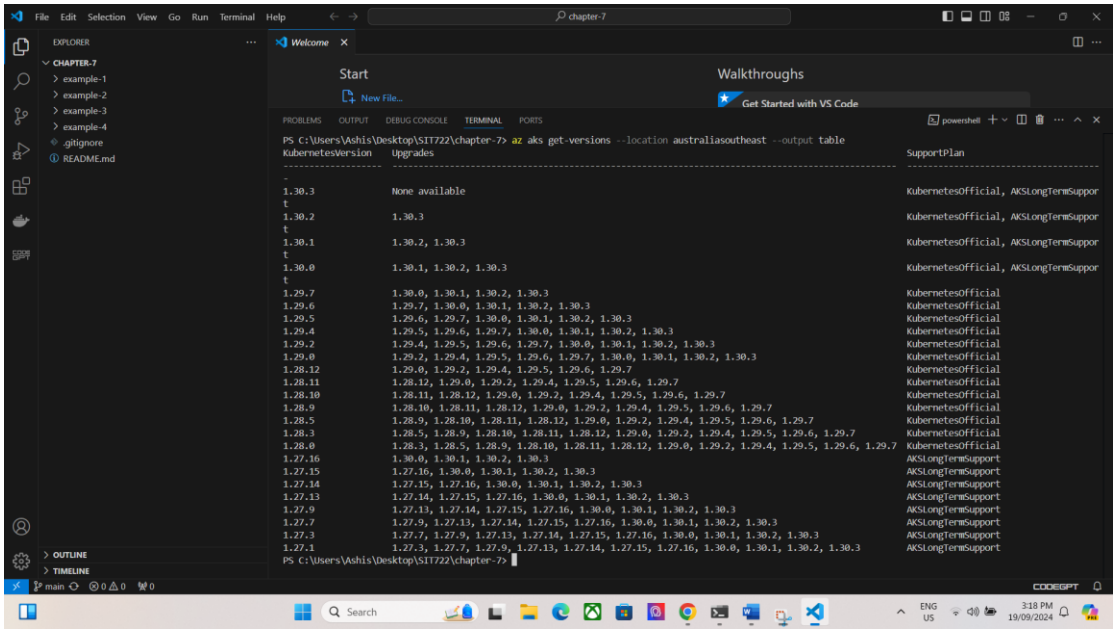
1. Git clone chapter-7

```
PS C:\Users\Ashis\desktop\SIT722> git clone https://github.com/bootstrapping-microservices-2nd-edition/chapter-7
Cloning into 'chapter-7'...
remote: Enumerating objects: 241, done.
remote: Counting objects: 100% (241/241), done.
remote: Compressing objects: 100% (123/123), done.
remote: Total 241 (delta 105), reused 237 (delta 101), pack-reused 0 (from 0)
Receiving objects: 100% (241/241), 1.04 MiB | 2.06 MiB/s, done.
Resolving deltas: 100% (105/105), done.
PS C:\Users\Ashis\desktop\SIT722>
```

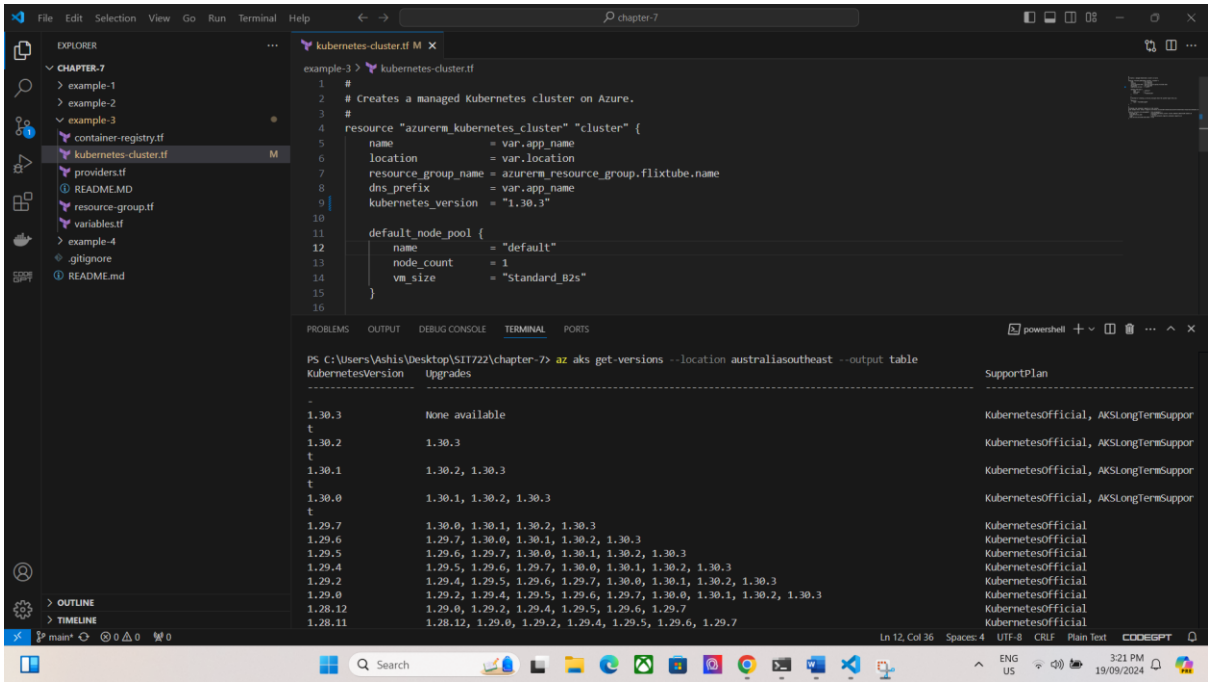
2. Az –version , terraform –version and kubectl --version

```
PS C:\Users\Ashis\desktop\SIT722> az --version
azure-cli                         2.62.0 *

core                              2.62.0 *
telemetry                          1.1.0

Dependencies:
msal                              1.28.1
azure-mgmt-resource               23.1.1

Python location 'C:\Program Files\Microsoft SDKs\Azure\CLI2\python.exe'
Extensions directory 'C:\Users\Ashis\.azure\cliextensions'

Python (Windows) 3.11.8 (tags/v3.11.8:db85d51, Feb  6 2024, 22:03:32) [MSC v.1937 64 bit (AMD64)]

Legal docs and information: aka.ms/AzureCliLegal


You have 2 update(s) available. Consider updating your CLI installation with 'az upgrade'
PS C:\Users\Ashis\desktop\SIT722> terraform --version
Terraform v1.5.7
on windows_amd64

Your version of Terraform is out of date! The latest version
is 1.9.5. You can update by downloading from https://www.terraform.io/downloads.html
PS C:\Users\Ashis\desktop\SIT722> kubectl version
Client Version: v1.30.2
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
Unable to connect to the server: dial tcp: lookup flixtubepr-flixtubeprod-6c3473-11bt107k.hcp.australiacentral.azmk8s.io: no such host
PS C:\Users\Ashis\desktop\SIT722>
```

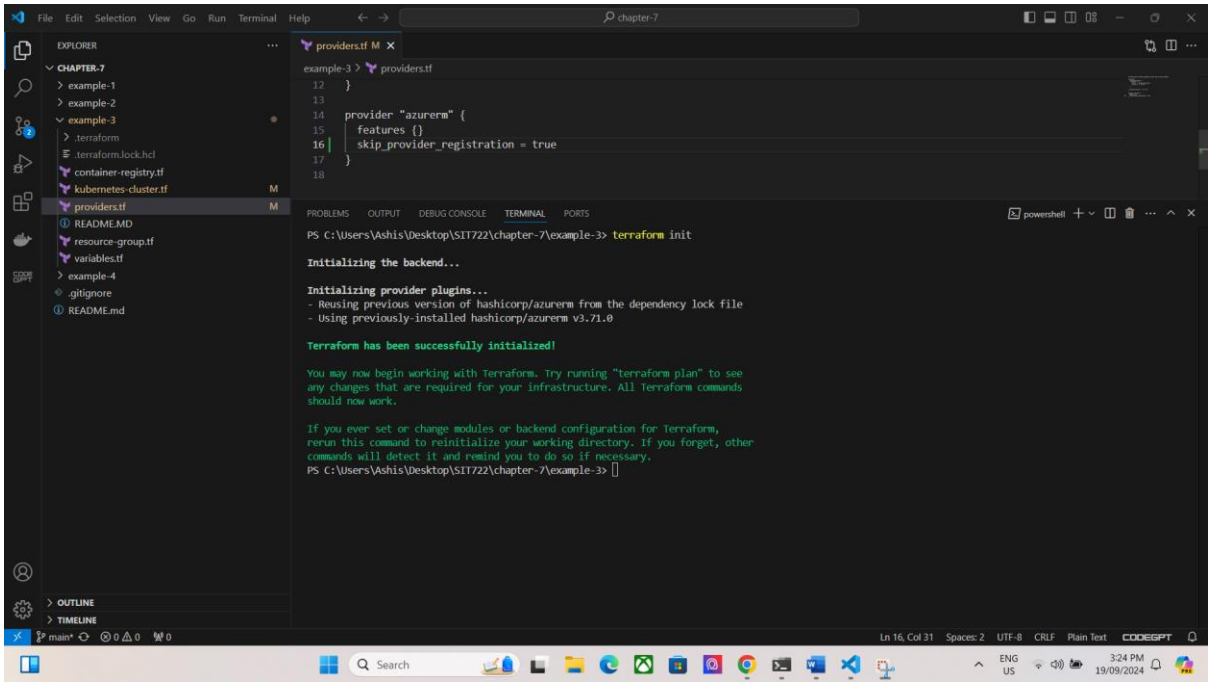
3. Get Kubernetes version by region



4. Update cluster.tf file



5. Terraform commands



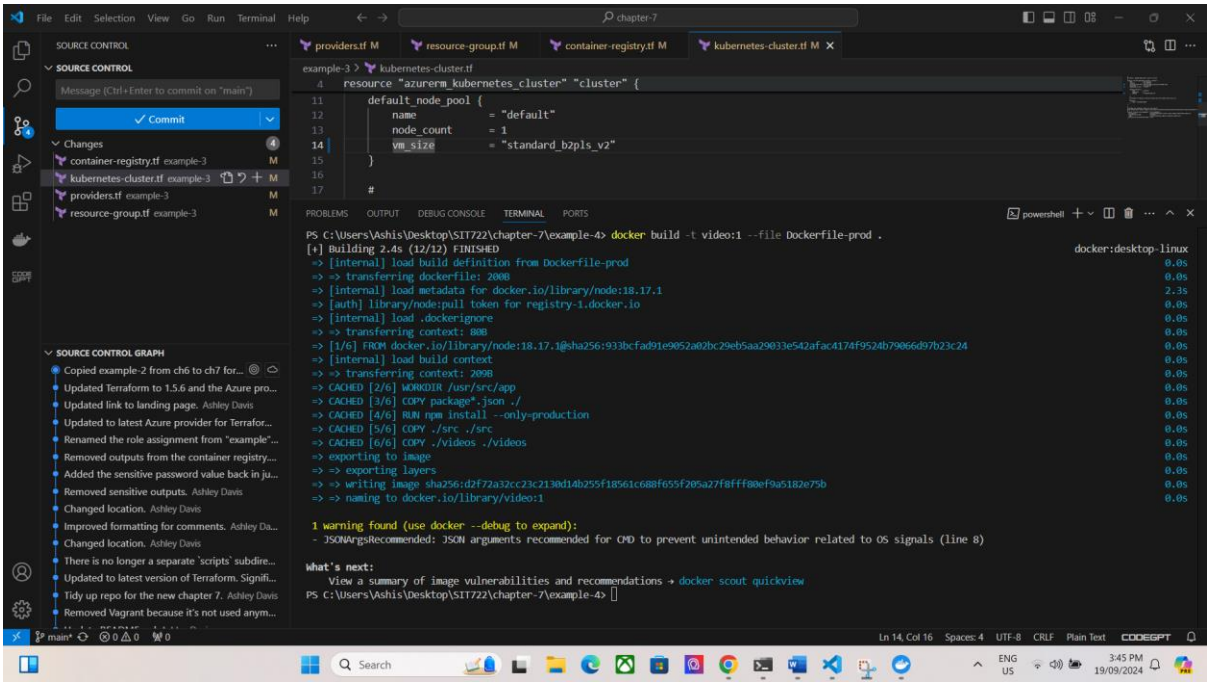
```
resource "azurerm_kubernetes_cluster" "cluster" {
    default_node_pool {
        name            = "default"
        node_count      = 1
        vm_size         = "standard_b2pls_v2"
    }

    #
```

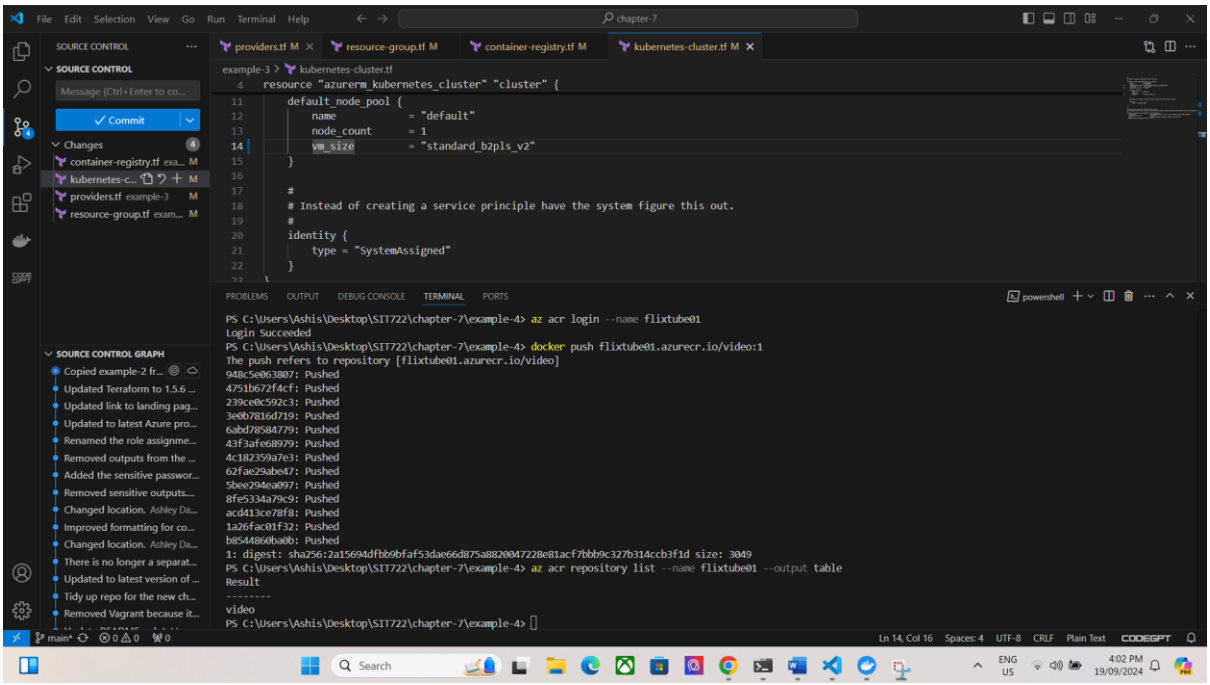
```
PS C:\Users\Ashis\Desktop\SIT722\chapter-7\example-3> terraform apply -auto-approve
var.app_name
  Enter a value: flixtube01

var.kubernetes_version
  Enter a value: 1.30.3

azurerm_resource_group.flixtube01: Refreshing state... [id=/subscriptions/6c347397-db47-4bb0-afb2-12da1df51e40/resourceGroups/flixtube01]
azurerm_container_registry.container_registry: Refreshing state... [id=/subscriptions/6c347397-db47-4bb0-afb2-12da1df51e40/resourceGroups/flixtube01/provider
s/Microsoft.ContainerRegistry/registries/flixtube01]

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_kubernetes_cluster.cluster will be created
  + resource "azurerm_kubernetes_cluster" "cluster" {
      + api_server_authorized_ip_ranges     = (known after apply)
      + dns_prefix                          = "flixtube01"
      + fqdn                                = (known after apply)
      + http_application_routing_zone_name  = (known after apply)
      + id                                  = (known after apply)
      + image_cleaner_enabled               = false
      + image_cleaner_interval_hours        = 48
      + kube_admin_config                   = (sensitive value)
      + kube_admin_config_raw               = (sensitive value)
      + kube_config                         = (sensitive value)
      + kube_config_raw                     = (sensitive value)
```

```
resource "azurerm_kubernetes_cluster" "cluster" {
    default_node_pool {
        name            = "default"
        node_count      = 1
        vm_size         = "standard_b2pls_v2"
    }

    #
```

```
azurerm_kubernetes_cluster.cluster: Still creating... [1m30s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [1m40s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [1m50s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [2m0s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [2m10s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [2m20s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [2m30s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [2m40s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [2m50s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [3m0s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [3m10s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [3m20s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [3m30s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [3m40s elapsed]
azurerm_kubernetes_cluster.cluster: Still creating... [3m50s elapsed]
azurerm_kubernetes_cluster.cluster: Creation complete after 3m56s [id=/subscriptions/6c347397-db47-4bb0-afb2-12da1df51e40/resourceGroups/flixtube01/providers
/Microsoft.ContainerService/managedClusters/flixtube01]
azurerm_role_assignment.role_assignment: Creating...
azurerm_role_assignment.role_assignment: Still creating... [10s elapsed]
azurerm_role_assignment.role_assignment: Still creating... [20s elapsed]
azurerm_role_assignment.role_assignment: Creation complete after 30s [id=/subscriptions/6c347397-db47-4bb0-afb2-12da1df51e40/resourceGroups/flixtube01/provid
ers/Microsoft.ContainerRegistry/registries/flixtube01/providers/Microsoft.Authorization/roleAssignments/e97de915-78ef-a9c4-2ebf-5ea83d49487a]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
PS C:\Users\Ashis\Desktop\SIT722\chapter-7\example-3> az aks list --resource-group flixtube01 --output table
Name        Location    ResourceGroup    KubernetesVersion    CurrentKubernetesVersion    ProvisioningState    Fqdn
----------  ----------  ---------------  -------------------  --------------------------  -------------------  ------------------------------------
flixtube01  eastus      flixtube01       1.30.3               1.30.3                      Succeeded            flixtube01-cdae5ffi.hcp.eastus.azmk8s.io
PS C:\Users\Ashis\Desktop\SIT722\chapter-7\example-3>
```

6. Docker push






```
PS C:\Users\Ashis\Desktop\SIT722\chapter-7\example-4> kubectl get nodes
NAME                                STATUS   ROLES    AGE   VERSION
aks-default-21466826-vmss000000     Ready    <none>   23m   v1.30.3
PS C:\Users\Ashis\Desktop\SIT722\chapter-7\example-4> kubectl cluster-info
Kubernetes control plane is running at https://flixtubeashish-f93wu0t2.hcp.eastus.azmk8s.io:443
CoreDNS is running at https://flixtubeashish-f93wu0t2.hcp.eastus.azmk8s.io:443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy
Metrics-server is running at https://flixtubeashish-f93wu0t2.hcp.eastus.azmk8s.io:443/api/v1/namespaces/kube-system/services/https:metrics-server:/proxy
```

Describe in your own words what are the four example applications(stages) each demonstrating?

Example 1:- This example demonstrates how to deploy a simple application in Kubernetes. It introduces the basic concepts of creating a Kubernetes deployment running a containerized application and exposing it using a service to make it accessible.

Example 2:- This example showcases how to use Terraform to automate the creation of an Azure Container Registry. The registry can then be used to store Docker images which can later be deployed in Kubernetes.

Example 3:- In this example, along with example 2 steps . This gets the infrastructure ready for running apps in containers.

Example 4:- This example shows how to deploy an app to the Kubernetes cluster made in Example 3. It builds the app using a Dockerfile and then uses a YAML file to deploy and manage the app in the cluster.

In this project, the latest **Kubernetes version** used was **1.30.3**.