AWS-Ansible-Terraform SkillCheck

This exercise is designed to check the knowledge and skills accumulated throughout the module. It will contain multiple processes and techniques from the lessons and is an open brief rather than a lab with steps.

The exercise has a set of requirements and starting brief that should be met, and this exercise should be done across the space of a day.

# Brief

You are hired as a DevOps engineer to setup an environment for the Development team to setup a NODE Project. For the time being they have a basic Express App and they require the infrastructure for CI CD to be setup and a production app, the exact required items are below:

* VPC with 3x public subnets across different AV zones and each having 400+ available IP addresses
* CI CD EC2 machine with Jenkins, Docker installed
* 2x Deployment EC2 with MySQL and able to run the express app at this location https://gitlab.com/Reece-Elder/devops-m5-nodeproject/
* Correct Security Groups to allow HTTP from anywhere on Deployment and MySql, Jenkins TCP from required machines
* Ability for Jenkins EC2 to SSH to deployment EC2 to deploy app (no need to actually deploy for this project)

All of these steps should be completed using Terraform and Ansible where possible without using the AWS GUI.   
When using Terraform you should be using Modules and Ansible should be using Roles to allow repeatability and scalability.

Diagram below to show the requirements, the Controller EC2 will be used to generate and create the required environment

A picture containing graphical user interface

Description automatically generated

# Requirements

You must consider the following basic requirements when designing:

* Terraform must be used to provision AWS resources
* Ansible must be used to setup the environments on the EC2 machines
* Terraform and Ansible should be used as Infrastructure as Code with actual files so they can be accessed, when using bash commands they should be ran via scripts so content can be checked
* CI CD EC2 should have Docker and Jenkins installed, Jenkins should also be able to run Docker commands, and SSH to Deployment machines
* Deployment EC2 should be at least 2 EC2s (Scaling group or 2x EC2s) with the correct ports open and the Express app downloaded and ran
* Basic Documentation about the project and how to use in form of README.md
* Good Security management ensuring no keys or private data is pushed up to GitHub

These are basic MVP requirements of this app; you are free to add extra functionality in whatever way you deem appropriate once the requirements have been met. Extra functionality could include:

* Kubernetes Deployment using EKS
* Scaling group of EC2 machines
* Deployment Script which runs all steps after just running one script
* Any Quality of Life improvements for the deliverable

# Deliverable

You are expected to host your solution on a public GitHub repo under the name of QAA-AWS-Ansible-Terraform\_Skillcheck so we can easily find the appropriate repo. Your code must be merged to the main branch, and you should be using proper FBM (with the use of Dev and Feature branches) throughout.

There is a mark scheme associated with this Skill Check, you will be not getting back a grade, but there will be comments associated with different aspects of the skill check you have managed to do.

You should ensure your link to your repo is submitted to the relevant activity within bud by the deadline. You should make sure your repo is public so anyone who accesses the link via bud can see through the work you have done. You should expect feedback submitted via the same message board on Bud.