Terraform Training Plan

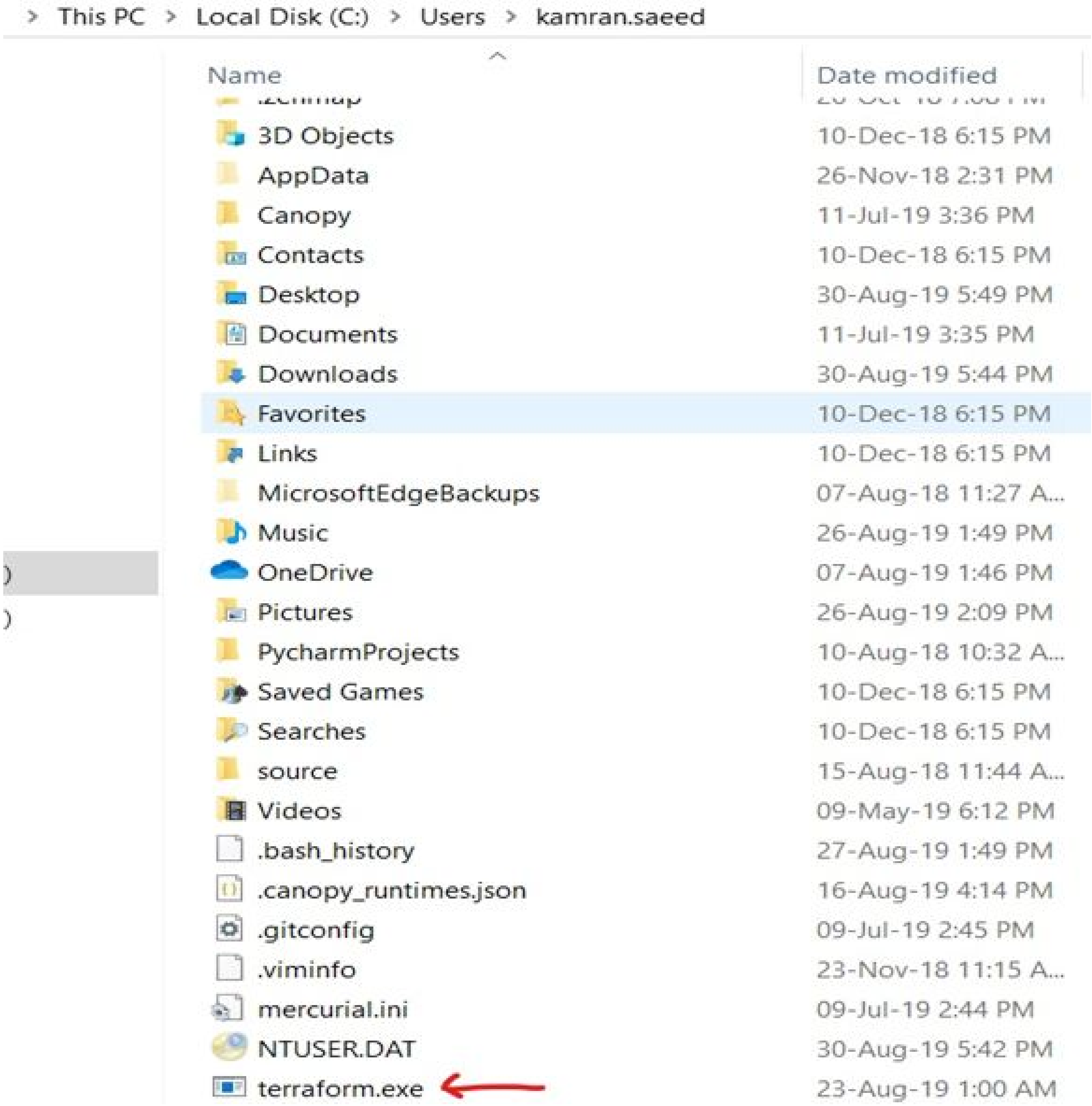
This plan will help you to understand what is terraform? For what purpose to use it and guide with steps to get hands dirty with this Tool

Download terraform from official website

a. Link: https://www.terraform.io/downloads.html
b. Please download the proper package for your operating system and architecture

For Windows do the following process:

- Download terraform from official site. It will be a zip package. Unzip it and then place this extracted .exe file under your user folder in windows drive like this:

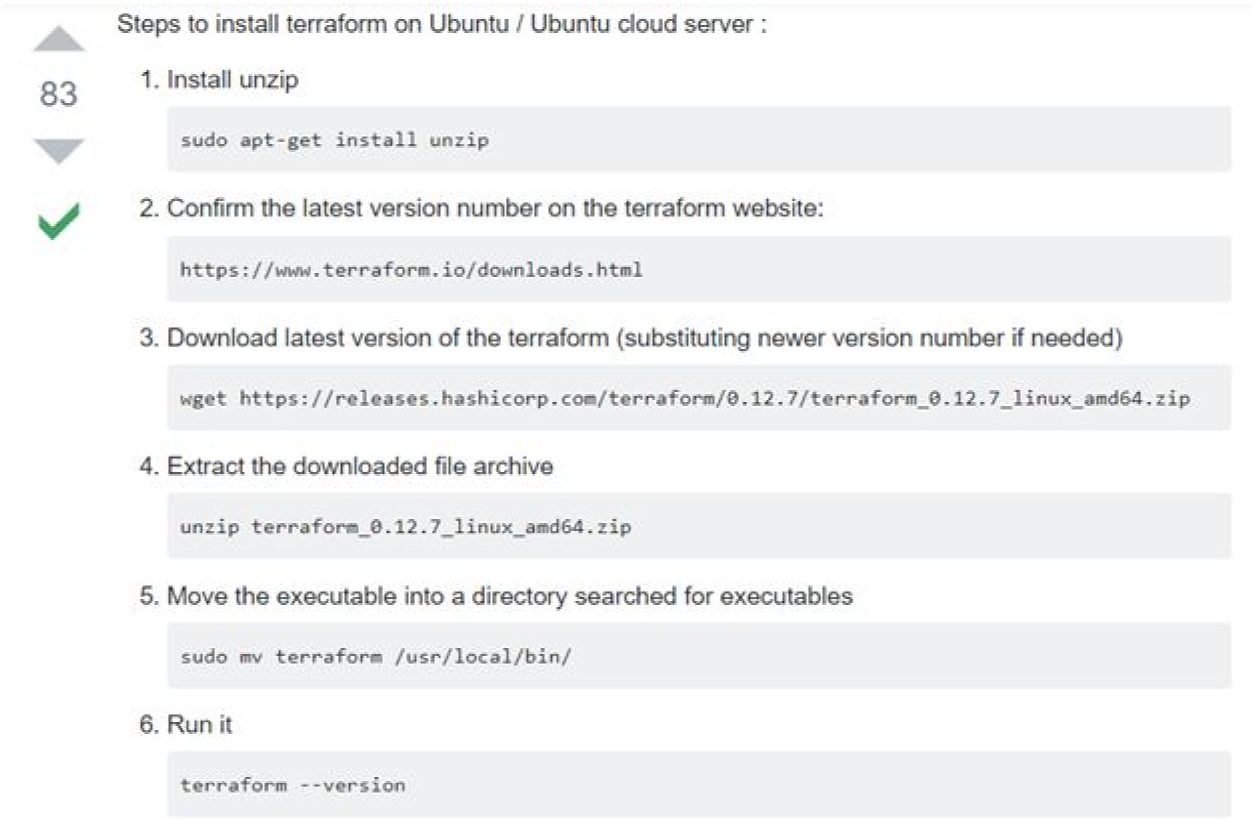


> This PC > Local Disk (C:) > Users > kamran.saeed

Name	Date modified
[illegible]	[illegible]
3D Objects	10-Dec-18 6:15 PM
AppData	26-Nov-18 2:31 PM
Canopy	11-Jul-19 3:36 PM
Contacts	10-Dec-18 6:15 PM
Desktop	30-Aug-19 5:49 PM
Documents	11-Jul-19 3:35 PM
Downloads	30-Aug-19 5:44 PM
Favorites	10-Dec-18 6:15 PM
Links	10-Dec-18 6:15 PM
MicrosoftEdgeBackups	07-Aug-18 11:27 A...
Music	26-Aug-19 1:49 PM
OneDrive	07-Aug-19 1:46 PM
Pictures	26-Aug-19 2:09 PM
PycharmProjects	10-Aug-18 10:32 A...
Saved Games	10-Dec-18 6:15 PM
Searches	10-Dec-18 6:15 PM
source	15-Aug-18 11:44 A...
Videos	09-May-19 6:12 PM
.bash_history	27-Aug-19 1:49 PM
.canopy_runtimes.json	16-Aug-19 4:14 PM
.gitconfig	09-Jul-19 2:45 PM
.viminfo	23-Nov-18 11:15 A...
mercurial.ini	09-Jul-19 2:44 PM
NTUSER.DAT	30-Aug-19 5:42 PM
terraform.exe	23-Aug-19 1:00 AM

- Goto environment variables. Under system variables select ‘path’ and click ‘Edit’ and then add your user directory path in it like ‘C:\Users\your-user-directory-name’
- restart your system/PC
- open CMD and run this command ‘terraform –version’. If this shows version then your terraform configured successfully otherwise follow the procedure carefully.

For Linux users do the following process:



Steps to install terraform on Ubuntu / Ubuntu cloud server :

1. Install unzip

```
sudo apt-get install unzip
```

2. Confirm the latest version number on the terraform website:

```
https://www.terraform.io/downloads.html
```

3. Download latest version of the terraform (substituting newer version number if needed)

```
wget https://releases.hashicorp.com/terraform/0.12.7/terraform_0.12.7_linux_amd64.zip
```

4. Extract the downloaded file archive

```
unzip terraform_0.12.7_linux_amd64.zip
```

5. Move the executable into a directory searched for executables

```
sudo mv terraform /usr/local/bin/
```

6. Run it

```
terraform --version
```

Main Concepts to understand

- Setting up provider in Terraform e.g AWS
  - How terraform deploy resources to aws account via your local machine?
  - How to provide credentials for terraform to work on local machine?
  - Study this link: https://www.terraform.io/docs/providers/aws/index.html
- Single Resource creation and deployment
  - Create s3 bucket and EC2 instance with terraform resource
  - For EC2 resource creation: https://www.terraform.io/docs/providers/aws/r/instance.html
  - For S3 bucket resource creation: https://www.terraform.io/docs/providers/aws/r/s3_bucket.html

- Get to know the purpose of commands to create resources

  - **terraform init**
  - **terraform validate**
  - **terraform refresh**
  - **terraform plan**
  - **terraform apply**
  - How to run resources you created above? follow this link: https://learn.hashicorp.com/terraform/getting-started/build
- Learn the Dependencies between terraform resources
  - How one resource wait for another resource to be created
  - Study this link: https://learn.hashicorp.com/terraform/getting-started/dependencies
- Get complete understanding of terraform States (Desired State, Actual State, Known State)
  - When you create resources with Terraform by terraform commands, terraform generates a file named as ‘terraform.tfstate’
  - This file will contain the information about the resources you created
  - Terraform will create this file to keep track of all resources it created to detect changes that you made manually

Terraform variables Concept

- Storing resource attributes values in variables
- Grab concept of files **variables.tf** and **terraform.tfvars**
- Priority of variable files in terraform
- Study this link: https://learn.hashicorp.com/terraform/getting-started/variables

Assignments:

1. Create VPC, 2 private subnets, 2 public subnets and a security group for VPC via terraform resources
   - Make sure you set the credentials properly
   - Provide aws provider in separate ‘providers.tf’ file
   - You should pass resources attributes value via ‘variables.tf’ and ‘terraform.tfvars’

2. Create bastion host in one of the above public subnets and ec2 instance in one of the private subnets
   - Pass the vpc Ids, subnet Ids and security group Ids via variables using terraform.tfvars
   - Pass the other attributes of bastion host and ec2 via variables.tf file too

3. Create S3 buckets
   - Created two s3 bucket resources using terraform resource section.
   - Variable file in each bucket directory to pass attributes value e.g bucket name