

Terraform Basic

```
$ brew install terraform
$ brew upgrade
$ brew install awscli
$ aws configure
```

1. Exercise 1 : Instances

1st-instance.tf

```
provider "aws" {
  region = "us-east-1"
}

resource "aws_instance" "intro" {
  ami                = "ami-0cff7528ff583bf9a"
  instance_type      = "t2.micro"
  availability_zone   = "us-east-1a"
  key_name            = "teraform-basic-key"
  vpc_security_group_ids = ["sg-0141abaf6a6038247"]
  tags = {
    Name = "Terraform-Instance"
  }
}
```

```
$ terraform init
$ terraform validate
$ terraform fmt
$ terraform plan
$ terraform apply
```

```
$ terraform destroy
```

To check current state: **\$ cat terraform.tfstate**

2. Exercise 2: Variables

Instance.tf

```
resource "aws_instance" "terraform-inst" {
  ami           = var.AMIA[var.REGION]
  instance_type = "t2.micro"
  availability_zone = var.ZONE1
  key_name      = "teraform-basic-key"
  vpc_security_group_ids = ["sg-0141abaf6a6038247"]
  tags = {
    Name = "Terraform-Instance"
  }
}
```

provider.tf

```
provider "aws" {
  region = var.REGION
}
```

vars.tf

```
variable "REGION" {
  default = "us-east-1"
}

variable "ZONE1" {
  default = "us-east-1a"
}

variable "AMIA" {
  type = map(any)
  default = {
    us-east-1 = "ami-0cfff7528ff583bf9a"
    us-east-2 = "ami-02d1e544b84bf7502"
  }
}
```

3. Exercise 3: Provisioners

```
$ ssh-keygen  
    terrakey
```

var.tf

```
variable "REGION" {  
    default = "us-east-1"  
}  
  
variable "ZONE1" {  
    default = "us-east-1a"  
}  
  
variable "AMIA" {  
    type = map(any)  
    default = {  
        us-east-1 = "ami-0cfff7528ff583bf9a"  
        us-east-2 = "ami-02d1e544b84bf7502"  
    }  
}  
  
variable "USER" {  
    default = "ec2-user"  
}
```

provider.tf

```
provider "aws" {  
    region = var.REGION  
}
```

instance.tf

```
resource "aws_key_pair" "terra-key" {  
    key_name     = "terrakey"  
    public_key   = file("terrakey.pub")  
}  
  
resource "aws_instance" "terraform-inst" {  
    ami                  = var.AMIA[var.REGION]  
    instance_type        = "t2.micro"  
    availability_zone    = var.ZONE1  
    key_name             = aws_key_pair.terra-key.key_name  
    vpc_security_group_ids = ["sg-0141abaf6a6038247"]  
    tags = {  
        Name     = "Terraform-Instance"  
        Project  = "Terraform"  
    }  
    provisioner "file" {  
        source      = "web.sh"  
        destination = "/tmp/web.sh"  
    }  
    provisioner "remote-exec" {  
        inline = [  
            "chmod u+x /tmp/web.sh",  
            "sudo /tmp/web.sh"  
        ]  
    }  
    connection {
```

```

    user      = var.USER
    private_key = file("terrakey")
    host      = self.public_ip
  }
}

output "PublicIP" {
  value = aws_instance.terraform-inst.public_ip
}

output "PrivateIP" {
  value = aws_instance.terraform-inst.private_ip
}

```

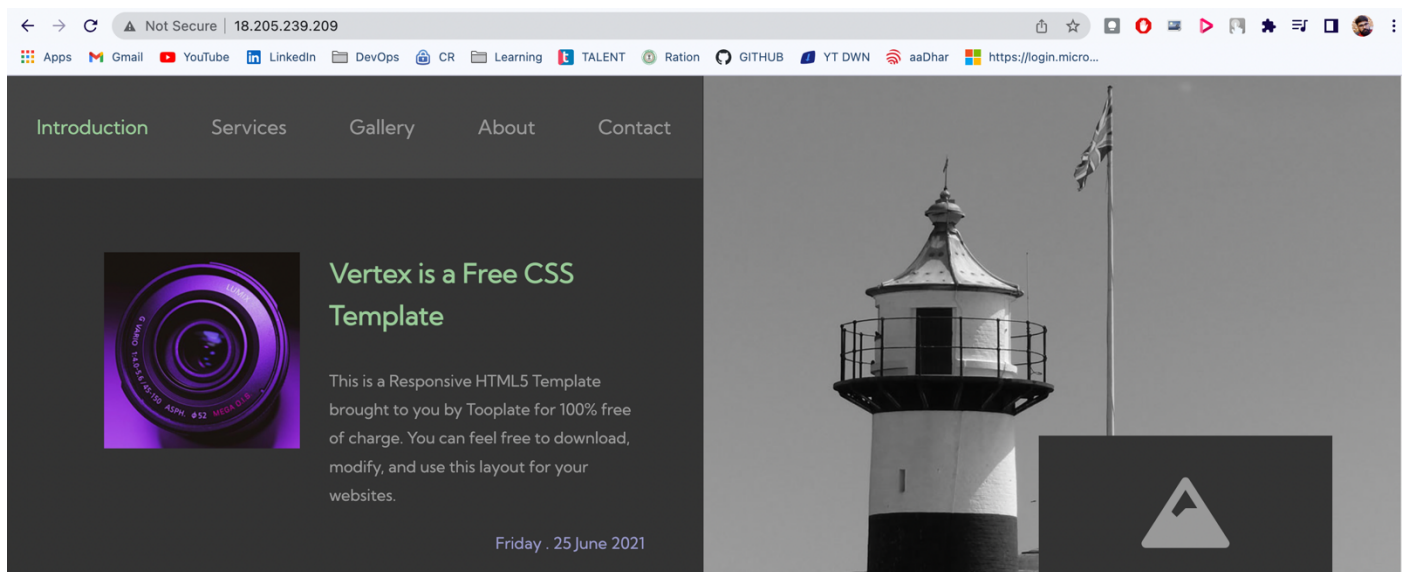
web.sh

```

#!/bin/bash
yum install wget unzip httpd -y
systemctl start httpd
systemctl enable httpd
wget https://www.tooplate.com/zip-templates/2124_vertex.zip
unzip -o 2124_vertex.zip
cp -r 2124_vertex/* /var/www/html/
systemctl restart httpd

```

Copy the public IP of EC2 instance : <http://18.205.239.209/>



4. Exercise 4: output

var.tf

```
variable "REGION" {
  default = "us-east-1"
}

variable "ZONE1" {
  default = "us-east-1a"
}

variable "AMIA" {
  type = map(any)
  default = {
    us-east-1 = "ami-0cff7528ff583bf9a"
    us-east-2 = "ami-02d1e544b84bf7502"
  }
}

variable "USER" {
  default = "ec2-user"
}
```

provider.tf

```
provider "aws" {
  region = var.REGION
}
```

instance.tf

```
resource "aws_key_pair" "terra-key" {
  key_name     = "terrakey"
  public_key   = file("terrakey.pub")
}

resource "aws_instance" "terraform-inst" {
  ami                  = var.AMIA[var.REGION]
  instance_type        = "t2.micro"
  availability_zone    = var.ZONE1
  key_name             = aws_key_pair.terra-key.key_name
  vpc_security_group_ids = ["sg-0141abaf6a6038247"]
  tags = {
    Name     = "Terraform-Instance"
    Project  = "Terraform"
  }
  provisioner "file" {
    source      = "web.sh"
    destination = "/tmp/web.sh"
  }
  provisioner "remote-exec" {
    inline = [
      "chmod u+x /tmp/web.sh",
      "sudo /tmp/web.sh"
    ]
  }
  connection {
    user        = var.USER
    private_key = file("terrakey")
    host        = self.public_ip
  }
}
```

```
}  
}  
  
output "PublicIP" {  
  value = aws_instance.terraform-inst.public_ip  
}  
  
output "PrivateIP" {  
  value = aws_instance.terraform-inst.private_ip  
}
```

web.sh

```
#!/bin/bash  
yum install wget unzip httpd -y  
systemctl start httpd  
systemctl enable httpd  
wget https://www.tooplate.com/zip-templates/2124_vertex.zip  
unzip -o 2124_vertex.zip  
cp -r 2124_vertex/* /var/www/html/  
systemctl restart httpd
```

Outputs:

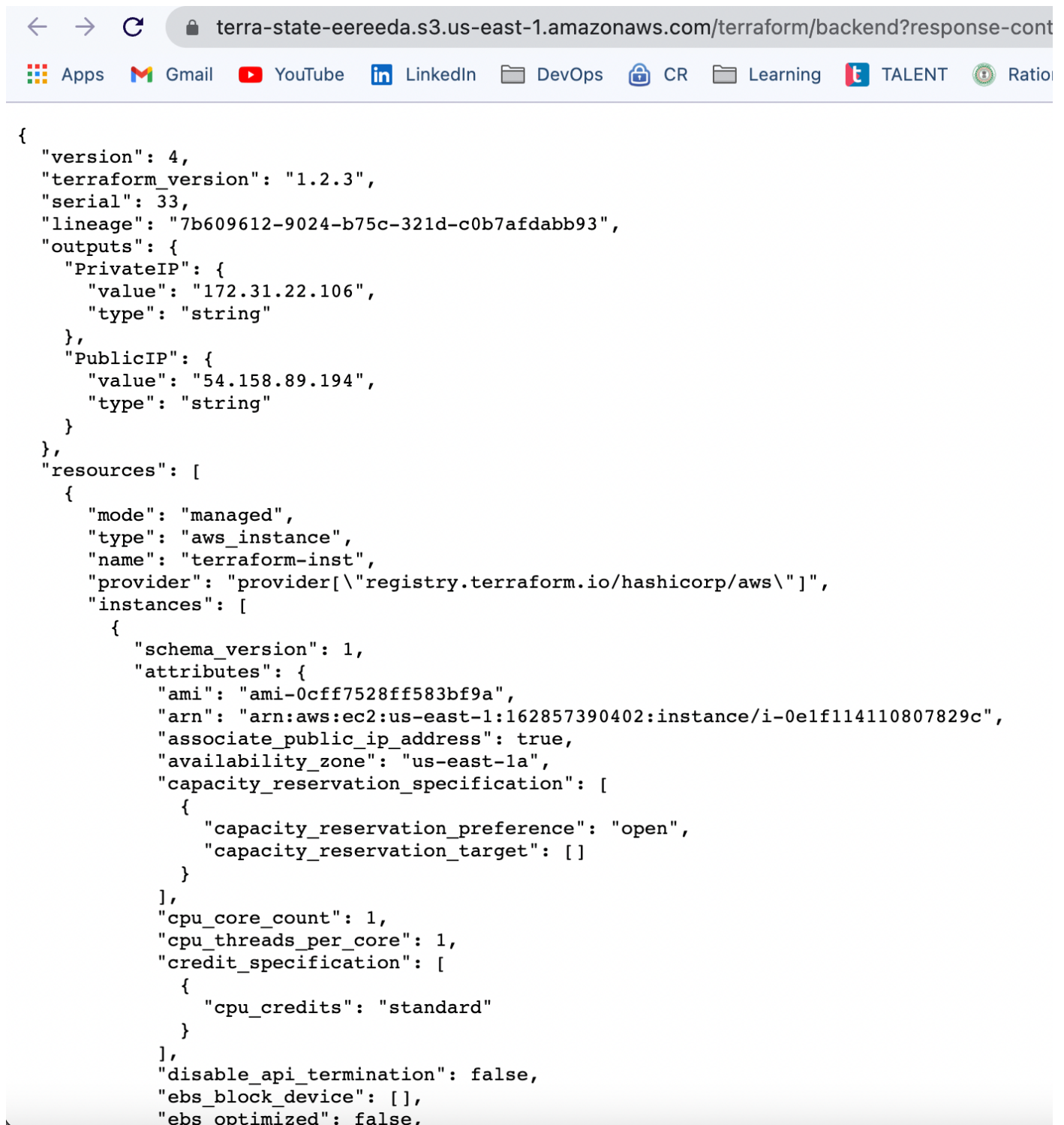
```
PrivateIP = "172.31.22.106"  
PublicIP = "54.158.89.194"
```

5. Exercise 5: output

backend.tf

```
terraform {  
  backend "s3" {  
    bucket = "terra-state-eereeda"  
    key = "terraform/backend"  
    region = "us-east-1"  
  }  
}
```

Amazon S3 > Buckets > terra-state-eereeda > terraform > backend > open



The screenshot shows a web browser window with the address bar displaying the URL: `terra-state-eereeda.s3.us-east-1.amazonaws.com/terraform/backend?response-cont`. The browser's address bar includes navigation icons (back, forward, refresh) and a search icon. Below the address bar, there is a row of application shortcuts: Apps, Gmail, YouTube, LinkedIn, DevOps, CR, Learning, TALENT, and Ration. The main content area of the browser displays the Terraform state file content, which is a JSON object. The JSON object contains the following fields: `"version": 4`, `"terraform_version": "1.2.3"`, `"serial": 33`, `"lineage": "7b609612-9024-b75c-321d-c0b7afdabb93"`, `"outputs": {` (containing `"PrivateIP": {` and `"PublicIP": {`), `"resources": [` (containing an `"aws_instance"` resource). The `"instances": [` array contains one instance with the following attributes: `"schema_version": 1`, `"attributes": {` (containing `"ami": "ami-0cff7528ff583bf9a"`, `"arn": "arn:aws:ec2:us-east-1:162857390402:instance/i-0elf114110807829c"`, `"associate_public_ip_address": true`, `"availability_zone": "us-east-1a"`, `"capacity_reservation_specification": {` (containing `"capacity_reservation_preference": "open"` and `"capacity_reservation_target": []`), `"cpu_core_count": 1`, `"cpu_threads_per_core": 1`, `"credit_specification": {` (containing `"cpu_credits": "standard"`), `"disable_api_termination": false`, `"ebs_block_device": []`, and `"ebs_optimized": false`.

```
{  
  "version": 4,  
  "terraform_version": "1.2.3",  
  "serial": 33,  
  "lineage": "7b609612-9024-b75c-321d-c0b7afdabb93",  
  "outputs": {  
    "PrivateIP": {  
      "value": "172.31.22.106",  
      "type": "string"  
    },  
    "PublicIP": {  
      "value": "54.158.89.194",  
      "type": "string"  
    }  
  },  
  "resources": [  
    {  
      "mode": "managed",  
      "type": "aws_instance",  
      "name": "terraform-inst",  
      "provider": "provider[\"registry.terraform.io/hashicorp/aws\"]",  
      "instances": [  
        {  
          "schema_version": 1,  
          "attributes": {  
            "ami": "ami-0cff7528ff583bf9a",  
            "arn": "arn:aws:ec2:us-east-1:162857390402:instance/i-0elf114110807829c",  
            "associate_public_ip_address": true,  
            "availability_zone": "us-east-1a",  
            "capacity_reservation_specification": [  
              {  
                "capacity_reservation_preference": "open",  
                "capacity_reservation_target": []  
              }  
            ],  
            "cpu_core_count": 1,  
            "cpu_threads_per_core": 1,  
            "credit_specification": [  
              {  
                "cpu_credits": "standard"  
              }  
            ],  
            "disable_api_termination": false,  
            "ebs_block_device": [],  
            "ebs_optimized": false,  
          }  
        }  
      ]  
    }  
  ]  
}
```

