Experiment no. 5

Aim : To understand terraform cycle, core concepts and terminologies and install it on Linux machine.

Theory :

☐ **Terraform lifecycle**
The lifecycle of a resource managed by Terraform has three stages: Apply, Update, and Destroy. The lifecycle meta-argument allows users to control these stages.

☐ **Terraform CLI**
The Terraform Command Line Interface (CLI) is the primary tool for interacting with Terraform's code.

☐ **Terraform core workflow**
The core workflow of Terraform consists of the following stages:

1. init: Initializes the local Terraform environment
2. plan: Compares the Terraform state with the cloud state, and creates an execution plan
3. apply: Executes the plan to change the deployment
4. destroy: Removes all resources defined in the Terraform configuration

☐ **Core concepts**

Some other core concepts of Terraform include:

Variables: Key-value pairs that allow customization

Provider: A plugin that allows users to interact with APIs of a service

Module: A folder containing Terraform templates that define configurations

State: Cached information about the infrastructure managed by Terraform

Resources: A block of one or more infrastructure objects

Data Source: Returns information on external objects to Terraform

Output Values: Return values of a Terraform module that can be used by other configurations

Output :

```
wget -O- https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o
/usr/share/keyrings/hashicorp-archive-keyring.gpg




echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg]
https://apt.releases.hashicorp.com $(lsb_release -cs) main" | sudo tee
/etc/apt/sources.list.d/hashicorp.list




sudo apt update && sudo apt install terraform
```

```
siddhi@LAPTOP-6GNJIKQO:-$ wget -O- https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o /usr/s
hare/keyrings/hashicorp-archive-keyring.gpg
--2024-09-23 19:53:50--  https://apt.releases.hashicorp.com/gpg
[sudo] password for siddhi: Resolving apt.releases.hashicorp.com (apt.releases.hashicorp.com)... 18.172.
78.129, 18.172.78.30, 18.172.78.65, ...
Connecting to apt.releases.hashicorp.com (apt.releases.hashicorp.com)|18.172.78.129|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3980 (3.9K) [binary/octet-stream]
Saving to: 'STDOUT'

-                           100%[===================================================>]   3.89K  --.-KB/s
    in 0s

2024-09-23 19:53:50 (3.64 GB/s) - written to stdout [3980/3980]


siddhi@LAPTOP-6GNJIKQO:-$ echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https:
//apt.releases.hashicorp.com $(lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp.list
deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com jam
my main
siddhi@LAPTOP-6GNJIKQO:-$
```

```
siddhi@LAPTOP-6GNJIKQO:-$ sudo apt update && sudo apt install terraform
Get:1 https://apt.releases.hashicorp.com jammy InRelease [12.9 kB]
Get:2 https://apt.releases.hashicorp.com jammy/main amd64 Packages [150 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:4 http://archive.ubuntu.com/ubuntu jammy InRelease
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1844 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [298 kB]
Get:9 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [13.3 kB]
Get:10 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [2439 kB]
Get:11 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2062 kB]
Get:12 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [420 kB]
Get:13 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 c-n-f Metadata [584 B]
Get:14 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [905 kB]
Get:15 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [177 kB]
Get:16 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [19.3 kB]
Get:17 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [37.2 kB]
Get:18 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [228 B]
Get:19 http://archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [356 kB]
Get:20 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [17.8 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [2499 kB]
Get:22 http://archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [430 kB]
Get:23 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 c-n-f Metadata [616 B]
Get:24 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1125 kB]
Get:25 http://archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [262 kB]
Get:26 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [26.1 kB]
Get:27 http://archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [43.3 kB]
Get:28 http://archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 c-n-f Metadata [444 B]
Get:29 http://archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [67.8 kB]
Get:30 http://archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [28.8 kB]
```

```
Get:31 http://archive.ubuntu.com/ubuntu jammy-backports/universe amd64 c-n-f Metadata [672 B]
Fetched 13.6 MB in 4s (3261 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
134 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  terraform
0 upgraded, 1 newly installed, 0 to remove and 134 not upgraded.
Need to get 28.1 MB of archives.
After this operation, 89.1 MB of additional disk space will be used.
Get:1 https://apt.releases.hashicorp.com jammy/main amd64 terraform amd64 1.9.6-1 [28.1 MB]
Fetched 28.1 MB in 6s (4892 kB/s)
Selecting previously unselected package terraform.
(Reading database ... 24606 files and directories currently installed.)
Preparing to unpack .../terraform_1.9.6-1_amd64.deb ...
Unpacking terraform (1.9.6-1) ...
Setting up terraform (1.9.6-1) ...
siddhi@LAPTOP-6GNJIKQO:~$
```

```
siddhi@LAPTOP-6GNJIKQO:~$ 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
  metadata      Metadata related commands
  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          Execute integration tests for Terraform modules
  untaint       Remove the 'tainted' state from a resource instance
```