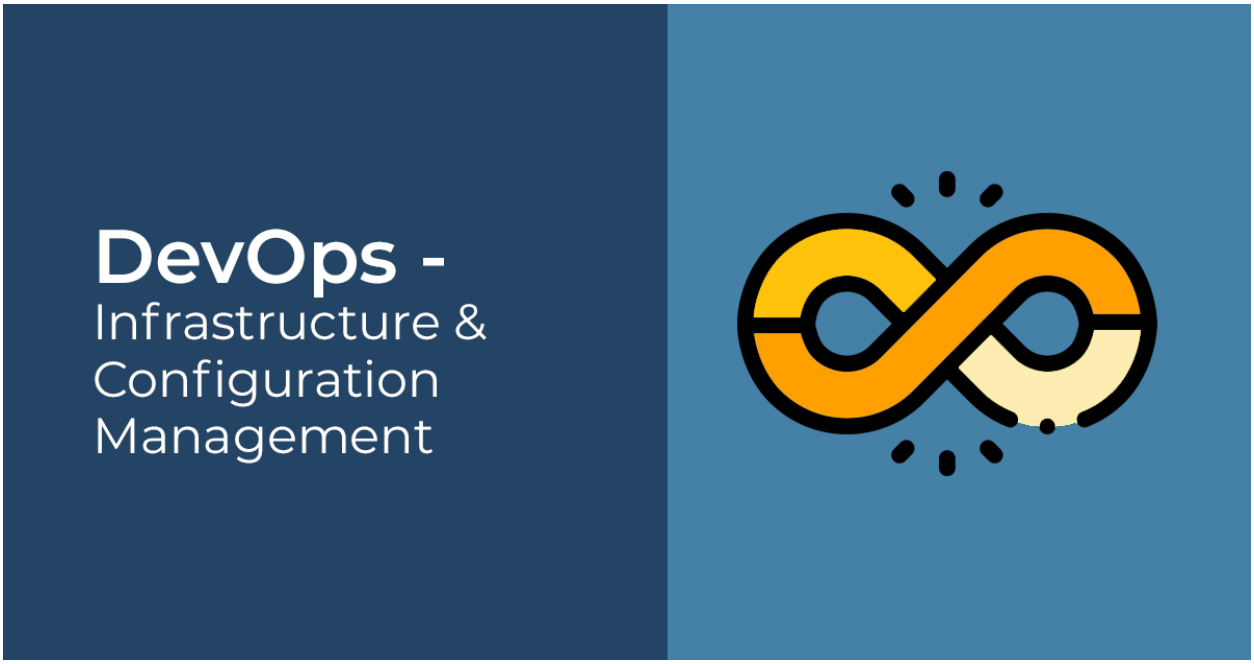


DevOps

Infrastructure & Configuration Management

April 2022

Infrastructure as Code with Terraform

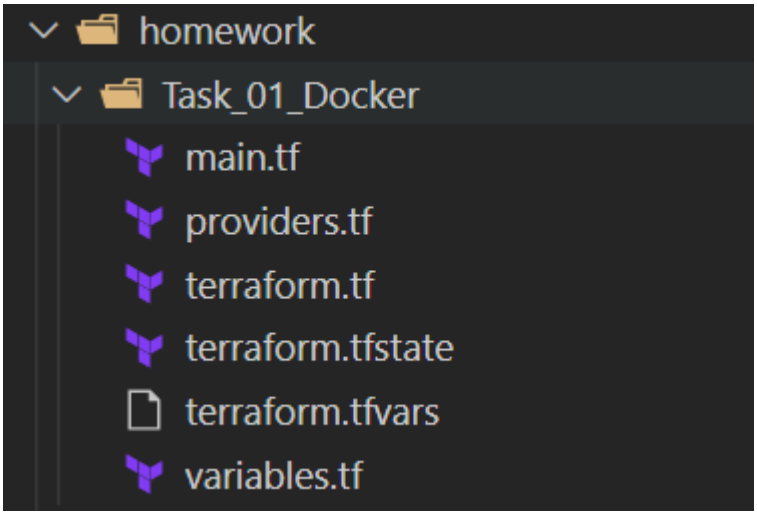
Home Work

Stefan Veselinov

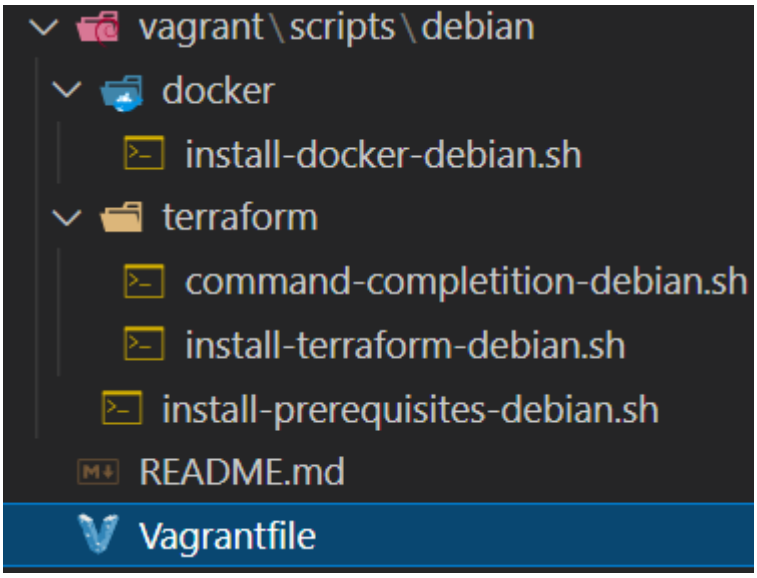
Tasks

1. Create a **Terraform** configuration to build a small containerized application in **Docker** by using the two images. You must provide the containers with connectivity and depending on the approach to mount the **web** folder. For details, check the information in the repository

Solution Structure



- homework
  - Contains the solution of the homework, all terraform files



- vagrant
  - Contains vagrant provisioning scripts for creating Debian VM

Proof: Task 1

- Create homework virtual environment
  Open project root and execute `vagrant up` - result of this command is the creation of Debian virtual machine. The VM (terraform) - is provisioned with initial hosts setup, tree, git, nano, curl, wget, unzip, vim, docker, and terraform.
- Prepare VM
  - ssh to vagrant – from project root directory execute `vagrant ssh terraform
  - Navigate to task 1 folder in vm - cd /vagrant/homework/Task_01_Docker
  - Clone project repository - git clone https://github.com/shekeriev/bgapp.git
- Run terraform
  - Initiate terraform – execute - terraform init

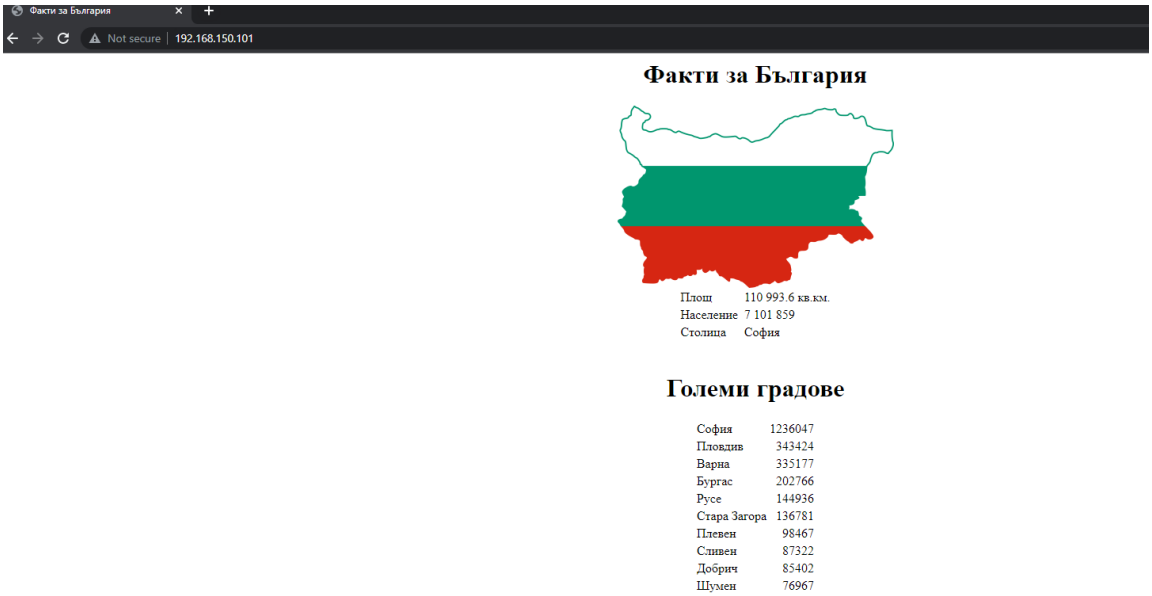
```
vagrant@terraform:/vagrant/homework/Task_01_Docker$ terraform init

Initializing the backend...

Initializing provider plugins...
- Finding kreuzwerker/docker versions matching "2.16.0"...
- Installing kreuzwerker/docker v2.16.0...
- Installed kreuzwerker/docker v2.16.0 (self-signed, key ID BD080C4571C6104C)
```

  - Execute - terraform apply -auto-approve

```
Plan: 5 to add, 0 to change, 0 to destroy.
docker_network.app-net: Creating...
docker_image.img-web: Creating...
docker_image.img-db: Creating...
docker_image.img-db: Creation complete after 1s [id=sha256:1c8b832d0f059dff68dff42d2af984f975ae8e9c245ed018486dfbcf6c4a3fd0bgapp-db]
docker_network.app-net: Creation complete after 3s [id=f0ac9655ff583565c7826503f4f6cc39ceef854555fbfb0326e258e508c889d1]
docker_container.con-db: Creating...
docker_container.con-db: Creation complete after 4s [id=05eec1b4732a93bac40f6a5eb495cd7793f41039df977f7e4b71ed77e7e8ef02]
docker_image.img-web: Still creating... [10s elapsed]
docker_image.img-web: Creation complete after 17s [id=sha256:86e4d2e52eb07a81e2ef86f25193603dbbeee8147d8ddc99ad552b93316b124cbgapp-web]
docker_container.con-web: Creating...
docker_container.con-web: Creation complete after 1s [id=a2139a8b061eec24d1054b47eba474e89da55d9a3c1caaedc97a5293ad22e3b5]

Apply complete! Resources: 5 added, 0 changed, 0 destroyed.
vagrant@terraform:/vagrant/homework/Task_01_Docker$ docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS                NAMES
a2139a8b061e   86e4d2e52eb0   "docker-php-entrypoi…"   15 seconds ago   Up 14 seconds   0.0.0.0:80->80/tcp   web
05eec1b4732a   1c8b832d0f05   "docker-entrypoint.s…"   29 seconds ago   Up 25 seconds   3306/tcp             db
vagrant@terraform:/vagrant/homework/Task_01_Docker$ docker images
REPOSITORY   TAG          IMAGE ID       CREATED          SIZE
bgapp-web    latest       86e4d2e52eb0   31 seconds ago   455MB
bgapp-db     latest       1c8b832d0f05   48 seconds ago   414MB
mariadb      10.7         100166b773f8   10 days ago      414MB
php          8.0-apache   b0e686dbc8a9   2 weeks ago      455MB
```

- Visit application - http://192.168.150.101:80