Brain Tasks App - Deployment Project

# 1. Project Overview

This project demonstrates deploying a React application (Brain Tasks App) into a production-ready environment using Docker, AWS ECR, EKS, CodePipeline, CodeBuild, and CodeDeploy. It includes proper CI/CD integration and monitoring via CloudWatch Logs.

# 2. Technology Stack

- React (Frontend)  
- Docker (Containerization)  
- AWS ECR (Container Registry)  
- AWS EKS (Kubernetes Cluster)  
- AWS CodeBuild (Build Automation)  
- AWS CodeDeploy (Deployment Management)  
- AWS CodePipeline (CI/CD Pipeline)  
- AWS CloudWatch (Monitoring Logs)

# 3. Step-by-Step Procedure

## 3.1 Clone Repository

Clone the GitHub repository:  
https://github.com/Vennilavan12/Brain-Tasks-App.git

## 3.2 Dockerize Application

Create a Dockerfile to serve the 'dist' folder using Nginx.

## 3.3 Build and Push Docker Image to ECR

- Create an ECR repo: brain-tasks-ecr  
- Authenticate Docker to ECR  
- Build and tag Docker image  
- Push image to: 571600858607.dkr.ecr.ap-south-1.amazonaws.com/brain-tasks-ecr

## 3.4 Create and Configure EKS Cluster

- Create EKS cluster via console or eksctl  
- Update kubeconfig: aws eks update-kubeconfig --name your-cluster-name --region ap-south-1  
- Apply deployment and service YAML files using kubectl

## 3.5 IAM Roles

- Create IAM roles for CodePipeline, CodeBuild, and CodeDeploy  
- Attach policies such as:  
 \* AdministratorAccess  
 \* AmazonEKSClusterPolicy  
 \* AWSCodePipelineFullAccess  
 \* AWSCodeBuildAdminAccess

## 3.6 CodeBuild

- Create CodeBuild project  
- Source: GitHub repo  
- Environment: Managed image (Amazon Linux)  
- Define build process in buildspec.yml

## 3.7 CodeDeploy

- Create a CodeDeploy application and deployment group  
- Use appspec.yml to handle kubectl commands to deploy to EKS

## 3.8 CodePipeline

- Create a pipeline:  
 \* Source: GitHub  
 \* Build: CodeBuild project  
 \* Deploy: CodeDeploy application

## 3.9 Monitoring with CloudWatch

- View logs in CloudWatch:  
 \* /aws/codebuild/your-build-project  
 \* /aws/codedeploy/your-app-name

# 4. GitHub Repository

https://github.com/Ragul0506/Brain-Tasks-App

# 5. Conclusion

The application was successfully containerized, pushed to ECR, deployed to EKS via a CI/CD pipeline using CodeBuild, CodeDeploy, and CodePipeline. Monitoring was set up using CloudWatch Logs.

6. Application deployed kubernetes Loadbalancer ARN <http://a2a2ac7e038424d12a0fd2a3c6614a04-1456211968.ap-south-1.elb.amazonaws.com/>

All o/p screenshots attached…