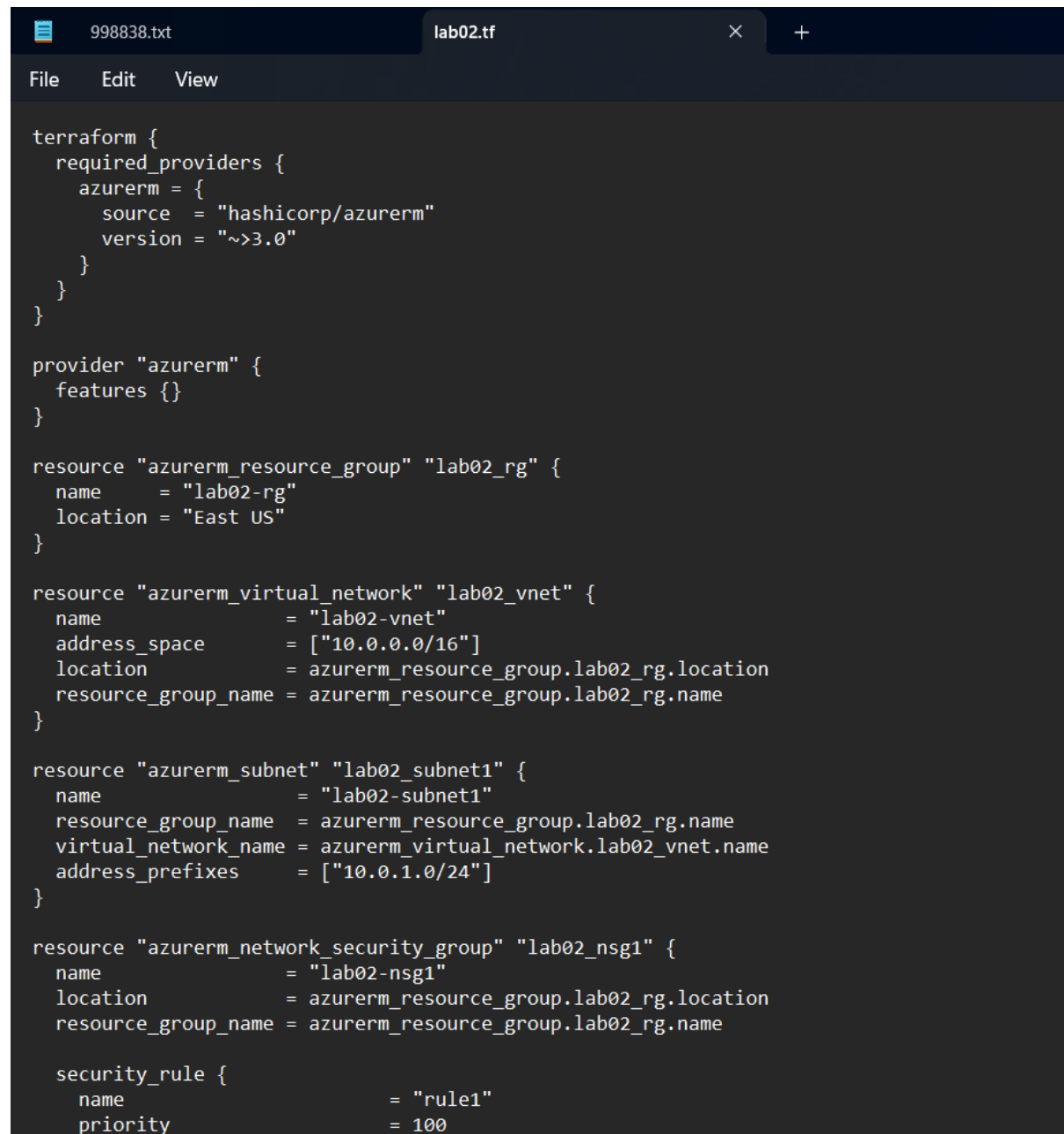**NAME: SANDYA NANKANI (2112128) &**
RITESH KUMAR (2112245)
SECTION: DEVOPS – B

Part 1 and 2:

```
terraform {
  required_providers {
    azurerm = {
      source  = "hashicorp/azurerm"
      version = "~>3.0"
    }
  }
}

provider "azurerm" {
  features {}
}

resource "azurerm_resource_group" "lab02_rg" {
  name     = "lab02-rg"
  location = "East US"
}

resource "azurerm_virtual_network" "lab02_vnet" {
  name                = "lab02-vnet"
  address_space       = ["10.0.0.0/16"]
  location            = azurerm_resource_group.lab02_rg.location
  resource_group_name = azurerm_resource_group.lab02_rg.name
}

resource "azurerm_subnet" "lab02_subnet1" {
  name                 = "lab02-subnet1"
  resource_group_name  = azurerm_resource_group.lab02_rg.name
  virtual_network_name = azurerm_virtual_network.lab02_vnet.name
  address_prefixes     = ["10.0.1.0/24"]
}

resource "azurerm_network_security_group" "lab02_nsg1" {
  name                = "lab02-nsg1"
  location            = azurerm_resource_group.lab02_rg.location
  resource_group_name = azurerm_resource_group.lab02_rg.name

  security_rule {
    name                       = "rule1"
    priority                   = 100
```

```
  security_rule {
    name                     = "rule1"
    priority                 = 100
    direction                = "Inbound"
    access                   = "Allow"
    protocol                 = "Tcp"
    source_port_range        = "*"
    destination_port_range   = "22"
    source_address_prefix    = "*"
    destination_address_prefix = "*"
  }
}

resource "azurerm_subnet_network_security_group_association" "lab02_assoc1" {
  subnet_id                = azurerm_subnet.lab02_subnet1.id
  network_security_group_id = azurerm_network_security_group.lab02_nsg1.id
```

Part 3:

```
PS C:\Users\rkmeg\Desktop\DEVOPS> terraform init
Initializing the backend...
Initializing provider plugins...
- Finding hashicorp/azurerm versions matching "~> 3.0"...
- Installing hashicorp/azurerm v3.117.1...
- Installed hashicorp/azurerm v3.117.1 (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 reposito
ry
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 se
e
any changes that are required for your infrastructure. All Terraform command
s
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, ot
her
commands will detect it and remind you to do so if necessary.
```

Part 4 and 5:

```
PS C:\Users\rkmeg\Desktop\DEVOPS> terraform validate
Success! The configuration is valid.

PS C:\Users\rkmeg\Desktop\DEVOPS> terraform plan

Terraform used the selected providers to generate the following execution
plan. Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:

  # azurerm_network_security_group.lab02_nsg1 will be created
  + resource "azurerm_network_security_group" "lab02_nsg1" {
      + id                   = (known after apply)
      + location             = "eastus"
      + name                 = "lab02-nsg1"
      + resource_group_name  = "lab02-rg"
      + security_rule        = [
          + {
              + access                                     = "Allow"
              + destination_address_prefix                 = "*"
              + destination_address_prefixes               = []
              + destination_application_security_group_ids = []
              + destination_port_range                     = "22"
              + destination_port_ranges                    = []
              + direction                                  = "Inbound"
              + name                                       = "rule1"
              + priority                                   = 100
              + protocol                                   = "Tcp"
```

Part 7:

```
PS C:\Users\rkmeg\Desktop\DEVOPS> terraform state list
azurerm_network_security_group.lab02_nsg1
azurerm_resource_group.lab02_rg
azurerm_subnet.lab02_subnet1
azurerm_subnet_network_security_group_association.lab02_assoc1
azurerm_virtual_network.lab02_vnet
PS C:\Users\rkmeg\Desktop\DEVOPS>
```

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```
PS C:\Users\rkmeg\Desktop\DEVOPS> terraform show
# azurerm_network_security_group.lab02_nsg1:
resource "azurerm_network_security_group" "lab02_nsg1" {
    id                    = "/subscriptions/6f6c1ba9-6f12-4481-90f0-b278f4bc6c
ba/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups
/lab02-nsg1"
    location              = "eastus"
    name                  = "lab02-nsg1"
    resource_group_name   = "lab02-rg"
    security_rule         = [
        {
            access                                     = "Allow"
            description                                = null
            destination_address_prefix                 = "*"
            destination_address_prefixes               = []
            destination_application_security_group_ids = []
            destination_port_range                     = "22"
            destination_port_ranges                    = []
            direction                                  = "Inbound"
            name                                       = "rule1"
            priority                                   = 100
            protocol                                   = "Tcp"
            source_address_prefix                      = "*"
            source_address_prefixes                    = []
            source_application_security_group_ids      = []
            source_port_range                          = "*"
            source_port_ranges                         = []
        },
    ]
```

```
Windows PowerShell                    X    +   v                                _   □

 azurerm_resource_group.lab02_rg:
esource "azurerm_resource_group" "lab02_rg" {
    id         = "/subscriptions/6f6c1ba9-6f12-4481-90f0-b278f4bc6cba/resou
eGroups/lab02-rg"
    location   = "eastus"
    managed_by = null
    name       = "lab02-rg"


 azurerm_subnet.lab02_subnet1:
esource "azurerm_subnet" "lab02_subnet1" {
    address_prefixes                            = [
        "10.0.1.0/24",
    ]
    default_outbound_access_enabled             = true
    enforce_private_link_endpoint_network_policies = false
    enforce_private_link_service_network_policies  = false
    id                                          = "/subscriptions/6f6c1k
-6f12-4481-90f0-b278f4bc6cba/resourceGroups/lab02-rg/providers/Microsoft.N
work/virtualNetworks/lab02-vnet/subnets/lab02-subnet1"
    name                                        = "lab02-subnet1"
    private_endpoint_network_policies           = "Enabled"
    private_endpoint_network_policies_enabled   = true
    private_link_service_network_policies_enabled = true
    resource_group_name                         = "lab02-rg"
    virtual_network_name                        = "lab02-vnet"


 azurerm_subnet_network_security_group_association.lab02_assoc1:
```

```
    id                           = "/subscriptions/6f6c1ba9-6f12-4481-90f0-b2
 f4bc6cba/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetwor
 /lab02-vnet/subnets/lab02-subnet1"
    network_security_group_id = "/subscriptions/6f6c1ba9-6f12-4481-90f0-b2
 f4bc6cba/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecuri
 Groups/lab02-nsg1"
    subnet_id                    = "/subscriptions/6f6c1ba9-6f12-4481-90f0-b2
 f4bc6cba/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetwor
 /lab02-vnet/subnets/lab02-subnet1"
 }

# azurerm_virtual_network.lab02_vnet:
resource "azurerm_virtual_network" "lab02_vnet" {
    address_space           = [
        "10.0.0.0/16",
    ]
    bgp_community           = null
    dns_servers             = []
    edge_zone               = null
    flow_timeout_in_minutes = 0
    guid                    = "f41b4dd9-126e-4559-8cb2-b94403ebc339"
    id                      = "/subscriptions/6f6c1ba9-6f12-4481-90f0-b278
 bc6cba/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks
 ab02-vnet"
    location                = "eastus"
    name                    = "lab02-vnet"
    resource_group_name     = "lab02-rg"
    subnet                  = []
 }
PS C:\Users\rkmeg\Desktop\DEVOPS>
```

Part 8:

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Home > Resource groups >

lab02-rg ✗ ☆ ...
Resource group

🔎 Search | ○ ≪

+ Create   ⚙ Manage view ∨   🗑 Delete resource group   ···

- ⊡ Overview
- ▣ Activity log
- 🔒 Access control (IAM)
- 🏷 Tags
- ⊹ Resource visualizer
- ⚡ Events
- > Settings
- > Cost Management
- > Monitoring
- > Automation
- > Help

∨ Essentials | JSON View

Resources   Recommendations (1)

| Filter for any field... | ⁺ᐁ Add filter | ∨ More (2) |

Showing 1 to 2 of 2 records.   ☐ Show hidden types ⓘ

| No grouping ∨ | ☰☰ List view ∨ |

☐ Name ↑↓	Type ↑↓	Location ↑↓
☐ 🛡 lab02-nsg1	Network security group	East US
☐ ⟨·⟩ lab02-vnet	Virtual network	East US

◄ ▬▬▬▬▬▬▬▬▬▬▬▬▬▬ ►

< Page 1 ∨ of 1 > | 👥

Add or remove favorites by pressing Ctrl+Shift+F

Part 9:

```
}
resource "azurerm_subnet" "subnet2" {
    name                 = "lab02-subnet2"
    resource_group_name  = azurerm_resource_group.rg.name
    virtual_network_name = azurerm_virtual_network.vnet.name
    address_prefixes     = ["10.0.2.0/24"]
}

resource "azurerm_network_security_group" "nsg2" {
    name                = "lab02-nsg2"
    location            = azurerm_resource_group.rg.location
    resource_group_name = azurerm_resource_group.rg.name

    security_rule {
        name                       = "rule1"
        priority                   = 100
        direction                  = "Inbound"
        access                     = "Allow"
        protocol                   = "Tcp"
        source_port_range          = "*"
        destination_port_range     = "3389"
        source_address_prefix      = "*"
        destination_address_prefix = "*"
    }

    security_rule {
        name                       = "rule2"
        priority                   = 200
        direction                  = "Inbound"
        access                     = "Allow"
        protocol                   = "Tcp"
        source_port_range          = "*"
        destination_port_range     = "5985"
        source_address_prefix      = "*"
        destination_address_prefix = "*"
    }
}

resource "azurerm_subnet_network_security_group_association" "assoc2" {
    subnet_id                 = azurerm_subnet.subnet2.id
    network_security_group_id = azurerm_network_security_group.nsg2.id
```

Part 10:

```
PS C:\Users\rkmeg\Desktop\DEVOPS> terraform validate
Success! The configuration is valid.
```

Part 11:

Part 12:

```
    + default_outbound_access_enabled                        = true
    + enforce_private_link_endpoint_network_policies         = (known after apply)
    + enforce_private_link_service_network_policies          = (known after apply)
    + id                                                     = (known after apply)
    + name                                                   = "lab02-subnet2"
    + private_endpoint_network_policies                      = (known after apply)
    + private_endpoint_network_policies_enabled              = (known after apply)
    + private_link_service_network_policies_enabled          = (known after apply)
    + resource_group_name                                    = "lab02-rg"
    + virtual_network_name                                   = "lab02-vnet"
  }

  # azurerm_subnet_network_security_group_association.assoc2 will be created
  + resource "azurerm_subnet_network_security_group_association" "assoc2" {
      + id                        = (known after apply)
      + network_security_group_id = (known after apply)
      + subnet_id                 = (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

azurerm_subnet.subnet2: Creating...
azurerm_network_security_group.nsg2: Creating...
azurerm_network_security_group.nsg2: Creation complete after 7s [id=/subscriptions/6f6c1ba9-6f12-4481-90f0-b278f4bc6cba/resourceG
crosoft.Network/networkSecurityGroups/lab02-nsg2]
azurerm_subnet.subnet2: Still creating... [10s elapsed]
azurerm_subnet.subnet2: Creation complete after 11s [id=/subscriptions/6f6c1ba9-6f12-90f0-b278f4bc6cba/resourceGroups/lab02-
ork/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]
azurerm_subnet_network_security_group_association.assoc2: Creating...
azurerm_subnet_network_security_group_association.assoc2: Creation complete after 10s [id=/subscriptions/6f6c1ba9-6f12-4481-90f0-
/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.
PS C:\Users\rkmeg\Desktop\DEVOPS>
```

Part 13:

```
PS C:\Users\rkmeg\Desktop\DEVOPS> terraform state list
azurerm_network_security_group.nsg1
azurerm_network_security_group.nsg2
azurerm_resource_group.rg
azurerm_subnet.subnet1
azurerm_subnet.subnet2
azurerm_subnet_network_security_group_association.assoc1
azurerm_subnet_network_security_group_association.assoc2
azurerm_virtual_network.vnet
PS C:\Users\rkmeg\Desktop\DEVOPS> |
```

Part 14:

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Part 15: