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System Provisioning and
Configuration Management

Submitted To:

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Lab Exercise 4– Terraform Variables

Objective:

Learn how to define and use variables in Terraform configuration.

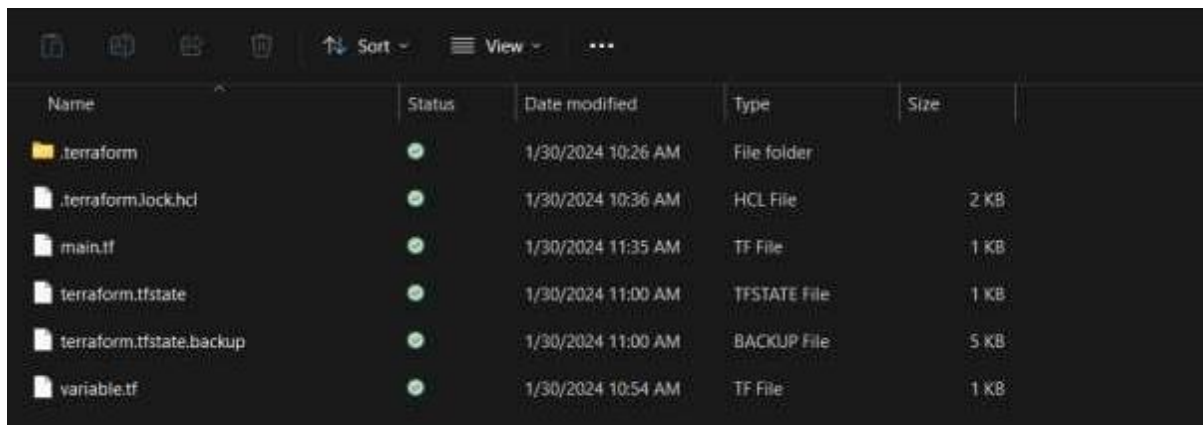
Prerequisites:

- Install Terraform on your machine.

Steps:

1. Create a Terraform Directory:

- Create a new directory for your Terraform project.



A screenshot of a file explorer window showing the contents of a Terraform project directory. The window has a dark theme and a toolbar at the top with icons for file operations and a 'Sort' dropdown. The main area displays a table of files and folders.

Name	Status	Date modified	Type	Size
.terraform	●	1/30/2024 10:26 AM	File folder	
.terraform.lock.hcl	●	1/30/2024 10:36 AM	HCL File	2 KB
main.tf	●	1/30/2024 11:35 AM	TF File	1 KB
terraform.tfstate	●	1/30/2024 11:00 AM	TFSTATE File	1 KB
terraform.tfstate.backup	●	1/30/2024 11:00 AM	BACKUP File	5 KB
variable.tf	●	1/30/2024 10:54 AM	TF File	1 KB

2. Create a Terraform Configuration File:

- Create a file named main.tf within your project directory.

```

main.tf > resource "aws_instance" "example"
1  resource "aws_instance" "example" {
2    ami = var.ami
3    instance_type = var.instance_ty
4  }
5
6  terraform {
7    required_providers {
8      aws = {
9        source = "hashicorp/aws"
10       version = "5.31.0"
11     }
12   }
13 }
14
15 provider "aws" {
16   region = "ap-south-1"
17   access_key = "AKIAZI2LIAJGSHGMMHP"
18   secret_key = "Fg5ojIkOskUNVG1NPhu4Kv41JzX1/XG/6zeQrGk/"
19 }

```

3. Define Variables:

- Open a new file named variables.tf. Define variables for region, ami, and instance_type.

variables.tf

```

variable.tf > variable "instance_ty"
1  variable "ami" {
2    description = "AMI ID"
3    default = "ami-03f4878755434977f"
4  }
5
6  variable "instance_ty" {
7    description = "ec2-instance"
8    default = "t2.micro"
9  }

```

Use Variables in main.tf:

- Modify main.tf to use the variables. # **main.tf**

```
main.tf > resource "aws_instance" "example"
1  resource "aws_instance" "example" {
2    ami = var.ami
3    instance_type = var.instance_ty
4  }
5
6  terraform {
7    required_providers {
8      aws = {
9        source = "hashicorp/aws"
10       version = "5.31.0"
11     }
12   }
13 }
14
15 provider "aws" {
16   region = "ap-south-1"
17   access_key = "AKIAZI2LIAJGSHGMMHP"
18   secret_key = "Fg5ojIkOskuNVG1NPhu4Kv41JzX1/XG/6zeQrGk/"
19 }
```

4. Initialize and Apply:

- Run the following Terraform commands to initialize and apply the configuration.

```
PS C:\Users\Dell\OneDrive\Desktop\DevOps\TerraformVariables> terraform init
```

Initializing the backend...

Initializing provider plugins...

- Finding hashicorp/aws versions matching "5.31.0"...
- Installing hashicorp/aws v5.31.0...
- Installed hashicorp/aws v5.31.0 (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 C:\Users\Dell\OneDrive\Desktop\DevOps\TerraformVariables> terraform apply
```

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:

```
# aws_instance.example will be created
+ resource "aws_instance" "example" {
  + ami                    = "ami-03f4b7875543a877f"
  + arn                   = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone      = (known after apply)
  + cpu_core_count        = (known after apply)
  + cpu_threads_per_core   = (known after apply)
  + disable_api_stop       = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized          = (known after apply)
  + get_password_data      = false
  + host_id                = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile    = (known after apply)
  + id                     = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle      = (known after apply)
```

Plan: 1 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.example: Creating...
aws_instance.example: Still creating... [10s elapsed]
aws_instance.example: Still creating... [20s elapsed]
aws_instance.example: Still creating... [30s elapsed]
aws_instance.example: Creation complete after 33s [id=i-01fafce2aefc1e3c2]
```

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.



5. Clean Up:

```
PS C:\Users\Dell\OneDrive\Desktop\DevOps\Terraform\variables> terraform destroy
aws_instance.example: Refreshing state... [id=i-01fafce2aeefe1e3c2]

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

Terraform will perform the following actions:

# aws_instance.example will be destroyed
- resource "aws_instance" "example" {
  + ami                    = "ami-03f46878755434977f" -> null
  + arm                   = "arn:aws:ec2:ap-south-1:637423583821:instance/i-01fafce2aeefe1e3c2" -> null
  + associate_public_ip_address = true -> null
  + availability_zone      = "ap-south-1a" -> null
  + cpu_core_count         = 1 -> null
  + cpu_threads_per_core   = 1 -> null
  + disable_api_stop       = false -> null
  + disable_api_termination = false -> null
  + ebs_optimized          = false -> null
  + get_password_data      = false -> null
  + hibernation            = false -> null
  + id                     = "i-01fafce2aeefe1e3c2" -> null
  + instance_initiated_shutdown_behavior = "stop" -> null
  + instance_state         = "running" -> null
  + instance_type          = "t2.micro" -> null
  + ipv6_address_count     = 0 -> null
  + ipv6_addresses        = [] -> null
  + monitoring             = false -> null
  + placement_partition_number = 0 -> null
  + primary_network_interface_id = "eni-03c4c13fe075584fe" -> null
  + private_dns            = "ip-172-31-41-191.ap-south-1.compute.internal" -> null
  + private_ip             = "172.31.41.191" -> null
  + public_dns             = "ec2-13-126-53-242.ap-south-1.compute.amazonaws.com" -> null
}
```

Plan: 0 to add, 0 to change, 1 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.example: Destroying... [id=i-01fafce2aeefe1e3c2]
aws_instance.example: Still destroying... [id=i-01fafce2aeefe1e3c2, 10s elapsed]
aws_instance.example: Still destroying... [id=i-01fafce2aeefe1e3c2, 20s elapsed]
aws_instance.example: Still destroying... [id=i-01fafce2aeefe1e3c2, 30s elapsed]
aws_instance.example: Destruction complete after 34s
```

Destroy complete! Resources: 1 destroyed.

AWS

Services

Search

(Alt+5)

Monitor

Help

Feedback

Account

Regions

EC2 Dashboard

EC2 Global View

Events

Instances

Instance Types

Launch Templates

Instances

Refresh

Instance state

Actions

Launch instances

Find instances by attribute or tag (case-sensitive)

Any state

Instance state: running

Clear filters

No matching instances found

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
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