DevOps Position Assessment

Deploying a Java Application to AWS EKS using GitHub Actions and IAC with Terraform

Objective:

Candidates are required to demonstrate their proficiency in DevOps practices by deploying a Java application to Amazon Elastic Kubernetes Service (EKS) using GitHub Actions for CI/CD and Infrastructure as Code (IaC) with Terraform.

Tasks:

Application Setup:

- Use start.spring.io to create a basic Java web application.
- Dockerize your web application by writing a Dockerfile to create a Docker image of your Application.
- Write a helm chart that includes all necessary YAML file to deploy a production-ready instance of your web application to a running Kubernetes cluster. Please note that your Kubernetes specs should allow your application to use:
    1. HELM for the deployment
    2. Expose service using Ingress
    3. Provide us with bash script or a makefile which we can be ran in our test cluster to deploy the chart with all dependencies.

Terraform Infrastructure Setup:

- Write Terraform code to provision the required AWS infrastructure, including EKS, VPC, and any necessary resources which required for your application.
- Ensure the infrastructure code follows best practices for security and scalability.

CI/CD Pipeline with GitHub Actions:

Configure GitHub Actions to automate the following processes:

- Build and push the Docker image to a container registry.
- Run any necessary tests.
- Deploy the Docker image to the EKS cluster using the latest infrastructure provisioned by Terraform.
- Infrastructure provisioning using GitHub workflow.

Documentation:

- Provide a README file explaining the steps to set up and execute the pipeline.
- Document any prerequisites and how to configure AWS credentials securely.

Assessment Criteria:

- Code Quality: Clarity, maintainability, and use of best practices in scripting and Dockerfile creation.
- Infrastructure as Code: Effective use of Terraform for provisioning AWS resources.
- CI/CD Implementation: Efficiency and reliability of the GitHub Actions pipeline; Illustrate the implementation of GitHub reusable workflows.
- Containerization and Kubernetes Deployment: Successful deployment of the Java application to EKS.
- Security and Best Practices: Adherence to security best practices in AWS and GitHub Actions.
- Documentation: Clarity and completeness of the instructions and explanations provided.

Submission:

Candidates must provide:

- Access to the GitHub repository containing all code and documentation.
- A brief report explaining their approach, choices made during the implementation, and any challenges faced.
- All git commit messages will be reviewed. Please try to avoid one commit as it's harder to track the changes and understand how the development progressed.

Evaluation:

Candidates will be evaluated based on the functionality of the deployment pipeline, the quality of their code, adherence to best practices, and their ability to clearly document and explain their process and choices. This assessment is designed to gauge the candidate's technical skills, problem-solving abilities, and communication skills in a practical DevOps scenario.