SYSTEM PROVISIONING AND CONFIGURATION MANAGEMENT

LAB FILE

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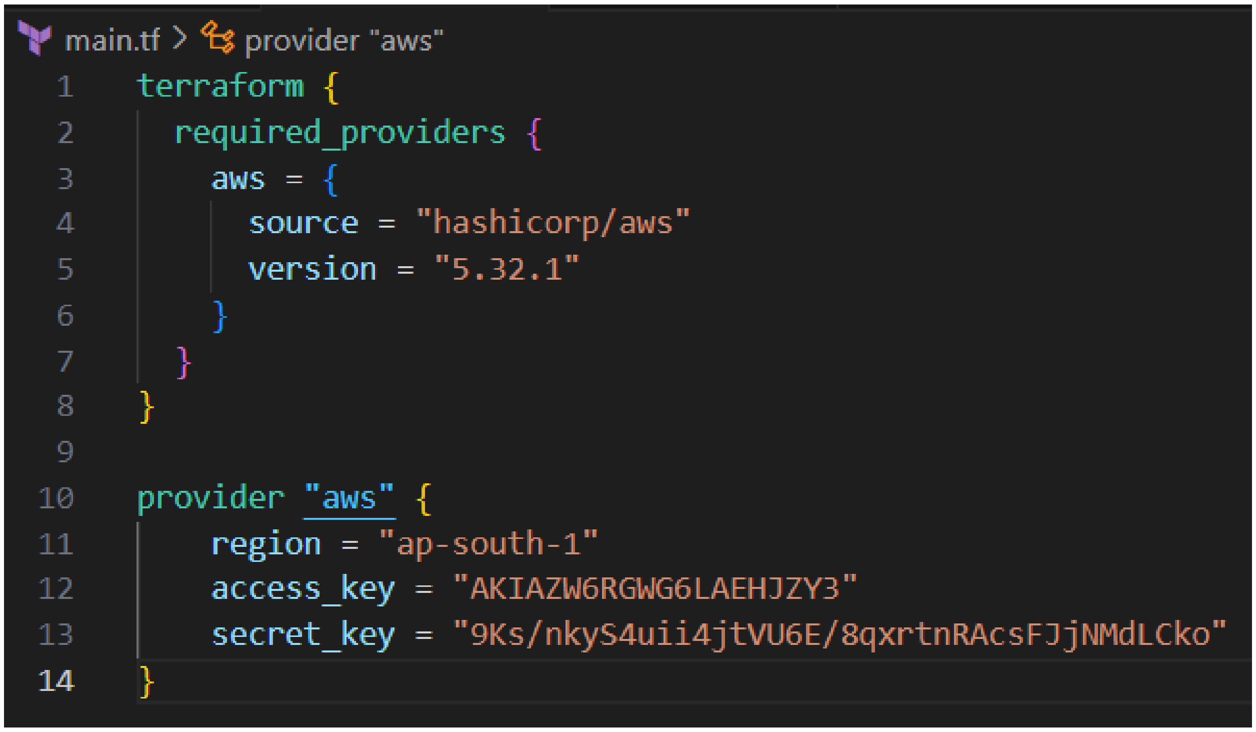
EXPERIMENT 8:
Creating a VPC in Terraform

1. Create a file named main.tf.

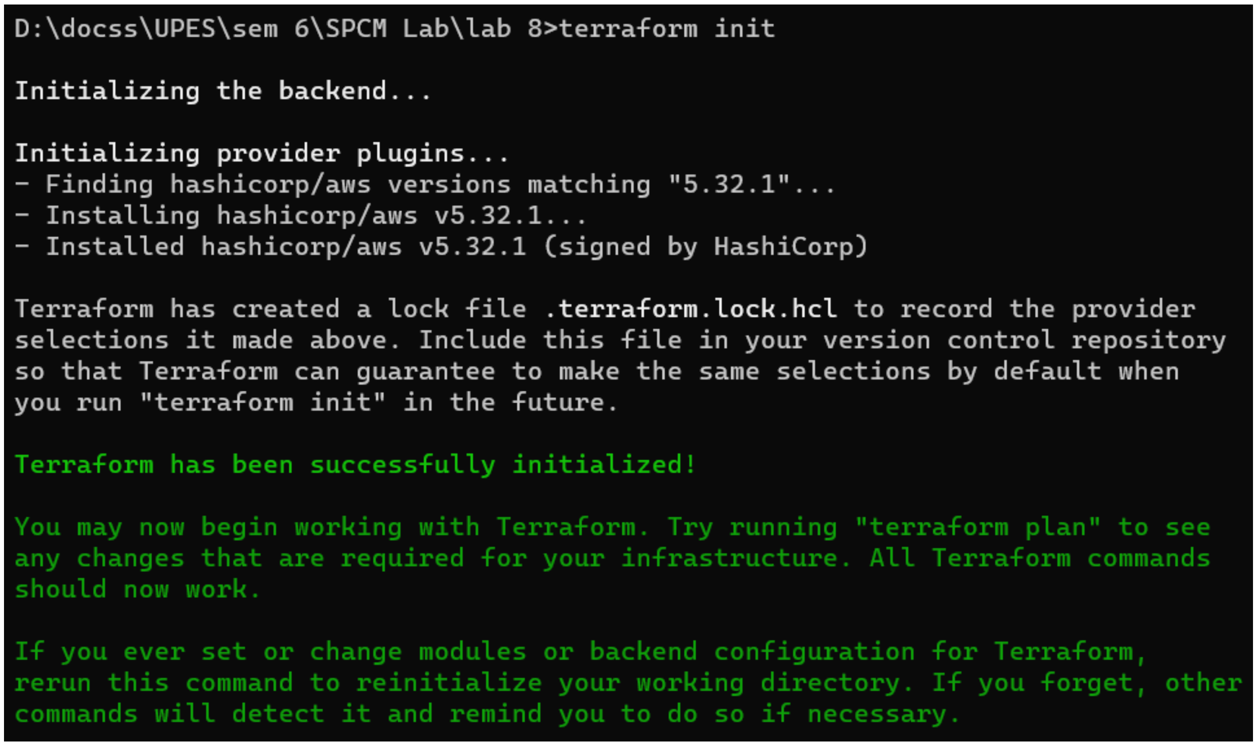


```
terraform {
  required_providers {
    aws = {
      source = "hashicorp/aws"
      version = "5.32.1"
    }
  }
}

provider "aws" {
    region = "ap-south-1"
    access_key = "AKIAZW6RGWG6LAEHJZY3"
    secret_key = "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"
}
```

2. Create a file named vpc.tf with the following configuration.

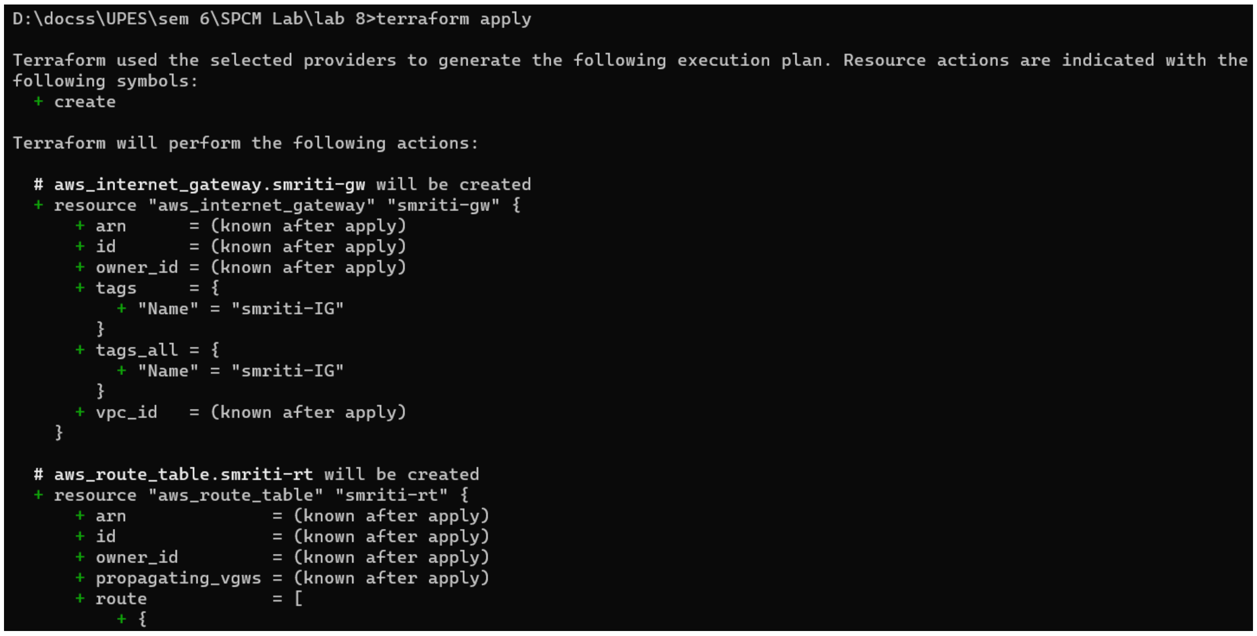
```
resource "aws_vpc" "smriti-vpc" {
  cidr_block = "10.0.0.0/16"
}

resource "aws_subnet" "smriti-subnet" {
  vpc_id     = aws_vpc.smriti-vpc.id
  cidr_block = "10.0.1.0/24"

  tags = {
    Name = "smriti-subnet"
  }
}

resource "aws_internet_gateway" "smriti-gw" {
  vpc_id = aws_vpc.smriti-vpc.id

  tags = {
    Name = "smriti-IG"
  }
}

resource "aws_route_table" "smriti-rt" {
  vpc_id = aws_vpc.smriti-vpc.id

  route {
    cidr_block = "0.0.0.0/0"
    gateway_id = aws_internet_gateway.smriti-gw.id
  }

    tags = {
    Name = "Smriti-Route-Table"
  }
}

resource "aws_route_table_association" "smriti-rta" {
  subnet_id      = aws_subnet.smriti-subnet.id
  route_table_id = aws_route_table.smriti-rt.id
}

resource "aws_security_group" "smriti-sg" {
  name        = "my-smriti-sg"
  vpc_id      = aws_vpc.smriti-vpc.id

  ingress {
    description      = "TLS from VPC"
    from_port        = 20
    to_port          = 20
    protocol         = "tcp"
    cidr_blocks      = ["0.0.0.0/0"]
    ipv6_cidr_blocks = ["::/0"]
  }

  egress {
    from_port        = 0
    to_port          = 0
    protocol         = "-1"
    cidr_blocks      = ["0.0.0.0/0"]
    ipv6_cidr_blocks = ["::/0"]
  }

  tags = {
    Name = "my-smriti-sg"
  }
}
```

3. Initialize the repository using terraform init.

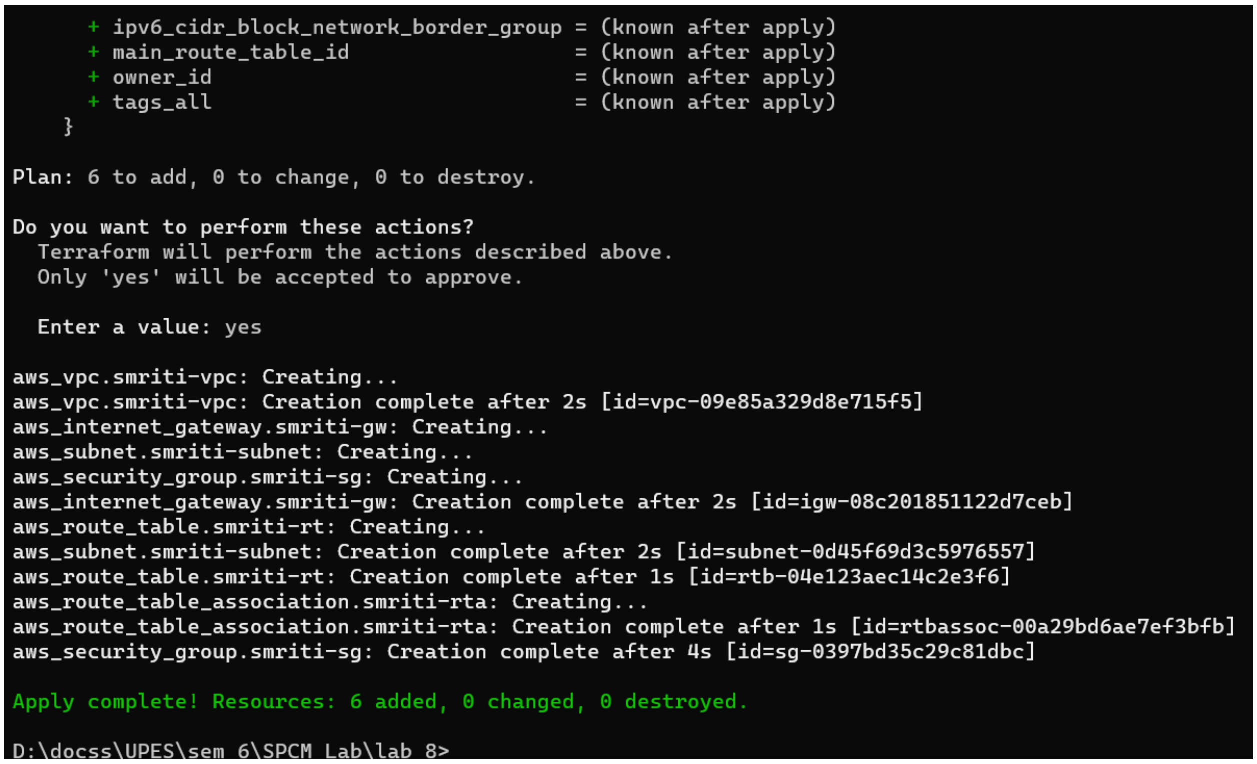


```
D:\docss\UPES\sem 6\SPCM Lab\lab 8>terraform init

Initializing the backend...

Initializing provider plugins...
- Finding hashicorp/aws versions matching "5.32.1"...
- Installing hashicorp/aws v5.32.1...
- Installed hashicorp/aws v5.32.1 (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.
```

4. Apply the changes using terraform apply.

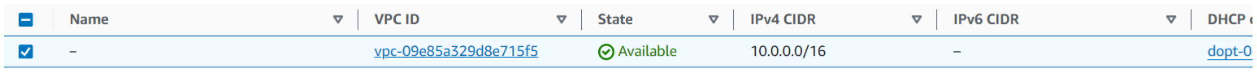


```
D:\docss\UPES\sem 6\SPCM Lab\lab 8>terraform apply

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

Terraform will perform the following actions:

  # aws_internet_gateway.smriti-gw will be created
  + resource "aws_internet_gateway" "smriti-gw" {
      + arn      = (known after apply)
      + id       = (known after apply)
      + owner_id = (known after apply)
      + tags     = {
          + "Name" = "smriti-IG"
        }
      + tags_all = {
          + "Name" = "smriti-IG"
        }
      + vpc_id   = (known after apply)
    }

  # aws_route_table.smriti-rt will be created
  + resource "aws_route_table" "smriti-rt" {
      + arn              = (known after apply)
      + id               = (known after apply)
      + owner_id         = (known after apply)
      + propagating_vgws = (known after apply)
      + route            = [
          + {
```

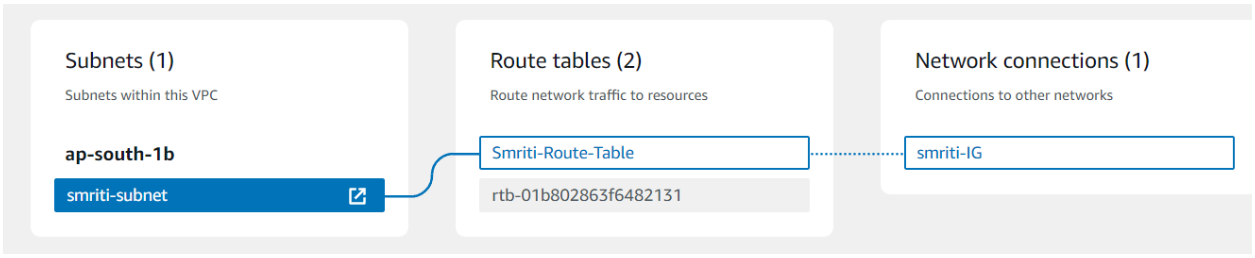


```
      + ipv6_cidr_block_network_border_group = (known after apply)
      + main_route_table_id                  = (known after apply)
      + owner_id                             = (known after apply)
      + tags_all                             = (known after apply)
    }

Plan: 6 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.smriti-vpc: Creating...
aws_vpc.smriti-vpc: Creation complete after 2s [id=vpc-09e85a329d8e715f5]
aws_internet_gateway.smriti-gw: Creating...
aws_subnet.smriti-subnet: Creating...
aws_security_group.smriti-sg: Creating...
aws_internet_gateway.smriti-gw: Creation complete after 2s [id=igw-08c201851122d7ceb]
aws_route_table.smriti-rt: Creating...
aws_subnet.smriti-subnet: Creation complete after 2s [id=subnet-0d45f69d3c5976557]
aws_route_table.smriti-rt: Creation complete after 1s [id=rtb-04e123aec14c2e3f6]
aws_route_table_association.smriti-rta: Creating...
aws_route_table_association.smriti-rta: Creation complete after 1s [id=rtbassoc-00a29bd6ae7ef3bfb]
aws_security_group.smriti-sg: Creation complete after 4s [id=sg-0397bd35c29c81dbc]

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

D:\docss\UPES\sem 6\SPCM Lab\lab 8>
```

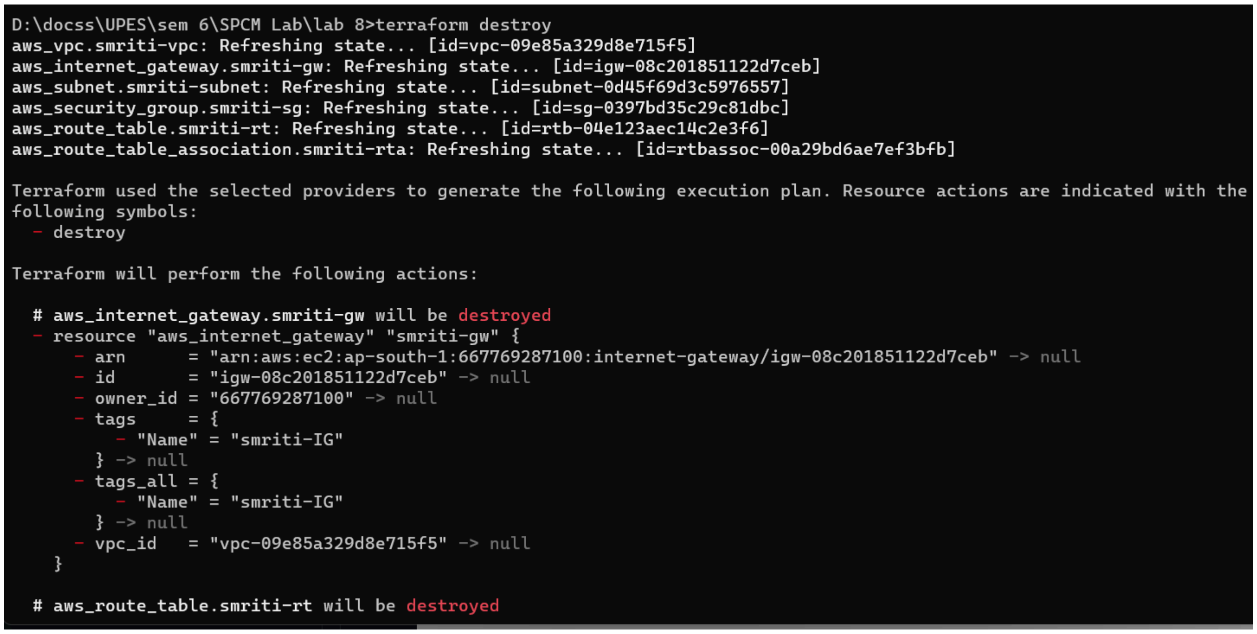
5. Check the AWS console to verify the creation.



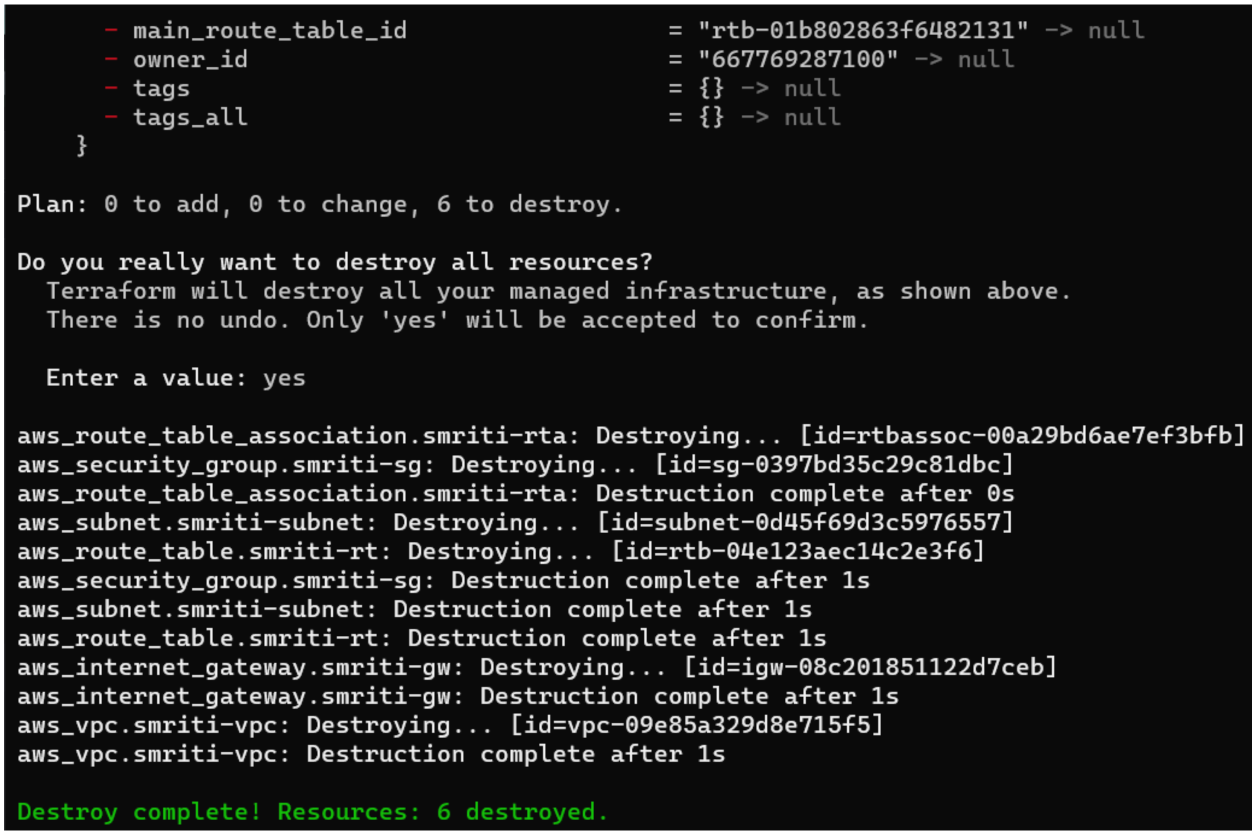
	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP
✓	–	vpc-09e85a329d8e715f5	Available	10.0.0.0/16	–	dopt-0



6. Clean up the resources using terraform destroy.



```
D:\docss\UPES\sem 6\SPCM Lab\lab 8>terraform destroy
aws_vpc.smriti-vpc: Refreshing state... [id=vpc-09e85a329d8e715f5]
aws_internet_gateway.smriti-gw: Refreshing state... [id=igw-08c201851122d7ceb]
aws_subnet.smriti-subnet: Refreshing state... [id=subnet-0d45f69d3c5976557]
aws_security_group.smriti-sg: Refreshing state... [id=sg-0397bd35c29c81dbc]
aws_route_table.smriti-rt: Refreshing state... [id=rtb-04e123aec14c2e3f6]
aws_route_table_association.smriti-rta: Refreshing state... [id=rtbassoc-00a29bd6ae7ef3bfb]

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_internet_gateway.smriti-gw will be destroyed
  - resource "aws_internet_gateway" "smriti-gw" {
      - arn      = "arn:aws:ec2:ap-south-1:667769287100:internet-gateway/igw-08c201851122d7ceb" -> null
      - id       = "igw-08c201851122d7ceb" -> null
      - owner_id = "667769287100" -> null
      - tags     = {
          - "Name" = "smriti-IG"
        } -> null
      - tags_all = {
          - "Name" = "smriti-IG"
        } -> null
      - vpc_id   = "vpc-09e85a329d8e715f5" -> null
    }

  # aws_route_table.smriti-rt will be destroyed
```



```
      - main_route_table_id                  = "rtb-01b802863f6482131" -> null
      - owner_id                             = "667769287100" -> null
      - tags                                 = {} -> null
      - tags_all                             = {} -> null
    }

Plan: 0 to add, 0 to change, 6 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_route_table_association.smriti-rta: Destroying... [id=rtbassoc-00a29bd6ae7ef3bfb]
aws_security_group.smriti-sg: Destroying... [id=sg-0397bd35c29c81dbc]
aws_route_table_association.smriti-rta: Destruction complete after 0s
aws_subnet.smriti-subnet: Destroying... [id=subnet-0d45f69d3c5976557]
aws_route_table.smriti-rt: Destroying... [id=rtb-04e123aec14c2e3f6]
aws_security_group.smriti-sg: Destruction complete after 1s
aws_subnet.smriti-subnet: Destruction complete after 1s
aws_route_table.smriti-rt: Destruction complete after 1s
aws_internet_gateway.smriti-gw: Destroying... [id=igw-08c201851122d7ceb]
aws_internet_gateway.smriti-gw: Destruction complete after 1s
aws_vpc.smriti-vpc: Destroying... [id=vpc-09e85a329d8e715f5]
aws_vpc.smriti-vpc: Destruction complete after 1s

Destroy complete! Resources: 6 destroyed.
```