Lab 2: Creating a Resource Group in Microsoft Azure using Terraform

Author: Dr. Sandeep Kumar Sharma
Level: Beginner
Platform: Ubuntu Linux + Microsoft Azure
Prerequisite: Lab 1 (Terraform + Azure Setup)

Learning Objective

By the end of this lab, participants will be able to:

- Understand what a Resource Group is in Microsoft Azure
- Understand why Resource Groups are important
- Write first real Terraform code for Azure
- Create a Resource Group using Terraform
- Use basic Terraform commands: init, plan, apply, destroy

Learning Outcome

After completing this lab, participants will:

- Clearly understand the concept of Resource Group
- Be able to create Azure infrastructure using Terraform
- Gain confidence in Terraform workflow
- Understand Infrastructure as Code practically

First Important Concept

What is a Resource Group?

A **Resource Group** is a container (folder) in Microsoft Azure.

It is used to **store, manage, and organize** cloud resources like:

- Virtual Machines
- Virtual Networks
- Storage Accounts
- Databases

- Load Balancers

Simple Example:

Think of a Resource Group like a **folder in your laptop**.

Just like:

- One folder contains files

Similarly:

- One Resource Group contains cloud resources

Why Resource Group is Important?

- It helps in organizing resources
- It makes management easy
- It helps in access control (security)
- It helps in billing and cost tracking
- It allows easy deletion of all resources together

👉In Azure, **nothing can be created without a Resource Group**.

Hands-On Lab

Step 1: Go to Your Terraform Working Directory

```
cd terraform-azure-lab
```

Step 2: Create a New Terraform File for Resource Group

```
touch resource_group.tf
```

Step 3: Open the File

```
nano resource_group.tf
```

Step 4: Write Terraform Code for Resource Group

Paste the following code:

```
resource "azurerm_resource_group" "rg1" {
  name     = "rg-terraform-lab"
  location = "East US"
}
```

Step 5: Understand the Code (Very Simple)

```
resource "azurerm_resource_group" "rg1"
```

- `resource` → Terraform keyword
- `azurerm_resource_group` → Azure resource type
- `rg1` → local Terraform name (internal reference)

```
name = "rg-terraform-lab"
```

→ Actual Azure Resource Group name

```
location = "East US"
```

→ Azure region where RG will be created

Step 6: Initialize Terraform

```
terraform init
```

Step 7: Preview Changes (Dry Run)

```
terraform plan
```

This shows what Terraform **will create** (no real creation yet).

Step 8: Create Resource Group

```
terraform apply
```

Type:

```
yes
```

Terraform will create the Resource Group in Azure.

Step 9: Verify in Azure Portal

Go to Azure Portal → Resource Groups

You will see:

```
rg-terraform-lab
```

Step 10: Verify using Azure CLI

```
az group list -o table
```

Terraform Lifecycle Understanding

Command	Meaning
terraform init	Initialize project
terraform plan	Show changes
terraform apply	Create resources
terraform destroy	Delete resources

Step 11: Delete Resource Group (Cleanup)

```
terraform destroy
```

Type:

```
yes
```

This will delete the Resource Group from Azure.
