpOptionsId": "dopt-0272c2329c23c4965"
        }
    ]
}
```

```
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-00c235734dab9fbf4]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0fb584d597fa7e387]

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

```
}
@neha-121 →/workspaces/Lab10 (main) $ aws ec2 describe-vpcs --filter "Name=vpc-id,Values=vpc-00c235734dab9fbf4"
{
    "Vpcs": [
        {
            "OwnerId": "564362507305",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0c58907c95e76d72d",
                    "CidrBlock": "10.0.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": false,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-00c235734dab9fbf4",
            "State": "available",
            "CidrBlock": "10.0.0.0/16",
            "DhcpOptionsId": "dopt-0272c2329c23c4965"
        }
    ]
}
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 1s [id=subnet-0d75e318b4639a1b1]
aws_vpc.development_vpc: Creation complete after 2s [id=vpc-0f1d5875ce426d30f]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0847aea67997ca257]

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.
@neha-121 →/workspaces/Lab10 (main) $ vim main.tf
@neha-121 →/workspaces/Lab10 (main) $
```

```
@neha-121 →/workspaces/Lab10 (main) $ terraform 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                              = "me-central-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_vpc.development_vpc: Creating...
aws_subnet.dev_subnet_1_existing: Creating...
aws_subnet.dev_subnet_1_existing: Creation complete after 1s [id=subnet-0d75e318b4639a1b1]
aws_vpc.development_vpc: Creation complete after 2s [id=vpc-0f1d5875ce426d30f]
aws_subnet.dev_subnet_1: Creating...
aws_subnet.dev_subnet_1: Creation complete after 1s [id=subnet-0847aea67997ca257]

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

```
@neha-121 →/workspaces/Lab10 (main) $ terraform apply
  + 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
      + 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)
      + vpc_id                                         = "vpc-0091f33e6aff43d6f"
    }

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 1s [id=subnet-08d9c012b57deda1e]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
@neha-121 →/workspaces/Lab10 (main) $
```

```
@neha-121 →/workspaces/Lab10 (main) $ terraform apply
  + 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
      + 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)
      + vpc_id                                         = "vpc-0091f33e6aff43d6f"
    }

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 1s [id=subnet-00a9bba14b1ec383f]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
@neha-121 →/workspaces/Lab10 (main) $ terraform plan
terraform apply -auto-approve

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes
are needed.
aws_vpc.development_vpc: Refreshing state... [id=vpc-0f1d5875ce426d30f]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0847aea67997ca257]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes
are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
@neha-121 →/workspaces/Lab10 (main) $
```

```
@neha-121 →/workspaces/Lab10 (main) $ terraform destroy -target=aws_subnet.dev_subnet_1_existing
```

> **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-00a9bba14b1ec383f]
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.
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                bash

@neha-121 →/workspaces/Lab10 (main) $ terraform plan
      + tags_all                                   = (known after apply)
      + vpc_id                                     = "vpc-0091f33e6aff43d6f"
    }

  # 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                               = "me-central-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.
@neha-121 →/workspaces/Lab10 (main) $ terraform plan
terraform apply -auto-approve

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes
are needed.
aws_vpc.development_vpc: Refreshing state... [id=vpc-0f1d5875ce426d30f]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0847aea67997ca257]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes
are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
@neha-121 →/workspaces/Lab10 (main) $
```

```
@neha-121 →/workspaces/Lab10 (main) $ terraform refresh
data.aws_vpc.existing_vpc: Reading...
aws_vpc.development_vpc: Refreshing state... [id=vpc-00c235734dab9fbf4]
data.aws_vpc.existing_vpc: Read complete after 1s [id=vpc-0091f33e6aff43d6f]
aws_subnet.dev_subnet_1: Refreshing state... [id=subnet-0fb584d597fa7e387]
```