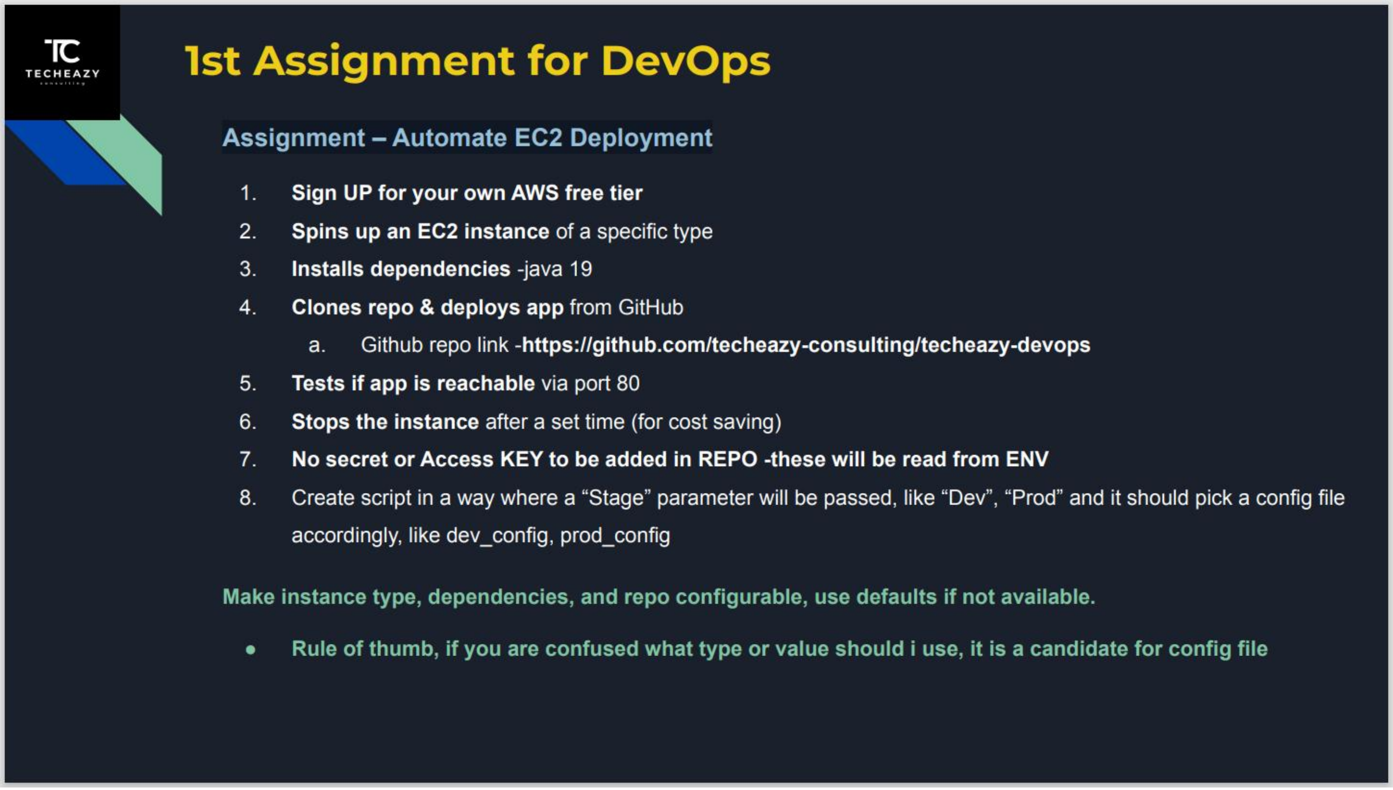
1st Assignment for DevOps

Assignment – Automate EC2 Deployment

1. **The requirements -**



1st Assignment for DevOps

Assignment – Automate EC2 Deployment

1. **Sign UP for your own AWS free tier**
2. **Spins up an EC2 instance** of a specific type
3. **Installs dependencies** -java 19
4. **Clones repo & deploys app** from GitHub
   a. Github repo link -**https://github.com/techeazy-consulting/techeazy-devops**
5. **Tests if app is reachable** via port 80
6. **Stops the instance** after a set time (for cost saving)
7. **No secret or Access KEY to be added in REPO -these will be read from ENV**
8. Create script in a way where a "Stage" parameter will be passed, like "Dev", "Prod" and it should pick a config file accordingly, like dev_config, prod_config

Make instance type, dependencies, and repo configurable, use defaults if not available.

- **Rule of thumb, if you are confused what type or value should i use, it is a candidate for config file**

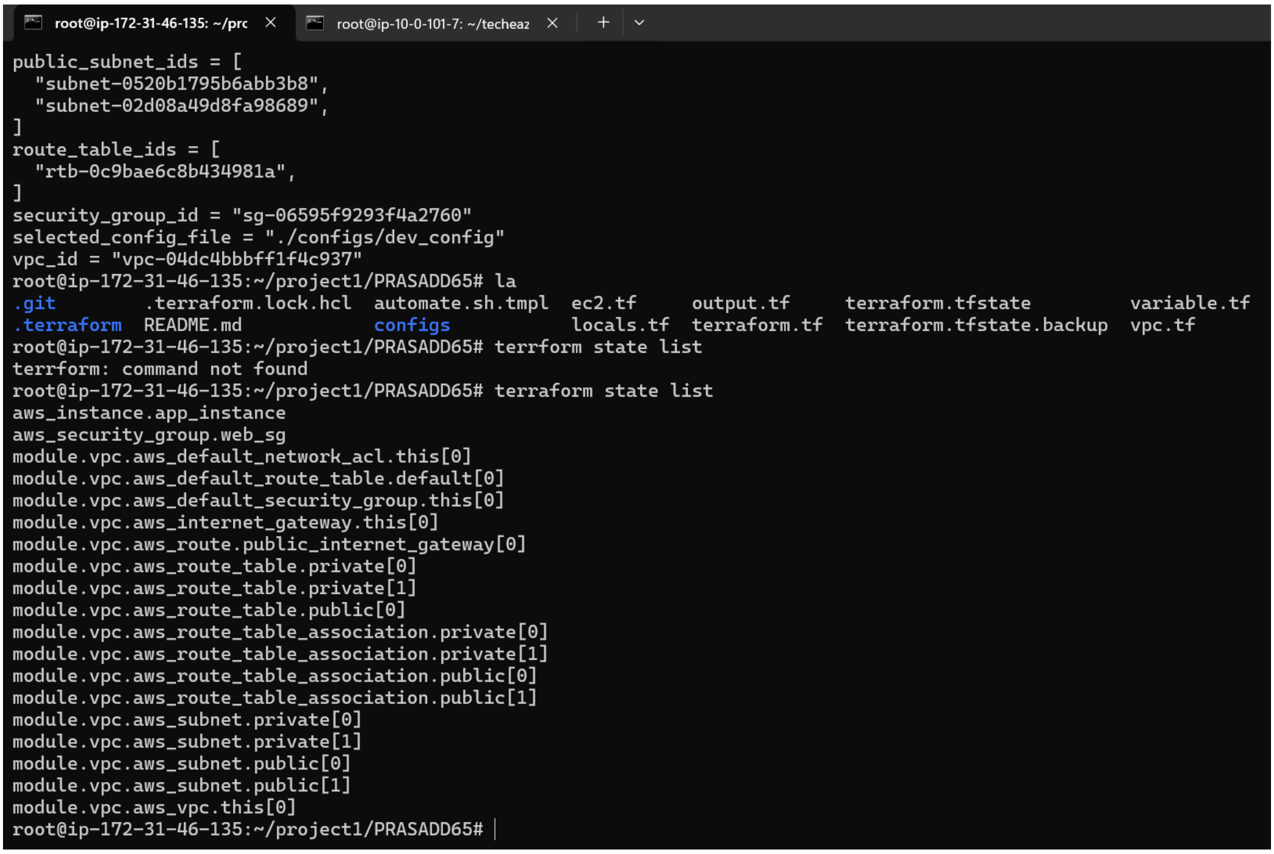
2. **Tools :**

- Terraform
- AWS console
- Linux (We'll go with Ubuntu)

3. **Terraform setup file structures :**

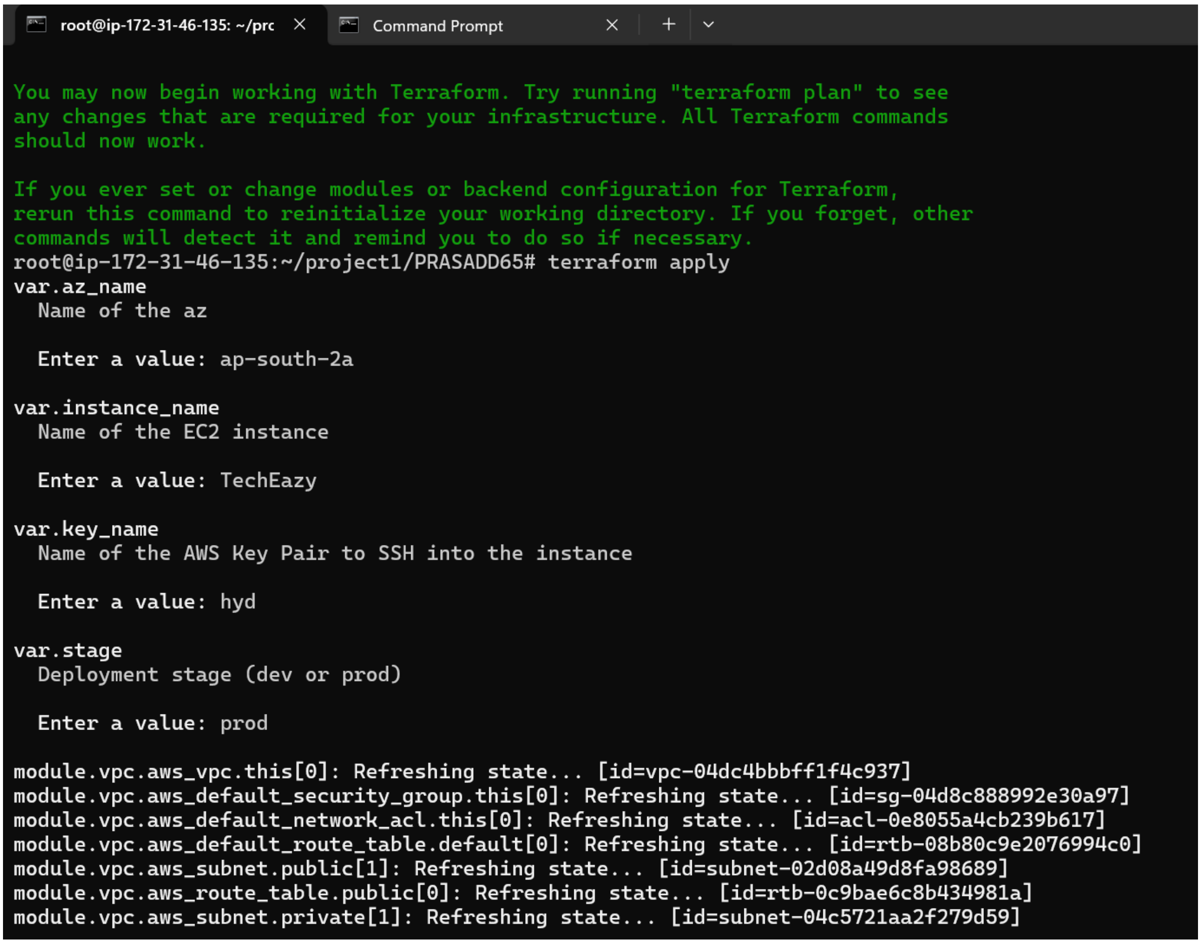
1. terraform.tf - includes provider and region
2. vpc.tf (Default module)
3. ec2.tf
4. variables.tf
5. outputs.tf
6. automate.sh.tmpl
7. config
   - dev_config
   - prod_config
8. shell script to install java 21. npm, node and clone the git repo.

4. **Terraform .tf files:**



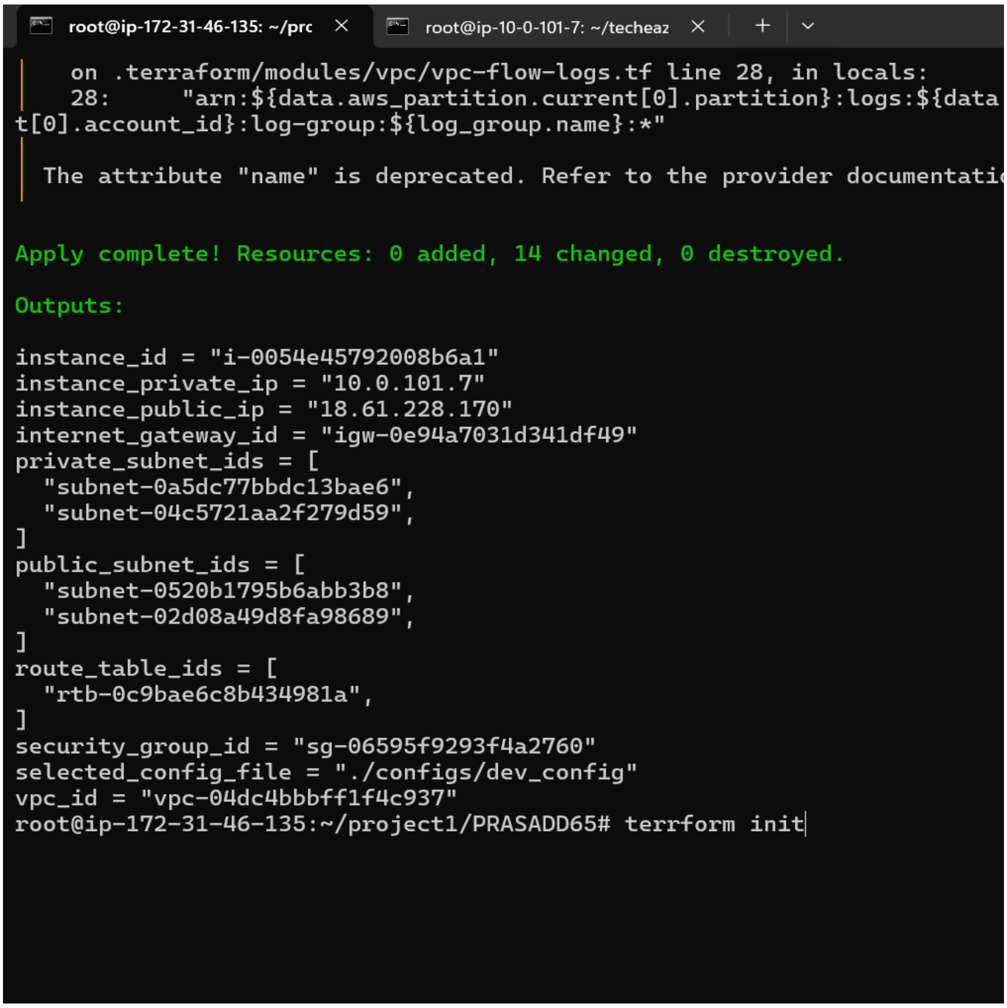
```
public_subnet_ids = [
  "subnet-0520b1795b6abb3b8",
  "subnet-02d08a49d8fa98689",
]
route_table_ids = [
  "rtb-0c9bae6c8b434981a",
]
security_group_id = "sg-06595f9293f4a2760"
selected_config_file = "./configs/dev_config"
vpc_id = "vpc-04dc4bbbff1f4c937"
root@ip-172-31-46-135:~/project1/PRASADD65# la
.git        .terraform.lock.hcl  automate.sh.tmpl  ec2.tf     output.tf     terraform.tfstate         variable.tf
.terraform  README.md            configs           locals.tf  terraform.tf  terraform.tfstate.backup  vpc.tf
root@ip-172-31-46-135:~/project1/PRASADD65# terrform state list
terrform: command not found
root@ip-172-31-46-135:~/project1/PRASADD65# terraform state list
aws_instance.app_instance
aws_security_group.web_sg
module.vpc.aws_default_network_acl.this[0]
module.vpc.aws_default_route_table.default[0]
module.vpc.aws_default_security_group.this[0]
module.vpc.aws_internet_gateway.this[0]
module.vpc.aws_route.public_internet_gateway[0]
module.vpc.aws_route_table.private[0]
module.vpc.aws_route_table.private[1]
module.vpc.aws_route_table.public[0]
module.vpc.aws_route_table_association.private[0]
module.vpc.aws_route_table_association.private[1]
module.vpc.aws_route_table_association.public[0]
module.vpc.aws_route_table_association.public[1]
module.vpc.aws_subnet.private[0]
module.vpc.aws_subnet.private[1]
module.vpc.aws_subnet.public[0]
module.vpc.aws_subnet.public[1]
module.vpc.aws_vpc.this[0]
root@ip-172-31-46-135:~/project1/PRASADD65#
```

5. **Terraform init – terraform apply – Passing the variables (terraform validate and terraform plan already tested just not included in the screenshot)**



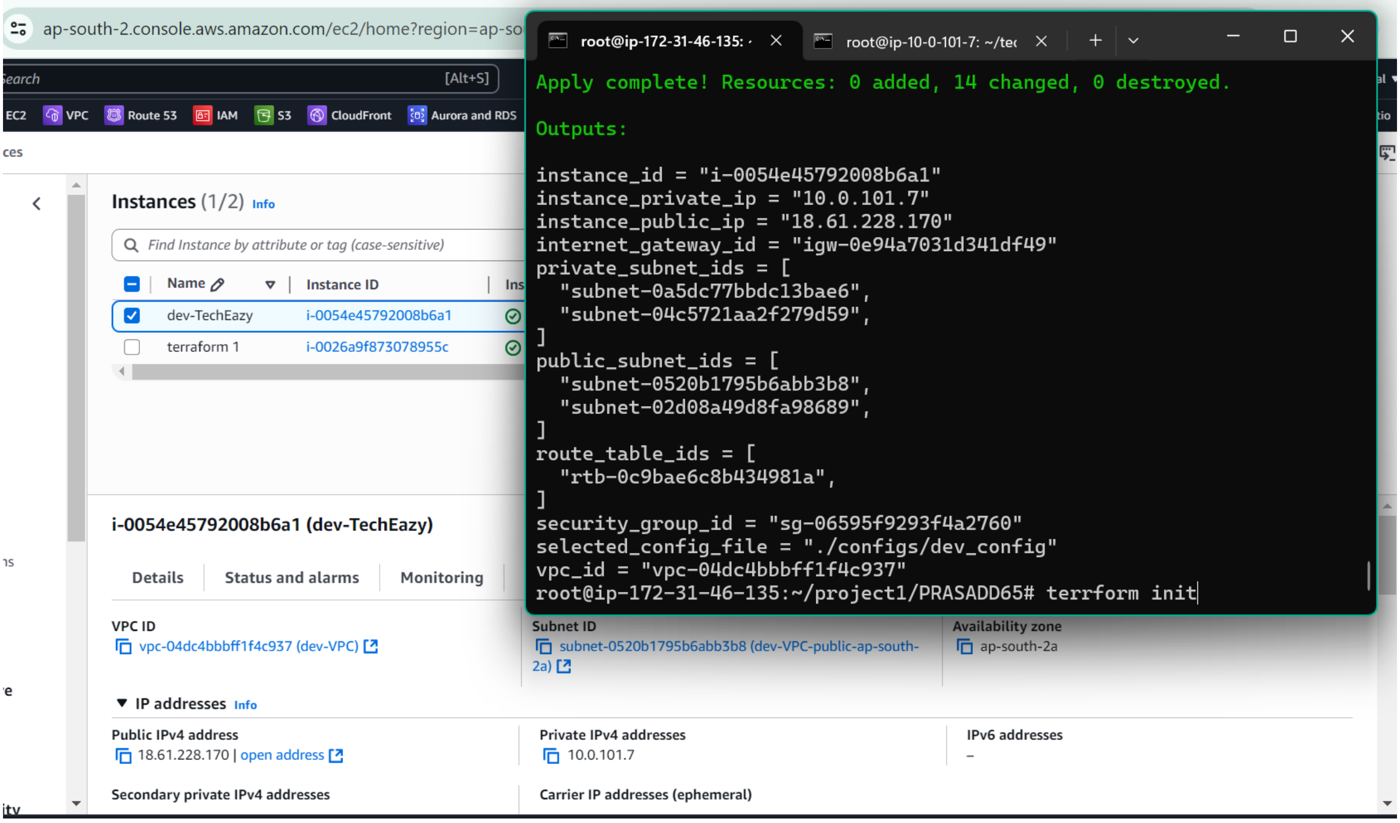
```
You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

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.
root@ip-172-31-46-135:~/project1/PRASADD65# terraform apply
var.az_name
  Name of the az

  Enter a value: ap-south-2a

var.instance_name
  Name of the EC2 instance

  Enter a value: TechEazy

var.key_name
  Name of the AWS Key Pair to SSH into the instance

  Enter a value: hyd

var.stage
  Deployment stage (dev or prod)

  Enter a value: prod

module.vpc.aws_vpc.this[0]: Refreshing state... [id=vpc-04dc4bbbff1f4c937]
module.vpc.aws_default_security_group.this[0]: Refreshing state... [id=sg-04d8c888992e30a97]
module.vpc.aws_default_network_acl.this[0]: Refreshing state... [id=acl-0e8055a4cb239b617]
module.vpc.aws_default_route_table.default[0]: Refreshing state... [id=rtb-08b80c9e2076994c0]
module.vpc.aws_subnet.public[1]: Refreshing state... [id=subnet-02d08a49d8fa98689]
module.vpc.aws_route_table.public[0]: Refreshing state... [id=rtb-0c9bae6c8b434981a]
module.vpc.aws_subnet.private[1]: Refreshing state... [id=subnet-04c5721aa2f279d59]
```

6. Terrform output – Selecting the config file as per stage env passed.



```
│   on .terraform/modules/vpc/vpc-flow-logs.tf line 28, in locals:
│   28:     "arn:${data.aws_partition.current[0].partition}:logs:${data
t[0].account_id}:log-group:${log_group.name}:*"
│
│ The attribute "name" is deprecated. Refer to the provider documentati

Apply complete! Resources: 0 added, 14 changed, 0 destroyed.

Outputs:

instance_id = "i-0054e45792008b6a1"
instance_private_ip = "10.0.101.7"
instance_public_ip = "18.61.228.170"
internet_gateway_id = "igw-0e94a7031d341df49"
private_subnet_ids = [
  "subnet-0a5dc77bbdc13bae6",
  "subnet-04c5721aa2f279d59",
]
public_subnet_ids = [
  "subnet-0520b1795b6abb3b8",
  "subnet-02d08a49d8fa98689",
]
route_table_ids = [
  "rtb-0c9bae6c8b434981a",
]
security_group_id = "sg-06595f9293f4a2760"
selected_config_file = "./configs/dev_config"
vpc_id = "vpc-04dc4bbbff1f4c937"
root@ip-172-31-46-135:~/project1/PRASADD65# terrform init
```

7. Terraform output on AWS console – Public ip, Private ip, VPC with env variable pass -


ap-south-2.console.aws.amazon.com/ec2/home?region=ap-so
earch
[Alt+S]
EC2
VPC
Route 53
IAM
S3
CloudFront
Aurora and RDS
root@ip-172-31-46-135: ·
root@ip-10-0-101-7: ~/tec

Instances (1/2) Info

Find Instance by attribute or tag (case-sensitive)

	Name	Instance ID	Ins
☑	dev-TechEazy	i-0054e45792008b6a1	✓
□	terraform 1	i-0026a9f873078955c	✓

i-0054e45792008b6a1 (dev-TechEazy)

Details | Status and alarms | Monitoring

VPC ID
vpc-04dc4bbbff1f4c937 (dev-VPC)

Subnet ID
subnet-0520b1795b6abb3b8 (dev-VPC-public-ap-south-2a)

Availability zone
ap-south-2a

▼ IP addresses Info

Public IPv4 address
18.61.228.170 | open address

Private IPv4 addresses
10.0.101.7

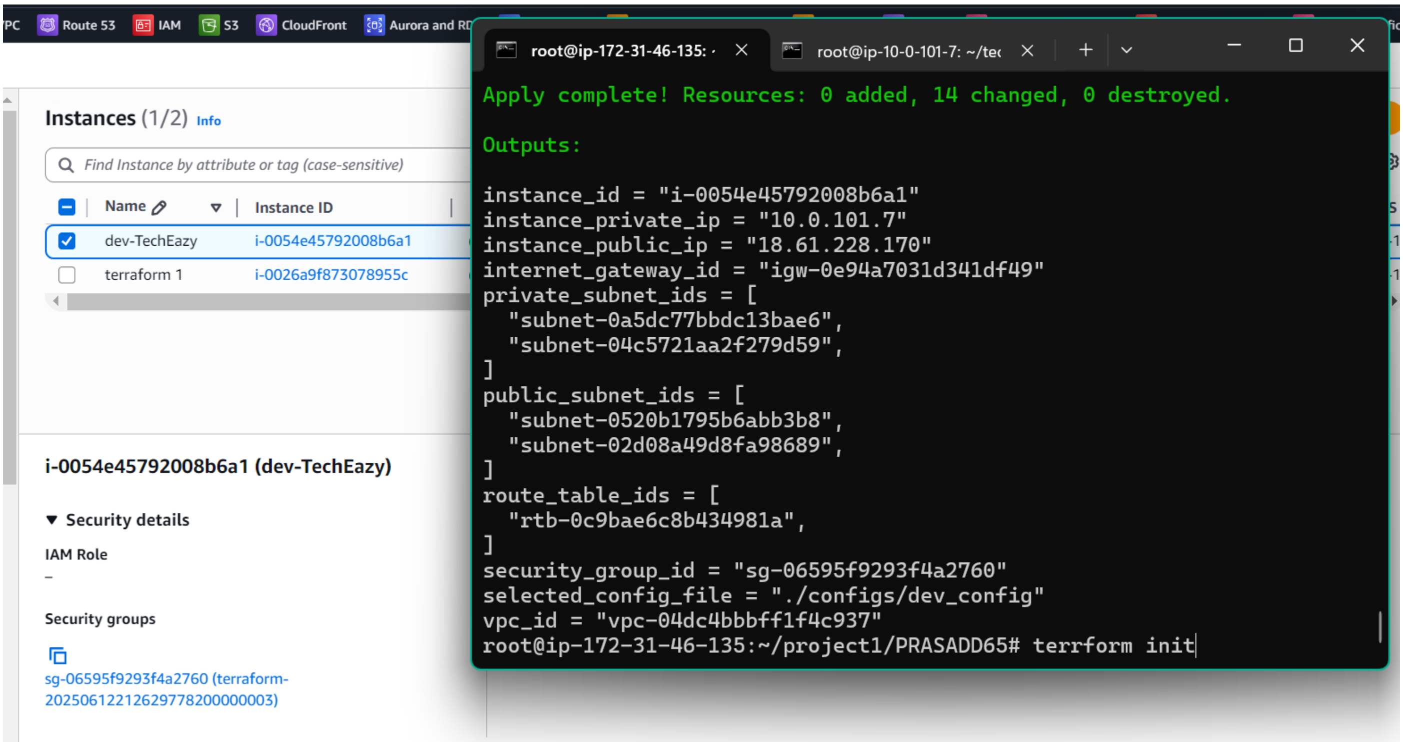
IPv6 addresses
–

Secondary private IPv4 addresses

Carrier IP addresses (ephemeral)

```
Apply complete! Resources: 0 added, 14 changed, 0 destroyed.

Outputs:

instance_id = "i-0054e45792008b6a1"
instance_private_ip = "10.0.101.7"
instance_public_ip = "18.61.228.170"
internet_gateway_id = "igw-0e94a7031d341df49"
private_subnet_ids = [
  "subnet-0a5dc77bbdc13bae6",
  "subnet-04c5721aa2f279d59",
]
public_subnet_ids = [
  "subnet-0520b1795b6abb3b8",
  "subnet-02d08a49d8fa98689",
]
route_table_ids = [
  "rtb-0c9bae6c8b434981a",
]
security_group_id = "sg-06595f9293f4a2760"
selected_config_file = "./configs/dev_config"
vpc_id = "vpc-04dc4bbbff1f4c937"
root@ip-172-31-46-135:~/project1/PRASADD65# terrform init
```

8. Security Group with env variable pass -



Instances (1/2) Info

Find Instance by attribute or tag (case-sensitive)

	Name	Instance ID
☑	dev-TechEazy	i-0054e45792008b6a1
□	terraform 1	i-0026a9f873078955c

i-0054e45792008b6a1 (dev-TechEazy)

▼ Security details

IAM Role

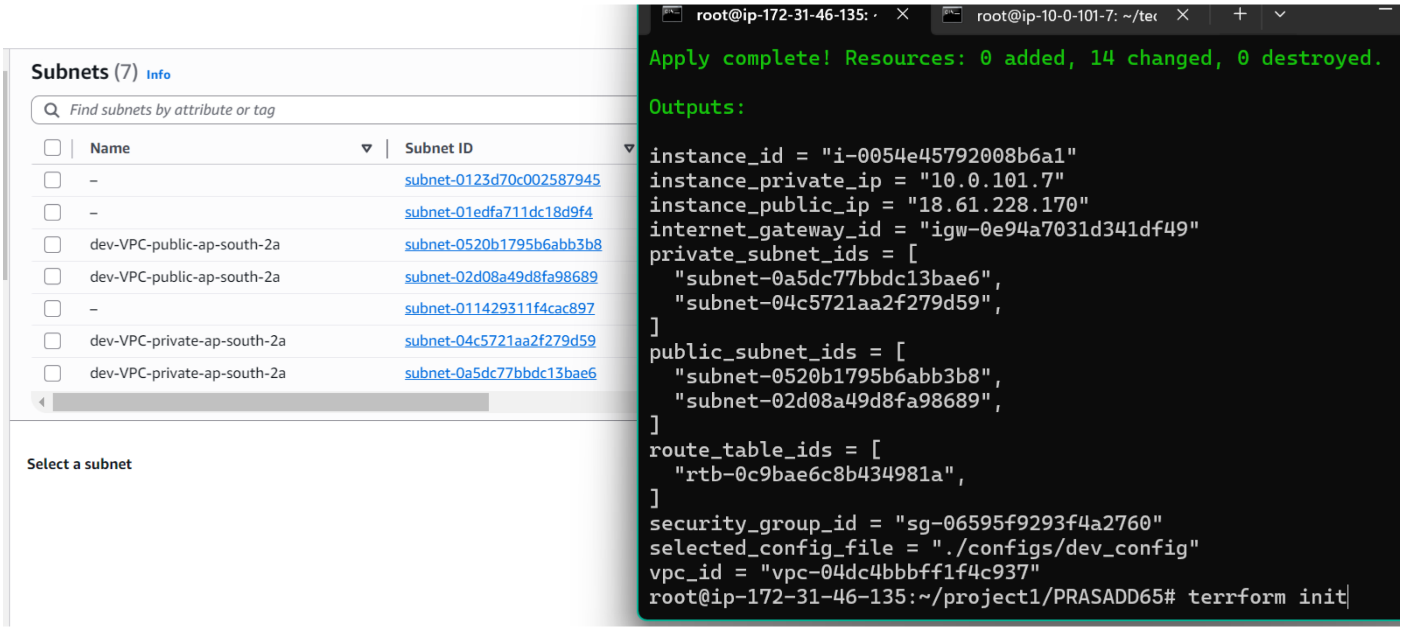
–

Security groups

sg-06595f9293f4a2760 (terraform-20250612212629778200000003)

```
Apply complete! Resources: 0 added, 14 changed, 0 destroyed.

Outputs:

instance_id = "i-0054e45792008b6a1"
instance_private_ip = "10.0.101.7"
instance_public_ip = "18.61.228.170"
internet_gateway_id = "igw-0e94a7031d341df49"
private_subnet_ids = [
  "subnet-0a5dc77bbdc13bae6",
  "subnet-04c5721aa2f279d59",
]
public_subnet_ids = [
  "subnet-0520b1795b6abb3b8",
  "subnet-02d08a49d8fa98689",
]
route_table_ids = [
  "rtb-0c9bae6c8b434981a",
]
security_group_id = "sg-06595f9293f4a2760"
selected_config_file = "./configs/dev_config"
vpc_id = "vpc-04dc4bbbff1f4c937"
root@ip-172-31-46-135:~/project1/PRASADD65# terrform init
```

9. Subnets with env variable pass



Subnets (7) Info

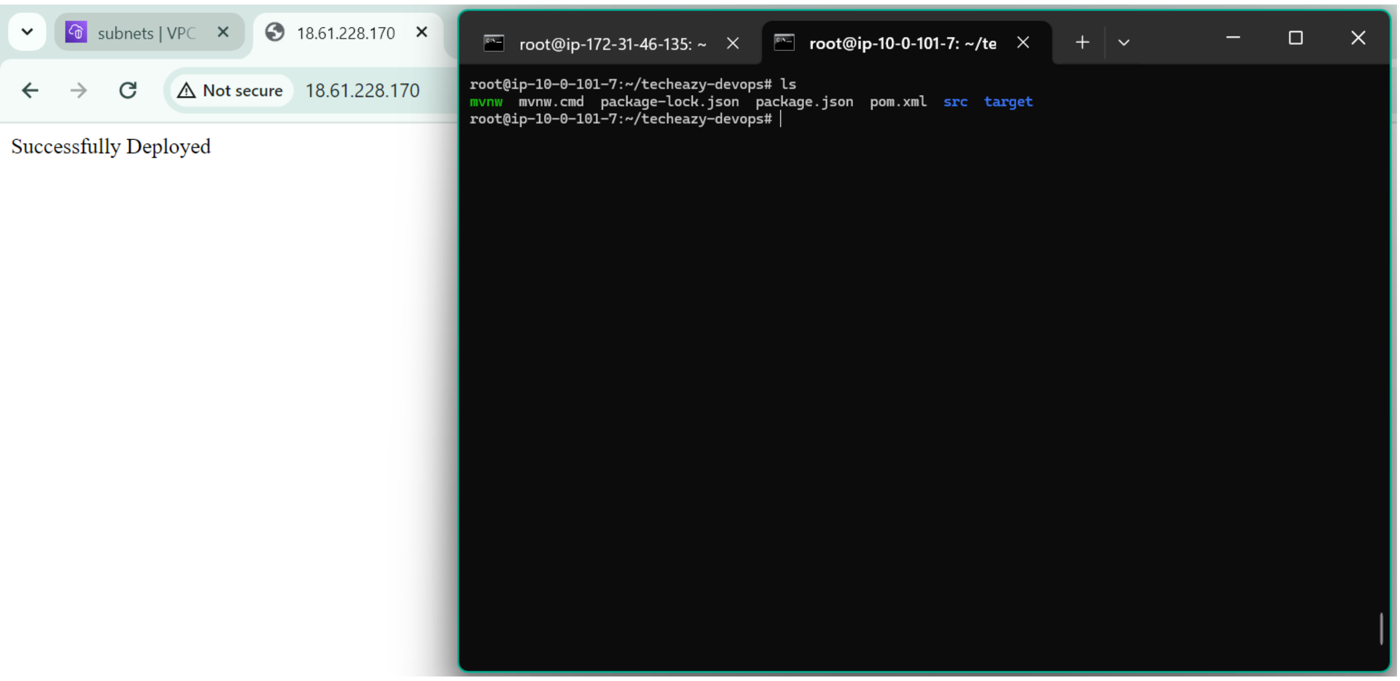
Find subnets by attribute or tag

	Name	Subnet ID
□	–	subnet-0123d70c002587945
□	–	subnet-01edfa711dc18d9f4
□	dev-VPC-public-ap-south-2a	subnet-0520b1795b6abb3b8
□	dev-VPC-public-ap-south-2a	subnet-02d08a49d8fa98689
□	–	subnet-011429311f4cac897
□	dev-VPC-private-ap-south-2a	subnet-04c5721aa2f279d59
□	dev-VPC-private-ap-south-2a	subnet-0a5dc77bbdc13bae6

Select a subnet

```
Apply complete! Resources: 0 added, 14 changed, 0 destroyed.

Outputs:

instance_id = "i-0054e45792008b6a1"
instance_private_ip = "10.0.101.7"
instance_public_ip = "18.61.228.170"
internet_gateway_id = "igw-0e94a7031d341df49"
private_subnet_ids = [
  "subnet-0a5dc77bbdc13bae6",
  "subnet-04c5721aa2f279d59",
]
public_subnet_ids = [
  "subnet-0520b1795b6abb3b8",
  "subnet-02d08a49d8fa98689",
]
route_table_ids = [
  "rtb-0c9bae6c8b434981a",
]
security_group_id = "sg-06595f9293f4a2760"
selected_config_file = "./configs/dev_config"
vpc_id = "vpc-04dc4bbbff1f4c937"
root@ip-172-31-46-135:~/project1/PRASADD65# terrform init
```

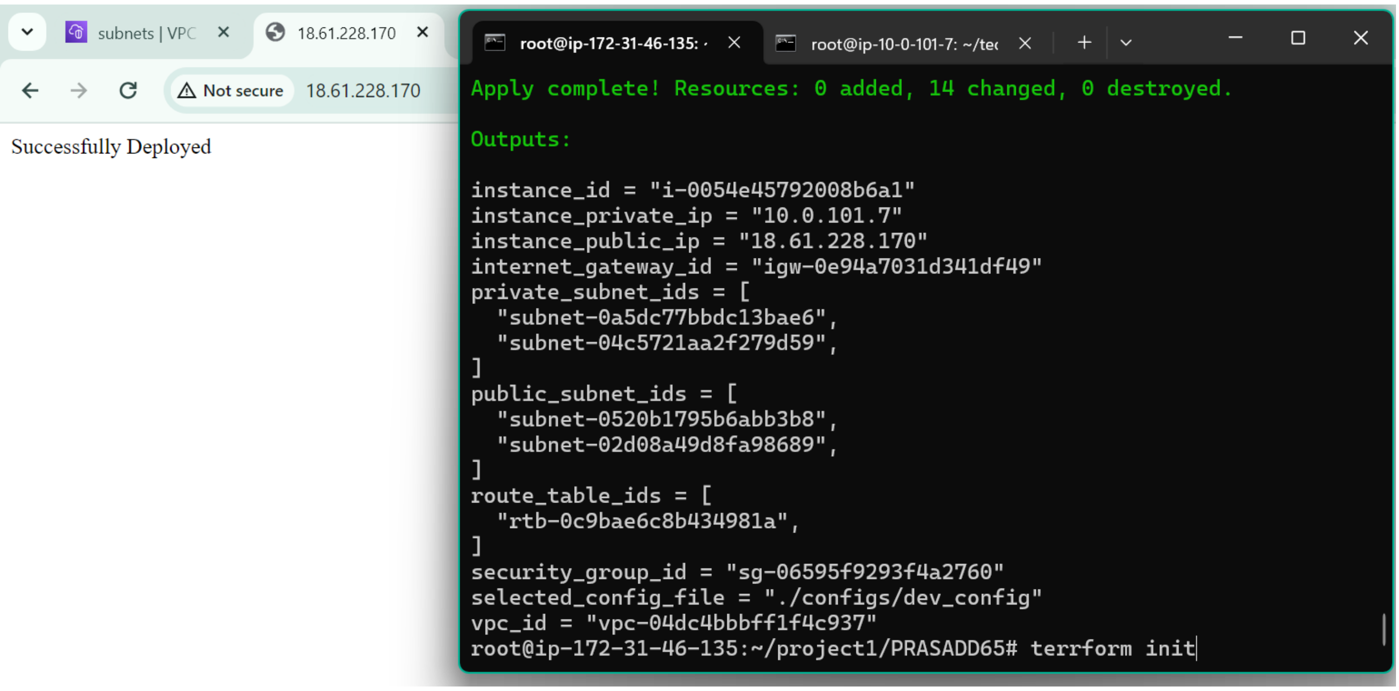
10 Project file after the build -



Successfully Deployed

```
root@ip-10-0-101-7:~/techeazy-devops# ls
mvnw  mvnw.cmd  package-lock.json  package.json  pom.xml  src  target
root@ip-10-0-101-7:~/techeazy-devops# |
```

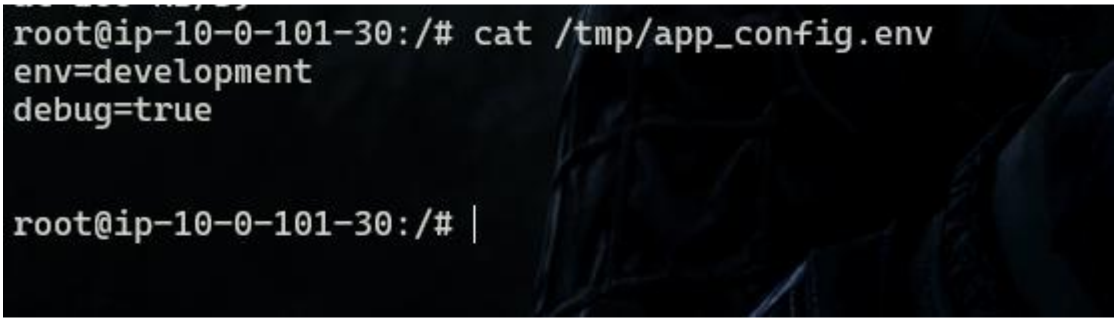
11 Output on the web browser:



Successfully Deployed

```
Apply complete! Resources: 0 added, 14 changed, 0 destroyed.

Outputs:

instance_id = "i-0054e45792008b6a1"
instance_private_ip = "10.0.101.7"
instance_public_ip = "18.61.228.170"
internet_gateway_id = "igw-0e94a7031d341df49"
private_subnet_ids = [
  "subnet-0a5dc77bbdc13bae6",
  "subnet-04c5721aa2f279d59",
]
public_subnet_ids = [
  "subnet-0520b1795b6abb3b8",
  "subnet-02d08a49d8fa98689",
]
route_table_ids = [
  "rtb-0c9bae6c8b434981a",
]
security_group_id = "sg-06595f9293f4a2760"
selected_config_file = "./configs/dev_config"
vpc_id = "vpc-04dc4bbbff1f4c937"
root@ip-172-31-46-135:~/project1/PRASADD65# terrform init
```

12 config file selected with stage env variable pass, data reflection on ec2 -



```
root@ip-10-0-101-30:/# cat /tmp/app_config.env
env=development
debug=true


root@ip-10-0-101-30:/# |
```