**Variables in Terraform configuration file**

In Terraform, **variables** are used to make configurations more flexible, reusable, and maintainable. They allow you to parameterize values **instead of hardcoding** them into the configuration files.

**Key Uses of Variables in Terraform:**

1. **Parameterization** – Allows dynamic values to be passed instead of hardcoding them.
2. **Reusability** – The same Terraform configuration can be used with different values.
3. **Consistency** – Ensures that values remain the same across different modules and environments.
4. **Security** – Sensitive values like passwords and API keys can be stored securely.
5. **Scalability** – Makes it easy to deploy infrastructure with different configurations.

The main use of Terraform variables is to **make your infrastructure code reusable and adaptable**.

Generally Variables can be declared in separate terraform configuration file called **“variable.tf”** file.

In terraform a variable block mainly consist of three parameters

1. default
2. type (optional)
3. description (optional)
4. **Default:** It used to store the values of the variable.
5. **Type:** It is a data type. It may be string, number, Boolean, list, map, tuple and count.
6. **Description:** It is used to describe what the variable is used for.

Variable “example” {

default = “RG1”

type = string

description = “resource-Group-name”

Ex:

**Note:** If we not defined the type in the variable block it automatically set’s **“any”** bydefault.

We can assign the values to the variables in three ways.

1. **Dynamic assigning (while executing the code).**

#provider Block

provider "azurerm" {

  features {}

  client\_id       = "1f79e427-2ac4-4eb6-9ca0-f4dd4b3f31ee"

  client\_secret   = "KDQ8Q~H-\_St9118keMeU-ADFzsiY.3y.GMYEnbeS"

  tenant\_id       = "4a623a04-9917-4ee2-8f59-02586964c992"

  subscription\_id = "51c6d184-6756-4a9a-ade4-cd0f3d57cded"

}

#Resource Block

resource "azurerm\_resource\_group" "TFRG" {

  name     = var.rg-name

  location = var.loc-name

}

**Fig:** main.tf file

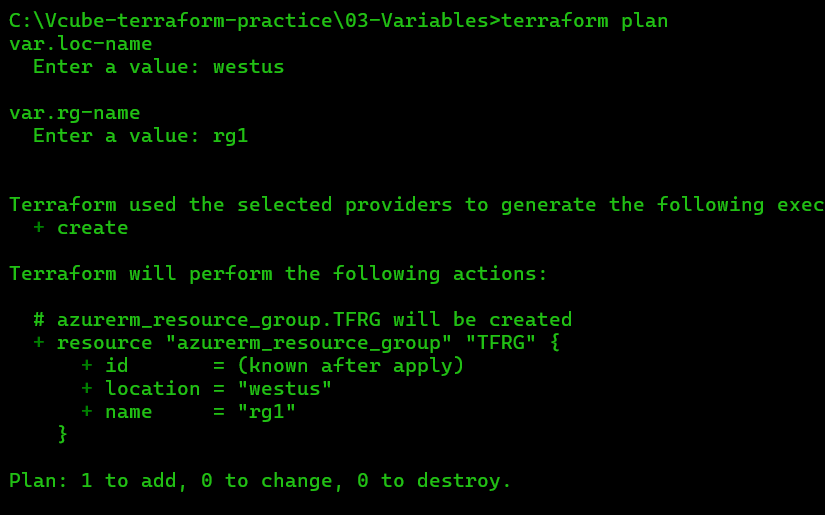
variable "rg-name" {

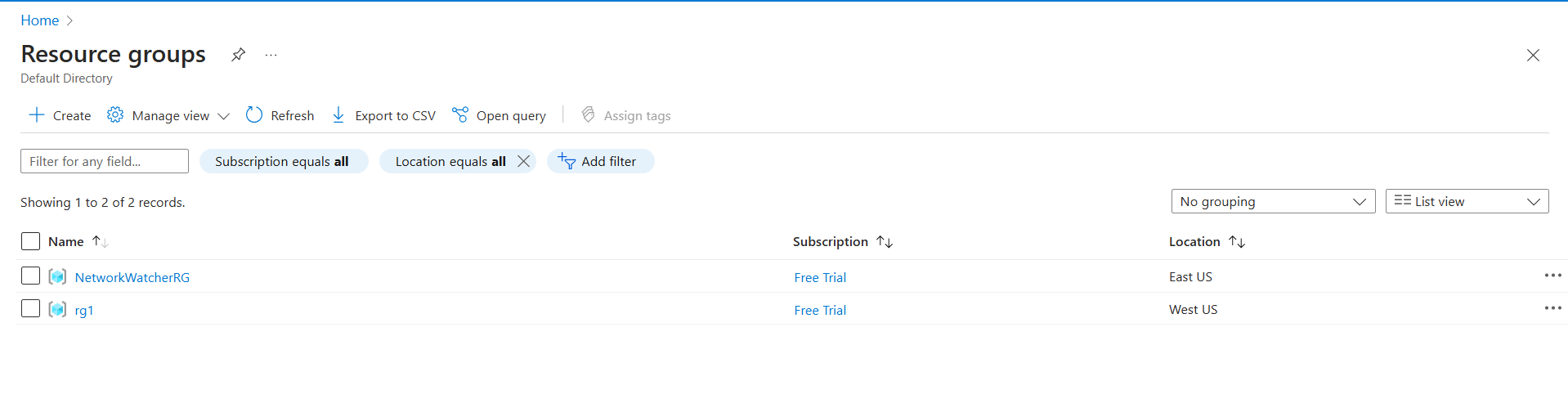
}

variable "loc-name" {

}

**Fig:** variable.tf file



**Fig:** Assigning variable values dynamically while executing

**Fig;** resource group created at West US

1. **Static assigning (declared in the variable.tf file)**

variable "rg-name" {

  default = "RG1"

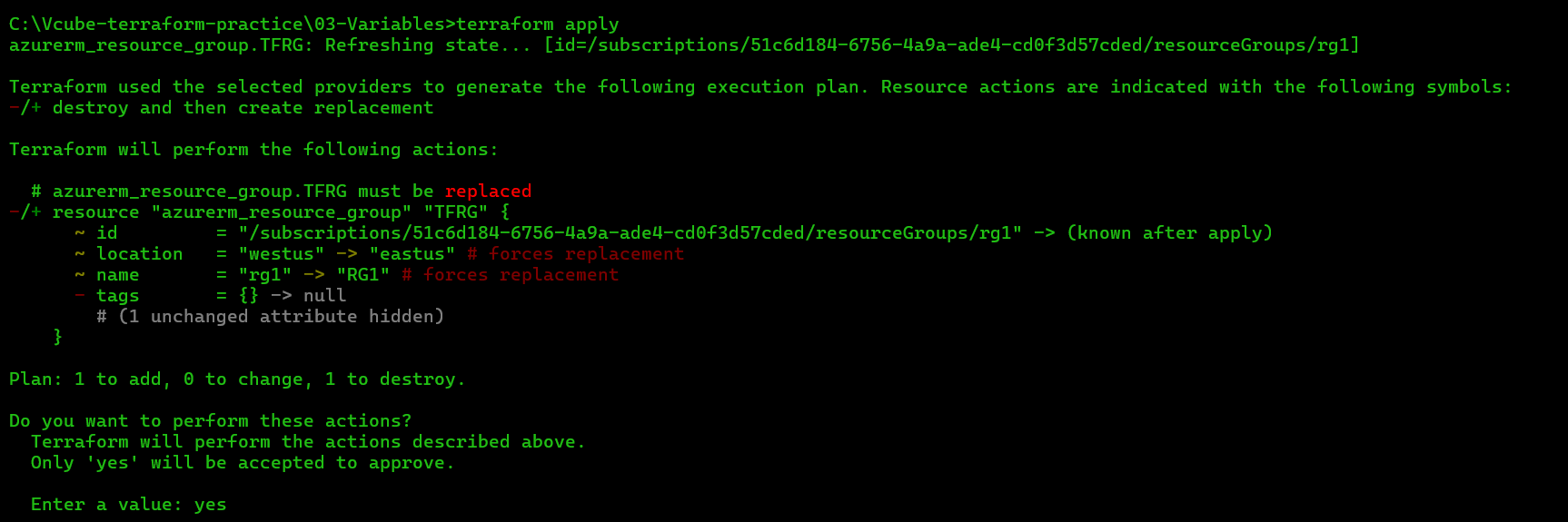
}

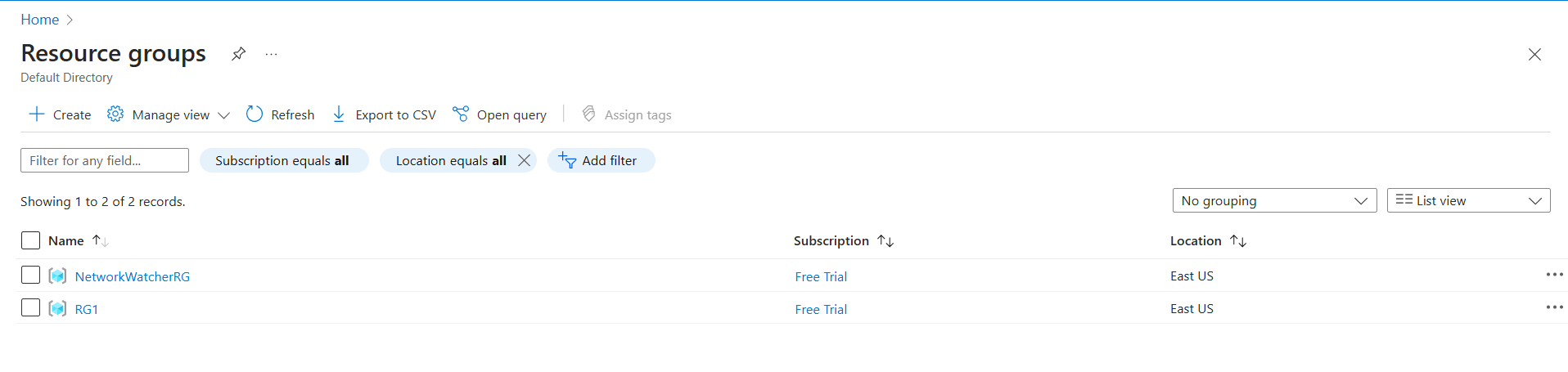
variable "loc-name" {

default = "eastus"

}

Fig: Variable values are declared in **variable.tf file** statically.





**Fig:** resource group is created at East US

1. **Declaring the values of variables in terraform.tfvars file.**

variable "rg-name" {

  default = "RG1"

}

variable "loc-name" {

default = "eastus"

}

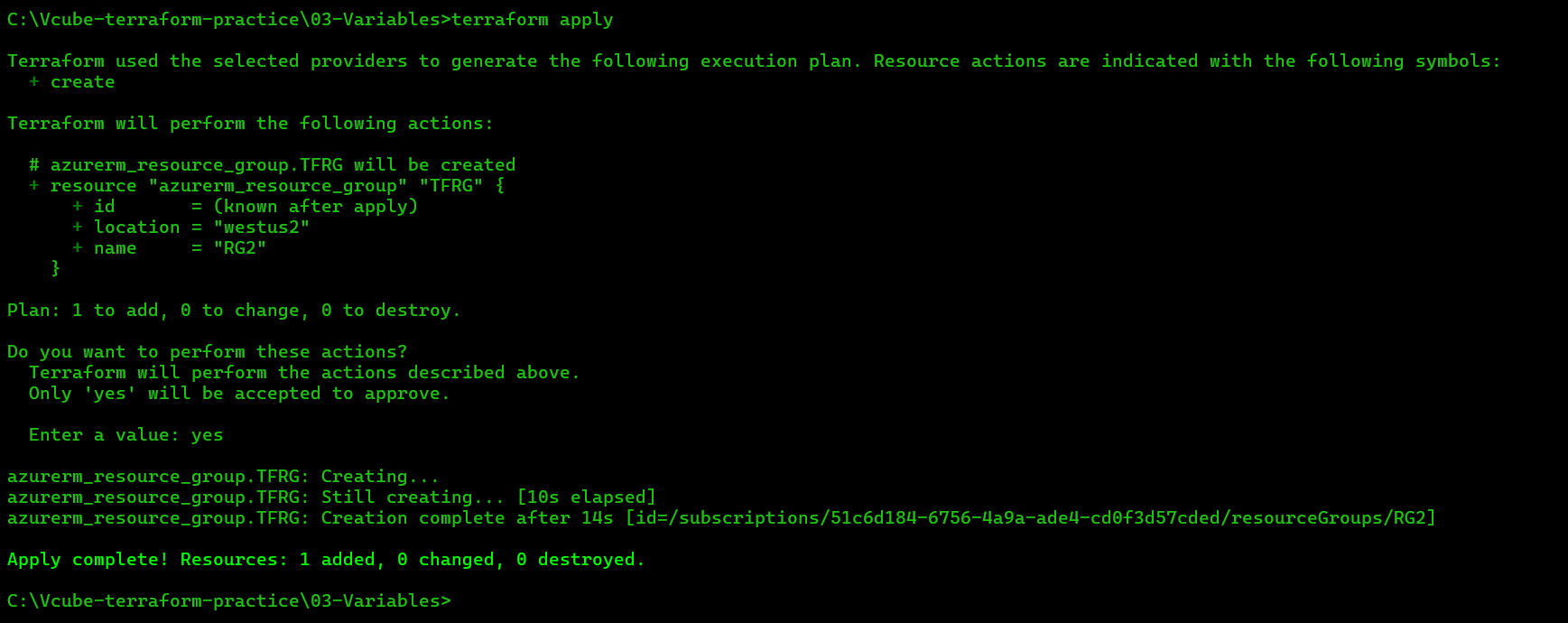
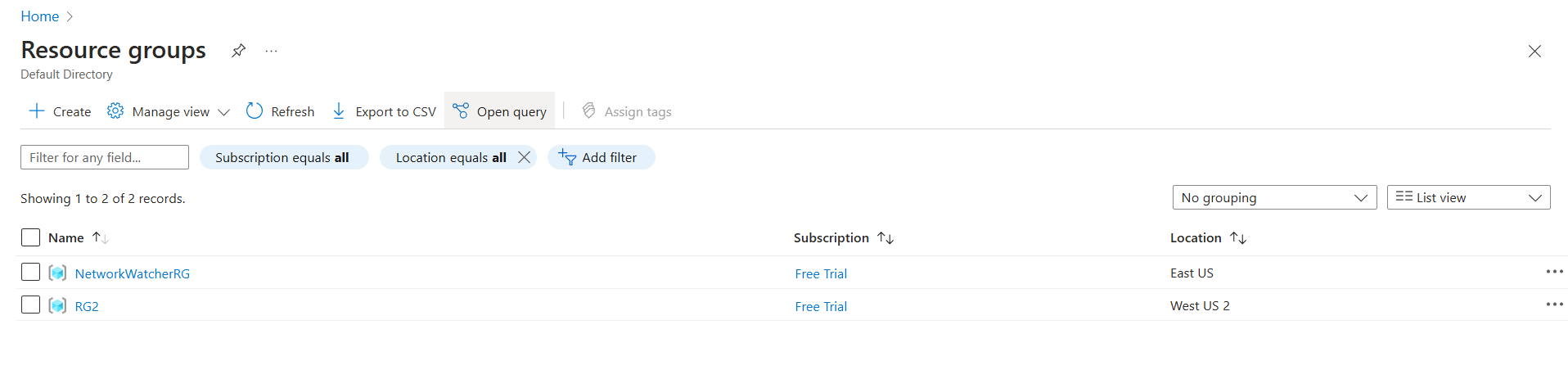
**Fig:** variable.tf file

rg-name = "RG2"

loc-name = "westus2"

**Fig:** terraform.tfvars file

After terraform apply the resource group will created in **westus2** with name **RG2** by ignoring the values from variable.tf file.



**Now create the Virtual Network Using variable concept.**

#Resource Block

resource "azurerm\_resource\_group" "TFRG" {

  name     = var.rg-name

  location = var.loc-name

}

#virtual network creation

resource "azurerm\_virtual\_network" "TFVnet" {

    name = var.Vnet-name

    location = azurerm\_resource\_group.TFRG.location

    resource\_group\_name = azurerm\_resource\_group.TFRG.name

    address\_space = var.ipaddress

}

**Fig:** main.tf file

variable "rg-name" {

}

variable "loc-name" {

}

variable "Vnet-name" {

}

variable "ipaddress" {

}

**Fig:** variable.tf file

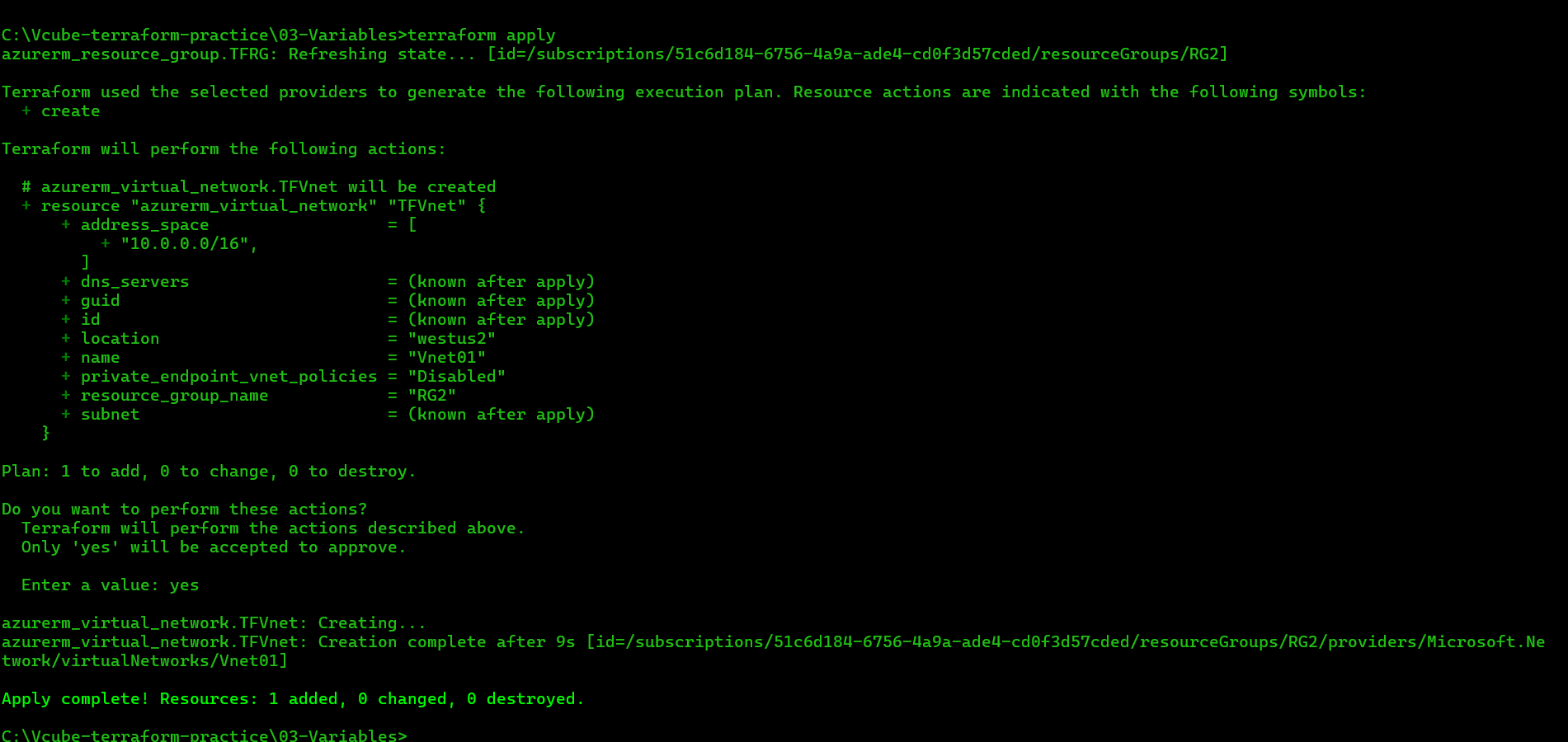
rg-name = "RG2"

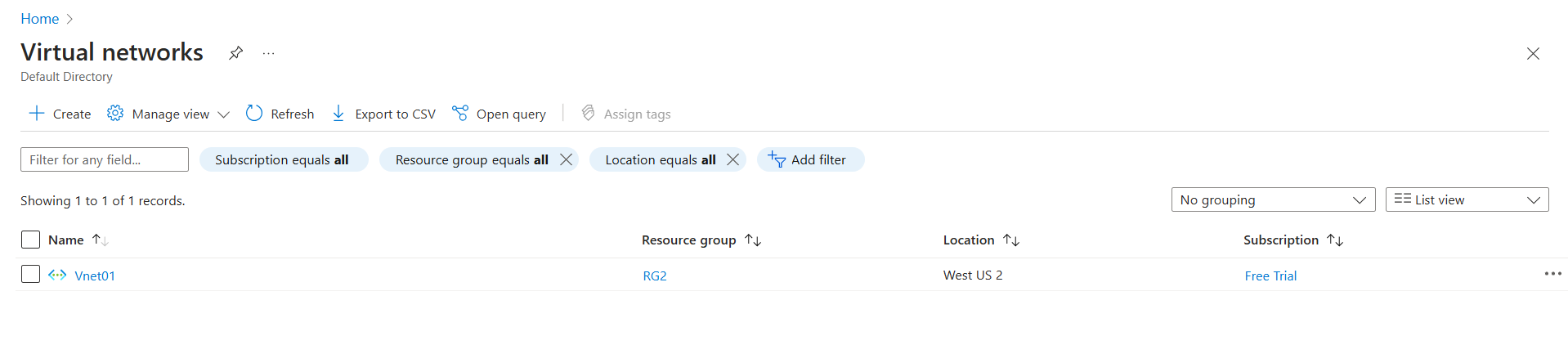
loc-name = "westus2"

Vnet-name = "Vnet01"

ipaddress = ["10.0.0.0/16"]

**Fig:** terraform.tfvars file.





**Fig:** Virtual network is created by using variable concept.

**Note:** we can create the terraform.tfvars file without creating variable.tf file. But it's generally **not recommended** and can lead to confusion and potential issues.

**Creation of Subnets Using variable concept**

#Subnet creation

resource "azurerm\_subnet" "TFSubnet" {

    name = var.sub-name

    resource\_group\_name = azurerm\_resource\_group.TFRG.name

    virtual\_network\_name = azurerm\_virtual\_network.TFVnet.name

    address\_prefixes = var.sub-ip

}

**Fig:** main.tf file

variable "rg-name" {}

variable "loc-name" {}

variable "Vnet-name" {}

variable "ipaddress" {}

variable "sub-name" {}

variable "sub-ip" {}

**Fig:** variable.tf file.

rg-name = "RG2"

loc-name = "westus2"

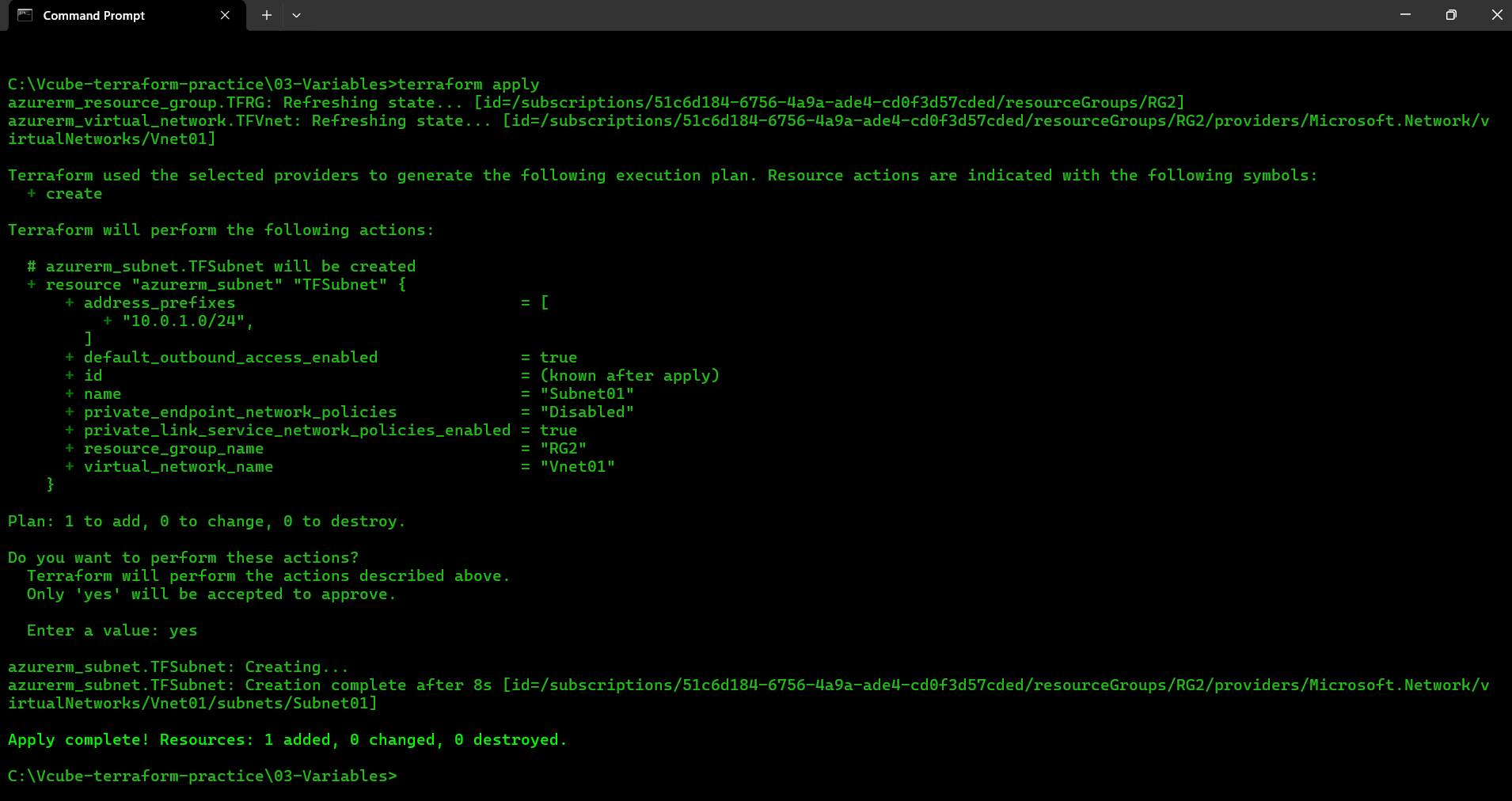
Vnet-name = "Vnet01"

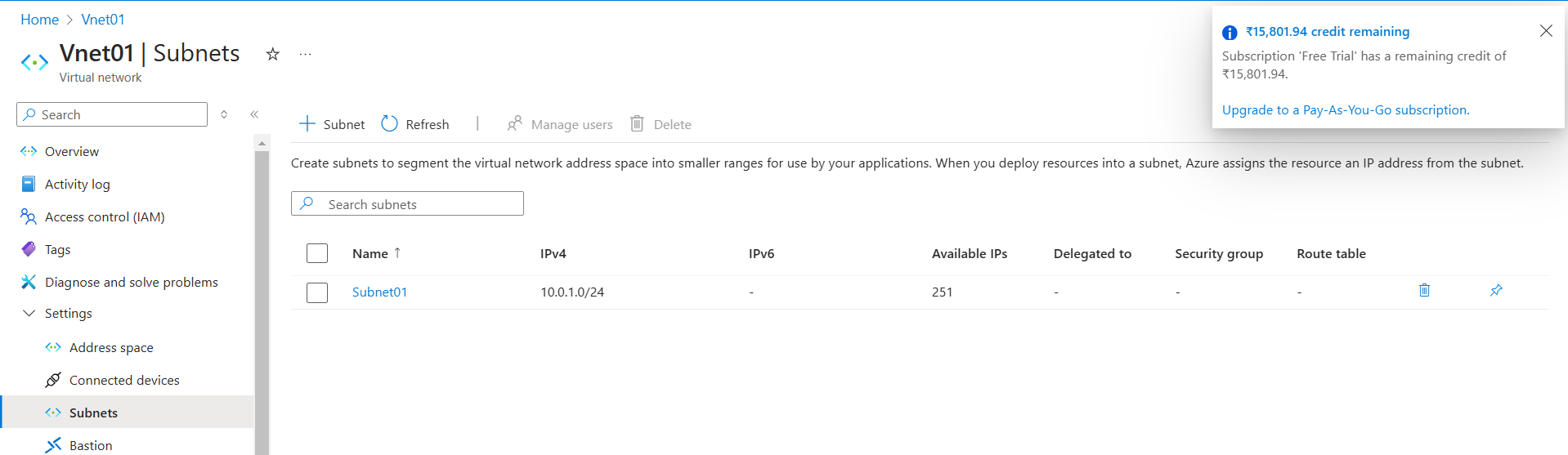
ipaddress = ["10.0.0.0/16"]

sub-name = "Subnet01"

sub-ip = ["10.0.1.0/24"]

**Fig:** terraform.tfvars.





**Fig:** Subnet is created within the Vnet01 using variable concept.