■ Task 3: Infrastructure as Code (IaC) with Terraform – Docker Container

■ Objective

Provision a local Docker container (Nginx) using Terraform as Infrastructure as Code (IaC).

■ Tools Used

```
- Terraform
- Docker
- Windows with Docker Desktop
```

■ Project Structure

```
terraform-docker-container/
■■■ main.tf
■■■ README.md
```

■ main.tf (Terraform Configuration)

```
terraform {
  required_providers {
    docker = {
      source  = "kreuzwerker/docker"
      version = "~> 3.0"
    }
  }
}

provider "docker" {
  host = "npipe:////./pipe/docker_engine"
}

resource "docker_image" "nginx" {
  name         = "nginx:latest"
  keep_locally = false
}

resource "docker_container" "nginx_container" {
  name  = "nginx_terraform"
  image = docker_image.nginx.name
  ports {
    internal = 80
    external = 8080
  }
}
```

■ Steps to Run

1■■ Prerequisites

```
- Docker Desktop installed and running
- Terraform installed
- Internet connection (to pull Docker image)
```

2■■ Initialize Terraform

```
terraform init
```

3■■ *Preview Terraform Plan*

```
terraform plan
```

4■■ *Apply Configuration*

```
terraform apply -auto-approve
```

5■■ *Verify the Setup*

```
docker ps
Visit: http://localhost:8080
```

6■■ *Check Terraform State*

```
terraform state list
```

7■■ *Destroy the Infrastructure*

```
terraform destroy -auto-approve
```

■ Common Issues (Windows)

■ `protocol not available` → ■ Use `npipe:////./pipe/docker_engine` in the provider block instead of Un

■ Deliverables

```
- main.tf
- README.md
- Execution logs (optional)
```

■ Author

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