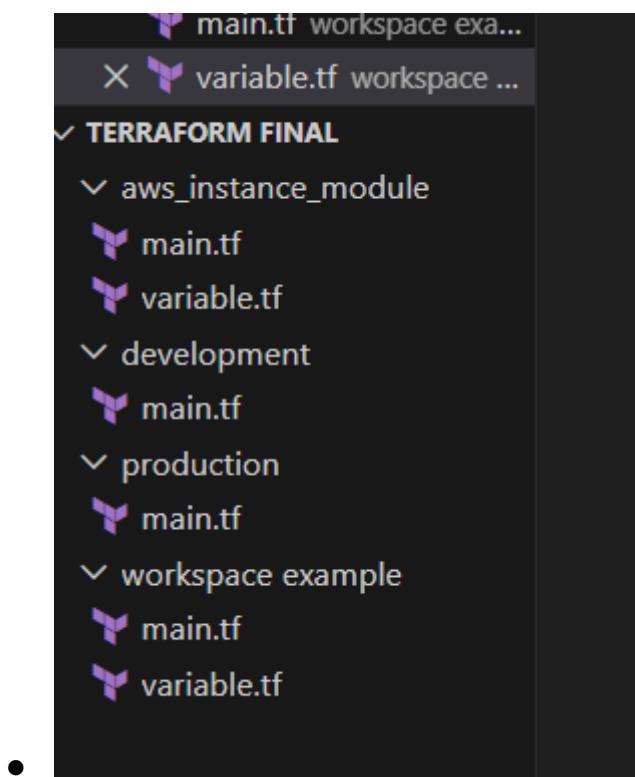


TERRAFORM 6

1. Watch the **Terraform-06** video.
2. Execute the script shown in the video.

- Create a folder,
- And add sub folder into it
- `terraform_project/`
- └─ `aws_instance_module/`
- | └─ `main.tf`
- | └─ `variables.tf`
- └─ `development/`
- | └─ `main.tf`
- └─ `production/`
- | └─ `main.tf`
- └─ `workspace_example/`
- | └─ `main.tf`
- └─ `variables.tf`



- Added script in files

```

main.tf aws_instance_module X provider.tf variable.tf main.tf development main
aws_instance_module > main.tf > ...
1   resource "aws_instance" "web" {
2     ami           = var.ami
3     instance_type = "t2.micro"
4
5     tags = {
6       Name = "server-${var.env}"
7     }
8
9   }

PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL PORTS

guntu@LAPTOP-14A29B5E MINGW64 ~/OneDrive/Desktop/terraform final/development (main)
$ terraform apply
      + root_block_device (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

module.dev_server.aws_instance.web: Creating...
module.dev_server.aws_instance.web: Still creating... [00m10s elapsed]
module.dev_server.aws_instance.web: Still creating... [00m20s elapsed]
module.dev_server.aws_instance.web: Creation complete after 28s [id=i-0ddf7b54034c8361a]

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

guntu@LAPTOP-14A29B5E MINGW64 ~/OneDrive/Desktop/terraform final/development (main)
$ 

```

Instance summary for i-0ddf7b54034c8361a (server-development) [Info](#)



[Connect](#)

[Instance state ▾](#)

[Actions ▾](#)

Updated less than a minute ago

Instance ID

[i-0ddf7b54034c8361a](#)

Public IPv4 address

[54.183.186.83 | open address ↗](#)

Private IPv4 addresses

[172.31.29.1](#)

IPv6 address

—

Instance state

[Running](#)

Public DNS

[ec2-54-183-186-83.us-west-1.compute.amazonaws.com | open address ↗](#)

- Change FROM development to production

- Go bhy cd .

```
guntu@LAPTOP-14A29B5E MINGW64 ~/OneDrive/Desktop/terraform final (main)
$ terraform workspace new kamal
Created and switched to workspace "kamal"!

You're now on a new, empty workspace. Workspaces isolate their state,
so if you run "terraform plan" Terraform will not see any existing state
for this configuration.

guntu@LAPTOP-14A29B5E MINGW64 ~/OneDrive/Desktop/terraform final (main)
$ ls
aws_instance_module/  development/  production/  terraform.tfstate.d/  'workspace example'/

guntu@LAPTOP-14A29B5E MINGW64 ~/OneDrive/Desktop/terraform final (main)
$ terraform workspace list
  default
* kamal

guntu@LAPTOP-14A29B5E MINGW64 ~/OneDrive/Desktop/terraform final (main)
$
```

3 . Provision EC2, S3, and VPC using Terraform modules.

- terraform-project/
 - |— main.tf
 - |— variables.tf
 - |— outputs.tf
 - |— terraform.tfvars
 - |
 - |— modules/
 - |— vpc/
 - |— main.tf
 - |— variables.tf
 - |
 - |
 - |— ec2/
 - |— main.tf
 - |— variables.tf

```

●   |
●   |
●   └── s3/
●       ├── main.tf
●       └── variables.tf
●

```

The screenshot shows the VS Code interface with the following details:

- Explorer (Ctrl+Shift+E)**: Shows files in the project structure.
- OPEN EDITORS**: Shows the current open files: variables.tf, outputs.tf, terraform.tfvars, main.tf (selected), and variables.tf (another instance).
- TERRAFORM-PROJECT**: Shows the .terraform and modules sections.
- Code Editor**: Displays the main.tf file content, which defines an AWS Security Group (sg) with ingress and egress rules.
- Bottom Bar**: Includes tabs for PROBLEMS, DEBUG CONSOLE, OUTPUT, TERMINAL, and PORTS.

```

modules > ec2 > main.tf > ...
  1 resource "aws_security_group" "sg" {
  2   ingress {
  3     to_port    = 80
  4     protocol   = "tcp"
  5     cidr_blocks = ["0.0.0.0/0"]
  6   }
  7
  8   egress {
  9     from_port   = 0
 10     to_port     = 0
 11     protocol   = "-1"
 12     cidr_blocks = ["0.0.0.0/0"]
 13   }
 14 }
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25

```

The terminal window shows the output of the terraform apply command:

```

guntu@LAPTOP-14A29B5E MINGW64 ~\OneDrive\Desktop\terraform-project (main)
$ terraform apply -auto-approve
module.vpc.aws_vpc.main: Creating...
module.s3_bucket.aws_s3_bucket.bucket: Creating...
module.vpc.aws_vpc.main: Creation complete after 4s [id=vpc-0bd02727babdfdc3c]
module.vpc.aws_route_table.public_rt: Creating...
module.vpc.aws_internet_gateway.igw: Creating...
module.vpc.aws_security_group.sg: Creating...
module.ec2.aws_subnet.public[0]: Creating...
module.vpc.aws_route_table.public_rt: Creation complete after 2s [id=rtb-059af7cb61448bf1]
module.vpc.aws_internet_gateway.igw: Creation complete after 2s [id=igw-08071b2ce183f9cff]
module.vpc.aws_route.default_route: Creating...
module.vpc.aws_route.default_route: Creation complete after 2s [id=r-rtb-059af7cb61448bf11080289494]
module.ec2.aws_security_group.sg: Creation complete after 5s [id=sg-0e13b54913f30326a]
module.vpc.aws_subnet.public[0]: Still creating... [00m10s elapsed]
module.vpc.aws_subnet.public[0]: Creation complete after 13s [id=subnet-04129673d6dd53603]
module.vpc.aws_route_table_association.public_assoc[0]: Creating...
module.ec2.aws_instance.web: Creating...
module.vpc.aws_route_table_association.public_assoc[0]: Creation complete after 1s [id=rtbassoc-00c5e6bb425ea5e93]
module.ec2.aws_instance.web: Still creating... [00m10s elapsed]
module.ec2.aws_instance.web: Still creating... [00m20s elapsed]
module.ec2.aws_instance.web: Creation complete after 25s [id=i-0eeef8c6f08dbc72]

```

4 . Provision EC2 for 3 different environments (Dev, Staging, and Prod) using Terraform workspaces.

FILE: main.tf

```
=====
```

```
provider "aws" {  
    region = var.aws_region  
}  
  
# workspace name = environment  
locals {  
    environment = terraform.workspace  
}  
  
resource "aws_instance" "ec2" {  
    ami      = var.ami_id  
    instance_type = var.instance_type  
  
    tags = {  
        Name      = "ec2-${local.environment}"  
        Environment = local.environment  
    }  
}
```

=====

📌 FILE: **variables.tf**

=====

```
variable "aws_region" {
```

```
description = "Region to deploy EC2"
default    = "us-west-1"

}

variable "ami_id" {
  description = "Amazon Linux 2 AMI for us-west-1"
  default    = "ami-01f87c43e618bf8f0"

}

variable "instance_type" {
  description = "EC2 instance type"
  default    = "t2.micro"

}
```

=====

=====

📌 FILE: outputs.tf

=====

```
output "environment" {
  value = terraform.workspace

}

output "instance_id" {
  value = aws_instance.ec2.id
```

```
}
```

```
output "instance_name" {  
    value = aws_instance.ec2.tags["Name"]  
}
```

```
=====
```

FILE: **terraform.tfvars**

```
=====
```

```
aws_region = "us-west-1"
```

HOW TO DEPLOY THE 3 ENVIRONMENTS

1 Initialize Terraform

```
terraform init
```

2 Create Workspaces

Dev

```
terraform workspace new dev
```

```
terraform workspace select dev
```

```
terraform apply -auto-approve
```

```

EXPLORER ... 
OPEN EDITORS Search (Ctrl+Shift+F)
outputs.tf
terraform.tfvars
variables.tf
TERRAFORM-WORKSPACE-EC2 .terraform
modules\ec2
main.tf
outputs.tf
variables.tf
terrafrom.tfstate.d
.terraform.lock.hcl
main.tf
outputs.tf
terraform.tfvars
variables.tf

main.tf > ...
1 provider "aws" {
2   region = var.aws_region
3 }
4
5 # workspace name = environment
6 locals {
7   environment = terraform.workspace
8 }
9
10 resource "aws_instance" "ec2" {
11   ami           = var.ami_id
12   instance_type = var.instance_type
13
14   tags = {
+
  + root_block_device (known after apply)
}

PROBLEMS DEBUG CONSOLE OUTPUT TERMINAL PORTS

Plan: 1 to add, 0 to change, 0 to destroy.

```

```

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
+ environment  = "dev"
+ instance_id  = (known after apply)
+ instance_name = "ec2-dev"
aws_instance.ec2: Creating...
aws_instance.ec2: Still creating... [00m10s elapsed]
aws_instance.ec2: Still creating... [00m20s elapsed]
aws_instance.ec2: Creation complete after 25s [id=i-0431a5d79054179ec]

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

Outputs:

environment = "dev"
instance_id = "i-0431a5d79054179ec"
instance_name = "ec2-dev"
PS C:\Users\guntu\OneDrive\Desktop\terraform-workspace-ec2>

```

Instance created and launched.

Instance summary for i-0431a5d79054179ec (ec2-dev) [Info](#)

Updated less than a minute ago

Instance ID

 i-0431a5d79054179ec

IPv6 address

-

Public IPv4 address

 13.57.230.214 | [open address ↗](#)

Instance state

 Running

Stages .

```
PS C:\Users\guntu\OneDrive\Desktop\terraform-workspace-ec2> terraform workspace new prod
Created and switched to workspace "prod"!
```

```
You're now on a new, empty workspace. Workspaces isolate their state,
so if you run "terraform plan" Terraform will not see any existing state
for this configuration.
```

```
PS C:\Users\guntu\OneDrive\Desktop\terraform-workspace-ec2> terraform workspace list
  default
  dev
* prod
  staging
```