**CLOUD COMPUTING LAB**

**Name: Maria Abdul Malik**

**Reg No: 2023-BSE-076**

**Submitted to: Sir Muhammad Shoaib**

**Class: 5B**

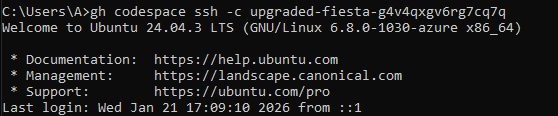
**LAB #12**

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

* task0\_codespace\_create\_and\_list. png



* task0\_codespace\_ssh\_connected.png

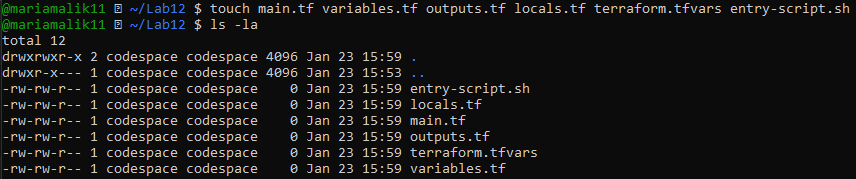


## Task 1 — Organize Terraform code into separate files

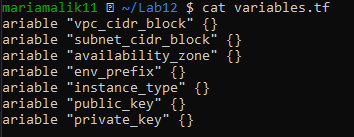
* task1\_project\_directory.png



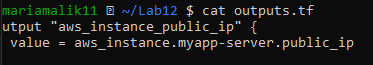
* task1\_files\_created.png



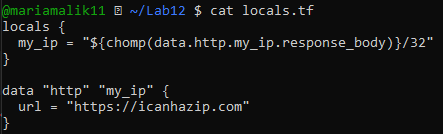
* task1\_variables\_tf.png



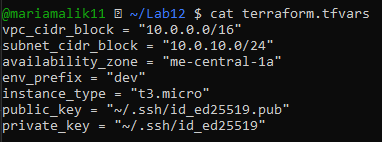
* task1\_outputs\_tf.png



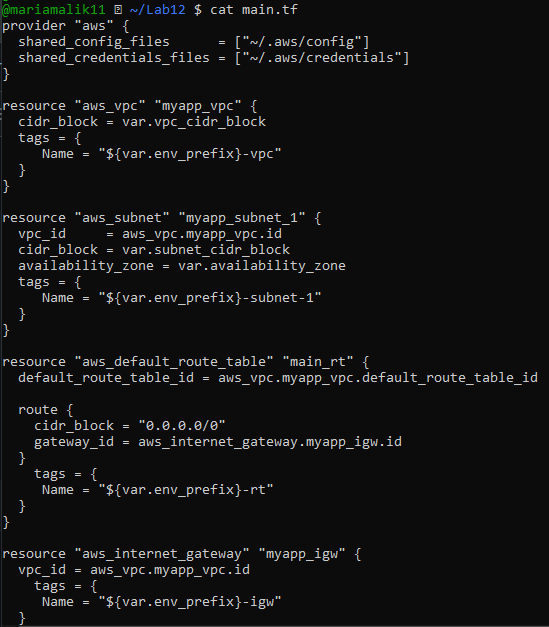
* task1\_locals\_tf.png

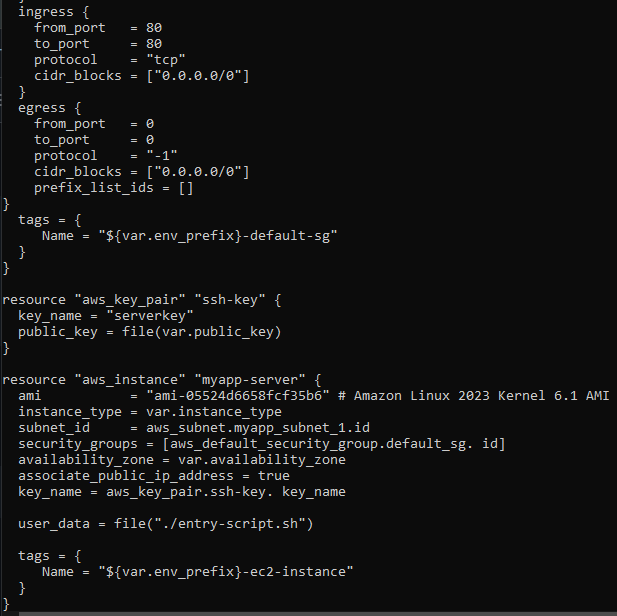


* task1\_terraform\_tfvars.png

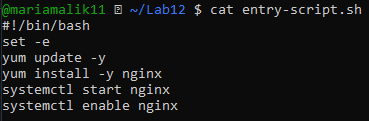


* task1\_main\_tf.png

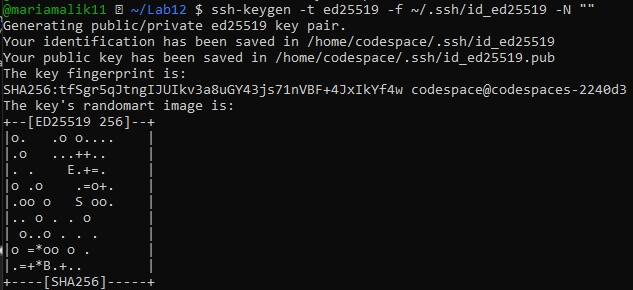




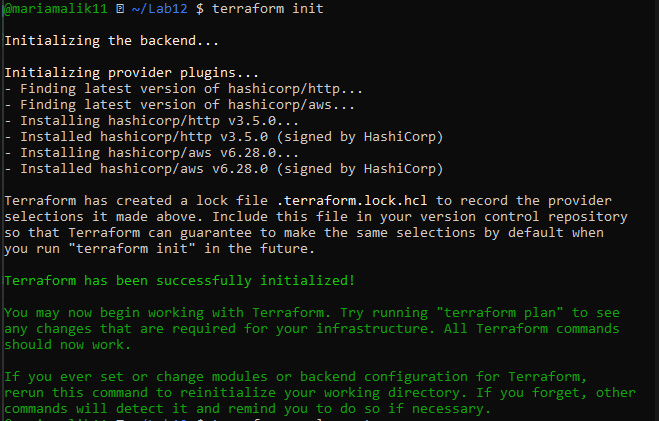
* task1\_entry\_script.png



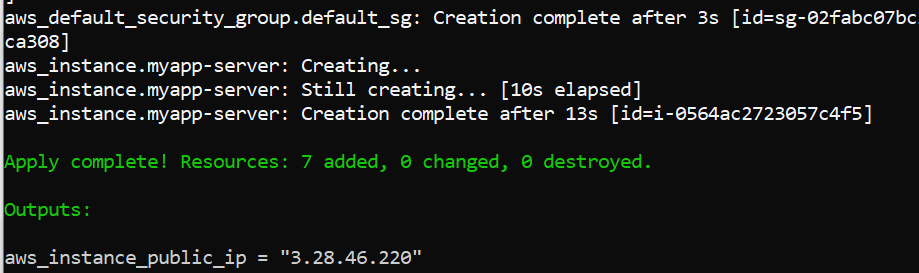
* task1\_ssh\_keygen.png



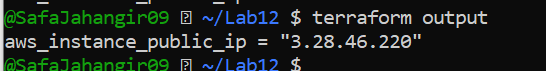
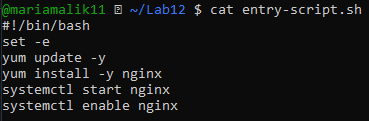
* task1\_terraform\_init.png



* task1\_terraform\_apply.png



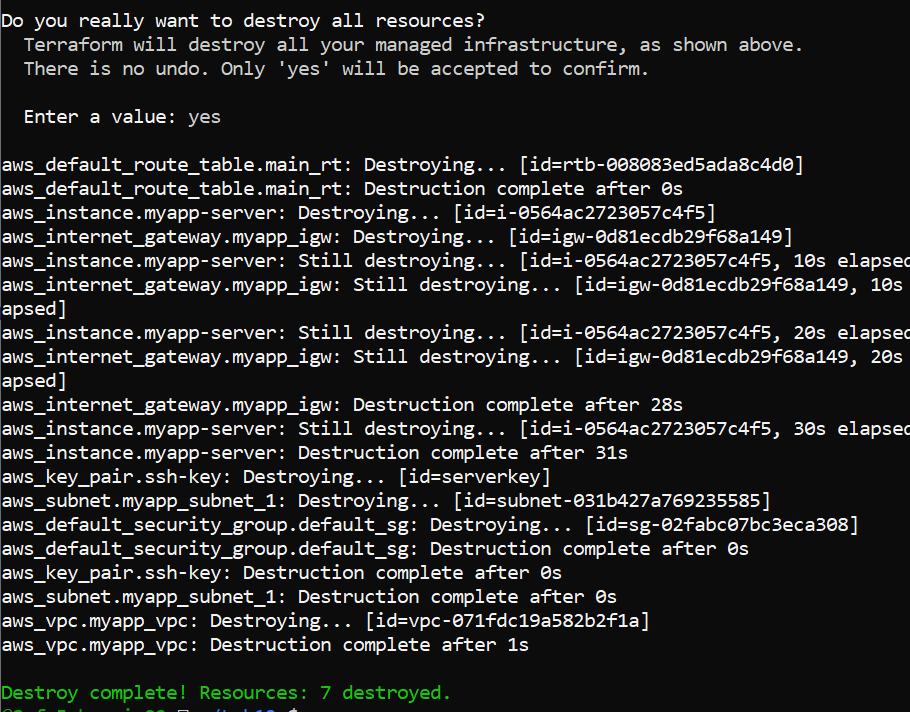
* task1\_terraform\_output.png



* task1\_nginx\_browser.png

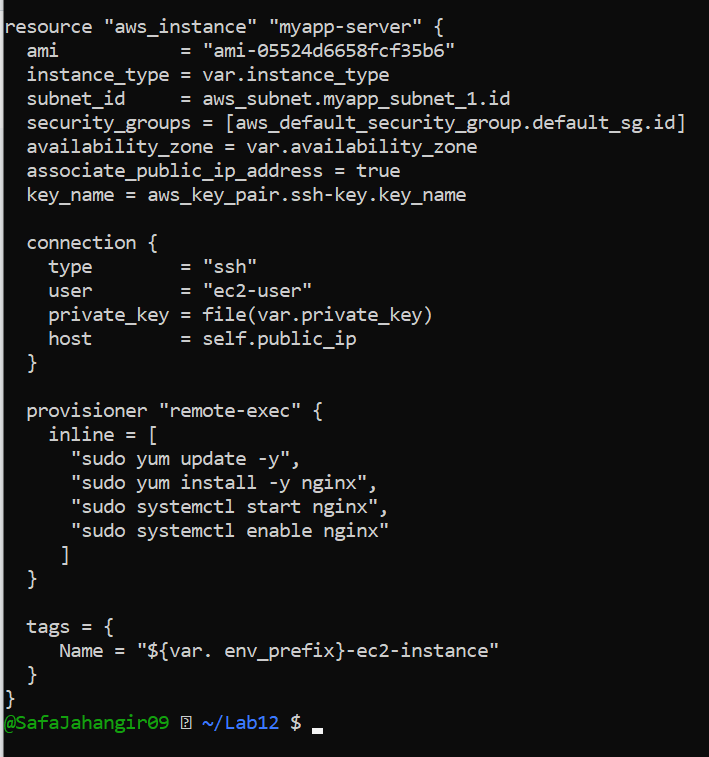


* task1\_terraform\_destroy.png

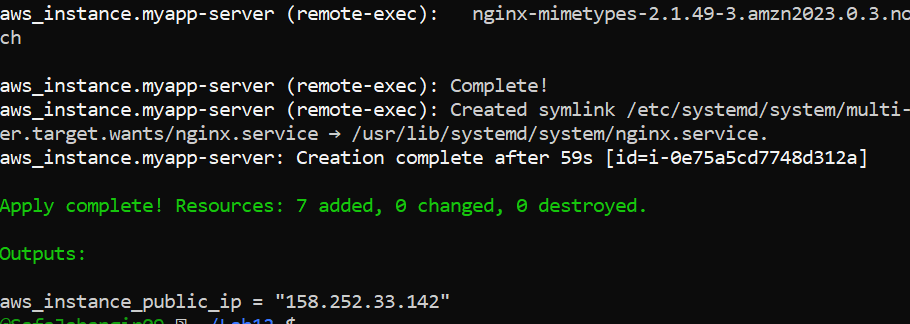


## Task 2 — Use remote-exec provisioner

* task2\_main\_tf\_remote\_exec.png



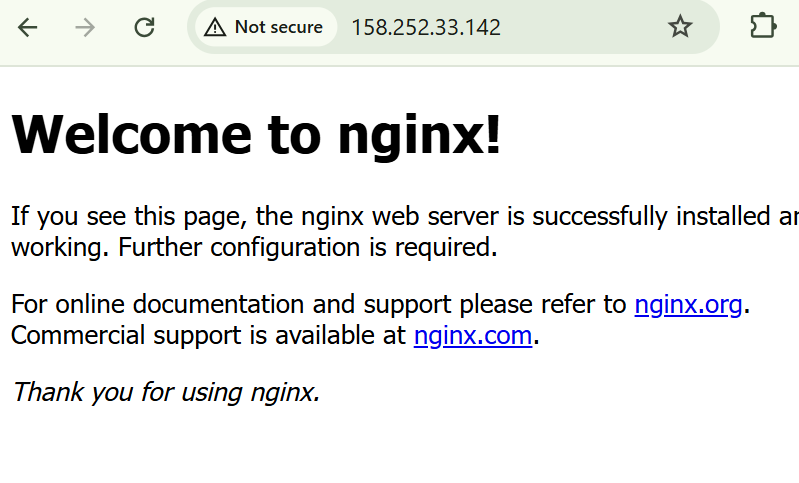
* task2\_terraform\_apply.png



* task2\_terraform\_output.png

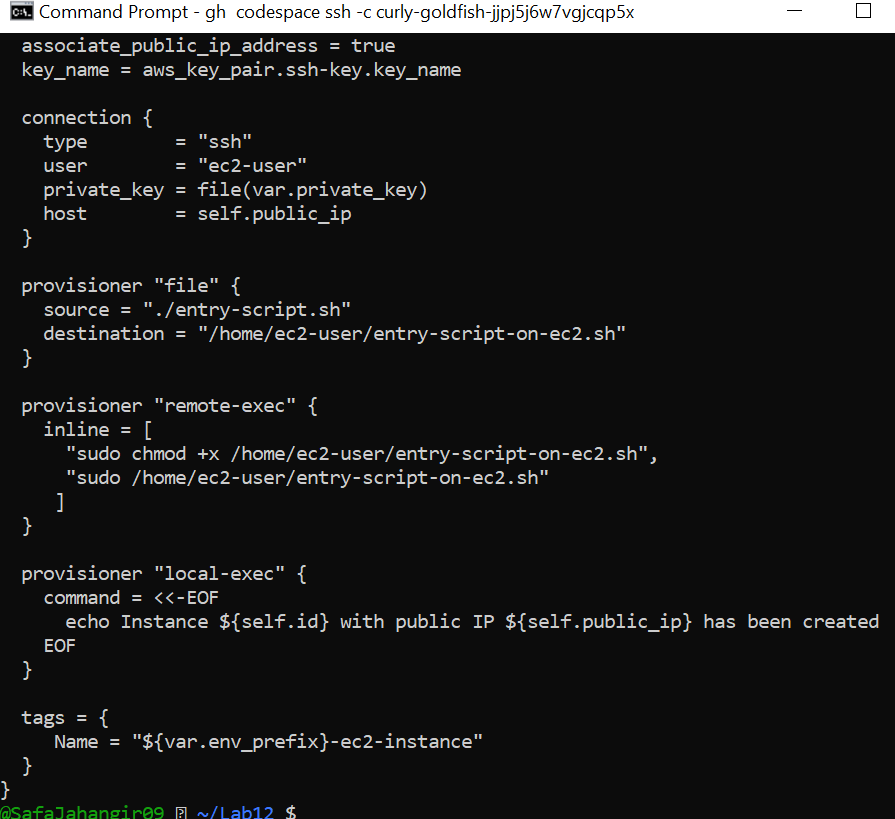


* task2\_nginx\_browser.png

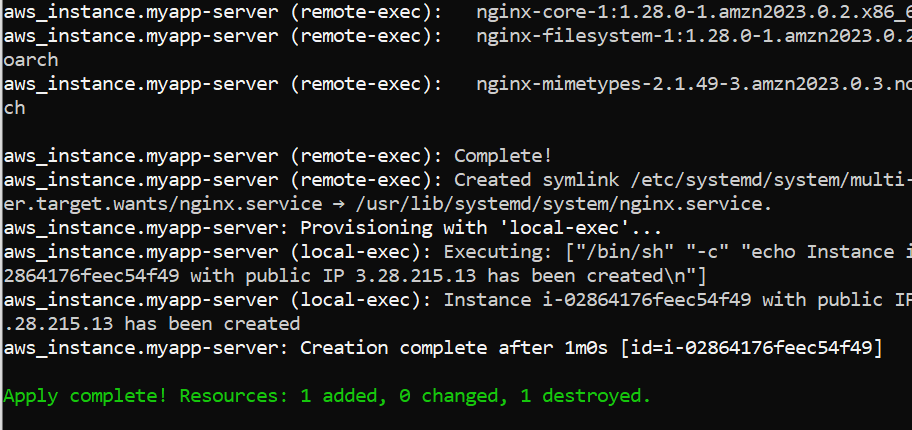


## Task 3 — Use file and local-exec provisioners

* task3\_main\_tf\_all\_provisioners.png



* task3\_terraform\_apply.png



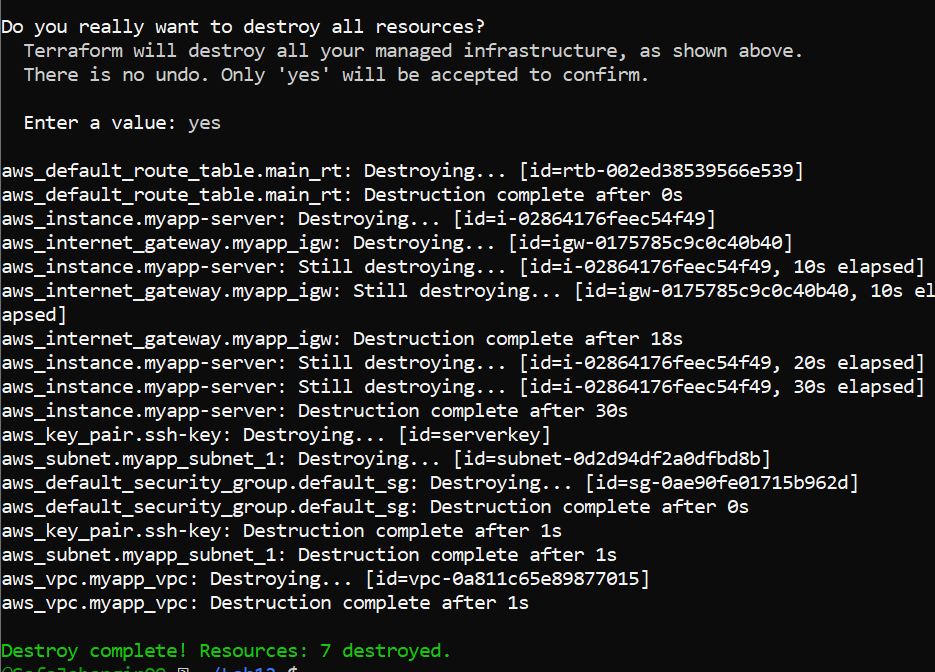
* task3\_terraform\_output.png



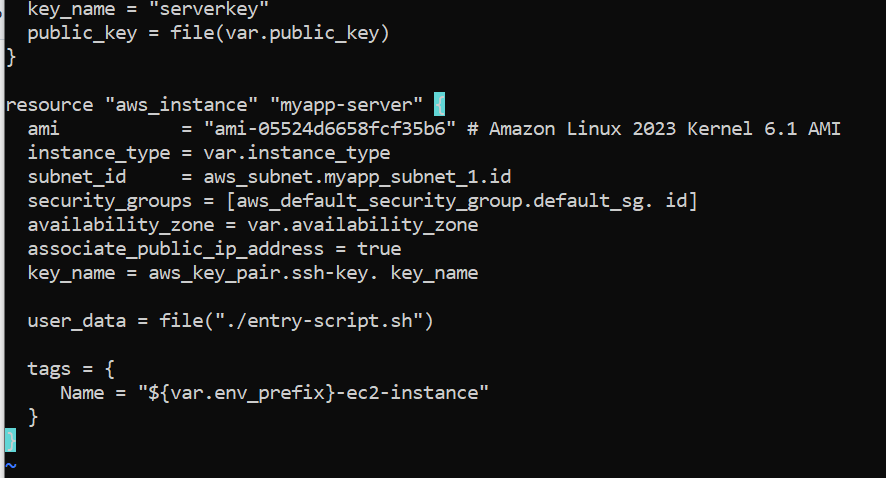
* task3\_nginx\_browser.png



* task3\_terraform\_destroy.png

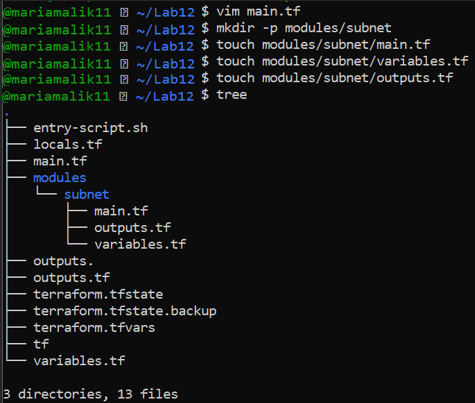


* task3\_main\_tf\_restored.png

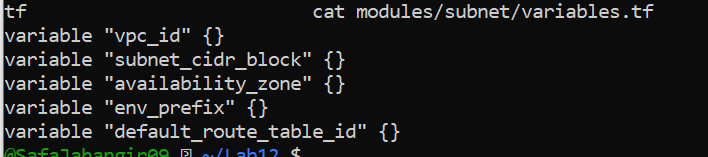


## Task 4 — Create Terraform modules (subnet module)

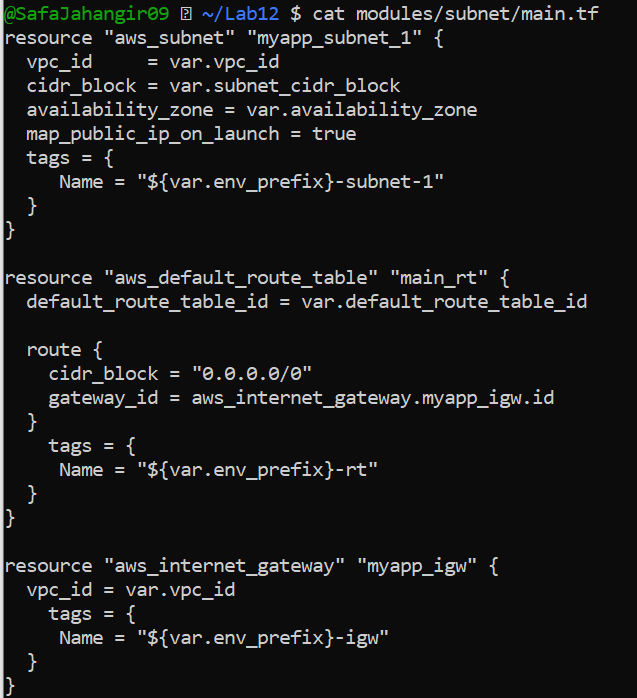
* task4\_module\_structure.png



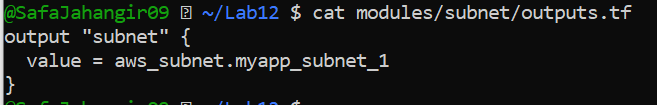
* task4\_subnet\_variables.png



* task4\_subnet\_main.png



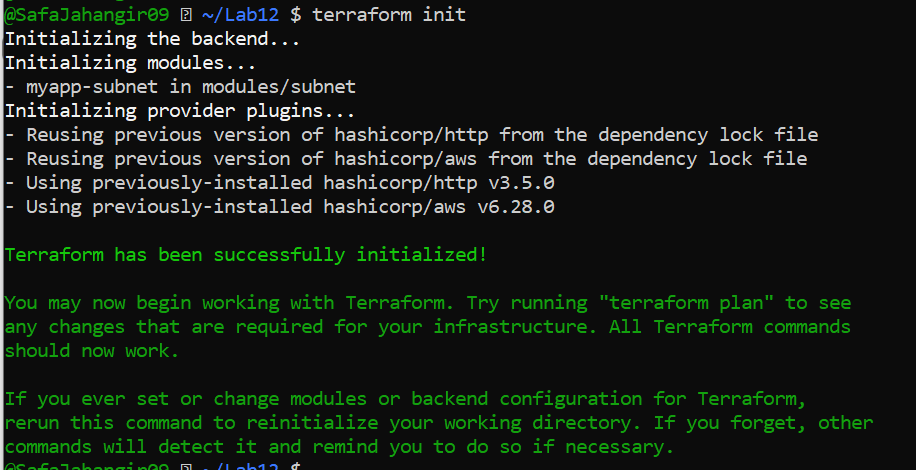
* task4\_subnet\_outputs.png



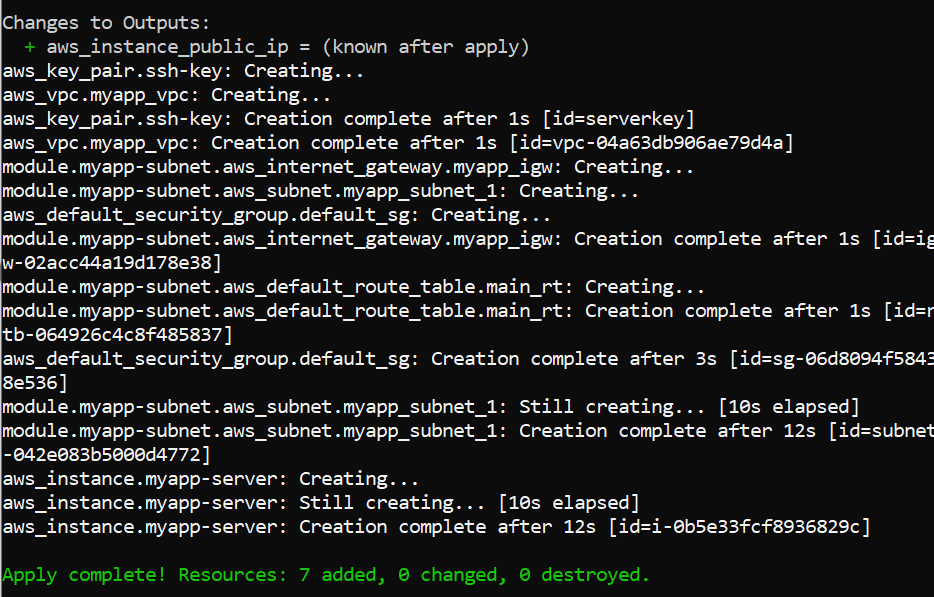
* task4\_main\_tf\_with\_module.png



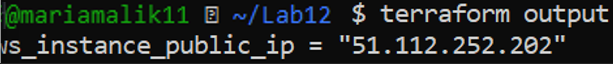
* task4\_terraform\_init.png



* task4\_terraform\_apply.png



* task4\_terraform\_output.png



* task4\_nginx\_browser.png

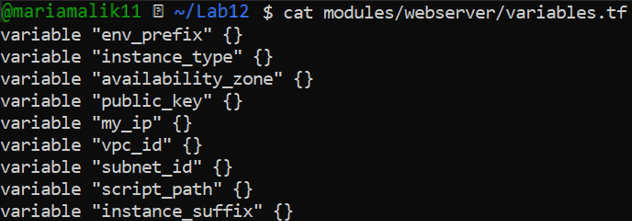


## Task 5 — Create webserver module

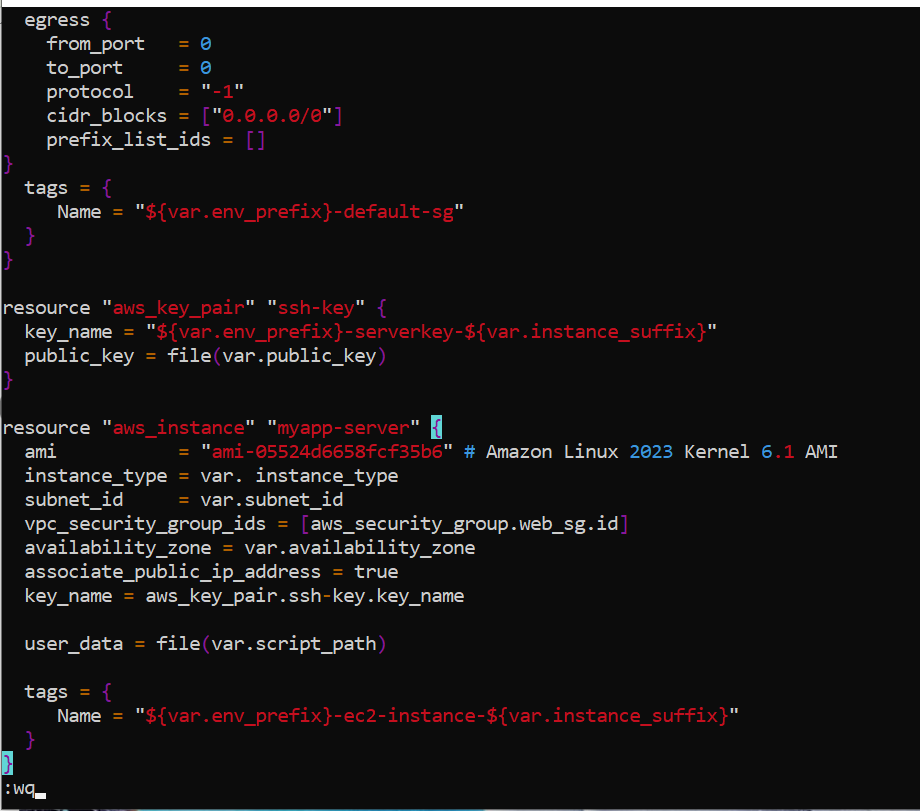
* task5\_webserver\_module\_structure.png



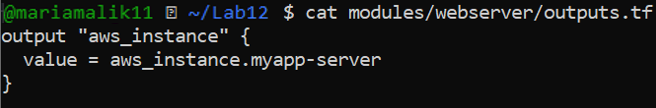
* task5\_webserver\_variables.png



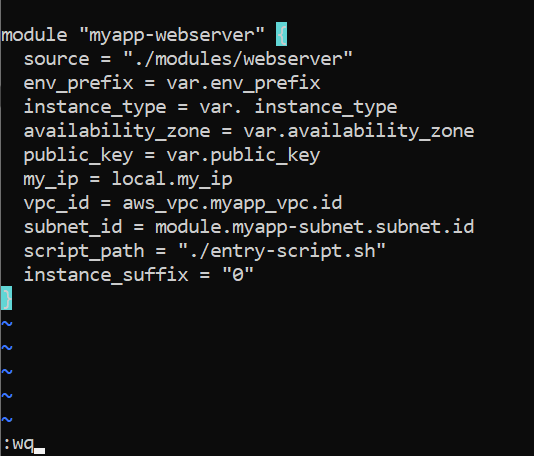
* task5\_webserver\_main.png



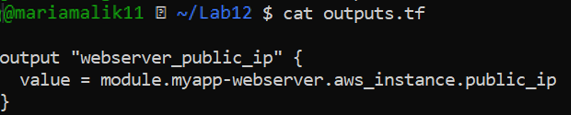
* task5\_webserver\_outputs.png



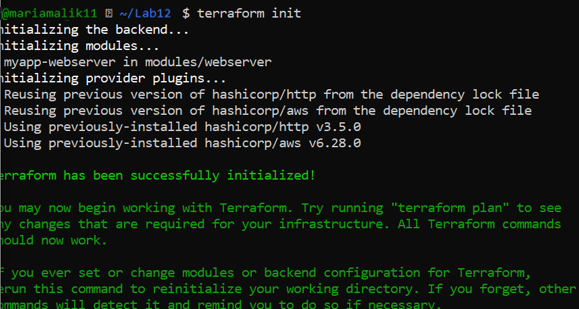
* task5\_main\_tf\_webserver\_module.png



* task5\_outputs\_updated.png



* task5\_terraform\_init.png



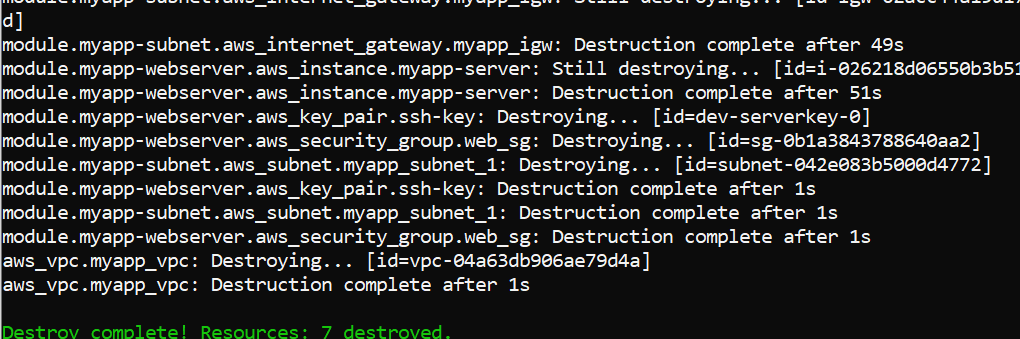
* task5\_terraform\_apply.png



* task5\_nginx\_browser.png

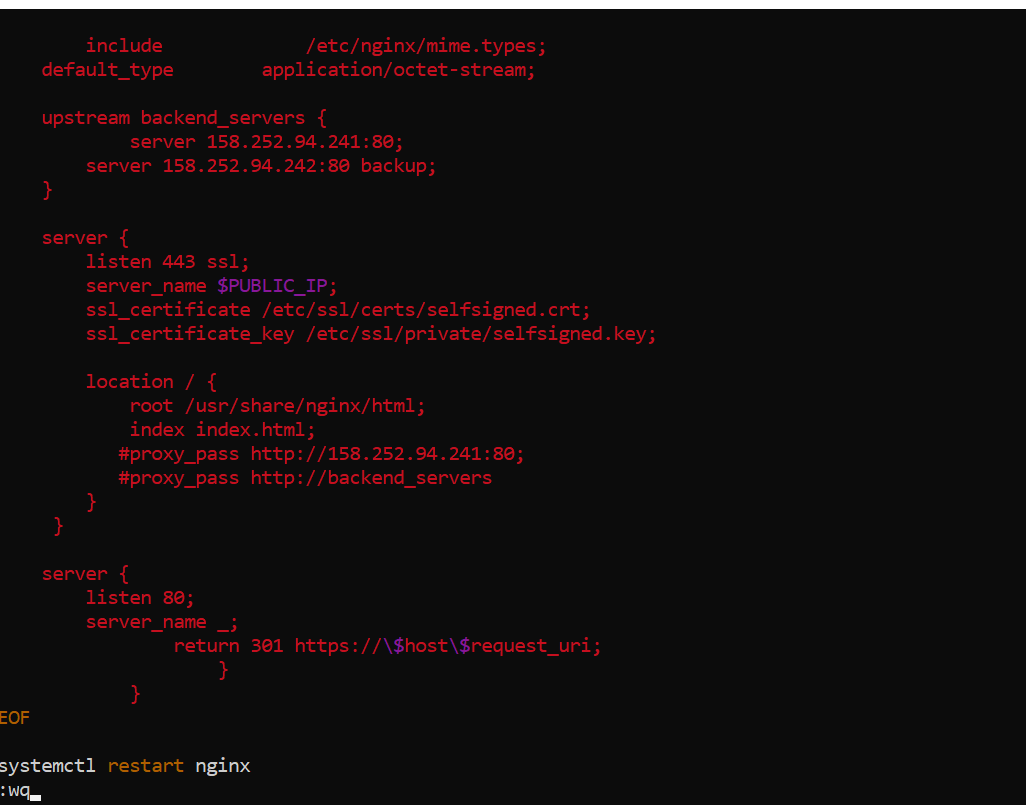


* task5\_terraform\_destroy.png

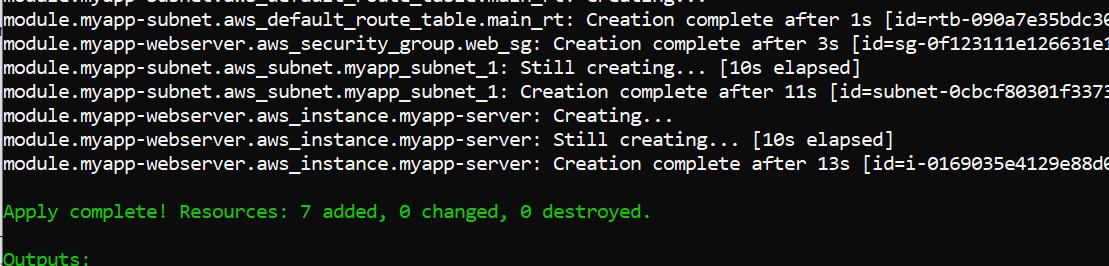


## Task 6 — Configure HTTPS with self-signed certificates

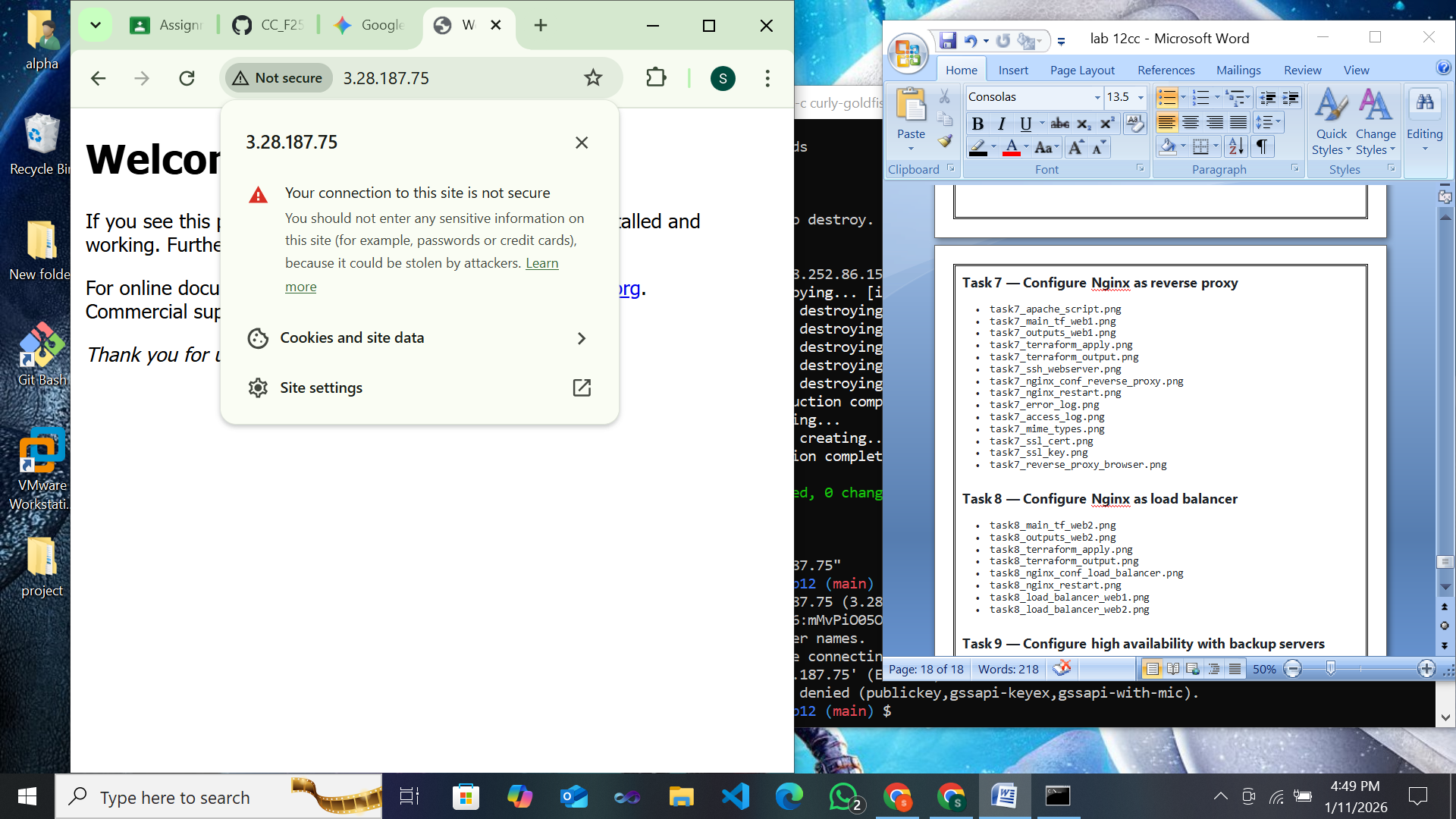
* task6\_entry\_script\_https.png



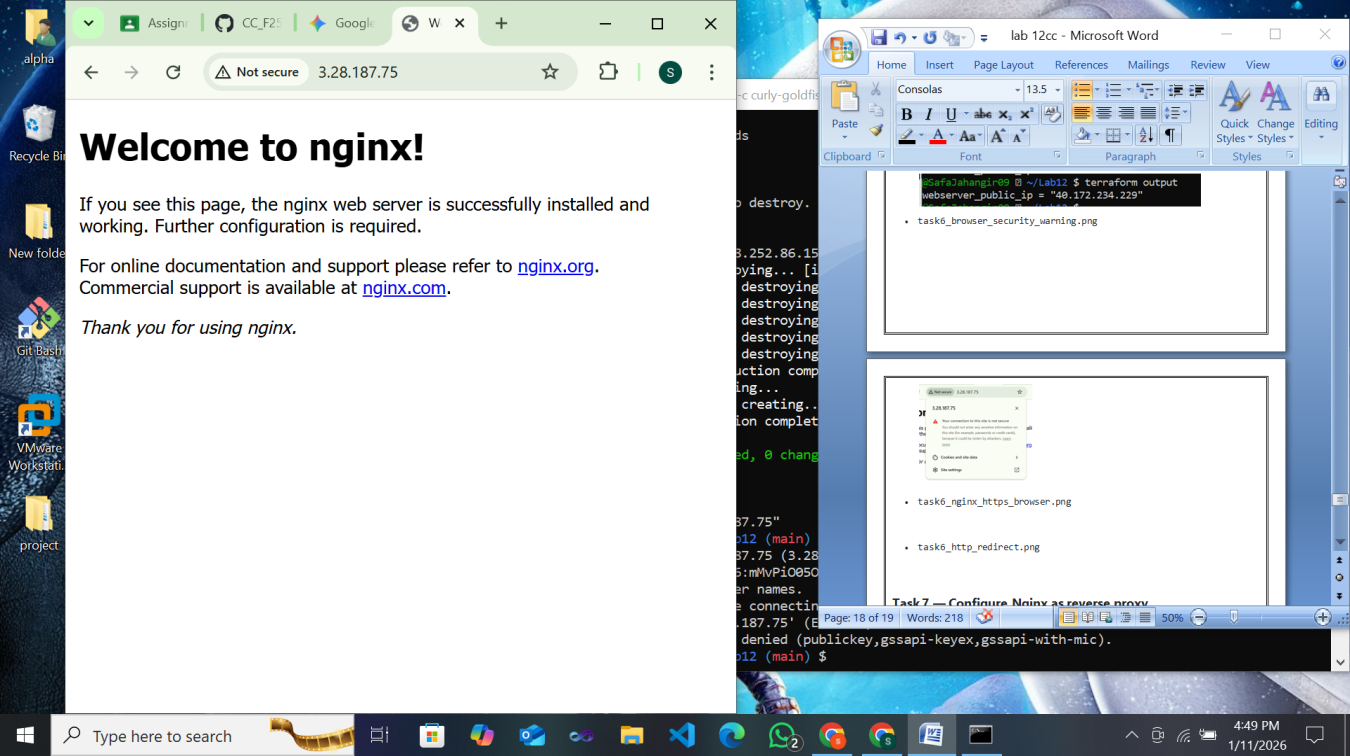
* task6\_terraform\_apply.png



* task6\_browser\_security\_warning.png

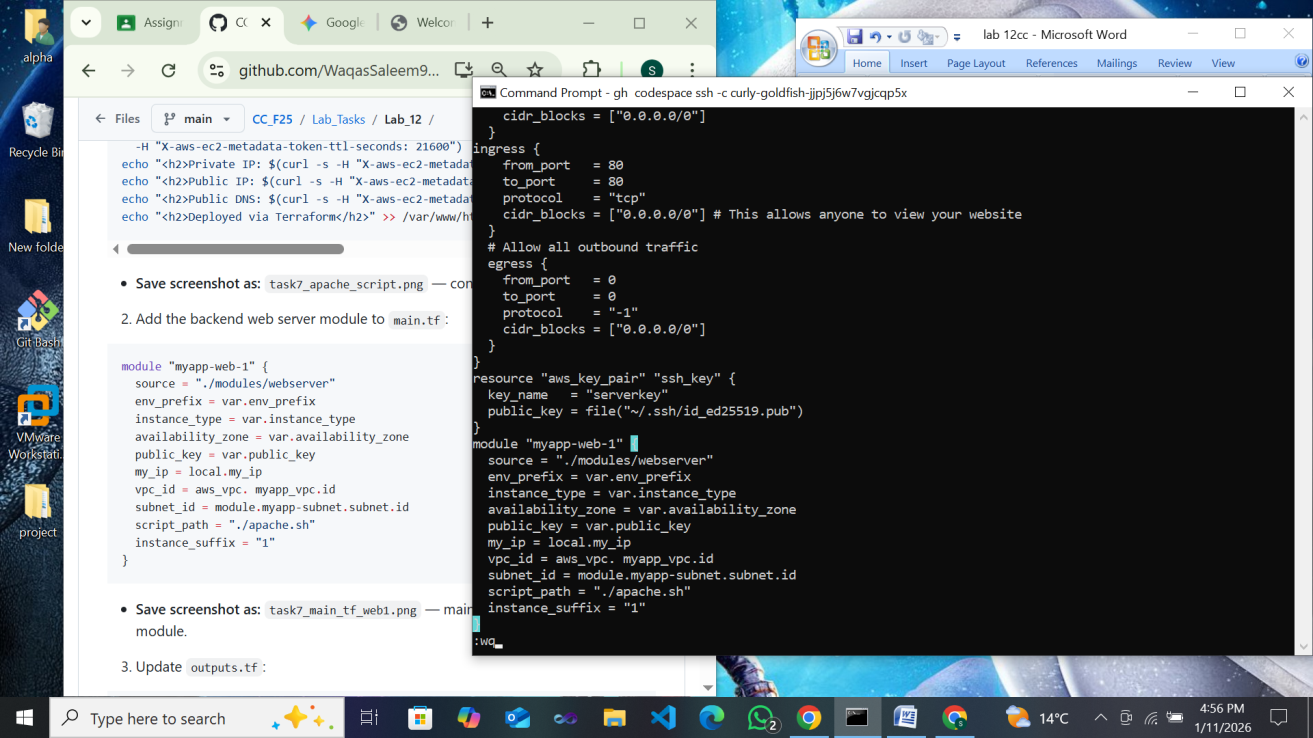


* task6\_nginx\_https\_browser.png

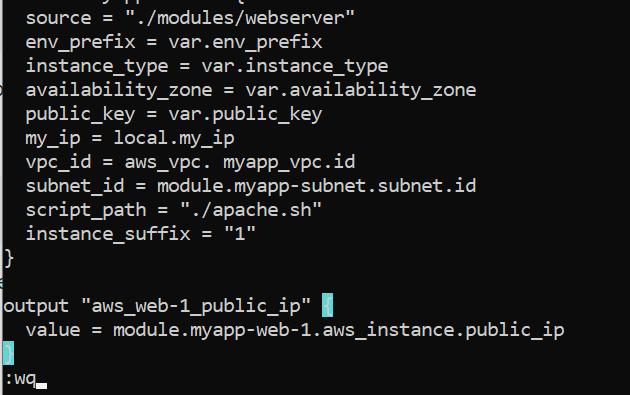


## Task 7 — Configure Nginx as reverse proxy

* task7\_apache\_script.png
* 
* task7\_main\_tf\_web1.png



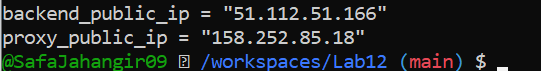
* task7\_outputs\_web1.png



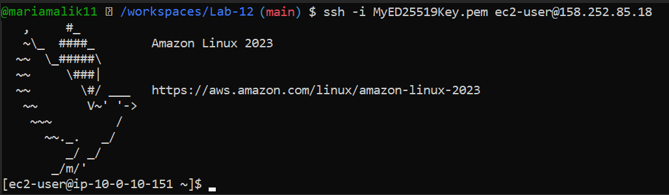
* task7\_terraform\_apply.png



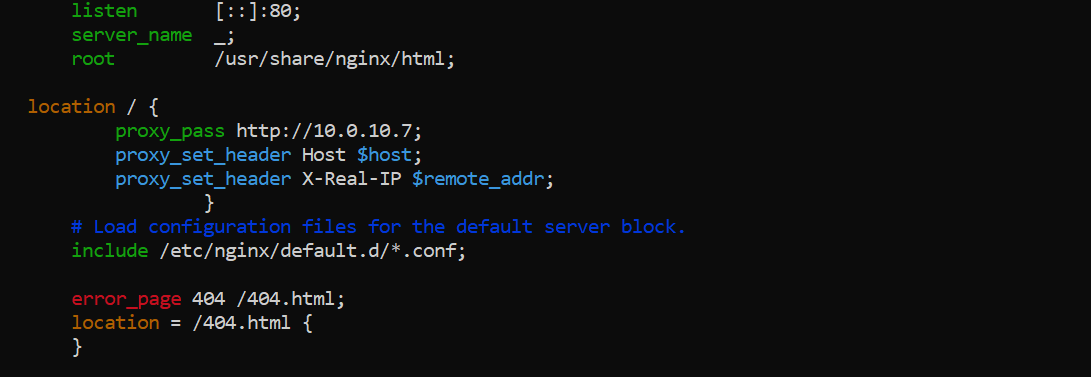
* task7\_terraform\_output.png



* task7\_ssh\_webserver.png



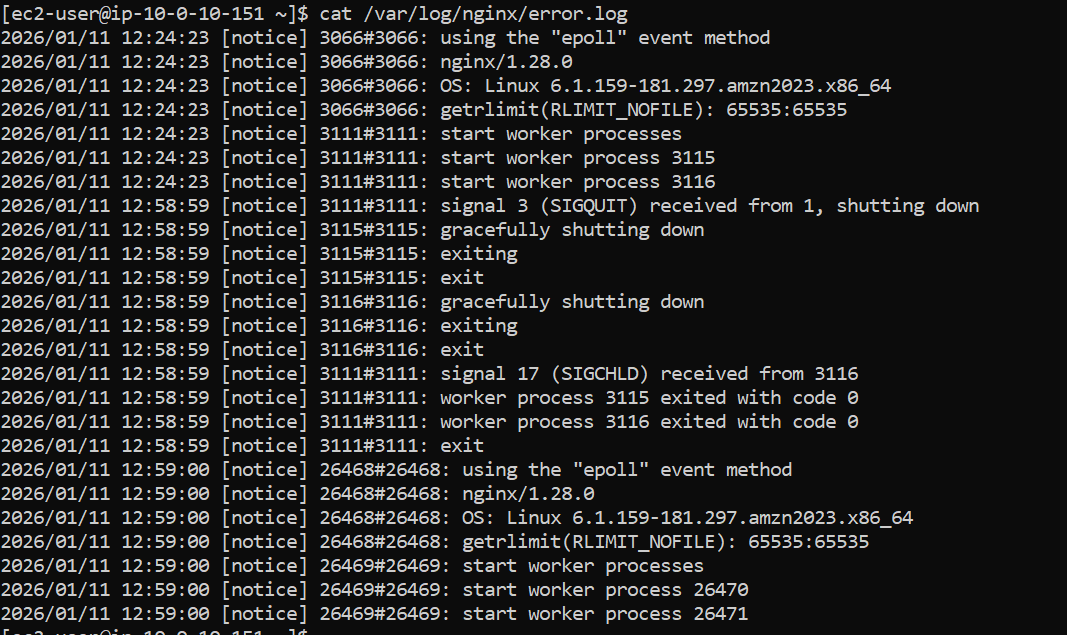
* task7\_nginx\_conf\_reverse\_proxy.png



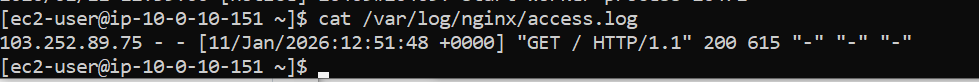
* task7\_nginx\_restart.png



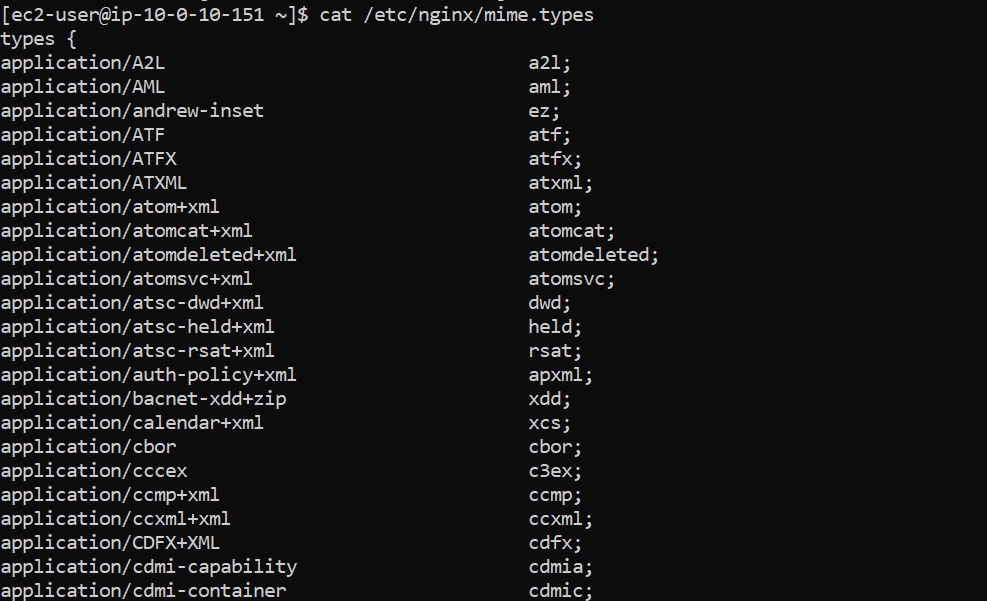
* task7\_error\_log.png



* task7\_access\_log.png



* task7\_mime\_types.png



* task7\_ssl\_cert.png



* task7\_ssl\_key.png

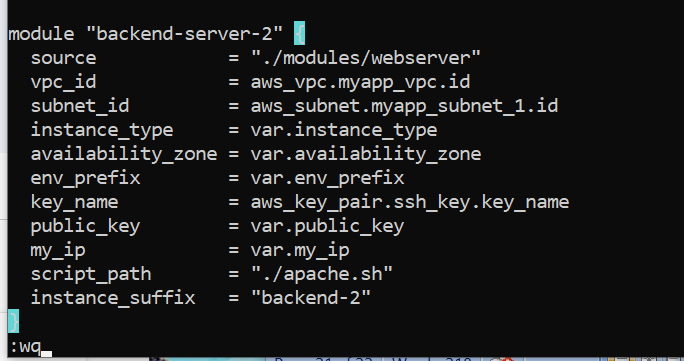


* task7\_reverse\_proxy\_browser.png

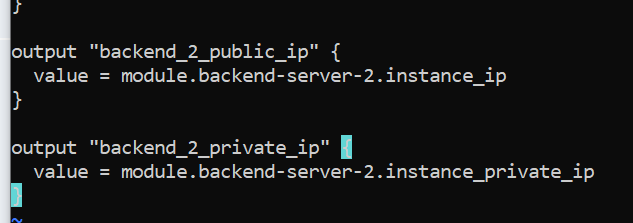


## Task 8 — Configure Nginx as load balancer

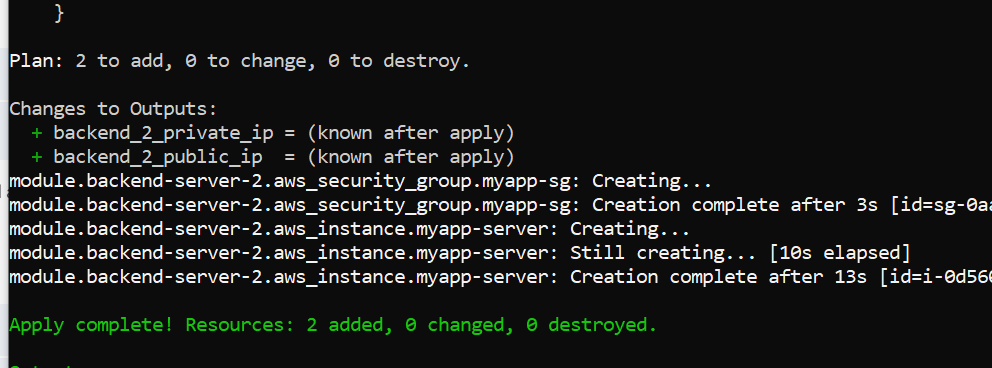
* task8\_main\_tf\_web2.png



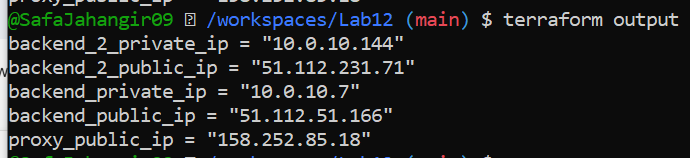
* task8\_outputs\_web2.png

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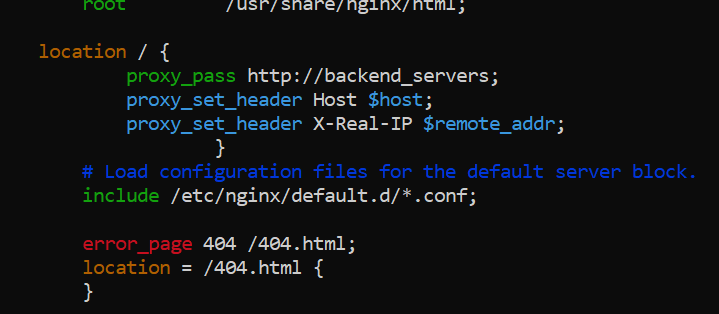
* task8\_terraform\_apply.png



* task8\_terraform\_output.png



* task8\_nginx\_conf\_load\_balancer.png



* task8\_nginx\_restart.png



## Task 9 — Configure high availability with backup servers

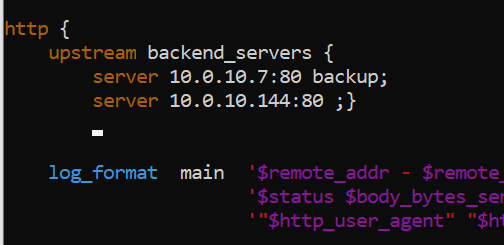
* task9\_nginx\_conf\_ha\_web1\_primary.png



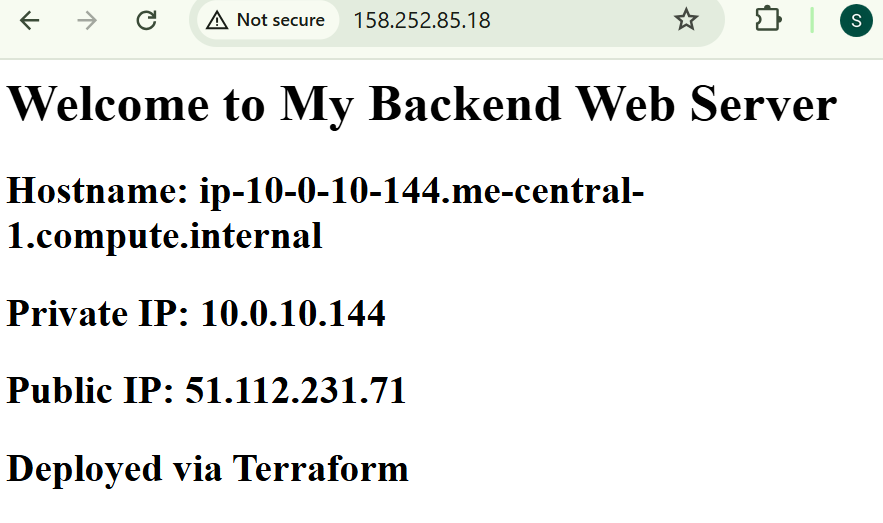
* task9\_ha\_web1\_only.png



* task9\_nginx\_conf\_ha\_web2\_primary.png

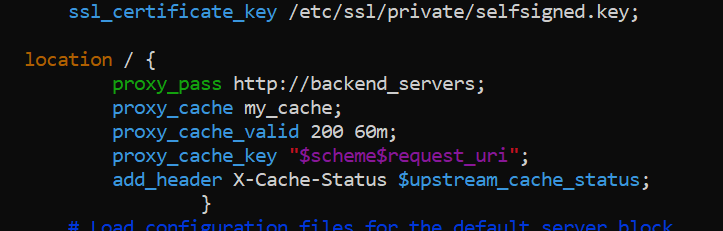


* task9\_ha\_web2\_only.png

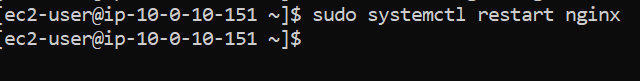


## Task 10 — Enable Nginx caching

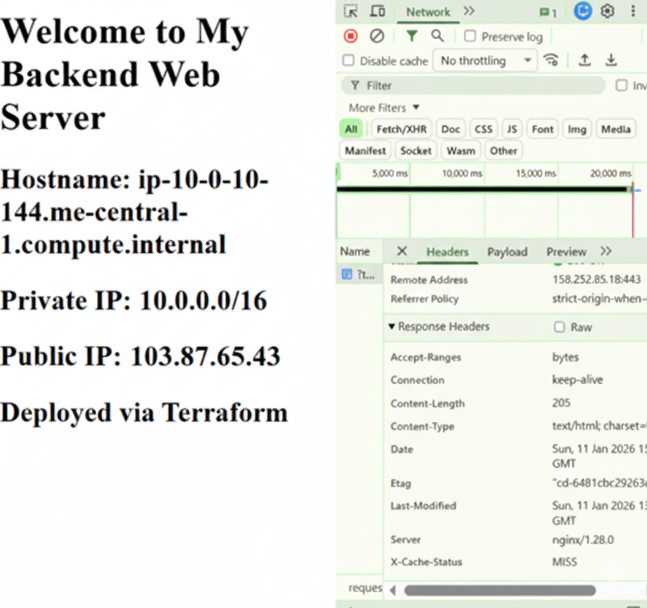
* task10\_nginx\_conf\_cache.png



* task10\_nginx\_restart.png



* task10\_cache\_miss.png



* task10\_cache\_directory.png

