Aanidhay Aggarwal

500104975

R2142220380

BTech CSE

DevOps Sem 6 (2022-26) B1 NH

ASSIGNMENT 1

System Provisioning & Config. Management

Write Terraform script to do perform following tasks on AWS cloud Platform

Step 1: Create two T2 Micro EC2 Instances.

Step2: Create a VPN on AWS

Step 3: Create a S3 Bucket

Step 4: Write the code for step 1,2 and 3 in a IaC terraform file and run terraform commands to execute these steps.
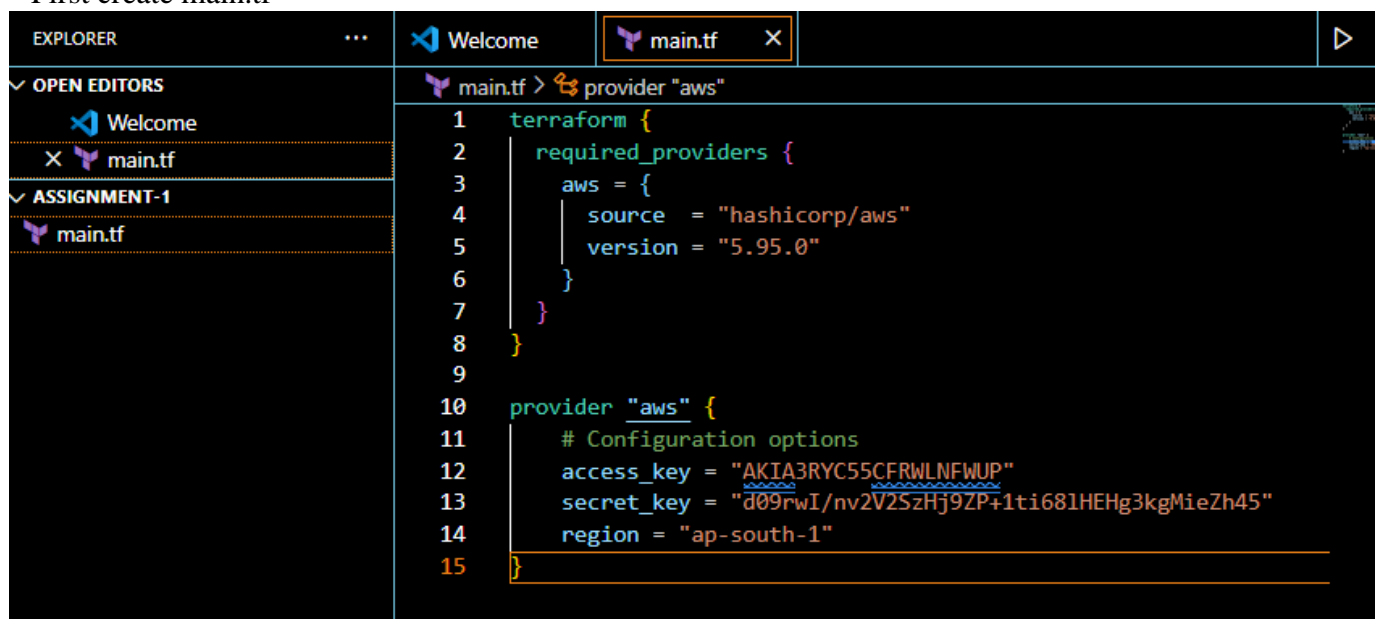
Create a folder

mkdir assignment-1

cd assignment-1

```
D:\Semester 6\System Provision and Configuration Management>mkdir assignment-1

D:\Semester 6\System Provision and Configuration Management>cd assignment-1

D:\Semester 6\System Provision and Configuration Management\assignment-1>code .

D:\Semester 6\System Provision and Configuration Management\assignment-1>
```

First create main.tf

```
1  terraform {
2    required_providers {
3      aws = {
4        source  = "hashicorp/aws"
5        version = "5.95.0"
6      }
7    }
8  }
9
10 provider "aws" {
11     # Configuration options
12     access_key = "AKIA3RYC55CFRWLNFWUP"
13     secret_key = "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"
14     region = "ap-south-1"
15 }
```

```
terraform {
  required_providers {
    aws = {
```

```
      source = "hashicorp/aws"
      version = "5.95.0"
    }
  }
}

provider "aws" {
  # Configuration options
  access_key = "AKIA3RYC55CFRWLNFWUP"
  secret_key = "d09rwI/nv2V2SzHj9ZP+1ti68lHEHg3kgMieZh45"
  region = "ap-south-1"
}
```

Step 1: Create two T2 Micro EC2 Instances.

Create ec2.tf

```
resource "aws_instance" "example1" {
  ami           = " ami-0f1dcc636b69a6438"
  instance_type = "t2.micro"

  tags = {
    Name = "EC2_Instance_1"
  }
}

resource "aws_instance" "example2" {
  ami           = " ami-0f1dcc636b69a6438"
  instance_type = "t2.micro"

  tags = {
    Name = "EC2_Instance_2"
  }
}
```
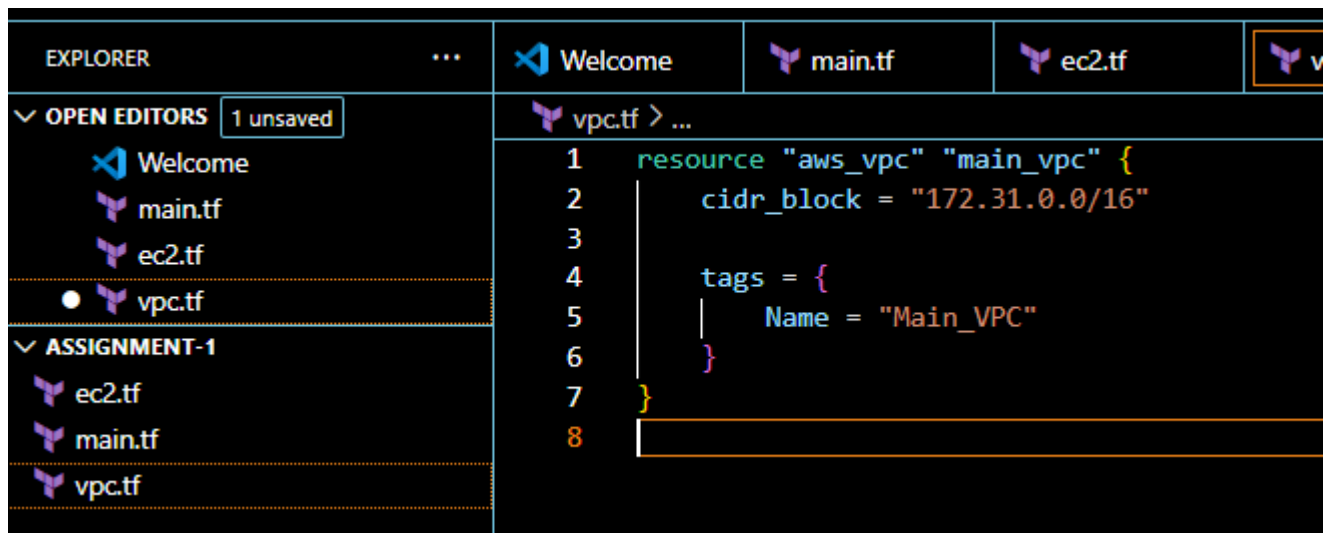
Step2: Create a VPN on AWS

Create vpc.tf

```
resource "aws_vpc" "main_vpc" {
  cidr_block = "172.31.0.0/16"

  tags = {
    Name = "Main_VPC"
  }
}
```
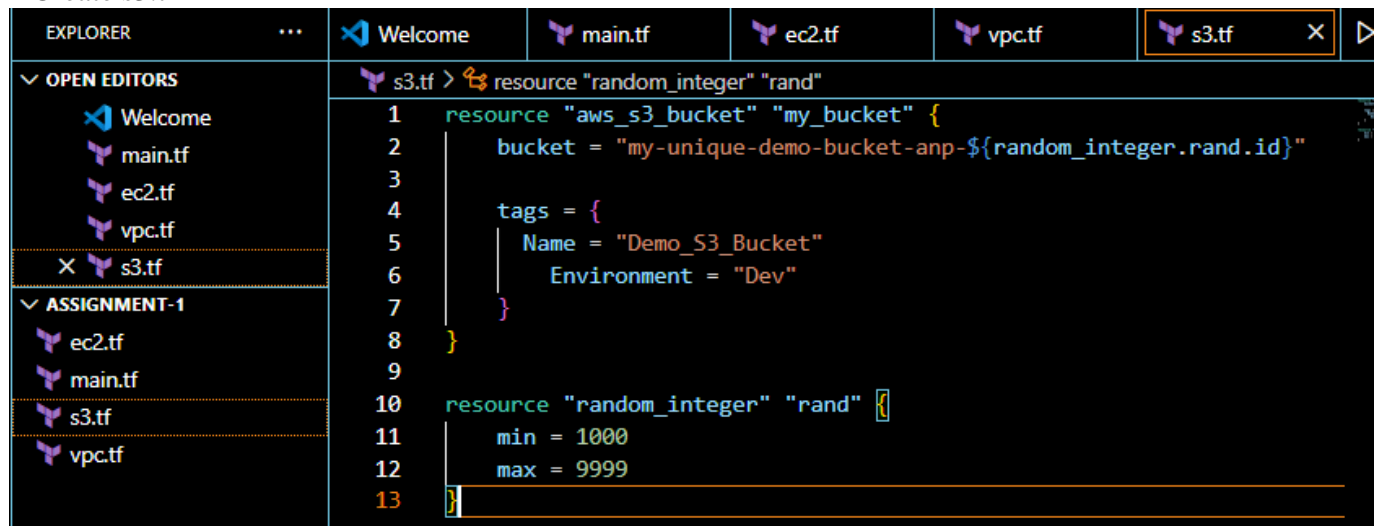
Step 3: Create a S3 Bucket

Create s3.tf


```
resource "aws_s3_bucket" "my_bucket" {
  bucket = "my-unique-demo-bucket-anp-${random_integer.rand.id}"

  tags = {
    Name        = "Demo_S3_Bucket"
    Environment = "Dev"
  }
}

resource "random_integer" "rand" {
  min = 1000
  max = 9999
}
```

Run **terraform init**

This initializes the Terraform working directory by downloading necessary provider plugins and setting up the backend configuration. It must be run before any other commands

```
D:\Semester 6\System Provision and Configuration Management\assignment-1>terraform init
Initializing the backend...
Initializing provider plugins...
- Finding hashicorp/aws versions matching "5.95.0"...
- Finding latest version of hashicorp/random...
- Installing hashicorp/random v3.7.2...
- Installed hashicorp/random v3.7.2 (signed by HashiCorp)
- Installing hashicorp/aws v5.95.0...
- Installed hashicorp/aws v5.95.0 (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.

D:\Semester 6\System Provision and Configuration Management\assignment-1>
```

Now **terraform plan** : It's like a dry run to review changes before applying them

```
      + 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)
      + tags                                 = {
          + "Name" = "Main_VPC"
        }
      + tags_all                             = {
          + "Name" = "Main_VPC"
        }
    }

  # random_integer.rand will be created
  + resource "random_integer" "rand" {
      + id     = (known after apply)
      + max    = 9999
      + min    = 1000
      + result = (known after apply)
    }

Plan: 5 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.

D:\Semester 6\System Provision and Configuration Management\assignment-1>
```

terraform apply : Applies the changes required to reach the desired state as defined in the configuration files. It provisions or updates resources on the cloud platform

```
  Enter a value: yes

random_integer.rand: Creating...
random_integer.rand: Creation complete after 0s [id=3018]
aws_vpc.main_vpc: Creating...
aws_instance.example2: Creating...
aws_s3_bucket.my_bucket: Creating...
aws_instance.example1: Creating...
aws_vpc.main_vpc: Creation complete after 1s [id=vpc-0ff8723b01524b897]
aws_s3_bucket.my_bucket: Creation complete after 2s [id=my-unique-demo-bucket-anp-3018]
aws_instance.example2: Still creating... [10s elapsed]
aws_instance.example1: Still creating... [10s elapsed]
aws_instance.example2: Creation complete after 12s [id=i-0dd6a753bb03909c2]
aws_instance.example1: Creation complete after 12s [id=i-0d71e4dfef74557ec]

Apply complete! Resources: 5 added, 0 changed, 0 destroyed.

D:\Semester 6\System Provision and Configuration Management\assignment-1>
```

Instances (3) Info

Last updated less than a minute ago

Connect | Instance state ▼ | Actions ▼ | **Launch instances** | ▼

Find Instance by attribute or tag (case-sensitive)

All states ▼

‹ 1 › ⚙

	Name ✎ ▽	Instance ID	Instance state ▽	Instance type ▽	Status check	Alarm status	Availability Zone ▽	Public IPv
☐	Apache-server	i-00aa6cacd60a57dfd	⊖ Stopped ⊕ ⊖	t2.micro	–	View alarms +	ap-south-1a	–
☐	EC2_Instance_1	i-0d71e4dfef74557ec	⊘ Running ⊕ ⊖	t2.micro	⏱ Initializing	View alarms +	ap-south-1b	ec2-13-12
☐	EC2_Instance_2	i-0dd6a753bb03909c2	⊘ Running ⊕ ⊖	t2.micro	⏱ Initializing	View alarms +	ap-south-1b	ec2-65-0-1

=

Select an instance

⚙ ⌄

General purpose buckets (1) Info   All AWS Regions

↻ | ⧉ Copy ARN | Empty | Delete | **Create bucket**

Buckets are containers for data stored in S3.

Find buckets by name

‹ 1 › ⚙

	Name ▲	AWS Region ▽	IAM Access Analyzer	Creation date ▽
○	my-unique-demo-bucket-anp-3018	Asia Pacific (Mumbai) ap-south-1	View analyzer for ap-south-1	April 26, 2025, 04:16:40 (UTC+05:30)

Your VPCs (2) Info

Last updated less than a minute ago

Actions ▼ | **Create VPC**

Find VPCs by attribute or tag

‹ 1 › ⚙

	Name ▽	VPC ID ▽	State ▽	Block Public... ▽	IPv4 CIDR ▽	IPv6 CIDR
☐	–	vpc-0d92572b1db1fb3d8	⊘ Available	⊖ Off	172.31.0.0/16	–
☐	Main_VPC	vpc-0ff8723b01524b897	⊘ Available	⊖ Off	172.31.0.0/16	–

Clean up using **terraform destroy**

```
  Enter a value: yes

aws_vpc.main_vpc: Destroying... [id=vpc-0ff8723b01524b897]
aws_instance.example1: Destroying... [id=i-0d71e4dfef74557ec]
aws_instance.example2: Destroying... [id=i-0dd6a753bb03909c2]
aws_s3_bucket.my_bucket: Destroying... [id=my-unique-demo-bucket-anp-3018]
aws_s3_bucket.my_bucket: Destruction complete after 1s
random_integer.rand: Destroying... [id=3018]
random_integer.rand: Destruction complete after 0s
aws_vpc.main_vpc: Destruction complete after 1s
aws_instance.example1: Still destroying... [id=i-0d71e4dfef74557ec, 10s elapsed]
aws_instance.example2: Still destroying... [id=i-0dd6a753bb03909c2, 10s elapsed]
aws_instance.example1: Still destroying... [id=i-0d71e4dfef74557ec, 20s elapsed]
aws_instance.example2: Still destroying... [id=i-0dd6a753bb03909c2, 20s elapsed]
aws_instance.example1: Still destroying... [id=i-0d71e4dfef74557ec, 30s elapsed]
aws_instance.example2: Still destroying... [id=i-0dd6a753bb03909c2, 30s elapsed]
aws_instance.example2: Still destroying... [id=i-0dd6a753bb03909c2, 40s elapsed]
aws_instance.example1: Still destroying... [id=i-0d71e4dfef74557ec, 40s elapsed]
aws_instance.example2: Destruction complete after 41s
aws_instance.example1: Destruction complete after 41s

Destroy complete! Resources: 5 destroyed.

D:\Semester 6\System Provision and Configuration Management\assignment-1>
```