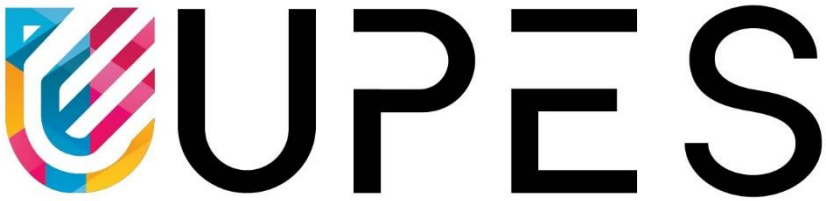

# ASSIGNMENT 1

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


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**Batch – DevOps(B1)**

**Submitted to – Prof. Hitesh Sharma**

Step 1: Create two T2 Micro EC2 Instances.

main.tf

```
terraform {
  required_providers {
    aws = {
      source  = "hashicorp/aws"
      version = "~> 5.0"
    }
  }
}

provider "aws" {
  region = "ap-southeast-2"
}

resource "aws_instance" "ec2_instance_1" {
  ami           = "ami-09e143e99e8fa74f9"
  instance_type = "t2.micro"
  tags = {
    Name = "Terraform-EC2-1"
  }
}

resource "aws_instance" "ec2_instance_2" {
  ami           = "ami-09e143e99e8fa74f9"
  instance_type = "t2.micro"
  tags = {
    Name = "Terraform-EC2-2"
  }
}
```

Step2: Create a VPN on AWS

main.tf

```
resource "aws_vpc" "main" {
  cidr_block = "10.0.0.0/16"
  tags = {
    Name = "Terraform-VPC"
  }
}

resource "aws_subnet" "public_subnet" {
  vpc_id            = aws_vpc.main.id
  cidr_block        = "10.0.1.0/24"
  availability_zone = "${data.aws_availability_zones.available.names[0]}"
  map_public_ip_on_launch = true
  tags = {
    Name = "Terraform-Public-Subnet"
  }
}

resource "aws_internet_gateway" "gw" {
  vpc_id = aws_vpc.main.id
  tags = {
    Name = "Terraform-Internet-Gateway"
  }
}

resource "aws_route_table" "public_rt" {
  vpc_id = aws_vpc.main.id
  route {
    cidr_block = "0.0.0.0/0"
    gateway_id = aws_internet_gateway.gw.id
  }
  tags = {
    Name = "Terraform-Public-RouteTable"
  }
}
```

Step 3: Create a S3 Bucket

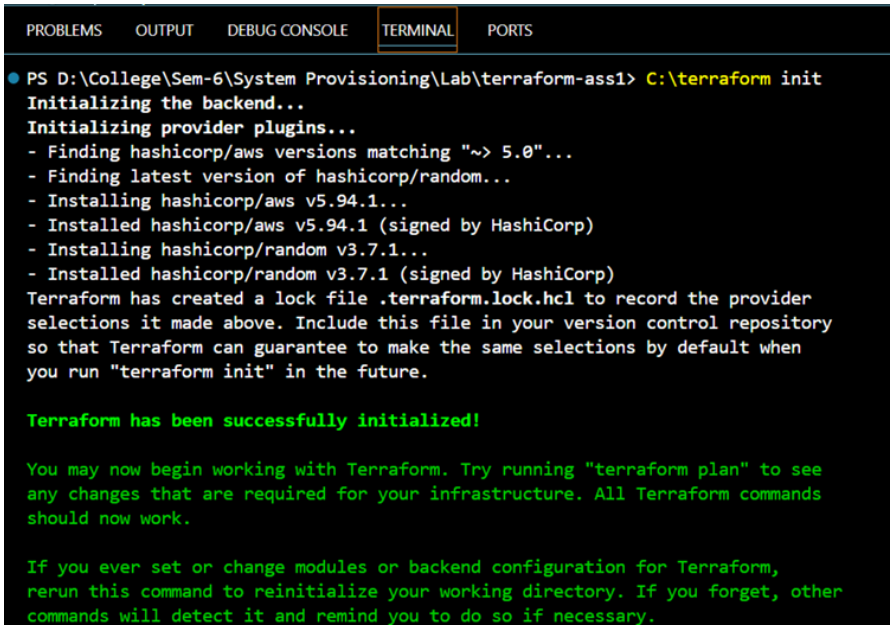

Step 4: Write the code for step 1,2 and 3 in a IaC terraform file and run terraform commands to execute these steps.

```
terraform {
  required_providers {
    aws = {
      source  = "hashicorp/aws"
      version = "~> 5.0"
    }
  }
}

provider "aws" {
  region = "ap-southeast-2"
}
```

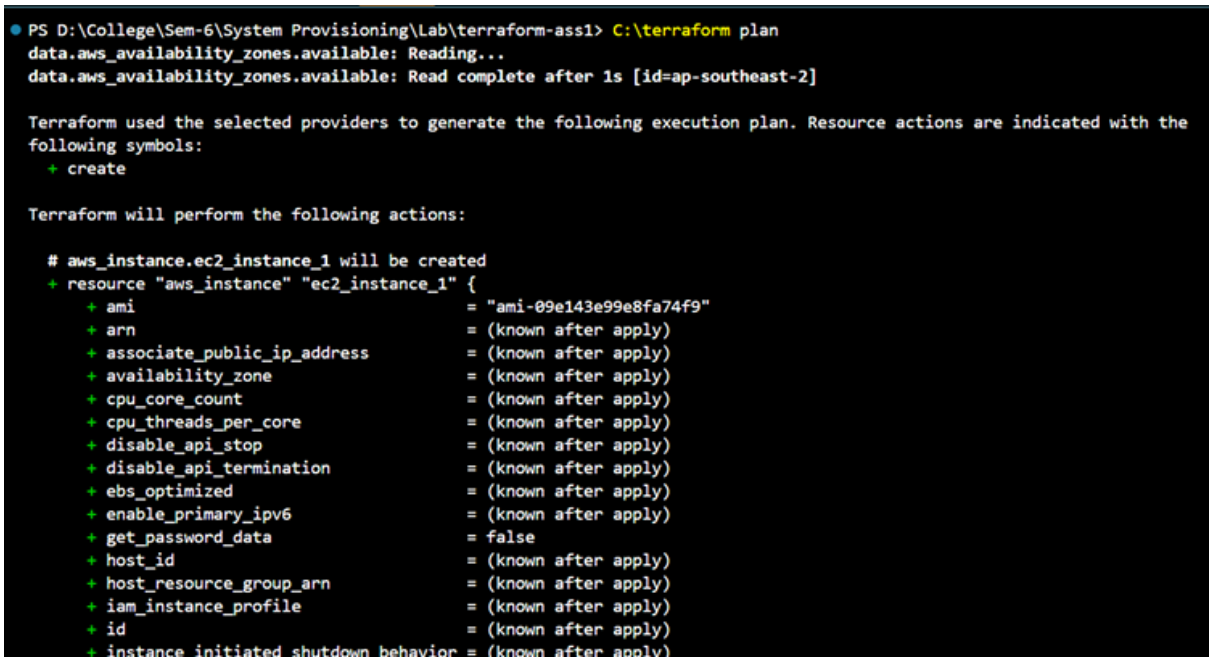
```
data "aws_availability_zones" "available" {}

resource "random_id" "bucket_id" {
  byte_length = 8
}

# VPC
resource "aws_vpc" "main" {
  cidr_block = "10.0.0.0/16"

  tags = {
    Name = "Terraform-VPC"
  }
}

# Subnet
resource "aws_subnet" "public_subnet" {
  vpc_id                  = aws_vpc.main.id
  cidr_block              = "10.0.1.0/24"
  availability_zone       = data.aws_availability_zones.available.names[0]
  map_public_ip_on_launch = true

  tags = {
    Name = "Terraform-Public-Subnet"
  }
}

# Internet Gateway
resource "aws_internet_gateway" "gw" {
  vpc_id = aws_vpc.main.id

  tags = {
    Name = "Terraform-Internet-Gateway"
  }
}

# Route Table
resource "aws_route_table" "public_rt" {
  vpc_id = aws_vpc.main.id

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

  tags = {
    Name = "Terraform-Public-RouteTable"
  }
}

# EC2 Instances
```

```
resource "aws_instance" "ec2_instance_1" {
  ami           = "ami-09e143e99e8fa74f9"
  instance_type = "t2.micro"

  tags = {
    Name = "Terraform-EC2-1"
  }
}

resource "aws_instance" "ec2_instance_2" {
  ami           = "ami-09e143e99e8fa74f9"
  instance_type = "t2.micro"

  tags = {
    Name = "Terraform-EC2-2"
  }
}

# S3 Bucket
resource "aws_s3_bucket" "my_bucket" {
  bucket = "terraform-ass1-${random_id.bucket_id.hex}"

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

# S3 Bucket ACL
resource "aws_s3_bucket_acl" "my_bucket_acl" {
  bucket = aws_s3_bucket.my_bucket.id
  acl    = "private"
}
```

Terraform init:




Terraform plan:




Terraform plan:

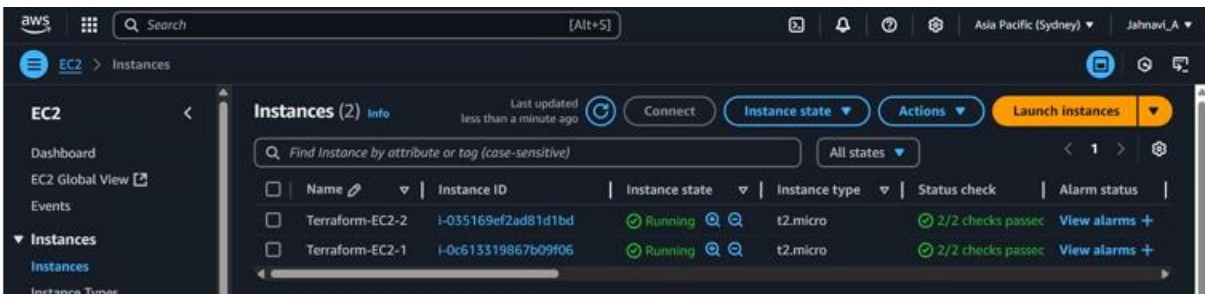
```
    + id                                   = (known after apply)
    + instance_tenancy                     = "default"
    + ipv6_association_id                  = (known after apply)
    + ipv6_cidr_block                      = (known after apply)
    + ipv6_cidr_block_network_border_group = (known after apply)
    + main_route_table_id                  = (known after apply)
    + owner_id                             = (known after apply)
    + tags                                 = {
        + "Name" = "Terraform-VPC"
      }
    + tags_all                             = {
        + "Name" = "Terraform-VPC"
      }
  }

# random_id.bucket_id will be created
+ resource "random_id" "bucket_id" {
    + b64_std     = (known after apply)
    + b64_url     = (known after apply)
    + byte_length = 8
    + dec         = (known after apply)
    + hex         = (known after apply)
    + id          = (known after apply)
  }

lan: 9 to add, 0 to change, 0 to destroy.
```

Terraform apply:

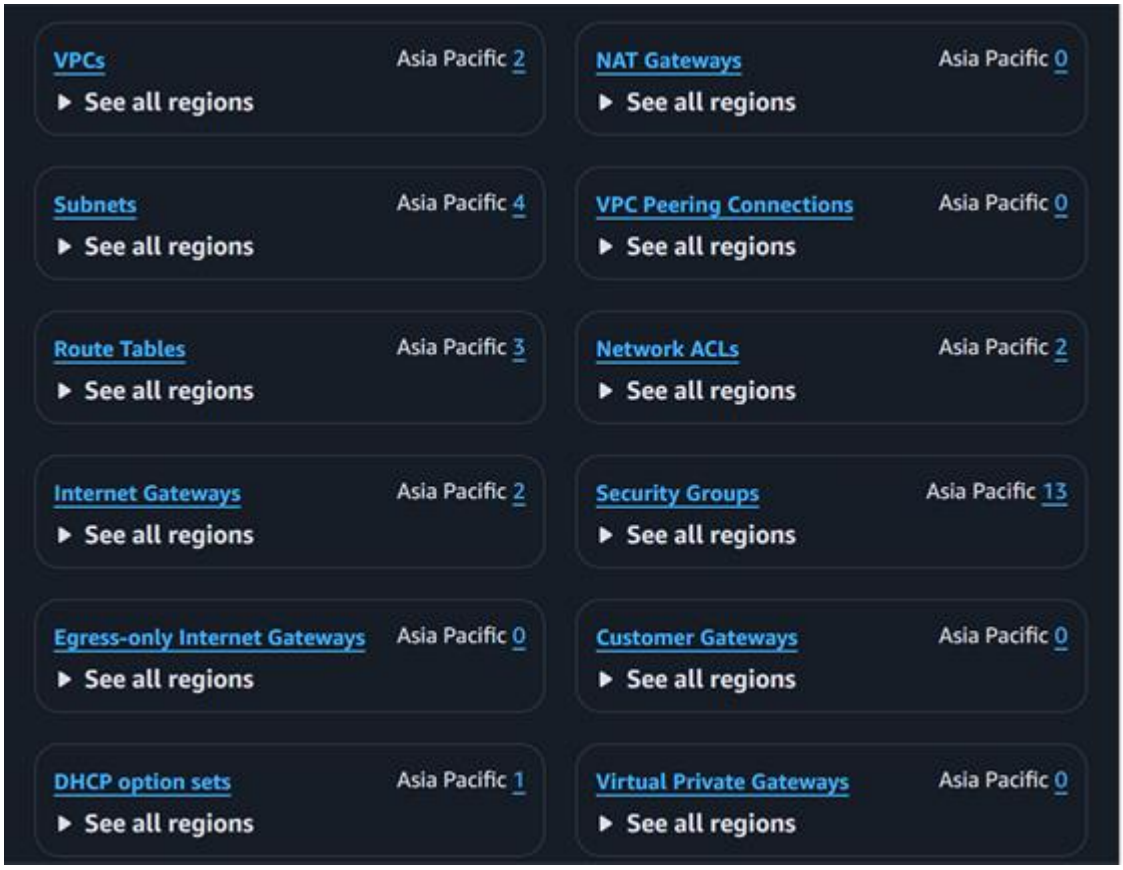
```
PS D:\College\Sem-6\System Provisioning\Lab\terraform-ass1> C:\terraform apply
random_id.bucket_id: Refreshing state... [id=RMnQU3_FvdI]
data.aws_availability_zones.available: Reading...
aws_vpc.main: Refreshing state... [id=vpc-066125ae4a8302e52]
aws_s3_bucket.my_bucket: Refreshing state... [id=terraform-ass1-44c9d0537fc5bdd2]
aws_instance.ec2_instance_1: Refreshing state... [id=i-0c613319867b09f06]
aws_instance.ec2_instance_2: Refreshing state... [id=i-035169ef2ad81d1bd]
data.aws_availability_zones.available: Read complete after 1s [id=ap-southeast-2]
aws_internet_gateway.gw: Refreshing state... [id=igw-01c8e32c2e2e0eb8d]
aws_subnet.public_subnet: Refreshing state... [id=subnet-05ffef25f915b4a02]
aws_route_table.public_rt: Refreshing state... [id=rtb-0cd6a048ea5e1feca]

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:
```

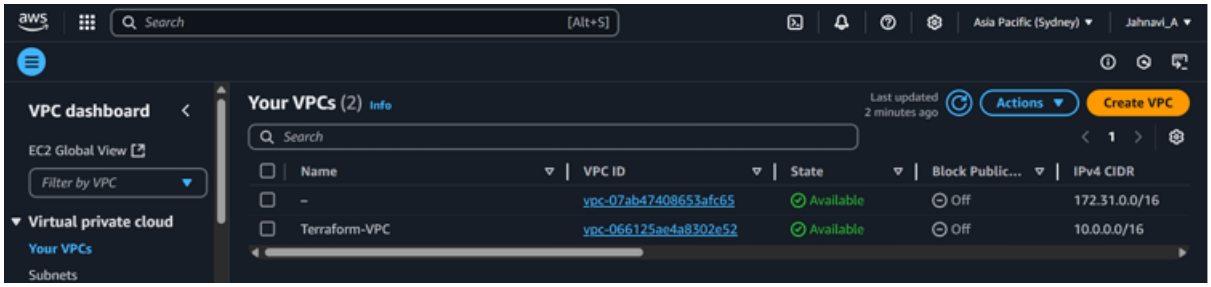
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

        }
      ~ tags_all                    = {
          ~ "Name"        = "TerraformExampleBucket" -> "TerraformAss1Bucket"
            # (1 unchanged element hidden)
        }
        # (12 unchanged attributes hidden)

        # (3 unchanged blocks 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_s3_bucket.my_bucket: Modifying... [id=terraform-ass1-44c9d0537fc5bdd2]
aws_s3_bucket.my_bucket: Modifications complete after 4s [id=terraform-ass1-44c9d0537fc5bdd2]

Apply complete! Resources: 0 added, 1 changed, 0 destroyed.
```

AWS Console Output: Instance-



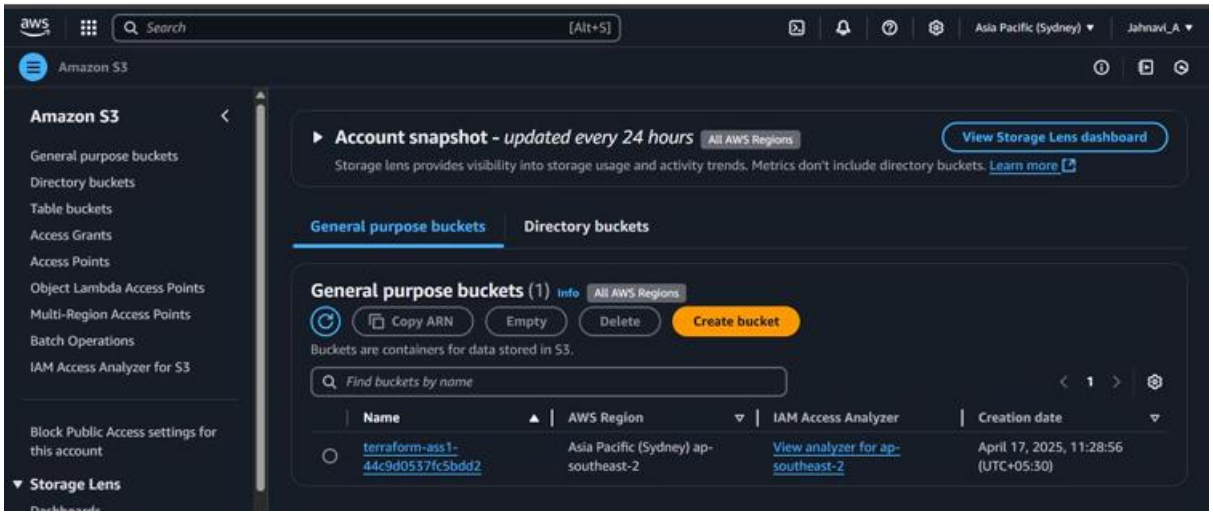

VPN-


VPCs
Asia Pacific 2
See all regions
NAT Gateways
Asia Pacific 0
See all regions
Subnets
Asia Pacific 4
See all regions
VPC Peering Connections
Asia Pacific 0
See all regions
Route Tables
Asia Pacific 3
See all regions
Network ACLs
Asia Pacific 2
See all regions
Internet Gateways
Asia Pacific 2
See all regions
Security Groups
Asia Pacific 13
See all regions
Egress-only Internet Gateways
Asia Pacific 0
See all regions
Customer Gateways
Asia Pacific 0
See all regions
DHCP option sets
Asia Pacific 1
See all regions
Virtual Private Gateways
Asia Pacific 0
See all regions


aws
Search
[Alt+S]
Asia Pacific (Sydney)
Jahnavi_A
VPC dashboard
EC2 Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Your VPCs (2) Info
Last updated 2 minutes ago
Actions
Create VPC
Search
Name
VPC ID
State
Block Public...
IPv4 CIDR
-
vpc-07ab47408653afc65
Available
Off
172.31.0.0/16
Terraform-VPC
vpc-066125ae4a8302e52
Available
Off
10.0.0.0/16


aws
Search
[Alt+S]
Asia Pacific (Sydney)
Jahnavi_A
VPC dashboard
EC2 Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Subnets (4) Info
Last updated less than a minute ago
Actions
Create subnet
Find resources by attribute or tag
Name
Subnet ID
State
VPC
-
subnet-0aa9f8f7d7b0abe72
Available
vpc-07ab47408653afc65
Terraform-Public-Subnet
subnet-05ffef25f915b4a02
Available
vpc-066125ae4a8302e52 | Terr...
-
subnet-038da8992db8c8ca4
Available
vpc-07ab47408653afc65
-
subnet-0dbeb62e57a2af053
Available
vpc-07ab47408653afc65


S3 Bucket-




Terraform destroy:

```
PS D:\College\Sem-6\System Provisioning\Lab\terraform-ass1> C:\terraform destroy
random_id.bucket_id: Refreshing state... [id=RMnQU3_FvdI]
aws_vpc.main: Refreshing state... [id=vpc-066125ae4a8302e52]
data.aws_availability_zones.available: Reading...
aws_s3_bucket.my_bucket: Refreshing state... [id=terraform-ass1-44c9d0537fc5bdd2]
aws_instance.ec2_instance_2: Refreshing state... [id=i-035169ef2ad81d1bd]
aws_instance.ec2_instance_1: Refreshing state... [id=i-0c613319867b09f06]
data.aws_availability_zones.available: Read complete after 1s [id=ap-southeast-2]
aws_internet_gateway.gw: Refreshing state... [id=igw-01c8e32c2e2e0eb8d]
aws_subnet.public_subnet: Refreshing state... [id=subnet-05ffef25f915b4a02]
aws_route_table.public_rt: Refreshing state... [id=rtb-0cd6a048ea5e1feca]
```

```
aws_instance.ec2_instance_1: Destruction complete after 1m12s

Destroy complete! Resources: 8 destroyed.
PS D:\College\Sem-6\System Provisioning\Lab\terraform-ass1>
```