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Roll no: 32

Sub: Advanced DevOps

Experiment No: 6

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Aim: To Build, change, and destroy AWS /GCP /Microsoft Azure/ DigitalOcean infrastructure Using Terraform.

Steps:

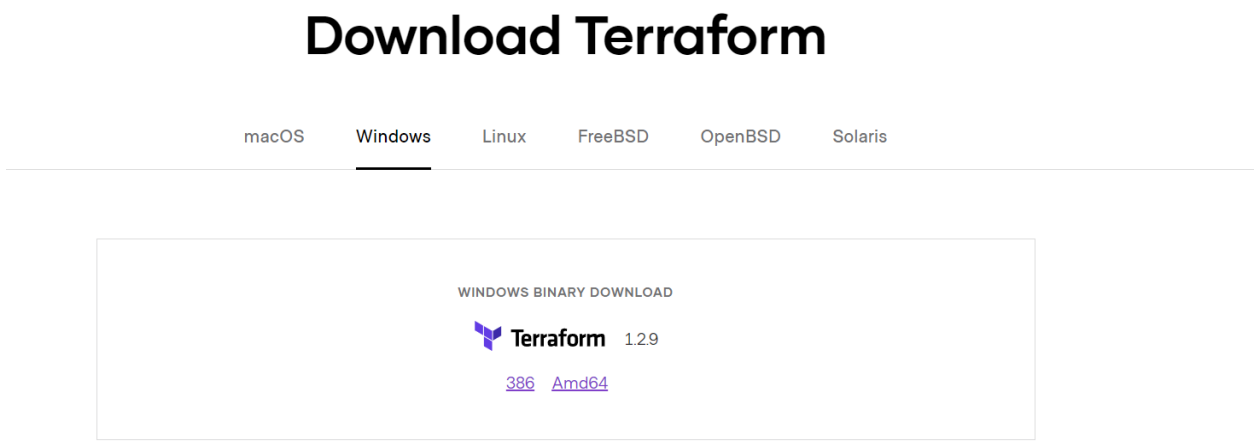
A) Installation and Configuration of Terraform in Windows

Step 1: Download terraform

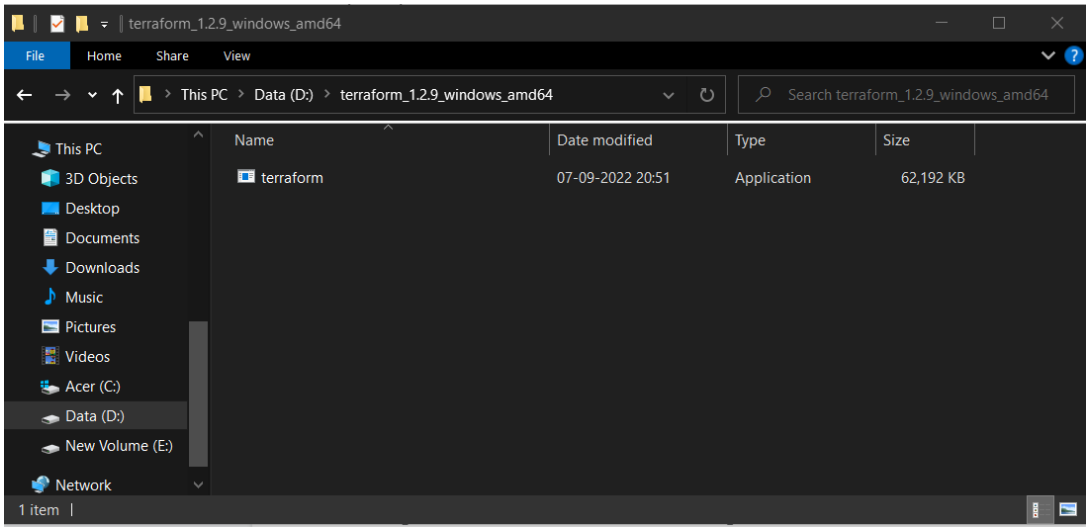
To install Terraform, First Download the Terraform Cli Utility for windows from terraforms official website

website:https://www.terraform.io/downloads.html

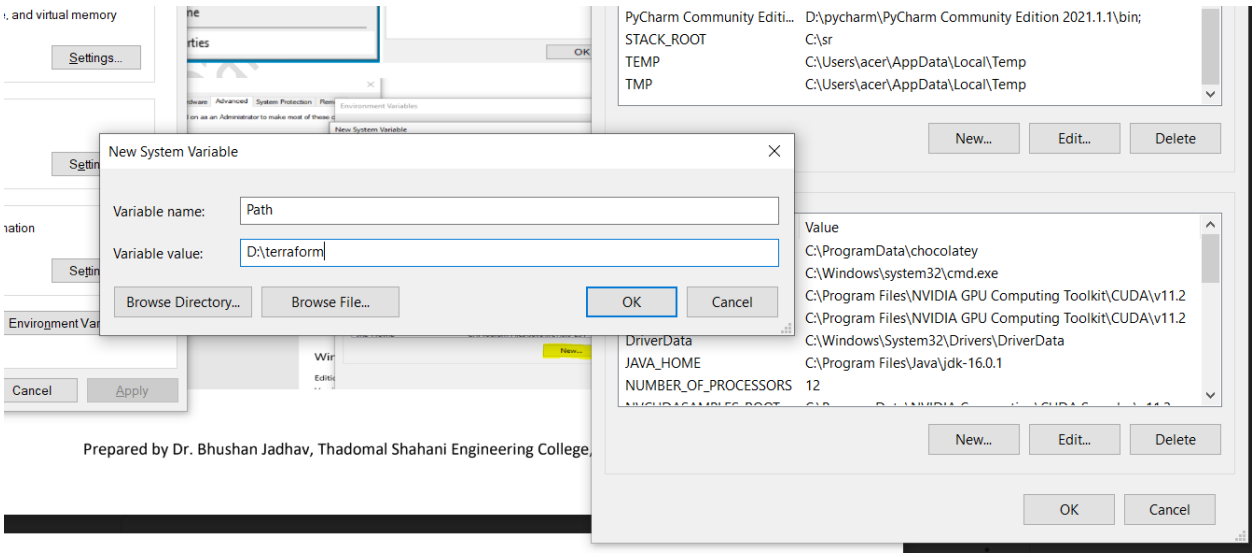
Select the Operating System Windows followed by either 32bit or 64 bit based on your OS type.



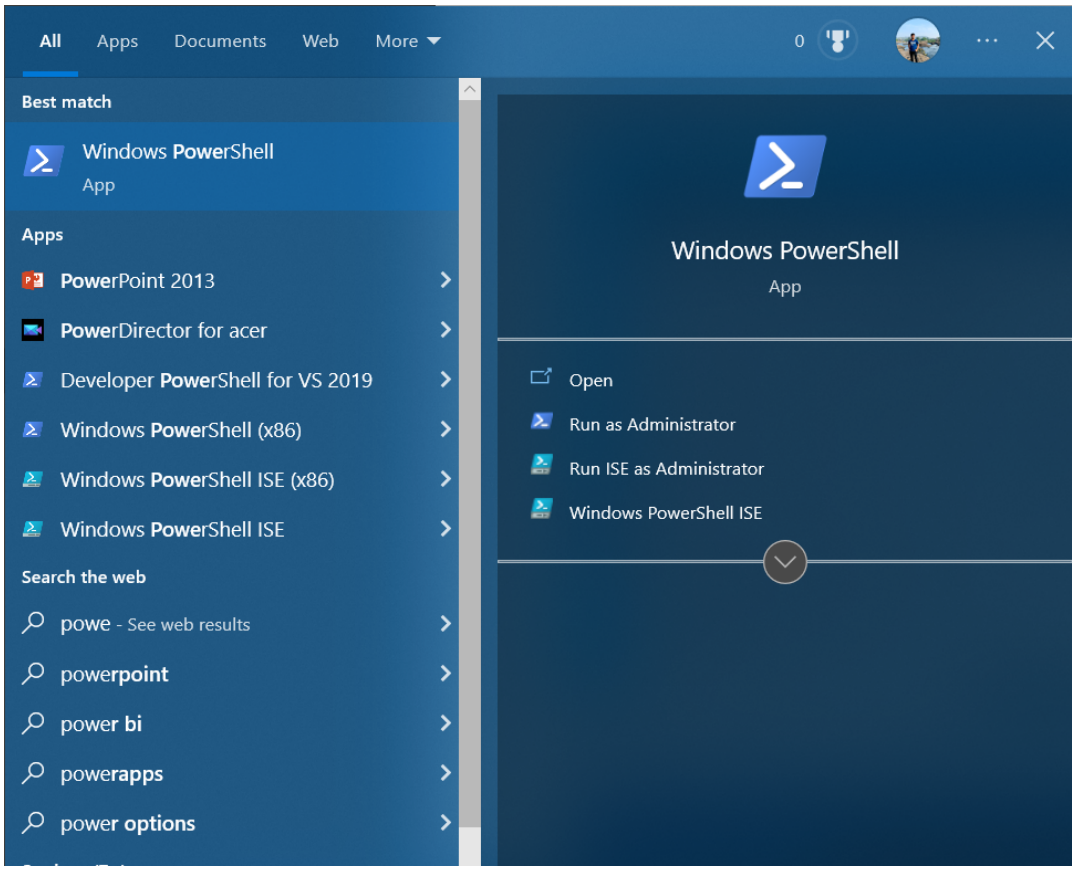
Step 2: Extract the downloaded setup file Terraform.exe in C:\Terraform directory



Step 3: Set the System path for Terraform in Environment Variables.



Step 4: Open PowerShell with Admin Access



Step 5 : Open Terraform in PowerShell and check its functionality

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Windows\system32> terraform
Usage: terraform [global options] <subcommand> [args]

The available commands for execution are listed below.
The primary workflow commands are given first, followed by
less common or more advanced commands.

Main commands:
  init          Prepare your working directory for other commands
  validate      Check whether the configuration is valid
  plan          Show changes required by the current configuration
  apply         Create or update infrastructure
  destroy       Destroy previously-created infrastructure

All other commands:
  console       Try Terraform expressions at an interactive command prompt
  fmt           Reformat your configuration in the standard style
  force-unlock  Release a stuck lock on the current workspace
  get           Install or upgrade remote Terraform modules
  graph         Generate a Graphviz graph of the steps in an operation
  import        Associate existing infrastructure with a Terraform resource
  login         Obtain and save credentials for a remote host
  logout        Remove locally-stored credentials for a remote host
  output        Show output values from your root module
  providers     Show the providers required for this configuration
  refresh       Update the state to match remote systems
  show          Show the current state or a saved plan
  state         Advanced state management
  taint         Mark a resource instance as not fully functional
  test          Experimental support for module integration testing
  untaint       Remove the 'tainted' state from a resource instance
  version       Show the current Terraform version
  workspace     Workspace management

Global options (use these before the subcommand, if any):
  -chdir=DIR    Switch to a different working directory before executing the
                given subcommand.
  -help         Show this help output, or the help for a specified subcommand.
  -version      An alias for the "version" subcommand.
PS C:\Windows\system32>
```

Note: If any error comes, then please recheck or set the path of Terraform in Environment variable again.

B)Creating S3 Bucket using terraform

Prerequisite:

1) Download and Install Docker Desktop from https://www.docker.com/products/docker-desktop

Step 1: Check the docker functionality

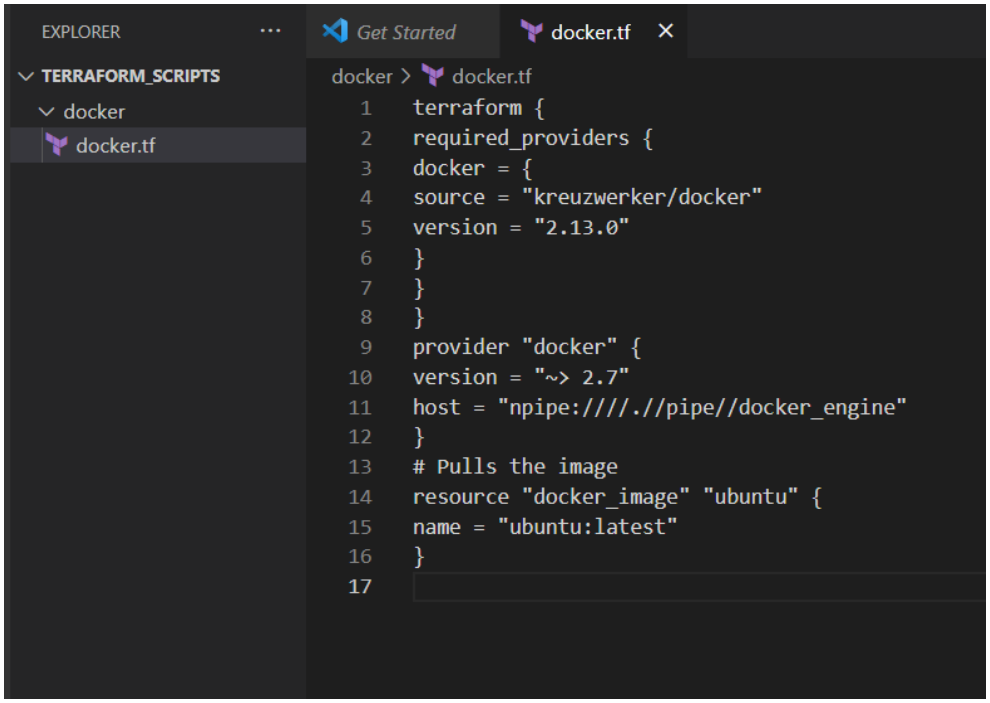
```
Command Prompt
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

C:\Users\acer>docker

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Options:
      --config string      Location of client config files (default
                           "C:\\Users\\acer\\.docker")
  -c, --context string     Name of the context to use to connect to the
                           daemon (overrides DOCKER_HOST env var and
                           default context set with "docker context use")
  -D, --debug              Enable debug mode
  -H, --host list          Daemon socket(s) to connect to
  -l, --log-level string   Set the logging level
                           ("debug"|"info"|"warn"|"error"|"fatal")
                           (default "info")
      --tls                Use TLS; implied by --tlsverify
      --tlscacert string   Trust certs signed only by this CA (default
                           "C:\\Users\\acer\\.docker\\ca.pem")
      --tlscert string     Path to TLS certificate file (default
                           "C:\\Users\\acer\\.docker\\cert.pem")
      --tlskey string      Path to TLS key file (default
                           "C:\\Users\\acer\\.docker\\key.pem")
      --tlsverify          Use TLS and verify the remote
  -v, --version            Print version information and quit
```

```
C:\Users\acer>docker --version
Docker version 20.10.17, build 100c701

C:\Users\acer>
```

Step 2: Write a terraform script to create a Ubuntu Linux container

```
Script: docker.tf
**************************************************************
terraform {
required_providers {
docker = {
source = "kreuzwerker/docker"
version = "2.13.0"
}
}
}
provider "docker" {
version = "~> 2.7"
host = "npipe:////.//pipe//docker_engine"
}
# Pulls the image
resource "docker_image" "ubuntu" {
name = "ubuntu:latest"
}
**************************************************************
```

Save the file in a new directory called docker where rest of the terraform scripts are stored



Step 3: Open Command Prompt and go to Terraform_Scripts\docker directory where our .tf file is stored

Step 4: Execute Terraform Init command to initialize the resources

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\docker> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding kreuzwerker/docker versions matching "~> 2.7, 2.13.0"...
- Installing kreuzwerker/docker v2.13.0...
- Installed kreuzwerker/docker v2.13.0 (self-signed, key ID 24E54F214569A8A5)

Partner and community providers are signed by their developers.
If you'd like to know more about provider signing, you can read about it here:
https://www.terraform.io/docs/cli/plugins/signing.html

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.


  Warning: Version constraints inside provider configuration blocks are deprecated

    on docker.tf line 10, in provider "docker":
    10: version = "~> 2.7"

  Terraform 0.13 and earlier allowed provider version constraints inside the provider configuration block, but that is now deprecated a
  of Terraform. To silence this warning, move the provider version constraint into the required_providers block.


Terraform has been successfully initialized!
```

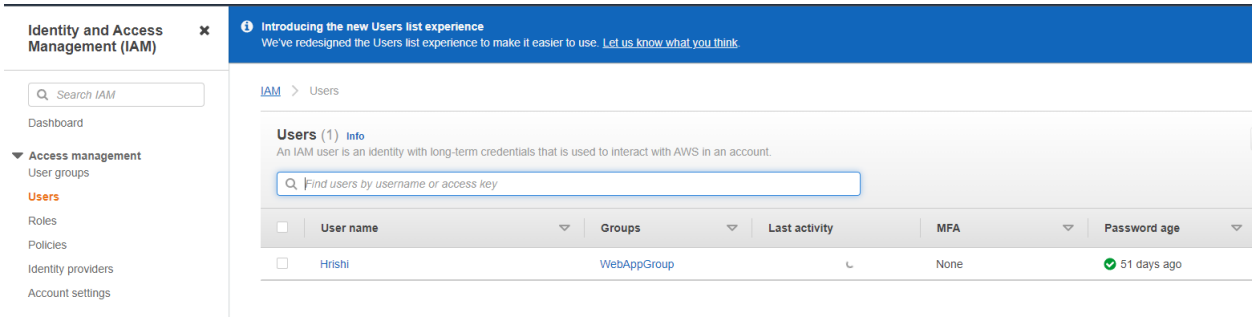
Step 5: Execute Terraform plan to see the available resources

// error

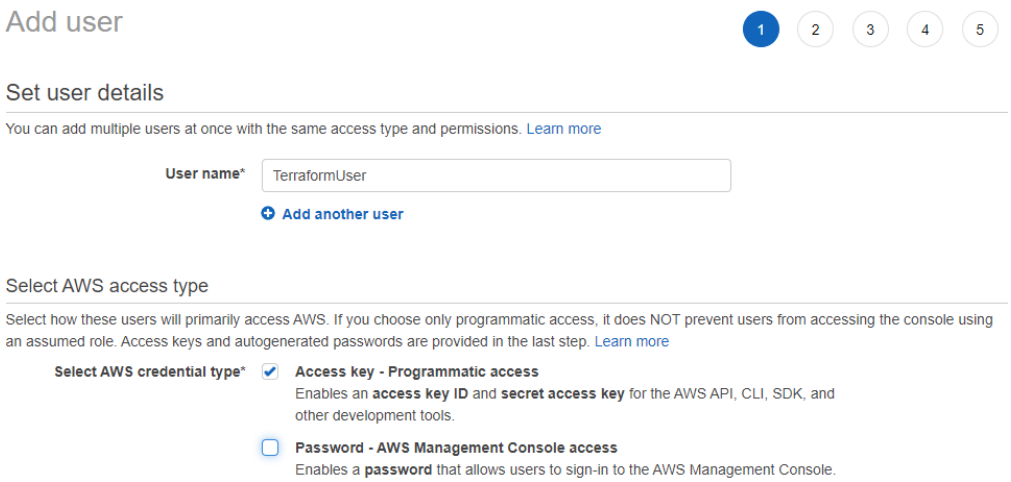
```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\docker> terraform plan

  Warning: Version constraints inside provider configuration blocks are deprecated

    on docker.tf line 10, in provider "docker":
    10: version = "~> 2.7"

  Terraform 0.13 and earlier allowed provider version constraints inside the provider configuration block, but that is now deprecated and will be removed in a future version
  of Terraform. To silence this warning, move the provider version constraint into the required_providers block.


  Error: Error pinging Docker server: error during connect: Get "http://%2F%2F.%2F%2Fpipe%2F%2Fdocker_engine/_ping": open //.//pipe//docker_engine: The system cannot find the
file specified.

    with provider["registry.terraform.io/kreuzwerker/docker"],
    on docker.tf line 9, in provider "docker":
     9: provider "docker" {


PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\docker>
```

Creating an EC2 instance using Terraform:

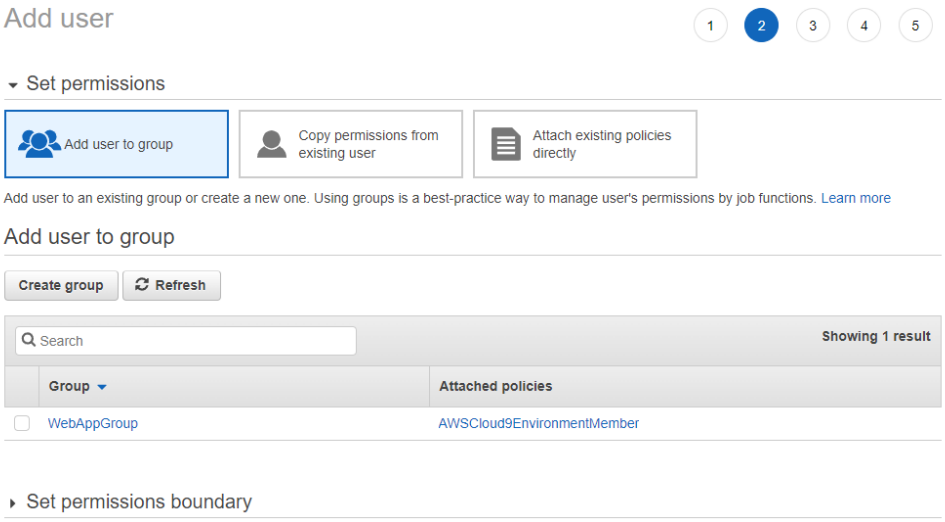
Step1: Create a new IAM user in AWS

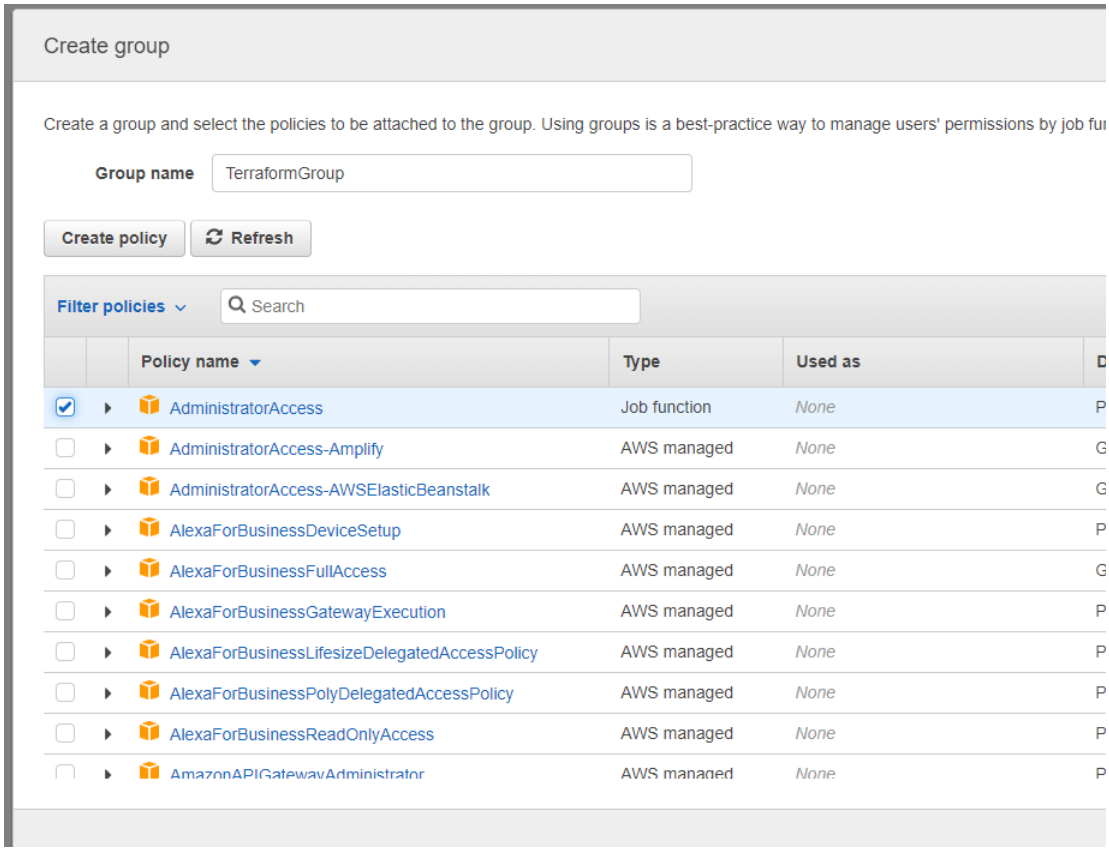


Enter a user name and choose Access Key credential type.



Create a new user group and provide Administrator Access





Add key and value tag:

Add user

1 2 3 4 5

Add tags (optional)

IAM tags are key-value pairs you can add to your user. Tags can include user information, such as an email address, or can be descriptive, such as a job title. You can use the tags to organize, track, or control access for this user. Learn more

Key	Value (optional)	Remove
TerraformUserKey	TerraformUserValue	✖
Add new key		

You can add 49 more tags.

Review changes and create the user.

Add user

1 2 3 4 5

Review

Review your choices. After you create the user, you can view and download the autogenerated password and access key.

User details

User name	TerraformUser
AWS access type	Programmatic access - with an access key
Permissions boundary	Permissions boundary is not set

Permissions summary

The user shown above will be added to the following groups.

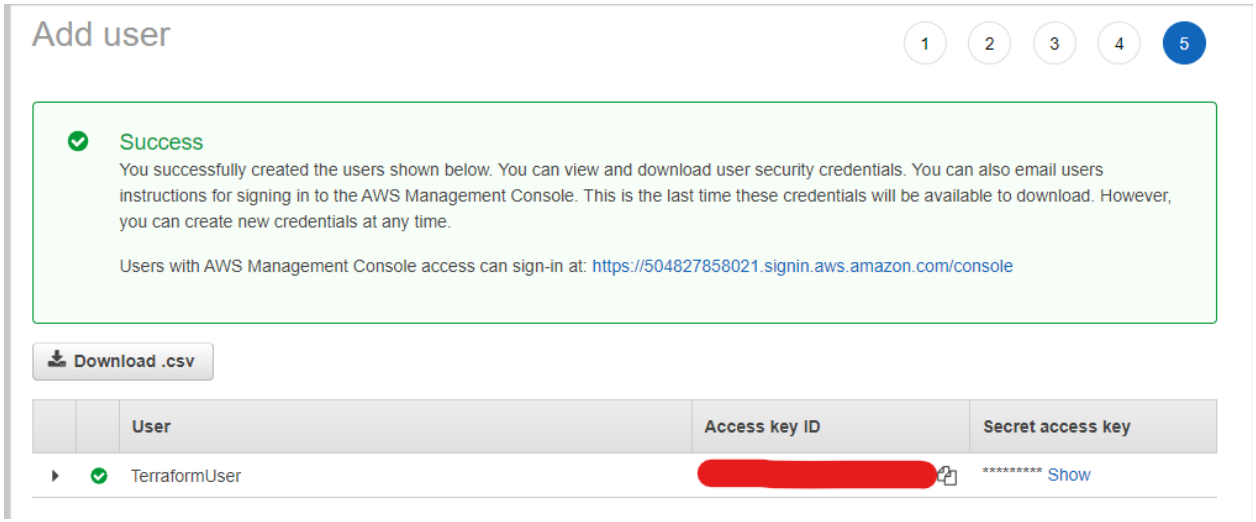
Type	Name
Group	TerraformGroup

Tags

The new user will receive the following tag

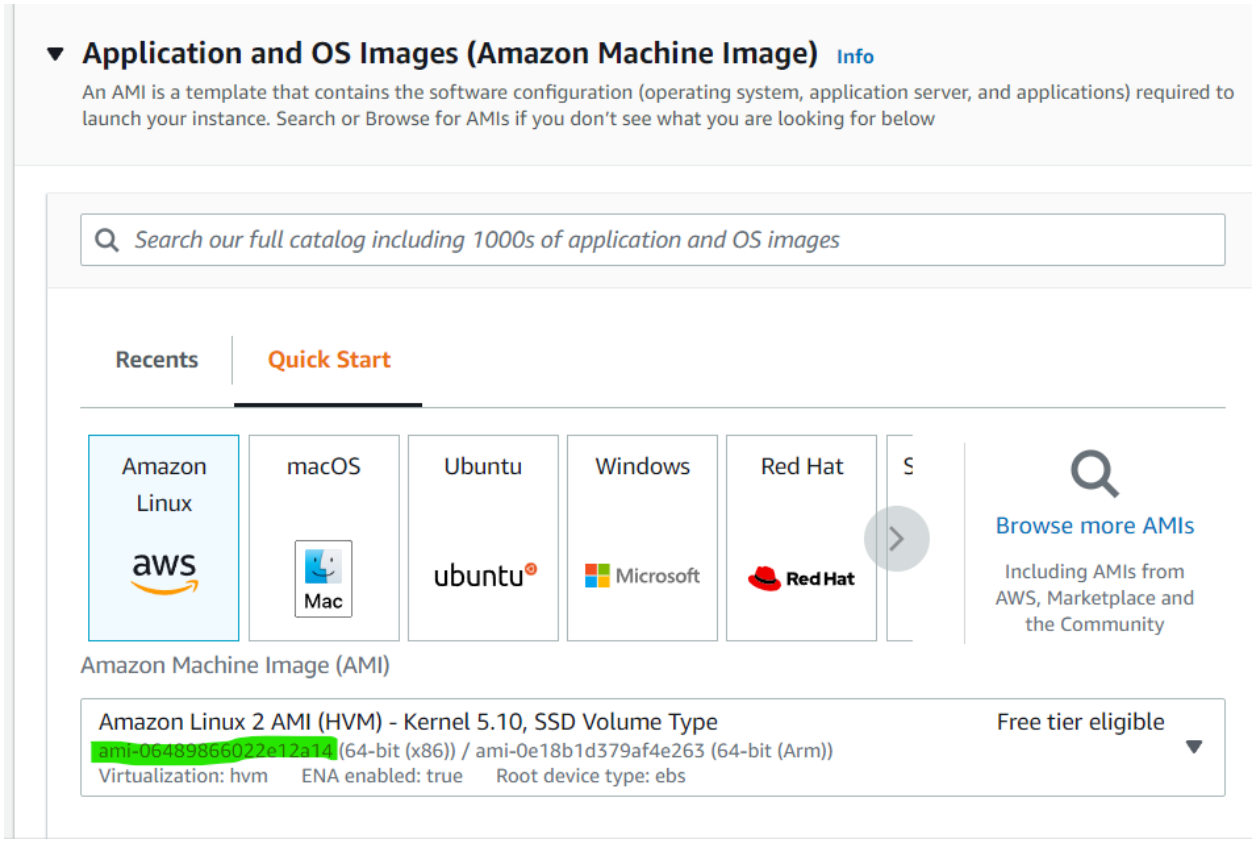
Key	Value
TerraformUserKey	TerraformUserValue

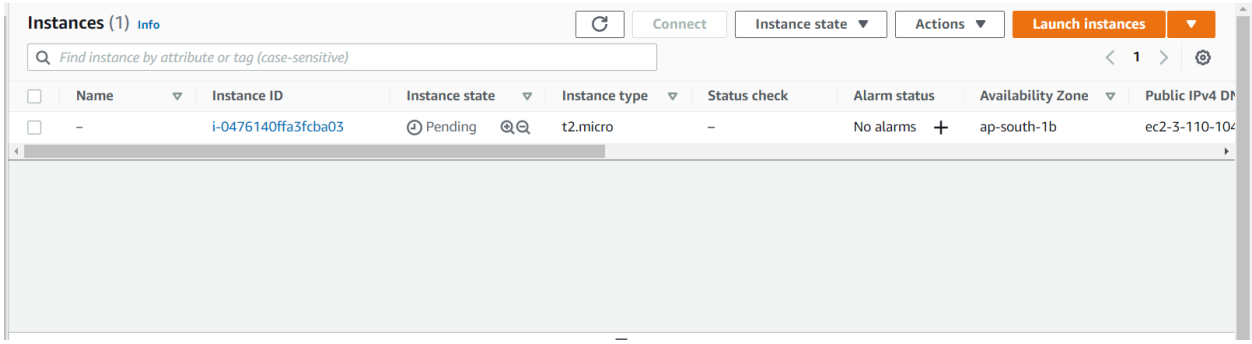
Copy the Access Key ID and Secret Key and save them in a Notepad.



Step2: Create a new folder and create a new .tf file in which we'll have the script

First Create an EC2 instance on AWS:

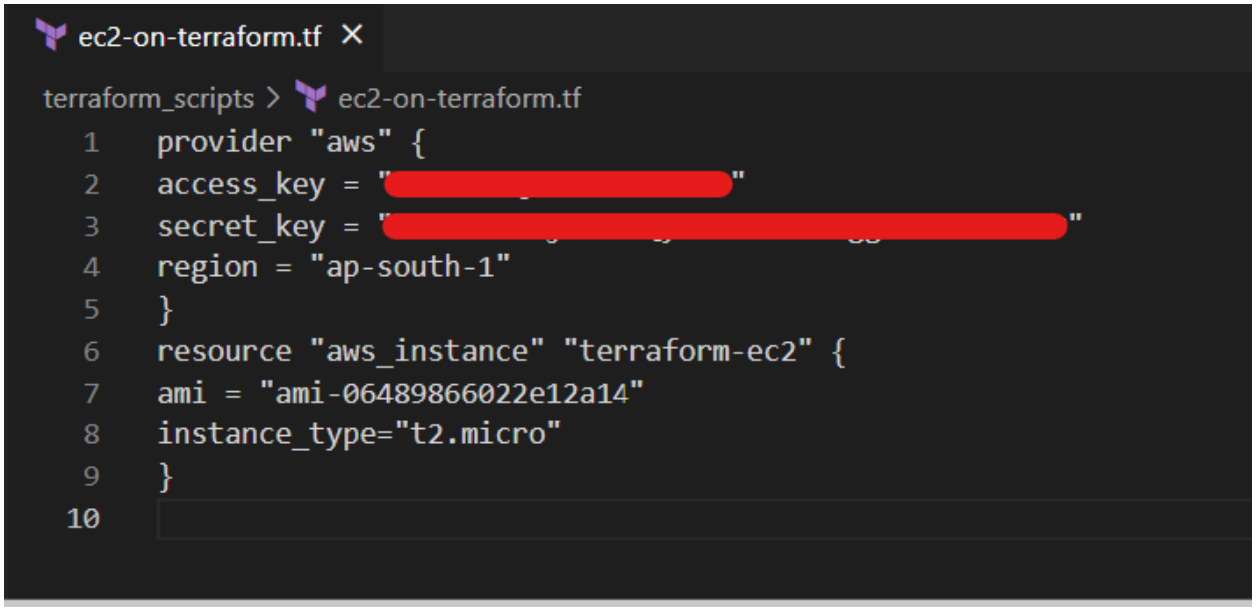




Create a new folder and create a new .tf file in which we'll have the script.

mkdir terraform_scripts
gedit ec2-on-terraform.tf

```
provider "aws" {
access_key = "<Key>"
secret_key = "<Key>"
region = "ap-south-1"
}
resource "aws_instance" "terraform-ec2" {
ami = "<ami-code>"
instance_type="t2.micro"
}
```



Step3: Perform Terraform Commands to initialize backend and then apply your scripts to start an EC2 instance.

```
terraform init
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v4.30.0...
- Installed hashicorp/aws v4.30.0 (signed by HashiCorp)

Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts>
```

```
terraform plan
```

```
PROBLEMS    OUTPUT    TERMINAL    JUPYTER    DEBUG CONSOLE

PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts> 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:

  # aws_instance.terraform-ec2 will be created
  + resource "aws_instance" "terraform-ec2" {
      + ami                                  = "ami-06489866022e12a14"
      + arn                                  = (known after apply)
      + associate_public_ip_address          = (known after apply)
      + availability_zone                    = (known after apply)
      + cpu_core_count                       = (known after apply)
      + cpu_threads_per_core                 = (known after apply)
      + disable_api_stop                     = (known after apply)
      + disable_api_termination              = (known after apply)
      + ebs_optimized                        = (known after apply)
      + get_password_data                    = false
      + host_id                              = (known after apply)
      + host_resource_group_arn              = (known after apply)
      + id                                   = (known after apply)
      + instance_initiated_shutdown_behavior = (known after apply)
      + instance_state                       = (known after apply)
      + instance_type                        = "t2.micro"
      + ipv6_address_count                   = (known after apply)
      + ipv6_addresses                       = (known after apply)
      + key_name                             = (known after apply)
      + monitoring                           = (known after apply)
```

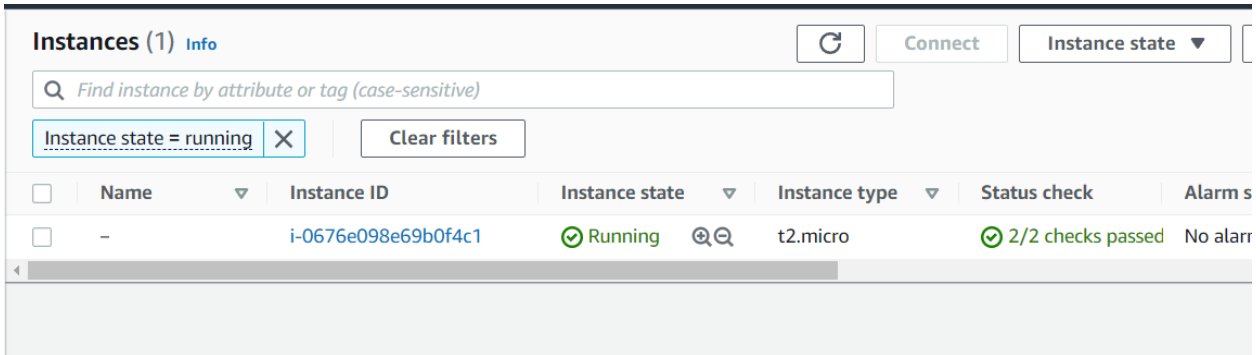
```
terraform apply
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts> terraform apply

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

Terraform will perform the following actions:

  # aws_instance.terraform-ec2 will be created
  + resource "aws_instance" "terraform-ec2" {
      + ami                                  = "ami-06489866022e12a14"
      + arn                                  = (known after apply)
      + associate_public_ip_address          = (known after apply)
      + availability_zone                    = (known after apply)
      + cpu_core_count                       = (known after apply)
      + cpu_threads_per_core                 = (known after apply)
      + disable_api_stop                     = (known after apply)
      + disable_api_termination              = (known after apply)
      + ebs_optimized                        = (known after apply)
      + get_password_data                    = false
      + host_id                              = (known after apply)
      + host_resource_group_arn              = (known after apply)
      + id                                   = (known after apply)
      + instance_initiated_shutdown_behavior = (known after apply)
      + instance_state                       = (known after apply)
      + instance_type                        = "t2.micro"
      + ipv6_address_count                   = (known after apply)
      + ipv6_addresses                       = (known after apply)
      + key_name                             = (known after apply)
```

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

Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  Enter a value: yes
```

```
aws_instance.terraform-ec2: Creating...
aws_instance.terraform-ec2: Still creating... [10s elapsed]
aws_instance.terraform-ec2: Still creating... [20s elapsed]
aws_instance.terraform-ec2: Still creating... [30s elapsed]
aws_instance.terraform-ec2: Creation complete after 32s [id=i-0676e098e69b0f4c1]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts>
```

Step4:Check if your instance is running in the AWS EC2 console.



Step5: Use the destroy command to terminate the EC2 instance

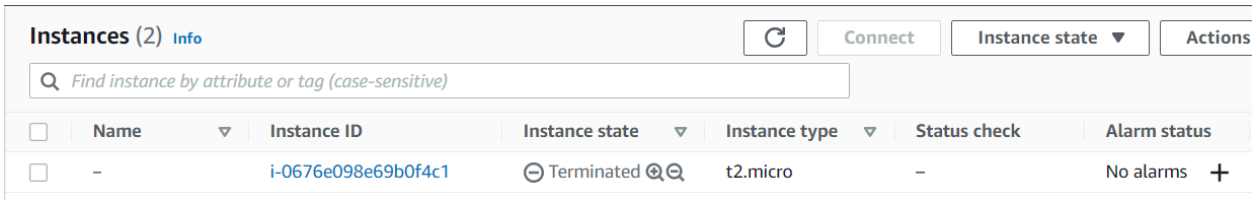
```
terraform destroy
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts> terraform destroy
aws_instance.terraform-ec2: Refreshing state... [id=i-0676e098e69b0f4c1]

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

Terraform will perform the following actions:

  # aws_instance.terraform-ec2 will be destroyed
  - resource "aws_instance" "terraform-ec2" {
      - ami                                  = "ami-06489866022e12a14" -> null
      - arn                                  = "arn:aws:ec2:ap-south-1:504827858021:instance/i-0676e098e69b0f4c1" -> null
      - associate_public_ip_address          = true -> null
      - availability_zone                    = "ap-south-1b" -> null
      - cpu_core_count                       = 1 -> null
      - cpu_threads_per_core                 = 1 -> null
      - disable_api_stop                     = false -> null
      - disable_api_termination              = false -> null
      - ebs_optimized                        = false -> null
      - get_password_data                    = false -> null
      - hibernation                          = false -> null
      - id                                   = "i-0676e098e69b0f4c1" -> null
      - instance_initiated_shutdown_behavior = "stop" -> null
      - instance_state                       = "running" -> null
      - instance_type                        = "t2.micro" -> null
```

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

Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes
```

```
aws_instance.terraform-ec2: Destroying... [id=i-0676e098e69b0f4c1]
aws_instance.terraform-ec2: Still destroying... [id=i-0676e098e69b0f4c1, 10s elapsed]
aws_instance.terraform-ec2: Still destroying... [id=i-0676e098e69b0f4c1, 20s elapsed]
aws_instance.terraform-ec2: Destruction complete after 30s

Destroy complete! Resources: 1 destroyed.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\terraform_scripts>
```

Step6: Check updates back in the Ec2 console. The instance should be terminated.



Creating an S3 Bucket using Terraform

Step1: Create a new directory and two .tf files, provider.tf and s3-on-terraform.tf

provider.tf

```
provider "aws" {
access_key = "<Key>"
secret_key = "<Key>"
region = "ap-south-1"
}
```

```
provider "aws" {
access_key = "[redacted]"
secret_key = "[redacted]"
region = "ap-south-1"
}
```

s3-on-terraform.tf

```
resource "aws_s3_bucket" "hrishi" {
      bucket = "hk-terraform-test-bucket-0001"
      acl = "public-read"
      tags={
      Name = "Hrishi S3 Bucket"
      Environment = "Dev"
      }
}
```

Step2: Perform Terraform commands.

```
terraform init
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\S3BucketTerraform> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v4.30.0...
- Installed hashicorp/aws v4.30.0 (signed by HashiCorp)

Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\S3BucketTerraform>
```

```
terraform plan
```

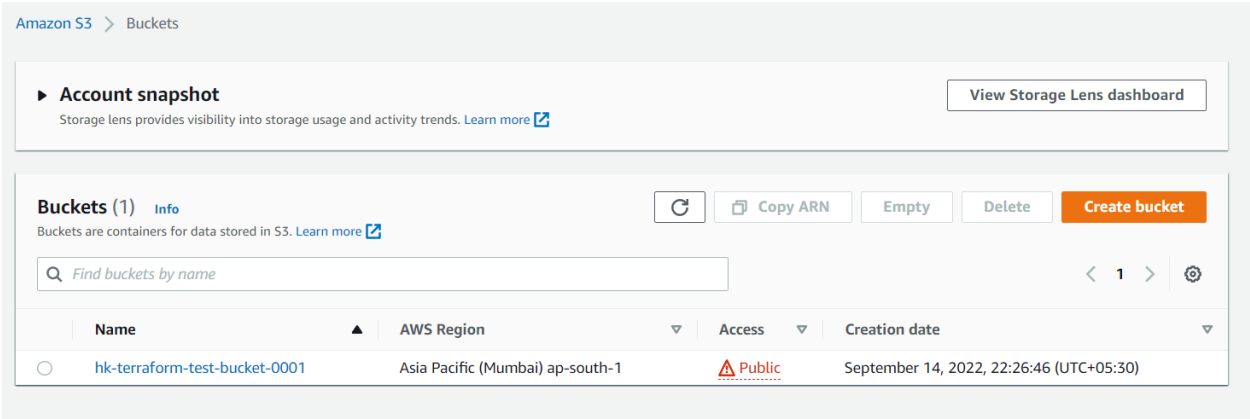
```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\S3BucketTerraform> terraform plan
Acquiring state lock. This may take a few moments...

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

Terraform will perform the following actions:

  # aws_s3_bucket.hrishi will be created
  + resource "aws_s3_bucket" "hrishi" {
      + acceleration_status         = (known after apply)
      + acl                         = "public-read"
      + arn                         = (known after apply)
      + bucket                      = "hk-terraform-test-bucket-0001"
      + bucket_domain_name          = (known after apply)
      + bucket_regional_domain_name = (known after apply)
      + force_destroy               = false
      + hosted_zone_id              = (known after apply)
      + id                          = (known after apply)
      + object_lock_enabled         = (known after apply)
      + policy                      = (known after apply)
      + region                      = (known after apply)
      + request_payer               = (known after apply)
      + tags                        = {
          + "Environment" = "Dev"
          + "Name"        = "Hrishi S3 Bucket"
        }
      + tags_all                    = {
          + "Environment" = "Dev"
          + "Name"        = "Hrishi S3 Bucket"
```

```
terraform apply
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\S3BucketTerraform> terraform apply

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

Terraform will perform the following actions:

  # aws_s3_bucket.hrishi will be created
  + resource "aws_s3_bucket" "hrishi" {
      + acceleration_status         = (known after apply)
      + acl                         = "public-read"
      + arn                         = (known after apply)
      + bucket                      = "hk-terraform-test-bucket-0001"
      + bucket_domain_name          = (known after apply)
      + bucket_regional_domain_name = (known after apply)
      + force_destroy               = false
      + hosted_zone_id              = (known after apply)
      + id                          = (known after apply)
      + object_lock_enabled         = (known after apply)
      + policy                      = (known after apply)
      + region                      = (known after apply)
      + request_payer               = (known after apply)
      + tags                        = {
          + "Environment" = "Dev"
          + "Name"        = "Hrishi S3 Bucket"
        }
      + tags_all                    = {
          + "Environment" = "Dev"
          + "Name"        = "Hrishi S3 Bucket"
        }
```

```
Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  Enter a value: yes

aws_s3_bucket.hrishi: Creating...
aws_s3_bucket.hrishi: Creation complete after 2s [id=hk-terraform-test-bucket-0001]

  Warning: Argument is deprecated

    with aws_s3_bucket.hrishi,
    on s3-on-terraform.tf line 3, in resource "aws_s3_bucket" "hrishi":
     3:         acl = "public-read"

  Use the aws_s3_bucket_acl resource instead


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

Step3: After terraform apply, check your S3 Console if you have a new bucket that you just created.



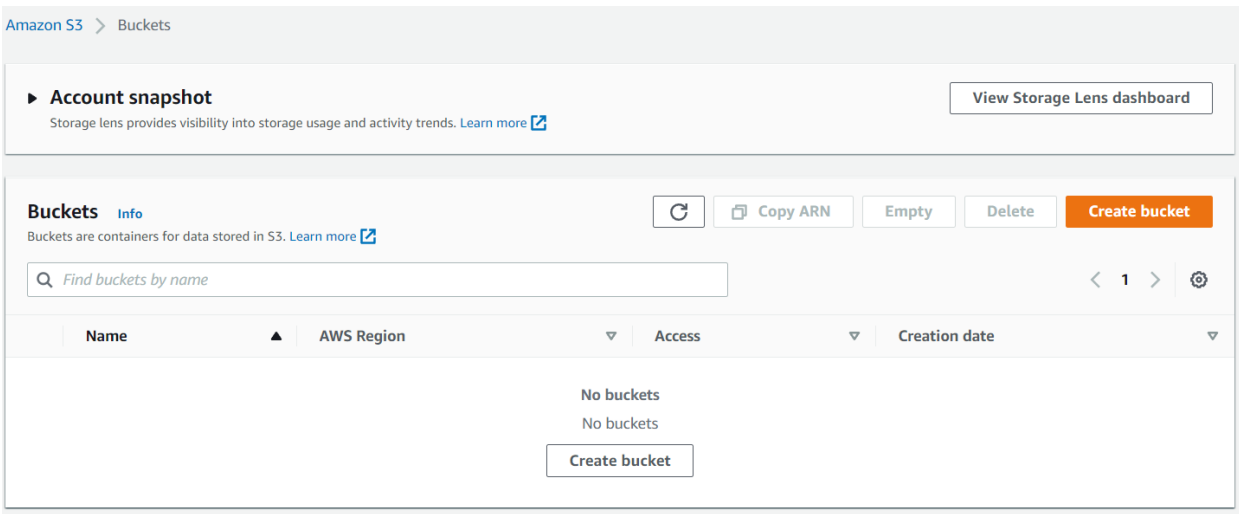
Step4: After you've created your bucket and verified it, you can delete this bucket by using terraform destroy.

```
terraform destroy
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\S3BucketTerraform> terraform destroy
aws_s3_bucket.hrishi: Refreshing state... [id=hk-terraform-test-bucket-0001]

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

Terraform will perform the following actions:

  # aws_s3_bucket.hrishi will be destroyed
  - resource "aws_s3_bucket" "hrishi" {
      - acl                         = "public-read" -> null
      - arn                         = "arn:aws:s3:::hk-terraform-test-bucket-0001" -> null
      - bucket                      = "hk-terraform-test-bucket-0001" -> null
      - bucket_domain_name          = "hk-terraform-test-bucket-0001.s3.amazonaws.com" -> null
      - bucket_regional_domain_name = "hk-terraform-test-bucket-0001.s3.ap-south-1.amazonaws.com" -> null
      - force_destroy               = false -> null
      - hosted_zone_id              = "Z11RGJOFQNVJUP" -> null
      - id                          = "hk-terraform-test-bucket-0001" -> null
      - object_lock_enabled         = false -> null
      - region                      = "ap-south-1" -> null
      - request_payer               = "BucketOwner" -> null
      - tags                        = {
          - "Environment" = "Dev"
          - "Name"        = "Hrishi S3 Bucket"
        } -> null
      - tags_all                    = {
          - "Environment" = "Dev"
          - "Name"        = "Hrishi S3 Bucket"
```

```
Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes

aws_s3_bucket.hrishi: Destroying... [id=hk-terraform-test-bucket-0001]
aws_s3_bucket.hrishi: Destruction complete after 0s

Destroy complete! Resources: 1 destroyed.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\S3BucketTerraform>
```

Step5: You can look back in the Console if the Bucket is destroyed



Creating a docker image using terraform

Step1:. Verify your docker installation by using

```
docker -version
```

```
C:\Users\acer>docker --version
Docker version 20.10.17, build 100c701

C:\Users\acer>
```

Step2: Create a new directory and a create-docker-image.tf file inside.
create-docker-image.tf

```
terraform {
required_providers {
docker = {
source = "kreuzwerker/docker"
version = "2.21.0"
}
}
}
provider "docker" {
host = "npipe:////.//pipe//docker_engine"
}
# Pulls the image
resource "docker_image" "ubuntu" {
name = "ubuntu:latest"
}
# Create a container
resource "docker_container" "foo" {
image = docker_image.ubuntu.image_id
name = "foo"
}
```

Step3: Use terraform commands to create the docker image.

```
terraform init
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding kreuzwerker/docker versions matching "2.15.0"...
- Installing kreuzwerker/docker v2.15.0...
- Installed kreuzwerker/docker v2.15.0 (self-signed, key ID BD080C4571C6104C)

Partner and community providers are signed by their developers.
If you'd like to know more about provider signing, you can read about it here:
https://www.terraform.io/docs/cli/plugins/signing.html

Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker>
```

```
terraform plan
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions
  + create

Terraform will perform the following actions:

  # docker_container.foo will be created
  + resource "docker_container" "foo" {
      + attach           = false
      + bridge           = (known after apply)
      + command          = (known after apply)
      + container_logs   = (known after apply)
      + entrypoint       = (known after apply)
      + env              = (known after apply)
      + exit_code        = (known after apply)
      + gateway          = (known after apply)
      + hostname         = (known after apply)
      + id               = (known after apply)
      + image            = (known after apply)
      + init             = (known after apply)
      + ip_address       = (known after apply)
      + ip_prefix_length = (known after apply)
```

```
terraform apply
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> terraform apply

Terraform used the selected providers to generate the following execution plan.
  + create

Terraform will perform the following actions:

  # docker_container.foo will be created
  + resource "docker_container" "foo" {
      + attach           = false
      + bridge           = (known after apply)
      + command          = (known after apply)
      + container_logs   = (known after apply)
      + entrypoint       = (known after apply)
      + env              = (known after apply)
      + exit_code        = (known after apply)
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> docker images
REPOSITORY   TAG       IMAGE ID       CREATED        SIZE
ubuntu       latest    2dc39ba059dc   4 weeks ago    77.8MB
sonarqube    latest    2cf2f2494695   5 weeks ago    534MB
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker>
```

```
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
docker_image.ubuntu: Creating...
docker_image.ubuntu: Still creating... [10s elapsed]
docker_image.ubuntu: Still creating... [20s elapsed]
docker_image.ubuntu: Still creating... [30s elapsed]
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> docker images
REPOSITORY    TAG       IMAGE ID       CREATED       SIZE
ubuntu        latest    2dc39ba059dc   4 weeks ago   77.8MB
sonarqube     latest    2cf2f2494695   5 weeks ago   534MB
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker>
```

```
terraform destroy
```

```
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> terraform destroy
docker_image.ubuntu: Refreshing state... [id=sha256:2dc39ba059dcd42ade30aae301

Terraform used the selected providers to generate the following execution plan
  - destroy

Terraform will perform the following actions:

  # docker_image.ubuntu will be destroyed
  - resource "docker_image" "ubuntu" {
      - id          = "sha256:2dc39ba059dcd42ade30aae30147b5692777ba9ff0779a62
      - image_id    = "sha256:2dc39ba059dcd42ade30aae30147b5692777ba9ff0779a62
      - latest      = "sha256:2dc39ba059dcd42ade30aae30147b5692777ba9ff0779a62
      - name        = "ubuntu:latest" -> null
      - repo_digest = "ubuntu@sha256:20fa2d7bb4de7723f542be5923b06c4d704370f03
    }

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

Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes
```

```
Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value: yes

docker_image.ubuntu: Destroying... [id=sha256:2dc39ba059dcd42ade30aae30147b5692777ba9ff0779a62ad93a74de02e3e1fubuntu:latest]
docker_image.ubuntu: Destruction complete after 0s

Destroy complete! Resources: 1 destroyed.
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker> docker images
REPOSITORY   TAG       IMAGE ID       CREATED       SIZE
sonarqube    latest    2cf2f2494695   5 weeks ago   534MB
PS D:\vesit\sem 5\ADV Dev Ops\Terraform_Scripts\Docker>
```

Conclusion:

In this experiment, we used Terraform to create and destroy an AWS EC2 Instance, an Amazon S3 bucket and a Docker image