



# Terraform for Absolute Beginners – Guided Project Completion Report

**Platform:** Coursera

**Instructor:** Saurabh Dhingra – DevOps Trainer and Consultant

**Duration:** ~2 Hours

**Date Completed:** June 27, 2025

---

## ✓ Completion Summary

- All readings completed
  - All graded assessments completed
  - Hands-on lab fully completed using real Terraform configurations
  - Final infrastructure deployed successfully in **Microsoft Azure**
- 

## 🧠 Learning Objectives Achieved

By the end of the guided project, I gained a foundational and **practical understanding** of:

- **Infrastructure as Code (IaC)** principles
  - **HashiCorp Configuration Language (HCL)** syntax and logic
  - Terraform's **execution workflow** and state management
  - Creating infrastructure on **Azure Cloud** using Terraform
  - Defining, managing, and passing **variables** using `.tfvars` and `variables.tf`
- 

## 🔍 Key Skills & Topics Covered

	<b>Topic</b>	<b>Description</b>
<b>IaC Concepts</b>		Explained the shift from manual provisioning to code-based automation using Terraform
<b>Terraform Basics</b>	Installation, init commands, plan → apply lifecycle	
<b>HCL Syntax</b>	Declaring resources, providers, variables, and outputs using Terraform DSL	
<b>Execution Flow</b>	Explored how Terraform plans and applies changes to infrastructure	
<b>State Management</b>	Created and inspected the <code>terraform.tfstate</code> file	

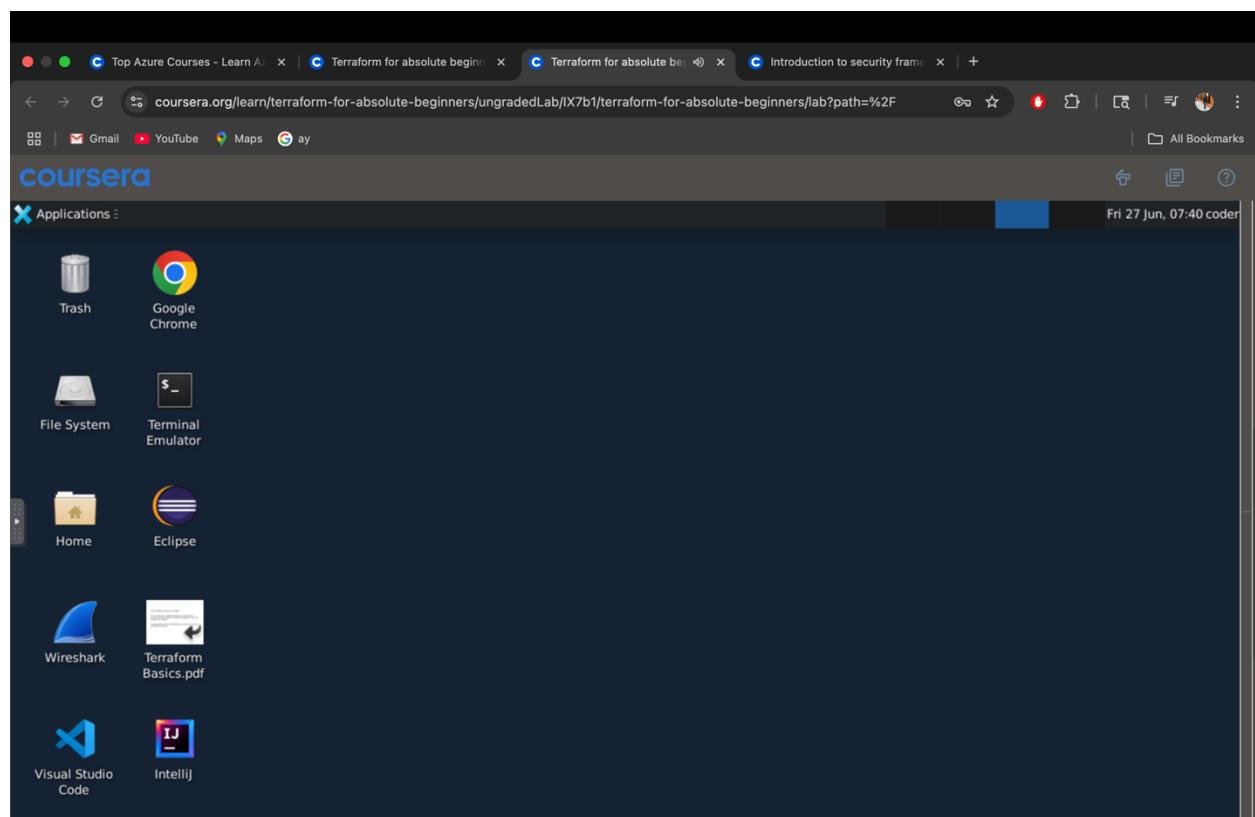
Topic	Description
<b>Variable Handling</b>	Declared variables, passed values via <code>terraform.tfvars</code>
<b>Azure Integration</b>	Wrote config files to provision real infrastructure on Microsoft Azure Cloud

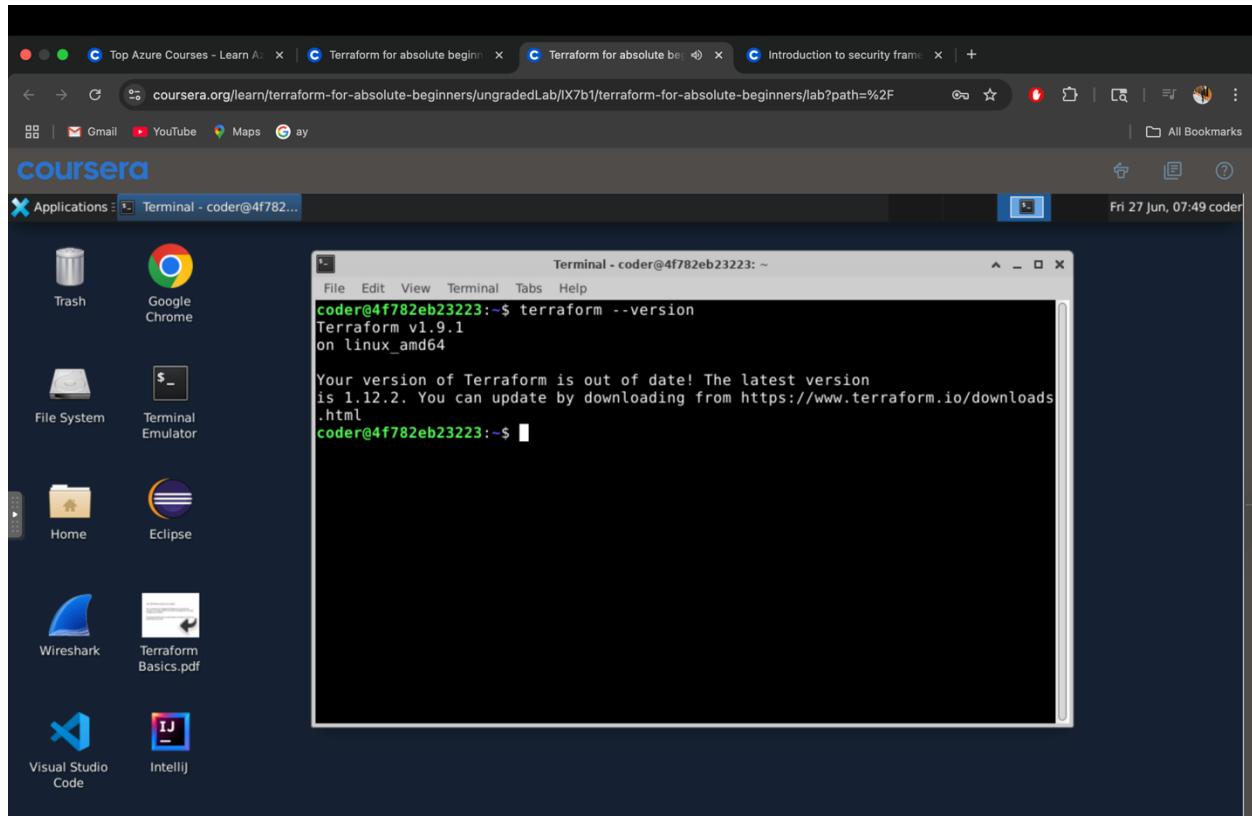
## ◆ Step 1: Introduction to Infrastructure as Code

Learned the core principles of IaC — writing code to define, provision, and manage infrastructure. Compared IaC to manual and scripted provisioning.

## ◆ Step 2: Terraform & HCL Overview

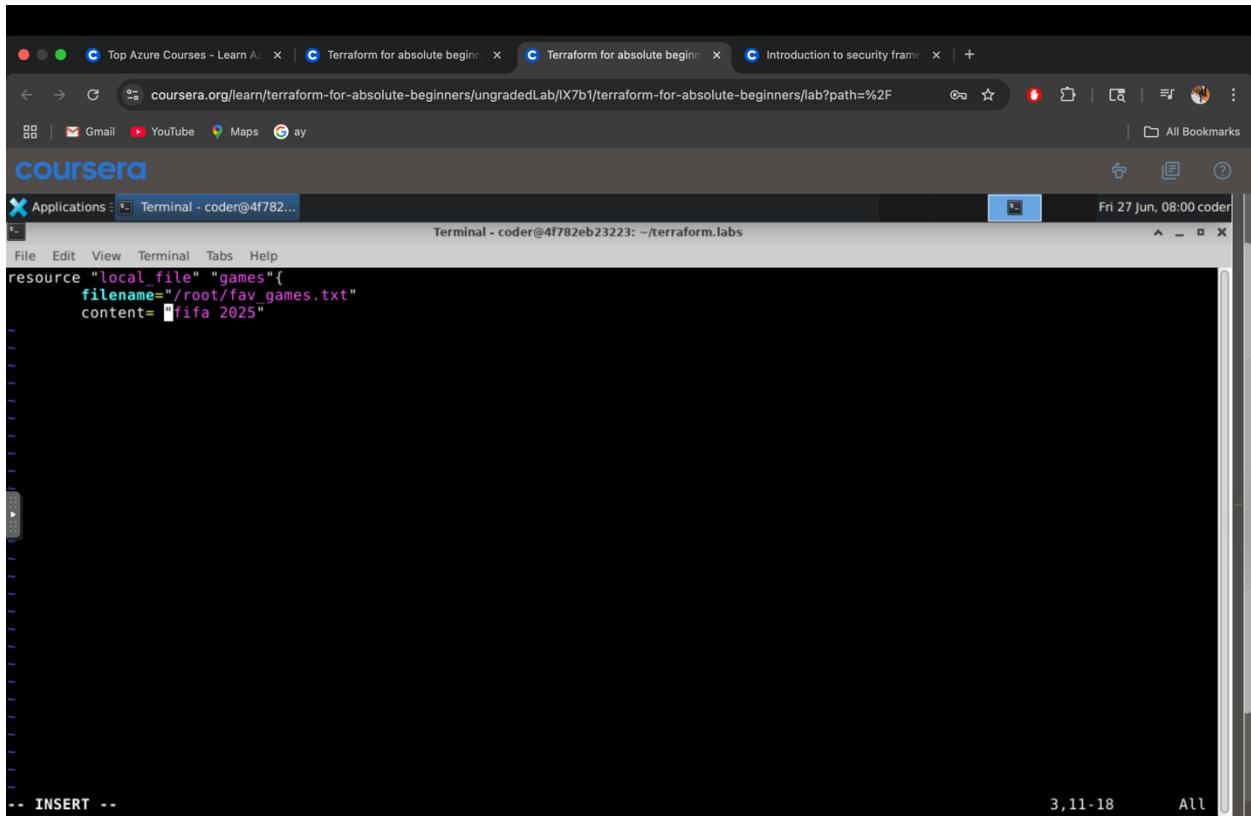
Explored the structure and purpose of Terraform and the HashiCorp Configuration Language (HCL). Learned about Terraform's declarative model and .tf file structure.





## ◆ Step 3: Setting Up Terraform Environment

Installed Terraform CLI, initialized the working directory using `terraform init`, and understood the role of `main.tf`, `provider.tf`, and `variables.tf`.



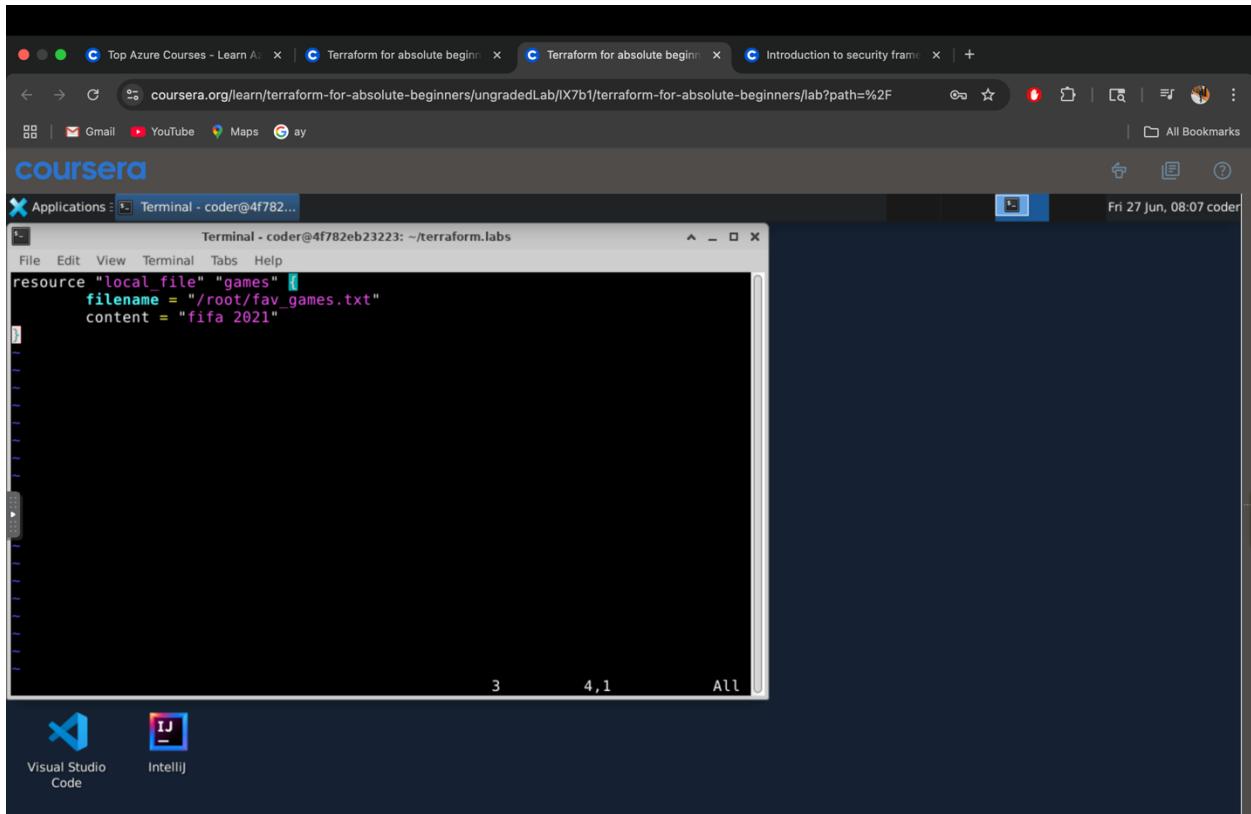
The screenshot shows a terminal window within a Coursera application. The terminal is titled 'Terminal - coder@4f782...'. The code displayed is:

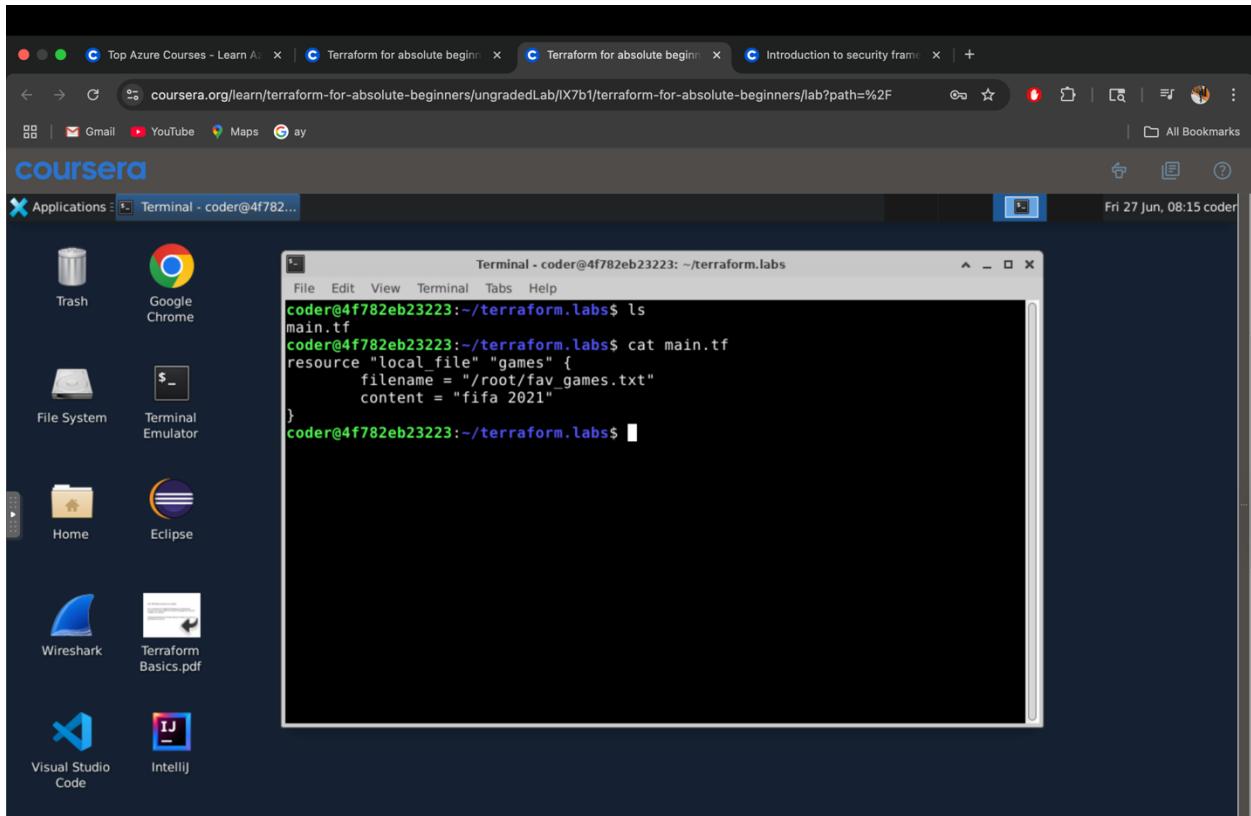
```
resource "local_file" "games"{
  filename = "/root/fav_games.txt"
  content = "fifa 2025"
}
```

The terminal window has a dark background and a light-colored text area. The status bar at the bottom shows '3,11-18' and 'All'.

## ◆ Step 4: Writing Your First Terraform Configuration

Created a basic infrastructure definition with HCL syntax. Wrote a `main.tf` file to provision a simple Azure resource.



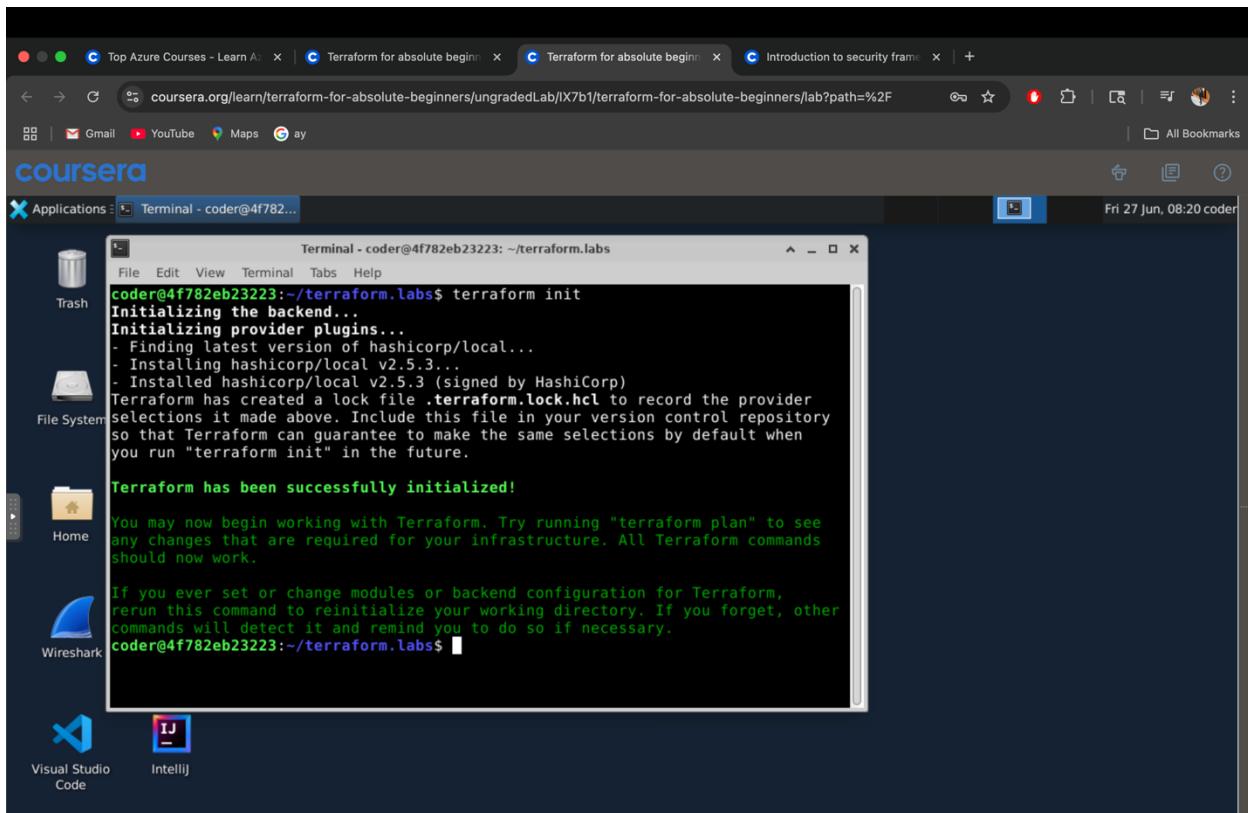


## ◆ Step 5: Terraform Execution Flow

Ran the Terraform workflow:

- `terraform init` – Initialize the project
- `terraform plan` – Preview the changes
- `terraform apply` – Execute and provision infrastructure

Understood how Terraform determines diffs between current and desired state.



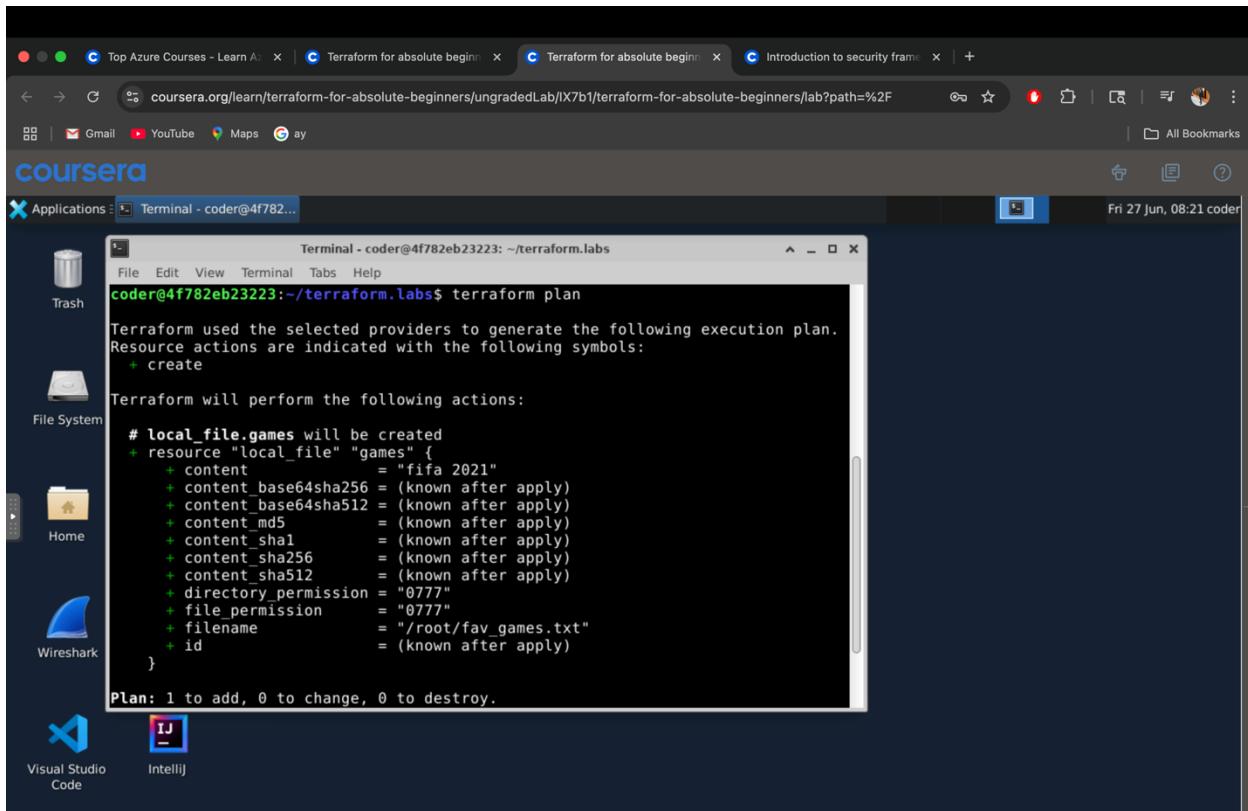
Terminal - coder@4f782eb23223: ~/terraform.labs

```
coder@4f782eb23223:~/terraform.labs$ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/local...
- Installing hashicorp/local v2.5.3...
- Installed hashicorp/local v2.5.3 (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.
coder@4f782eb23223:~/terraform.labs$
```



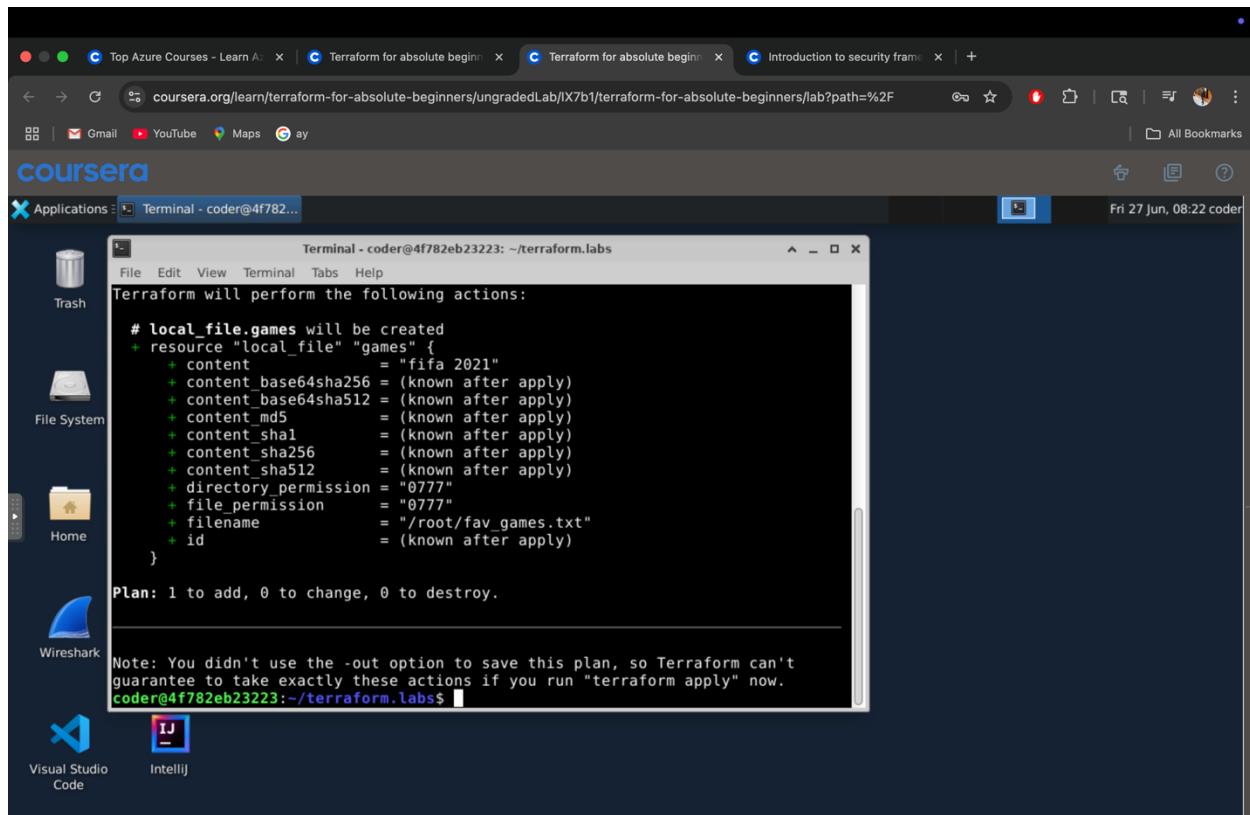
Terminal - coder@4f782eb23223: ~/terraform.labs

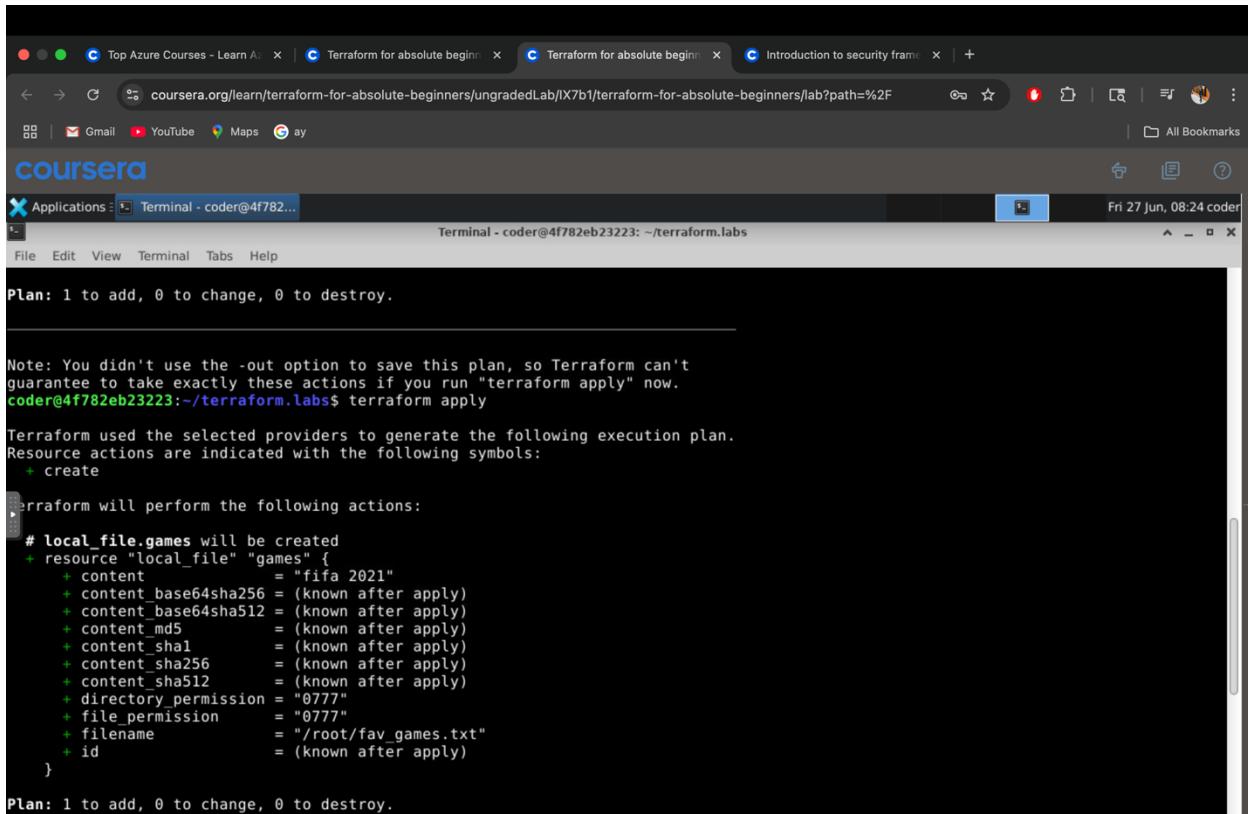
```
coder@4f782eb23223:~/terraform.labs$ terraform plan
Terraform used the selected providers to generate the following execution plan.
Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

  # local_file.games will be created
  + resource "local_file" "games" {
      + content          = "fifa 2021"
      + content_base64sha256 = (known after apply)
      + content_base64sha512 = (known after apply)
      + content_md5       = (known after apply)
      + content_shal       = (known after apply)
      + content_sha256     = (known after apply)
      + content_sha512     = (known after apply)
      + directory_permission = "0777"
      + file_permission    = "0777"
      + filename           = "/root/fav_games.txt"
      + id                 = (known after apply)
    }

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





Top Azure Courses - Learn A... | C Terraform for absolute begin... | C Terraform for absolute begin... | C Introduction to security frame... | +

coursera.org/learn/terraform-for-absolute-beginners/ungradedLab/lX7b1/terraform-for-absolute-beginners/lab?path=%2F

Applications Terminal - coder@4f782... Terminal - coder@4f782eb23223: ~/terraform.labs

File Edit View Terminal Tabs Help

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

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

coder@4f782eb23223:~/terraform.labs\$ terraform apply

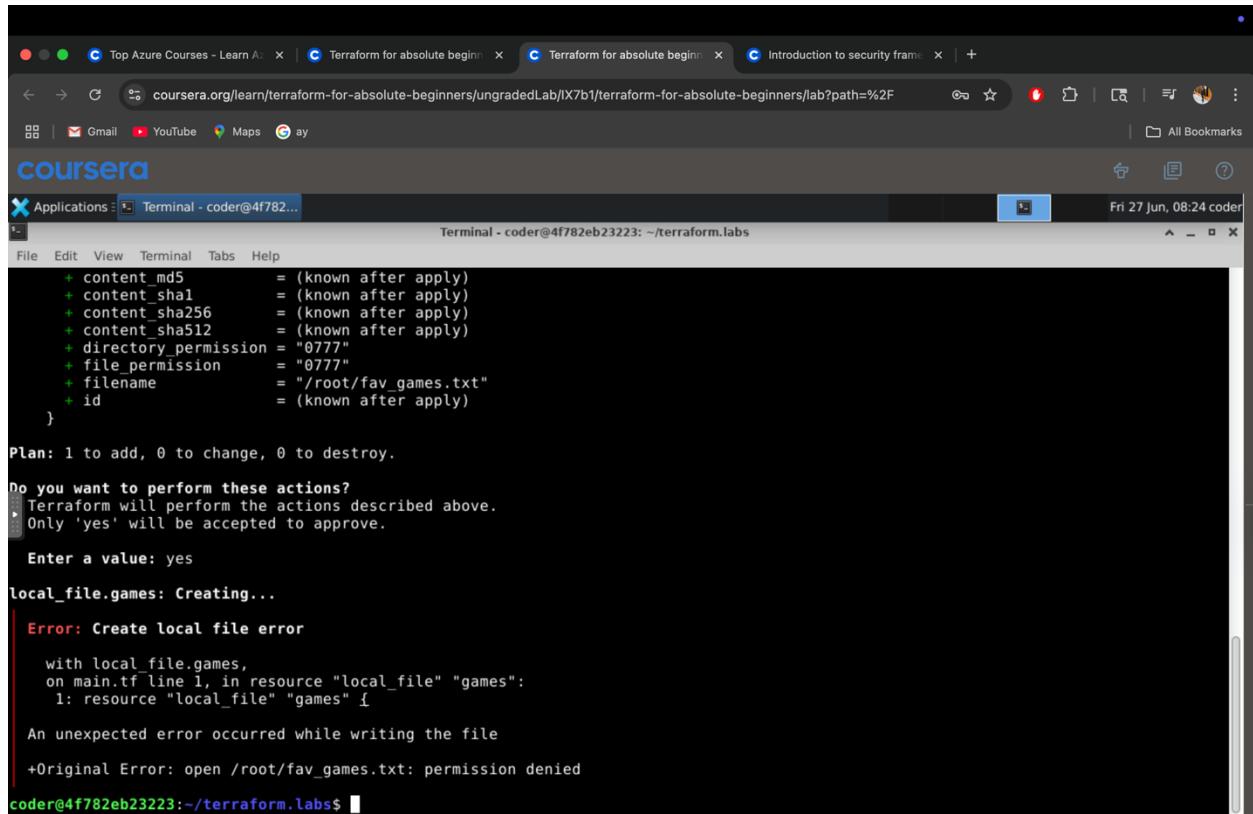
Terraform used the selected providers to generate the following execution plan.  
Resource actions are indicated with the following symbols:

- + create

Terraform will perform the following actions:

```
# local_file.games will be created
+ resource "local_file" "games" {
  + content          = "fifa 2021"
  + content_base64sha256 = (known after apply)
  + content_md5      = (known after apply)
  + content_shal      = (known after apply)
  + content_sha256    = (known after apply)
  + content_sha512    = (known after apply)
  + directory_permission = "0777"
  + file_permission    = "0777"
  + filename           = "/root/fav_games.txt"
  + id                 = (known after apply)
}
```

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



Top Azure Courses - Learn A... | C Terraform for absolute begin... | C Terraform for absolute begin... | C Introduction to security frame... | +

coursera.org/learn/terraform-for-absolute-beginners/ungradedLab/lX7b1/terraform-for-absolute-beginners/lab?path=%2F

Applications Terminal - coder@4f782... Fri 27 Jun, 08:24 coder

File Edit View Terminal Tabs Help

```
+ content_md5      = (known after apply)
+ content_shal      = (known after apply)
+ content_sha256    = (known after apply)
+ content_sha512    = (known after apply)
+ directory_permission = "0777"
+ file_permission    = "0777"
+ filename           = "/root/fav_games.txt"
+ id                 = (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

local\_file.games: Creating...

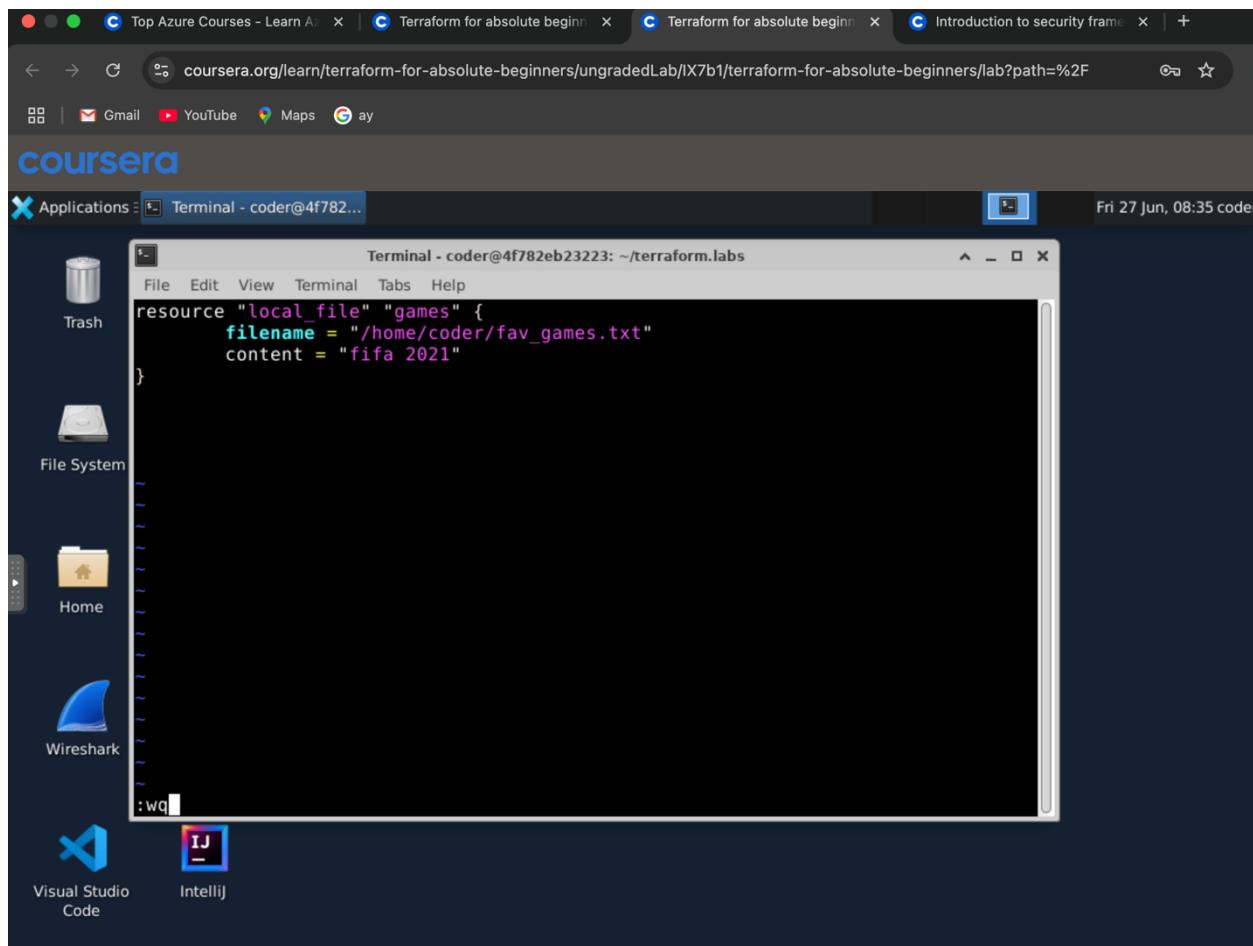
Error: Create local file error

with local\_file.games,  
on main.tf line 1, in resource "local\_file" "games":  
1: resource "local\_file" "games" {

An unexpected error occurred while writing the file

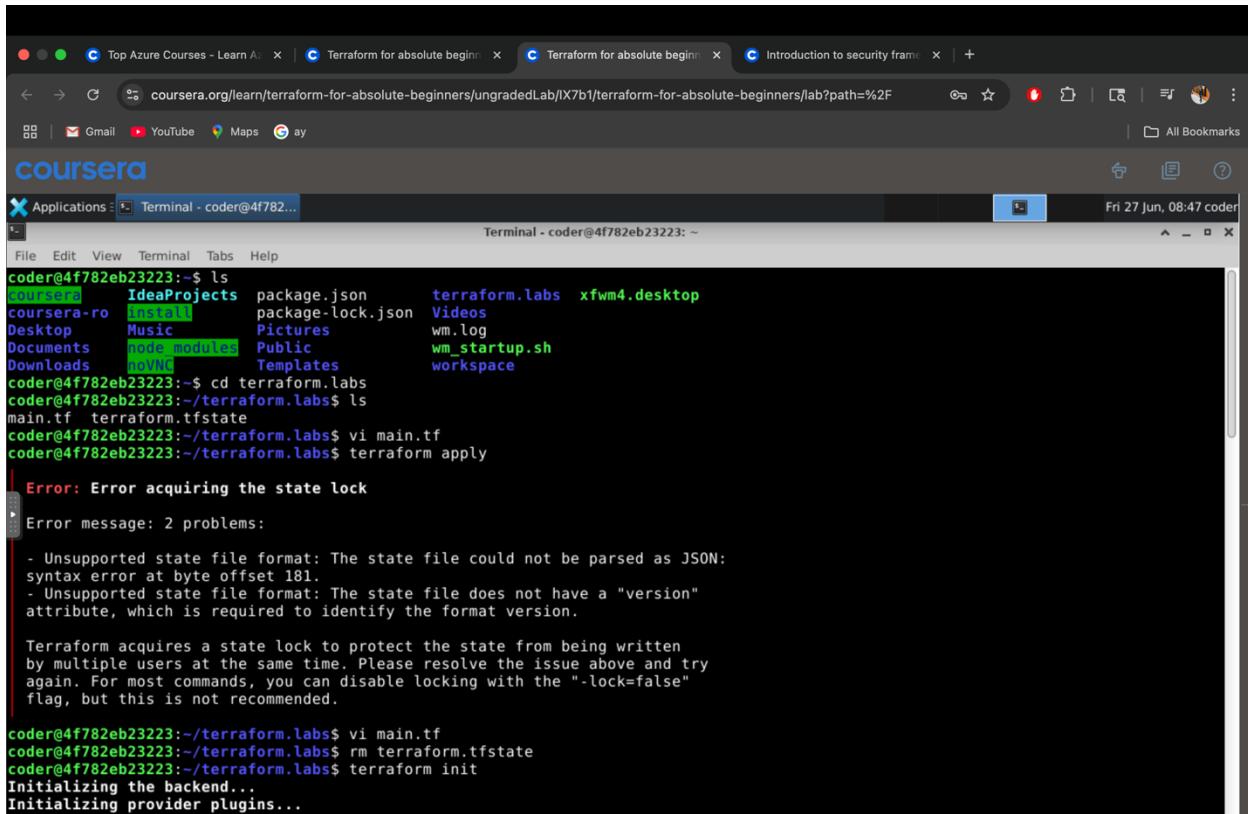
+Original Error: open /root/fav\_games.txt: permission denied

coder@4f782eb23223:~/terraform.labs\$



## ◆ Step 6: Terraform State Files

Learned about the `terraform.tfstate` file — how Terraform tracks the current deployed state, what happens if it's deleted, and its importance for idempotent deployments.



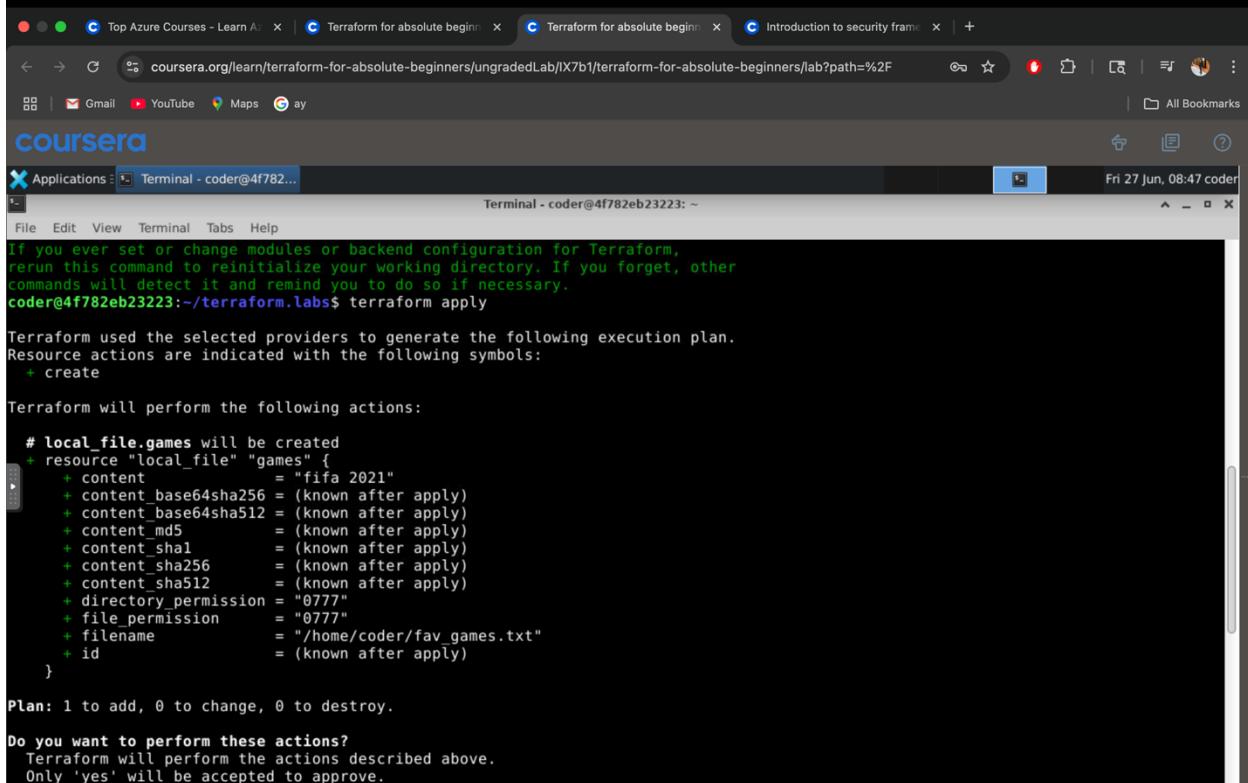
```
File Edit View Terminal Tabs Help
coder@4f782eb23223:~$ ls
coursea  IdeeProjects  package.json  terraform.labs  xfwm4.desktop
coursea-ro  install  package-lock.json  Videos
Desktop  Music  Pictures  wm.log
Documents  node_modules  Public  wm_startup.sh
Downloads  noVNC  Templates  workspace
coder@4f782eb23223:~$ cd terraform.labs
coder@4f782eb23223:~/terraform.labs$ ls
main.tf  terraform.tfstate
coder@4f782eb23223:~/terraform.labs$ vi main.tf
coder@4f782eb23223:~/terraform.labs$ terraform apply

Error: Error acquiring the state lock

Error message: 2 problems:
- Unsupported state file format: The state file could not be parsed as JSON:
  syntax error at byte offset 181.
- Unsupported state file format: The state file does not have a "version"
  attribute, which is required to identify the format version.

Terraform acquires a state lock to protect the state from being written
by multiple users at the same time. Please resolve the issue above and try
again. For most commands, you can disable locking with the "-lock=false"
flag, but this is not recommended.

coder@4f782eb23223:~/terraform.labs$ vi main.tf
coder@4f782eb23223:~/terraform.labs$ rm terraform.tfstate
coder@4f782eb23223:~/terraform.labs$ terraform init
Initializing the backend...
Initializing provider plugins...
```



```
File Edit View Terminal Tabs Help
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.
coder@4f782eb23223:~/terraform.labs$ terraform apply

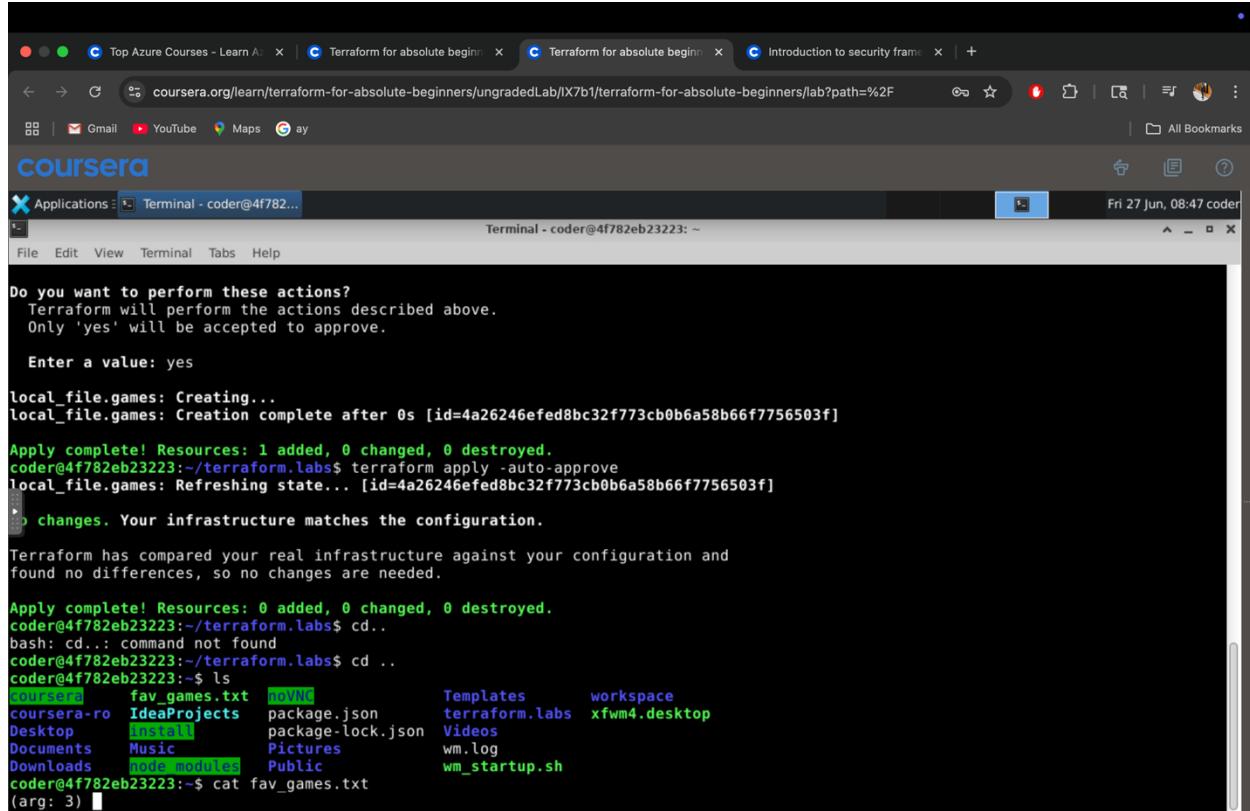
Terraform used the selected providers to generate the following execution plan.
Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:

  # local_file.games will be created
  + resource "local_file" "games" {
      + content          = "fifa 2021"
      + content_base64sha256 = (known after apply)
      + content_base64sha512 = (known after apply)
      + content_md5       = (known after apply)
      + content_shal       = (known after apply)
      + content_sha256     = (known after apply)
      + content_sha512     = (known after apply)
      + directory_permission = "0777"
      + file_permission     = "0777"
      + filename           = "/home/coder/fav_games.txt"
      + id                 = (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.
```



```
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

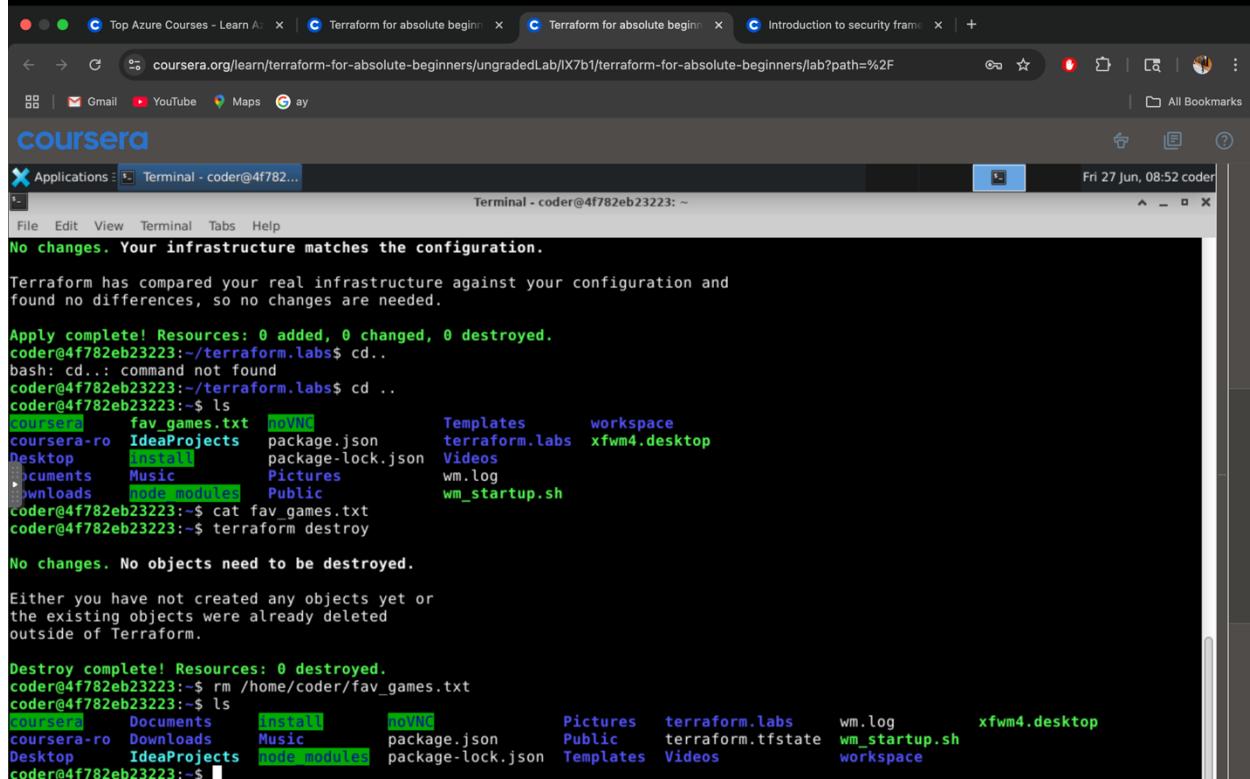
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform.labs$ terraform apply -auto-approve
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and
found no differences, so no changes are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform.labs$ cd..
bash: cd: command not found
coder@4f782eb23223:~/terraform.labs$ cd ..
coder@4f782eb23223:~$ ls
courseid  fav_games.txt  noVNC      Templates  workspace
coursea-ro  IdeaProjects  package.json  terraform.labs  xfwm4.desktop
Desktop    install       package-lock.json  Videos
Documents  Music        Pictures      wm.log
Downloads  node_modules  Public       wm_startup.sh
coder@4f782eb23223:~$ cat fav_games.txt
(arg: 3)
```



```
No changes. Your infrastructure matches the configuration.

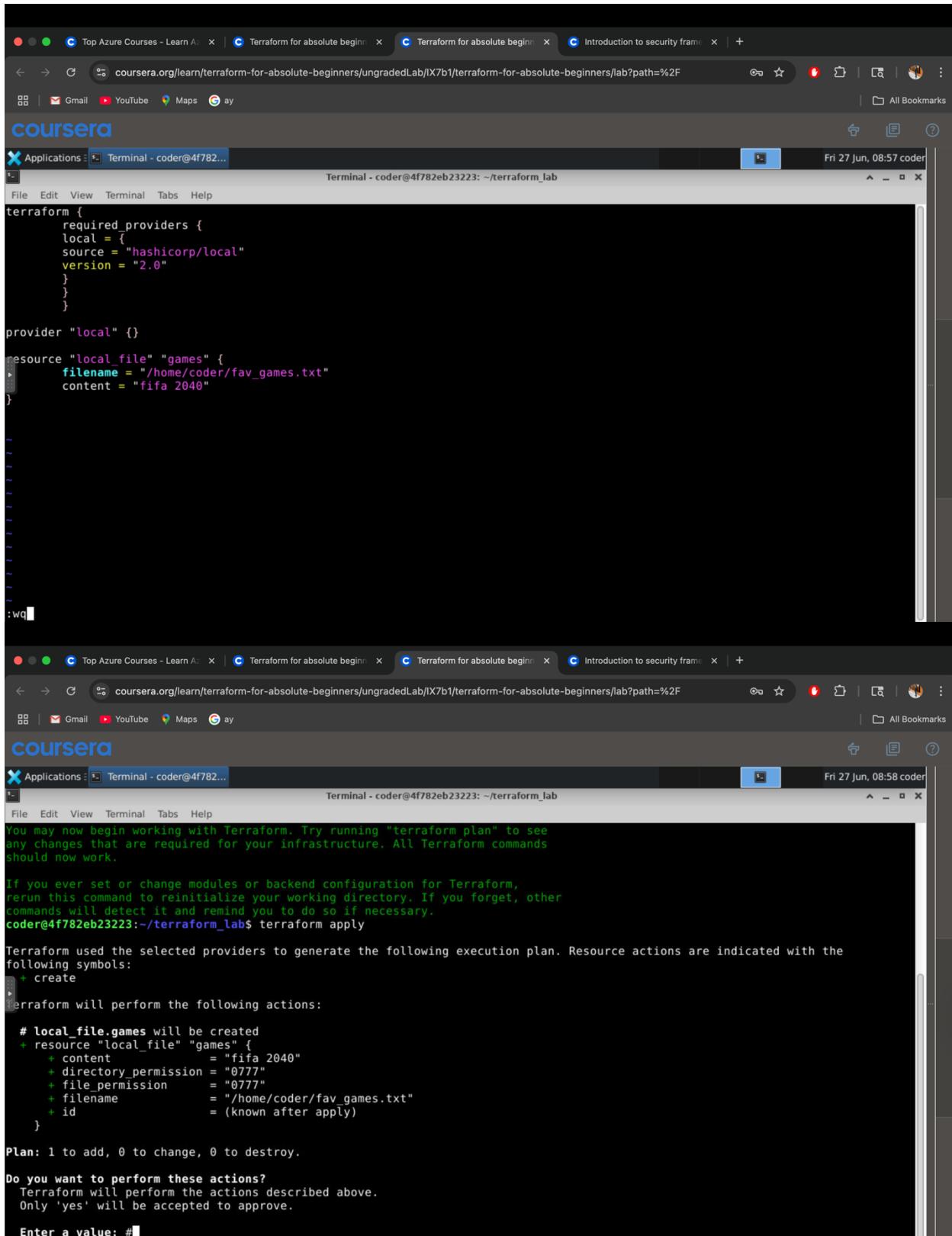
Terraform has compared your real infrastructure against your configuration and
found no differences, so no changes are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform.labs$ cd..
bash: cd: command not found
coder@4f782eb23223:~/terraform.labs$ cd ..
coder@4f782eb23223:~$ ls
courseid  fav_games.txt  noVNC      Templates  workspace
coursea-ro  IdeaProjects  package.json  terraform.labs  xfwm4.desktop
Desktop    install       package-lock.json  Videos
Documents  Music        Pictures      wm.log
Downloads  node_modules  Public       wm_startup.sh
coder@4f782eb23223:~$ cat fav_games.txt
coder@4f782eb23223:~$ terraform destroy

No changes. No objects need to be destroyed.

Either you have not created any objects yet or
the existing objects were already deleted
outside of Terraform.

Destroy complete! Resources: 0 destroyed.
coder@4f782eb23223:~$ rm /home/coder/fav_games.txt
coder@4f782eb23223:~$ ls
courseid  Documents  install  noVNC      Pictures  terraform.labs  wm.log      xfwm4.desktop
coursea-ro  Downloads  Music   package.json  Public   terraform.tfstate  wm_startup.sh
Desktop    IdeaProjects  node_modules  package-lock.json  Templates  Videos      workspace
coder@4f782eb23223:~$
```



The image shows two screenshots of a terminal window on a Mac OS X desktop. The terminal is running on a virtual machine with the identifier 'coder@4f782eb23223' and is located at the path '/terraform\_lab'.

**Terminal Screenshot 1 (Fri 27 Jun, 08:57):**

```
File Edit View Terminal Tabs Help
terraform {
  required_providers {
    local = {
      source = "hashicorp/local"
      version = "2.0"
    }
  }
}

provider "local" {}

resource "local_file" "games" {
  filename = "/home/coder/fav_games.txt"
  content = "fifa 2040"
}

:WQ
```

**Terminal Screenshot 2 (Fri 27 Jun, 08:58):**

```
File Edit View Terminal Tabs Help
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.
coder@4f782eb23223:~/terraform_lab$ terraform apply

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the
following symbols:
+ create
- destroy
M modify
A refresh-as-if-created

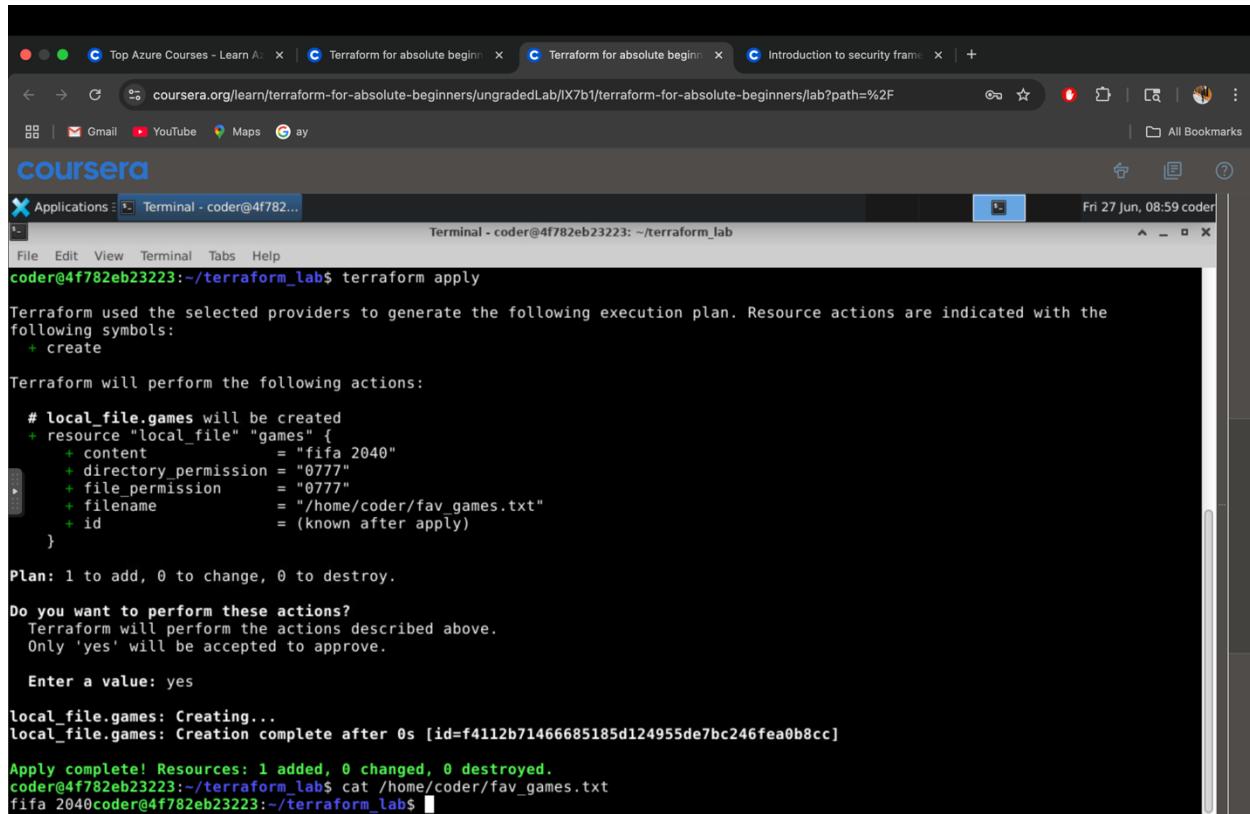
Terraform will perform the following actions:

# local_file.games will be created
+ resource "local_file" "games" {
  + content          = "fifa 2040"
  + directory_permission = "0777"
  + file_permission   = "0777"
  + filename          = "/home/coder/fav_games.txt"
  + id                = (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: #
```



```
File Edit View Terminal Tabs Help
coder@4f782eb23223:~/terraform_lab$ 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:

# local_file.games will be created
+ resource "local_file" "games" {
  + content      = "fifa 2040"
  + directory_permission = "0777"
  + file_permission      = "0777"
  + filename            = "/home/coder/fav_games.txt"
  + id                  = (known after apply)
}

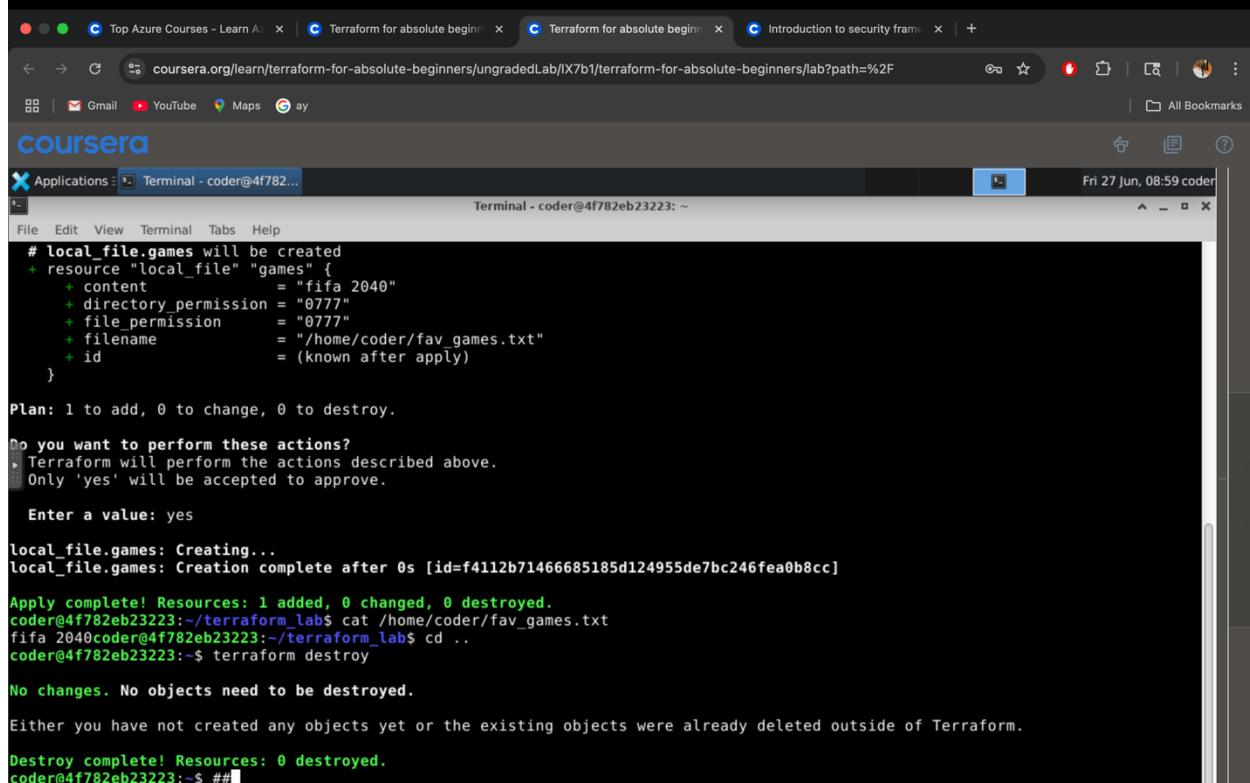
Plan: 1 to add, 0 to change, 0 to destroy.

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

local_file.games: Creating...
local_file.games: Creation complete after 0s [id=f4112b71466685185d124955de7bc246fea0b8cc]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform_lab$ cat /home/coder/fav_games.txt
fifa 2040
coder@4f782eb23223:~/terraform_lab$
```



```
File Edit View Terminal Tabs Help
coder@4f782eb23223:~/terraform_lab$ terraform apply

# local_file.games will be created
+ resource "local_file" "games" {
  + content      = "fifa 2040"
  + directory_permission = "0777"
  + file_permission      = "0777"
  + filename            = "/home/coder/fav_games.txt"
  + id                  = (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

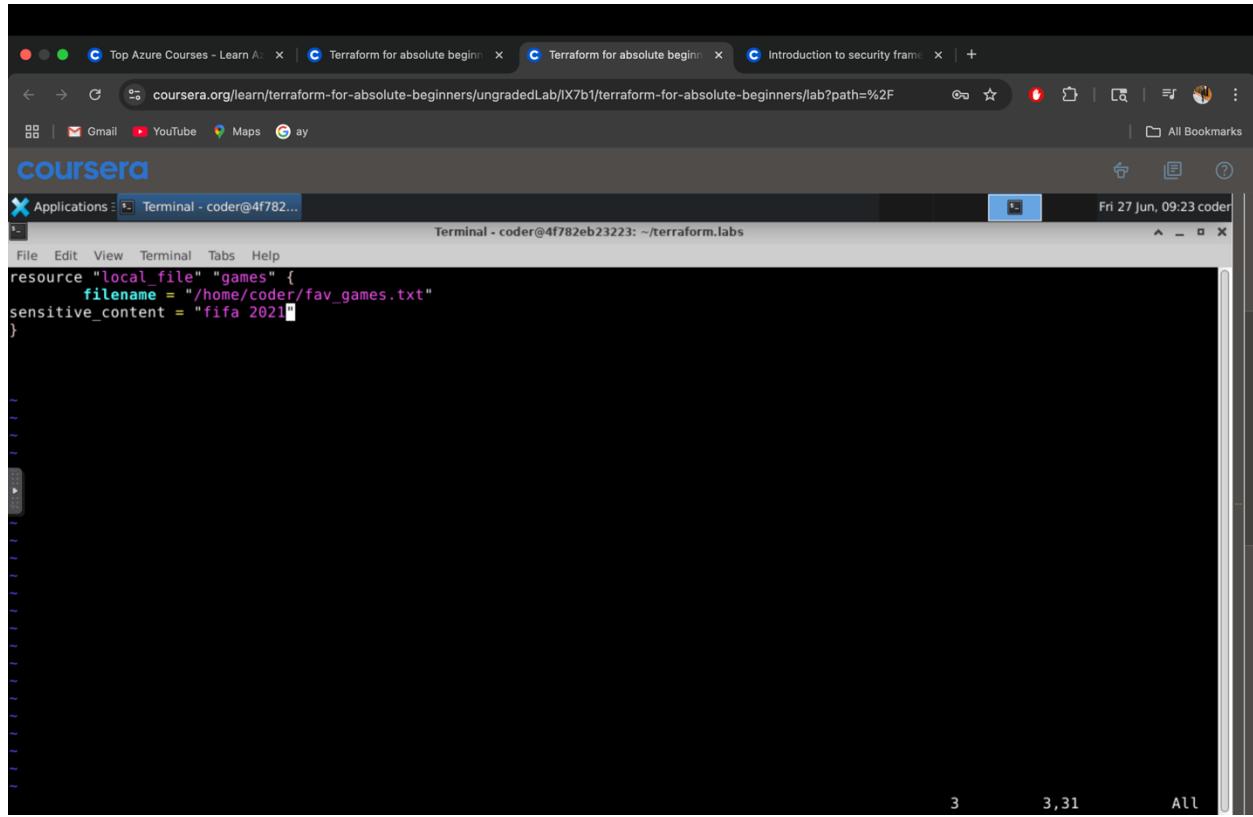
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=f4112b71466685185d124955de7bc246fea0b8cc]

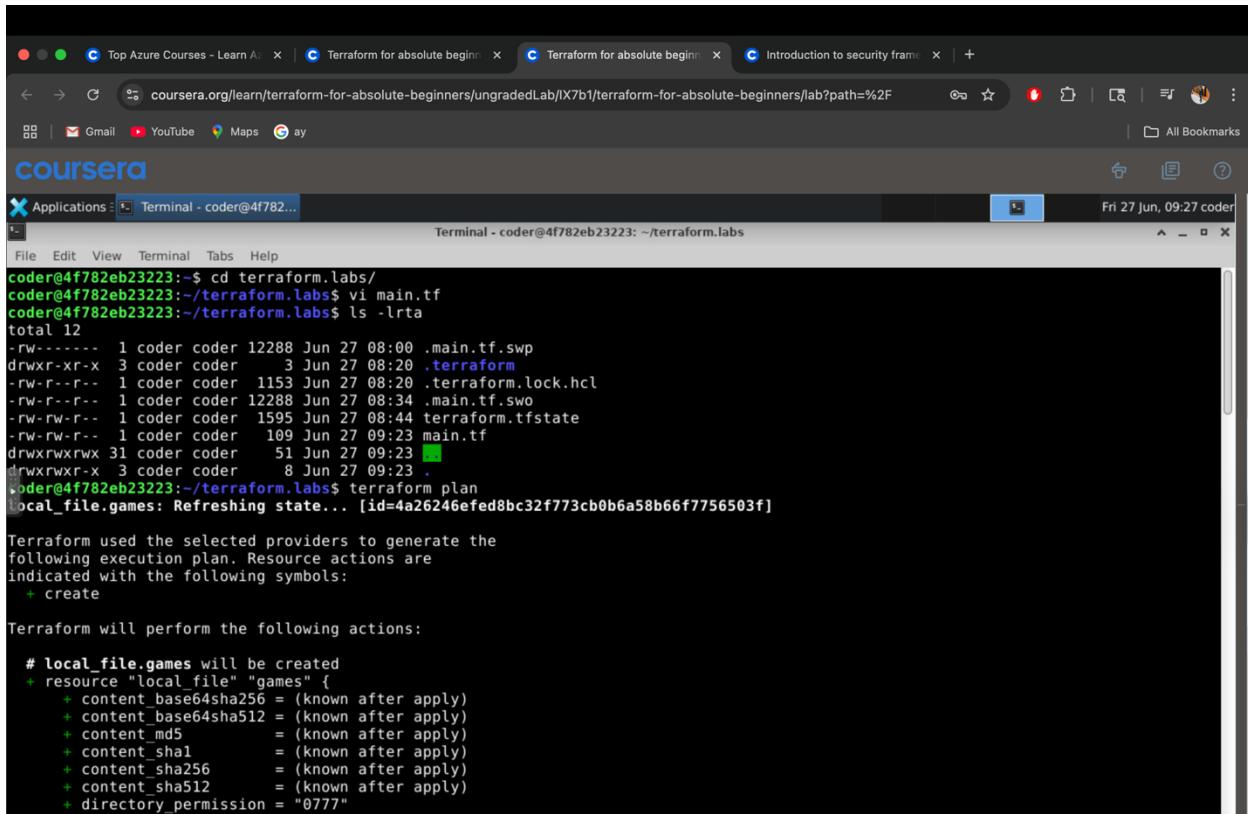
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform_lab$ cat /home/coder/fav_games.txt
fifa 2040
coder@4f782eb23223:~/terraform_lab$ cd ..
coder@4f782eb23223:~$ terraform destroy

No changes. No objects need to be destroyed.

Either you have not created any objects yet or the existing objects were already deleted outside of Terraform.

Destroy complete! Resources: 0 destroyed.
coder@4f782eb23223:~$ ##
```



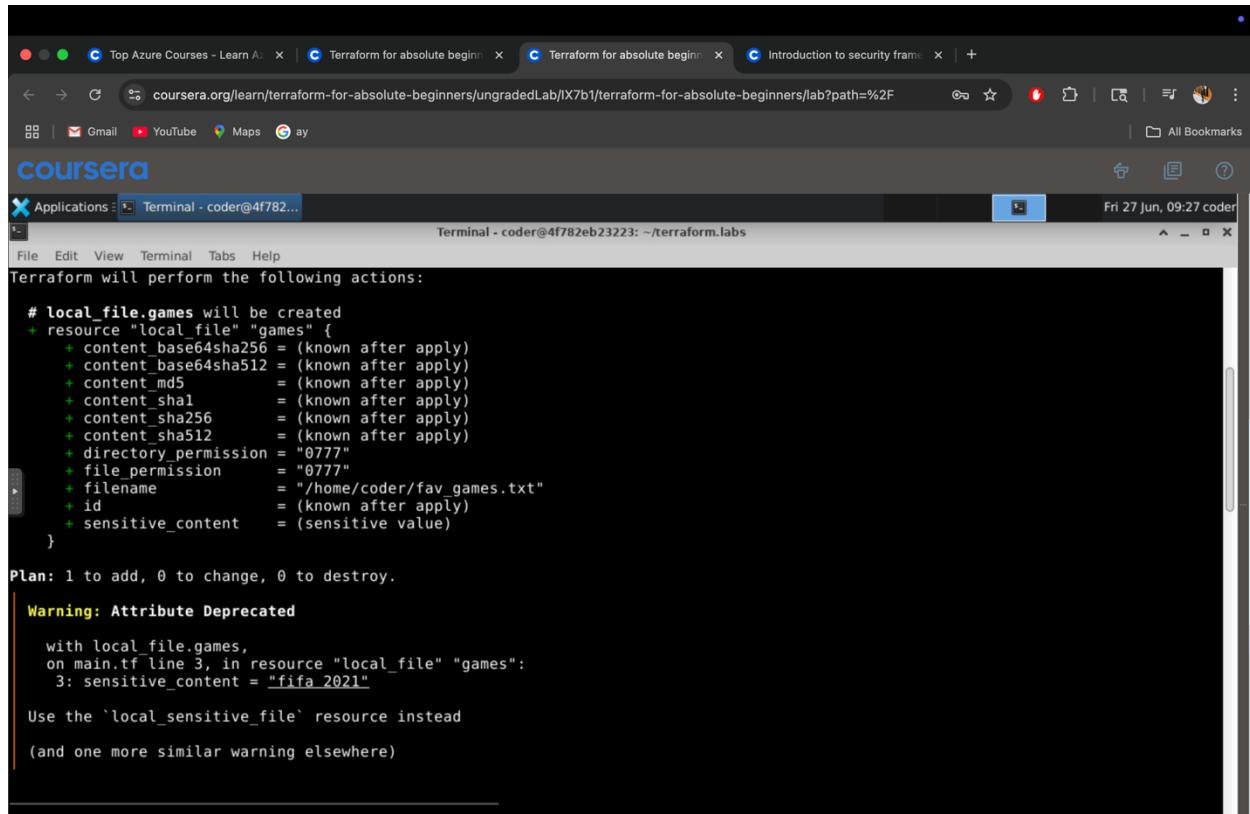


```
File Edit View Terminal Tabs Help
coder@4f782eb23223:~$ cd terraform.labs/
coder@4f782eb23223:~/terraform.labs$ vi main.tf
coder@4f782eb23223:~/terraform.labs$ ls -lra
total 12
-rw----- 1 coder coder 12288 Jun 27 08:00 .main.tf.swp
drwxr-xr-x 3 coder coder 3 Jun 27 08:20 .terraform
-rw-r--r-- 1 coder coder 1153 Jun 27 08:20 .terraform.lock.hcl
-rw-r--r-- 1 coder coder 12288 Jun 27 08:34 .main.tf.swo
-rw-rw-r-- 1 coder coder 1595 Jun 27 08:44 terraform.tfstate
-rw-rw-r-- 1 coder coder 109 Jun 27 09:23 main.tf
drwxrwxrwx 31 coder coder 51 Jun 27 09:23 .
drwxrwxr-x 3 coder coder 8 Jun 27 09:23 .
coder@4f782eb23223:~/terraform.labs$ terraform plan
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

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:

# local_file.games will be created
+ resource "local_file" "games" {
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5 = (known after apply)
  + content_shal = (known after apply)
  + content_sha256 = (known after apply)
  + content_sha512 = (known after apply)
  + directory_permission = "0777"
```



File Edit View Terminal Tabs Help

Terraform will perform the following actions:

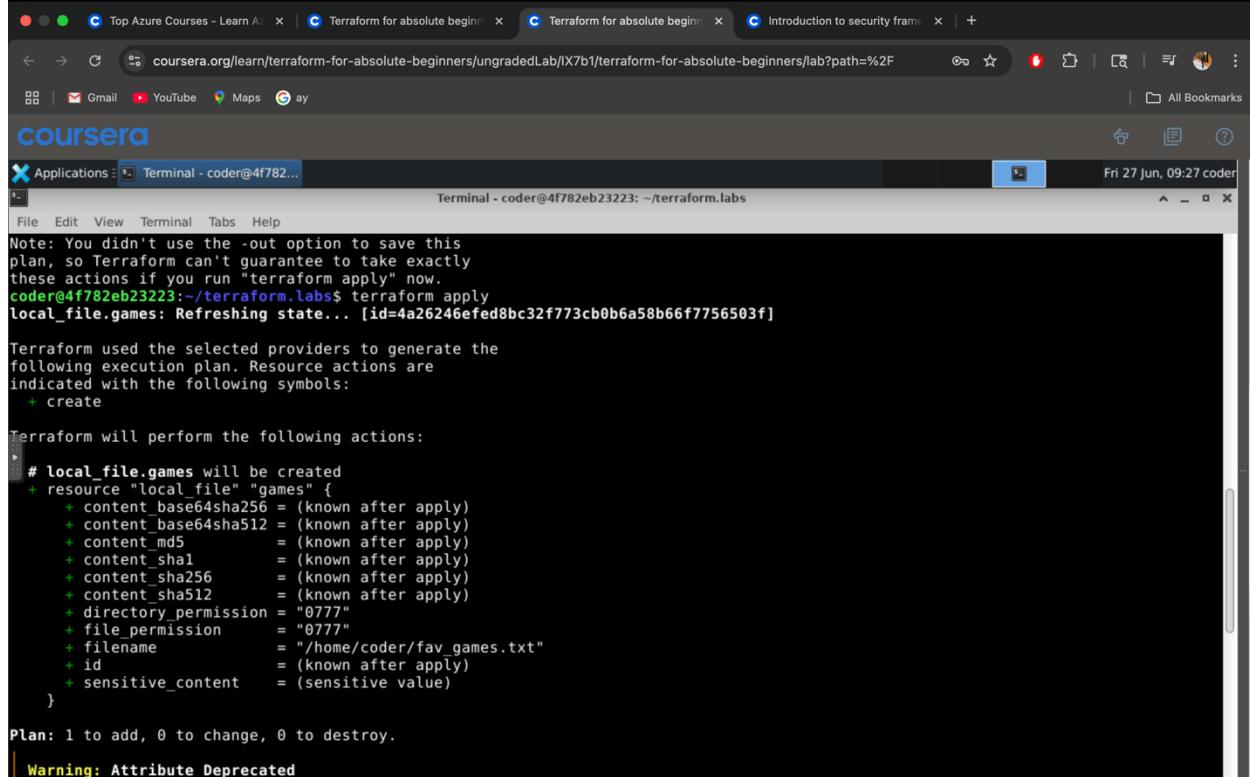
```
# local_file.games will be created
+ resource "local_file" "games" {
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5          = (known after apply)
  + content_shal          = (known after apply)
  + content_sha256        = (known after apply)
  + content_sha512        = (known after apply)
  + directory_permission  = "0777"
  + file_permission       = "0777"
  + filename              = "/home/coder/fav_games.txt"
  + id                    = (known after apply)
  + sensitive_content     = (sensitive value)
}
```

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

**Warning: Attribute Deprecated**

with local\_file.games,  
on main.tf line 3, in resource "local\_file" "games":  
 3: sensitive\_content = fifa\_2021

Use the `local\_sensitive\_file` resource instead  
(and one more similar warning elsewhere)



File Edit View Terminal Tabs Help

Note: You didn't use the `-out` option to save this plan, so Terraform can't guarantee to take exactly these actions if you run `"terraform apply"` now.

```
coder@4f782eb23223:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]
```

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

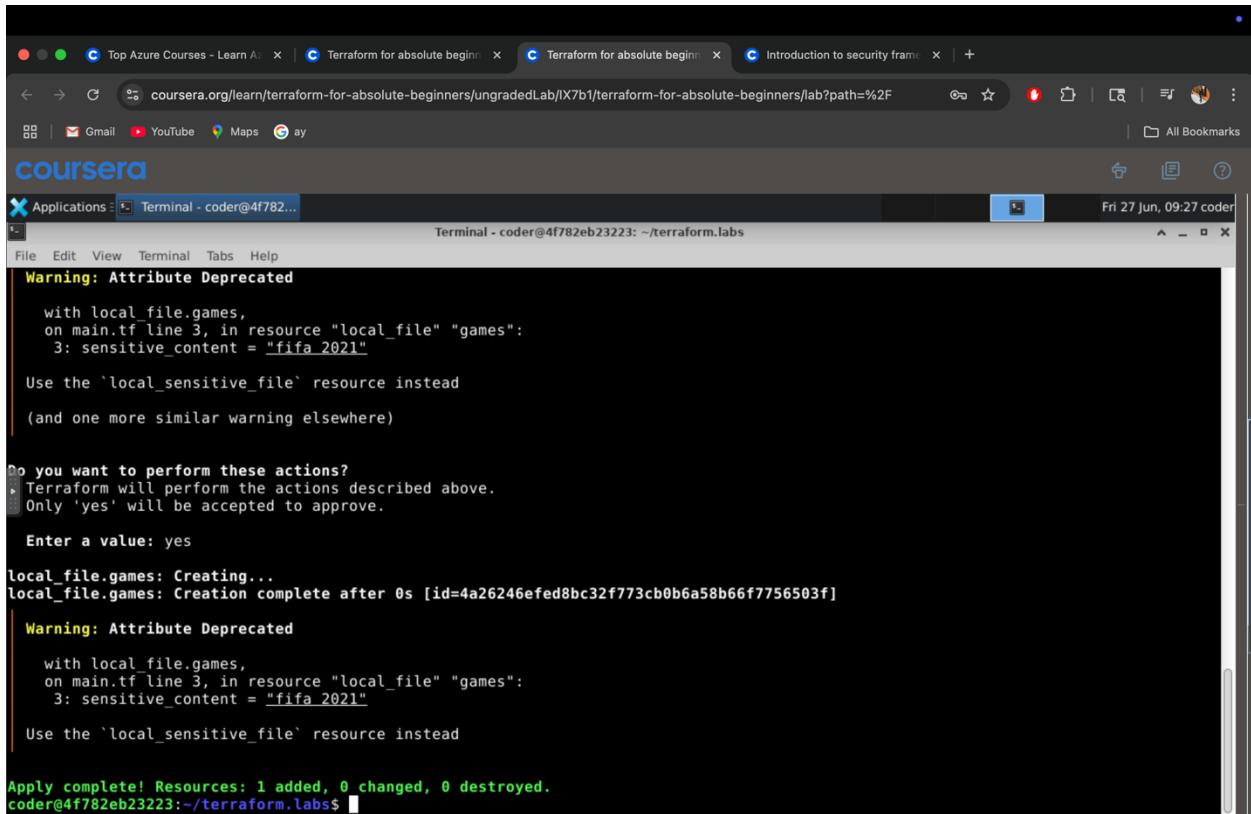
```
+ create
```

Terraform will perform the following actions:

```
# local_file.games will be created
+ resource "local_file" "games" {
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5          = (known after apply)
  + content_shal          = (known after apply)
  + content_sha256        = (known after apply)
  + content_sha512        = (known after apply)
  + directory_permission  = "0777"
  + file_permission       = "0777"
  + filename              = "/home/coder/fav_games.txt"
  + id                    = (known after apply)
  + sensitive_content     = (sensitive value)
}
```

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

**Warning: Attribute Deprecated**



Warning: Attribute Deprecated

```
with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3: sensitive_content = "fifa 2021"

Use the `local_sensitive_file` resource instead

(and one more similar warning elsewhere)
```

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

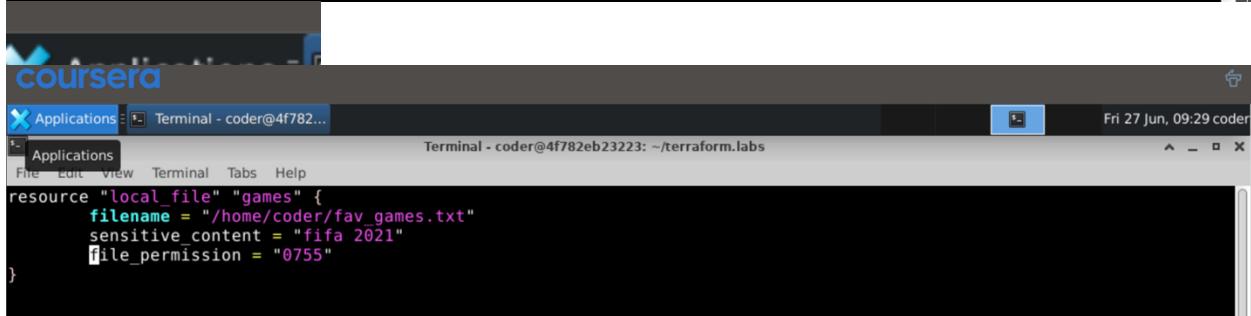
```
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

Warning: Attribute Deprecated
```

```
with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3: sensitive_content = "fifa 2021"

Use the `local_sensitive_file` resource instead
```

```
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform.labs$
```



```
resource "local_file" "games" {
  filename = "/home/coder/fav_games.txt"
  sensitive_content = "fifa 2021"
  file_permission = "0755"
}
```

The screenshot shows a Linux desktop environment with a terminal window, a browser window, and a file manager window.

**Terminal Window (Top):**

```
coder@4f782eb23223:~/terraform.labs$ vi main.tf
coder@4f782eb23223:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

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

Terraform will perform the following actions:

# local_file.games must be replaced
/+ resource "local_file" "games" {
  - content_base64sha256 = "CfGOKWHkElwmdvqcTejAx8/vsblAVP1d8rxwYmB0o3o=" -> (known after apply)
  - content_base64sha512 = "WsHyHWvuNnJGhmvhfMOrvqj0iw+gYjALTsUSPby0o9558zMzj0XMmcikIKjBWaxkFV0etAWfw70zg0LemG3AbA==" -> (known
after apply)
  - content_md5          = "836ae908b56f115151d5fc5cd4b02f" -> (known after apply)
  - content_shal          = "4a26246efed8bc32f773cb0b6a58b66f7756503f" -> (known after apply)
  - content_sha256        = "09fb142961e4125c2676fa9c4de8c0c7cef1b94054fd5df2bc7062604ea37a" -> (known after apply)
  - content_sha512        = "5ac1f21d6bee3672461e6be17cc391bea8f48b0fa062300b4ec5123dbc8ea3de79f333338ce5cc99c88a8c159ac64155
39eb4059fc3b3b380e2de986dc06c" -> (known after apply)
  - file_permission        = "0777" -> "0755" # forces replacement
  - id                    = "4a26246efed8bc32f773cb0b6a58b66f7756503f" -> (known after apply)
  # (3 unchanged attributes hidden)
}

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

Warning: Attribute Deprecated
  with local_file.games,
```

**Terminal Window (Bottom):**

```
File Edit View Terminal Tabs Help
File Edit View Terminal Tabs Help
Apply complete! Resources: 1 added, 0 changed, 1 destroyed.
coder@4f782eb23223:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against
your configuration and found no differences, so no changes
are needed.

Warning: Attribute Deprecated
  with local_file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = "fifa_2021"

Use the `local_sensitive_file` resource instead
(and one more similar warning elsewhere)

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform.labs$
```

**Browser Window (Top):**

coursera

**File Edit View Terminal Tabs Help**

```
coder@4f782eb23223:~/terraform.labs$ vi main.tf
coder@4f782eb23223:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

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

Terraform will perform the following actions:

# local_file.games must be replaced
/+ resource "local_file" "games" {
  - content_base64sha256 = "CfGOKWHkElwmdvqcTejAx8/vsblAVP1d8rxwYmB0o3o=" -> (known after apply)
  - content_base64sha512 = "WsHyHWvuNnJGhmvhfMOrvqj0iw+gYjALTsUSPby0o9558zMzj0XMmcikIKjBWaxkFV0etAWfw70zg0LemG3AbA==" -> (known
after apply)
  - content_md5          = "836ae908b56f115151d5fc5cd4b02f" -> (known after apply)
  - content_shal          = "4a26246efed8bc32f773cb0b6a58b66f7756503f" -> (known after apply)
  - content_sha256        = "09fb142961e4125c2676fa9c4de8c0c7cef1b94054fd5df2bc7062604ea37a" -> (known after apply)
  - content_sha512        = "5ac1f21d6bee3672461e6be17cc391bea8f48b0fa062300b4ec5123dbc8ea3de79f333338ce5cc99c88a8c159ac64155
39eb4059fc3b3b380e2de986dc06c" -> (known after apply)
  - file_permission        = "0777" -> "0755" # forces replacement
  - id                    = "4a26246efed8bc32f773cb0b6a58b66f7756503f" -> (known after apply)
  # (3 unchanged attributes hidden)
}

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

Warning: Attribute Deprecated
  with local_file.games,
```

**File Manager Window (Bottom):**

Google Chrome

Terminal - coder@4f782eb23223: ~/terraform.labs

```
File Edit View Terminal Tabs Help
File Edit View Terminal Tabs Help
Apply complete! Resources: 1 added, 0 changed, 1 destroyed.
coder@4f782eb23223:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=4a26246efed8bc32f773cb0b6a58b66f7756503f]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against
your configuration and found no differences, so no changes
are needed.

Warning: Attribute Deprecated
  with local_file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = "fifa_2021"

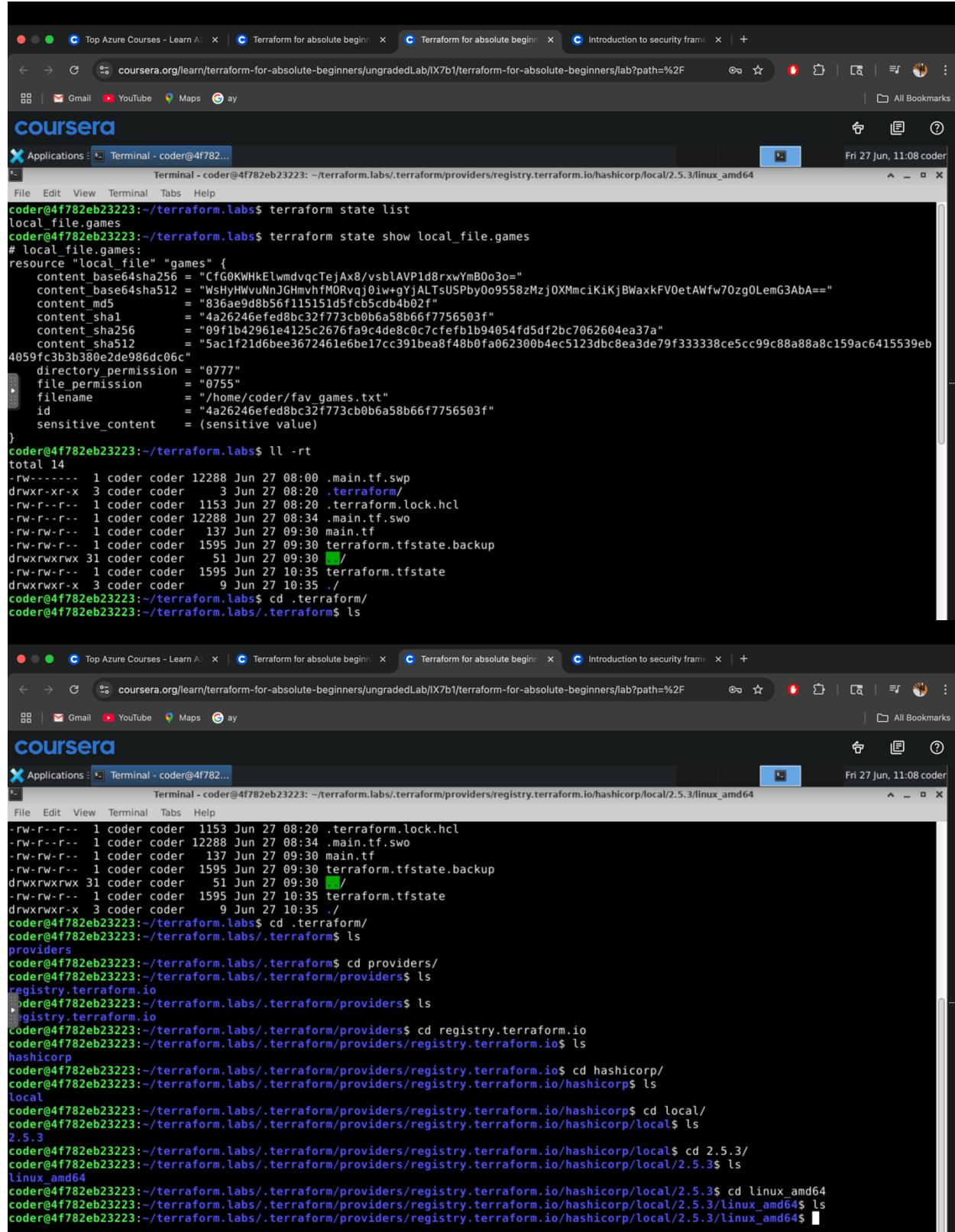
Use the `local_sensitive_file` resource instead
(and one more similar warning elsewhere)

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
coder@4f782eb23223:~/terraform.labs$
```

Eclipse

terraform basics.p

```
File Edit View Terminal Tabs Help
coder@4f782eb23223:~/terraform.labs$ ls -l
total 14
-rw----- 1 coder coder 12288 Jun 27 08:00 .main.tf.swp
drwxr-xr-x 3 coder coder 3 Jun 27 08:20 .terraform
-rw-r--r-- 1 coder coder 1153 Jun 27 08:20 .terraform.lock.hcl
-rw-r--r-- 1 coder coder 12288 Jun 27 08:34 .main.tf.swo
-rw-rw-r-- 1 coder coder 137 Jun 27 09:30 main.tf
-rw-rw-r-- 1 coder coder 1595 Jun 27 09:30 terraform.tfstate.backup
drwxrwxrwx 31 coder coder 51 Jun 27 09:30
-rw-rw-r-- 1 coder coder 1595 Jun 27 10:35 terraform.tfstate
drwxrwxr-x 3 coder coder 9 Jun 27 10:35 .
coder@4f782eb23223:~/terraform.labs$ cat terraform.tfstate
{
  "version": 4,
  "terraform_version": "1.9.1",
  "serial": 6,
  "lineage": "38be8005-dffe-a9cb-ba36-974bf6ef3743",
  "outputs": {},
  "resources": [
    {
      "mode": "managed",
      "type": "local_file",
      "name": "games",
      "provider": "provider[\"registry.terraform.io/hashicorp/local\"]",
      "instances": [
        {
          "schema_version": 0,
          "attributes": {
            "content": null,
            "content_base64": null,
            "content_base64sha256": "CfG0KWHkElwmdvqcTejAx8/vsblAVP1d8rxwYmB0o3o=",
            "content_base64sha512": "WsHyHWvuNnJGHmhfM0Rvqj01w+gYjALTsUSPbyOo9558zMzj0XMmcikIKjBWaxkFV0etAWfw70zg0LemG3AbA==",
            "content_md5": "836ae9d8b56f115151d5fc5cdb4b02f",
            "content_sha1": "4a26246efed8bc32f773cb0b6a58b66f7756503f",
            "content_sha256": "09f1b42961e4125c2676fa9c4de8c0c7cefblb94054fd5df2bc7062604ea37a",
            "content_sha512": "5ac1f21d6bee3672461e6be17cc391bea8f48b0fa062300b4ec5123dbc8ea3de79f333338ce5cc99c88a88a8c159ac6415539eb4059fc3b3b380e2de986dc06c",
            "directory_permission": "0777",
            "file_permission": "0755",
            "filename": "/home/coder/fav_games.txt",
            "id": "4a26246fed8bc32f773cb0b6a58b66f7756503f",
            "sensitive_content": "fifa 2021",
            "source": null
          },
          "sensitive_attributes": [
            [
              {
                "type": "get_attr",
                "value": "sensitive_content"
              }
            ]
          ]
        }
      ],
      "check_results": null
    }
  ]
}
```



```

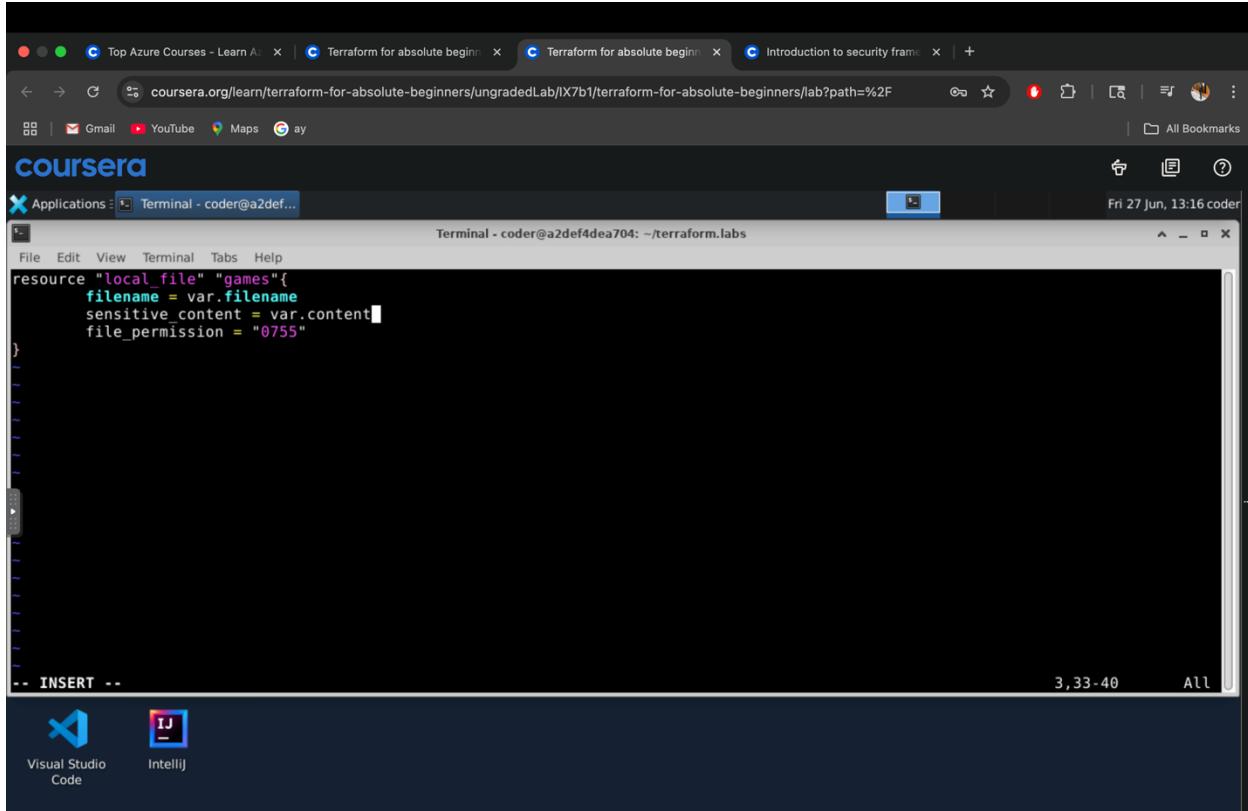
File Edit View Terminal Tabs Help
coder@4f782eb23223:~/terraform.labs$ terraform state list
local_file.games
coder@4f782eb23223:~/terraform.labs$ terraform state show local_file.games
# local_file.games:
resource "local_file" "games" {
  content_base64sha256 = "CfG0KWHkElwmdvqcTejAx8/vsblAVP1d8rxwYmB0o3o="
  content_base64sha512 = "WsHyHwvUnJGhmvfM0Rvqj0iw+yjALTsUSPby0o9558zMzj0XMmcIK1KjBwaxkFV0etAWfw70zg0LemG3AbA=="
  content_md5 = "836ae9d8b56f115151d5fc5cd4b02f"
  content_shai = "4a26246efed8bc32f773cb0b6a58b66f7756503f"
  content_sha256 = "09f1b42961e4125c2676fa9c4de8c0c7cefcb1b94054fd5df2bc7062604ea37a"
  content_sha512 = "5ac1f21d6bee3672461e6be17c391bea8f48b0fa062300b4ec5123dbc8ea3de79f333338ce5cc99c88a88a159ac6415539eb4059fc3b3b380e2de986dc06c"
  directory_permission = "0777"
  file_permission = "0755"
  filename = "/home/coder/fav_games.txt"
  id = "4a26246efed8bc32f773cb0b6a58b66f7756503f"
  sensitive_content = (sensitive value)
}
coder@4f782eb23223:~/terraform.labs$ ll -rt
total 14
-rw----- 1 coder coder 12288 Jun 27 08:00 .main.tf.swp
drwxr-xr-x 3 coder coder 3 Jun 27 08:20 .terraform/
-rw-r--r-- 1 coder coder 1153 Jun 27 08:20 .terraform.lock.hcl
-rw-r--r-- 1 coder coder 12288 Jun 27 08:34 .main.tf.swo
-rw-rw-r-- 1 coder coder 137 Jun 27 09:30 main.tf
-rw-rw-r-- 1 coder coder 1595 Jun 27 09:30 terraform.tfstate.backup
drwxrwxrwx 31 coder coder 51 Jun 27 09:30 /
-rw-rw-r-- 1 coder coder 1595 Jun 27 10:35 terraform.tfstate
drwxrwxr-x 3 coder coder 9 Jun 27 10:35 .
coder@4f782eb23223:~/terraform.labs$ cd .terraform/
coder@4f782eb23223:~/terraform.labs/.terraform$ ls
providers
coder@4f782eb23223:~/terraform.labs/.terraform$ cd providers/
coder@4f782eb23223:~/terraform.labs/.terraform/providers$ ls
registry.terraform.io
coder@4f782eb23223:~/terraform.labs/.terraform/providers$ ls
registry.terraform.io
coder@4f782eb23223:~/terraform.labs/.terraform/providers$ cd registry.terraform.io
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io$ ls
hashicorp
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io$ cd hashicorp/
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp$ ls
local
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp$ cd local/
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp/local$ ls
2.5.3
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp/locals$ cd 2.5.3/
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp/local/2.5.3$ ls
linux_amd64
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp/local/2.5.3$ cd linux_amd64
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp/local/2.5.3/linux_amd64$ ls
coder@4f782eb23223:~/terraform.labs/.terraform/providers/registry.terraform.io/hashicorp/local/2.5.3/linux_amd64$ 

```

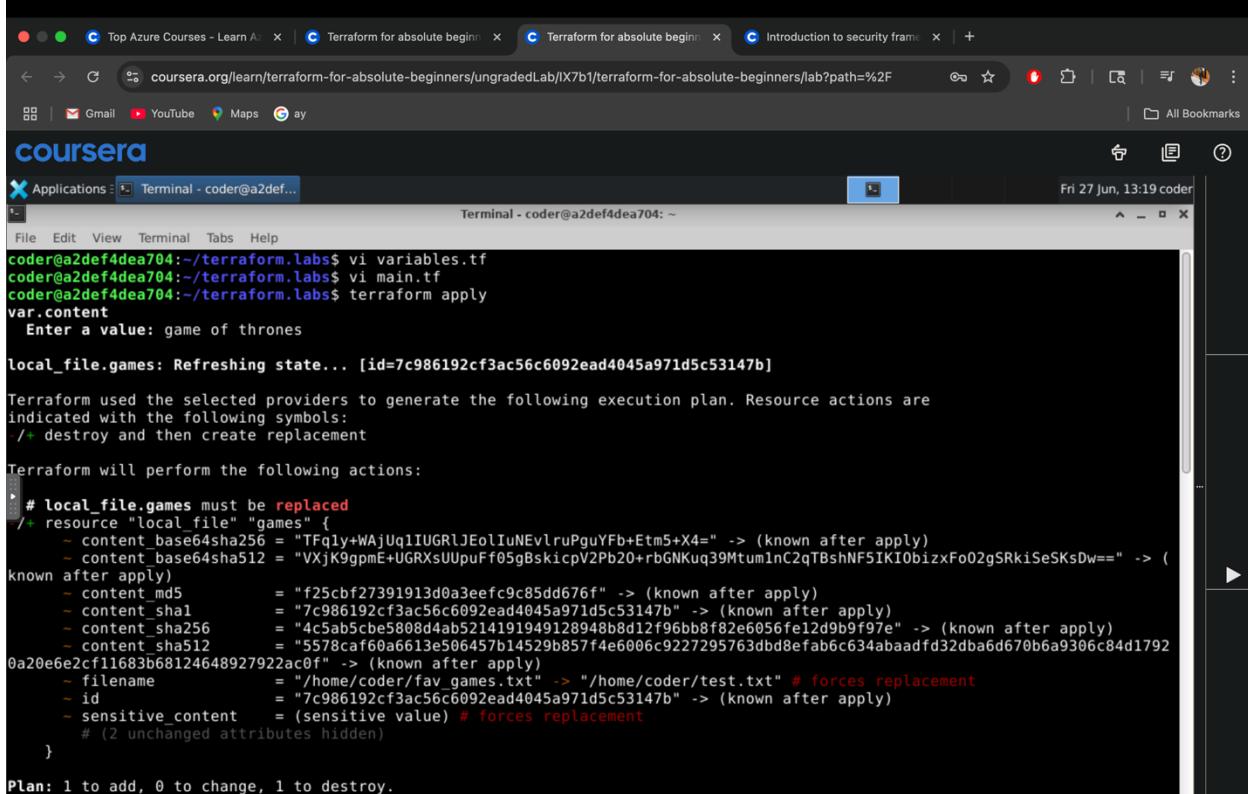
Terminal - coder@4f782eb23223: ~/terraform.labs

File Edit View Terminal Tabs Help

```
der@4f782eb23223:~$ cd terraform.labs
der@4f782eb23223:~/terraform.labs$ ll -rt
total 14
w----- 1 coder coder 12288 Jun 27 08:00 .main.tf.swp
wxr-xr-x 3 coder coder     3 Jun 27 08:20 .terraform/
w-r--r-- 1 coder coder 1153 Jun 27 08:20 .terraform.lock.hcl
w-r--r-- 1 coder coder 12288 Jun 27 08:34 .main.tf.swo
w-rw-r-- 1 coder coder 137 Jun 27 09:30 main.tf
w-rw-r-- 1 coder coder 1595 Jun 27 09:30 terraform.tfstate.backup
wxrwxrwx 31 coder coder   51 Jun 27 09:30 ../
w-rw-r-- 1 coder coder 1595 Jun 27 10:35 terraform.tfstate
wxrwxr-x 3 coder coder     9 Jun 27 10:35 ./
der@4f782eb23223:~/terraform.labs$
```



```
resource "local_file" "games"{
  filename = var.filename
  sensitive_content = var.content
  file_permission = "0755"
}
```



```
coder@a2def4dea704:~/terraform.labs$ vi variables.tf
coder@a2def4dea704:~/terraform.labs$ vi main.tf
coder@a2def4dea704:~/terraform.labs$ terraform apply
var.content
  Enter a value: game of thrones

local_file.games: Refreshing state... [id=7c986192cf3ac56c6092ead4045a971d5c53147b]

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

Terraform will perform the following actions:

  # local_file.games must be replaced
/+ resource "local_file" "games" {
    - content_base64sha256 = "Tfql+WAjUq1IUGrJElIuNEvlruPguYFb+Etm5+X4=" -> (known after apply)
    - content_base64sha512 = "VXjK9gpME+UGRXsUUpuFf05gBskicpV2Pb20+rbGNKuq39Mtum1nC2qTBshNF5IKI0bzxFo02gSRkiSeSKsDw==" -> (known after apply)
    - content_md5      = "f25cbf27391913da3eefc9c85dd676f" -> (known after apply)
    - content_shal      = "7c986192cf3ac56c6092ead4045a971d5c53147b" -> (known after apply)
    - content_sha256    = "4c5ab5cbe5808d4ab5214191949128948b8d12f96bb8f82e6056fe12d969f97e" -> (known after apply)
    - content_sha512    = "5578caf60a6613e506457b14529b857f4e6006c9227295763dbd8efab6c634baadfd32dba6d670b6a9306c84d1792
0a20e6e2cf11683b68124648927922a0cf" -> (known after apply)
    - filename          = "/home/coder/fav_games.txt" -> "/home/coder/test.txt" # forces replacement
    - id               = "7c986192cf3ac56c6092ead4045a971d5c53147b" -> (known after apply)
    - sensitive_content = (sensitive value) # forces replacement
    # (2 unchanged attributes hidden)
  }

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

```

File Edit View Terminal Tabs Help
- filename      = "/home/coder/fav_games.txt" -> "/home/coder/test.txt" # forces replacement
- id           = "7c986192cf3ac56c6092ead4045a971d5c53147b" -> (known after apply)
- sensitive_content = (sensitive value) # forces replacement
} # (2 unchanged attributes hidden)

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

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:     sensitive_content = var.content

Use the `local_sensitive_file` resource instead

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

local_file.games: Destroying... [id=7c986192cf3ac56c6092ead4045a971d5c53147b]
local_file.games: Destruction complete after 0s
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=b33c5a4a9989f7994ee7953a45855ae164672661]

Warning: Attribute Deprecated

with local_file.games,
Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:     sensitive_content = var.content

Use the `local_sensitive_file` resource instead

Apply complete! Resources: 1 added, 0 changed, 1 destroyed.
coder@azdef4dea704:~/terraform.labs$ cd ..
coder@azdef4dea704:~$ ls
coursera  Downloads  Music  package-lock.json  terraform.labs  wm_startup.sh
coursera-ro  IdeaProjects  node_modules  Pictures  test.txt  workspace
Desktop  install  noVNC  Public  Videos  xfwm4.desktop
Documents  main.tf  package.json  Templates  wm.log
coder@azdef4dea704:~$ cat test.txt
game of thrones
coder@azdef4dea704:~$ ls

File Edit View Terminal Tabs Help
coder@azdef4dea704:~$ terraform apply -var "filename=/root/test1.txt" -var "content=fifa2080"

Error: Value for undeclared variable

A variable named "filename" was assigned on the command
line, but the root module does not declare a variable
of that name. To use this value, add a "variable" block
to the configuration.

Error: Value for undeclared variable

A variable named "content" was assigned on the command
line, but the root module does not declare a variable
of that name. To use this value, add a "variable" block
to the configuration.

coder@azdef4dea704:~$ cd terraform.labs/
coder@azdef4dea704:~/terraform.labs$ terraform apply -var "filename=/root/test1.txt" -var "content=fifa2080"
local_file.games: Refreshing state... [id=b33c5a4a9989f7994ee7953a45855ae164672661]

Terraform used the selected providers to generate the
following execution plan. Resource actions are indicated
with the following symbols:
-/+ destroy and then create replacement

Terraform will perform the following actions:

# local_file.games must be replaced
/+ resource "local_file" "games" {
  - content_base64sha256 = "0pjNXTYycZ/q0y5Jq6EsUUUDL3/R3elkFNErNujtcVms=" -> (known after apply)

```

```

Terraform will perform the following actions:

# local_file.games must be replaced
/+ resource "local_file" "games" {
  - content_base64sha256 = "0pjNXYycZ/q0y5Jq6EsUUDL3/R3elKFNerNujtcVms=" -> (known after apply)
  - content_base64sha512 = "C0duzPc+k4o4AUaLLOUmHjsGjsJBz9xsZ21g2A10rm4m51n7f+MefYbaEEnABBQwSqIbjp53qs520C5VwtHQ==" -> (known
after apply)
  - content_md5 = "1f96a0fcdb8d39628f86e090ec26229" -> (known after apply)
  - content_shal = "b33c5a4a9989f7994ee7953a45855ae164672661" -> (known after apply)
  - content_sha256 = "3a98cd5d3632719fea3b2e49aba12c5140cbfff4777a5905344acdba3b5c566b" -> (known after apply)
  - content_sha512 = "09476eccf73e938a3801468b2ce5261c9b0626c241cfdb31b19db58360353ab9b89b9d67edff8c79f61b684127001050c12
3821b8e9e77aace76382e55c2d1d" -> (known after apply)
  - filename = "/home/coder/test.txt" -> "/root/test1.txt" # forces replacement
  - id = "b33c5a4a9989f7994ee7953a45855ae164672661" -> (known after apply)
  - sensitive_content = (sensitive value) # forces replacement
  # (2 unchanged attributes hidden)
}

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

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:           sensitive_content = var.content

Use the `local_sensitive_file` resource instead

```

```

File Edit View Terminal Tabs Help terminal ~ coder@a2def4dea704:~/terraform.labs$ 
coder@a2def4dea704:~/terraform.labs$ export TF_VAR_filename="/root/test3.txt"
coder@a2def4dea704:~/terraform.labs$ export TF_VAR_content="Mario"
coder@a2def4dea704:~/terraform.labs$ 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:

# local_file.games will be created
/+ resource "local_file" "games" {
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5 = (known after apply)
  + content_shal = (known after apply)
  + content_sha256 = (known after apply)
  + content_sha512 = (known after apply)
  + directory_permission = "0777"
  + file_permission = "0755"
  + filename = "/root/test3.txt"
  + id = (known after apply)
  + sensitive_content = (sensitive value)
}

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

Warning: Attribute Deprecated

with local_file.games,

```

```
}

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

Warning: Attribute Deprecated

  with local_file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:     sensitive_content = var.content

Use the `local_sensitive_file` resource instead

▶ 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

local_file.games: Creating...

Warning: Attribute Deprecated

  with local_file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:     sensitive_content = var.content

Use the `local_sensitive_file` resource instead

Error: Create local file error

Enter a value: yes

local_file.games: Creating...

Warning: Attribute Deprecated

  with local_file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:     sensitive_content = var.content

Use the `local_sensitive_file` resource instead

▶ Error: Create local file error

  with local_file.games,
  on main.tf line 1, in resource "local_file" "games":
  1: resource "local_file" "games"{

An unexpected error occurred while writing the file

+Original Error: open /root/test3.txt: permission
denied

coder@a2def4dea704:~/terraform.labs$ export TF_VAR_filename="/home/coder/test3.txt"
coder@a2def4dea704:~/terraform.labs$ terraform apply

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

```

Terraform will perform the following actions:

# local_file.games will be created
+ resource "local_file" "games" {
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5          = (known after apply)
  + content_shal          = (known after apply)
  + content_sha256        = (known after apply)
  + content_sha512        = (known after apply)
  + directory_permission  = "0777"
  + file_permission       = "0755"
  + filename              = "/home/coder/test3.txt"
  + id                    = (known after apply)
  + sensitive_content     = (sensitive value)
}

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

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:           sensitive_content = var.content

Use the `local_sensitive_file` resource instead

Do you want to perform these actions?
Terraform will perform the actions described above.

File Edit View Terminal Tabs Help
Plan: 1 to add, 0 to change, 0 to destroy.

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:           sensitive_content = var.content

Use the `local_sensitive_file` resource instead

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

local_file.games: Creating...
local_file.games: Creation complete after 0s [id=8e7d820ad9d3323edb541a72da4912148cb9c0c2]

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:           sensitive_content = var.content

Use the `local_sensitive_file` resource instead

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
coder@a2def4dea704:~/terraform.labs$ $ 

```

## ◆ Step 7: Defining and Passing Variables

Created a `variables.tf` file to make the configuration more flexible. Used `terraform.tfvars` to pass values cleanly and securely. Practiced using default values and override files.

```
Terminal - coder@a2def4dea704: ~/terraform.labs
File Edit View Terminal Tabs Help
coder@a2def4dea704:~/terraform.labs$ vi terraform.tfvars
coder@a2def4dea704:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=8e7d820ad9d3323edb541a72da4912148cb9c0c2]

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

Terraform will perform the following actions:

  # local_file.games must be replaced
/+ resource "local_file" "games" {
  - content_base64sha256 = "YcjhatkNTm2jFwgPpEXiYukx078h/U0ws7m0QliGsvU=" -> (known after apply)
  - content_base64sha512 = "23KcJnGms/+IJZ5gEv94l1zaarzv2afb6017bMqCUidNdiASW6sZycCA+Fb2adG7nIMjLpvFMNjGDnl0uRueA==" -> (known
after apply)
  - content_md5          = "1cc477616bb182e87ec7285bfb8c34b" -> (known after apply)
  - content_shal          = "8e7d820ad9d3323edb541a72da4912148cb9c0c2" -> (known after apply)
  - content_sha256        = "61c8e16ad90d4e6da317180fa445e262e9313bbf21ffd30b3b9b4425886b2f5" -> (known after apply)
  - content_sha512        = "db791c2671a6b3ff88259e6012ff78975cee69aaef3bf669f6fad35edb32a09489d35d880496eac67270203e15bd9a746ee72
0c8cba6f14c3631839e5d2e46e78" -> (known after apply)
  - filename              = "/home/coder/test3.txt" -> "/home/coder/pets.txt" # forces replacement
  - id                    = "8e7d820ad9d3323edb541a72da4912148cb9c0c2" -> (known after apply)
  - sensitive_content     = (sensitive value) # forces replacement
  # (2 unchanged attributes hidden)
}

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

Warning: Attribute Deprecated

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = var.content

Use the `local_sensitive_file` resource instead

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

local_file.games: Destroying... [id=8e7d820ad9d3323edb541a72da4912148cb9c0c2]
local_file.games: Destruction complete after 0s
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=b866865be01a47a38a8b8e70d9eeb4d216a5889b]

Warning: Attribute Deprecated

with local_file.games,
on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = var.content

Use the `local_sensitive_file` resource instead

Apply complete! Resources: 1 added, 0 changed, 1 destroyed.
coder@a2def4dea704:~/terraform.labs$ cd ..
```

```

Enter a value: yes

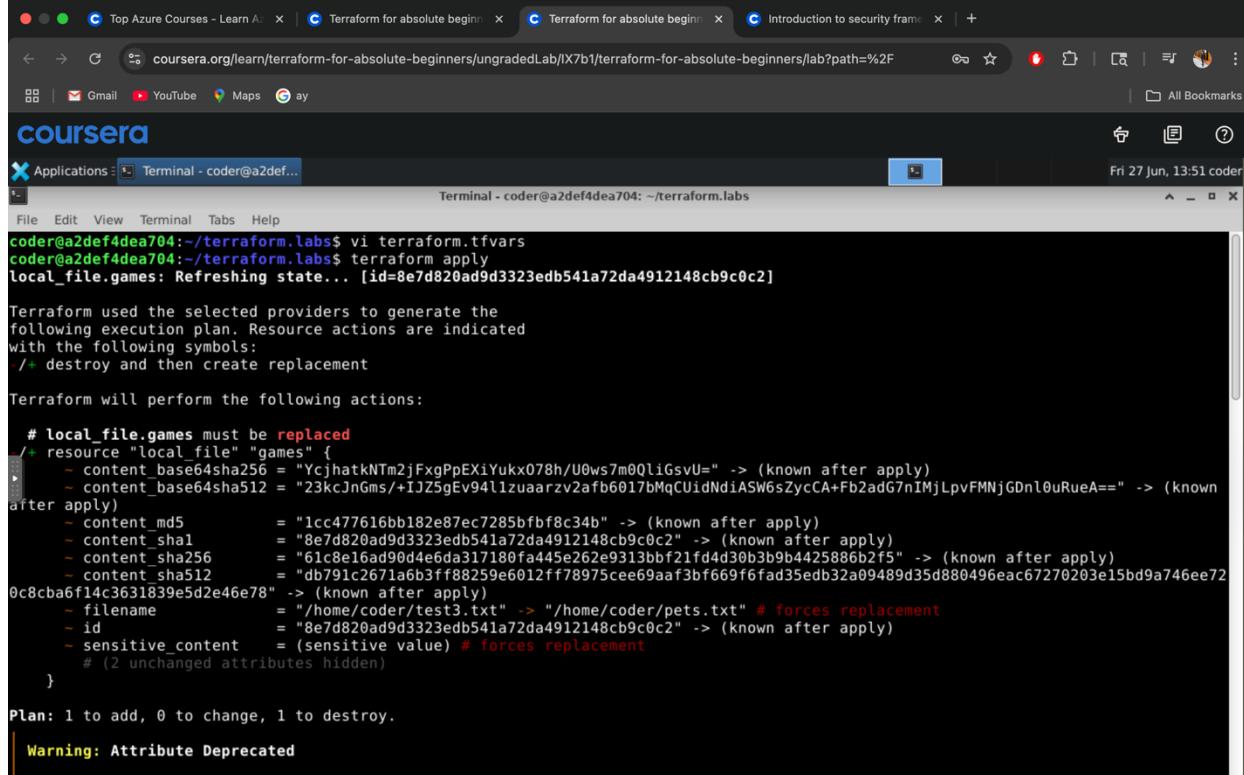
local_file.games: Destroying... [id=8e7d820ad9d3323edb541a72da4912148cb9c0c2]
local_file.games: Destruction complete after 0s
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=b866865be01a47a38a8b8e70d9eeb4d216a5889b]

Warning: Attribute Deprecated

  with local_file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = var.content

  Use the `local_sensitive_file` resource instead

Apply complete! Resources: 1 added, 0 changed, 1 destroyed.
coder@a2def4dea704:~/terraform.labs$ cd ..
coder@a2def4dea704:~$ ls
Courses   Music      Templates
coursera-ro node_modules  terraform.labs
Desktop   .noVNC      Videos
Documents  package.json  wm.log
Downloads  package-lock.json  wm_startup.sh
IdeaProjects  pets.txt  workspace
Install   Pictures    xfwm4.desktop
main.tf    Public
coder@a2def4dea704:~$ cat pets.txt
Dogcoder@a2def4dea704:~$ cd terraform.labs
coder@a2def4dea704:~/terraform.labs$ 
```



```

Top Azure Courses - Learn A... | C Terraform for absolute beginners | C Terraform for absolute beginners | C Introduction to security frame | +
coursera.org/learn/terraform-for-absolute-beginners/ungradedLab/Ix7b1/terraform-for-absolute-beginners/lab?path=%2F
← → G coursera.org/learn/terraform-for-absolute-beginners/ungradedLab/Ix7b1/terraform-for-absolute-beginners/lab?path=%2F
Fri 27 Jun, 13:51 coder
Applications Terminal - coder@a2def...
File Edit View Terminal Tabs Help Terminal - coder@a2def4dea704: ~/terraform.labs
coder@a2def4dea704:~/terraform.labs$ vi terraform.tfvars
coder@a2def4dea704:~/terraform.labs$ terraform apply
local_file.games: Refreshing state... [id=8e7d820ad9d3323edb541a72da4912148cb9c0c2]

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

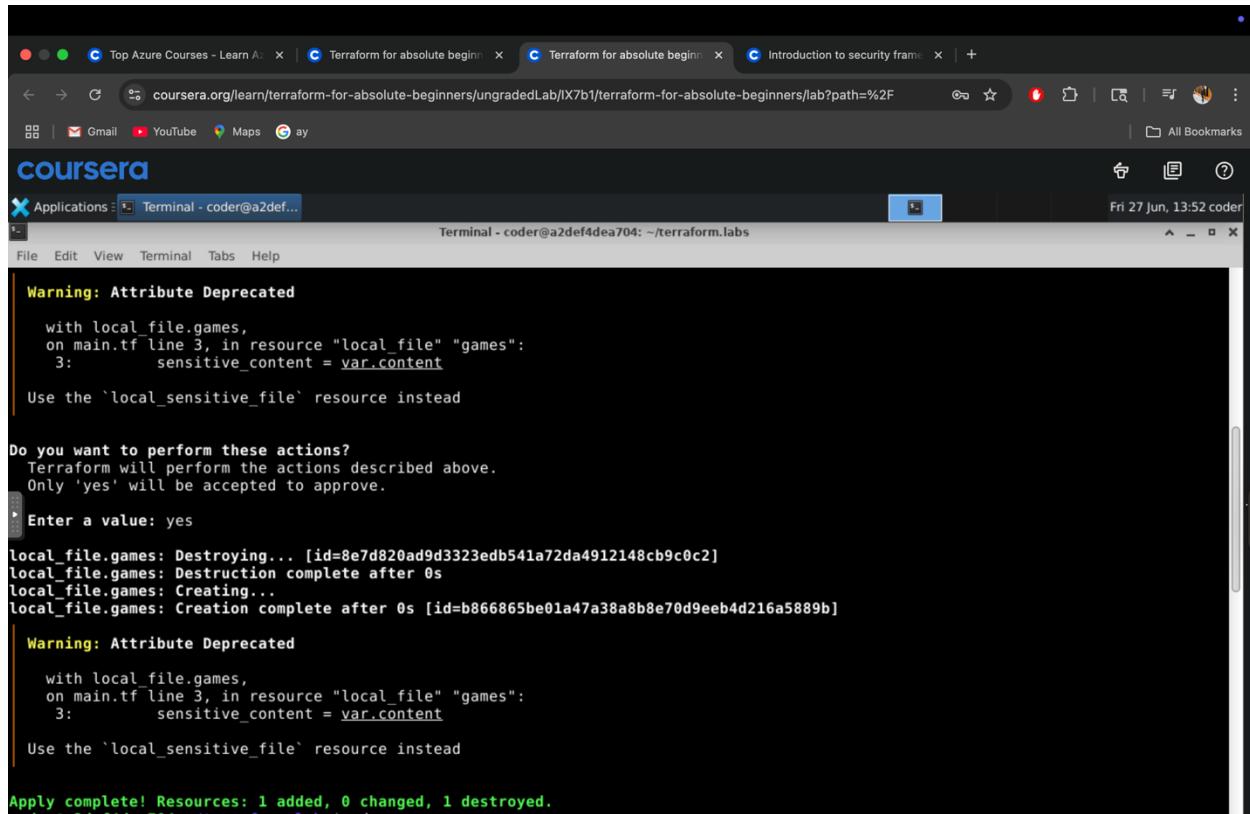
Terraform will perform the following actions:

# local_file.games must be replaced
/+ resource "local_file" "games" {
  - content_base64sha256 = "YcjhatkNTm2jFwgPpEXiYukx078h/U0ws7m0liGsvU=" -> (known after apply)
  - content_base64sha512 = "23kcJnGms/+IJZ5gEv94l1zuuarzv2afb6017bMqCUidNdiASW6sZycCA+Fb2adG7nIMjLpvFMNjGDn10uRueA==" -> (known after apply)
  - content_md5         = "1cc477616bb182e87ec7285bfb8c34b" -> (known after apply)
  - content_shal         = "8e7d820ad9d3323edb541a72da4912148cb9c0c2" -> (known after apply)
  - content_sha256       = "61c8e16ad90d4e6da317180fa445e262e9313bbf21fd4d30b3b9b4425886b2f5" -> (known after apply)
  - content_sha512       = "db791c2671a6b3ff88259e6012ff78975ce69aafb669f6fad35edb32a09489d35d880496eac67270203e15bd9a746ee720c8cba6f14c3631839e5d2e46e78" -> (known after apply)
  - filename             = "/home/coder/test3.txt" -> "/home/coder/pets.txt" # forces replacement
  - id                  = "8e7d820ad9d3323edb541a72da4912148cb9c0c2" -> (known after apply)
  - sensitive_content    = (sensitive value) # forces replacement
  # (2 unchanged attributes hidden)
}

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

Warning: Attribute Deprecated

```



```
Warning: Attribute Deprecated

  with local file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = var.content

  Use the `local_sensitive_file` resource instead

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

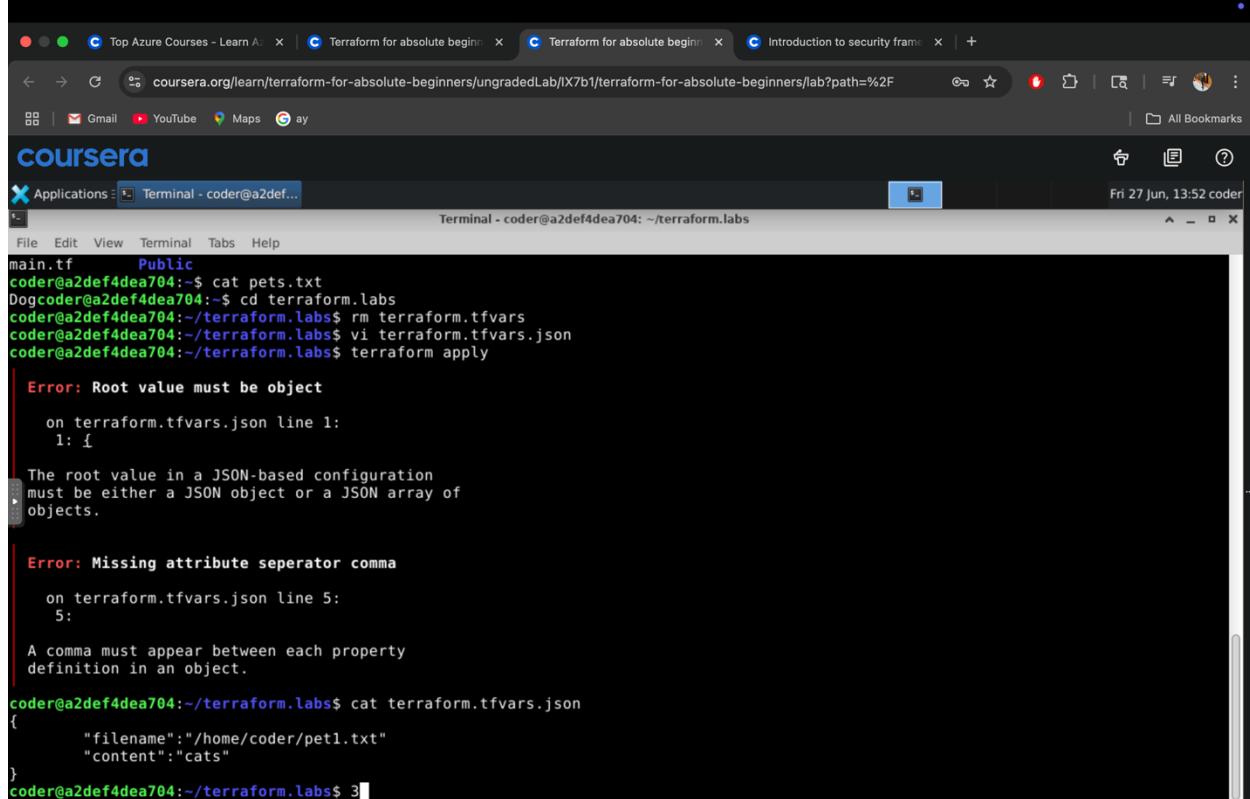
local_file.games: Destroying... [id=8e7d820ad9d3323edb541a72da4912148cb9c0c2]
local_file.games: Destruction complete after 0s
local_file.games: Creating...
local_file.games: Creation complete after 0s [id=b866865be01a47a38a8b8e70d9eeb4d216a5889b]

Warning: Attribute Deprecated

  with local file.games,
  on main.tf line 3, in resource "local_file" "games":
  3:       sensitive_content = var.content

  Use the `local_sensitive_file` resource instead

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

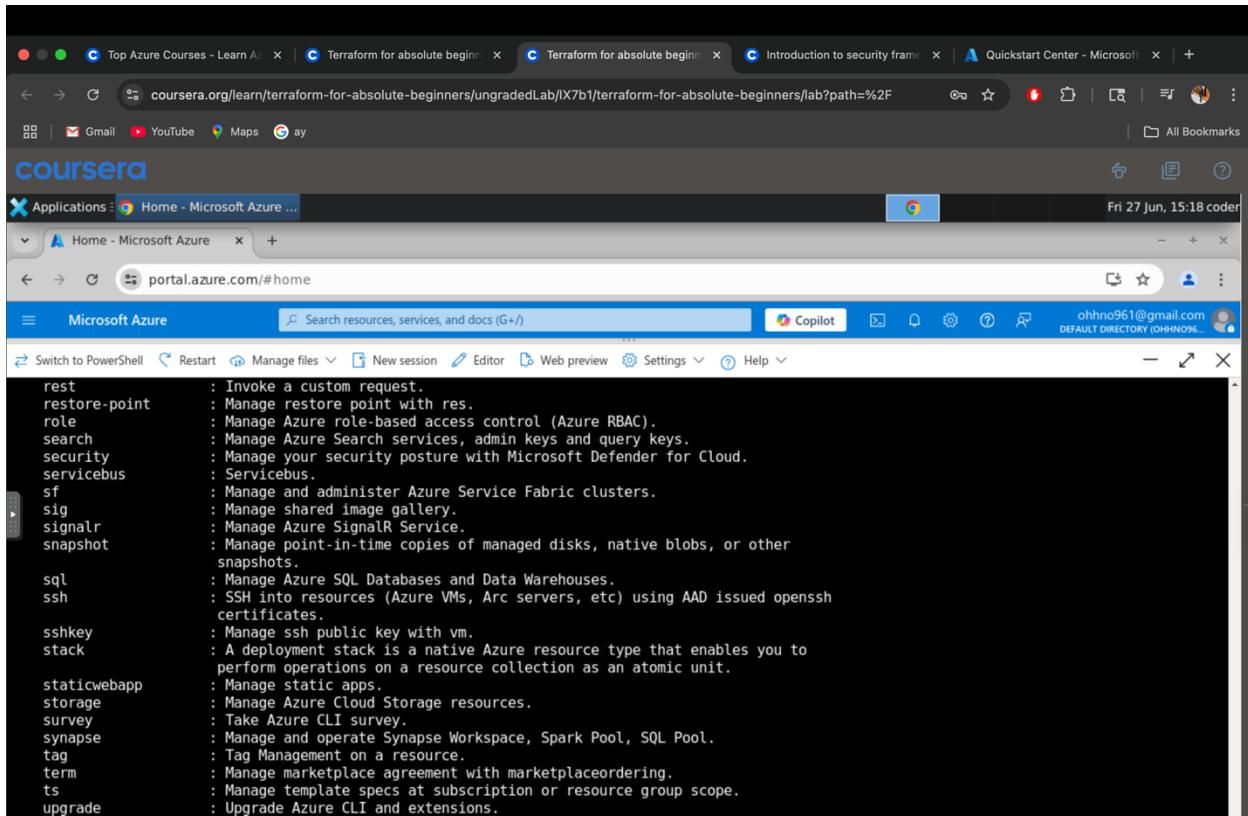


```
main.tf      Public
coder@a2def4dea704:~$ cat pets.txt
Dog
coder@a2def4dea704:~$ cd terraform.labs
coder@a2def4dea704:~/terraform.labs$ rm terraform.tfvars
coder@a2def4dea704:~/terraform.labs$ vi terraform.tfvars.json
coder@a2def4dea704:~/terraform.labs$ terraform apply

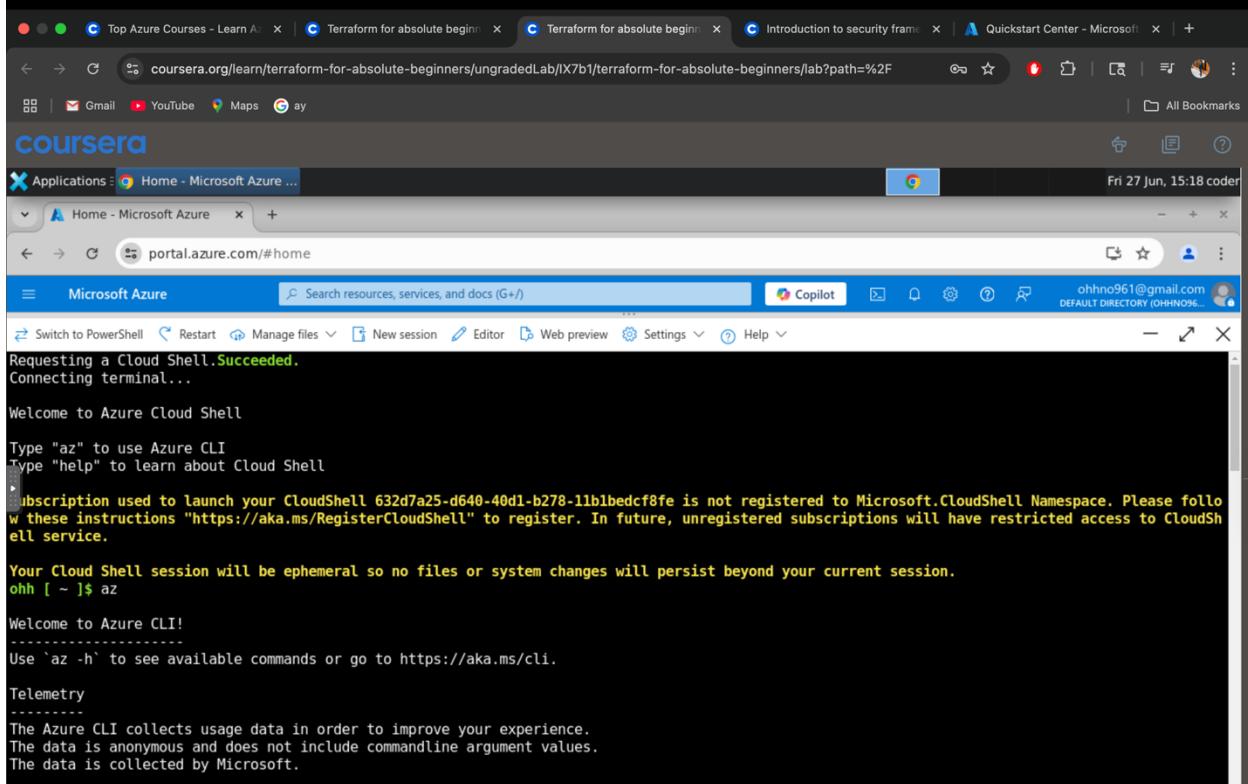
Error: Root value must be object
  on terraform.tfvars.json line 1:
  1: {
The root value in a JSON-based configuration
  must be either a JSON object or a JSON array of
  objects.

Error: Missing attribute separator comma
  on terraform.tfvars.json line 5:
  5:
  A comma must appear between each property
  definition in an object.

coder@a2def4dea704:~/terraform.labs$ cat terraform.tfvars.json
{
  "filename":"/home/coder/pet1.txt"
  "content":"cats"
}
coder@a2def4dea704:~/terraform.labs$ 3
```



```
rest : Invoke a custom request.
restore-point : Manage restore point with res.
role : Manage Azure role-based access control (Azure RBAC).
search : Manage Azure Search services, admin keys and query keys.
security : Manage your security posture with Microsoft Defender for Cloud.
servicebus : Servicebus.
sf : Manage and administer Azure Service Fabric clusters.
sig : Manage shared image gallery.
signalr : Manage Azure SignalR Service.
snapshot : Manage point-in-time copies of managed disks, native blobs, or other snapshots.
sql : Manage Azure SQL Databases and Data Warehouses.
ssh : SSH into resources (Azure VMs, Arc servers, etc) using AAD issued openssh certificates.
sshkey : Manage ssh public key with vm.
stack : A deployment stack is a native Azure resource type that enables you to perform operations on a resource collection as an atomic unit.
staticwebapp : Manage static apps.
storage : Manage Azure Cloud Storage resources.
survey : Take Azure CLI survey.
synapse : Manage and operate Synapse Workspace, Spark Pool, SQL Pool.
tag : Tag Management on a resource.
term : Manage marketplace agreement with marketplaceordering.
ts : Manage template specs at subscription or resource group scope.
upgrade : Upgrade Azure CLI and extensions.
```



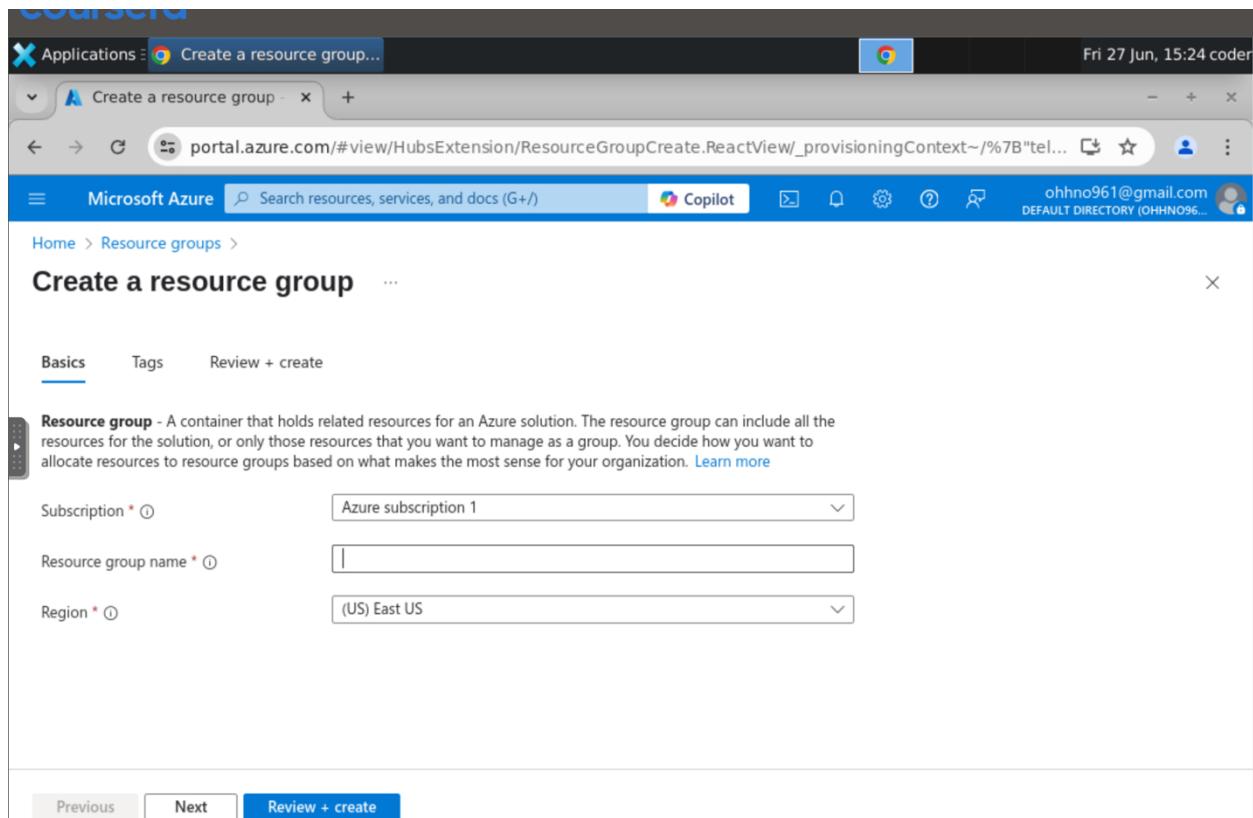
```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...
Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell
Subscription used to launch your CloudShell 632d7a25-d640-40d1-b278-11b1bedcf8fe is not registered to Microsoft.CloudShell Namespace. Please follow these instructions "https://aka.ms/RegisterCloudShell" to register. In future, unregistered subscriptions will have restricted access to CloudShell service.

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
ohh [ ~ ]$ az

Welcome to Azure CLI!
-----
Use `az -h` to see available commands or go to https://aka.ms/cli.

Telemetry
-----
The Azure CLI collects usage data in order to improve your experience.
The data is anonymous and does not include commandline argument values.
The data is collected by Microsoft.
```



**Create a resource group**

Basics Tags Review + create

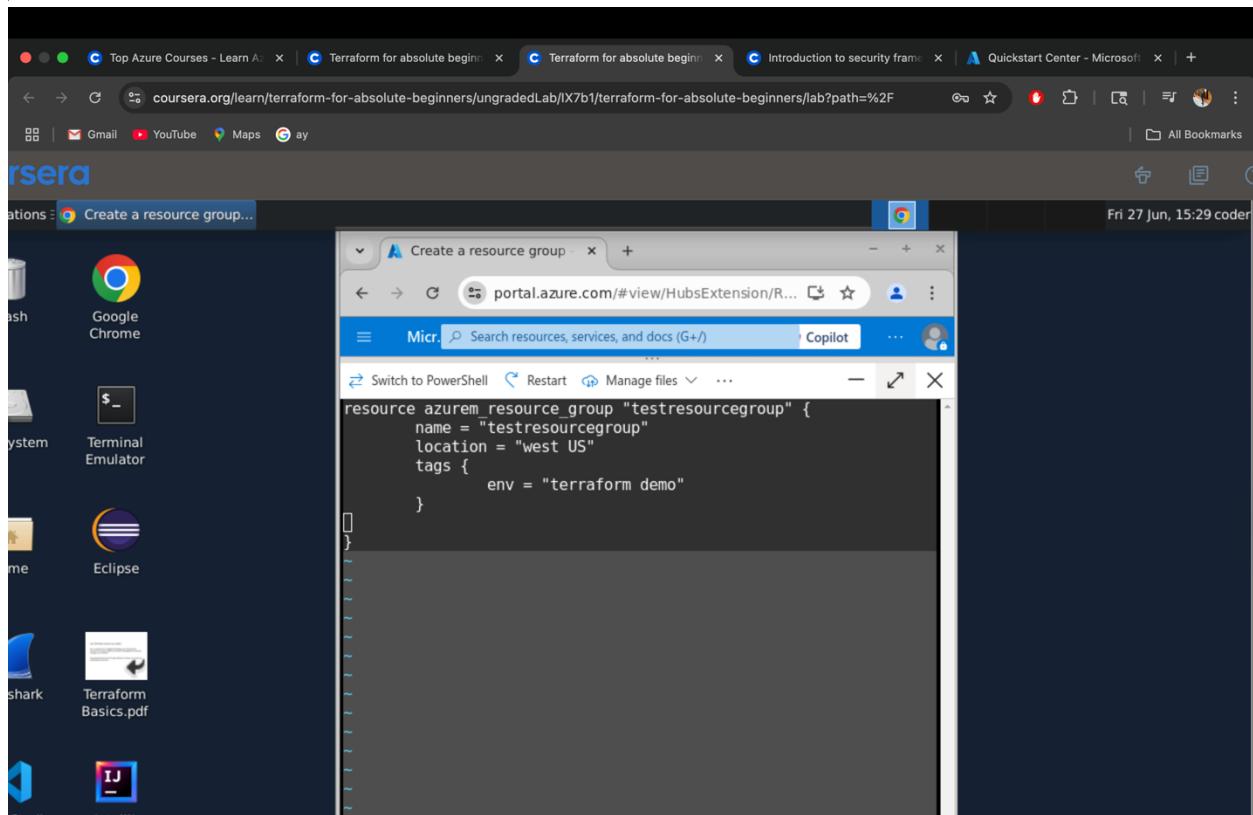
**Resource group** - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

Subscription \*

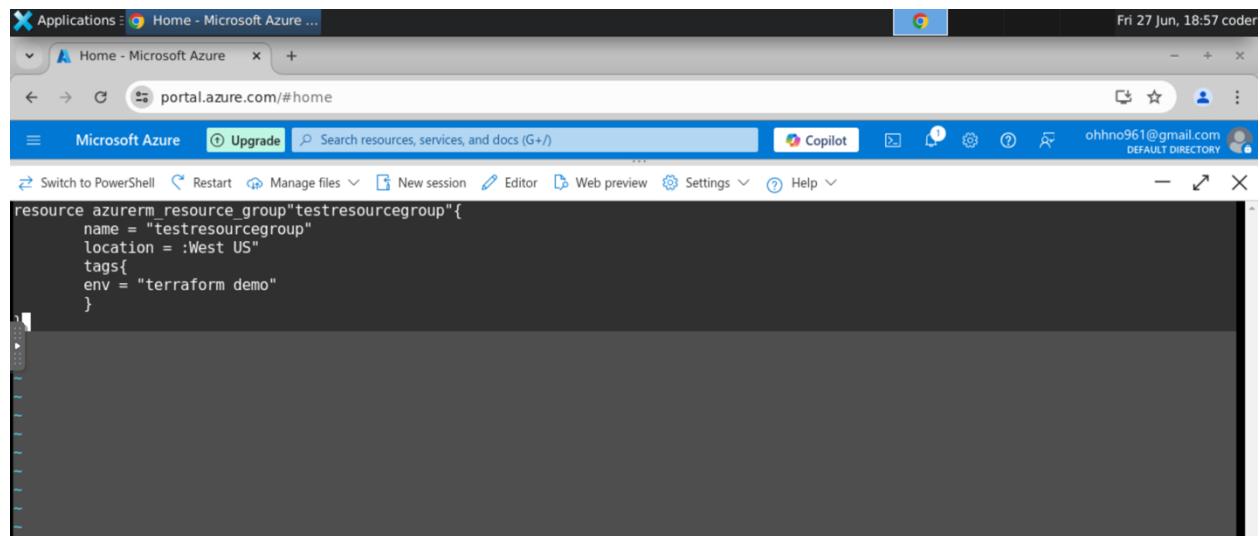
Resource group name \*

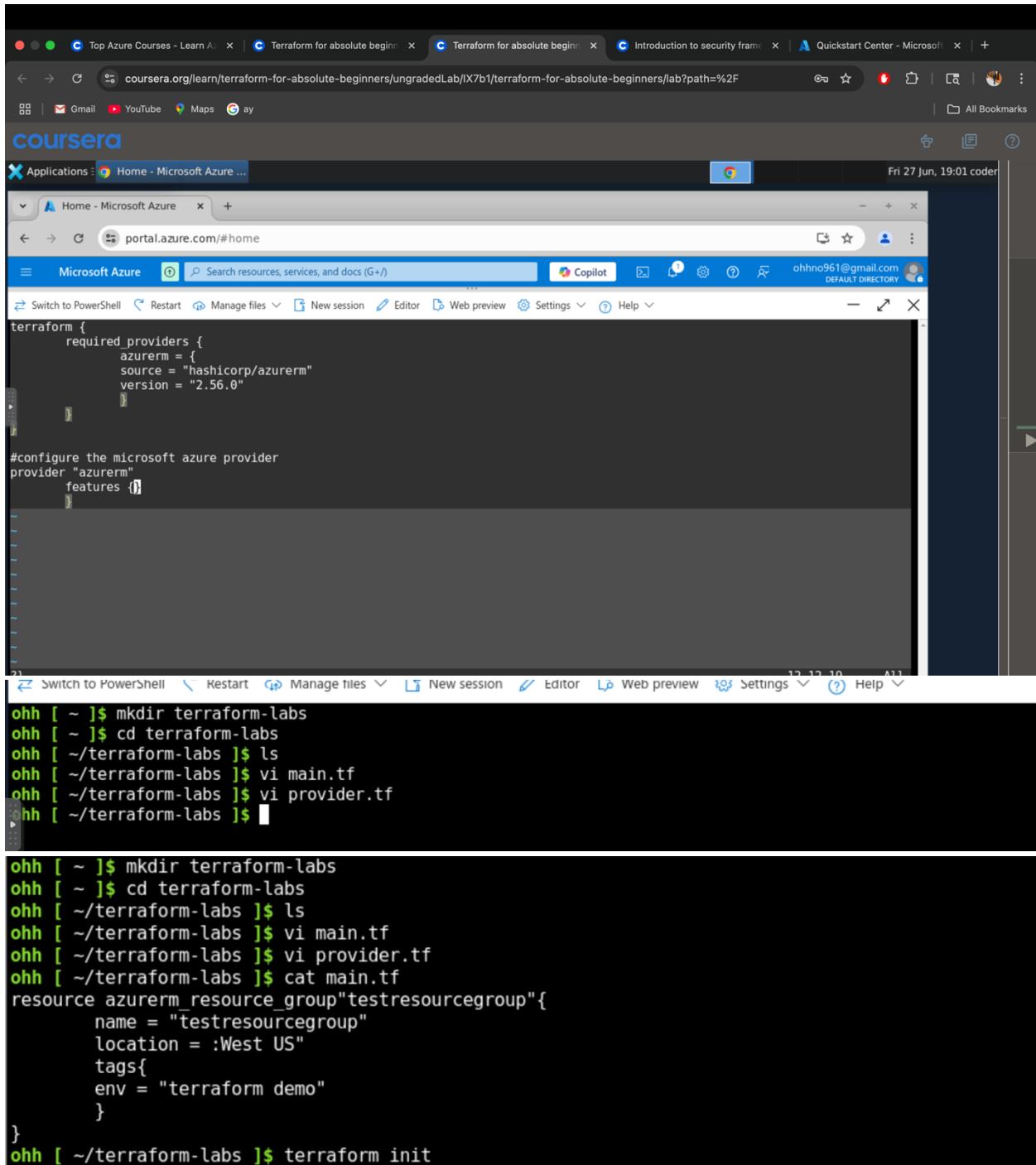
Region \*

Previous



```
resource azurerm_resource_group "testresourcegroup" {
  name = "testresourcegroup"
  location = "west US"
  tags {
    env = "terraform demo"
  }
}
```





```
terraform {
  required_providers {
    azurerm = {
      source = "hashicorp/azurerm"
      version = "2.56.0"
    }
  }

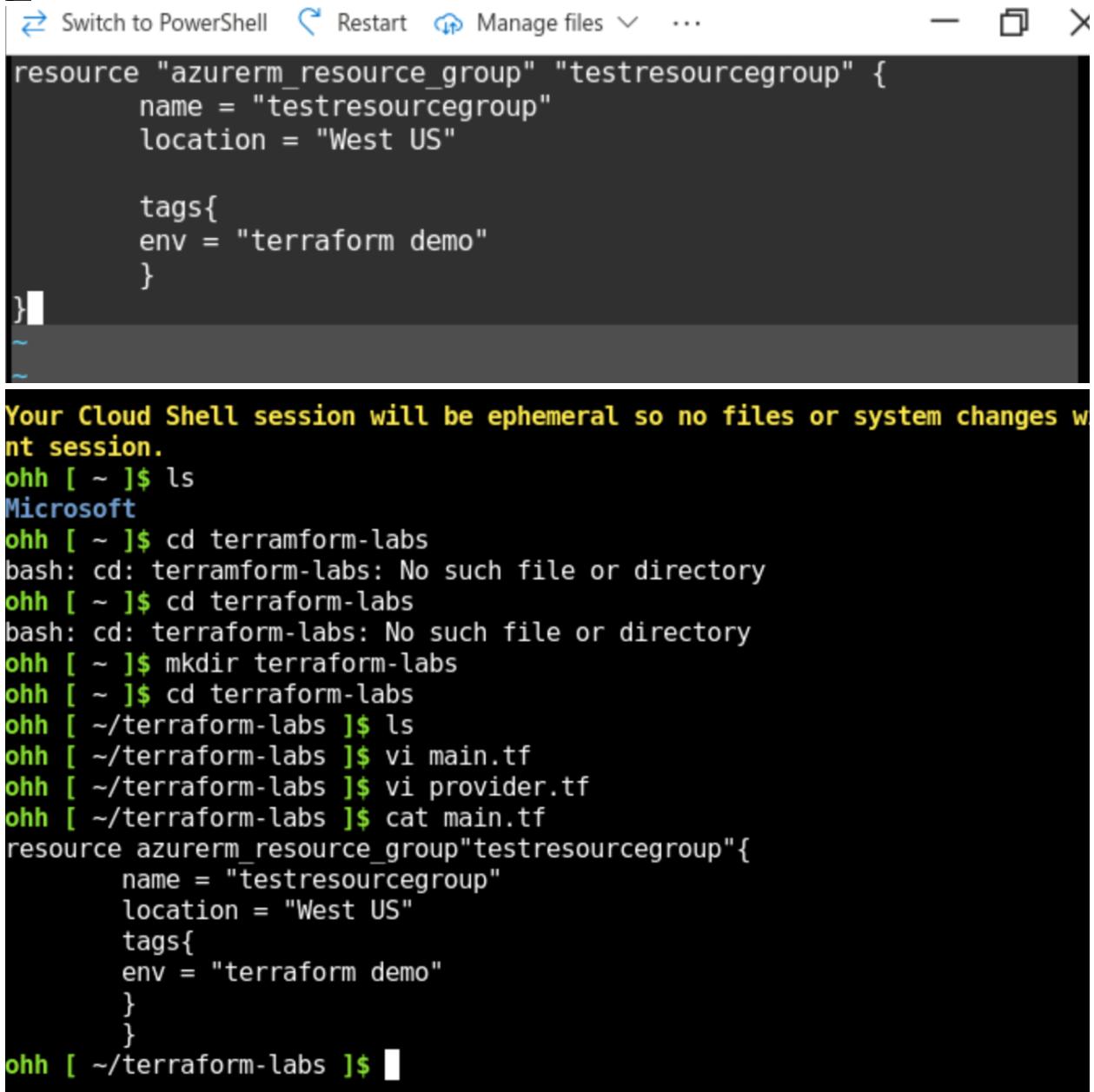
  #configure the microsoft azure provider
  provider "azurerm" {
    features {}
  }
}

ohh [ ~ ]$ mkdir terraform-labs
ohh [ ~ ]$ cd terraform-labs
ohh [ ~/terraform-labs ]$ ls
ohh [ ~/terraform-labs ]$ vi main.tf
ohh [ ~/terraform-labs ]$ vi provider.tf
ohh [ ~/terraform-labs ]$ 

ohh [ ~ ]$ mkdir terraform-labs
ohh [ ~ ]$ cd terraform-labs
ohh [ ~/terraform-labs ]$ ls
ohh [ ~/terraform-labs ]$ vi main.tf
ohh [ ~/terraform-labs ]$ vi provider.tf
ohh [ ~/terraform-labs ]$ cat main.tf
resource azurerm_resource_group "testresourcegroup" {
  name = "testresourcegroup"
  location = :West US"
  tags{
    env = "terraform demo"
  }
}
ohh [ ~/terraform-labs ]$ terraform init
```

## ◆ Step 8: Updating Resources via Configuration Changes

Modified the resource configuration to simulate a real-world change (e.g., resizing a VM or changing tags). Observed how Terraform updates only the necessary parts of the infrastructure.



```
resource "azurerm_resource_group" "testresourcegroup" {
    name = "testresourcegroup"
    location = "West US"

    tags{
        env = "terraform demo"
    }
}

Your Cloud Shell session will be ephemeral so no files or system changes will be persistent across sessions.
ohh [ ~ ]$ ls
Microsoft
ohh [ ~ ]$ cd terramform-labs
bash: cd: terramform-labs: No such file or directory
ohh [ ~ ]$ cd terraform-labs
bash: cd: terraform-labs: No such file or directory
ohh [ ~ ]$ mkdir terraform-labs
ohh [ ~ ]$ cd terraform-labs
ohh [ ~/terraform-labs ]$ ls
ohh [ ~/terraform-labs ]$ vi main.tf
ohh [ ~/terraform-labs ]$ vi provider.tf
ohh [ ~/terraform-labs ]$ cat main.tf
resource azurerm_resource_group "testresourcegroup"{
    name = "testresourcegroup"
    location = "West US"
    tags{
        env = "terraform demo"
    }
}
ohh [ ~/terraform-labs ]$
```

Microsoft Azure   [Upgrade](#) [Search resources, services, and docs \(G+\)](#)   [Copilot](#)

Switch to PowerShell   [Restart](#)   [Manage files](#)   [New session](#)   [Editor](#)   [Web preview](#)   [Settings](#)

```
ohh [ ~/terraform-labs ]$ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding hashicorp/azurerm versions matching "2.56.0"...
- Installing hashicorp/azurerm v2.56.0...
  Installed hashicorp/azurerm v2.56.0 (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.
ohh [ ~/terraform-labs ]$ $
```

Microsoft Azure   [Upgrade](#) [Search resources, services, and docs \(G+\)](#)   [Copilot](#)

Switch to PowerShell   [Restart](#)   [Manage files](#)   [New session](#)   [Editor](#)   [Web preview](#)   [Settings](#)

```
ohh [ ~/terraform-labs ]$ terraform plan
Error: Unsupported block type

  on main.tf line 4, in resource "azurerm_resource_group" "testresourcegroup":
  4:   tags{

Blocks of type "tags" are not expected here. Did you mean to define argument "tags"?
  equals sign to assign it a value.

ohh [ ~/terraform-labs ]$
```

```
ohh [ ~/terraform-labs ]$ terraform plan

Error: Unsupported block type

  on main.tf line 4, in resource "azurerm_resource_group" "testresourcegroup":
  4:       tags{



Blocks of type "tags" are not expected here. Did you mean to define argument "tags"? An equals sign to assign it a value.

ohh [ ~/terraform-labs ]$ vi main.tf
ohh [ ~/terraform-labs ]$ 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_resource_group.testresourcegroup will be created
+ resource "azurerm_resource_group" "testresourcegroup" {
  + id      = (known after apply)
  + location = "westus"

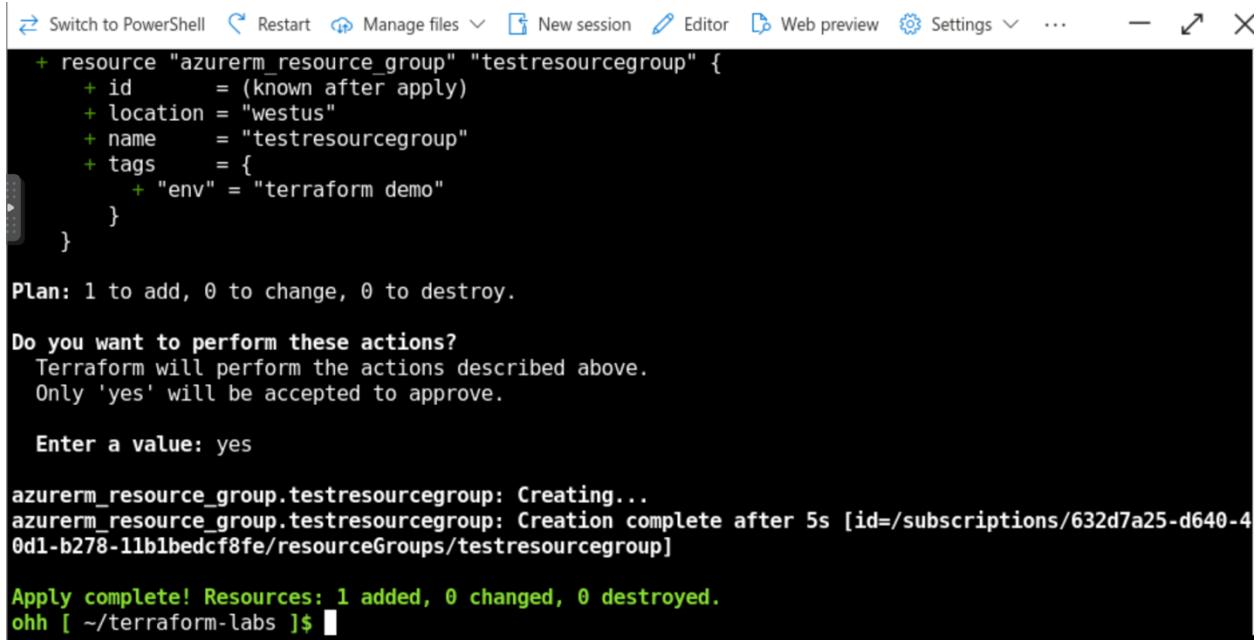
Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
ohh [ ~/terraform-labs ]$ terraform apply

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:

# azurerm_resource_group.testresourcegroup will be created
+ resource "azurerm_resource_group" "testresourcegroup" {
  + id      = (known after apply)
  + location = "westus"
  + name    = "testresourcegroup"
  + tags    = {
    + "env" = "terraform demo"
  }
}

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



```
+ resource "azurerm_resource_group" "testresourcegroup" {
+   id      = (known after apply)
+   location = "westus"
+   name    = "testresourcegroup"
+   tags    = {
+     "env" = "terraform demo"
+   }
}

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.

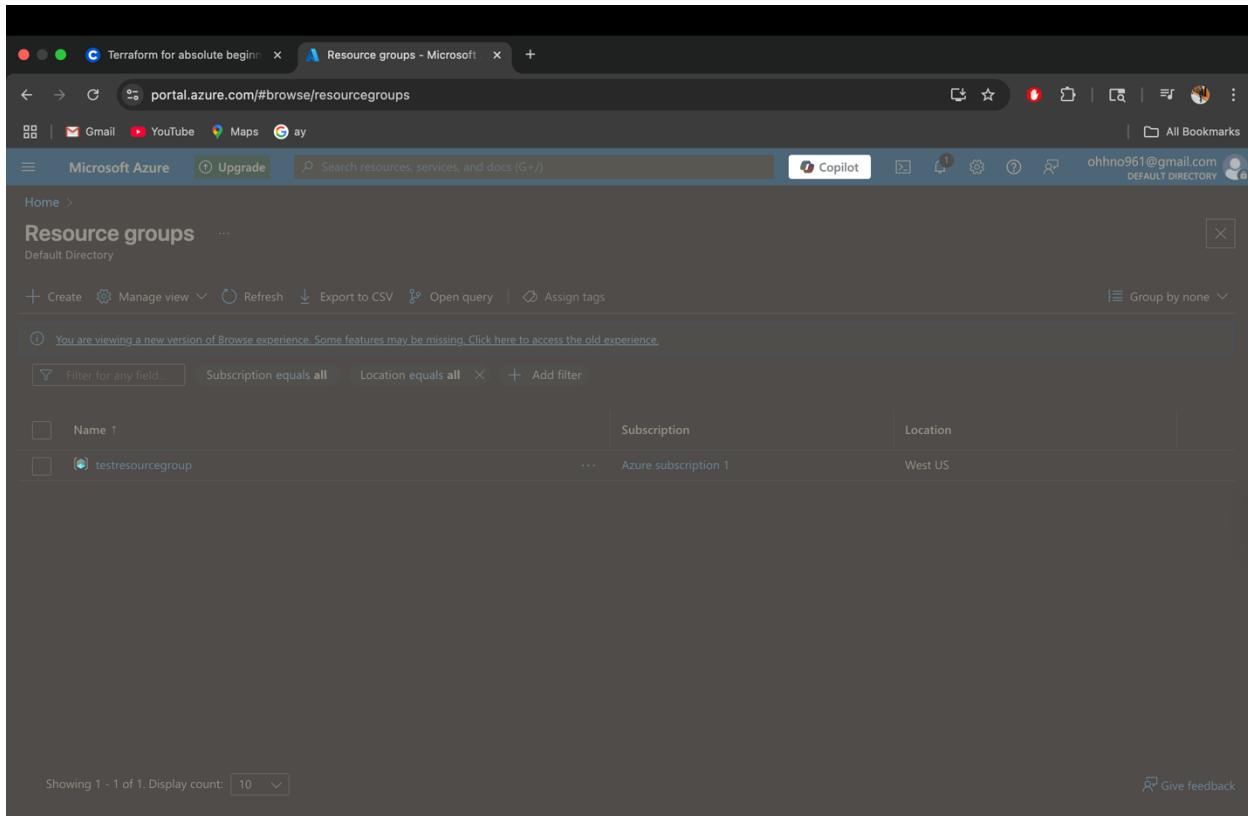
Enter a value: yes

azurerm_resource_group.testresourcegroup: Creating...
azurerm_resource_group.testresourcegroup: Creation complete after 5s [id=/subscriptions/632d7a25-d640-4
0d1-b278-11b1bedcf8fe/resourceGroups/testresourcegroup]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
ohh [ ~/terraform-labs ]$
```

## ◆ Step 9: Deploying to Azure Cloud

Connected Terraform with Azure using provider credentials. Used your `.tf` files to provision a real resource (e.g., a VM or storage account) in the Azure cloud. Verified deployment in Azure Portal.



The screenshot shows the Azure portal interface. The top navigation bar includes 'Terraform for absolute beginners' and 'Resource groups - Microsoft'. The main content area is titled 'Resource groups' and shows a single resource group named 'testresourcegroup'. The group details are as follows:

Name	Subscription	Location
testresourcegroup	Azure subscription 1	West US

At the bottom of the portal, there is a terminal window displaying a command-line session:

```
ohh [ ~/terraform-labs ]$ ls
main.tf  provider.tf  terraform.tfstate
ohh [ ~/terraform-labs ]$ ls -lrt
total 12
-rw-r--r-- 1 ohh ohh 147 Jun 27 19:49 provider.tf
-rw-r--r-- 1 ohh ohh 142 Jun 27 19:53 main.tf
-rw-r--r-- 1 ohh ohh 1013 Jun 27 19:55 terraform.tfstate
ohh [ ~/terraform-labs ]$ ls -lrlta
total 28
-rw-r--r-- 1 ohh ohh 147 Jun 27 19:49 provider.tf
drwxr-xr-x 3 ohh ohh 4096 Jun 27 19:50 .terraform
-rw-r--r-- 1 ohh ohh 1110 Jun 27 19:50 .terraform.lock.hcl
-rw-r--r-- 1 ohh ohh 142 Jun 27 19:53 main.tf
drwxr-xr-x 11 ohh ohh 4096 Jun 27 19:53 ..
-rw-r--r-- 1 ohh ohh 1013 Jun 27 19:55 terraform.tfstate
drwxr-xr-x 3 ohh ohh 4096 Jun 27 19:55 .
ohh [ ~/terraform-labs ]$ 444
```

 **Project Outcome**

Successfully deployed and modified cloud infrastructure using Terraform, proving full execution of the Terraform lifecycle — from writing infrastructure as code to provisioning in a real cloud environment.

---