Implementing DevSecOps Blue-Green Deployment of a Swiggy-Clone Application on AWS ECS Using AWS CodePipeline

Objective:

Design and execute a Blue-Green deployment strategy for a Swiggy-clone application using AWS ECS, AWS CodePipeline, and CodeDeploy. Integrate security measures by performing Static Code Analysis with SonarQube to detect vulnerabilities before deployment. Ensure a fully automated CI/CD pipeline that facilitates safe, secure, and seamless application releases with minimum downtime.

Requirements:

1. **Infrastructure Setup:**
    - **Use AWS ECS for container orchestration.**

- **Set up an EC2 instance as a SonarQube server for Static Code Analysis.**
- **Configure Application Load Balancer (ALB) for traffic management.**

2. **Deployment Strategy:**
   - **Implement Blue-Green deployment for zero-downtime rollouts.**
   - **Utilize CodeDeploy for managing environment shifts (Blue/Green) in ECS.**
3. **Pipeline Automation with AWS CodePipeline:**
   - **Source code management with GitHub integration.**
   - **Build process with CodeBuild and run security checks.**
4. **Security Integration:**
   - **Use SonarQube for code analysis.**
   - **Store credentials securely in AWS Parameter Store.**
   - **Run dependency and image scanning with Trivy.**

Solution Steps:

1. **Infrastructure Preparation:**
   - **Set up AWS ECS with an EC2 cluster for the application.**
   - **Deploy SonarQube on an EC2 instance for Static Code Analysis.**
   - **Configure an ALB to route traffic between the Blue and Green environments.**
   - **Securely manage access keys and tokens in AWS Parameter Store.**
2. **CI/CD Pipeline Creation:**

- **Establish a CodePipeline with stages for source, build, and deployment.**
- **Automate code analysis with SonarQube during the build stage.**
- **Manage Blue-Green deployment with CodeDeploy and monitor deployments.**

3. **Testing and Monitoring:**
   - **Verify application functionality after deployment by switching between Blue and Green.**
   - **Automate rollback if health checks fail.**
4. **Post-Deployment:**
   - **Confirm new updates are accessible via the ALB.**
   - **Decommission the previous version (Blue) if deployment succeeds.**
5. **Clean-Up:**
   - **After testing, delete resources including ECS clusters, EC2 instances, and CodePipeline configurations.**

Expected Outcome:
A secure, automated CI/CD pipeline that enables continuous, secure deployment with zero downtime for the Swiggy-clone application.