**School of Computer Science**

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**DEHRADUN, UTTARAKHAND**



System Provisioning and Configuration Management Lab

Lab File

(2023-2024)

for

6th Semester

Submitted To:

Dr. Hitesh Kumar Sharma

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Submitted By:

Arman Bisht

B. Tech. CSE [DevOps]

500093031

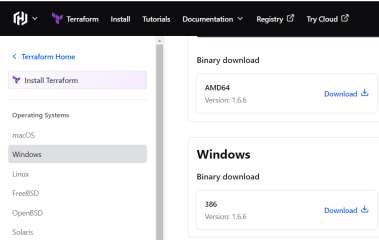
R2142210141

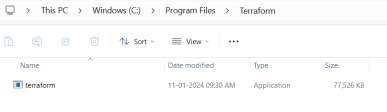
B2- DevOps (Non-Hons)

# EXPERIMENT – 1

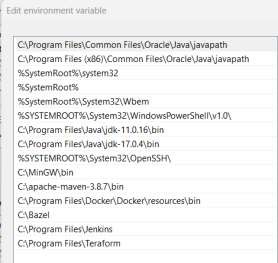
**Aim: Install Terraform on Windows**

1. Download Terraform File for Windows





1. Add Terraform path to system Environment-variables



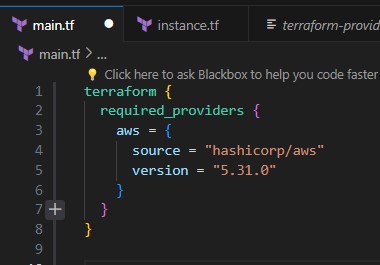
1. Verify Windows Terraform Insallation.
   1. Open a new command-prompt windows.
   2. Enter the command to check the terraform version: terraform –version or -v.



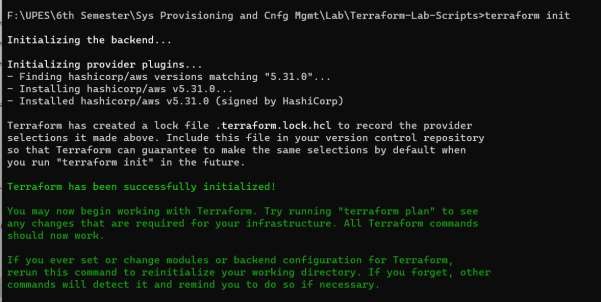
# EXPERIMENT – 2

**Aim: Terraform AWS provider and IAM user setting.**

## 1] Create a new directory and Create terraform Configuration File (main.tf)



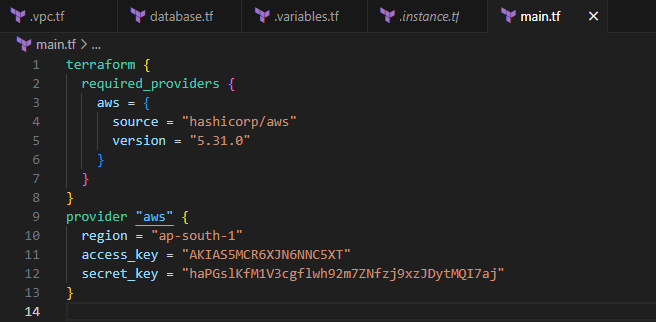
## 2] Initialize Terraform



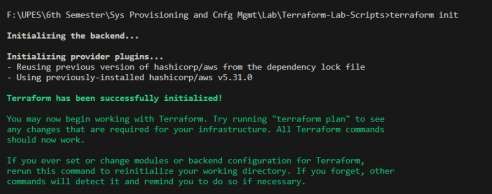
# EXPERIMENT – 3

**Aim: Provisioning an EC2 Instance on AWS.**

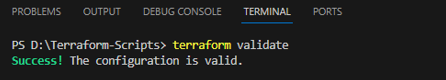
1. Create a Terraform Configuration File (main.tf)



1. Initialize Terraform.



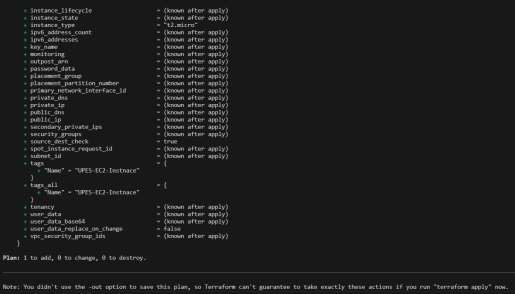
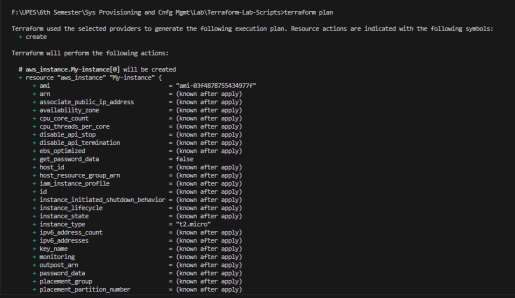
1. Validate the Script.



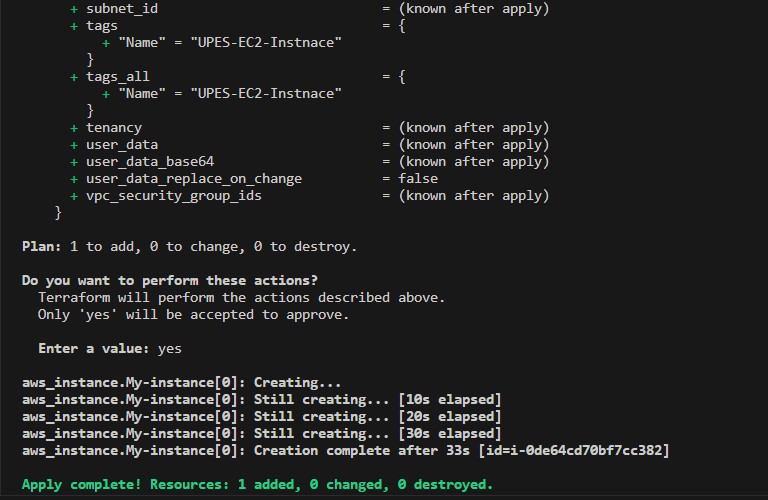
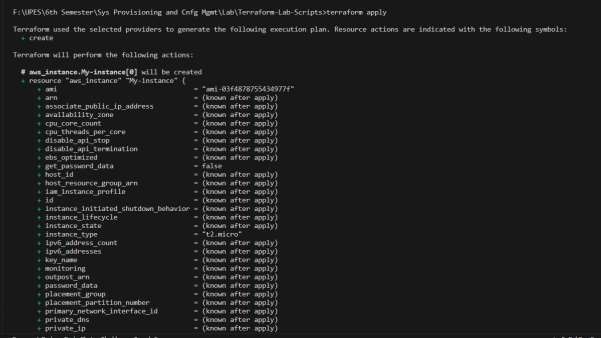
1. Create a Terraform Configuration File for EC2 instance (instance.tf).



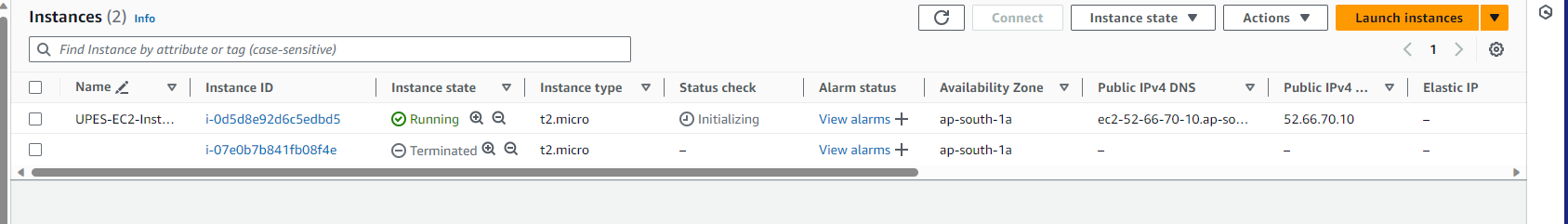
1. Review Plan using Command “Terraform plan”



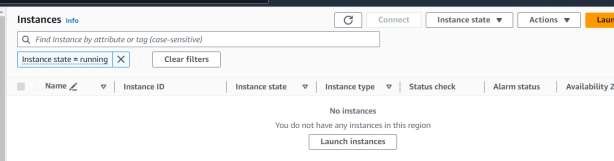
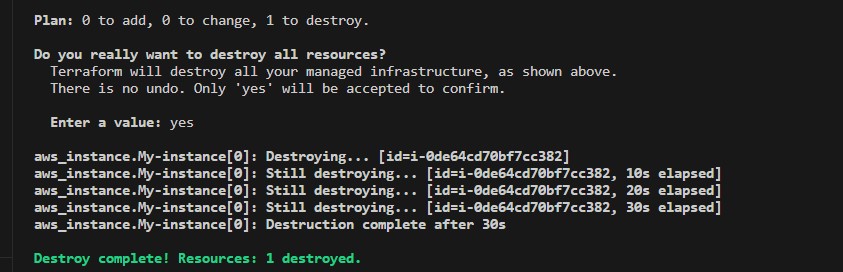
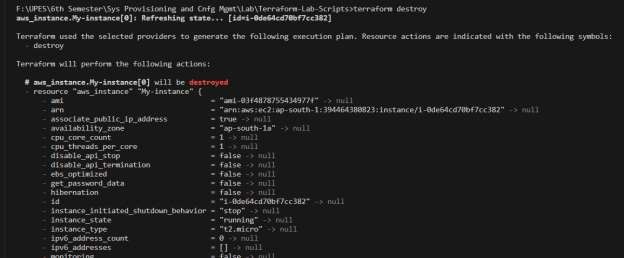
1. Apply it using command “Terraform apply”



1. Verify Resources on AWS Management Console.



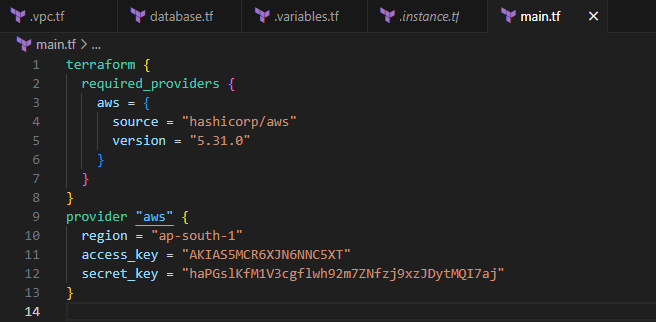
1. Cleanup Resources using command “Terraform destroy”



# EXPERIMENT – 4

**Aim: Terraform Variables.**

## 1] Create a Terraform Configuration File (main.tf)

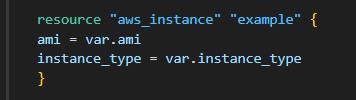


## 2] Create new file name as “variables.tf”’

A screen shot of a computer program

Description automatically generated

1. Use Variables in “main.tf” and update main.tf file.

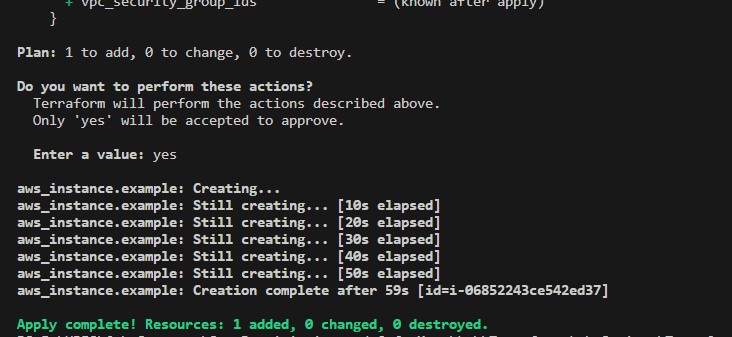
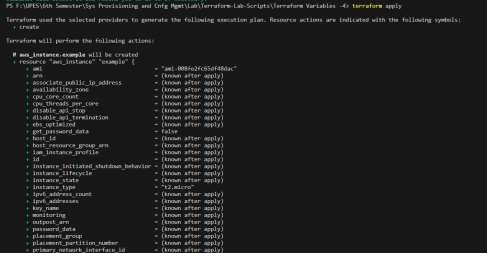


1. Initialize Terraform using command “terraform init”

A screenshot of a computer

Description automatically generated

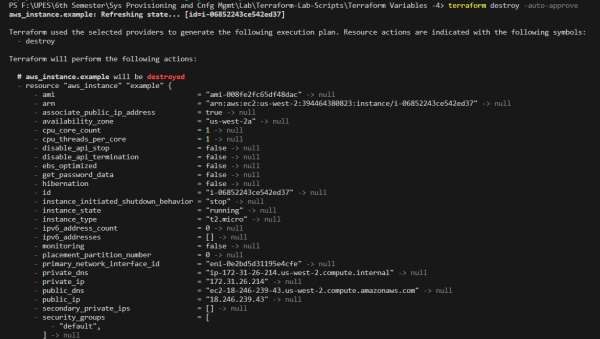
1. Apply it using command “Terraform apply”

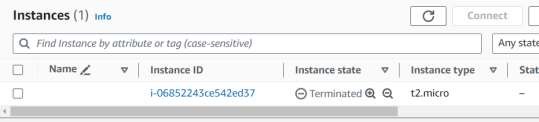


1. Verify Resources on AWS Management Console.



1. Cleanup Resources using command “Terraform destroy”

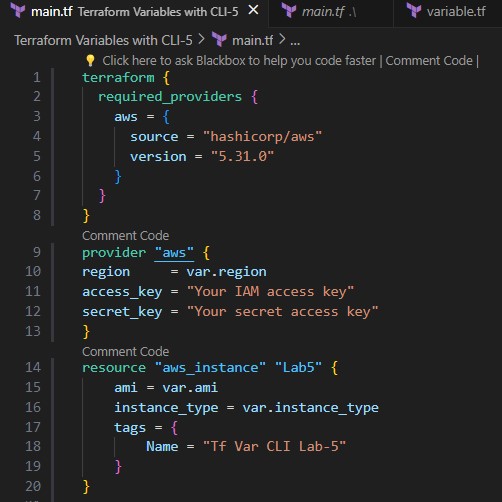




# EXPERIMENT – 5

**Aim: Terraform Variables with command Line Arguments**

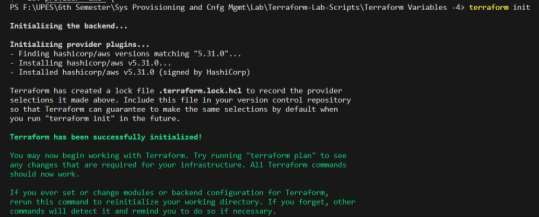
1. Create a Terraform Configuration File (main.tf)



1. Create new file name as “variables.tf”’

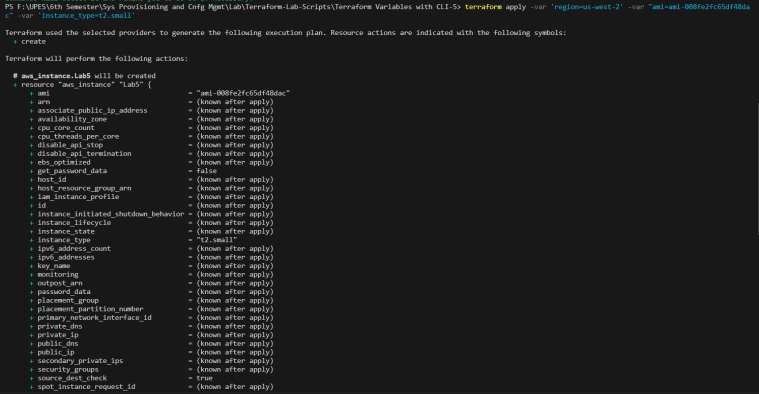
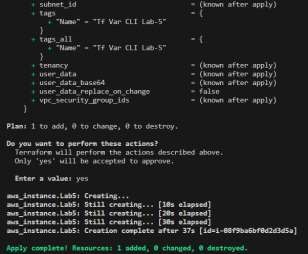


1. Initialize Terraform using command “terraform init”

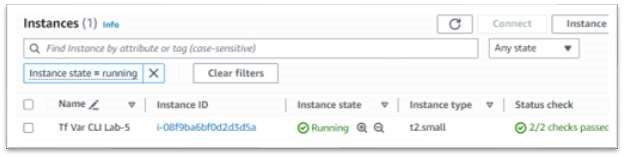


1. Apply command with command line arguments to set variables values using command

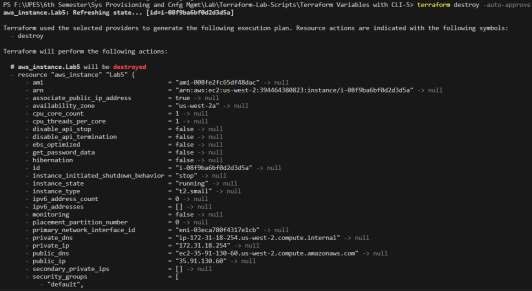
“terraform apply -var 'region=us-west-2' -var "ami=ami-008fe2fc65df48dac" -var 'instance\_type=t2.small'”



1. Verify Resources on AWS Management Console.



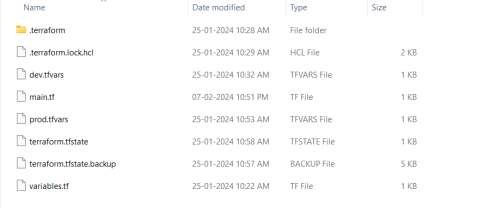
1. Cleanup Resources using command “terraform destroy”

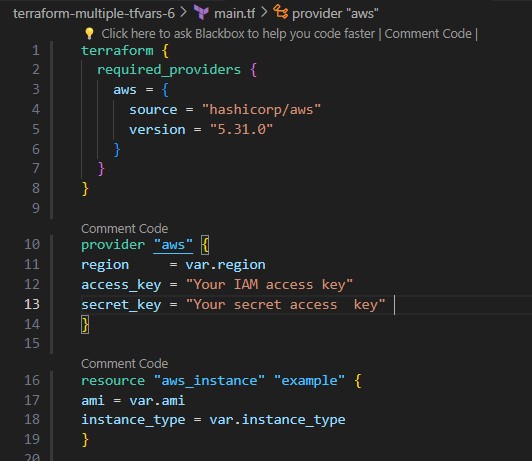


# EXPERIMENT – 6

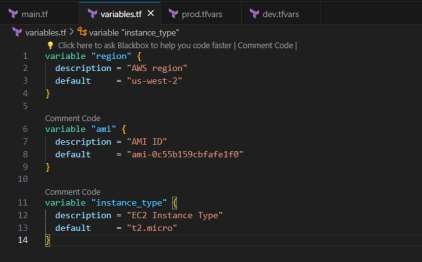
**Aim: Terraform Multiple tfvars Files.**

1. Create a new directory and Create terraform Configuration File (main.tf)





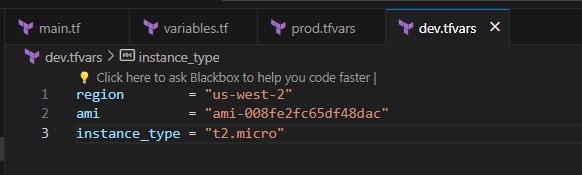
1. Create a file named as “variable.tf”

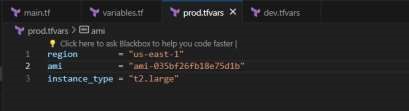


1. Create Multiple tfvars Files:

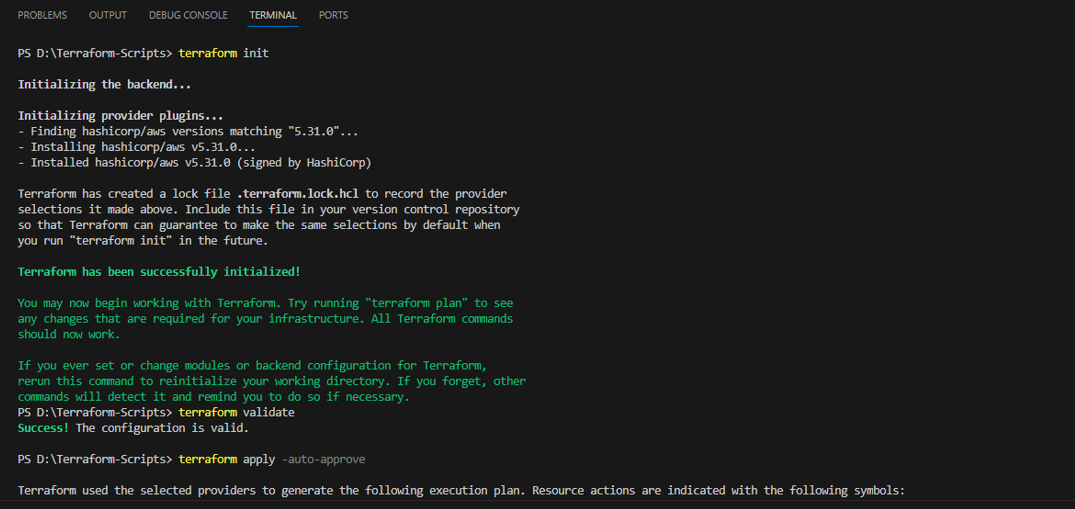
i) dev.tfvars

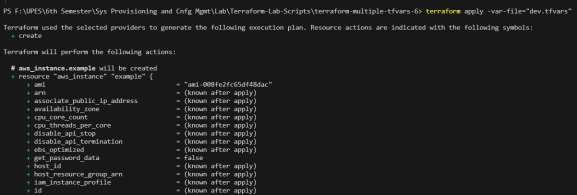
ii) prod.tfvars

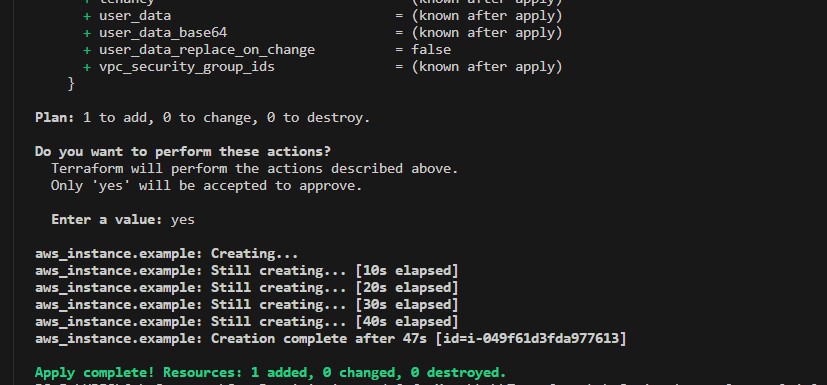




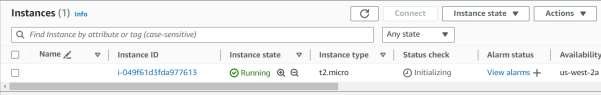
1. Initialize Terraform for Dev Environment and apply it using command “Terraform apply”







1. Verify Resources on AWS Management Console for Dev Environment



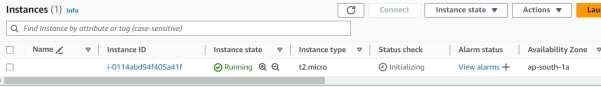
1. A screenshot of a computer

   Description automatically generatedInitialize Terraform for Prod Environment and apply it using command “Terraform apply”

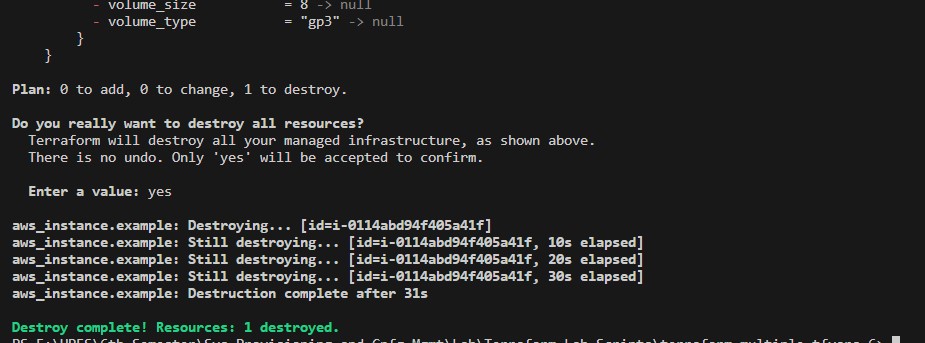
A computer screen with white text

Description automatically generated

1. Verify Resources on AWS Management Console for Prod Environment



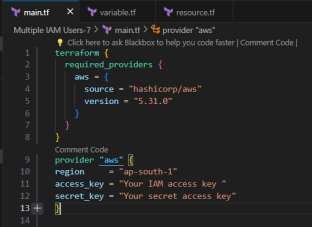
1. Cleanup Resources for Dev and Prod Environment using command “Terraform destroy”



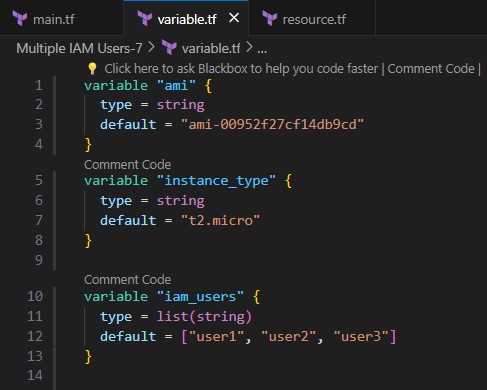
# EXPERIMENT – 7

**Aim: Creating Multiple IAM Users in Terraform.**

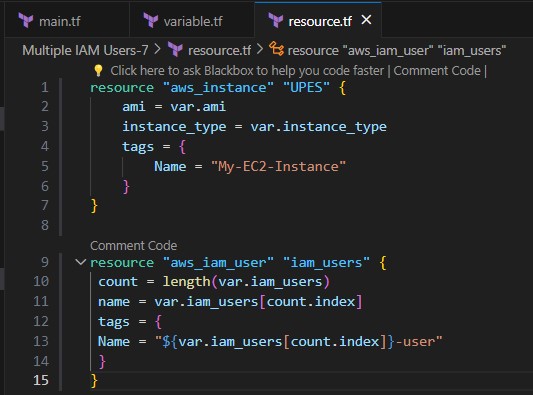
1. Create a Terraform Configuration File (main.tf)



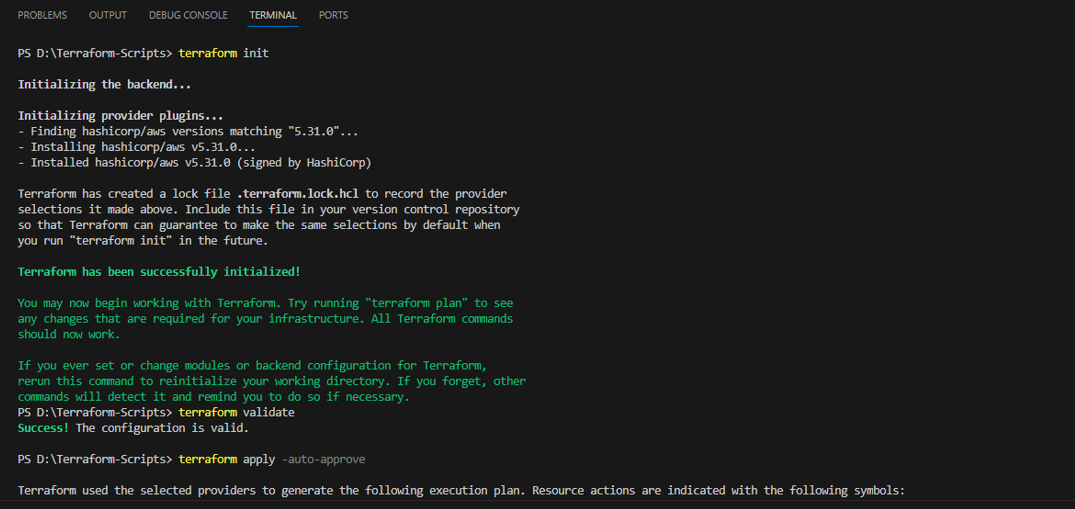
1. Create new file name as “variables.tf”’



1. Create new file name as “resource.tf”’and define a list variable IAM users containing the names of the IAM users that we want to create.



1. Initialize Terraform using command “terraform init”



1. Apply it using command “Terraform apply”



A screenshot of a computer screen

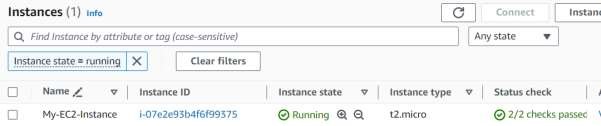
Description automatically generated

A computer screen with white text

Description automatically generated

1. Verify Resources on AWS Management Console.

**EC2**



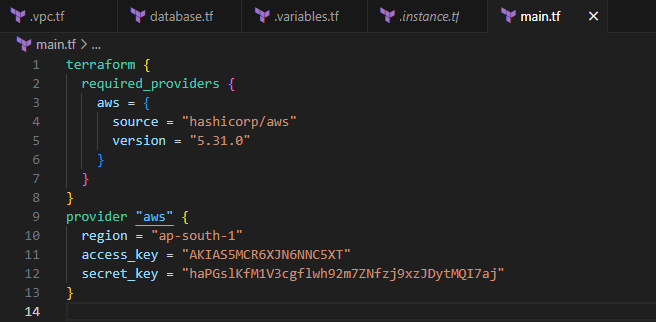
**User**



# EXPERIMENT – 8

**Aim: Creating a VPC in Terraform**

1. Create a Terraform Configuration File (main.tf)

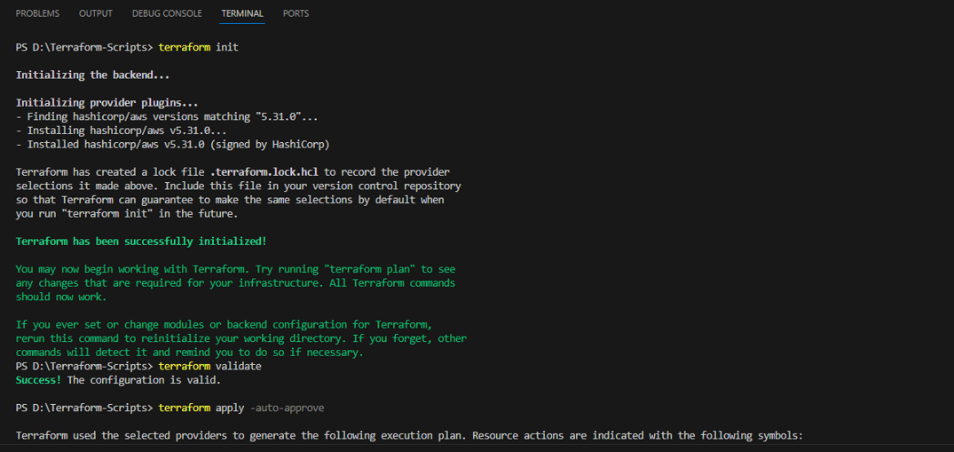


1. Create new file name as “vpc.tf”’

A screen shot of a computer program

Description automatically generated

1. Initialize Terraform using command “terraform init”



1. Apply it using command “Terraform apply -auto-approve”

A screenshot of a computer program

Description automatically generated

1. Verify Resources on AWS Management Console.

A white box with black text

Description automatically generated

1. Cleanup Resources using command “Terraform destroy”

A screenshot of a computer program

Description automatically generated

1. Now Update the vpc.tf file and repeat the previous Steps.

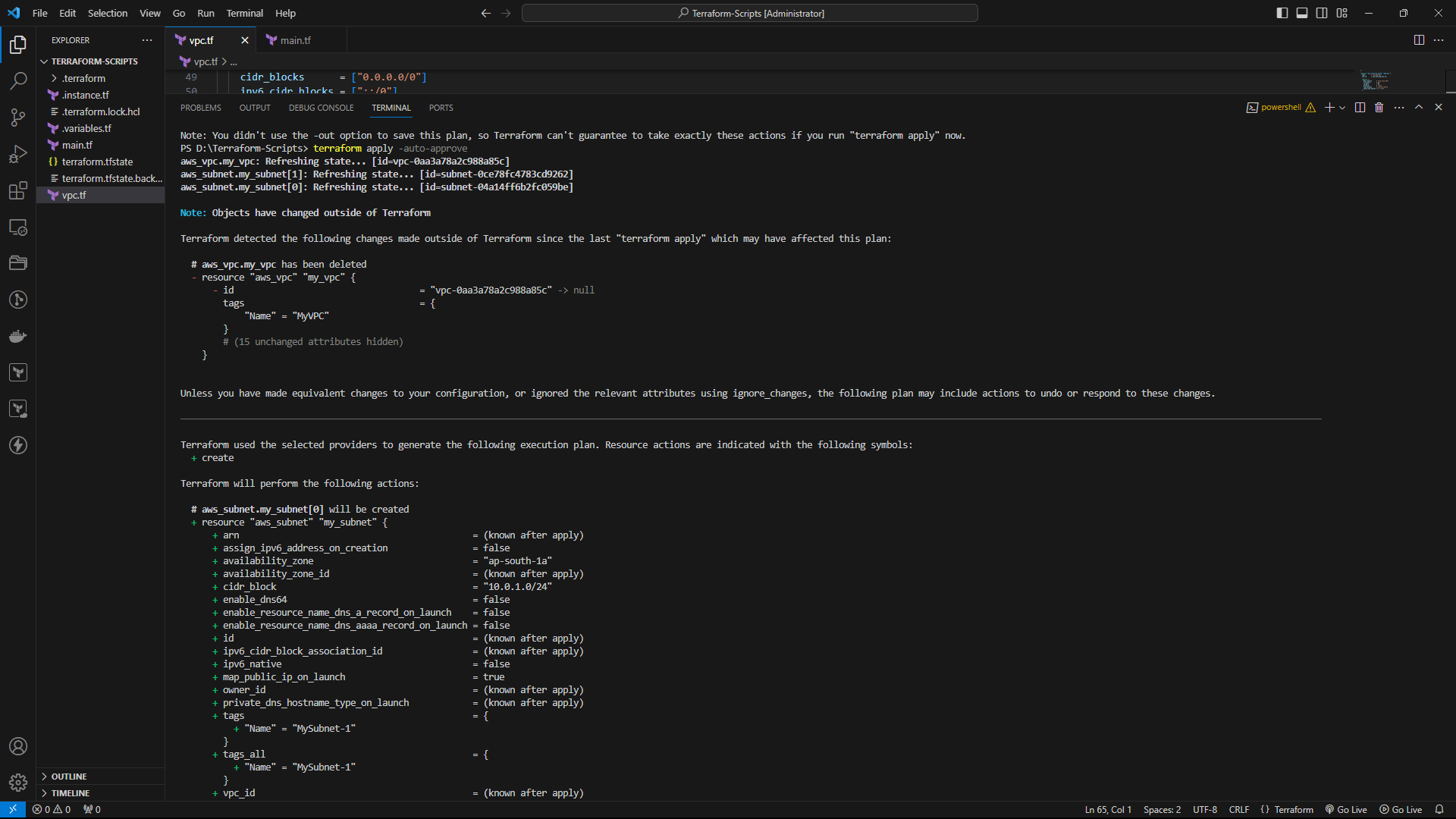
A screen shot of a computer

Description automatically generated

A computer screen shot of a code

Description automatically generated

1. Apply it using command “Terraform apply”



1. Again verify resources on AWS Management Console.

A screenshot of a computer

Description automatically generated

1. Cleanup Resources using command “Terraform destroy”

A screenshot of a computer program

Description automatically generated

# EXPERIMENT – 9

**Aim: Creating Multiple EC2 Instances with for each in Terraform.**

1. Create a Terraform Configuration File (main.tf)

A screen shot of a computer program

Description automatically generated

1. Create new file name as “instance.tf”

A screen shot of a computer program

Description automatically generated

1. Initialize Terraform using command “terraform init”

A screenshot of a computer

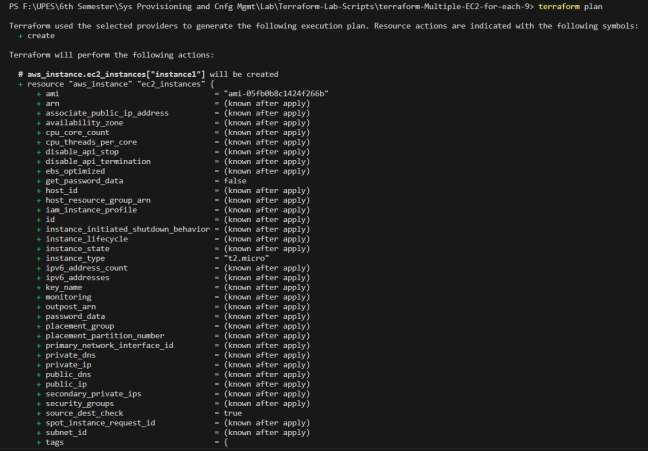
Description automatically generated

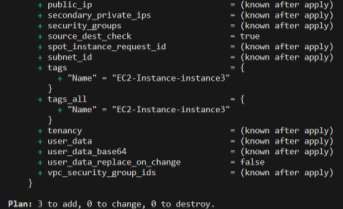
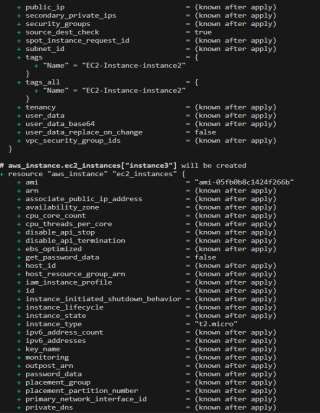
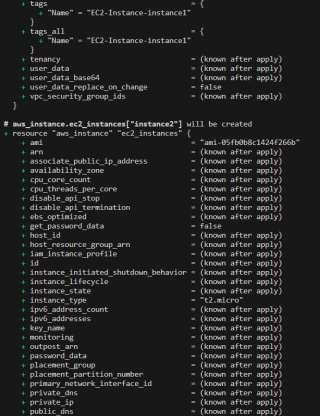
1. Validate it using command “terraform validate”

A black background with white text

Description automatically generated

1. Check the Plan using command “terraform plan”





# EXPERIMENT – 10

**Aim: Creating an AWS RDS Instance in Terraform.**

1. Create a Terraform Configuration File (main.tf)

A screen shot of a computer program

Description automatically generated

1. Create a Terraform RDS File (rds.tf)

A screen shot of a computer

Description automatically generated

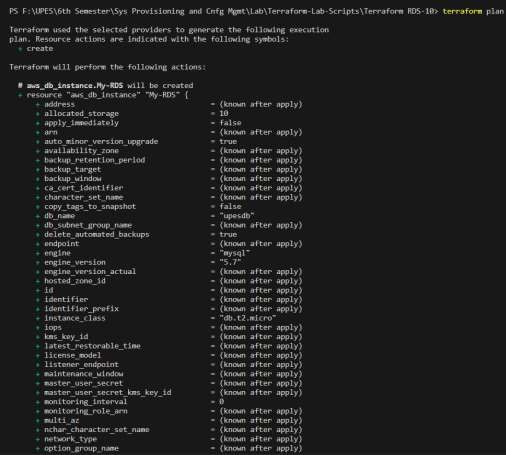
1. Initialize Terraform using command “terraform init”

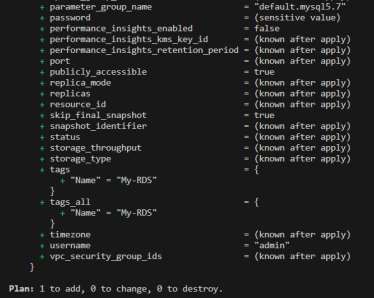


1. Validate it using command “terraform validate”

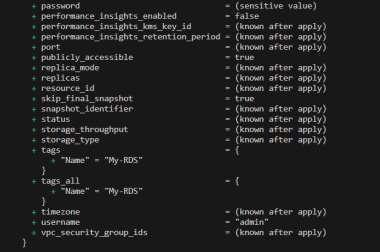
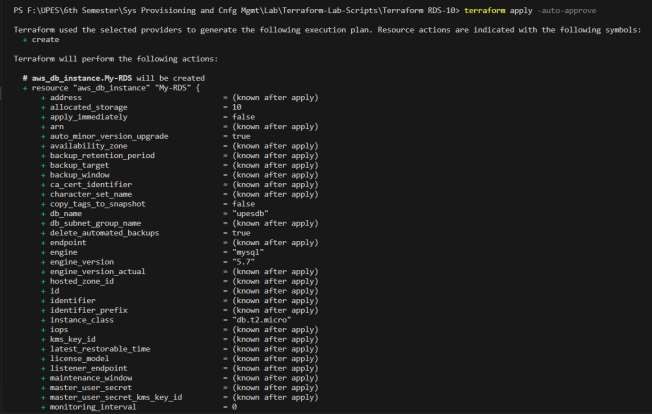


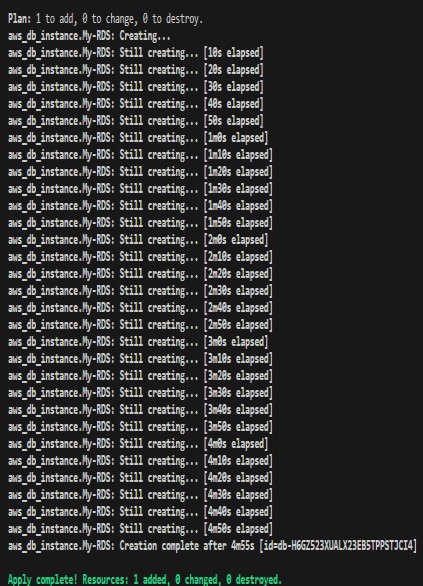
1. Check the Plan using command “terraform plan”





1. Apply it using command “Terraform apply -auto-approve”





1. Verify Resources on AWS Management Console.

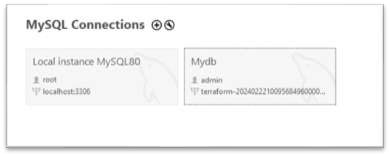
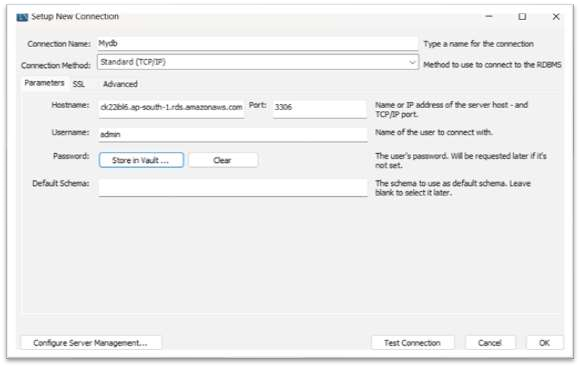
A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

1. Connect with MySQL Workbench with proper Configuration and save it.



1. Cleanup Resources using command “Terraform destroy”

