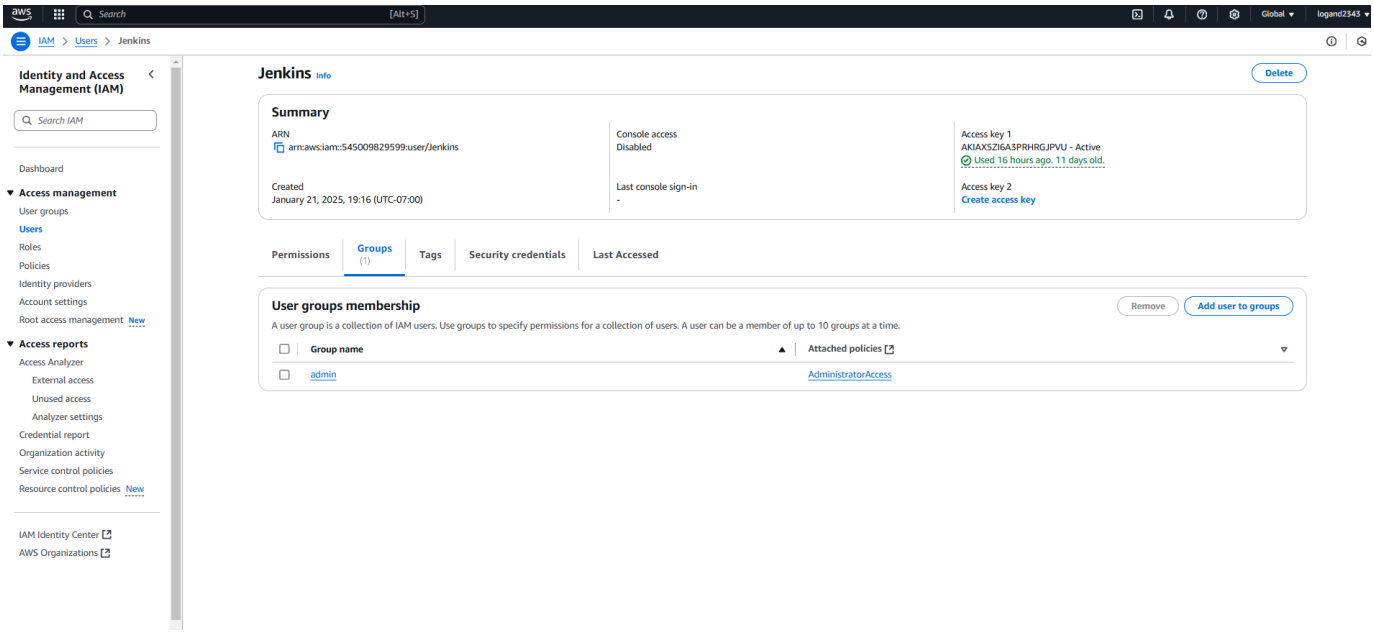
Jenkins Documentation

Overview Steps

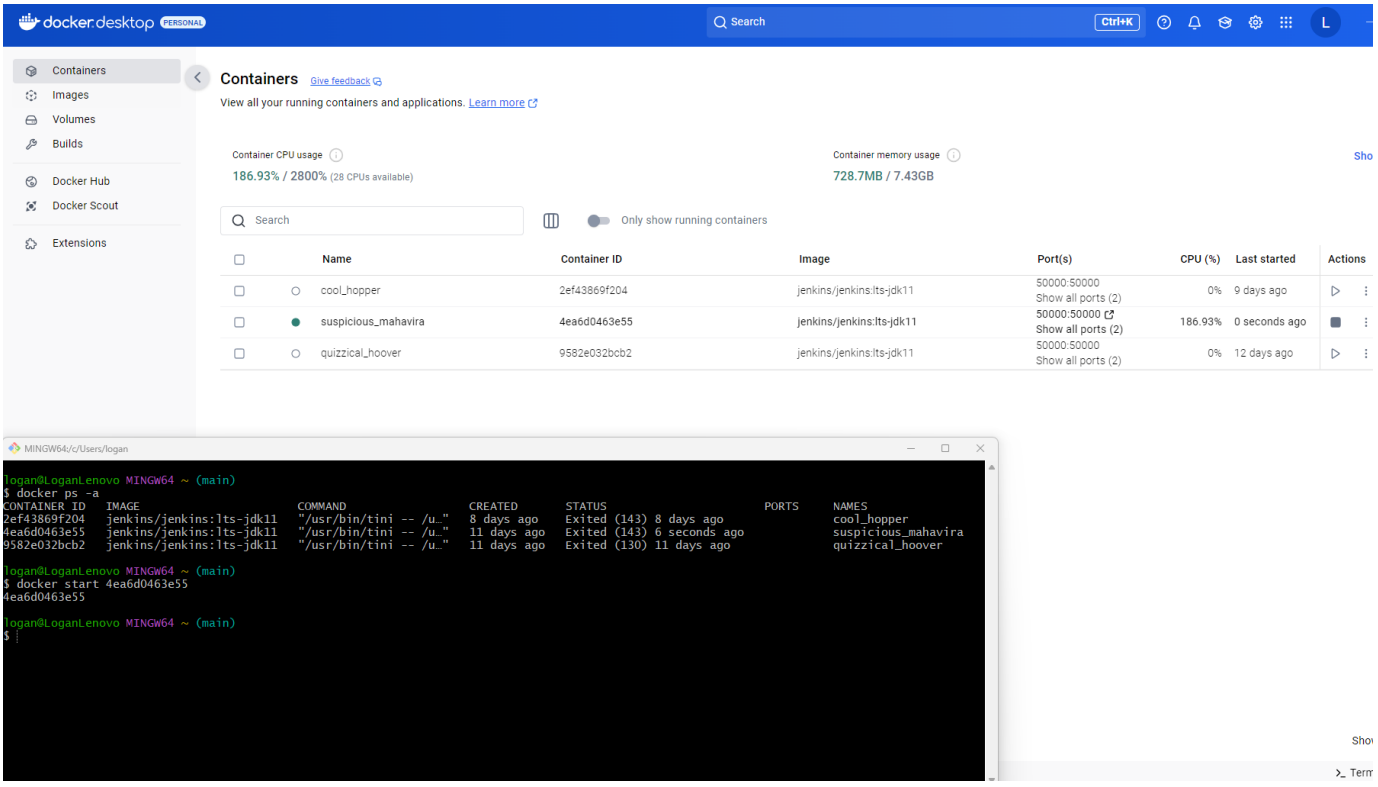
1. For Jenkins service, create a dedicated AWS IAM user with Access and Secret Keys.
2. Turn on Jenkins container via the CLI.
3. Within the CLI, install both Terraform and AWSCLI.
4. Access Jenkins in web browser via the localhost80:80 url and login with Jenkins credentials.
5. Add our Jenkins AWS IAM user keys to our Jenkins credentials settings.
6. Create new Github repository with working Terraform project and ensure the Jenkins file is properly configured and included in repository.
7. Create a new Pipeline in Jenkins and configure it to utilize our Github repository.
8. Run our new Pipeline in Jenkins to fire off the build of our Terraform project.
9. Confirm the Pipeline build was successful.
10. Perform Terraform teardown within our container in the CLI.

Steps Breakdown

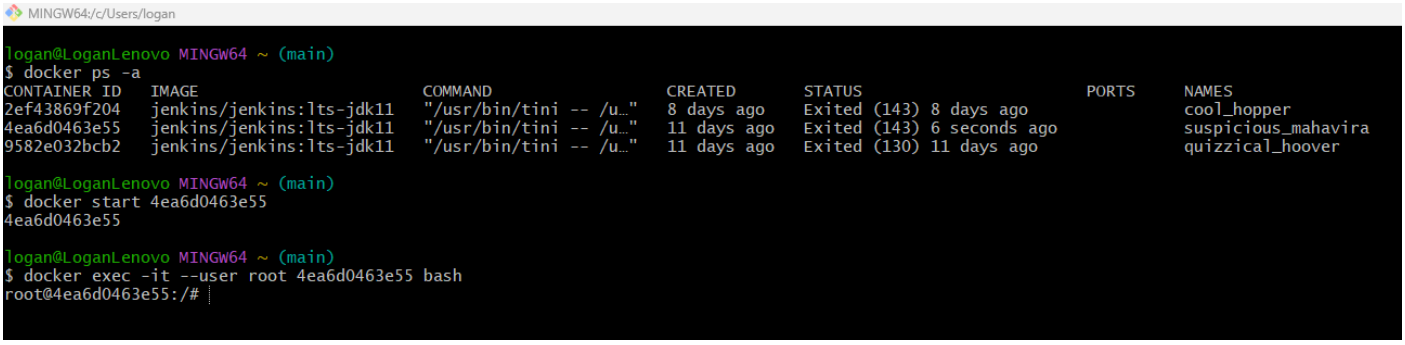
1. For Jenkins service, create a dedicated AWS IAM user with Access and Secret Keys.
    a. Log into AWS and navigate to the IAM section.
    b. Create a new user for Jenkins.
    c. Assign the user to a group with administrator permissions.
    d. Create an access key and save the Access Key and Secret Key.
    e. Screenshots



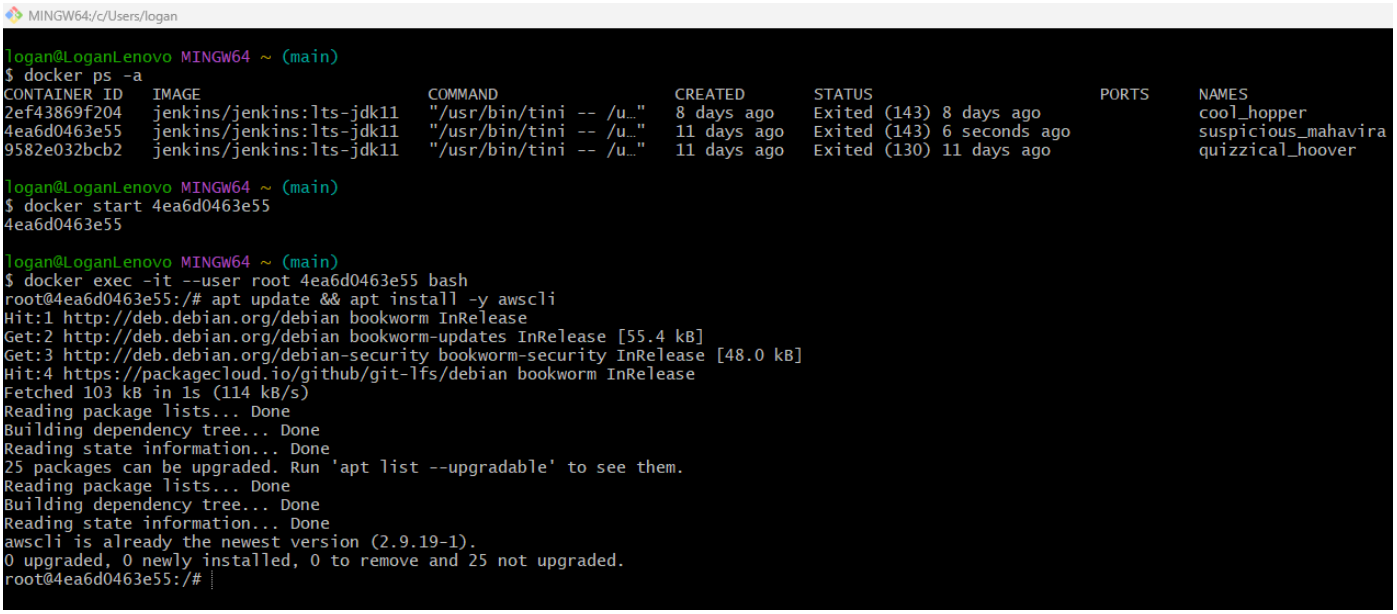
2. Turn on Jenkins container via the CLI.
    a. Open Gitbash
    b. Run the docker command “docker ps -a” to get a list of all containers on local machine so we can retrieve the container id.
    c. Run the docker command “docker start <container id>” to start the docker container.



3. Within the CLI, install both Terraform and AWSCLI.
    a. Run this docker command “docker exec -it --user root <container id> bash” to ssh into this running container.



    b. Run this docker command “apt update && apt install -y awscli” to update our container and install awscli.

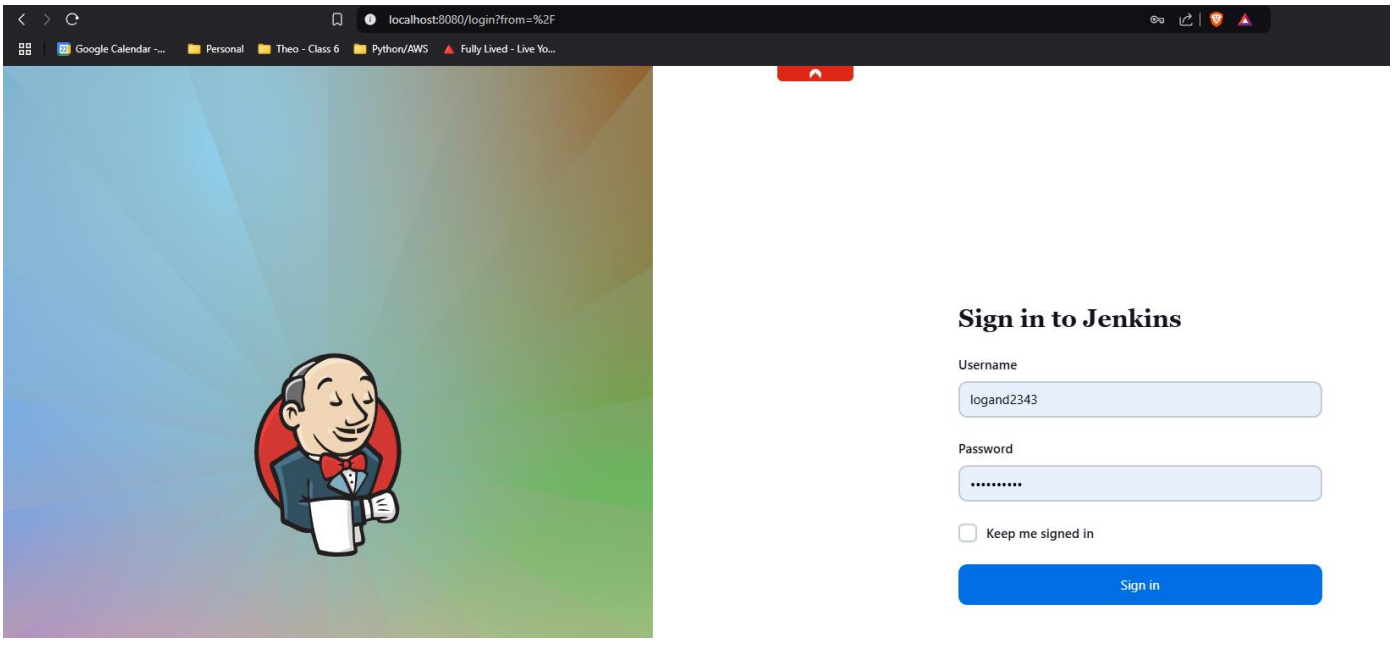


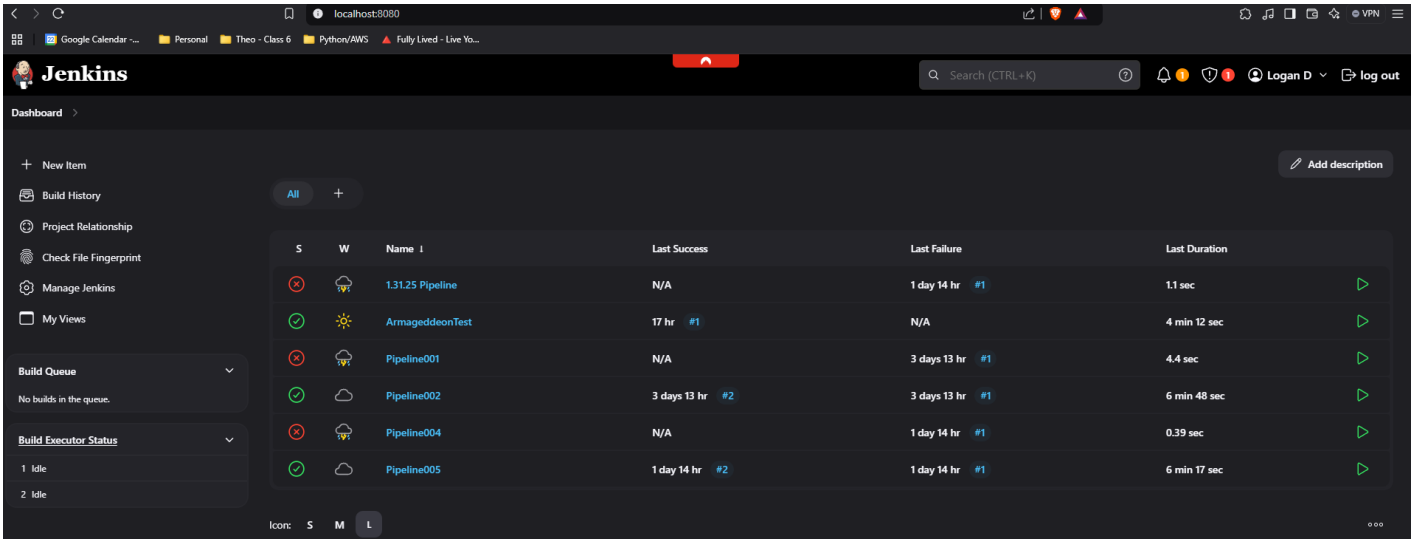
    c. Run this docker command “mkdir -p /home/jenkins/bin” to make a directory for Jenkins.
    d. Run this docker command “curl -fsSL https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip -o /home/jenkins/terraform.zip” to grab terraform from hashicorp and save the zip file inside our container.
    e. Run this docker command “unzip /home/jenkins/terraform.zip -d /home/jenkins/bin” to unzip our terraform zip and place it in the Jenkins directory.

f. Run this docker command “rm /home/jenkins/terraform.zip” to remove the zip file since it is no longer necessary.
g. Run this docker command “export PATH="/home/jenkins/bin:$PATH" to let the container know where we installed terraform for future runs.
h. Run the following commands “terraform --version” and “aws --version” to ensure both are installed.

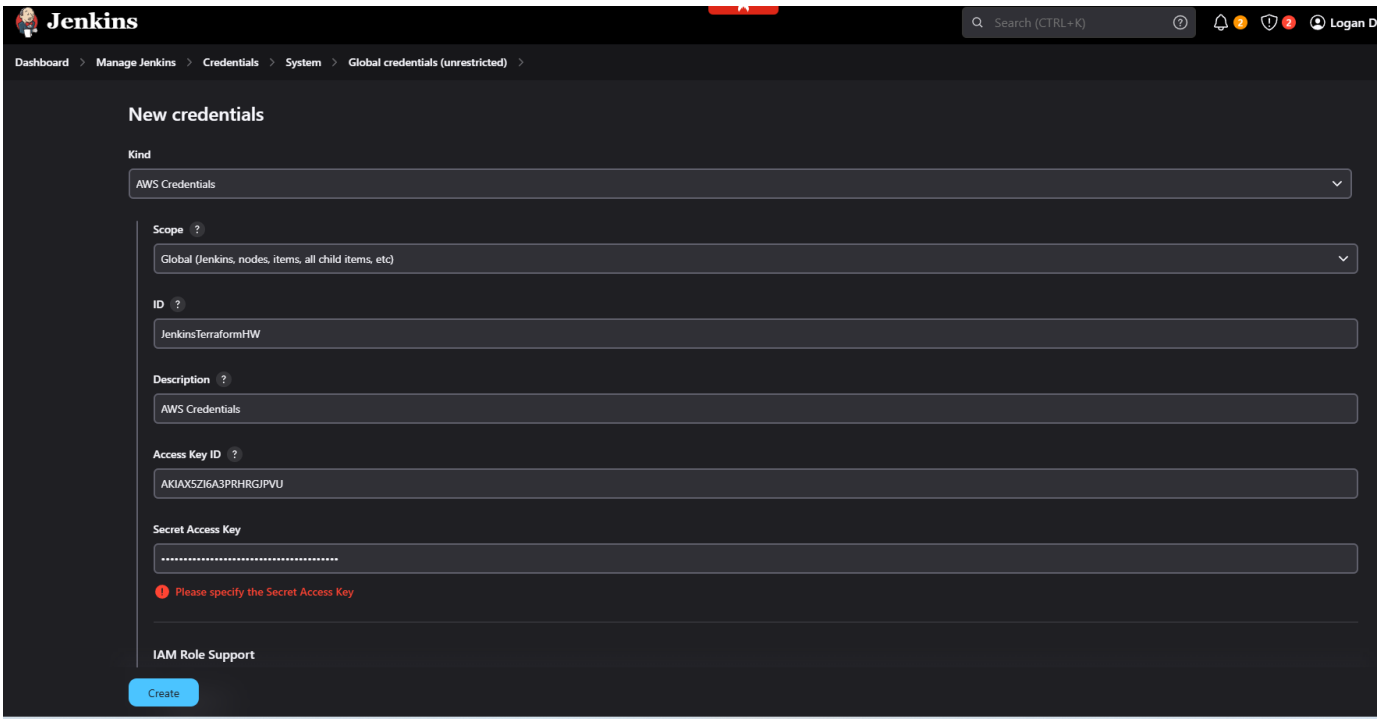
```
MINGW64:/c/Users/logan

logan@LoganLenovo MINGW64 ~ (main)
$ docker ps -a
CONTAINER ID   IMAGE                      COMMAND                  CREATED       STATUS                       PORTS     NAMES
2ef43869f204   jenkins/jenkins:lts-jdk11   "/usr/bin/tini -- /u…"   8 days ago    Exited (143) 8 days ago                cool_hopper
4ea6d0463e55   jenkins/jenkins:lts-jdk11   "/usr/bin/tini -- /u…"   11 days ago   Exited (143) 6 seconds ago             suspicious_mahavira
9582e032bcb2   jenkins/jenkins:lts-jdk11   "/usr/bin/tini -- /u…"   11 days ago   Exited (130) 11 days ago               quizzical_hoover

logan@LoganLenovo MINGW64 ~ (main)
$ docker start 4ea6d0463e55
4ea6d0463e55

logan@LoganLenovo MINGW64 ~ (main)
$ docker exec -it --user root 4ea6d0463e55 bash
Building dependency tree... Done
Reading state information... Done
awscli is already the newest version (2.9.19-1).
0 upgraded, 0 newly installed, 0 to remove and 25 not upgraded.
root@4ea6d0463e55:/# mkdir -p /home/jenkins/bin
root@4ea6d0463e55:/# curl -fsSL https://releases.hashicorp.com/terraform/1.5.7/terraform_1.5.7_linux_amd64.zip  -o /home/jenkins/terraform.zip
root@4ea6d0463e55:/# unzip /home/jenkins/terraform.zip -d /home/jenkins/bin
Archive:  /home/jenkins/terraform.zip
  inflating: /home/jenkins/bin/terraform
root@4ea6d0463e55:/# rm /home/jenkins/terraform.zip
root@4ea6d0463e55:/# export PATH="/home/jenkins/bin:$PATH"
root@4ea6d0463e55:/# terraform --version
Terraform v1.5.7
on linux_amd64

Your version of Terraform is out of date! The latest version
is 1.10.5. You can update by downloading from https://www.terraform.io/downloads.html
root@4ea6d0463e55:/# aws --version
aws-cli/2.9.19 Python/3.11.2 Linux/5.15.167.4-microsoft-standard-WSL2 source/x86_64.debian.12 prompt/off
root@4ea6d0463e55:/#
```

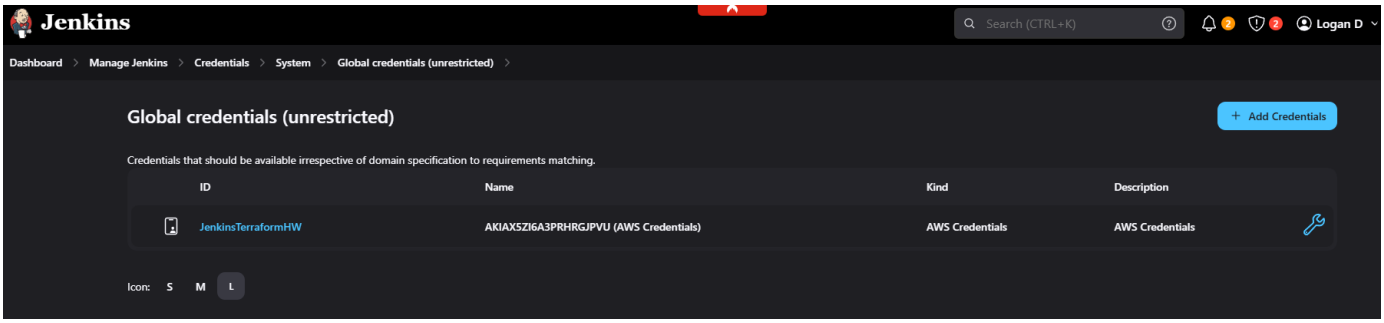
4. Access Jenkins in web browser via the localhost80:80 url and login with Jenkins credentials.



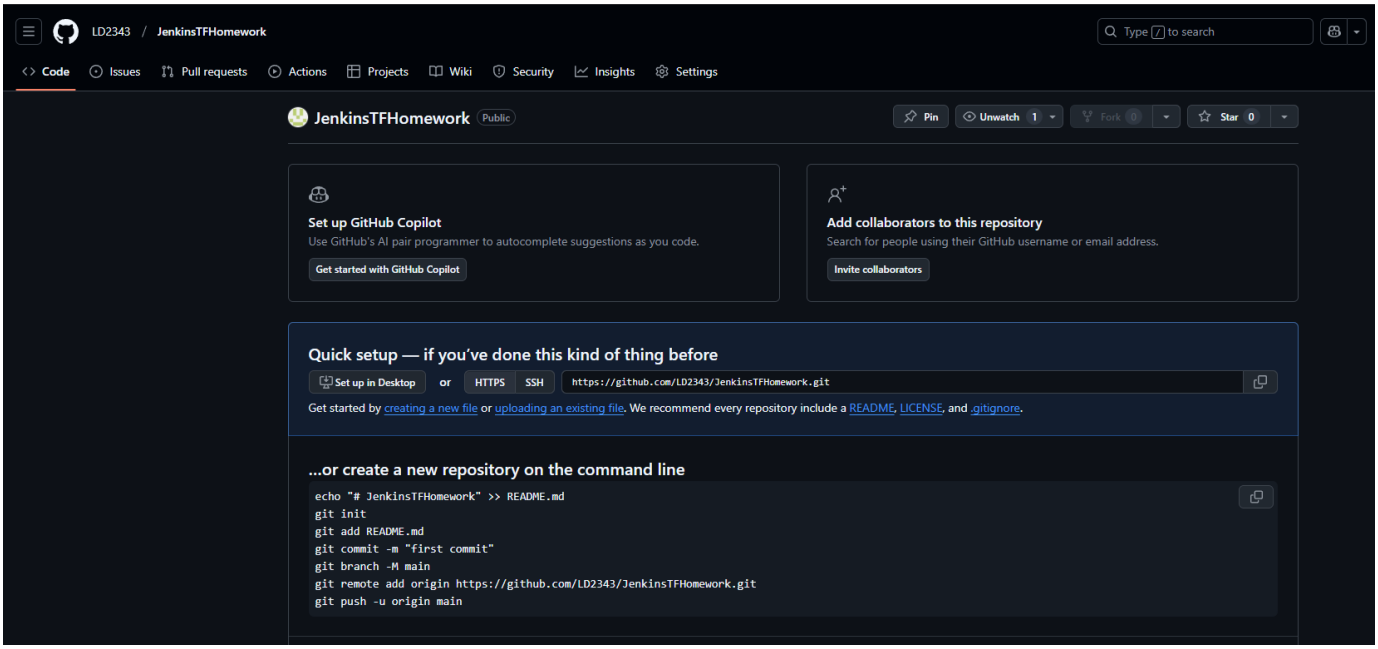


5. Add our Jenkins AWS IAM user keys to our Jenkins credentials settings.
    a. Inside Jenkins, go to Manage Jenkins and then Credentials.
    b. Click on System, then Global credentials (unrestricted) and then click on the Add Credentials button.
    c. For Kind select AWS Credentials. Add an ID label for this credential.
    d. Add the Access Key ID & Secret Access Key.
    e. Click Create to save credentials in Jenkins.

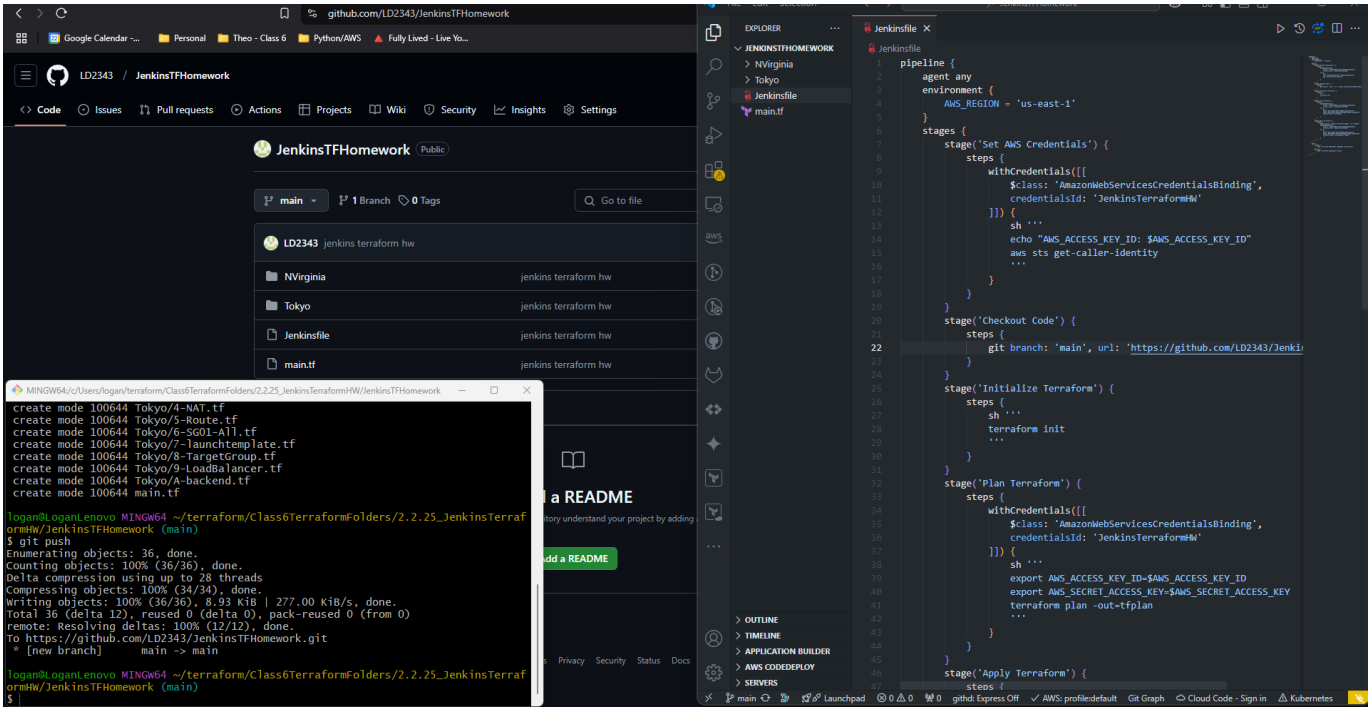




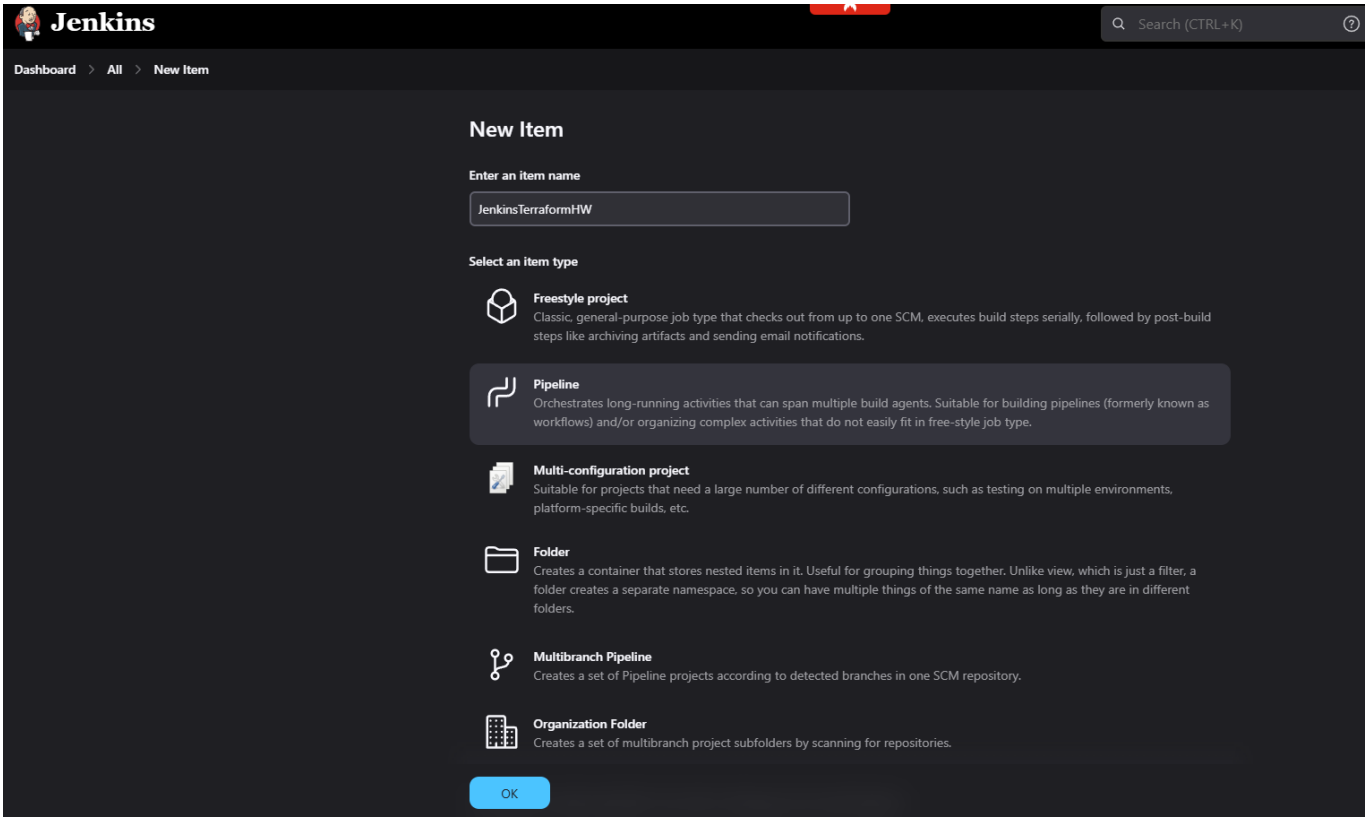
6. Create new Github repository with working Terraform project and ensure the Jenkins file is properly configured and included in repository.
    a. Log into Github and create a new repository.

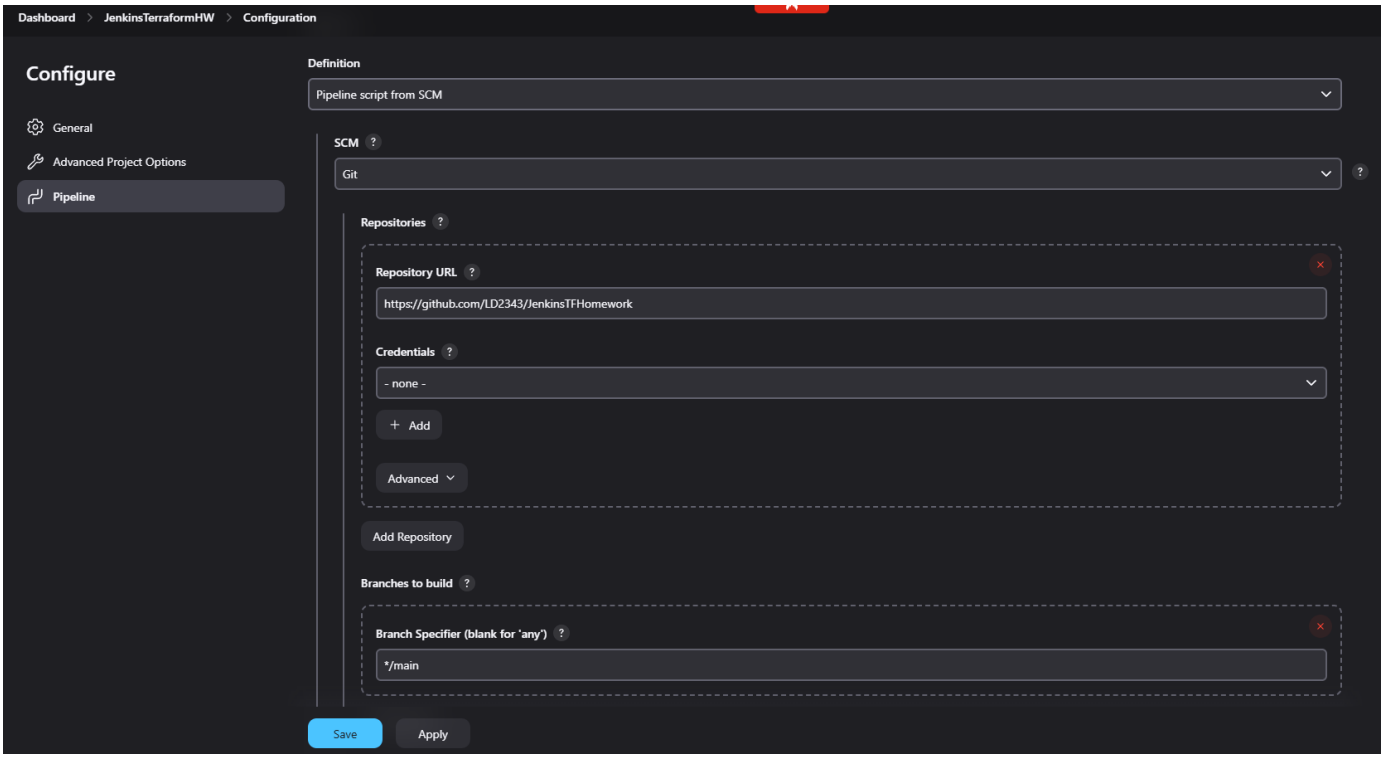


    b. Create a folder on pc to clone this empty repository to.
    c. Add working Terraform project and Jenkins file to this folder.
    d. In VS code update the Jenkins file with the correct
    e. Perform Git commands to push the terraform project and Jenkins file to repository.



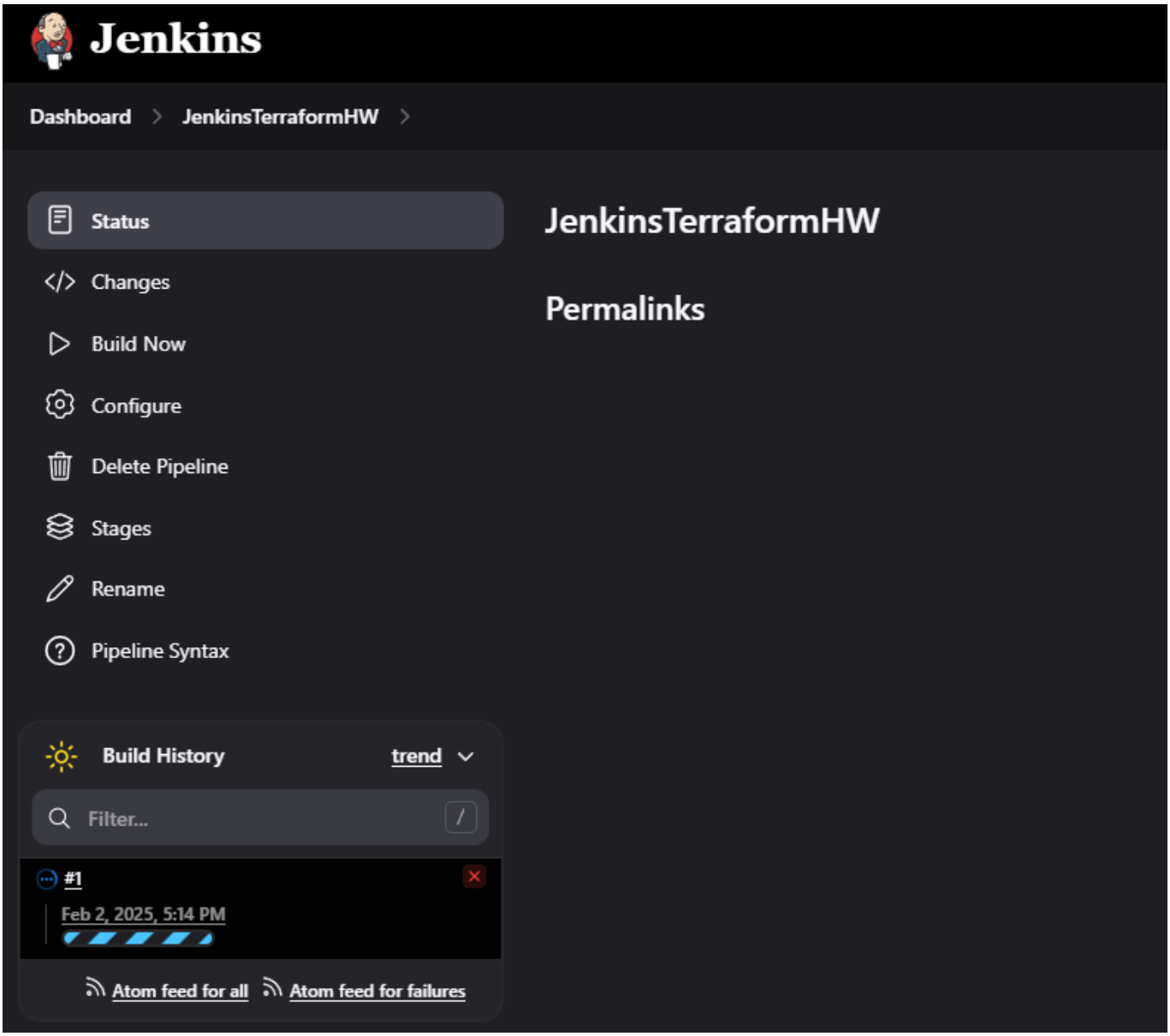
7. Create a new Pipeline in Jenkins and configure it to utilize our Github repository.
    a. In Jenkins under Dashboard, click on New Item.
    b. Name item and select Pipeline then click ok.
    c. In the Pipeline section, for Definition select Pipeline script from SCM.
    d. In SCM, select Git.
    e. Paste the Github repository url and update the Branch Specifier to */main.
    f. Click Save

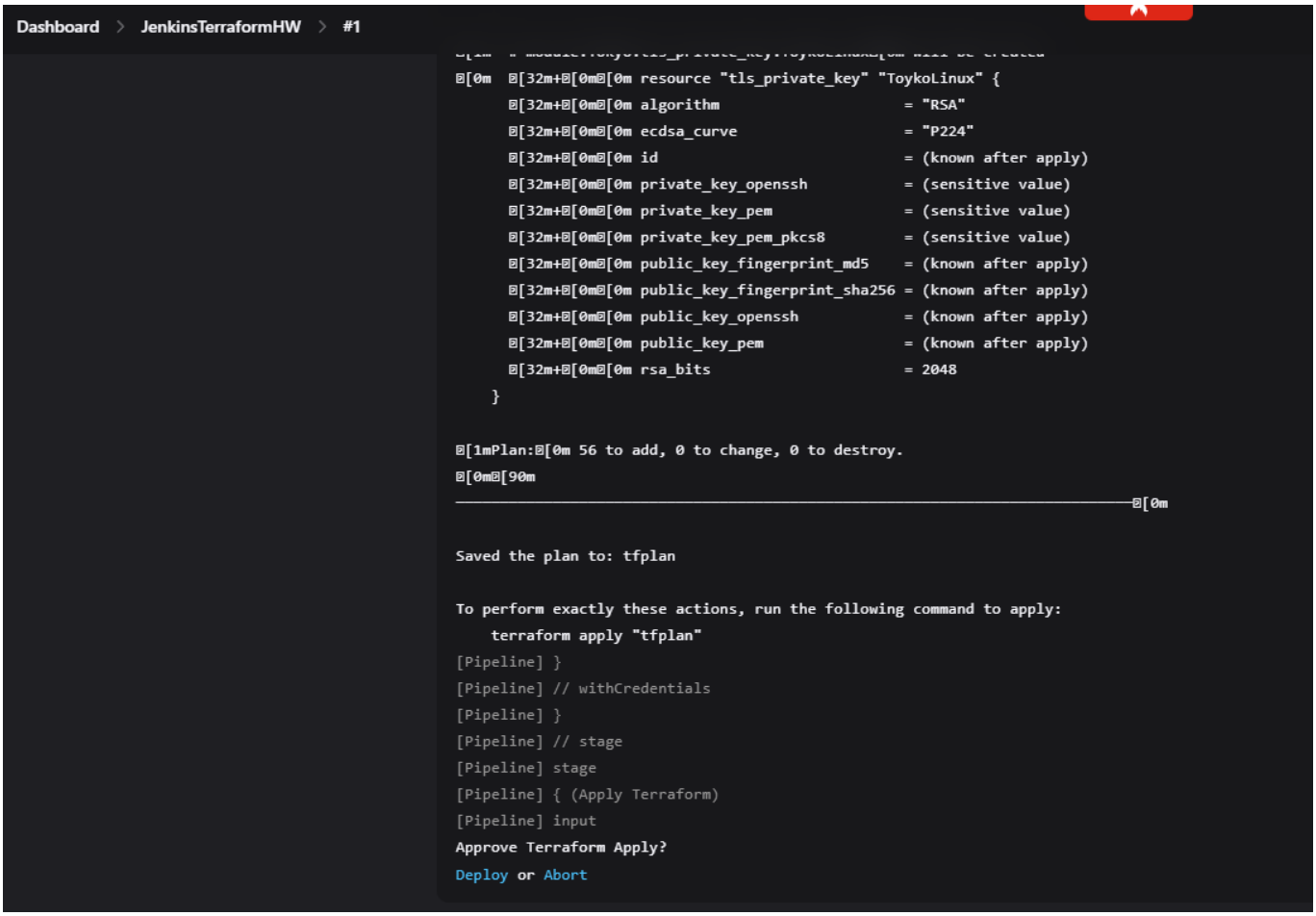




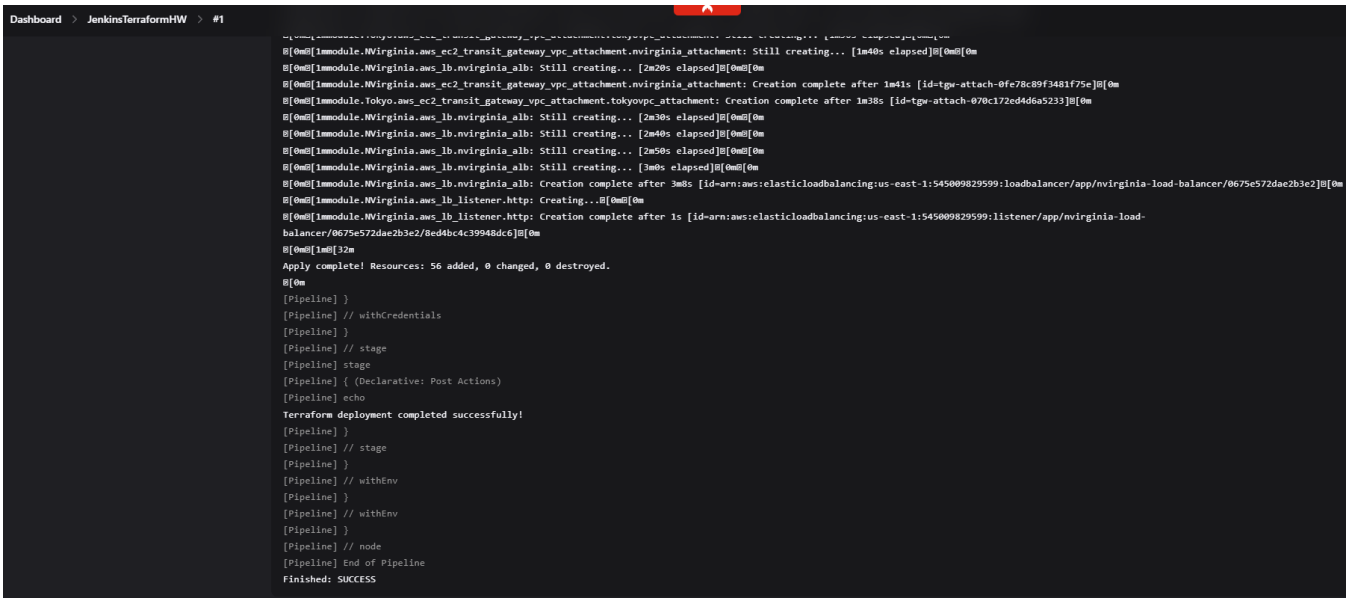
8. Run our new Pipeline in Jenkins to fire off the build of our Terraform project.
    a. Inside the Pipeline, click on Build Now to run.

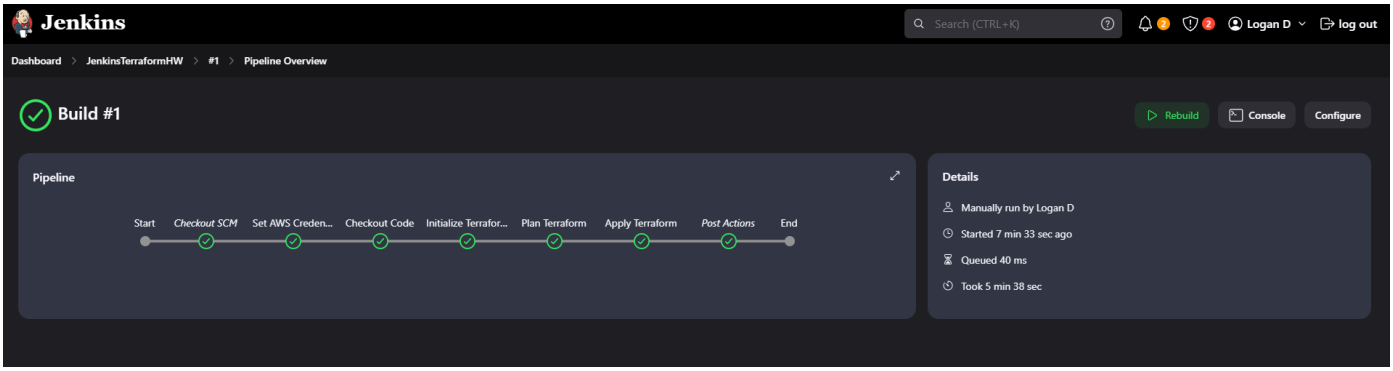
b. Click on the progress bar.
c. When prompted click on Deploy in the Console Output.
d. Wait for build to complete.

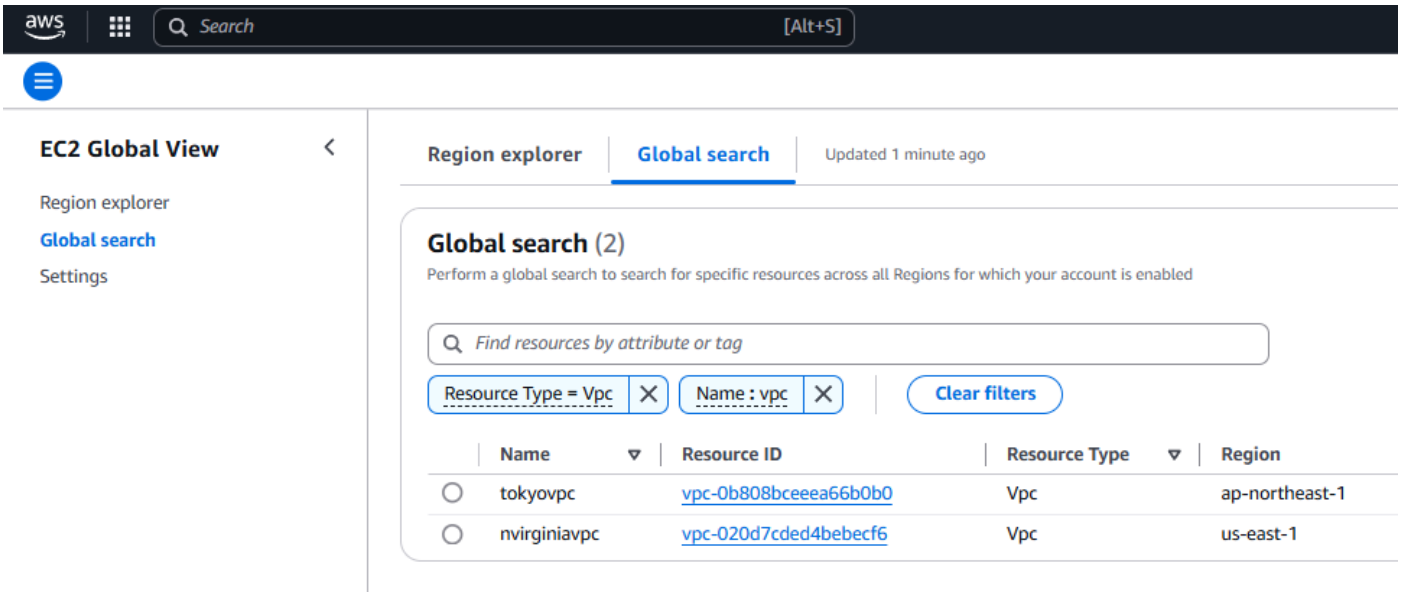


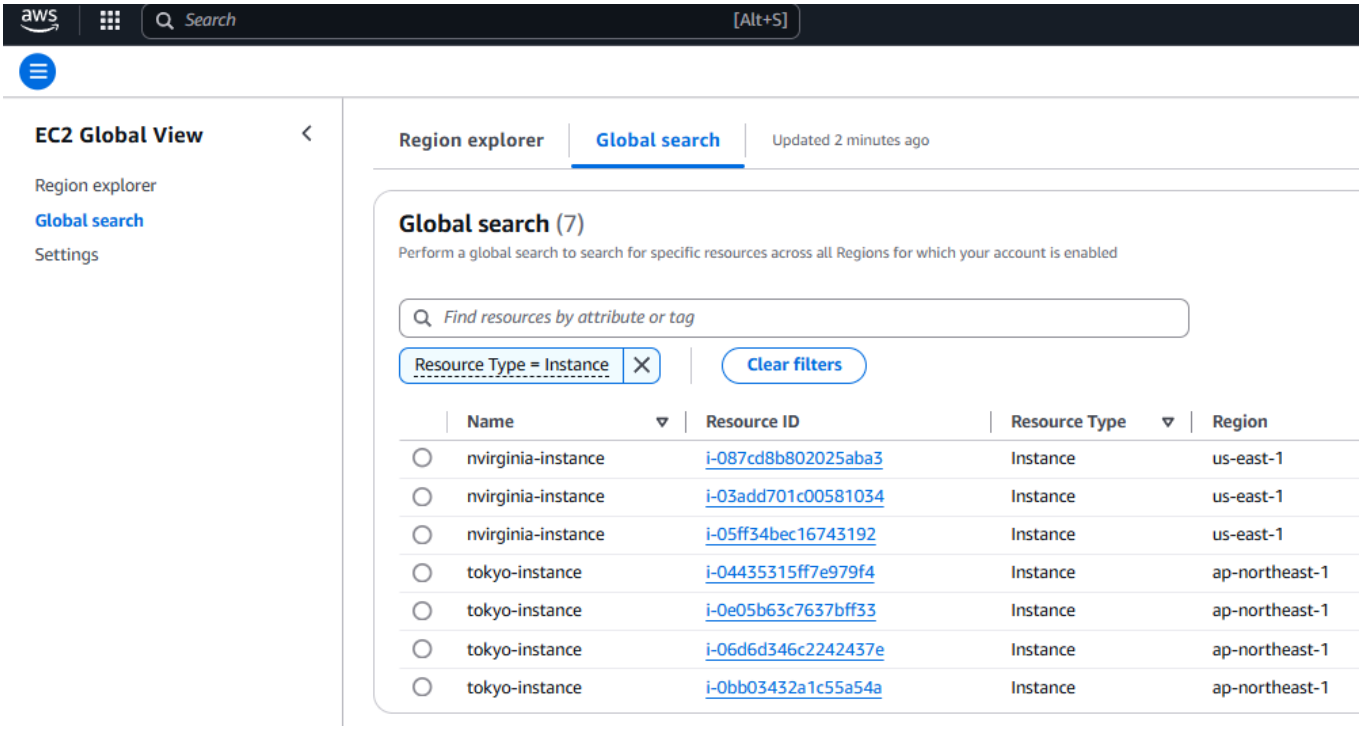


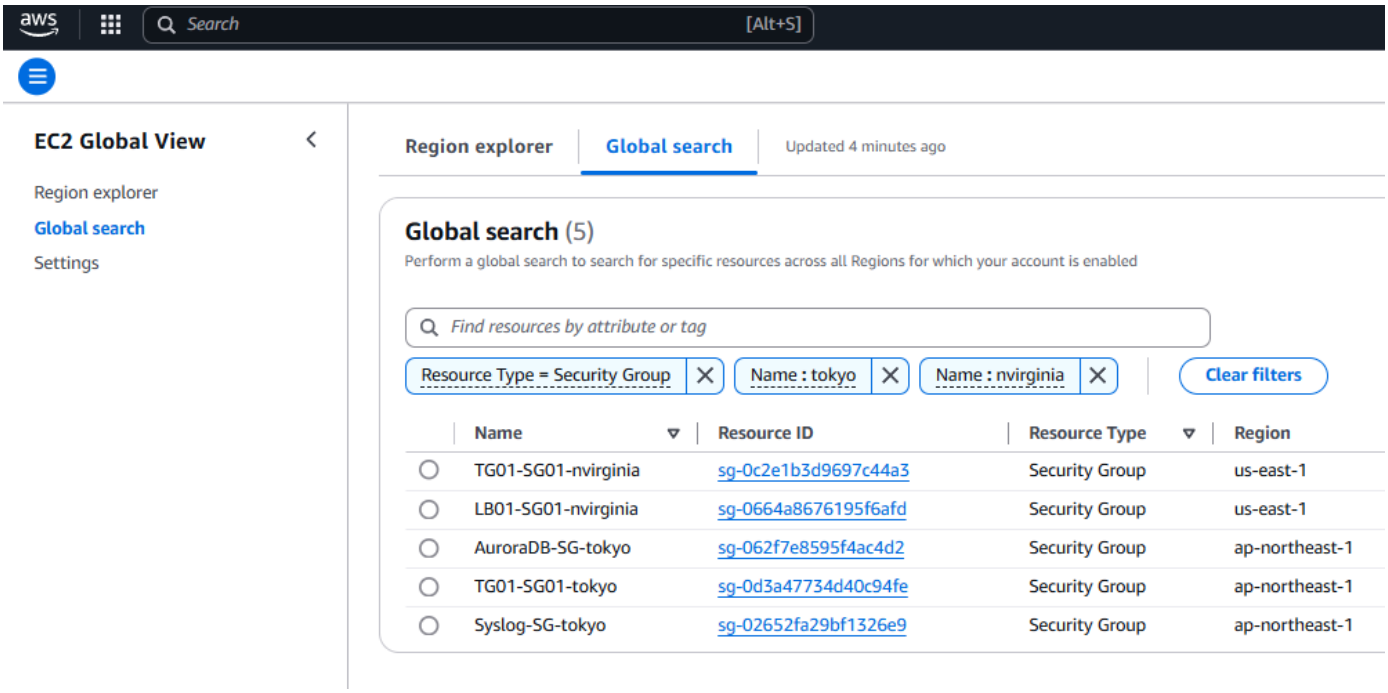
9. Confirm the Pipeline build was successful.
    a. Verify the build was successful in Jenkins in the Console Output, Pipeline Overview and AWS.




Jenkins
Search (CTRL+K)
Logan D
log out
Dashboard
JenkinsTerraformHW
#1
Pipeline Overview
Build #1
Rebuild
Console
Configure
Pipeline
Start
Checkout SCM
Set AWS Creden...
Checkout Code
Initialize Terrafor...
Plan Terraform
Apply Terraform
Post Actions
End
Details
Manually run by Logan D
Started 7 min 33 sec ago
Queued 40 ms
Took 5 min 38 sec

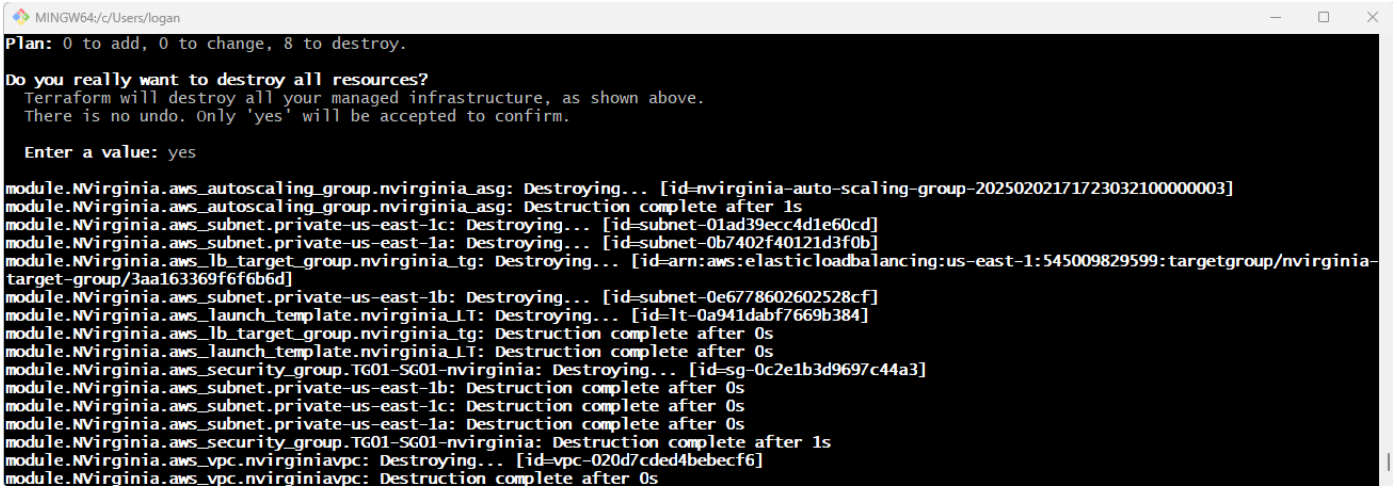

aws
Search
[Alt+S]
EC2 Global View
Region explorer
Global search
Settings
Region explorer
Global search
Updated 1 minute ago
Global search (2)
Perform a global search to search for specific resources across all Regions for which your account is enabled
Find resources by attribute or tag
Resource Type = Vpc
Name : vpc
Clear filters
Name
Resource ID
Resource Type
Region
tokyovpc
vpc-0b808bceeea66b0b0
Vpc
ap-northeast-1
nvirginiavpc
vpc-020d7cded4bebecf6
Vpc
us-east-1


aws
Search
[Alt+S]
EC2 Global View
Region explorer
Global search
Settings
Region explorer
Global search
Updated 2 minutes ago
Global search (7)
Perform a global search to search for specific resources across all Regions for which your account is enabled
Find resources by attribute or tag
Resource Type = Instance
Clear filters
Name
Resource ID
Resource Type
Region
nvirginia-instance
i-087cd8b802025aba3
Instance
us-east-1
nvirginia-instance
i-03add701c00581034
Instance
us-east-1
nvirginia-instance
i-05ff34bec16743192
Instance
us-east-1
tokyo-instance
i-04435315ff7e979f4
Instance
ap-northeast-1
tokyo-instance
i-0e05b63c7637bff33
Instance
ap-northeast-1
tokyo-instance
i-06d6d346c2242437e
Instance
ap-northeast-1
tokyo-instance
i-0bb03432a1c55a54a
Instance
ap-northeast-1



10. Perform Terraform teardown within our container in the CLI.
    a. In CLI inside our container, run to following command “cd var/jenkins_home/workspace/<PIPELINENAME>” to change directory to our pipeline.
    b. Run the following commands to input our AWS credentials and region in our container in order to run terraform destroy.
        i. export AWS_ACCESS_KEY_ID="xxxxxxx"
        ii. export AWS_SECRET_ACCESS_KEY="xxxxxxxx"
        iii. export AWS_REGION="xxxxxxx"
    c. Run the following command to teardown our terraform build.
        i. terraform destroy

```
Plan: 0 to add, 0 to change, 56 to destroy.

Do you really want to destroy all resources?
  Terraform will destroy all your managed infrastructure, as shown above.
  There is no undo. Only 'yes' will be accepted to confirm.

  Enter a value:
```


MINGW64:/c/Users/logan
Plan: 0 to add, 0 to change, 8 to destroy.
Do you really want to destroy all resources?
Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.
Enter a value: yes
module.NVirginia.aws_autoscaling_group.nvirginia_asg: Destroying... [id=nvirginia-auto-scaling-group-2025020217172303210000003]
module.NVirginia.aws_autoscaling_group.nvirginia_asg: Destruction complete after 1s
module.NVirginia.aws_subnet.private-us-east-1c: Destroying... [id=subnet-01ad39ecc4d1e60cd]
module.NVirginia.aws_subnet.private-us-east-1a: Destroying... [id=subnet-0b7402f40121d3f0b]
module.NVirginia.aws_lb_target_group.nvirginia_tg: Destroying... [id=arn:aws:elasticloadbalancing:us-east-1:545009829599:targetgroup/nvirginia-target-group/3aa163369f6f6b6d]
module.NVirginia.aws_subnet.private-us-east-1b: Destroying... [id=subnet-0e6778602602528cf]
module.NVirginia.aws_launch_template.nvirginia_LT: Destroying... [id=lt-0a941dabf7669b384]
module.NVirginia.aws_lb_target_group.nvirginia_tg: Destruction complete after 0s
module.NVirginia.aws_launch_template.nvirginia_LT: Destruction complete after 0s
module.NVirginia.aws_security_group.TG01-SG01-nvirginia: Destroying... [id=sg-0c2e1b3d9697c44a3]
module.NVirginia.aws_subnet.private-us-east-1b: Destruction complete after 0s
module.NVirginia.aws_subnet.private-us-east-1c: Destruction complete after 0s
module.NVirginia.aws_subnet.private-us-east-1a: Destruction complete after 0s
module.NVirginia.aws_security_group.TG01-SG01-nvirginia: Destruction complete after 1s
module.NVirginia.aws_vpc.nvirginiavpc: Destroying... [id=vpc-020d7cded4bebecf6]
module.NVirginia.aws_vpc.nvirginiavpc: Destruction complete after 0s