Pre requisites for Deployment 4 include having Jenkins installed on an EC2 Ubuntu instance

```
#!/bin/bash
sudo apt update
sudo apt -y install openjdk-11-jre
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee \
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
/etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get -y install jenkins
sudo systemctl start jenkins
systemctl status jenkins >> ~/file.txt
```

install Terraform on the Jenkins server

```
wget -O- https://apt.releases.hashicorp.com/gpg | gpg --dearmor | sudo tee /usr/share/keyrings/hashicorp-archive-keyring.gpg
  echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(lsb_release -cs) main" | sudo tee /etc/apt/sources.list.d/hashicorp.list
  sudo apt update && sudo apt install terraform
  terraform –version
```

Select the pipeline, select credentials and deploy the Jenkins build

Unfortunately, after multiple troubleshooting steps with colleagues and Google my Jenkins build continuously had a credential failure—thus not allowing me to move beyond. This is reflected in my diagram

Figure 1 Initial Credential Failure

Lessons learned:

To resolve this issue I had to delete my keys and re-apply them. I further troubleshot the issue by restarting my instance which then gave it a different instance. I later learned that when I initially added my keys in github which is a huge safety error---AWS added a exposed key role to my IAM user thus making impossible for me to plan and apply. Upon deleting this I was able to continue.

I also learned to ensure proper spacing on my terraform VPC pipeline syntax was updated as well as replacing the quotes as this initially gave multiple errors. After clearing out a series of errors my VPC was constructed. I also had to delete my 5th VPC to make room for this deployment as AWS has a maximum of 5 vpcs. I then added my destroy stage and verified the URL shortner displayed.

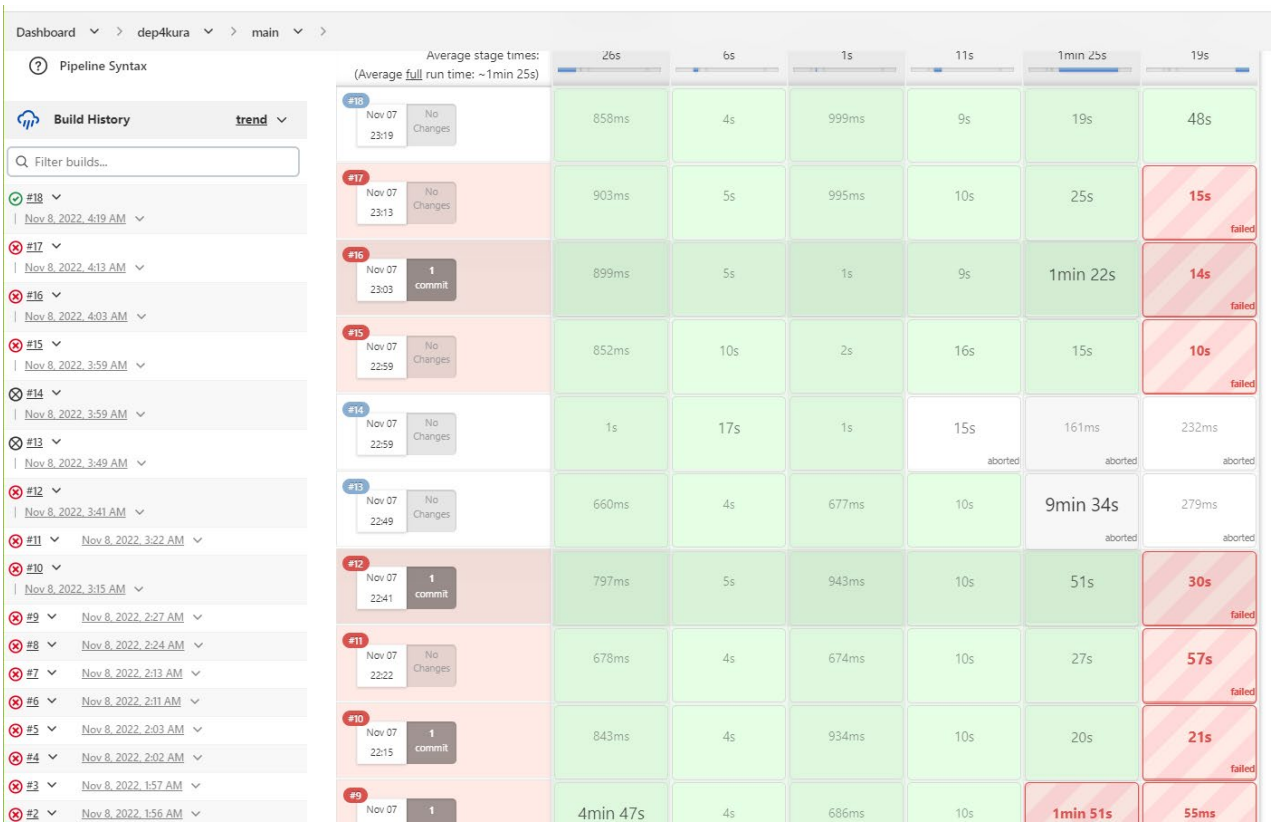

Figure 2 Multiple Commits

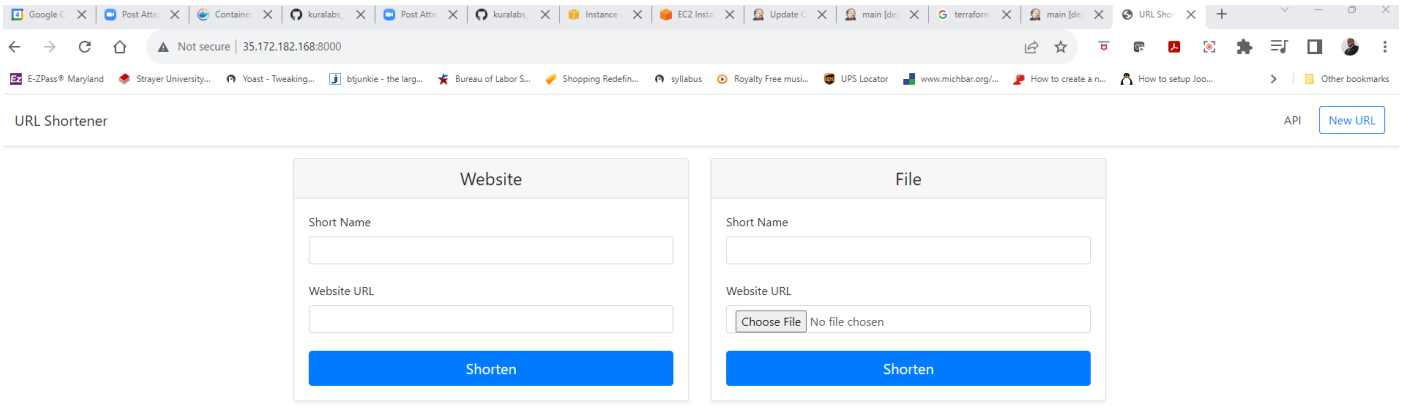

Figure 3URL Shortner