SYNNEFO SOLUTIONS

DevOps

Project 1

Build and deploy a simple web application on AWS EC2 using Docker.

Requirements:

- Create a Dockerfile to build a Docker image of a simple web application (e.g., a static HTML page). You can use either HTTPD / NGINX
- Push the Docker image to an Docker HUB repository.
- Deploy the Docker image to an AWS EC2 instance using the Docker CLI.
- Configure basic security for the EC2 instance (e.g., SSH key-based authentication).
- Implement basic monitoring using Prometheus to track CPU and memory usage of the EC2 instance.

Project 2

Build a CI/CD pipeline for a Node.js application using Jenkins and deploy it to a Kubernetes cluster on AWS EKS.

Requirements:

- Create a Jenkins pipeline to build, test, and deploy a Node.js application.
- Use Git for version control.
- Configure Jenkins to pull code from a Git repository.
- Build and test the application using npm.
- Create a Docker image of the application and push it to AWS ECR/ Docker HUB.
- Deploy the application to an AWS EKS cluster using Kubernetes manifests (Deployment, Service).
- Try AWS EKS, if its too much, use local kubernetes cluster using minikube.
- Implement rolling updates and canary deployments.
- Use Prometheus and Grafana to monitor the application's performance.

Project 3

Build a highly available and scalable microservices architecture on AWS using Kubernetes, Terraform, and Prometheus.

Requirements:

- Design a microservices architecture for a specific application (e.g., e-commerce).
- Use Terraform to provision AWS infrastructure (VPC, subnets, security groups, EKS cluster (try this one too)).
- Create Kubernetes manifests for multiple microservices, including deployments, services, ingress, and configmaps.
- Implement service discovery and load balancing using Kubernetes.
- Implement continuous deployment using Jenkins.
- Use Prometheus and Grafana to monitor the overall system health and performance.
- Implement autoscaling based on CPU utilization.
- Implement blue/green deployments. (search this one, pretty easy)
- Consider security best practices (network security, IAM roles, secrets management).