Lab Exercise 9

Creating Multiple EC2 Instances with for each in Terraform

1. **Create a Terraform Directory:**

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS E:\> mkdir terraform-ec2-for-each


    Directory: E:\


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        21-02-2024     09:41                terraform-ec2-for-each


PS E:\> cd .\terraform-ec2-for-each\
PS E:\terraform-ec2-for-each>
```

2. **Create a Terraform Configuration File:**

main.tf > ...

```hcl
terraform {
  required_providers {
    aws = {
      source = "hashicorp/aws"
      version = "5.34.0"
    }
  }
}
provider "aws" {
  region = "us-east-2"
  access_key = "AKIAVRUVV37F4VMDRGTY"
  secret_key = "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"
}

```

instance.tf > variable "instances"

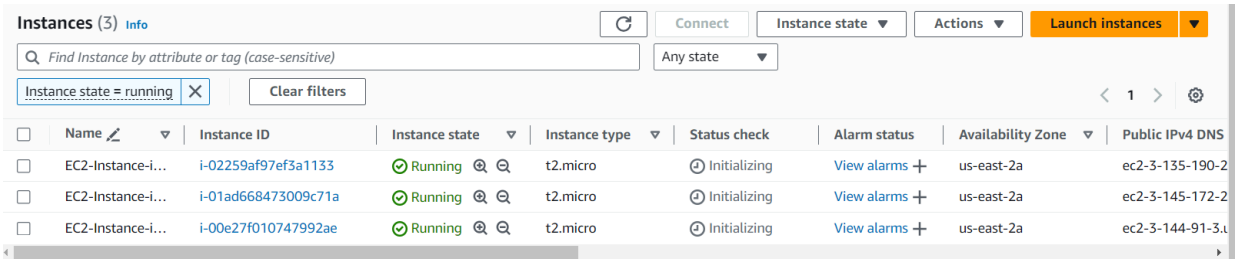
```hcl
resource "aws_instance" "ec2_instances" {
 for_each = var.instances
 ami = var.instances[each.key].ami
 instance_type = var.instances[each.key].instance_type
 tags = {
 Name = "EC2-Instance-${each.key}"
 }
}
variable "instances" {
    description = "Map of EC2 instances with settings"
    default = {
    "instance1" = {
    ami = "ami-02ca28e7c7b8f8be1"
    instance_type = "t2.micro"
},
    "instance2" = {
    ami = "ami-05fb0b8c1424f266b"
    instance_type = "t2.micro"
},
    "instance3" = {
    ami = "ami-0d77c9d87c7e619f9"
    instance_type = "t2.micro"
}
 }
}
```

3. **Initialize and Apply:**

Windows PowerShell

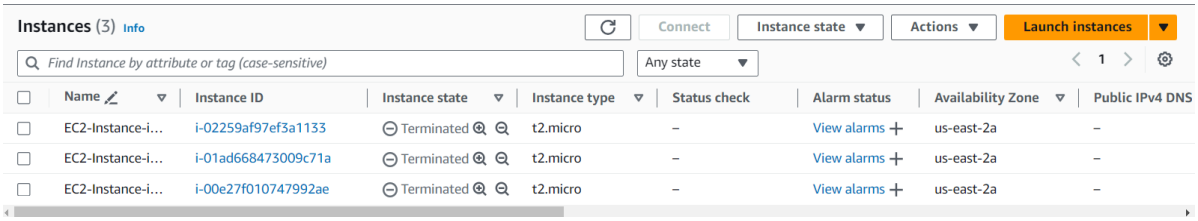
```
PS E:\terraform-ec2-for-each> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding hashicorp/aws versions matching "5.34.0"...
- Installing hashicorp/aws v5.34.0...
- Installed hashicorp/aws v5.34.0 (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.
PS E:\terraform-ec2-for-each>
```

```
      + user_data_base64                     = (known after apply)
      + user_data_replace_on_change          = false
      + vpc_security_group_ids               = (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_instance.ec2_instances["instance1"]: Creating...
aws_instance.ec2_instances["instance2"]: Creating...
aws_instance.ec2_instances["instance3"]: Creating...
aws_instance.ec2_instances["instance1"]: Still creating... [10s elapsed]
aws_instance.ec2_instances["instance2"]: Still creating... [10s elapsed]
aws_instance.ec2_instances["instance3"]: Still creating... [10s elapsed]
aws_instance.ec2_instances["instance3"]: Still creating... [20s elapsed]
aws_instance.ec2_instances["instance2"]: Still creating... [20s elapsed]
aws_instance.ec2_instances["instance1"]: Still creating... [20s elapsed]
aws_instance.ec2_instances["instance1"]: Creation complete after 28s [id=i-00e27f010747992ae]
aws_instance.ec2_instances["instance2"]: Still creating... [30s elapsed]
aws_instance.ec2_instances["instance3"]: Still creating... [30s elapsed]
aws_instance.ec2_instances["instance2"]: Creation complete after 39s [id=i-01ad668473009c71a]
aws_instance.ec2_instances["instance3"]: Creation complete after 39s [id=i-02259af97ef3a1133]

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.
PS E:\terraform-ec2-for-each>
```



4. Clean Up:

```
        - volume_size           = 10 -> null
        - volume_type           = "gp3" -> null
      }
    }

Plan: 0 to add, 0 to change, 3 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_instance.ec2_instances["instance3"]: Destroying... [id=i-02259af97ef3a1133]
aws_instance.ec2_instances["instance1"]: Destroying... [id=i-00e27f010747992ae]
aws_instance.ec2_instances["instance2"]: Destroying... [id=i-01ad668473009c71a]
aws_instance.ec2_instances["instance2"]: Still destroying... [id=i-01ad668473009c71a, 10s elapsed]
aws_instance.ec2_instances["instance1"]: Still destroying... [id=i-00e27f010747992ae, 10s elapsed]
aws_instance.ec2_instances["instance3"]: Still destroying... [id=i-02259af97ef3a1133, 10s elapsed]
aws_instance.ec2_instances["instance3"]: Still destroying... [id=i-02259af97ef3a1133, 20s elapsed]
aws_instance.ec2_instances["instance2"]: Still destroying... [id=i-01ad668473009c71a, 20s elapsed]
aws_instance.ec2_instances["instance1"]: Still destroying... [id=i-00e27f010747992ae, 20s elapsed]
aws_instance.ec2_instances["instance3"]: Destruction complete after 23s
aws_instance.ec2_instances["instance1"]: Still destroying... [id=i-00e27f010747992ae, 30s elapsed]
aws_instance.ec2_instances["instance2"]: Still destroying... [id=i-01ad668473009c71a, 30s elapsed]
aws_instance.ec2_instances["instance2"]: Destruction complete after 33s
aws_instance.ec2_instances["instance1"]: Destruction complete after 33s

Destroy complete! Resources: 3 destroyed.
PS E:\terraform-ec2-for-each>
```


Instances (3) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
Any state
1
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
EC2-Instance-i...
i-02259af97ef3a1133
Terminated
t2.micro
–
View alarms
us-east-2a
–
EC2-Instance-i...
i-01ad668473009c71a
Terminated
t2.micro
–
View alarms
us-east-2a
–
EC2-Instance-i...
i-00e27f010747992ae
Terminated
t2.micro
–
View alarms
us-east-2a
–