Advance Devops Experiment 6

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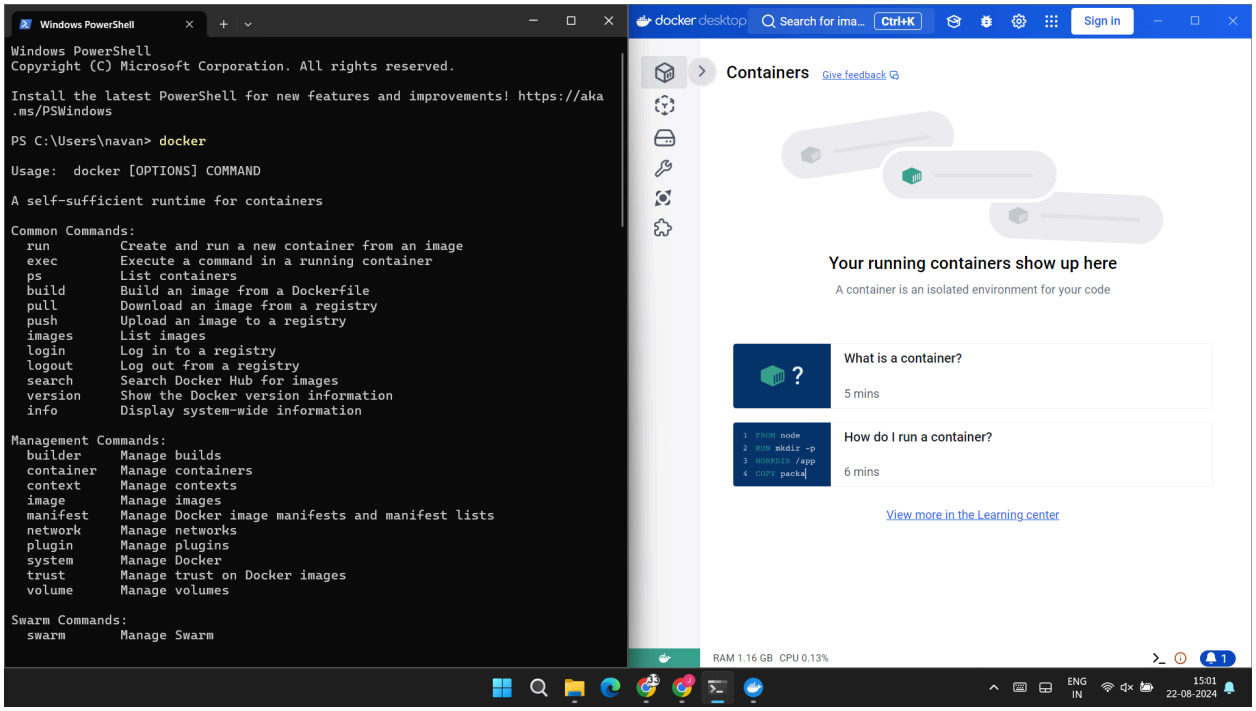
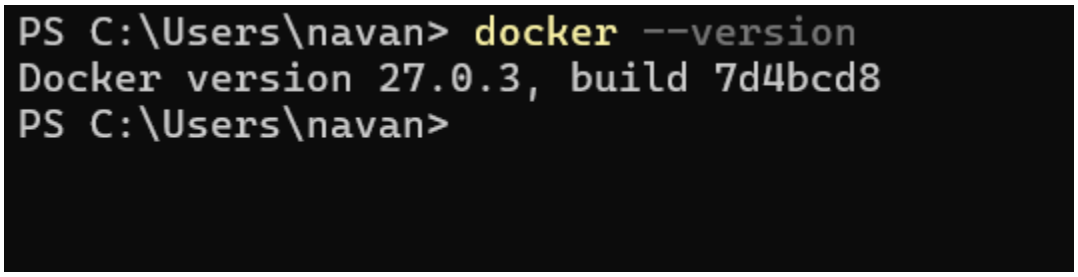
D15 A-43

Aim: Creating docker image using Terraform

Step 1: Install docker Desktop after installation check the functionality



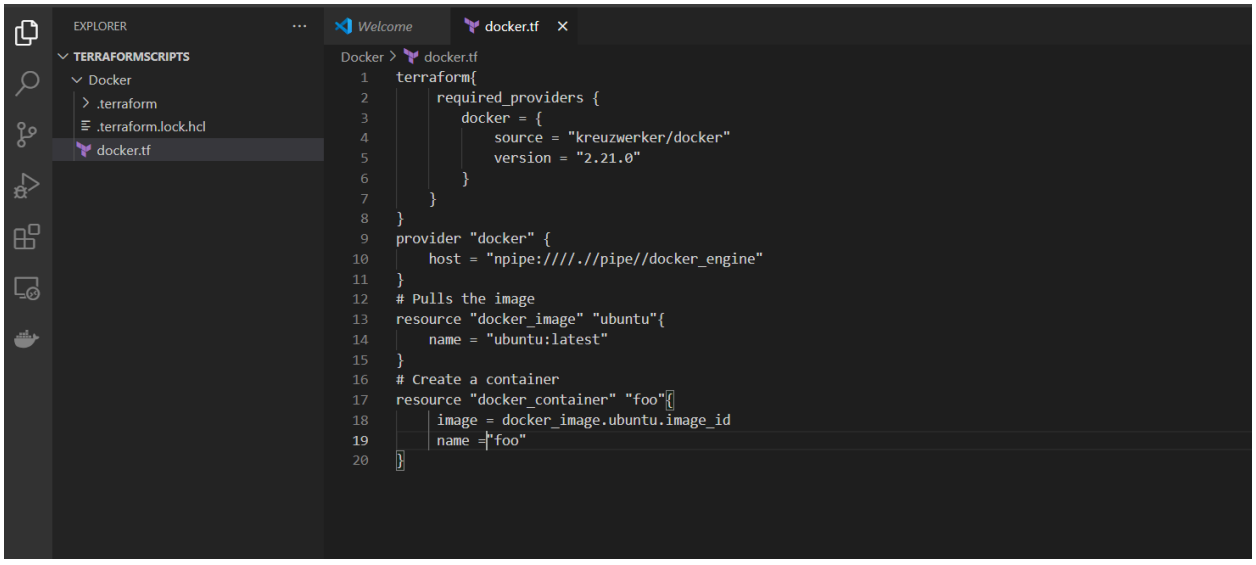


Now, create a folder named ‘Terraform Scripts’ in which we save our different types of scripts which will be further used in this experiment.

Step 2: Firstly create a new folder named ‘Docker’ in the ‘TerraformScripts’ folder. Then create a new docker.tf file using Atom editor and write the followingcontents into it to create a Ubuntu Linux container.

Script:

```
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"
}
```



Step 3: Execute terraform init command to initialize the resources

```
C:\Users\navan\Desktop\TerraformScripts\Docker> terraform init
Initializing the backend...
Initializing provider plugins...
- Finding kreuzwerker/docker versions matching "2.21.0"...
- Installing kreuzwerker/docker v2.21.0...
- Installed kreuzwerker/docker v2.21.0 (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.

C:\Users\navan\Desktop\TerraformScripts\Docker>
```

Step 4: Execute Terraform plan to see the available resources

```
C:\Users\navan\Desktop\TerraformScripts\Docker>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:

  # 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)
      + ipc_mode         = (known after apply)
      + log_driver       = (known after apply)
      + logs             = false
      + must_run         = true
      + name             = "foo"
      + network_data     = (known after apply)
      + read_only        = false
      + remove_volumes   = true
      + restart          = "no"
      + rm               = false
      + runtime          = (known after apply)
```

```
      + security_opts    = (known after apply)
      + shm_size         = (known after apply)
      + start            = true
      + stdin_open       = false
      + stop_signal      = (known after apply)
      + stop_timeout     = (known after apply)
      + tty              = false

      + healthcheck (known after apply)

      + labels (known after apply)
    }

  # docker_image.ubuntu will be created
  + resource "docker_image" "ubuntu" {
      + id          = (known after apply)
      + image_id    = (known after apply)
      + latest      = (known after apply)
      + name        = "ubuntu:latest"
      + output      = (known after apply)
      + repo_digest = (known after apply)
    }

Plan: 2 to add, 0 to change, 0 to destroy.

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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.

C:\Users\navan\Desktop\TerraformScripts\Docker>
```

Step 5: Execute Terraform apply to apply the configuration, which will automatically
create and run the Ubuntu Linux container based on our configuration. Using command :
“terraform apply”

```
    }

Plan: 2 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

docker_image.ubuntu: Creating...
docker_image.ubuntu: Creation complete after 10s [id=sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598aubuntu:latest]
docker_container.foo: Creating...
```

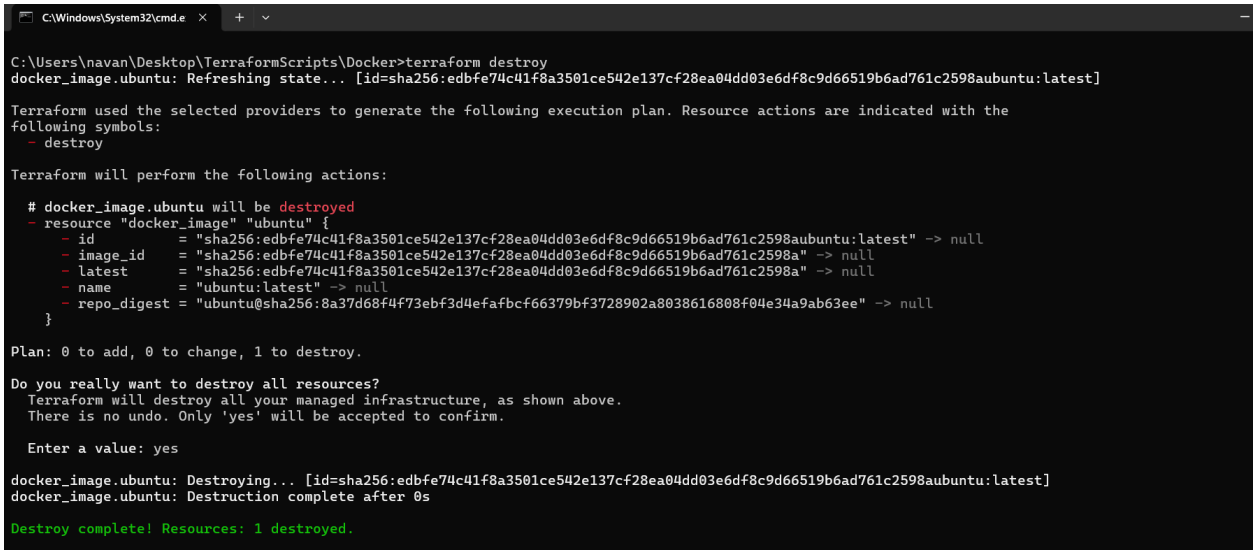
Docker images,before Executing Apply step:

```
C:\Users\navan\Desktop\TerraformScripts\Docker>docker images
REPOSITORY   TAG          IMAGE ID       CREATED       SIZE
ubuntu       latest       edbfe74c41f8   2 weeks ago   78.1MB
node         20-alpine    e2997a3fdff8   4 weeks ago   133MB
```

```
docker_image.ubuntu: Refreshing state... [id=sha256:edbfe74c41f8a3501ce542e137cf28e
3e6df8c9d66519b6ad761c2598aubuntu:latest]

Note: Objects have changed outside of Terraform

Terraform detected the following changes made outside of Terraform since the last
"terraform apply" which may have affected this plan:

  # docker_image.ubuntu has been deleted
  - resource "docker_image" "ubuntu" {
        id          = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6
2598aubuntu:latest"
      - image_id    = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6
2598a" -> null
        name        = "ubuntu:latest"
        # (2 unchanged attributes hidden)
    }


Unless you have made equivalent changes to your configuration, or ignored the relev
attributes using ignore_changes, the following plan may include actions to undo or
respond to these changes.
```

Step 6: Execute Terraform destroy to delete the configuration, which will automatically delete the ubuntu container.

```
C:\Users\navan\Desktop\TerraformScripts\Docker>terraform destroy
docker_image.ubuntu: Refreshing state... [id=sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c259
tu:latest]

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

Terraform will perform the following actions:

  # docker_image.ubuntu will be destroyed
  - resource "docker_image" "ubuntu" {
      - id          = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598aubuntu:latest" -> nu
      - image_id    = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598a" -> null
      - latest      = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598a" -> null
      - name        = "ubuntu:latest" -> null
      - repo_digest = "ubuntu@sha256:8a37d68f4f73ebf3d4efafbcf66379bf3728902a8038616808f04e34a9ab63ee" -> 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:
```



Docker images after executing destroy step

```
C:\Users\navan\Desktop\TerraformScripts\Docker>docker images
REPOSITORY   TAG          IMAGE ID       CREATED       SIZE
node         20-alpine    e2997a3fdff8   5 weeks ago   133MB
```