**Cloud Computing Lab**

**Safa Jahangir**

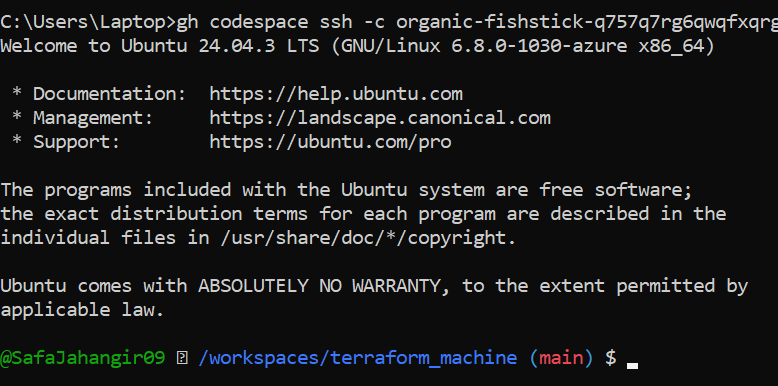
**BSE-V B**

**2023-BSE-056**

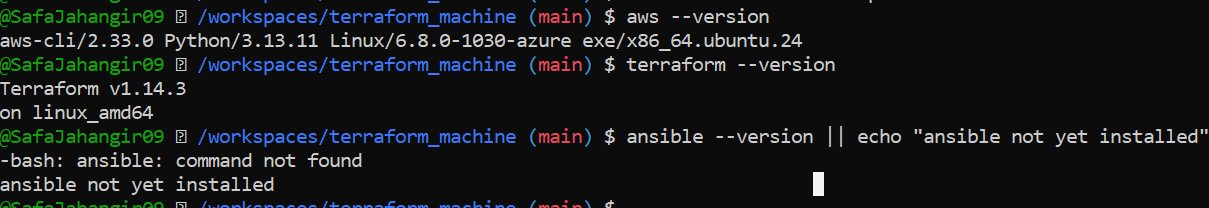
**LAB 14**

**Task 0 – Lab Setup (Codespace & GH CLI)**

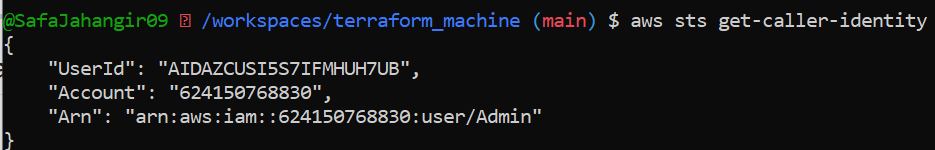
* task0\_codespace\_open.png



* task0\_env\_check.png

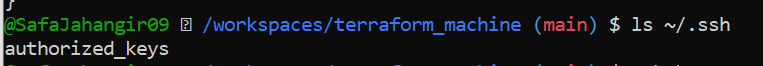


* task0\_aws\_config.png

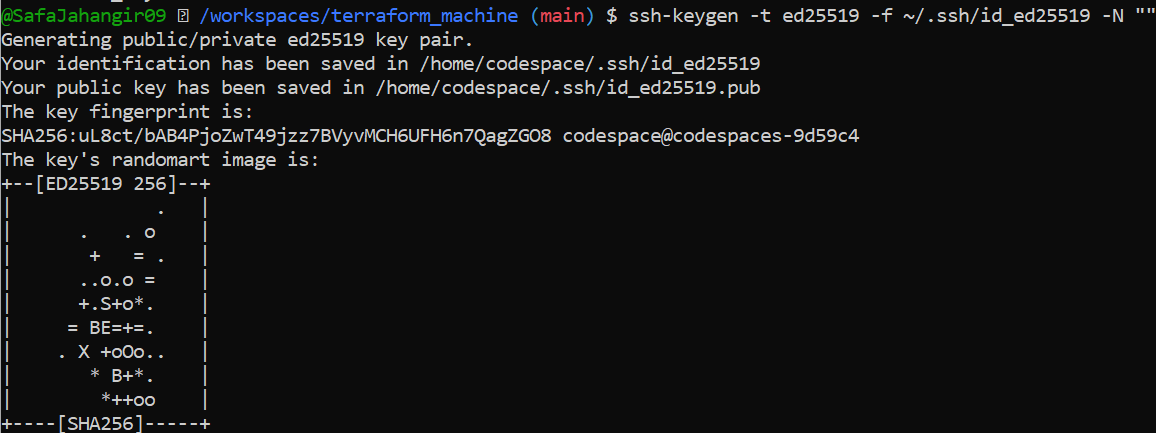


## Task 1 – Generate ssh key and Initial Terraform apply

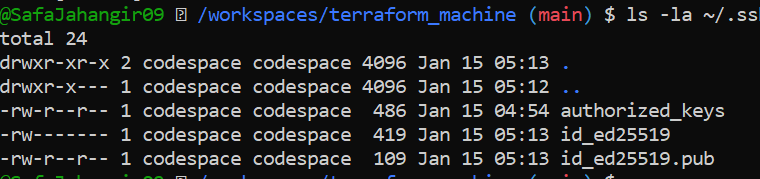
* task1\_ssh\_keygen\_before.png



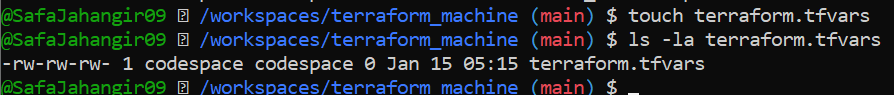
* task1\_ssh\_keygen.png



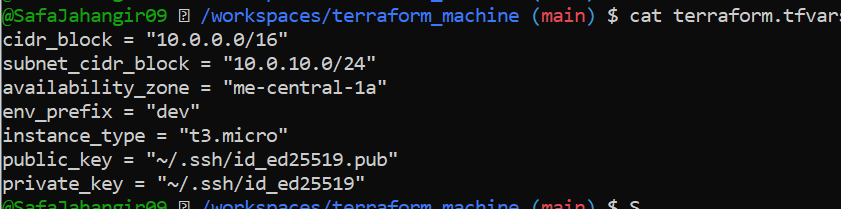
* task1\_ssh\_keygen\_after.png



* task1\_terraform\_tfvars\_created.png



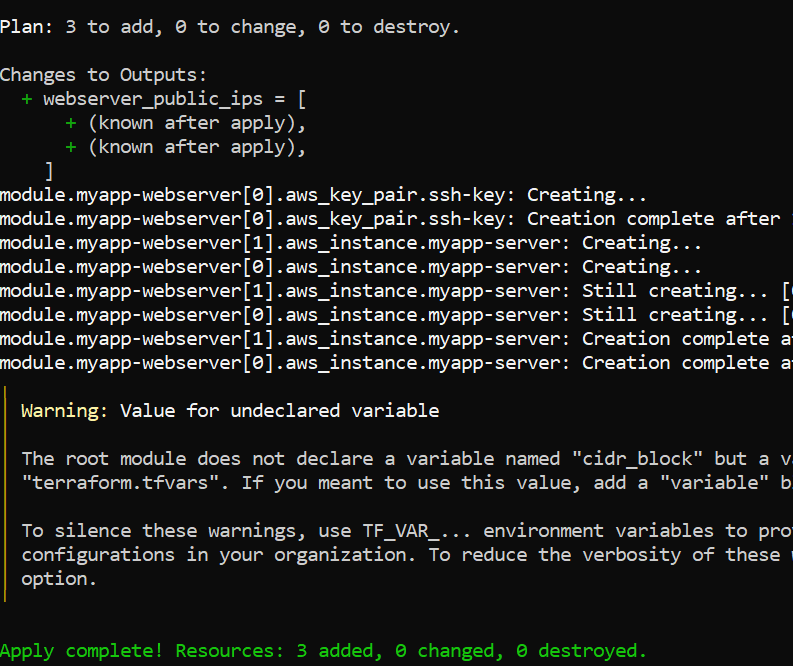
* task1\_terraform\_tfvars.png



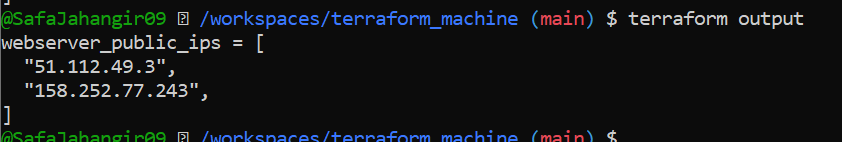
* task1\_terraform\_init.png



* task1\_terraform\_apply\_2\_instances.png

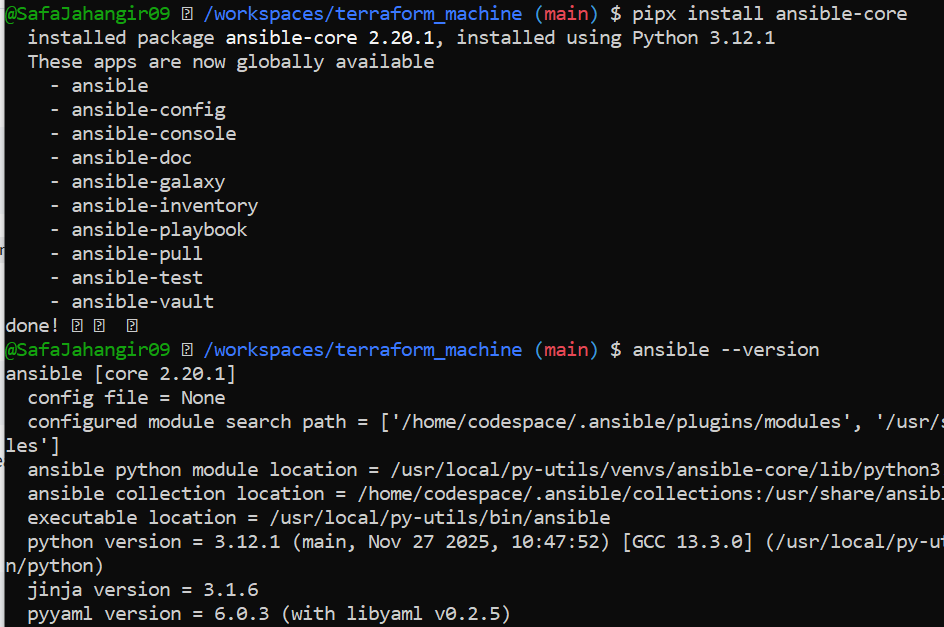


* task1\_terraform\_output\_ips.png

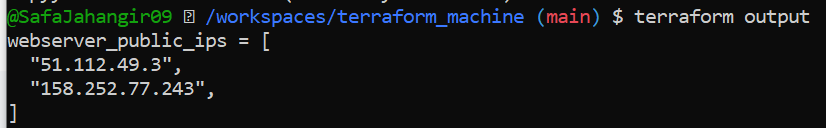


## Task 2 – Static Ansible inventory with two EC2 instances

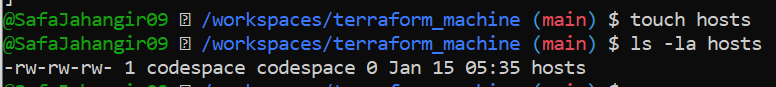
* task2\_ansible\_install.png



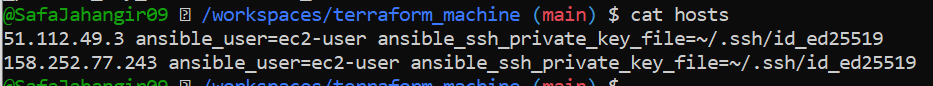
* task2\_terraform\_output\_ips.png



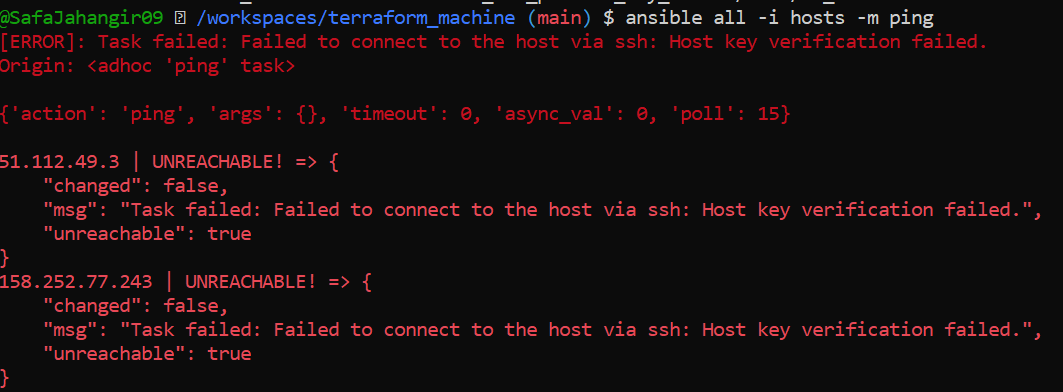
* task2\_hosts\_created.png



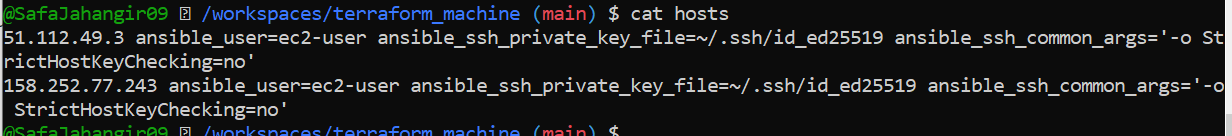
* task2\_hosts\_initial.png



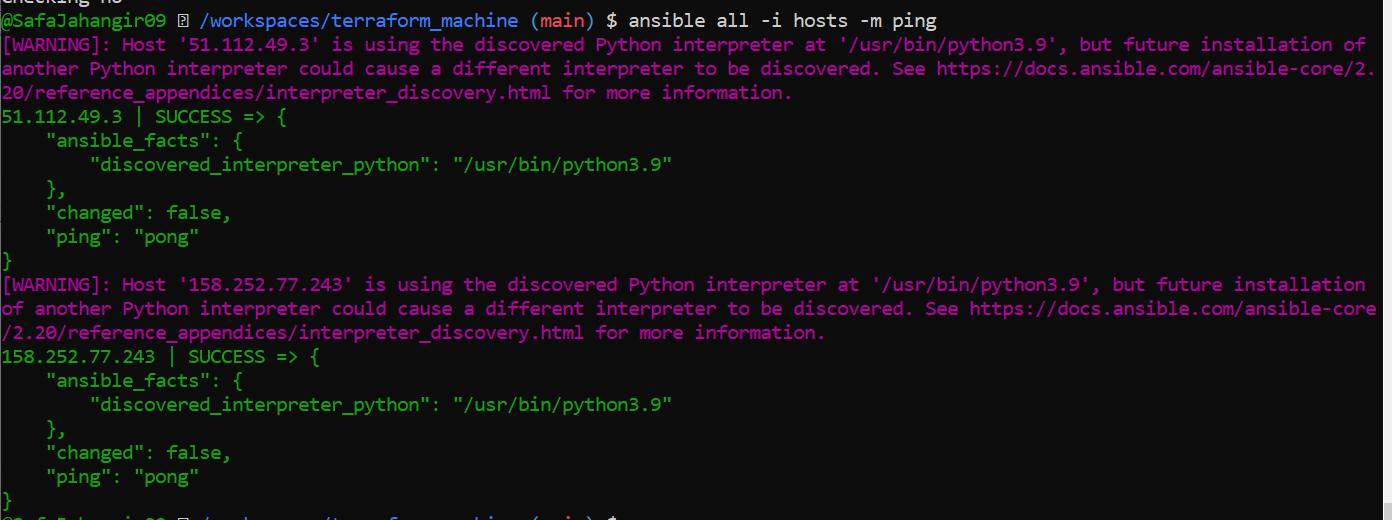
* task2\_ansible\_ping\_initial.png



* task2\_hosts\_with\_common\_args.png

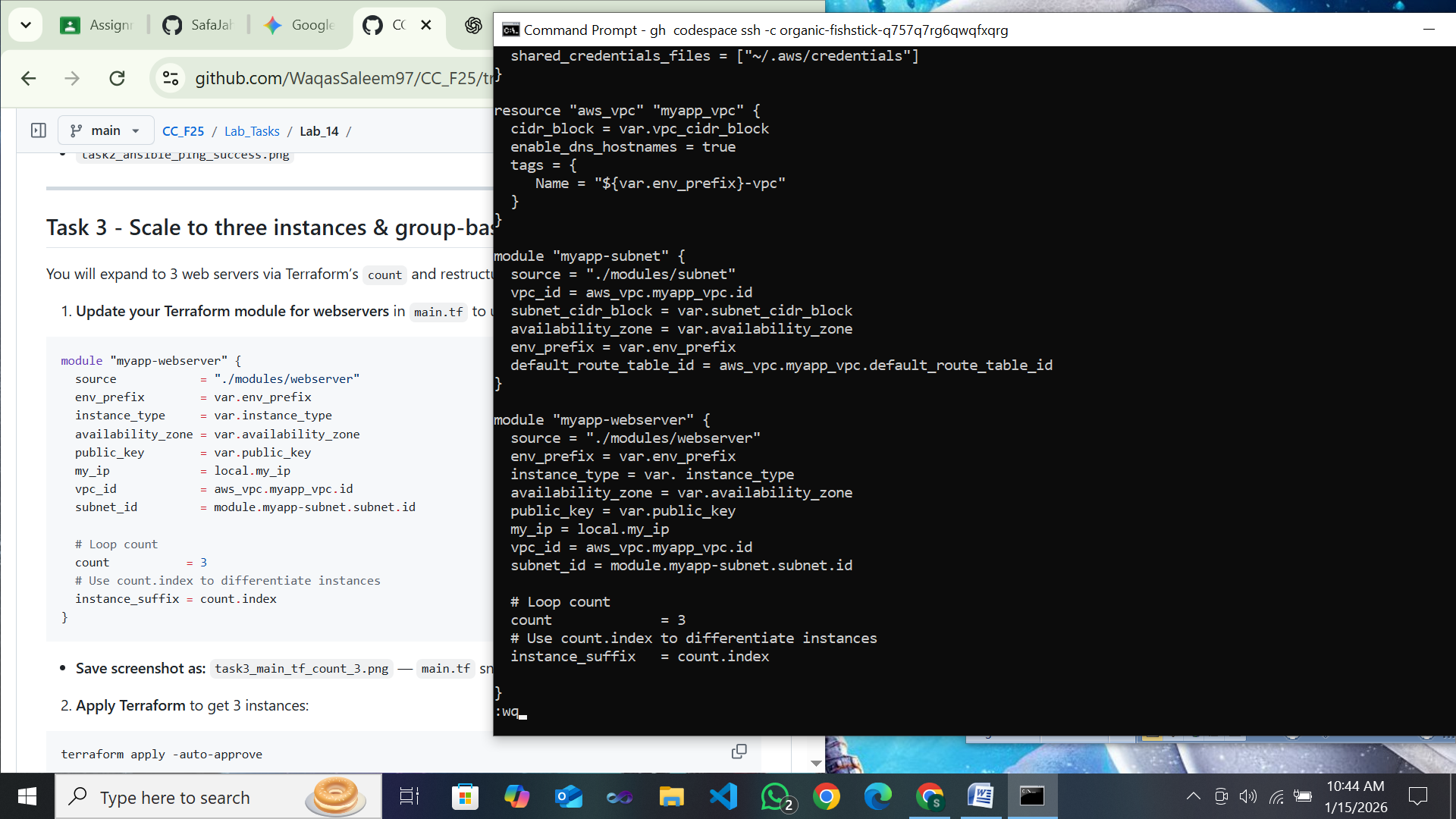


* task2\_ansible\_ping\_success.png

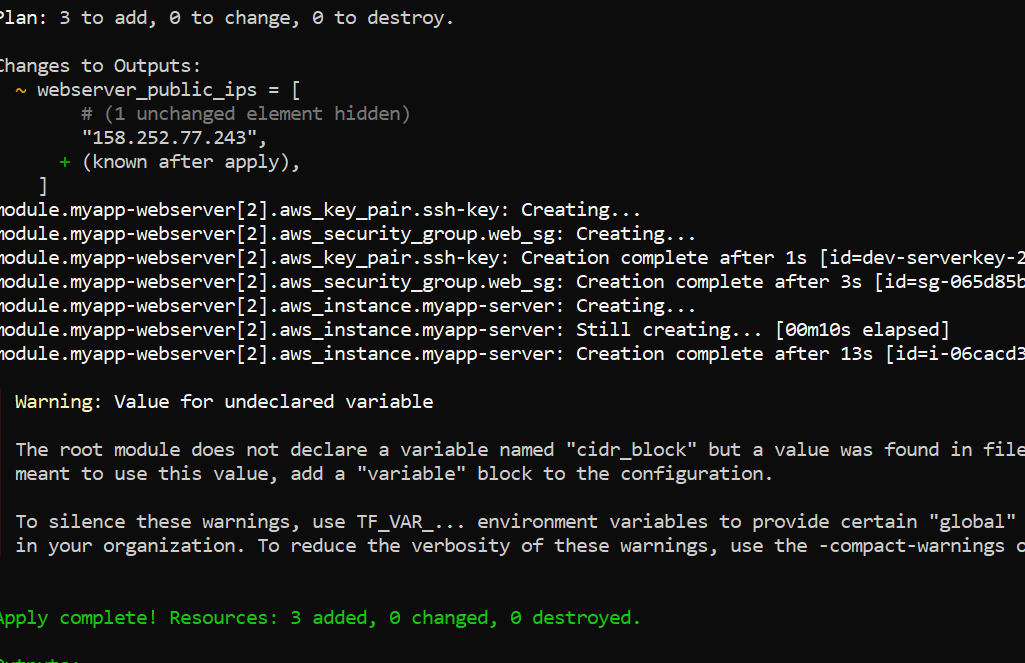


## Task 3 - Scale to three instances & group-based inventory

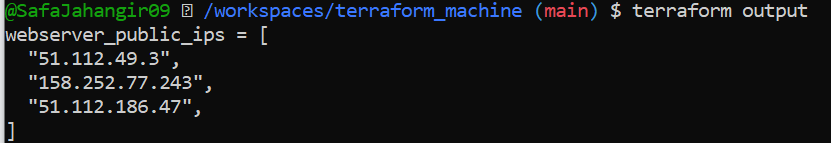
* task3\_main\_tf\_count\_3.png



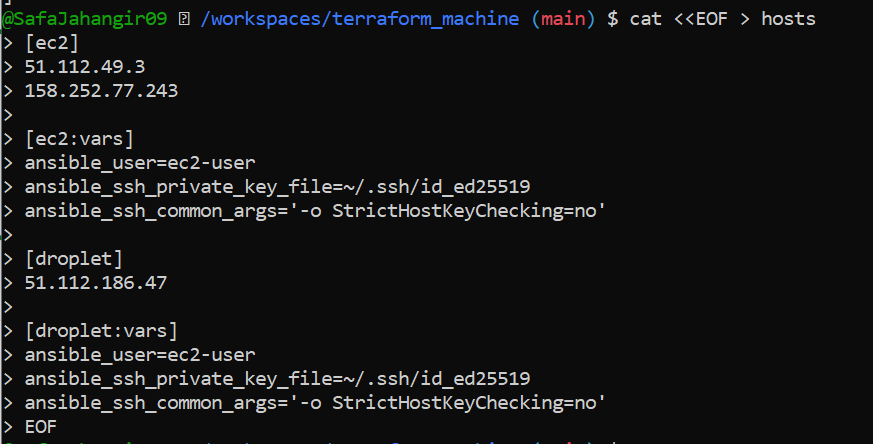
* task3\_terraform\_apply\_3\_instances.png



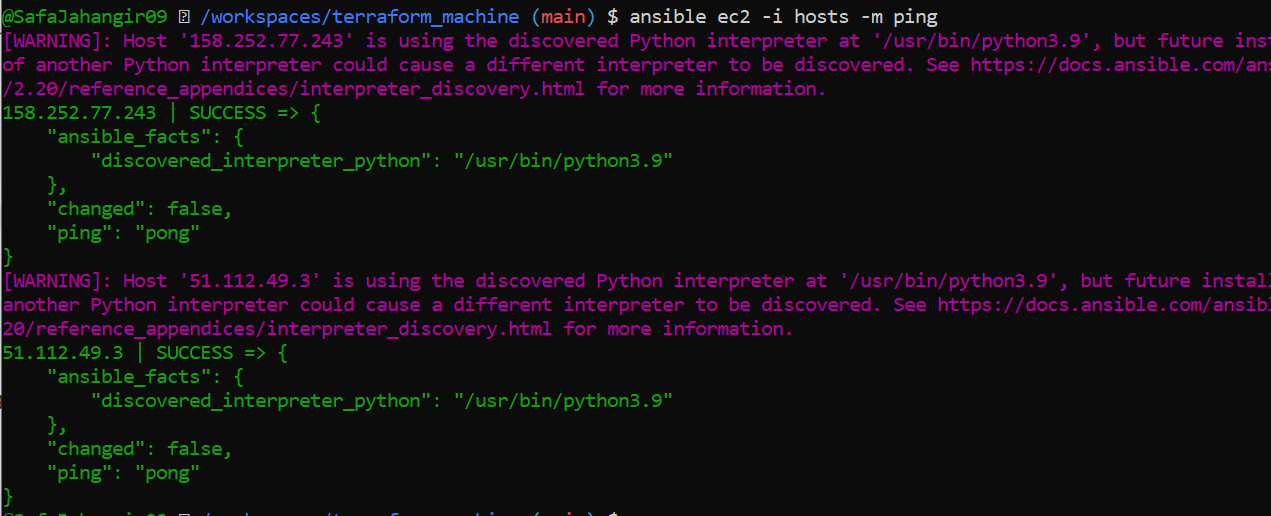
* task3\_terraform\_output\_3\_ips.png



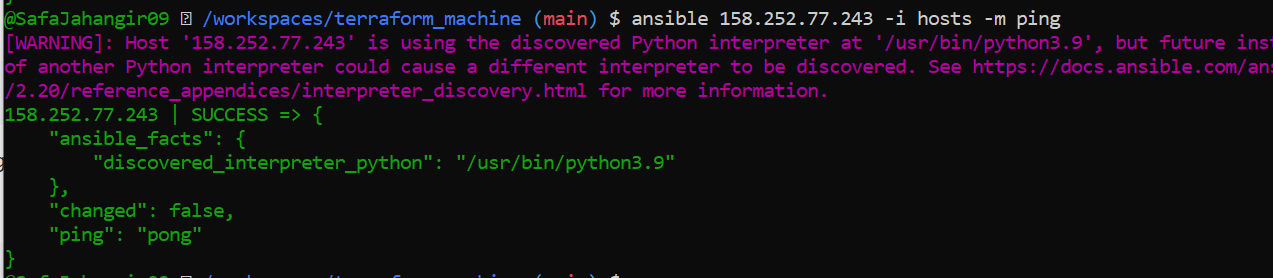
* task3\_hosts\_grouped.png



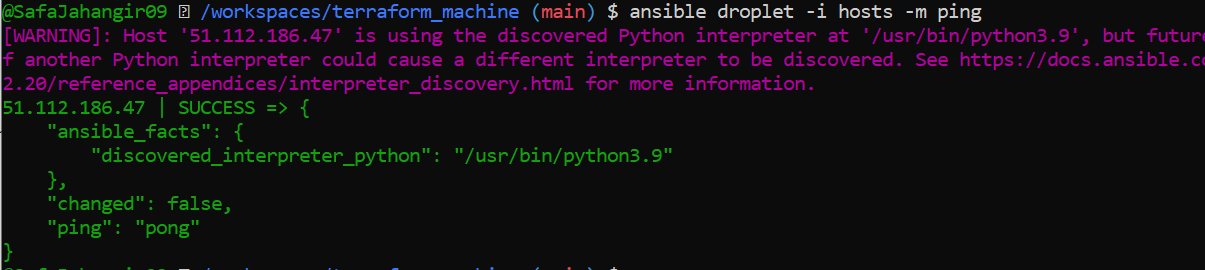
* task3\_ansible\_ec2\_ping.png



* task3\_ansible\_single\_ip\_ping.png



* task3\_ansible\_droplet\_ping.png

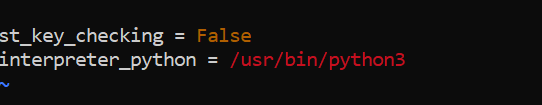


* task3\_ansible\_all\_ping.png

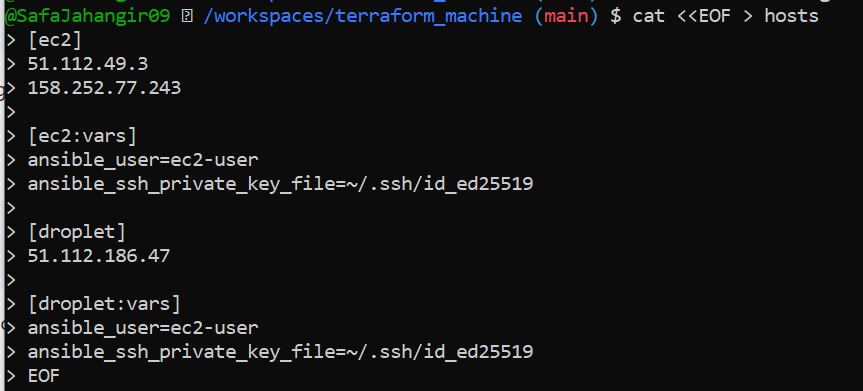


## Task 4 – Global ansible.cfg & first nginx playbook

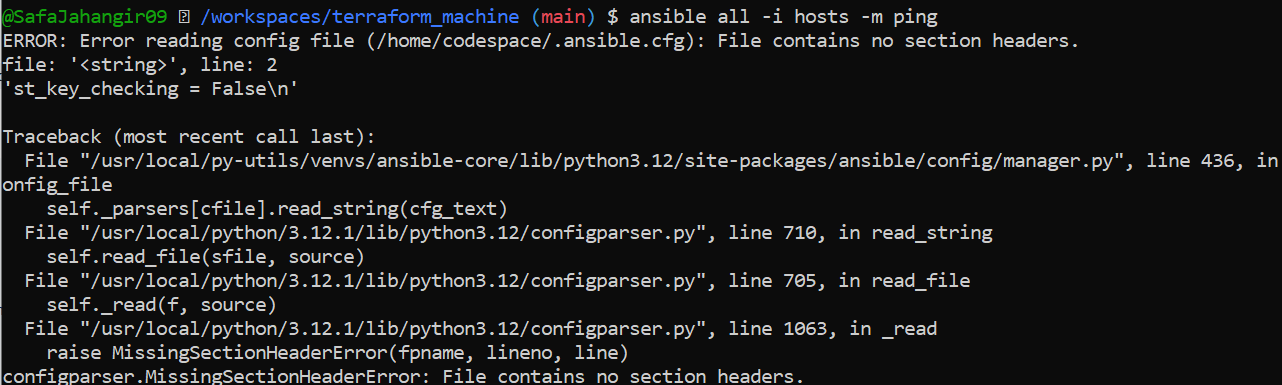
* task4\_global\_ansible\_cfg.png



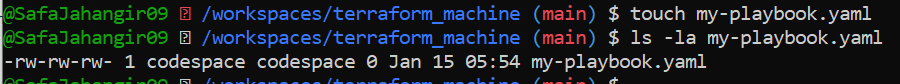
* task4\_hosts\_without\_common\_args.png



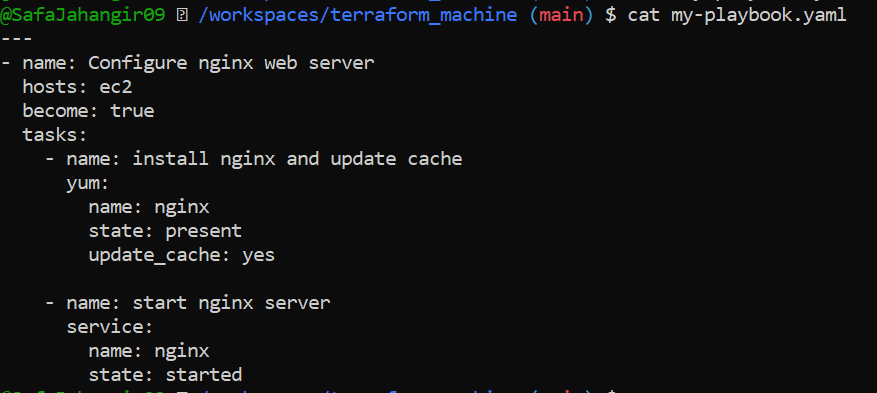
* task4\_ansible\_ping\_after\_cfg.png



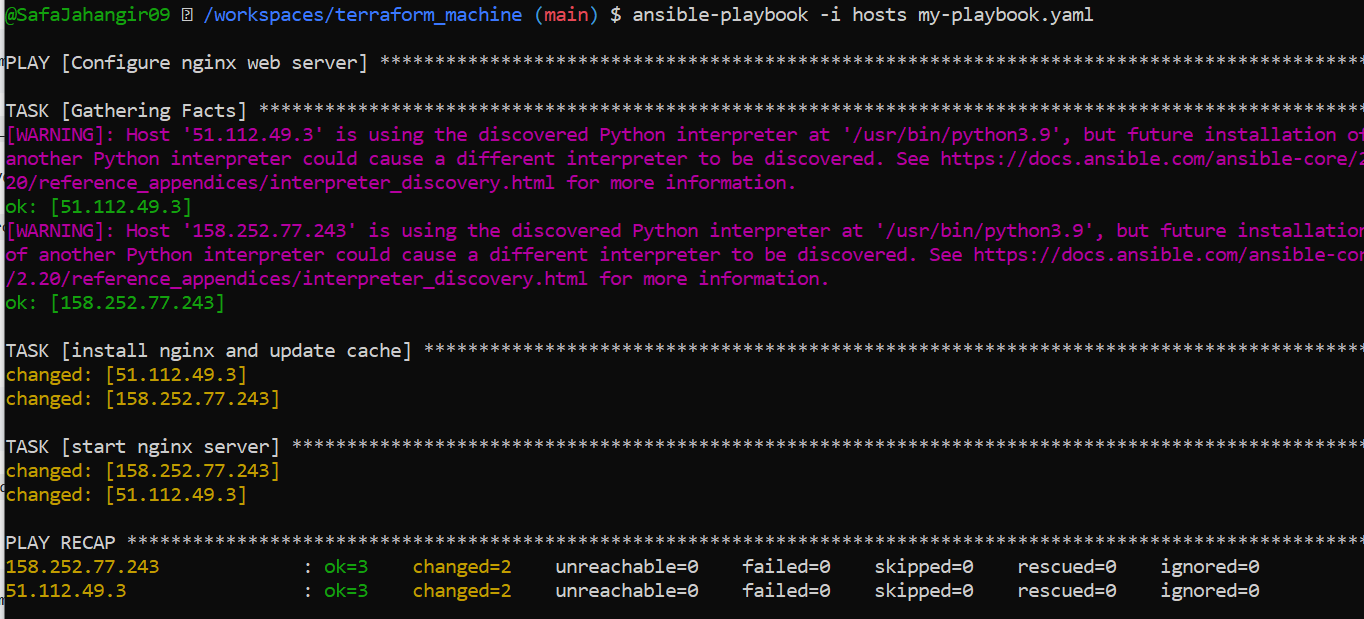
* task4\_my\_playbook\_created.png



* task4\_my\_playbook\_ec2.png



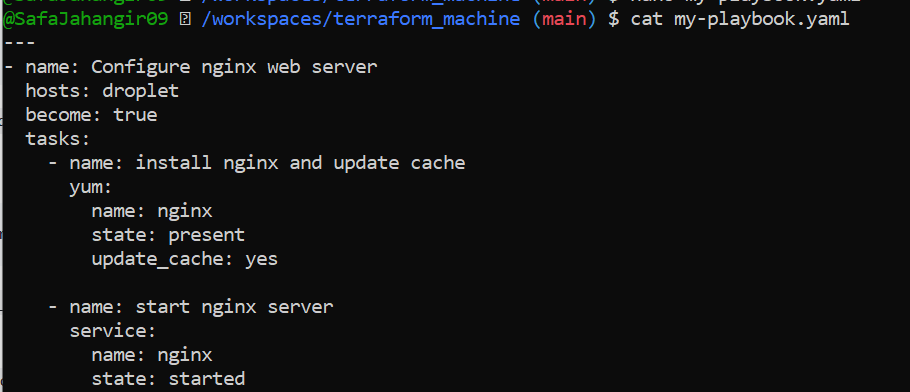
* task4\_ansible\_play\_ec2.png



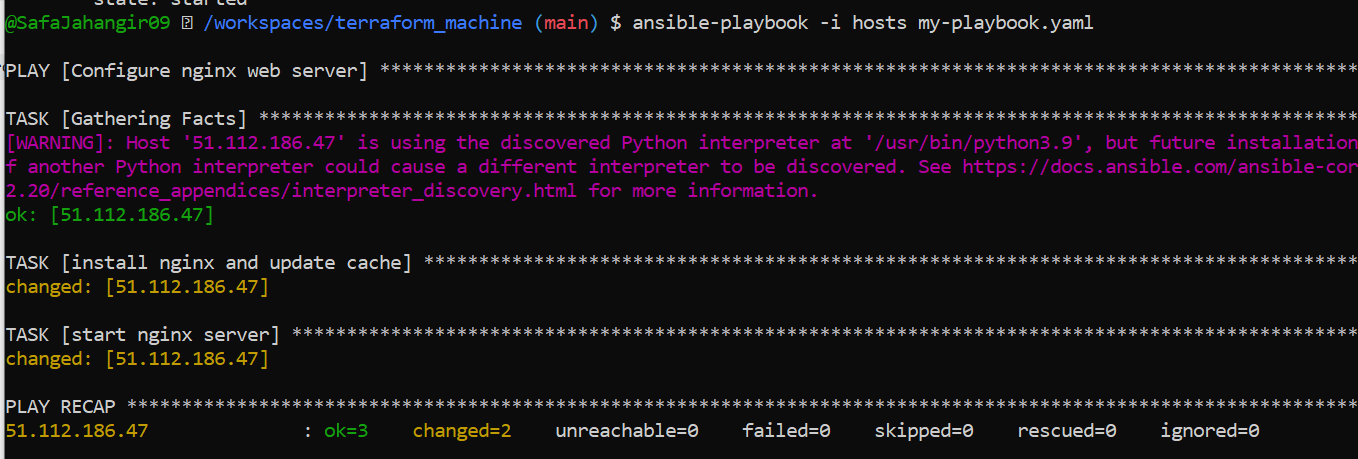
* task4\_nginx\_browser\_ec2.png



* task4\_my\_playbook\_droplet.png



* task4\_ansible\_play\_droplet.png

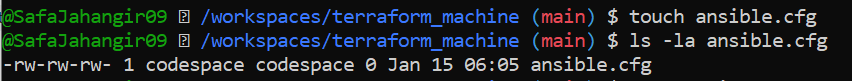


* task4\_nginx\_browser\_droplet.png

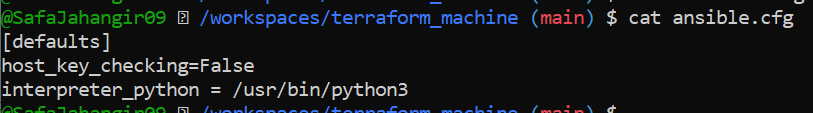


## Task 5 – Single nginx target group & HTTPS prerequisites

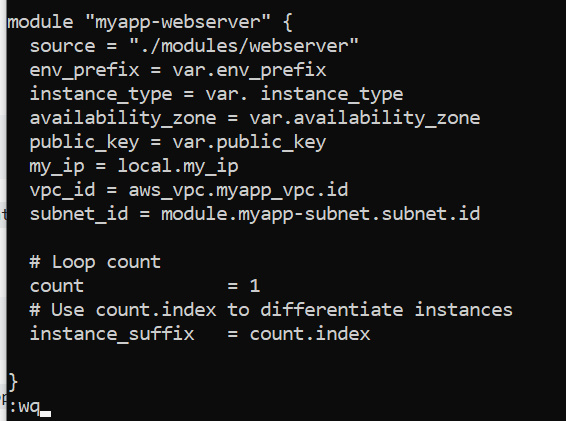
* task5\_project\_ansible\_cfg\_created.png



* task5\_project\_ansible\_cfg.png



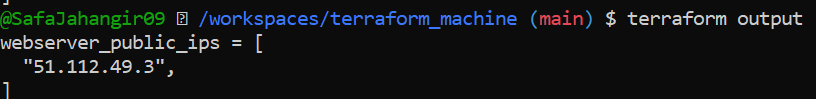
* task5\_main\_tf\_count\_1.png



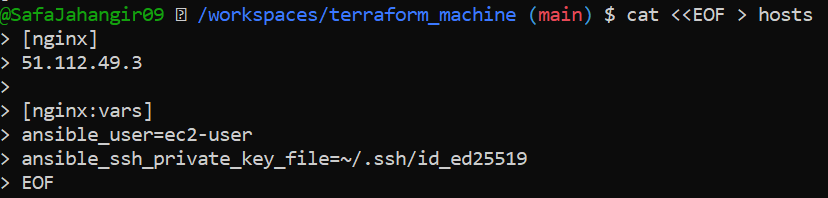
* task5\_terraform\_apply\_one\_instance.png



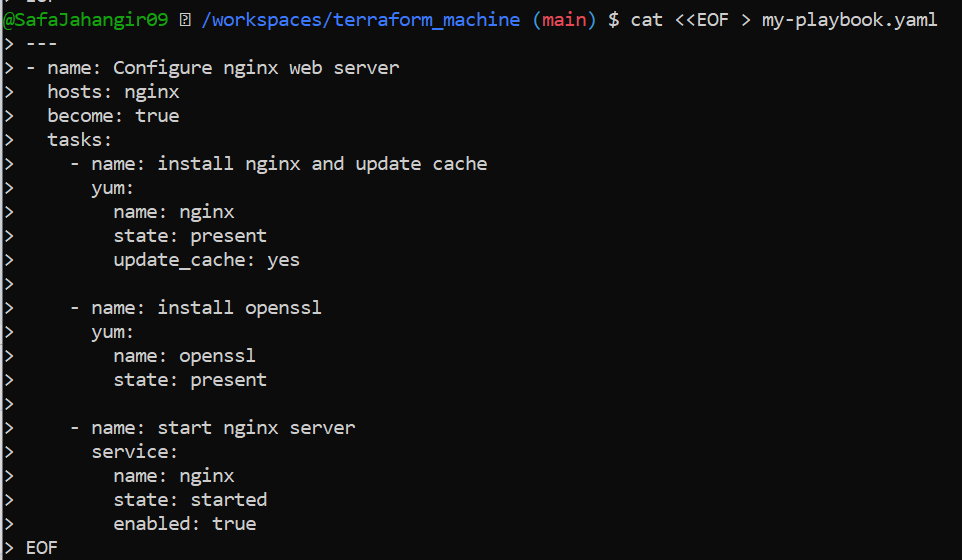
* task5\_terraform\_output\_single\_ip.png



* task5\_hosts\_nginx\_group.png



* task5\_my\_playbook\_nginx\_group.png



* task5\_ansible\_play\_nginx\_group.png

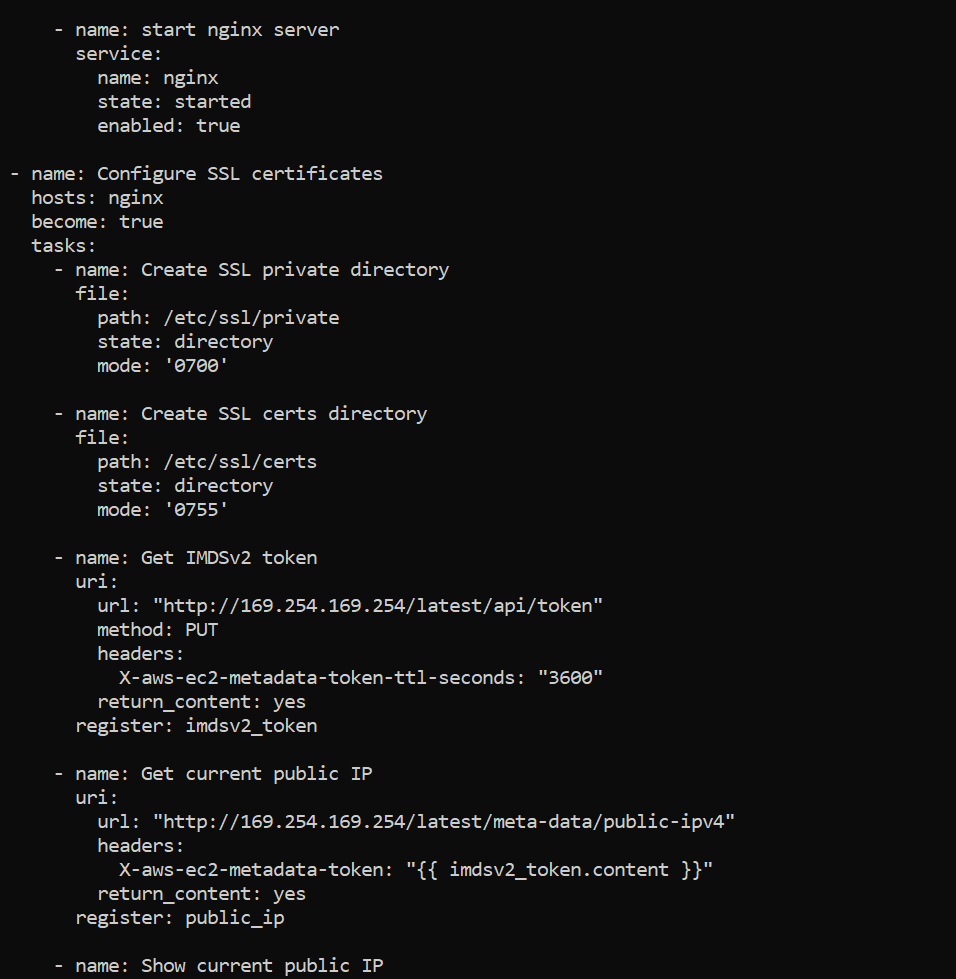


* task5\_nginx\_browser\_single.png

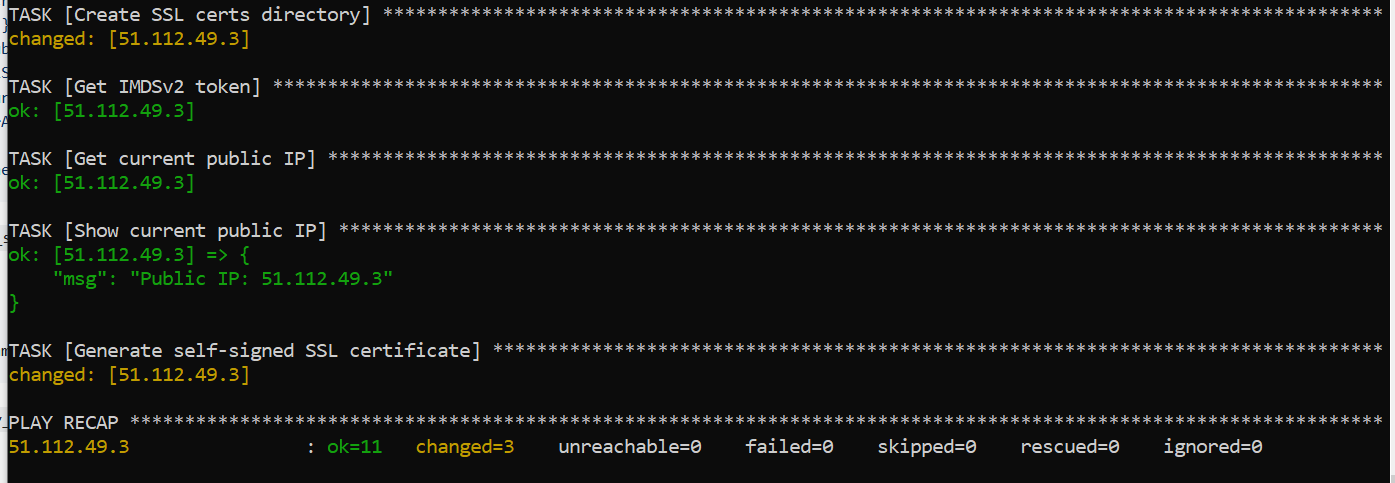


## Task 6 - Ansible-managed SSL certificates

* task6\_my\_playbook\_ssl\_section.png



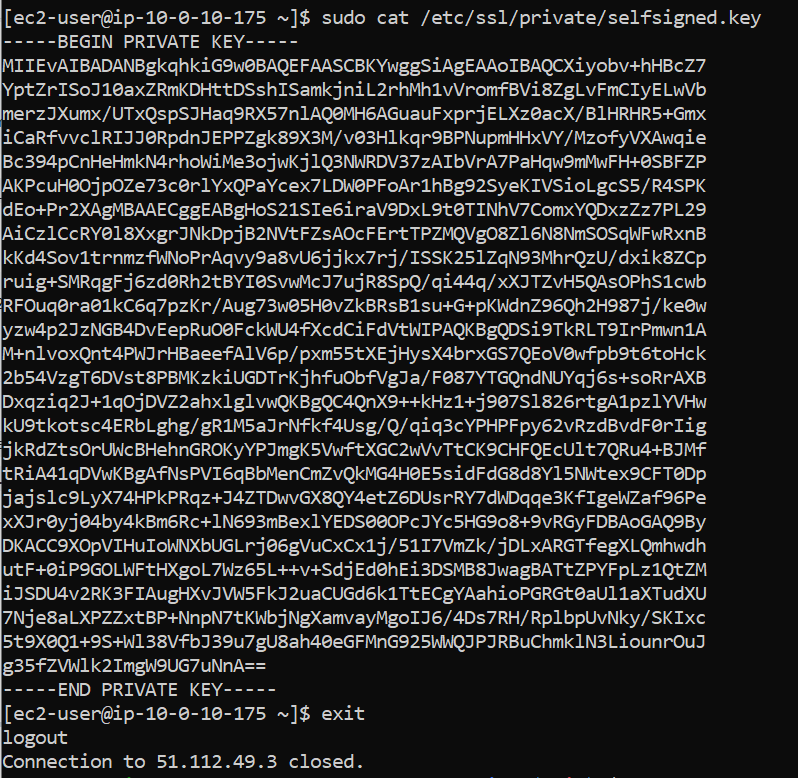
* task6\_ansible\_play\_ssl.png



* task6\_ssl\_cert\_file.png

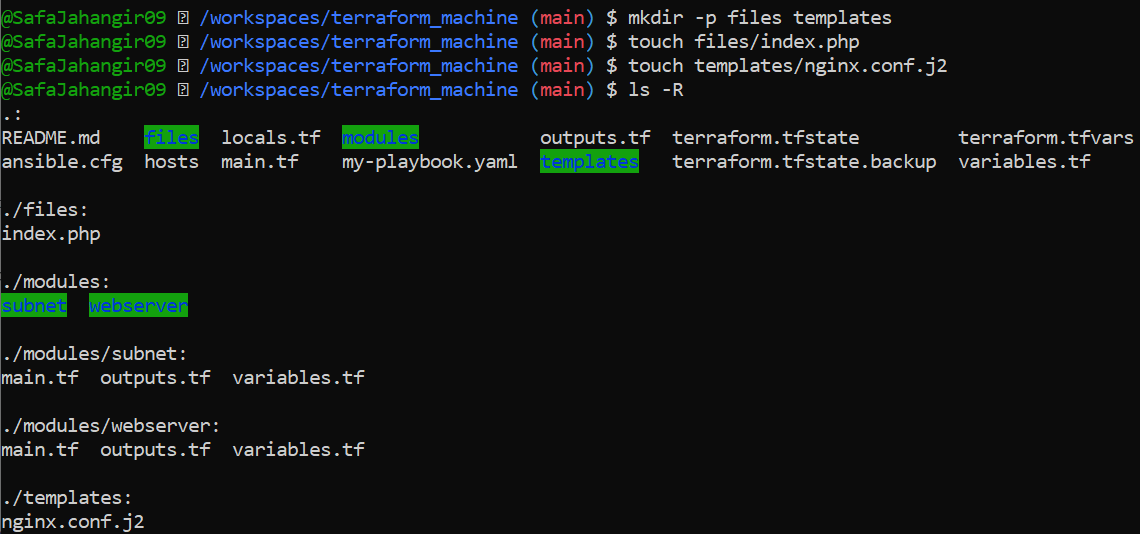


* task6\_ssl\_key\_file.png

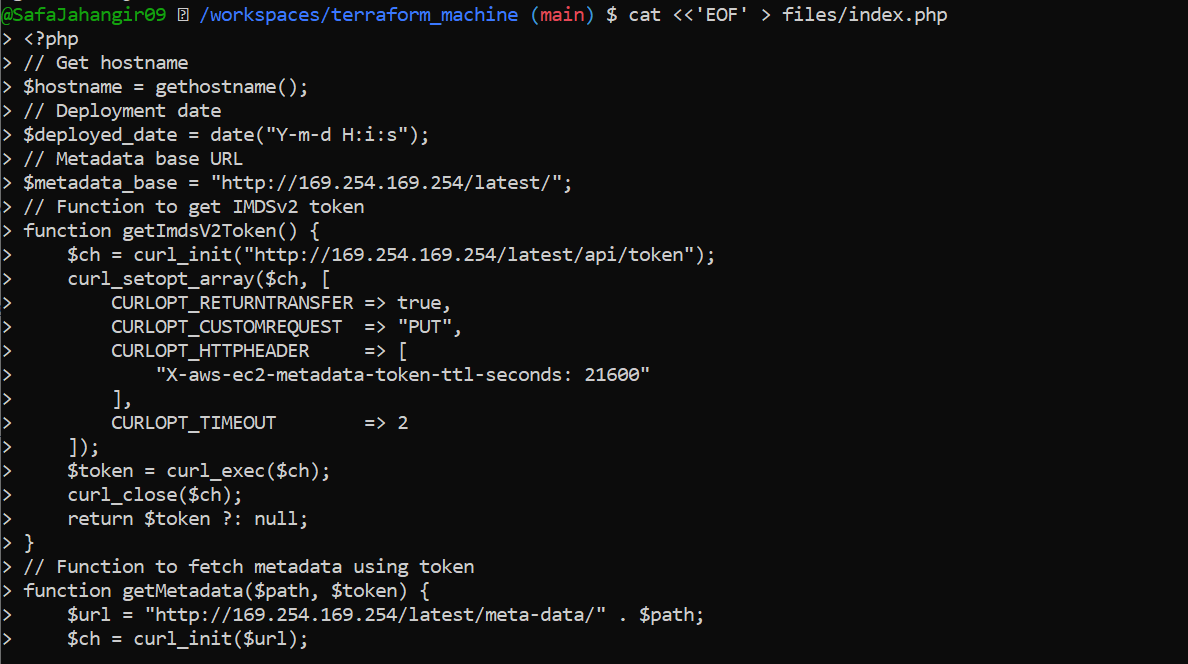


## Task 7 - PHP front-end deployment with templates

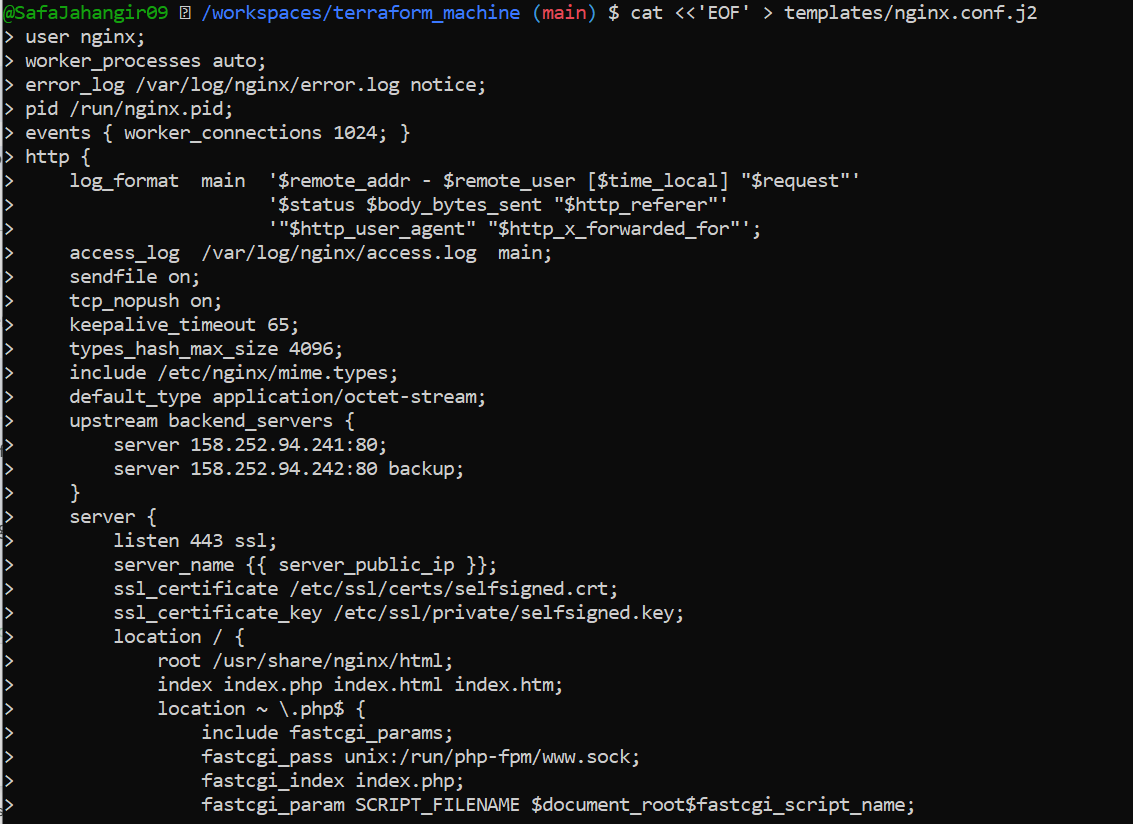
* task7\_files\_templates\_created.png



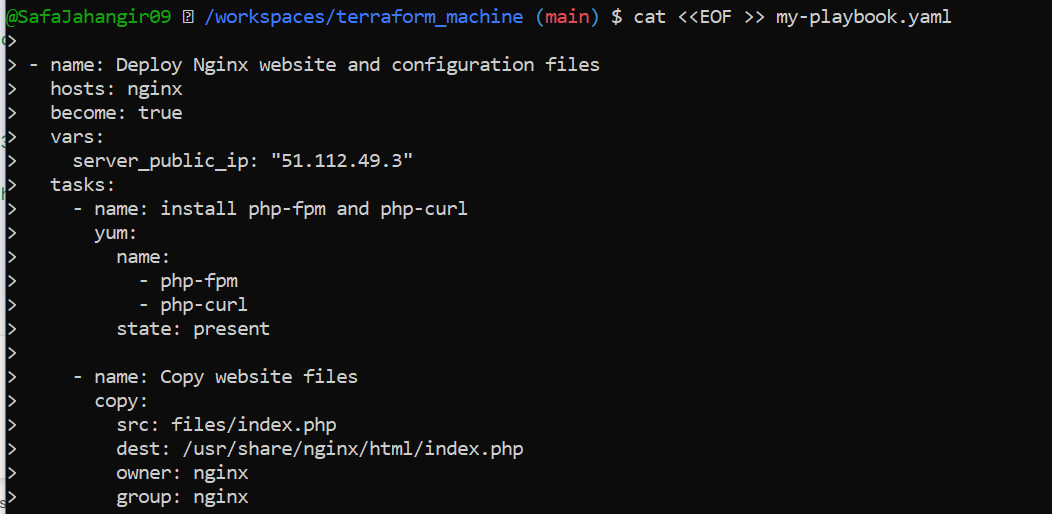
* task7\_index\_php\_content.png



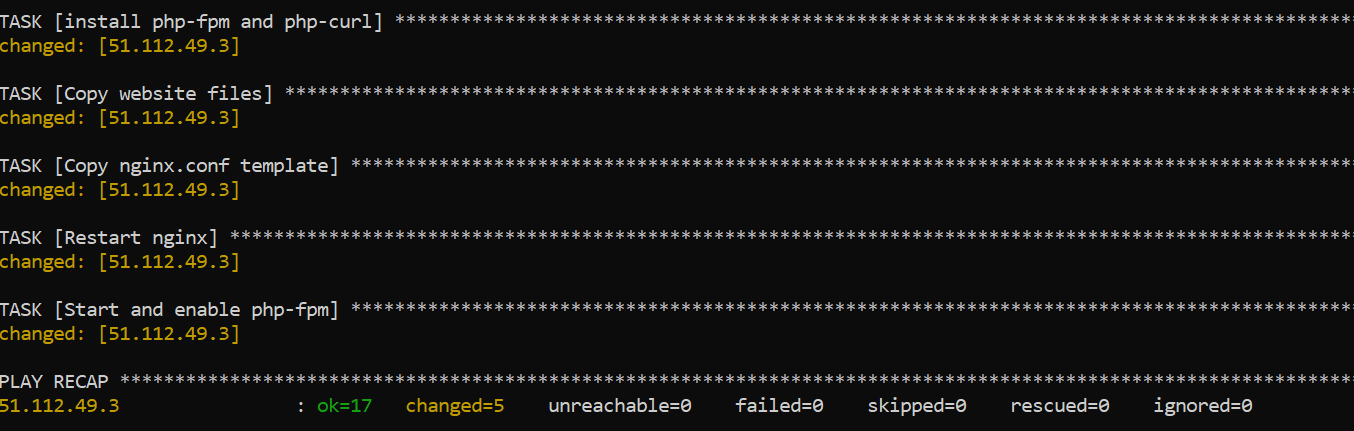
* task7\_nginx\_conf\_template.png



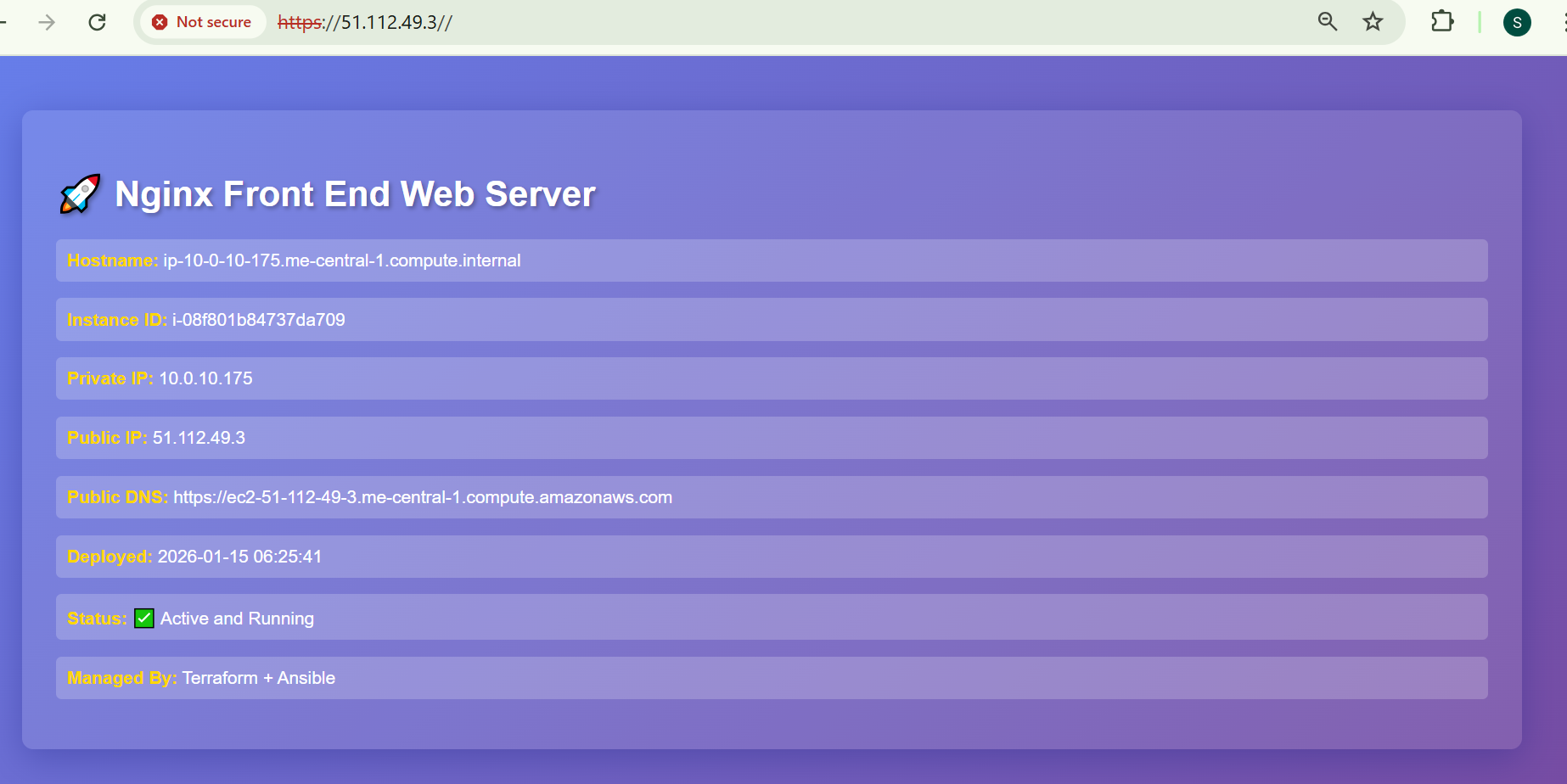
* task7\_my\_playbook\_web\_deploy.png



* task7\_ansible\_play\_web\_deploy.png

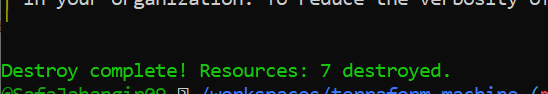


* task7\_php\_https\_browser.png

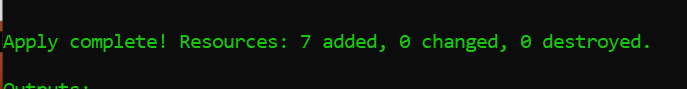


**Task 8 – Docker & Docker Compose provisioning via Ansible**

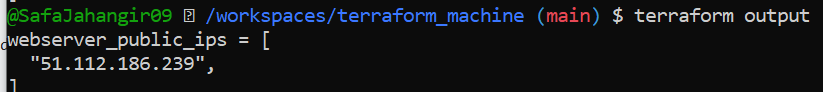
* task8\_terraform\_destroy\_old.png



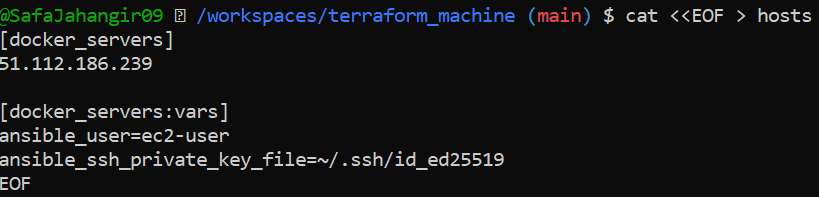
* task8\_terraform\_apply\_docker\_instance.png



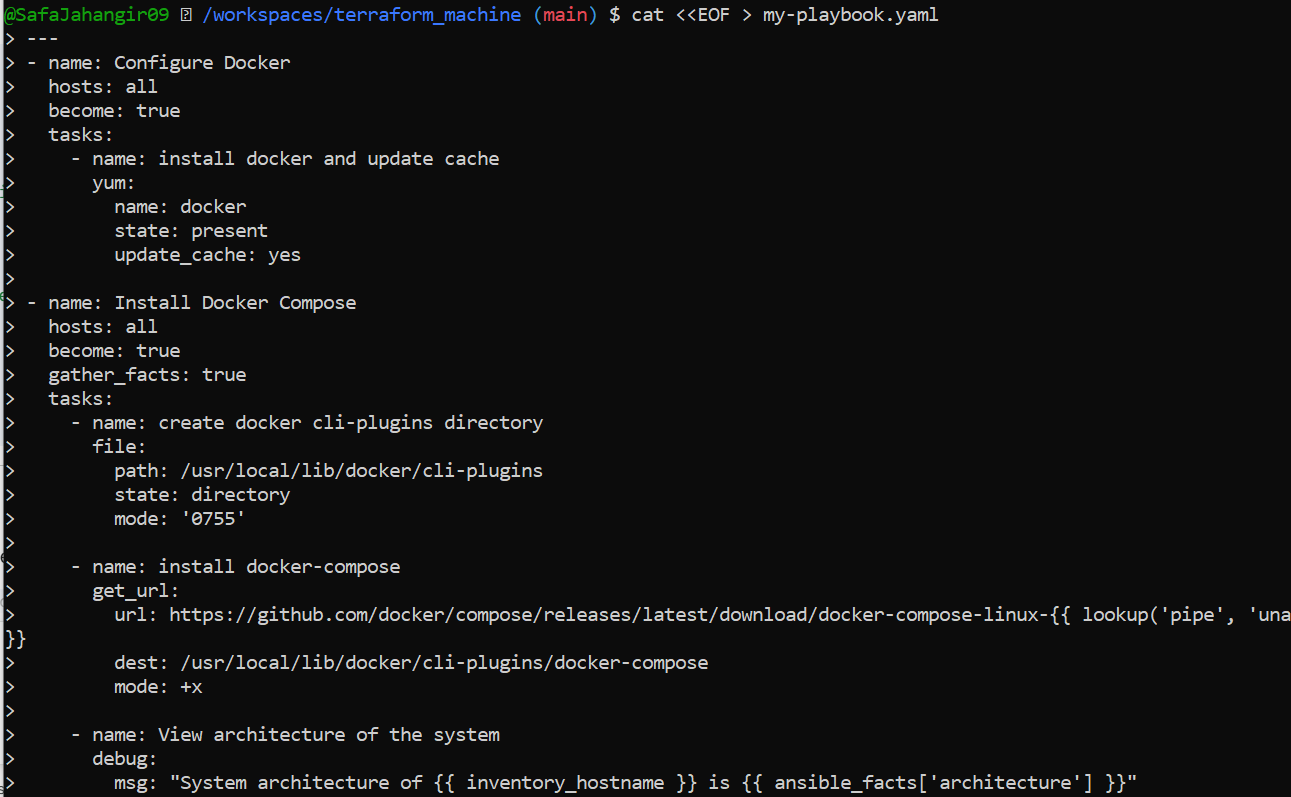
* task8\_terraform\_output\_new\_ip.png



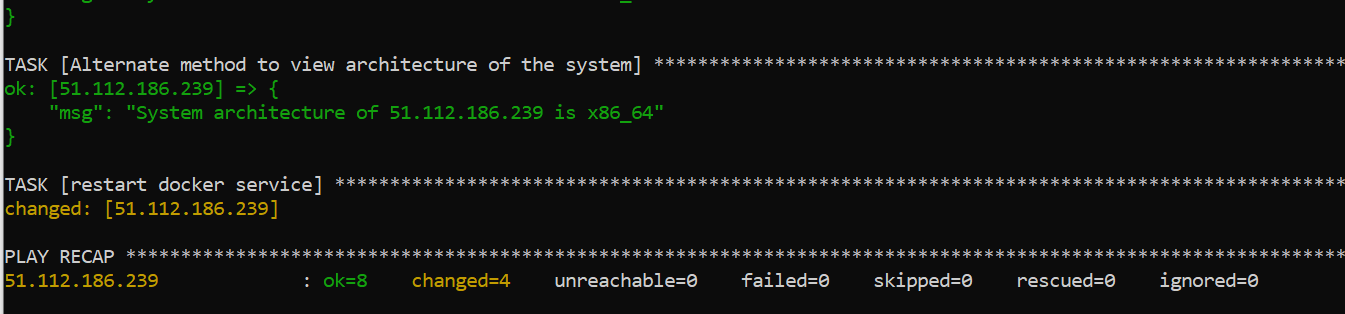
* task8\_hosts\_docker\_servers.png



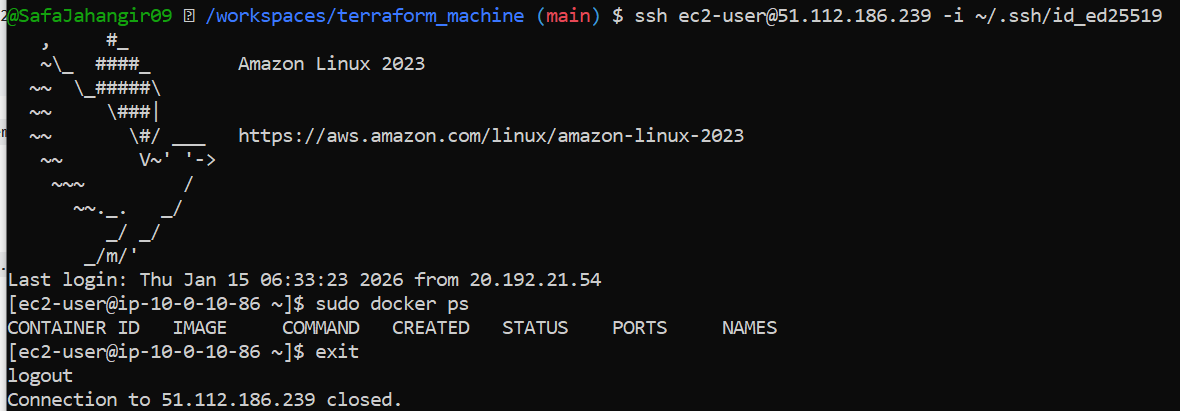
* task8\_my\_playbook\_docker.png



* task8\_ansible\_play\_docker.png

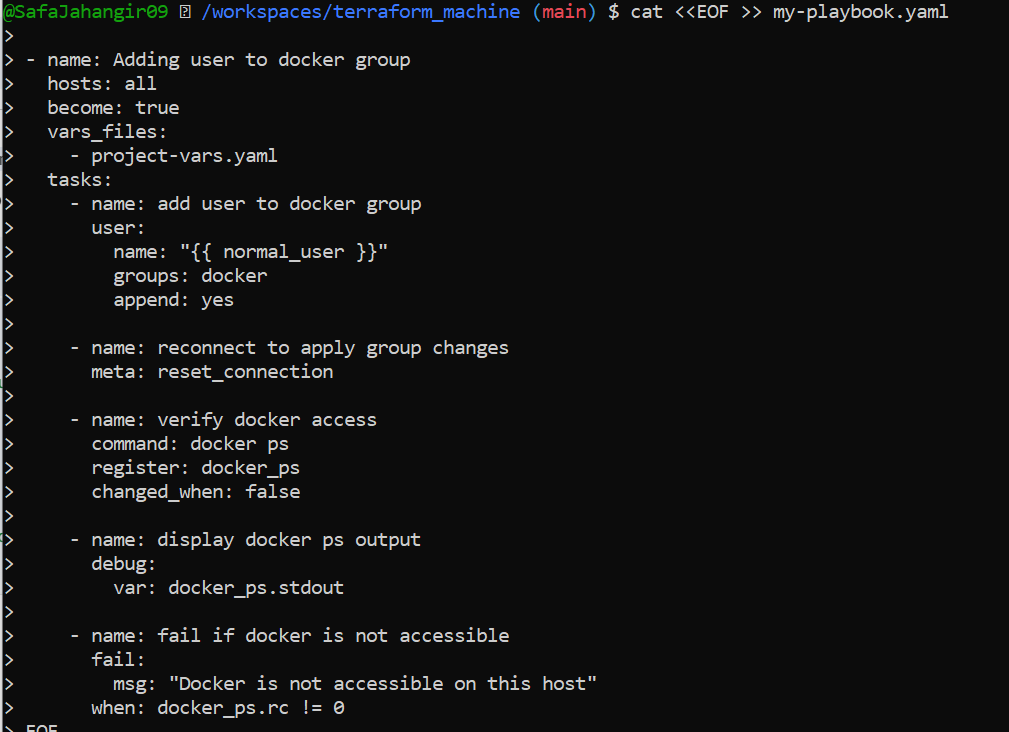


* task8\_docker\_ps\_remote.png

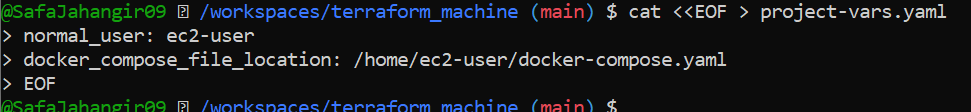


**Task 9 – Gitea Docker stack via Ansible + Terraform security group update**

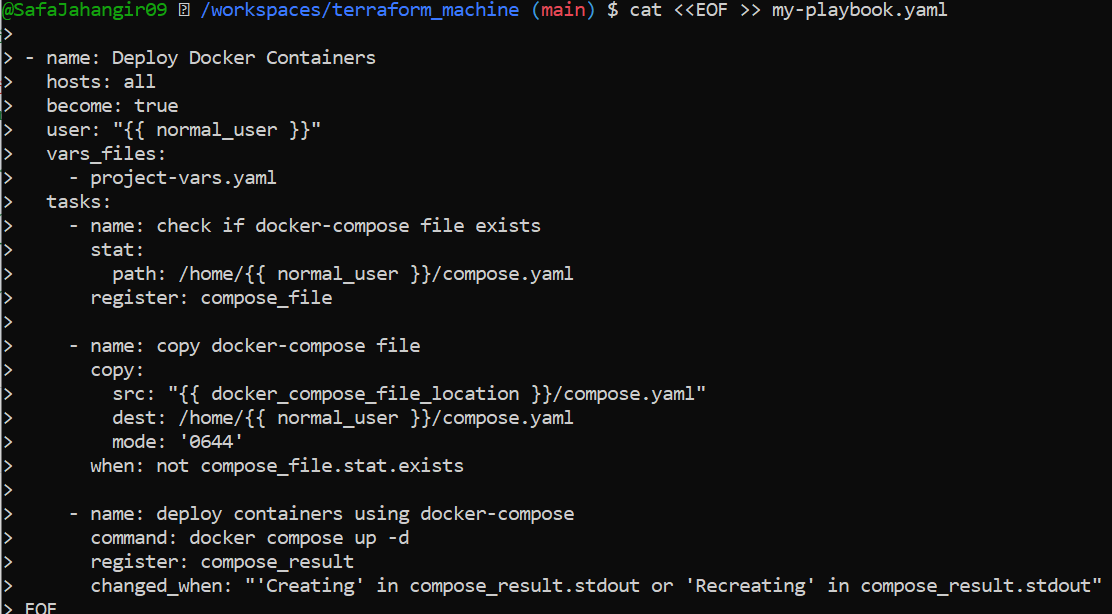
* task9\_my\_playbook\_add\_user\_to\_docker.png



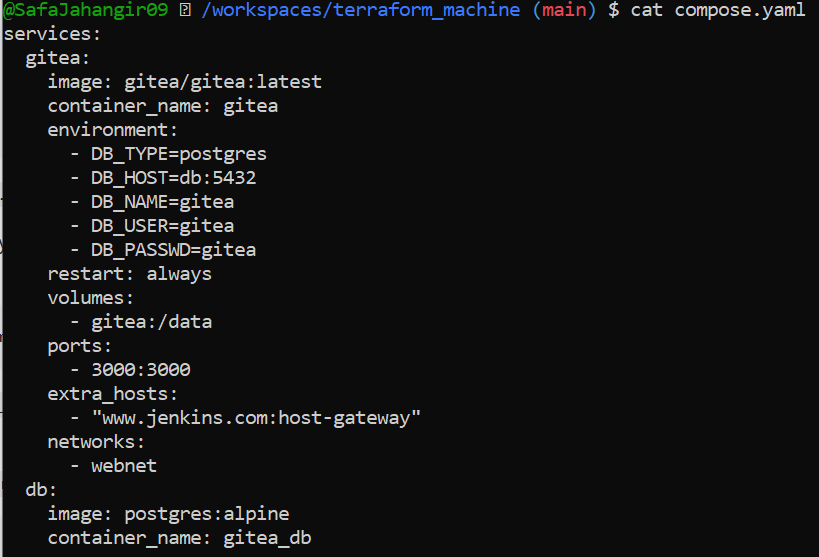
* task9\_project\_vars.png



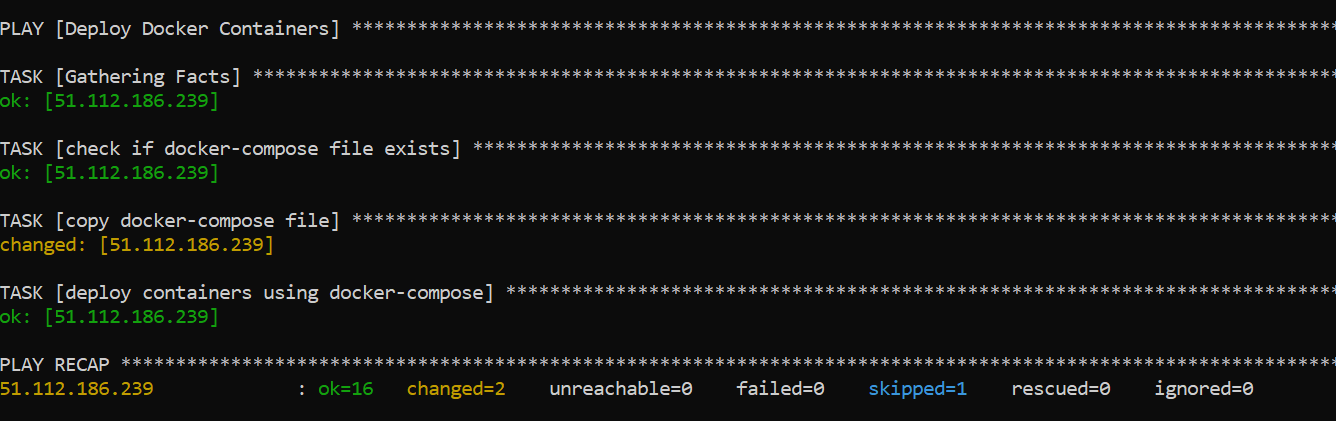
* task9\_my\_playbook\_deploy\_containers.png



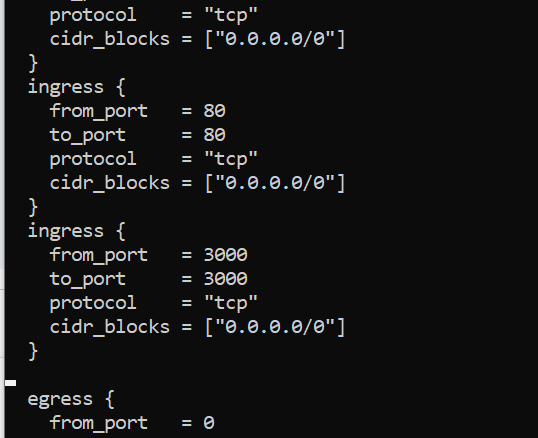
* task9\_compose\_yaml.png



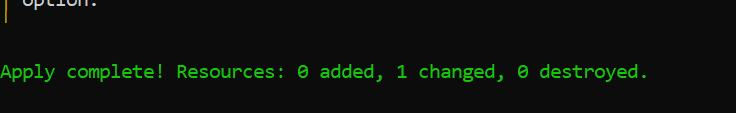
* task9\_ansible\_play\_gitea.png



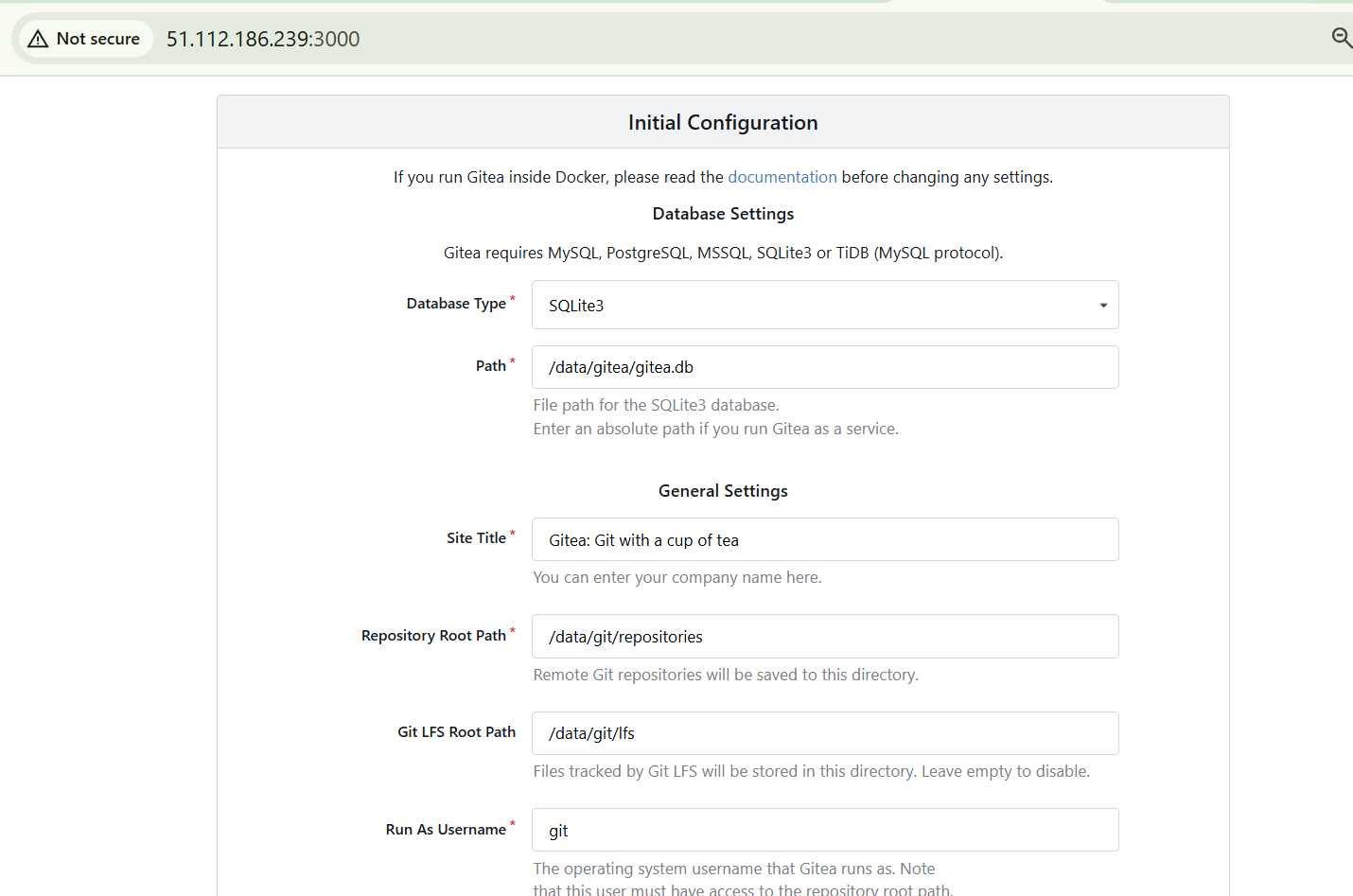
* task9\_sg\_ingress\_3000.png



* task9\_terraform\_apply\_sg\_3000.png

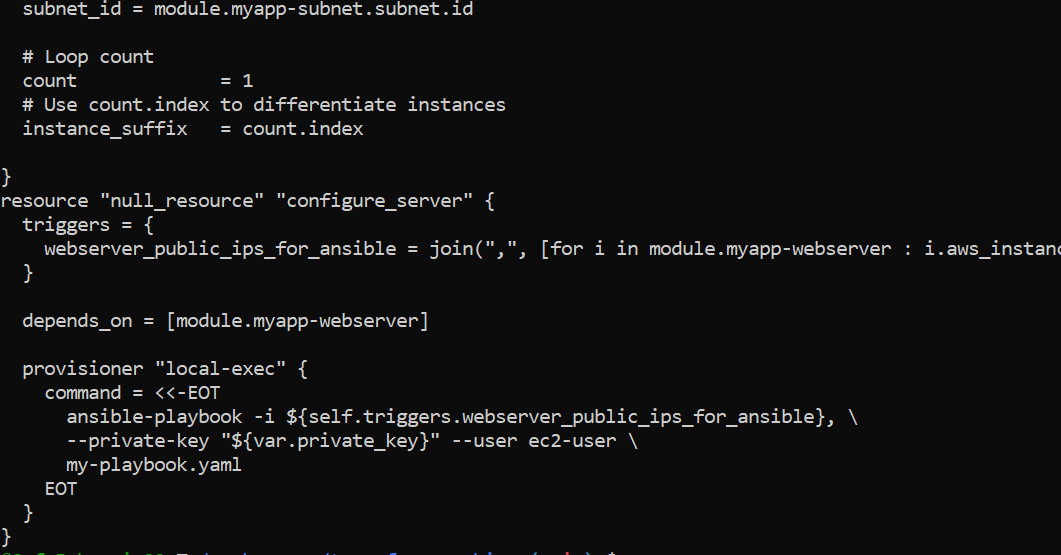


* task9\_gitea\_browser.png

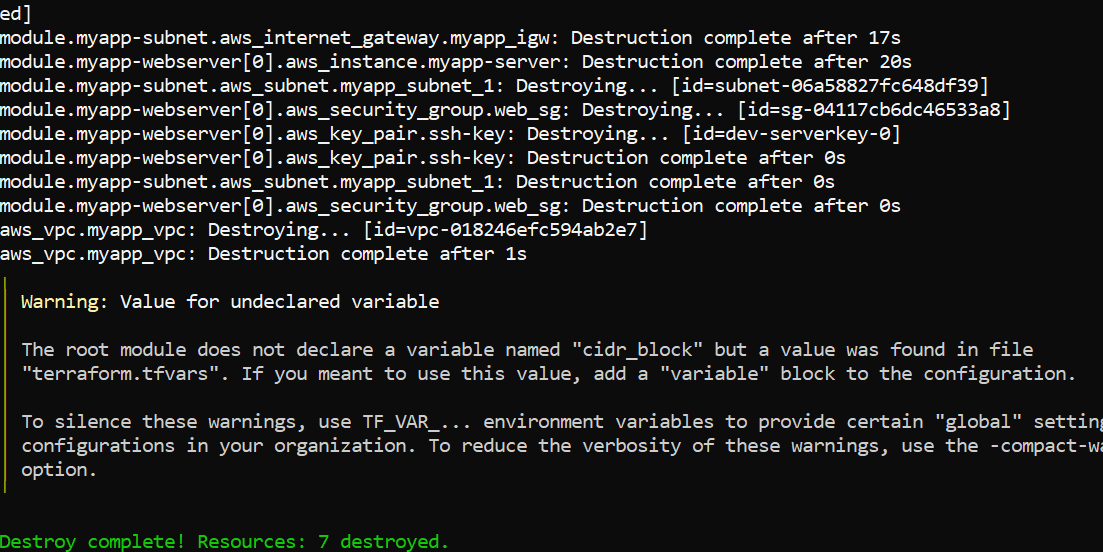


## Task 10 – Automating Ansible with Terraform (null\_resource)

* task10\_null\_resource\_main\_tf.png



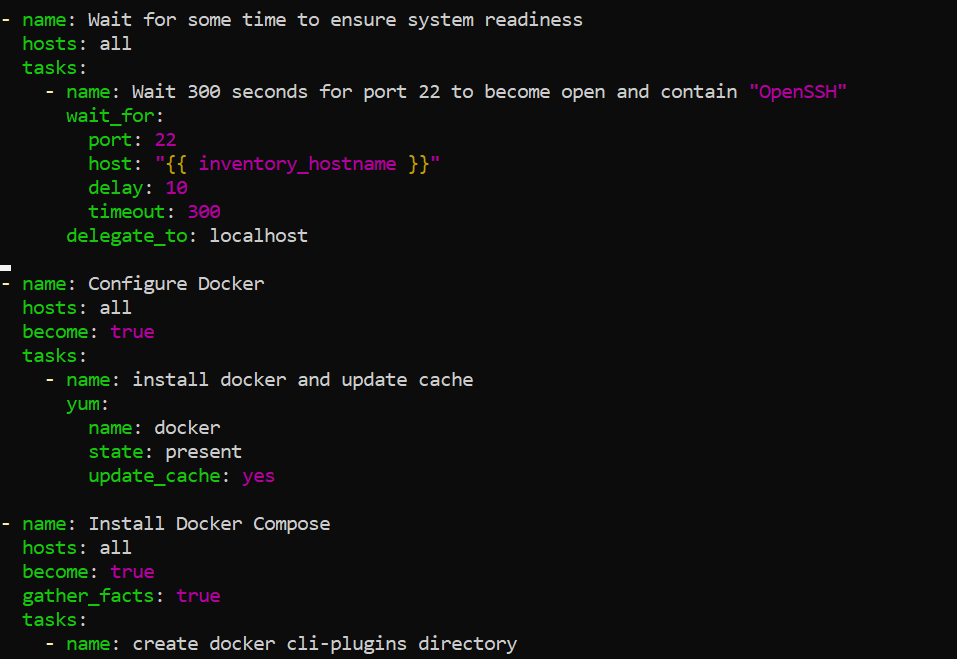
* task10\_terraform\_destroy\_before\_null.png



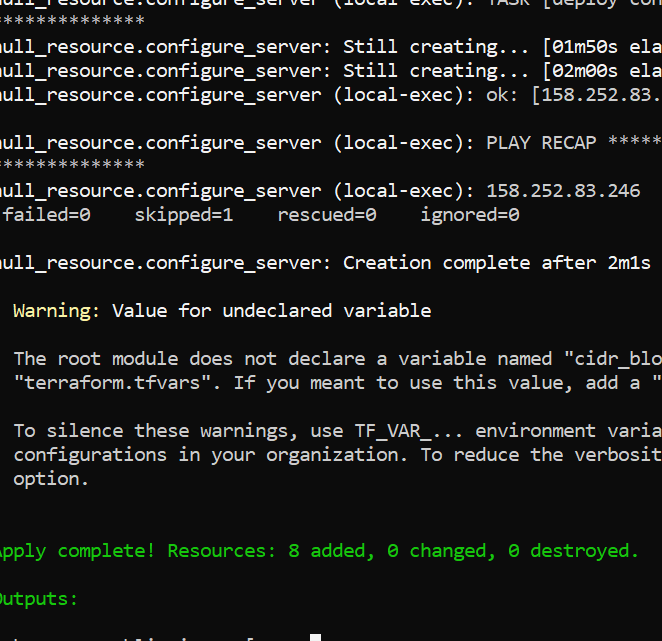
* task10\_terraform\_apply\_with\_local\_exec.png



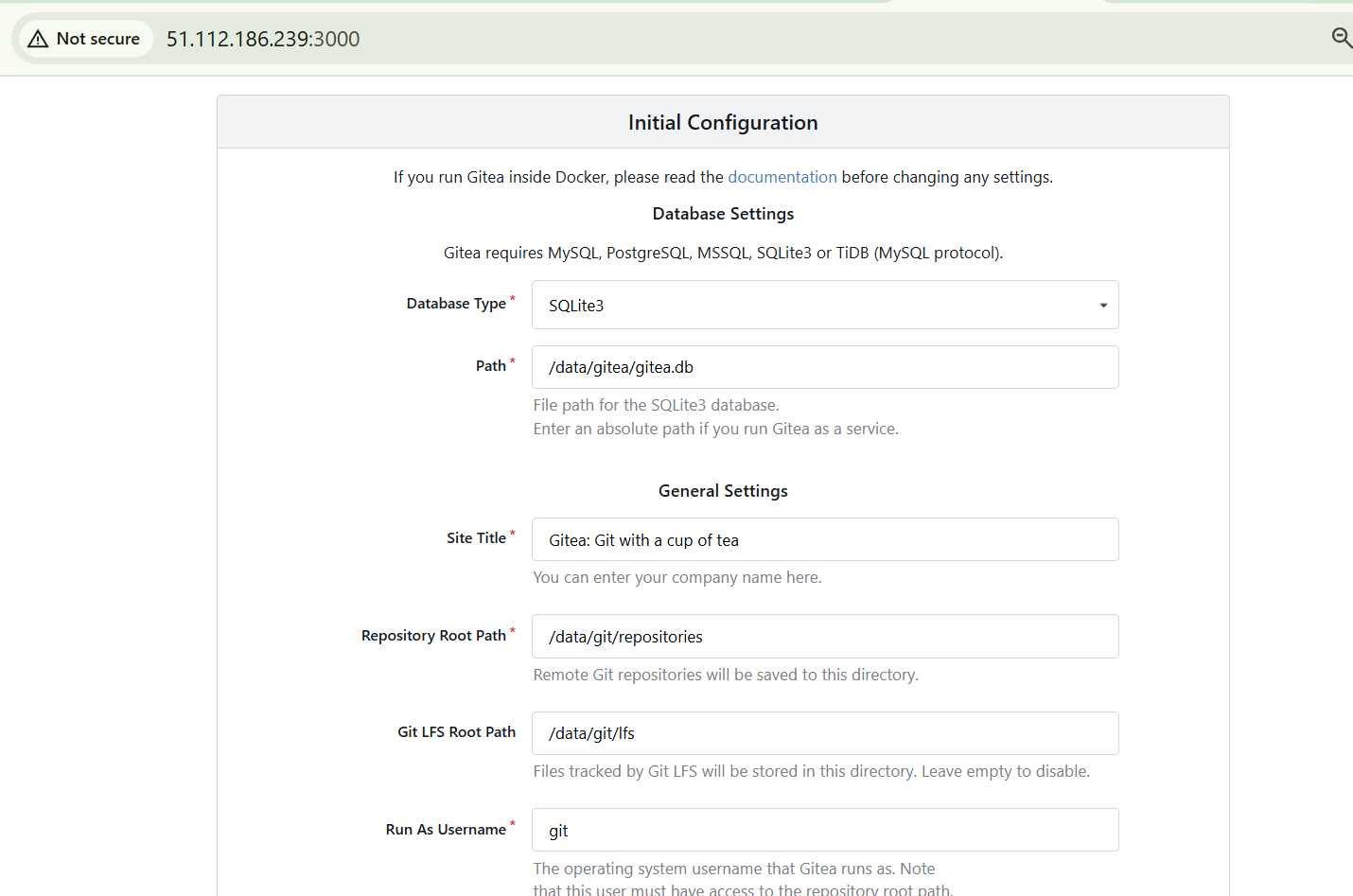
* task10\_my\_playbook\_wait\_for\_ssh.png



* task10\_terraform\_apply\_after\_wait.png

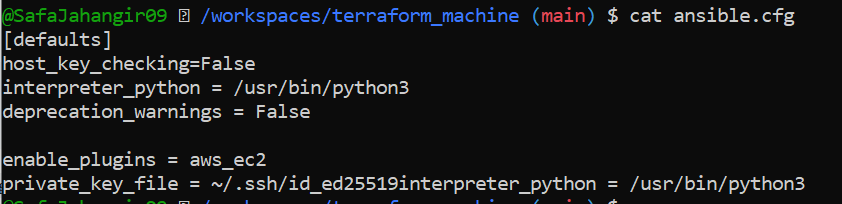


* task10\_app\_browser\_post\_null\_resource.png

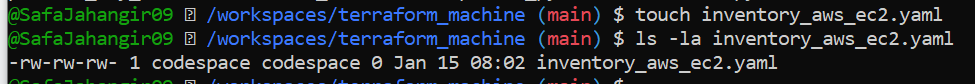


## Task 11 – Dynamic inventory with aws\_ec2 plugin

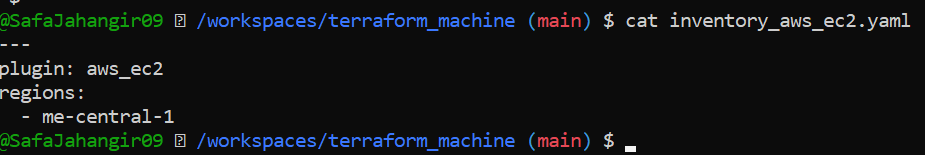
* task11\_ansible\_cfg\_aws\_ec2.png



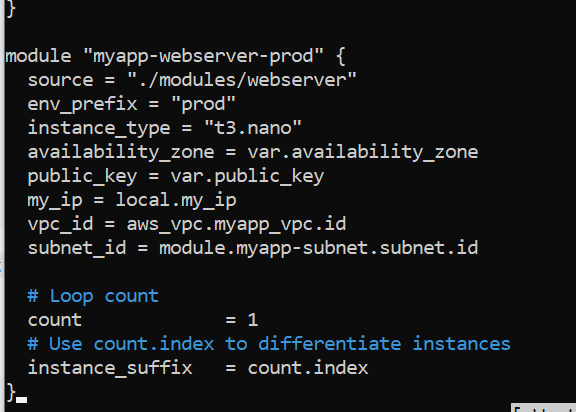
* task11\_inventory\_aws\_ec2\_created.png



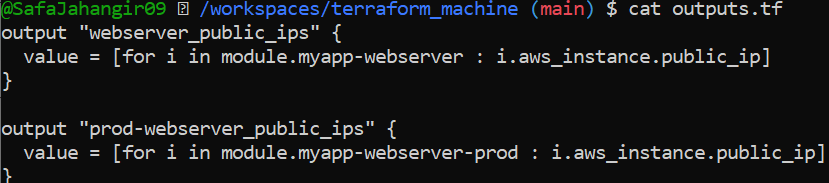
* task11\_inventory\_aws\_ec2\_initial.png



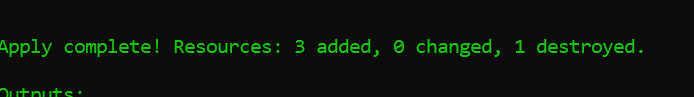
* task11\_main\_tf\_dev\_prod\_modules.png



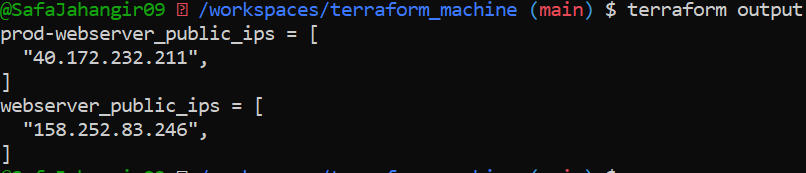
* task11\_outputs\_tf\_dev\_prod\_ips.png



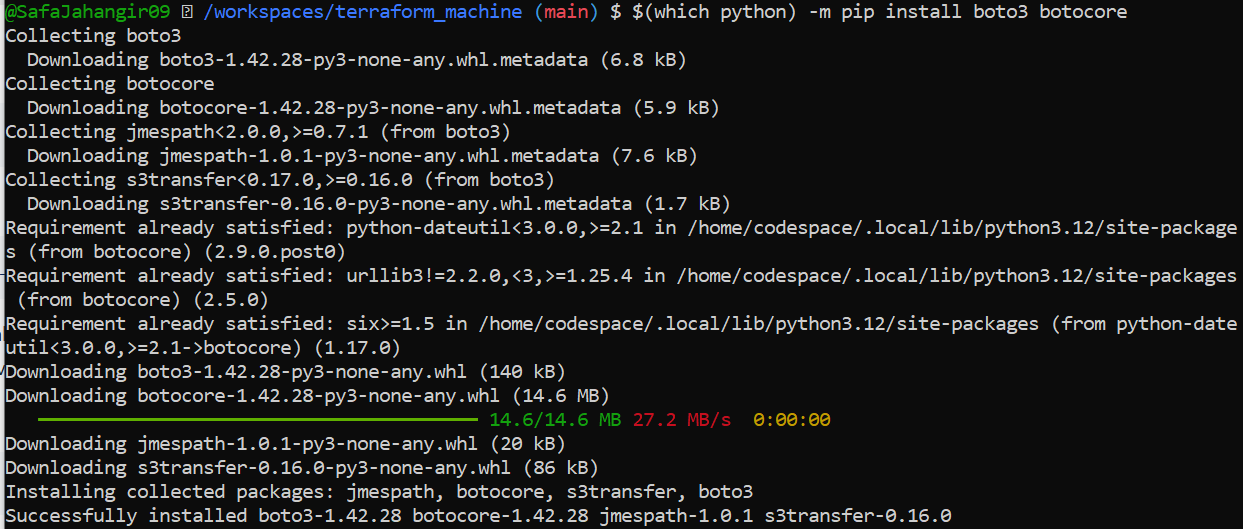
* task11\_terraform\_apply\_dynamic\_setup.png



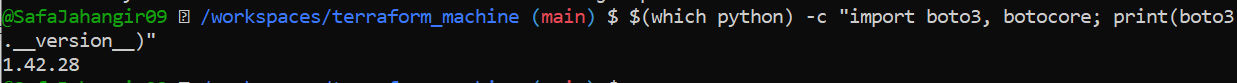
* task11\_terraform\_output\_dynamic\_ips.png



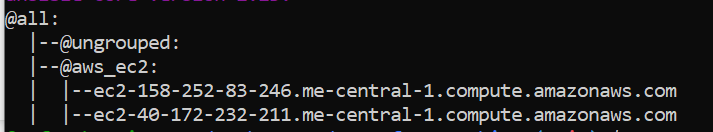
* task11\_boto\_install.png



* task11\_boto\_version.png

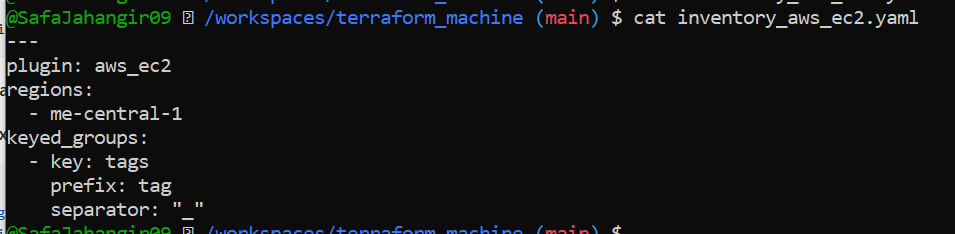


* task11\_ansible\_inventory\_graph\_initial.png

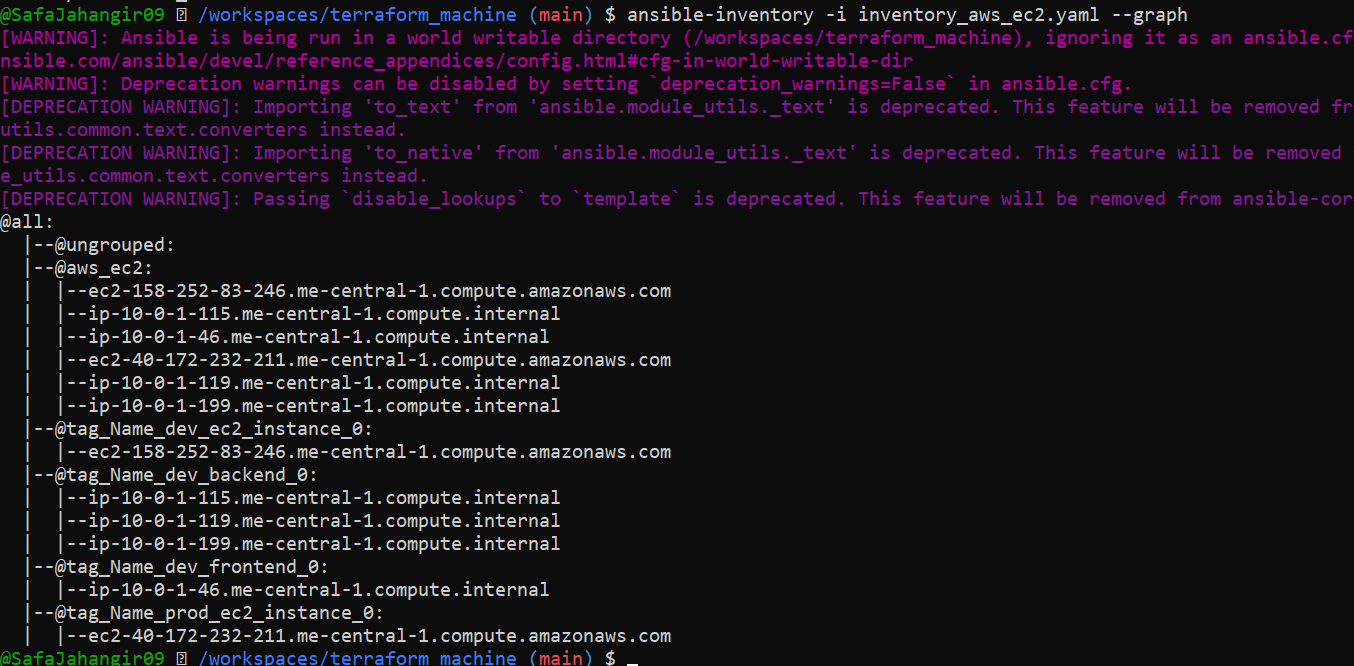


## Task 12 – Filtering EC2 instances by tags & instance type

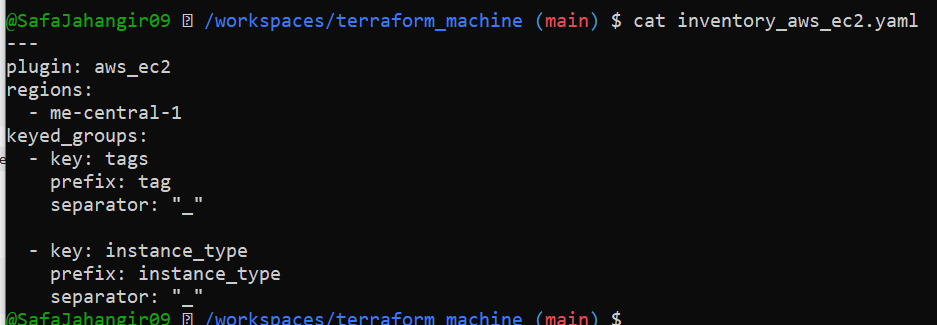
* task12\_inventory\_aws\_ec2\_tag\_groups.png



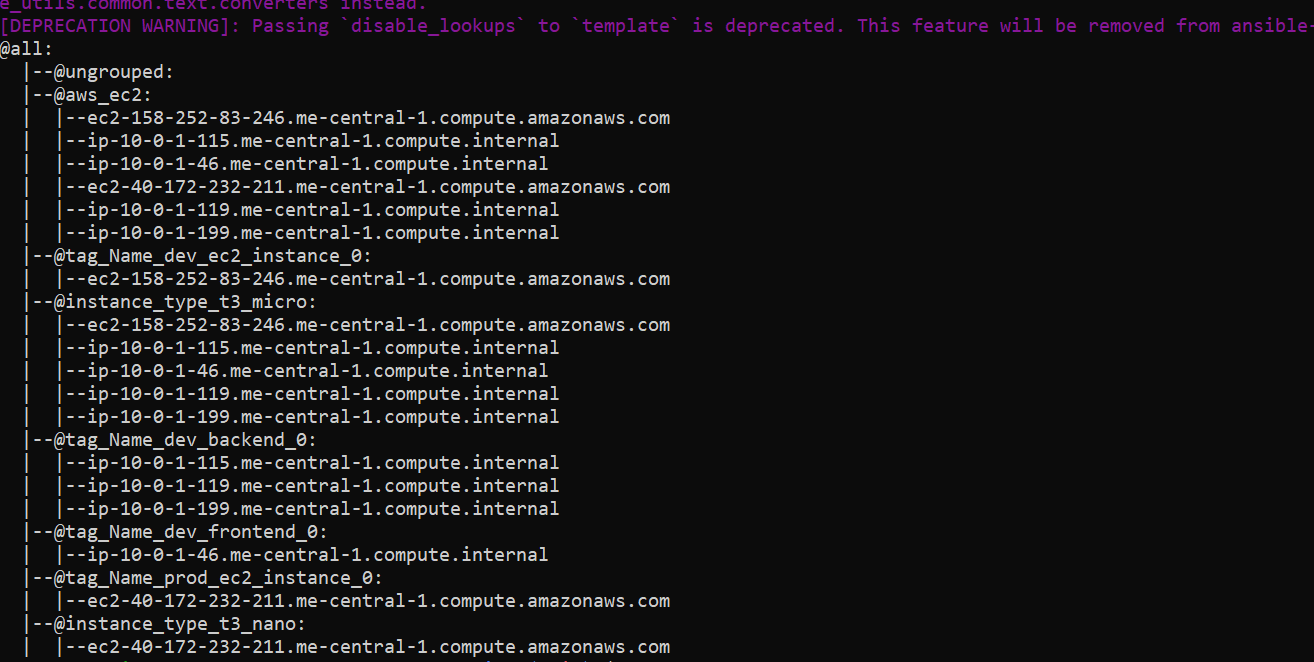
* task12\_inventory\_graph\_tag\_groups.png



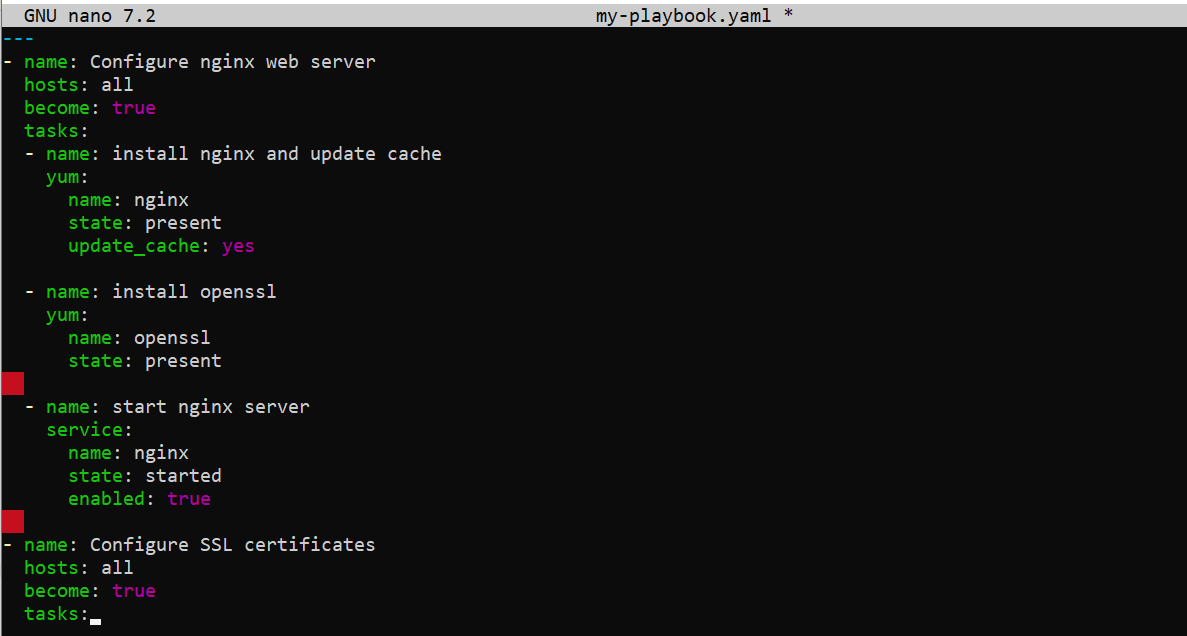
* task12\_inventory\_aws\_ec2\_instance\_type\_groups.png



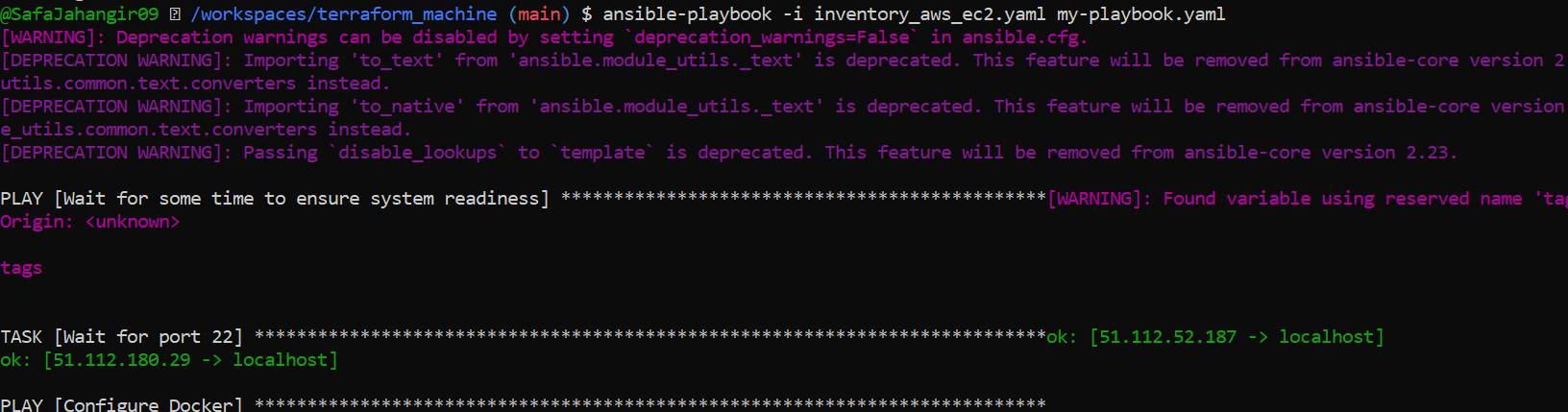
* task12\_inventory\_graph\_full.png

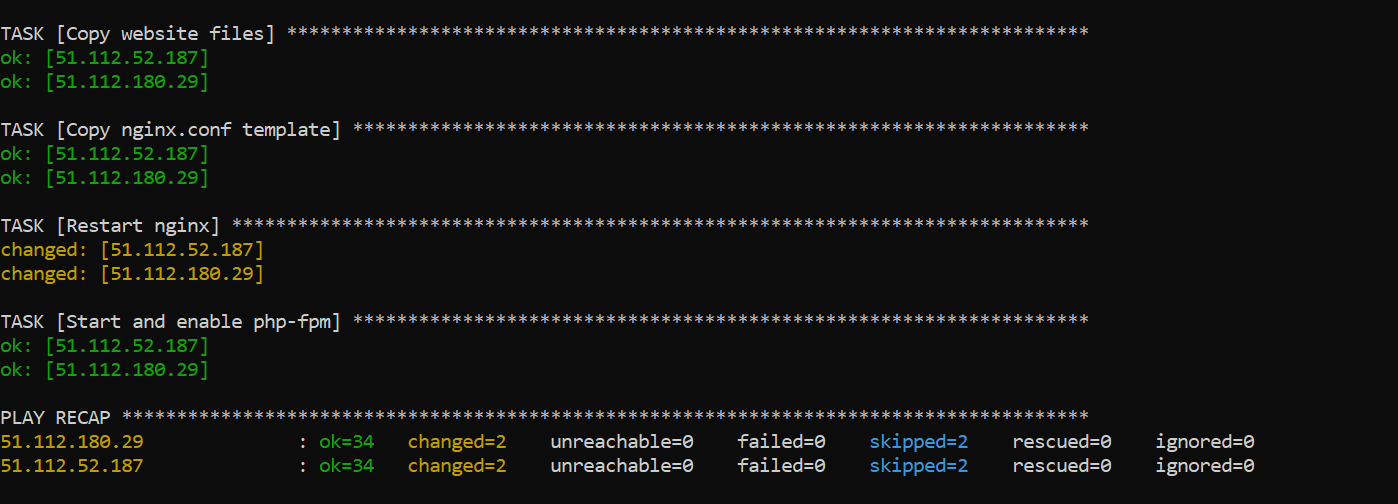


* task12\_my\_playbook\_all\_hosts.png

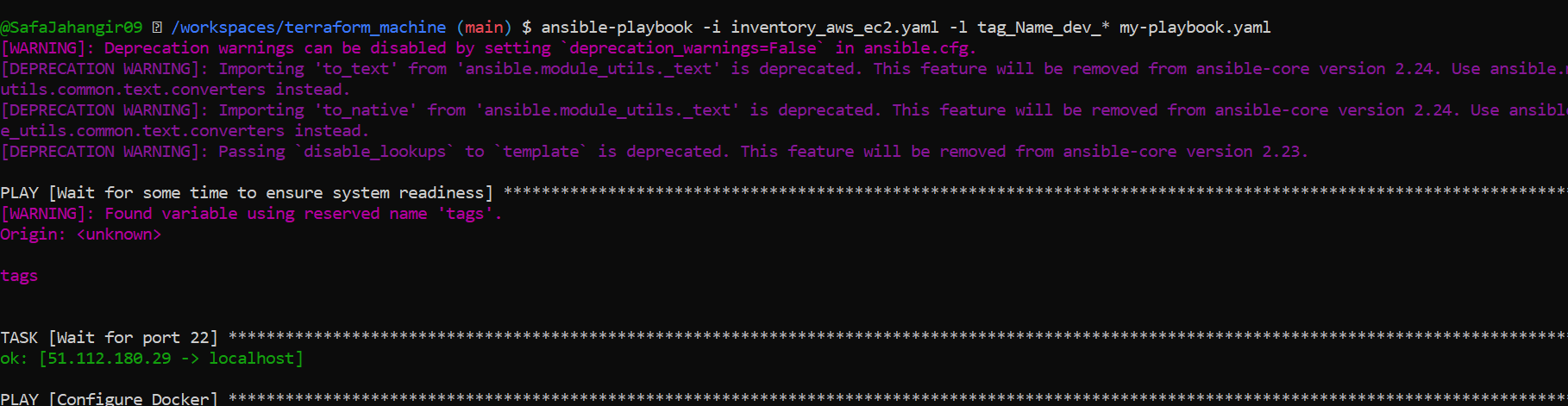


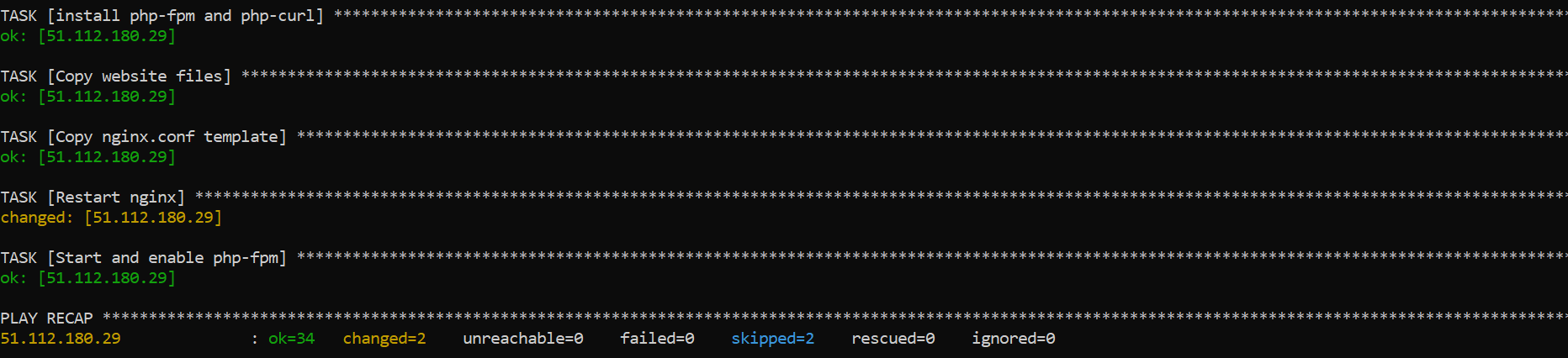
* task12\_ansible\_play\_all.png



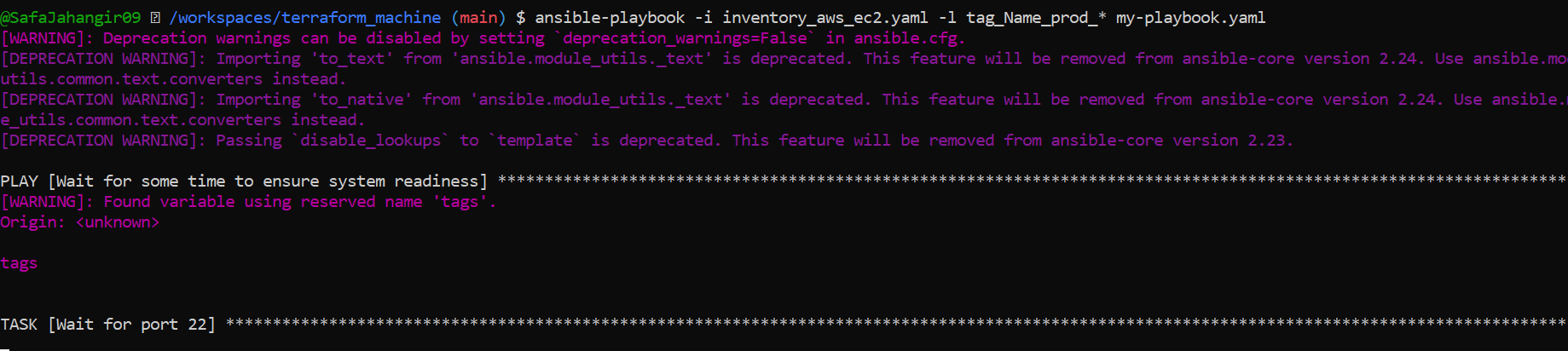


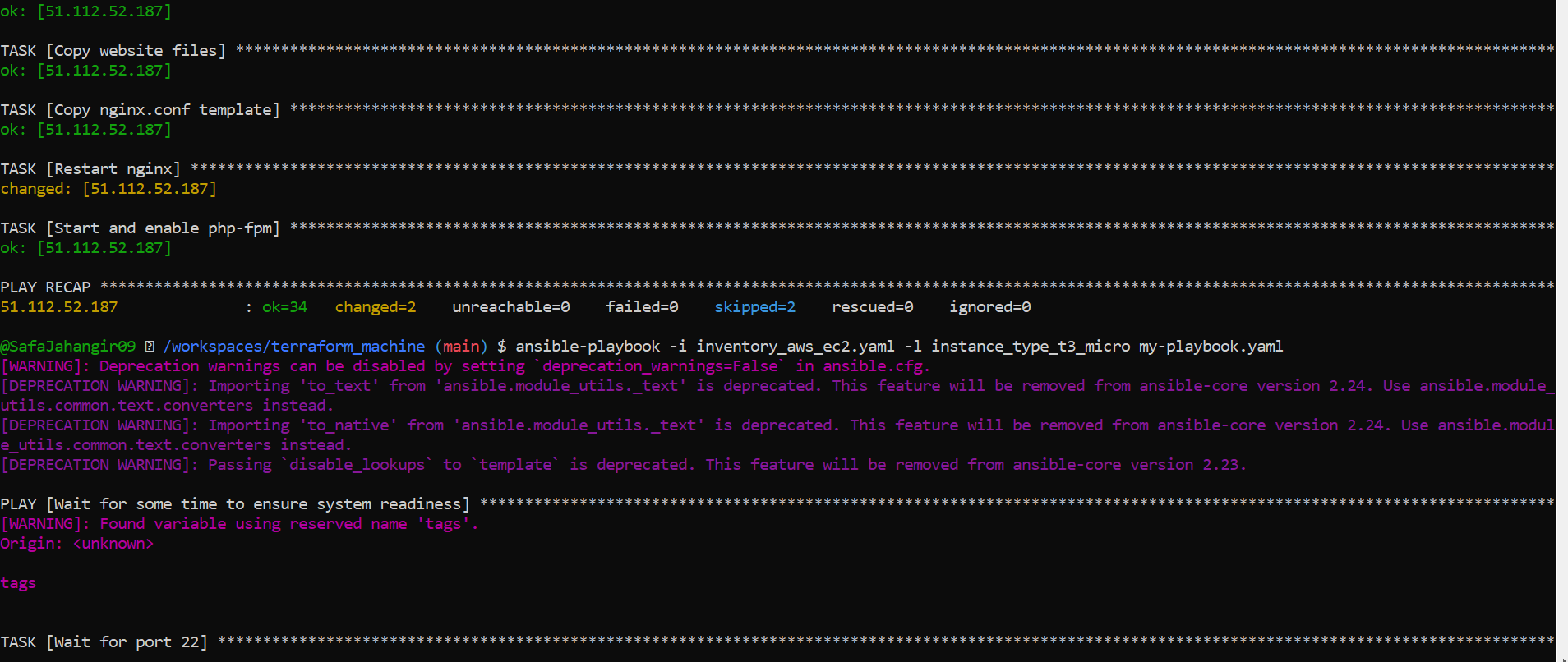
* task12\_ansible\_play\_dev\_only.png



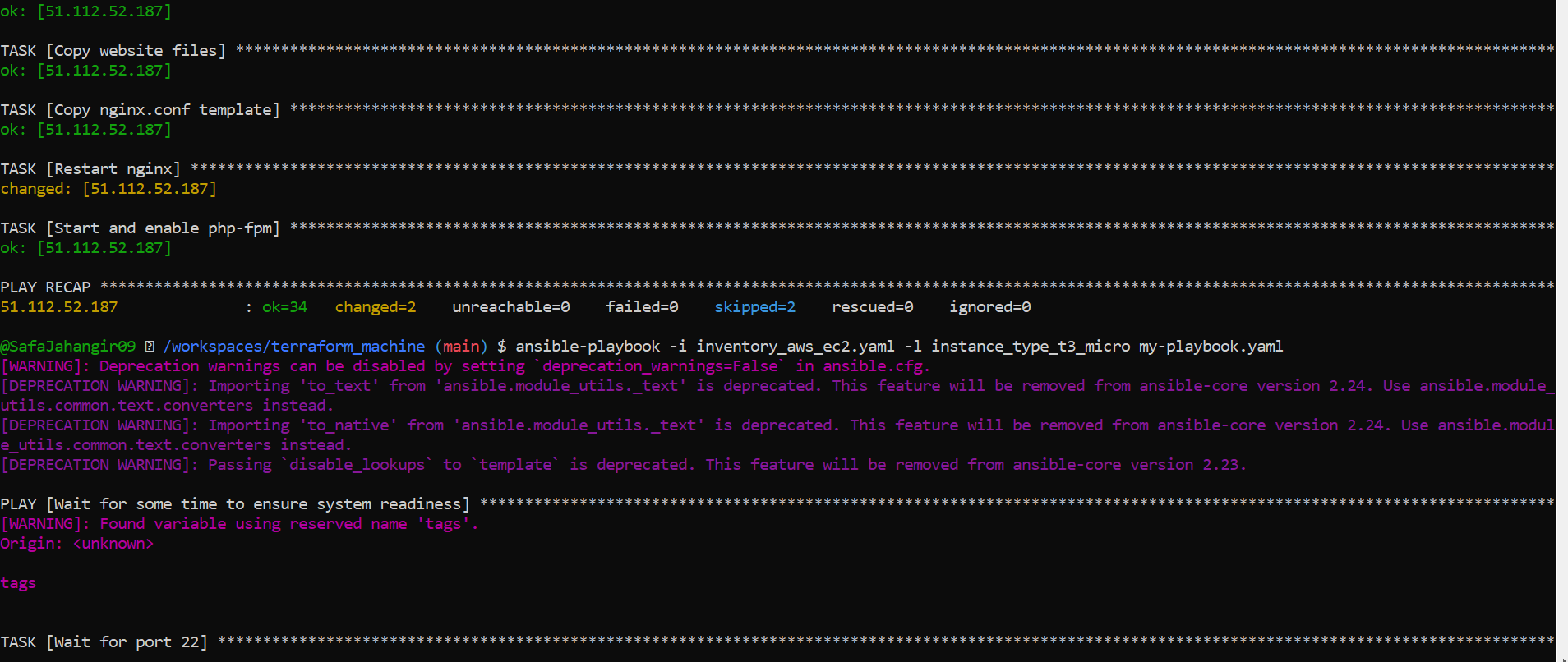


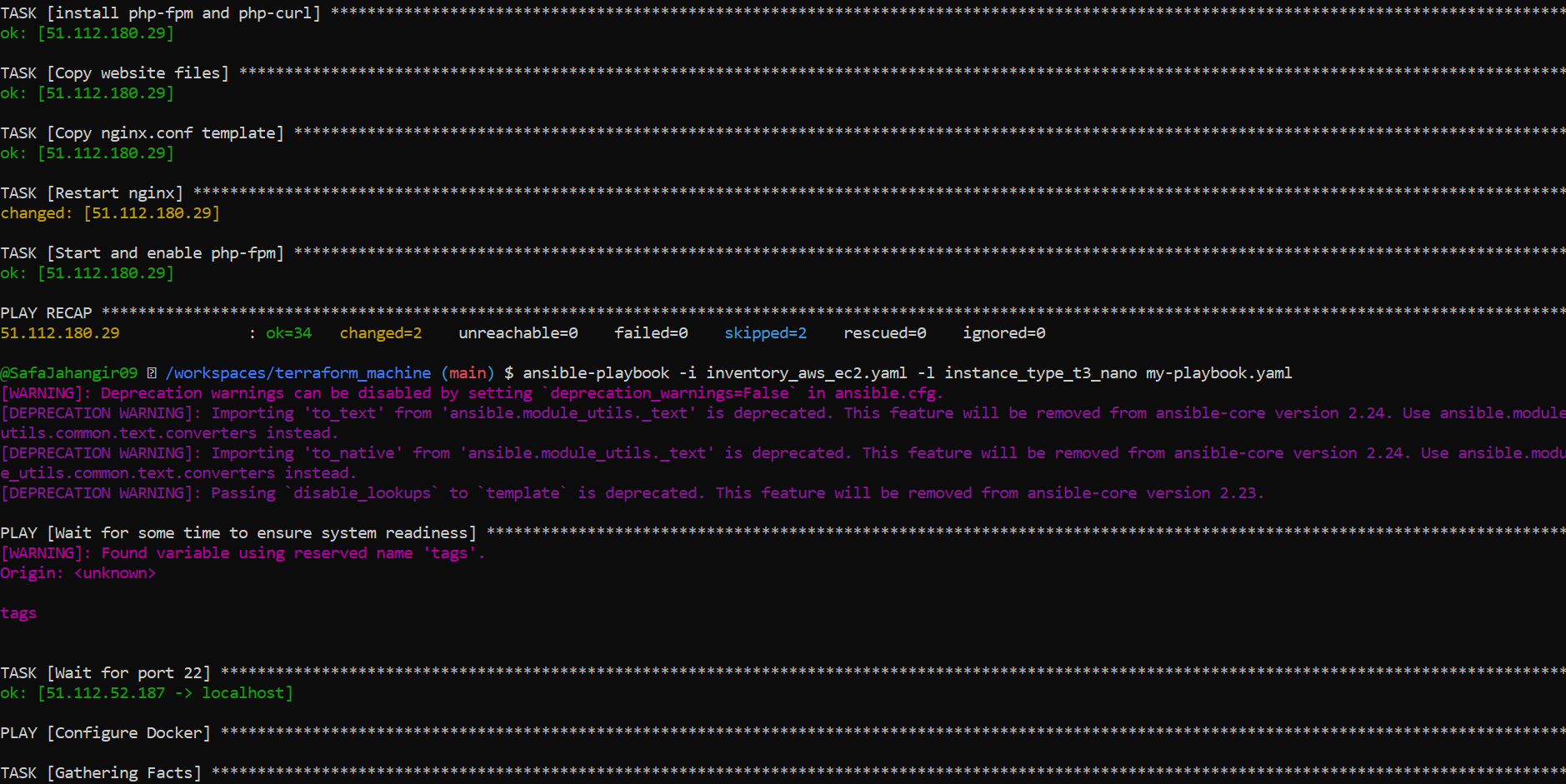
* task12\_ansible\_play\_prod\_only.png



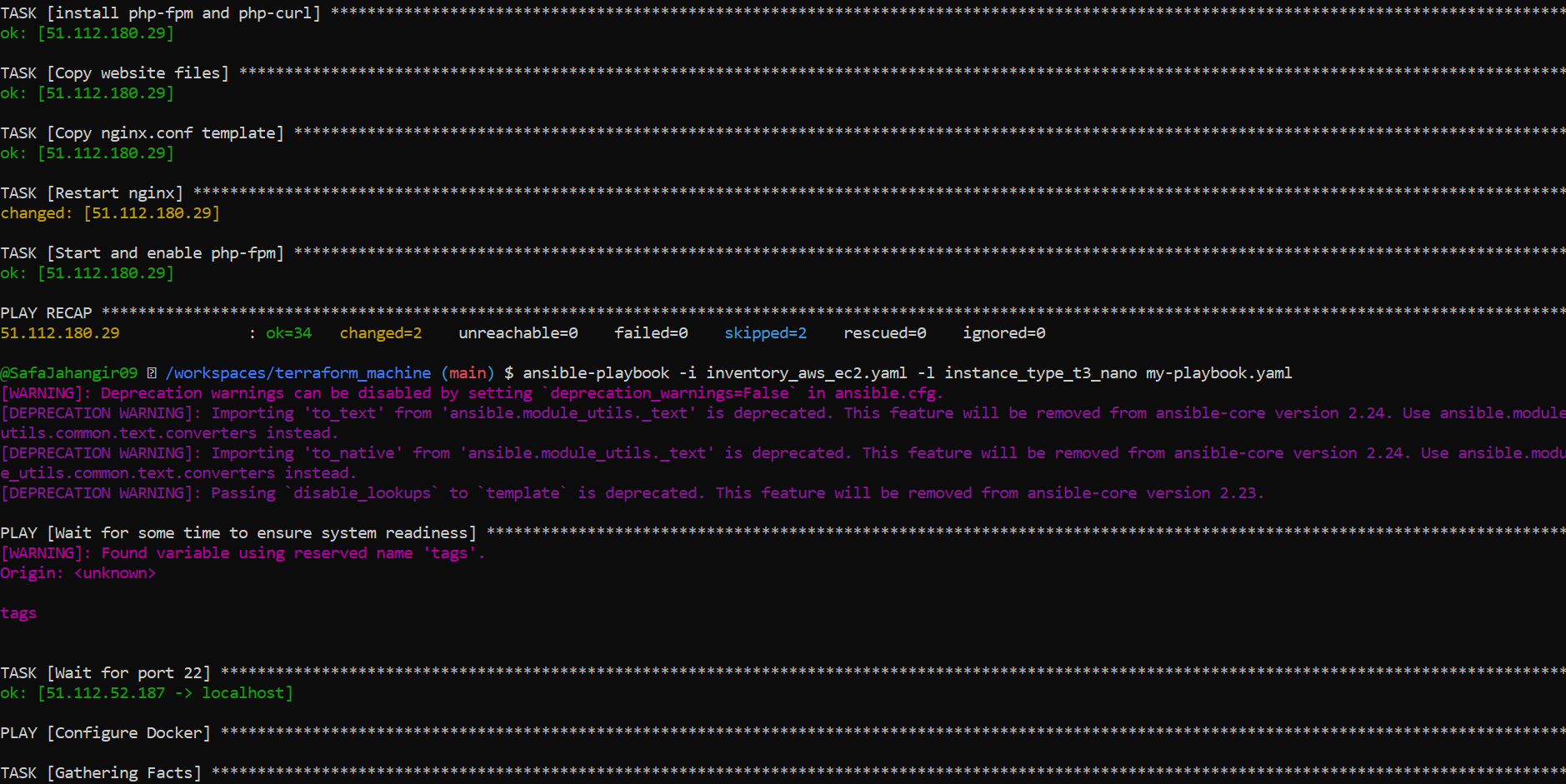


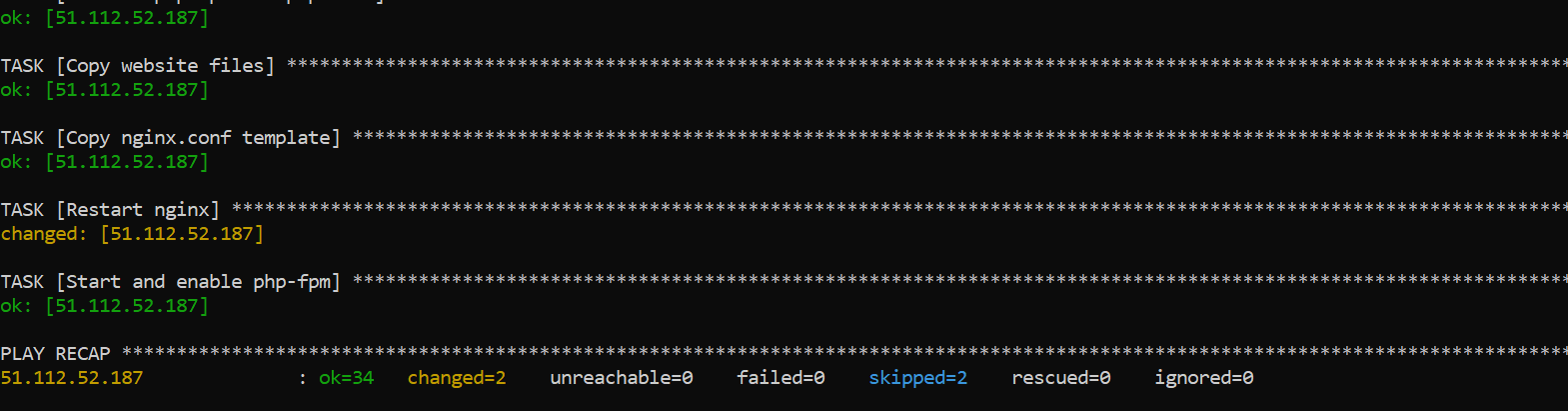
* task12\_ansible\_play\_t3\_micro.png



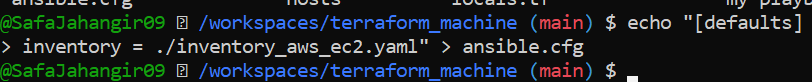


* task12\_ansible\_play\_t3\_nano.png

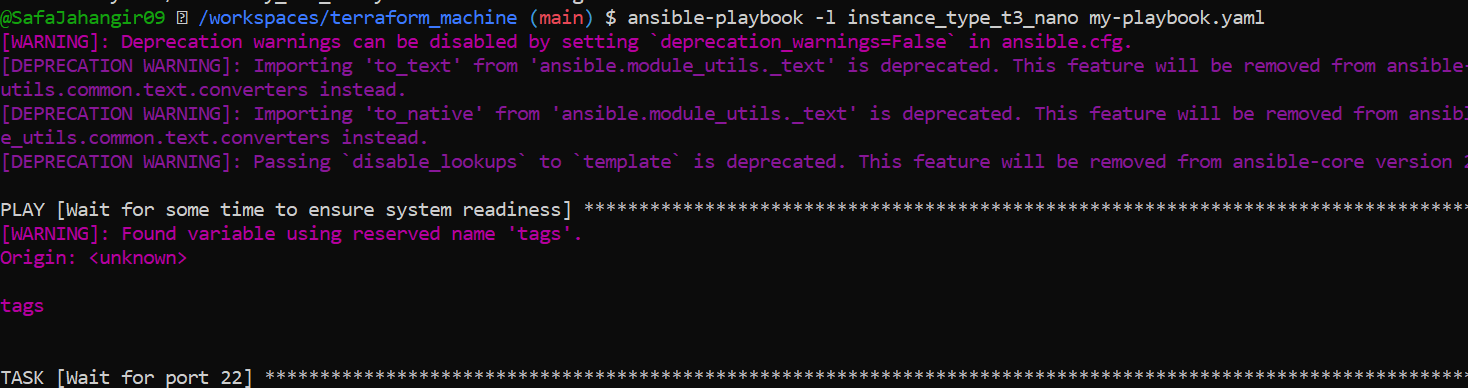


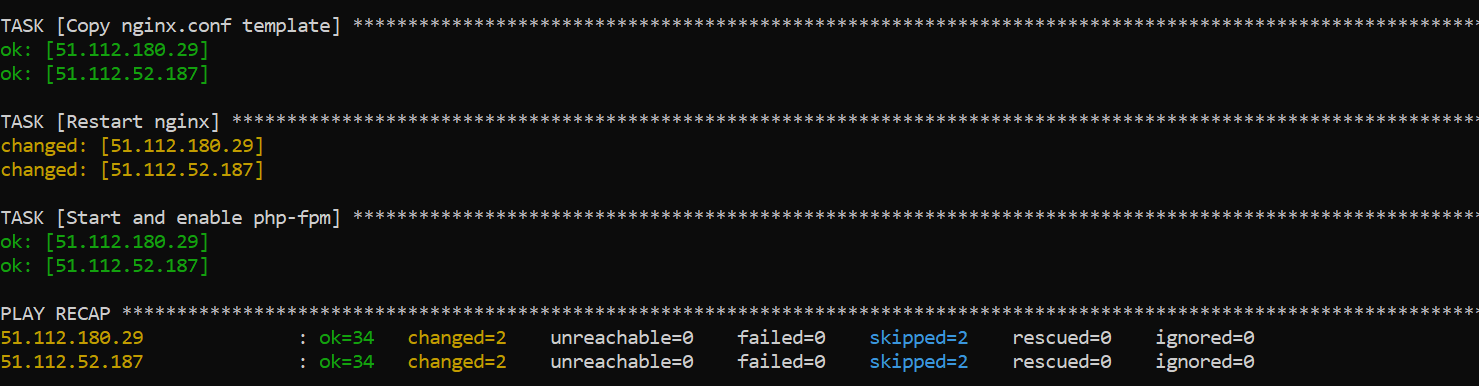


* task12\_ansible\_cfg\_inventory\_default.png



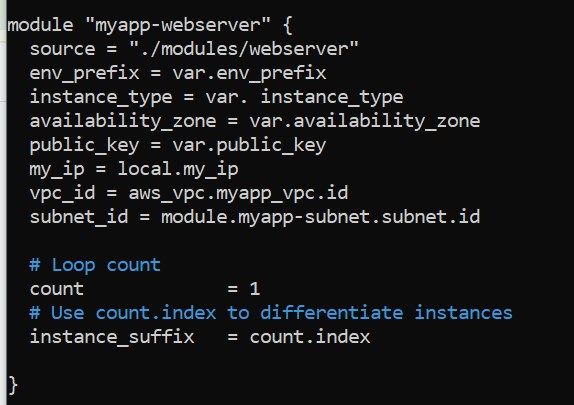
* task12\_ansible\_play\_t3\_nano\_no\_i.png



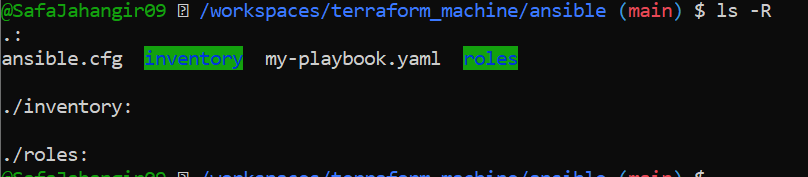


## Task 13 – Ansible roles: nginx, ssl, webapp

* task13\_main\_tf\_single\_dev.png



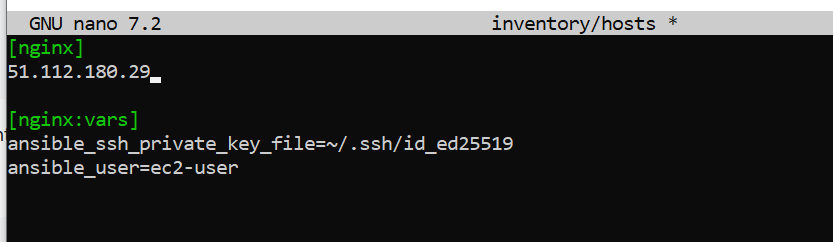
* task13\_ansible\_structure\_created.png



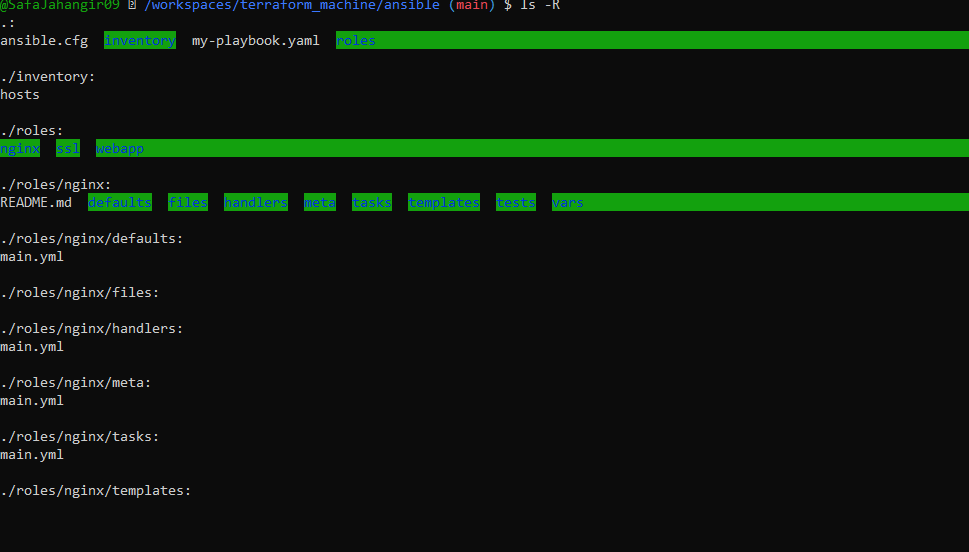
* task13\_ansible\_cfg\_project.png



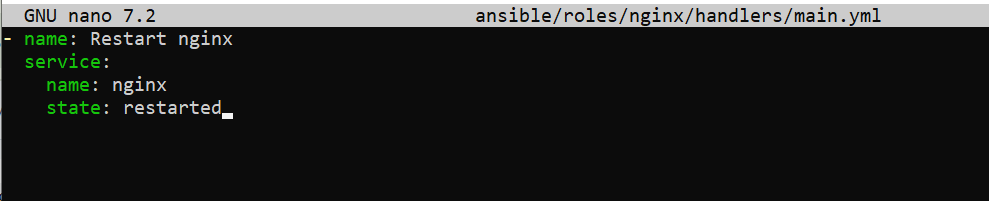
* task13\_ansible\_inventory\_hosts.png



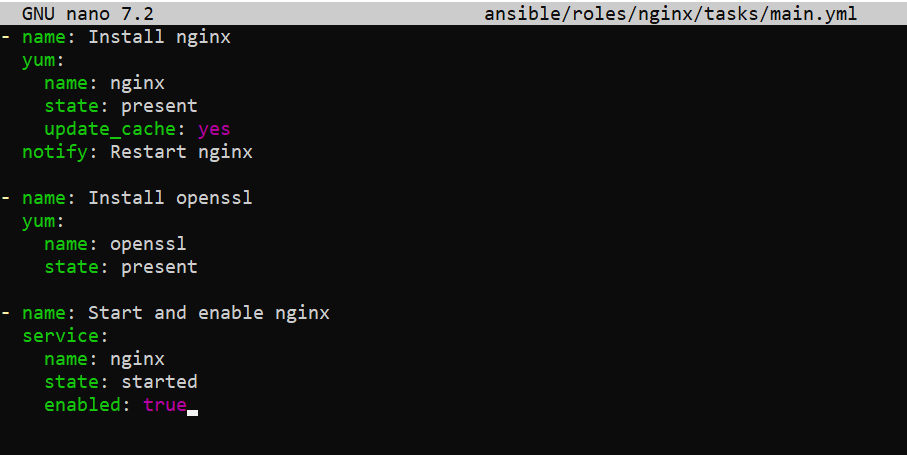
* task13\_roles\_created.png



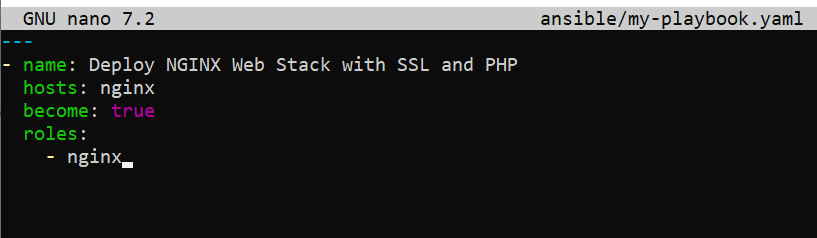
* task13\_nginx\_handlers\_main.png



* task13\_nginx\_tasks\_main.png



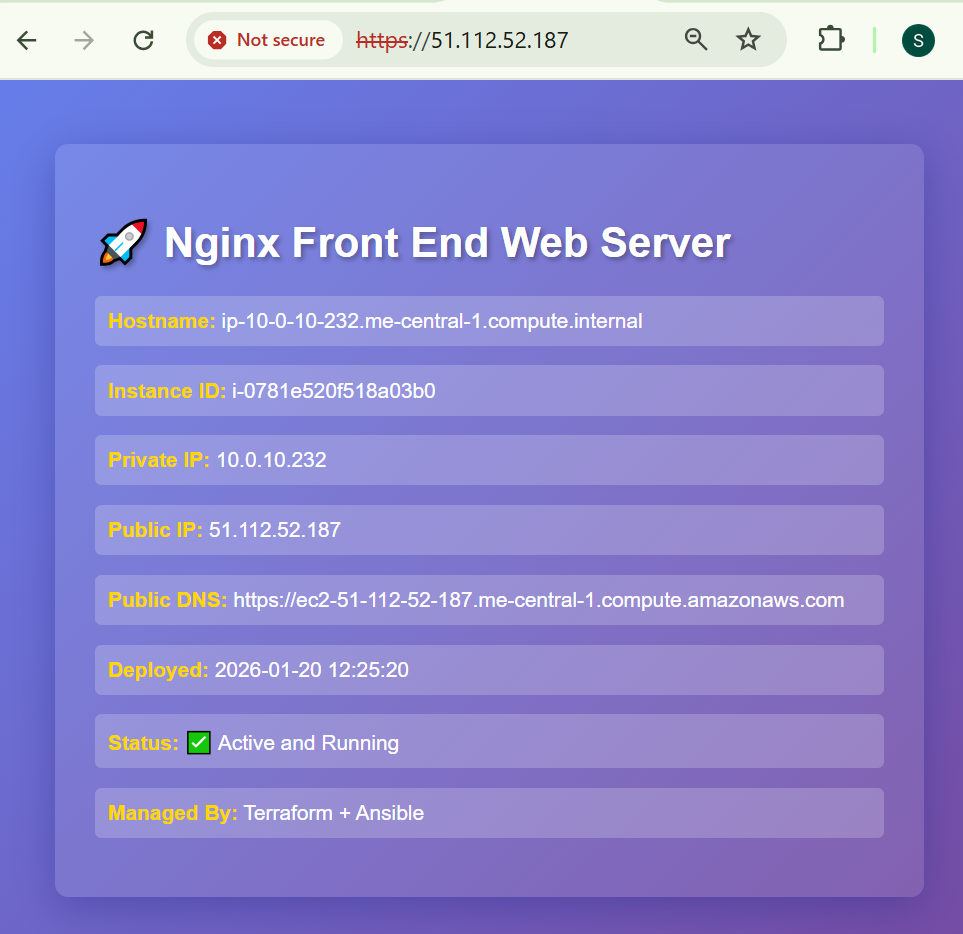
* task13\_my\_playbook\_nginx\_only.png



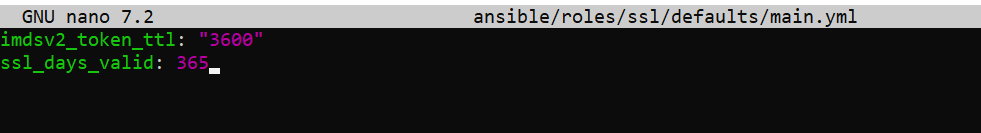
* task13\_ansible\_play\_nginx\_only.png



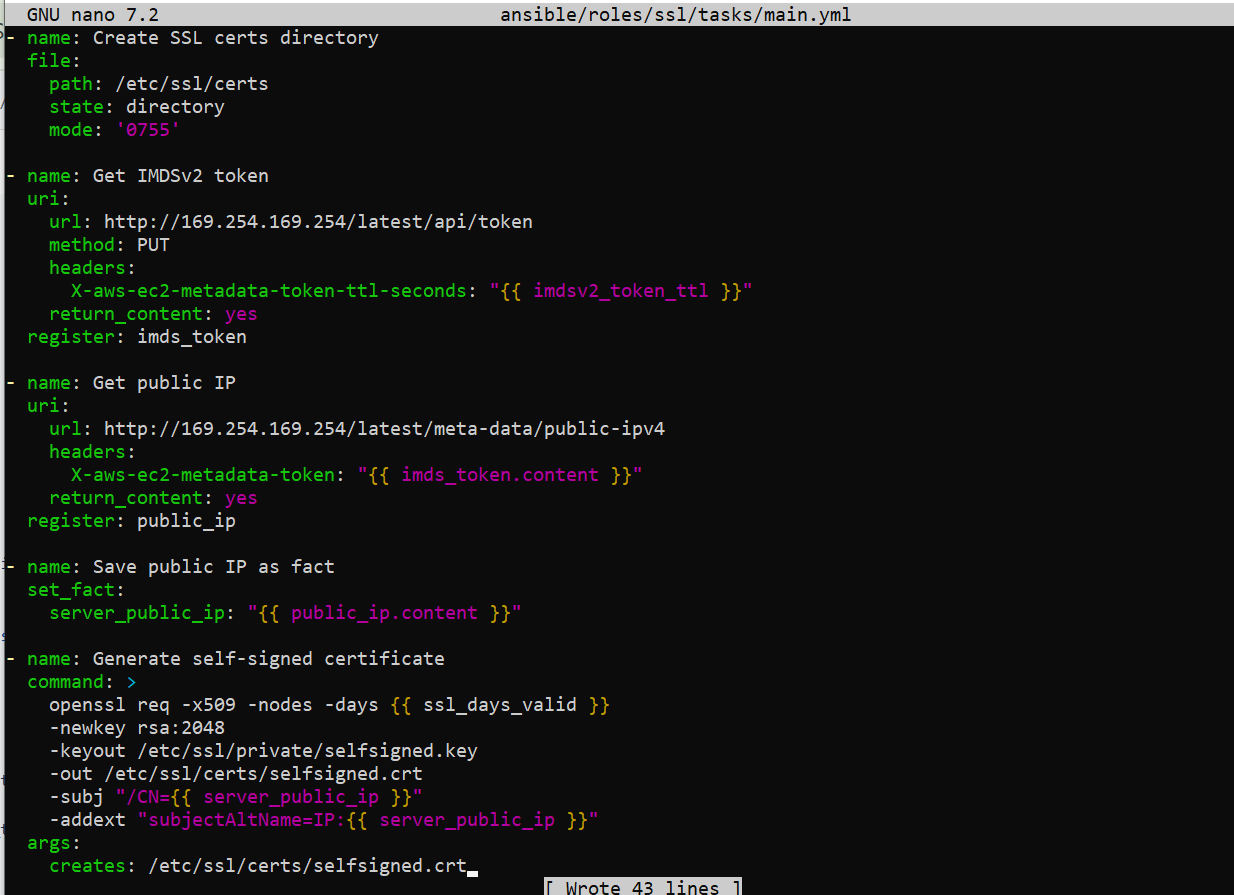
* task13\_nginx\_browser\_roles.png



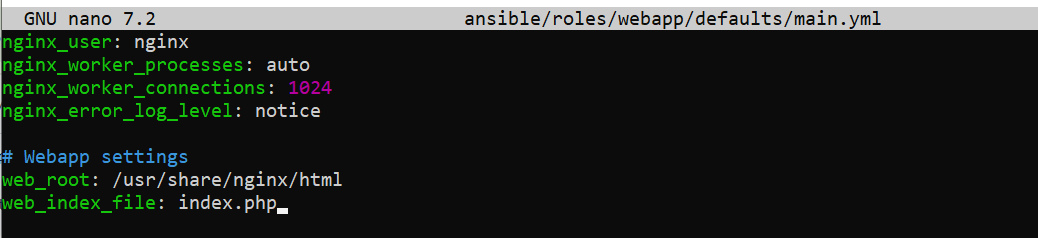
* task13\_ssl\_defaults\_main.png



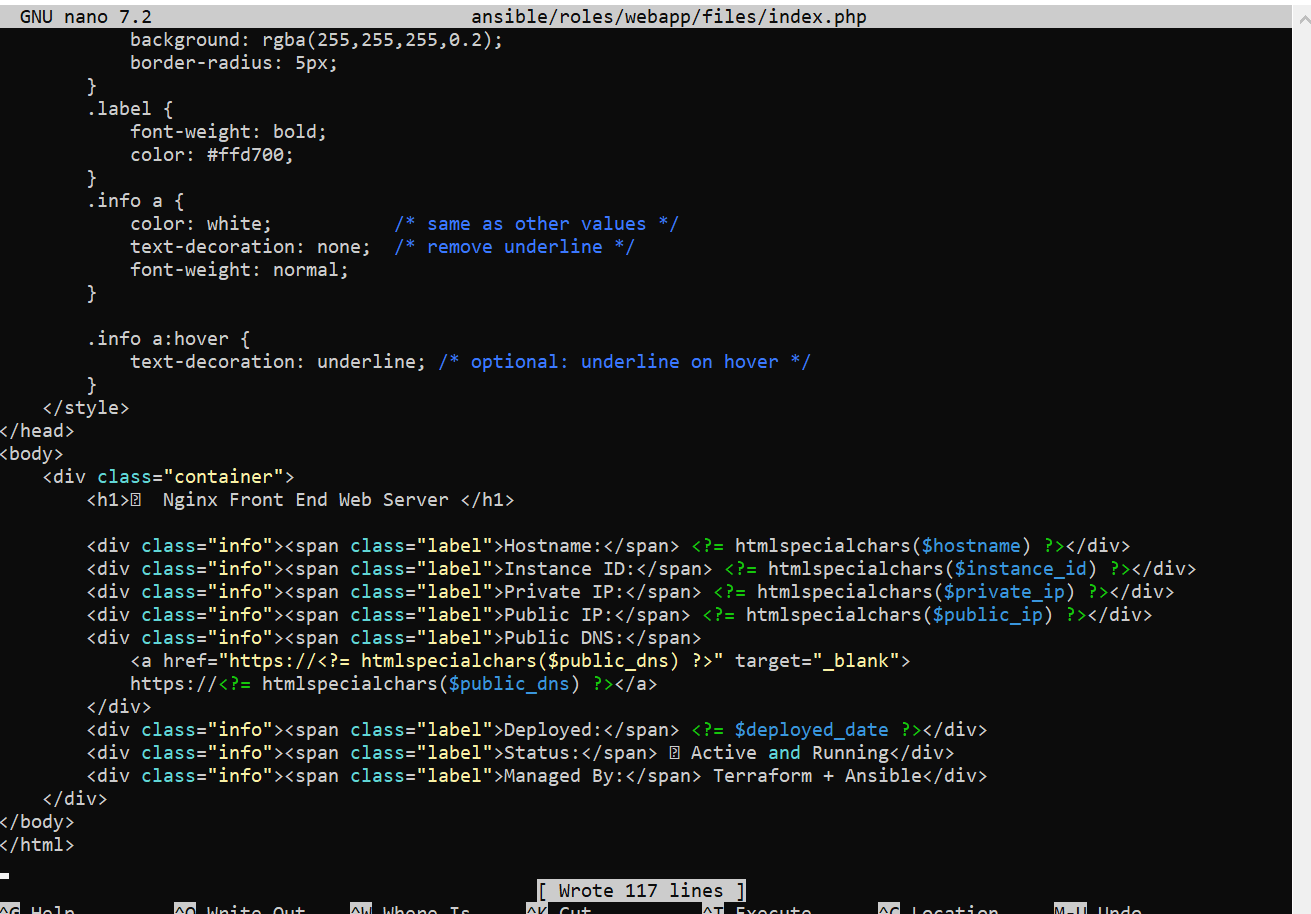
* task13\_ssl\_tasks\_main.png



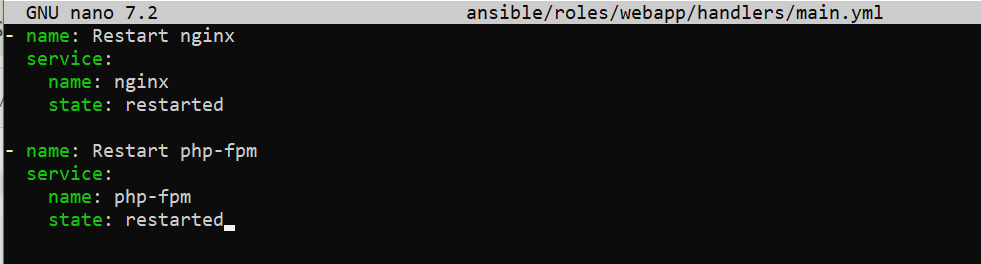
* task13\_webapp\_defaults\_main.png



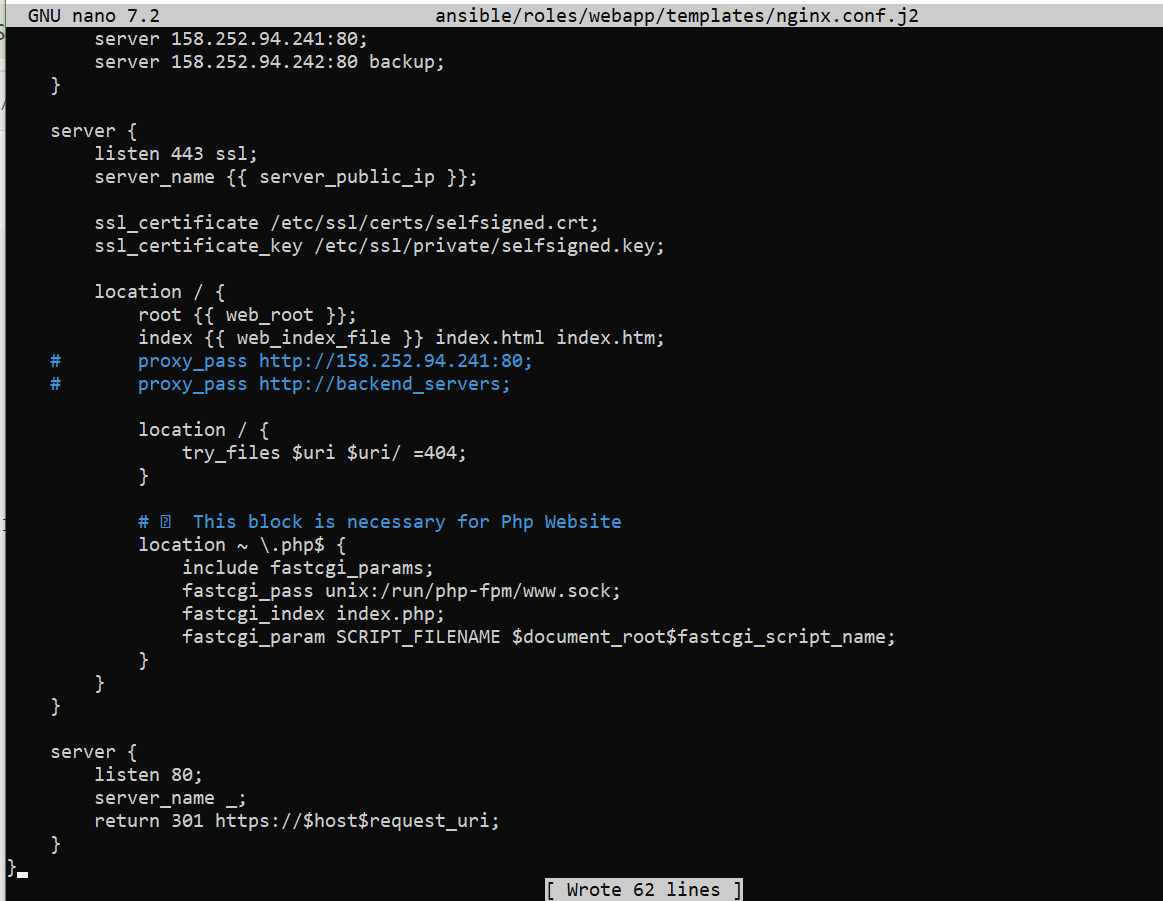
* task13\_webapp\_files\_index\_php.png



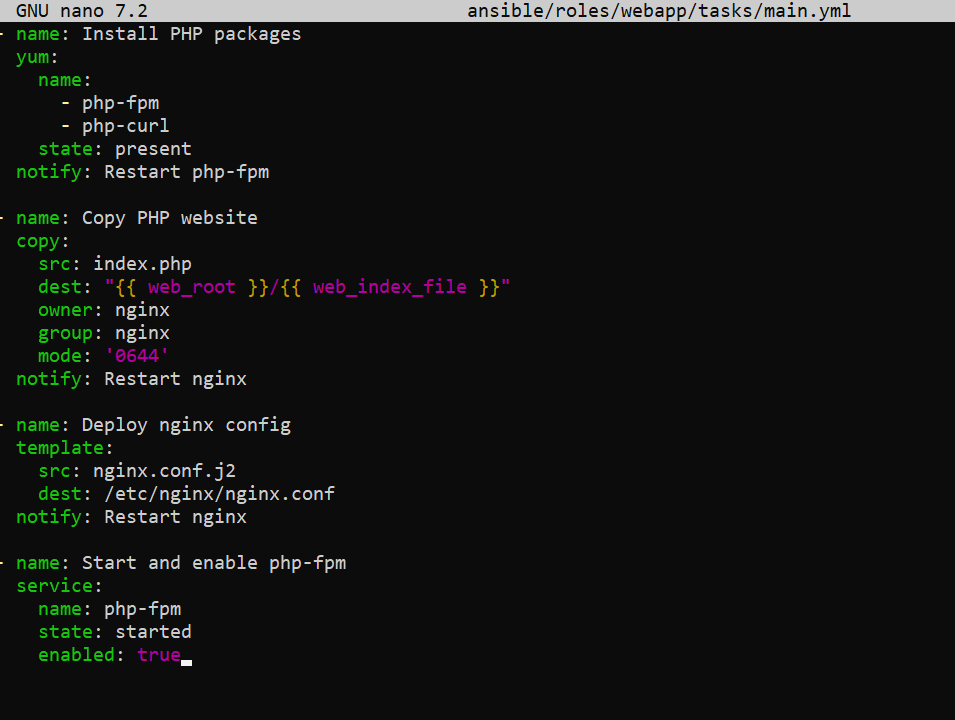
* task13\_webapp\_handlers\_main.png



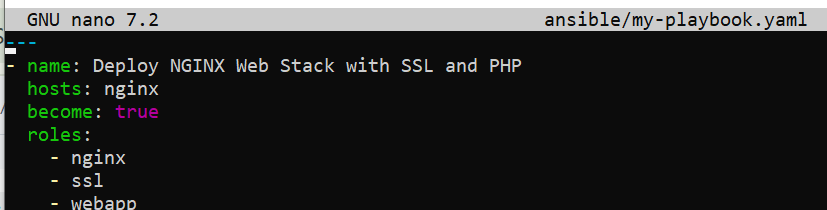
* task13\_webapp\_templates\_nginx\_conf.png



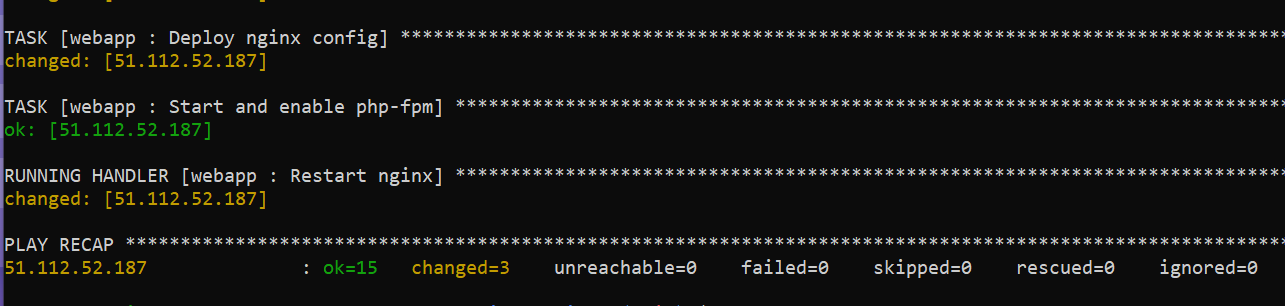
* task13\_webapp\_tasks\_main.png



* task13\_my\_playbook\_roles.png



* task13\_ansible\_play\_roles.png

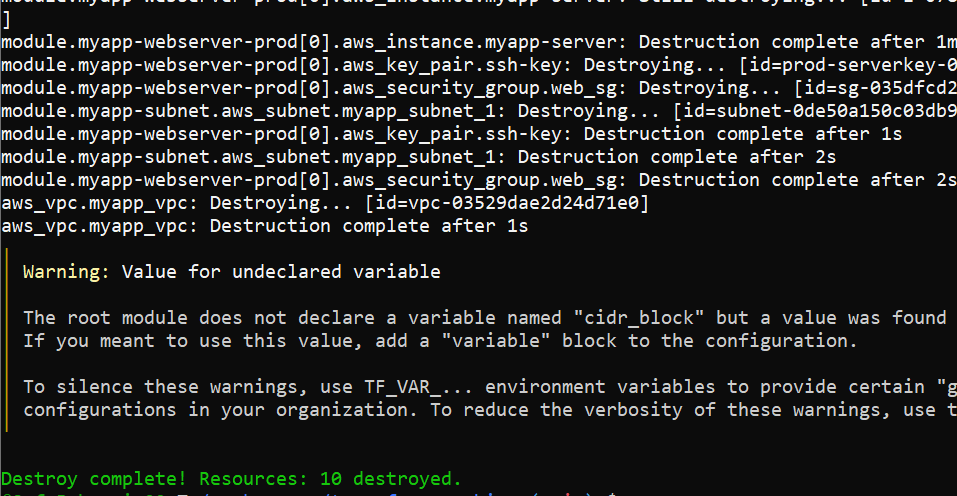


* task13\_php\_https\_browser\_roles.png

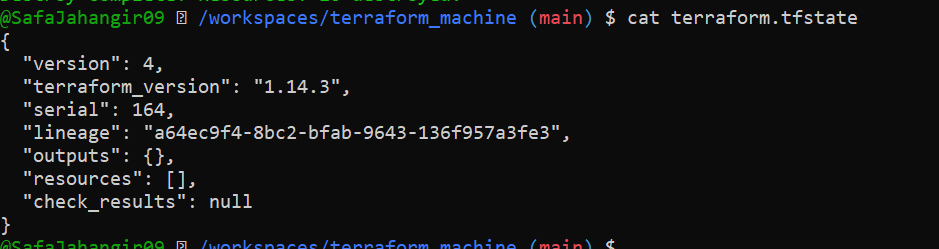
## 

**Cleanup**

* cleanup\_terraform\_destroy.png



* cleanup\_tfstate.png



* cleanup\_aws\_console.png

