Project -1 **Application Deployment**

Git Clone Repo URL : https://github.com/Vennilavan12/Brain-Tasks-App.git

```
root@ip-172-31-45-41:~# git clone https://github.com/Vennilavan12/Brain-Tasks-App.git
Cloning into 'Brain-Tasks-App'...
remote: Enumerating objects: 8, done.
remote: Total 8 (delta 0), reused 0 (delta 0), pack-reused 8 (from 1)
Receiving objects: 100% (8/8), 100.04 KiB | 14.29 MiB/s, done.
root@ip-172-31-45-41:~# ls
Brain-Tasks-App  snap
root@ip-172-31-45-41:~# cd Brain-Tasks-App/
root@ip-172-31-45-41:~/Brain-Tasks-App# ls
dist
root@ip-172-31-45-41:~/Brain-Tasks-App# vi script.sh
root@ip-172-31-45-41:~/Brain-Tasks-App# ./script.sh
-bash: ./script.sh: Permission denied
root@ip-172-31-45-41:~/Brain-Tasks-App# chmod 755 script.sh
root@ip-172-31-45-41:~/Brain-Tasks-App# ./script.sh
Updating system...
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
```

Created Docker build

```
root@ip-172-31-45-41:~/Brain-Tasks-App# docker build -t brainstack:latest .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  489.5kB
Step 1/6 : FROM nginx:alpine
alpine: Pulling from library/nginx
589002ba0eae: Pulling fs layer
bca5d04786e1: Pulling fs layer
3e2c181db1b0: Pulling fs layer
6b7b6c7061b7: Pulling fs layer
399d0898a94e: Pulling fs layer
955a8478f9ac: Pulling fs layer
6d397a54a185: Pulling fs layer
5e7756927bef: Pulling fs layer
6b7b6c7061b7: Waiting
399d0898a94e: Waiting
955a8478f9ac: Waiting
```

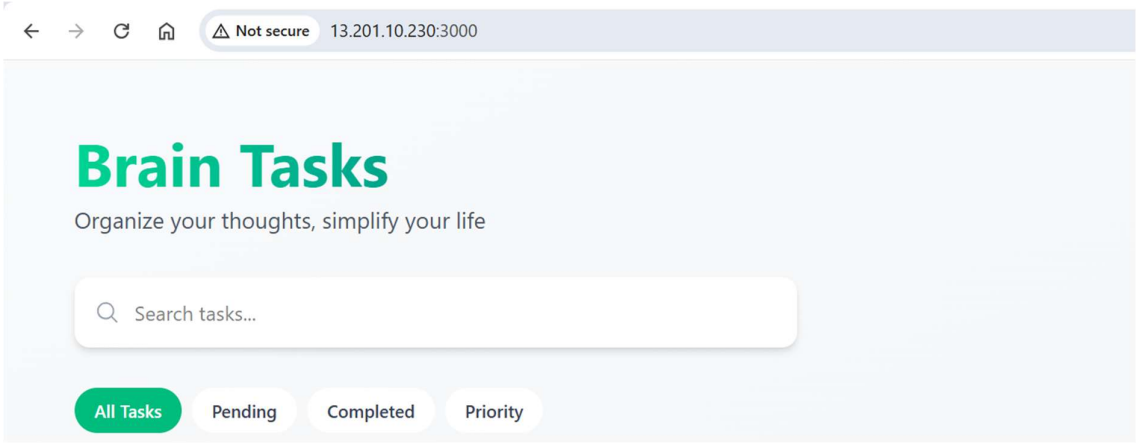
Build Docker images

```
Successfully tagged brainstack:latest
root@ip-172-31-45-41:~/Brain-Tasks-App# docker images
REPOSITORY   TAG       IMAGE ID       CREATED         SIZE
brainstack   latest    d78c0c5fb716   3 minutes ago   62.4MB
nginx        alpine    b76de378d572   10 days ago     62.1MB
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

Docker image ran and check in Browser

```
root@ip-172-31-45-41:~/Brain-Tasks-App# docker run -p 3000:3000 brainstack:latest
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: /etc/nginx/conf.d/default.conf differs from the packaged versi
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2026/02/15 06:16:50 [notice] 1#1: using the "epoll" event method
2026/02/15 06:16:50 [notice] 1#1: nginx/1.29.5
2026/02/15 06:16:50 [notice] 1#1: built by gcc 15.2.0 (Alpine 15.2.0)
2026/02/15 06:16:50 [notice] 1#1: OS: Linux 6.14.0-1018-aws
2026/02/15 06:16:50 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2026/02/15 06:16:50 [notice] 1#1: start worker processes
2026/02/15 06:16:50 [notice] 1#1: start worker process 29
```

Launched in browser



AWS ECR Repository created

```
root@ip-172-31-45-41:~/Brain-Tasks-App# aws ecr create-repository \
  --repository-name react-app \
  --region ap-south-1
{
    "repository": {
        "repositoryArn": "arn:aws:ecr:ap-south-1:460783431859:repository/react-app",
        "registryId": "460783431859",
        "repositoryName": "react-app",
        "repositoryUri": "460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app",
        "createdAt": "2026-02-15T06:23:49.417000+00:00",
        "imageTagMutability": "MUTABLE",
        "imageScanningConfiguration": {
            "scanOnPush": false
        },
        "encryptionConfiguration": {
            "encryptionType": "AES256"
        }
    }
}
```

Docker image tagged to ECR

```
Login Succeeded
root@ip-172-31-45-41:~/Brain-Tasks-App# docker tag braintask:latest 460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app:latest
Error response from daemon: No such image: braintask:latest
root@ip-172-31-45-41:~/Brain-Tasks-App# docker images
REPOSITORY    TAG       IMAGE ID       CREATED          SIZE
brainstack    latest    d78c0c5fb716   18 minutes ago   62.4MB
nginx         alpine    b76de378d572   10 days ago      62.1MB
root@ip-172-31-45-41:~/Brain-Tasks-App# docker tag brainstack:latest 460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app:latest
root@ip-172-31-45-41:~/Brain-Tasks-App# docker images
REPOSITORY                                                  TAG       IMAGE ID       CREATED          SIZE
460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app     latest    d78c0c5fb716   19 minutes ago   62.4MB
brainstack                                                  latest    d78c0c5fb716   19 minutes ago   62.4MB
nginx                                                       alpine    b76de378d572   10 days ago      62.1MB
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

i-038ff3c0dfda169ec (Project)

PublicIPs: 13.201.10.230 PrivateIPs: 172.31.45.41

Docker push to ECR

```
root@ip-172-31-45-41:~/Brain-Tasks-App# docker push 460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app
Using default tag: latest
The push refers to repository [460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app]
a2f2f97e9511: Pushed
f61dbb93401c: Pushed
20829c4ece7d: Pushed
da3ac26fdf0f: Pushed
7b2903554e63: Pushed
6c0e59fd138a: Pushed
aa0fc249df10: Pushed
f35bcec50d8c: Pushed
660f9a93104f: Pushed
53998a5033c3: Pushed
989e799e6349: Pushed
latest: digest: sha256:e896872dae6d5533ca47320fb1e4ad70ea51fbbd38032ba15af083306710e5ff size: 2613
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

i-038ff3c0dfda169ec (Project)

PublicIPs: 13.201.10.230 PrivateIPs: 172.31.45.41

react-app

Summary | Images | Lifecycle policy | Permissions | Repository tags

Images (1) Info

Delete | Copy URI | Details | Scan | View push commands

Filter active images

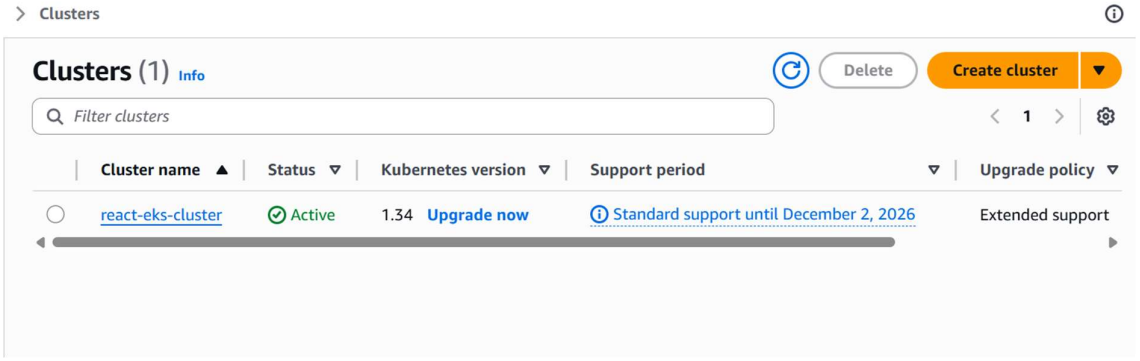
Image tags	Type	Created at	Image size	Image digest	Last pulled at
latest	Image	15 February 2026, 12:04:48 (UTC+05.5)	26.08	sha256:e8…	-

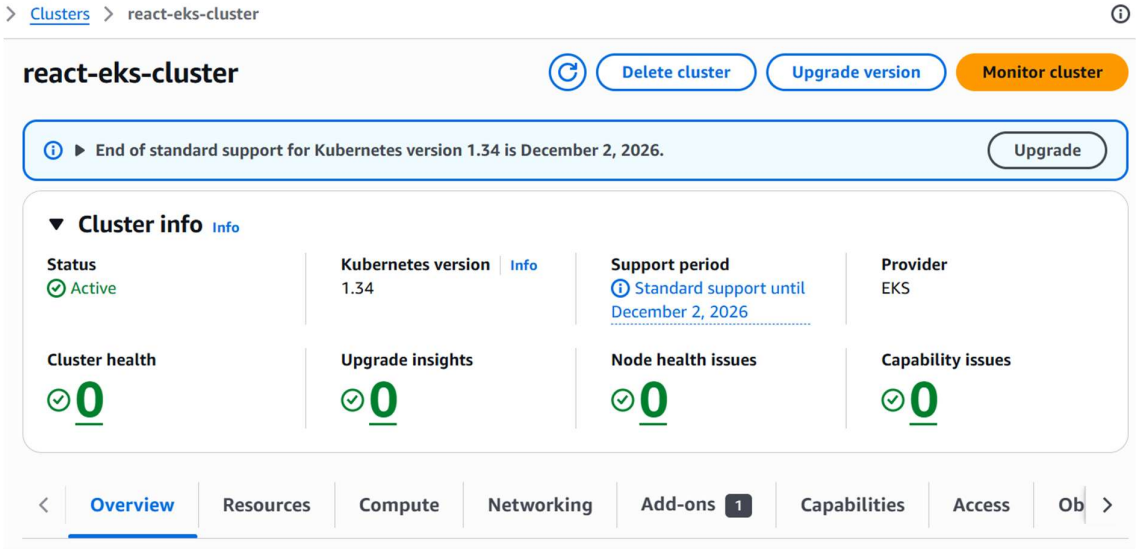
Created a EKS cluster with 7 nodes

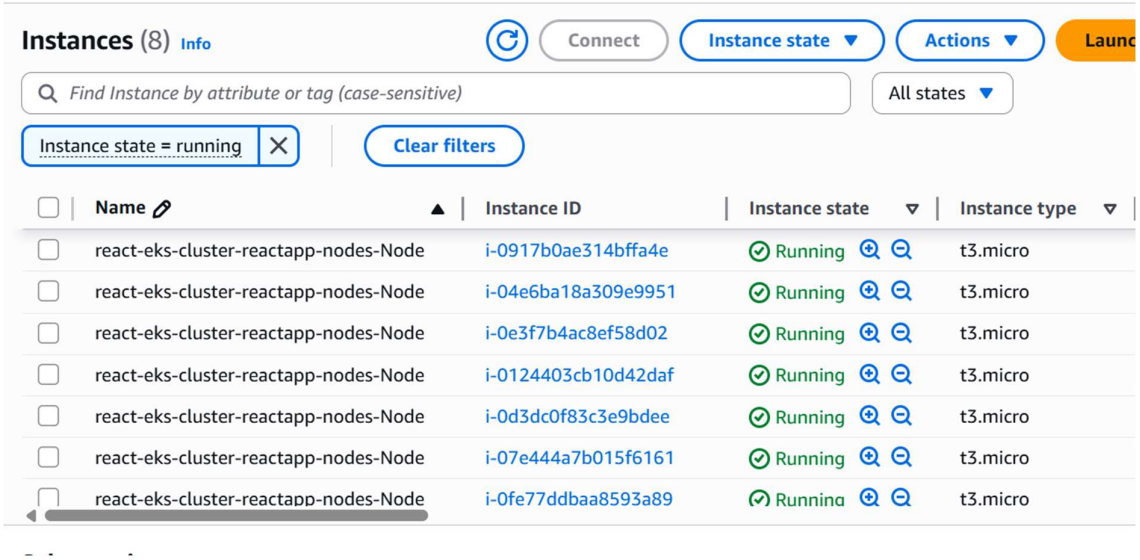
```
root@ip-172-31-45-41:~/Brain-Tasks-App# eksctl create cluster \
  --name react-eks-cluster \
  --region ap-south-1 \
  --nodegroup-name reactapp-nodes \
  --node-type t3.micro \
  --nodes 7
2026-02-15 06:40:14 [ℹ]  eksctl version 0.223.0
2026-02-15 06:40:14 [ℹ]  using region ap-south-1
2026-02-15 06:40:14 [ℹ]  setting availability zones to [ap-south-1a ap-south-1b ap-south-1c]
2026-02-15 06:40:14 [ℹ]  subnets for ap-south-1a - public:192.168.0.0/19 private:192.168.96.0/19
2026-02-15 06:40:14 [ℹ]  subnets for ap-south-1b - public:192.168.32.0/19 private:192.168.128.0/19
2026-02-15 06:40:14 [ℹ]  subnets for ap-south-1c - public:192.168.64.0/19 private:192.168.160.0/19
2026-02-15 06:40:14 [ℹ]  nodegroup "reactapp-nodes" will use "" [AmazonLinux2023/1.34]
2026-02-15 06:40:14 [!]  Auto Mode will be enabled by default in an upcoming release of eksctl. This mea
etworking add-ons will no longer be created by default. To maintain current behavior, explicitly set 'au
 cluster configuration. Learn more: https://eksctl.io/usage/auto-mode/
2026-02-15 06:40:14 [ℹ]  using Kubernetes version 1.34
```

i-038ff3c0dfda169ec (Project)

PublicIPs: 13.201.10.230 PrivateIPs: 172.31.45.41







Deployment.yml file

```
root@ip-172-31-45-41:~/Brain-Tasks-App# cat deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: brain-tasks-deployment
spec:
  replicas: 5
  selector:
    matchLabels:
      app: react-app
  template:
    metadata:
      labels:
        app: react-app
    spec:
      containers:
      - name: react-app
        image: 460783431859.dkr.ecr.ap-south-1.amazonaws.com/react-app
        ports:
        - containerPort: 3000
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

Service.yml file

```
root@ip-172-31-45-41:~/Brain-Tasks-App# vi service.yaml
root@ip-172-31-45-41:~/Brain-Tasks-App# cat service.yaml
apiVersion: v1
kind: Service
metadata:
  name: react-app-service
spec:
  type: LoadBalancer
  selector:
    app: react-app
  ports:
    - protocol: TCP
      port: 80
      targetPort: 3000
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

i-038ff3c0dfda169ec (Project)

PublicIPs: 13.201.10.230 PrivateIPs: 172.31.45.41

Applied Kubectl deployment & service

```
      targetPort: 3000
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl apply -f deployment.yaml
deployment.apps/brain-tasks-deployment created
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl apply -f service.yaml
service/react-app-service created
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

i-038ff3c0dfda169ec (Project)

PublicIPs: 13.201.10.230 PrivateIPs: 172.31.45.41

Verified nodes & pods services

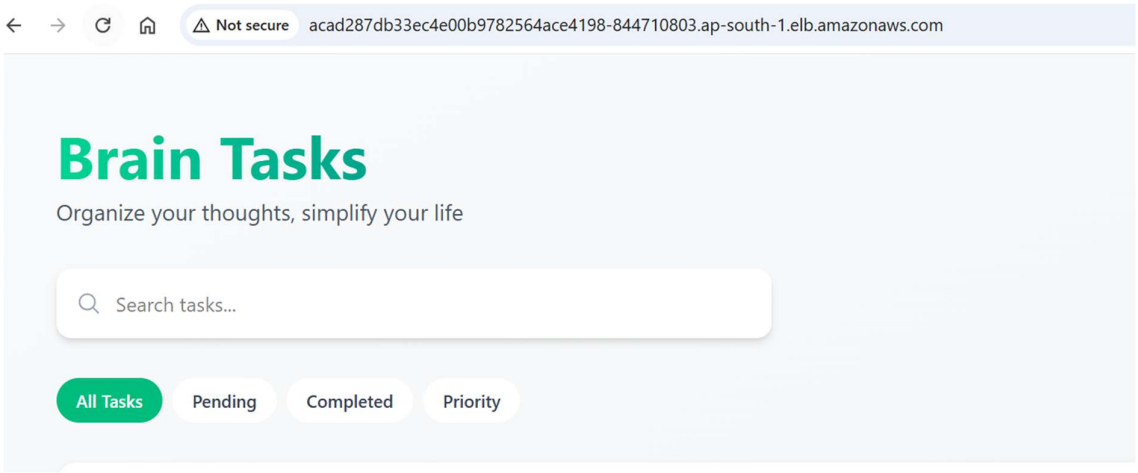
```
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl get nodes
NAME                                        STATUS   ROLES    AGE     VERSION
ip-192-168-17-0.ap-south-1.compute.internal     Ready    <none>   8m21s   v1.34.3-eks-70ce843
ip-192-168-4-66.ap-south-1.compute.internal     Ready    <none>   8m22s   v1.34.3-eks-70ce843
ip-192-168-42-202.ap-south-1.compute.internal   Ready    <none>   8m22s   v1.34.3-eks-70ce843
ip-192-168-42-39.ap-south-1.compute.internal    Ready    <none>   8m22s   v1.34.3-eks-70ce843
ip-192-168-50-189.ap-south-1.compute.internal   Ready    <none>   8m21s   v1.34.3-eks-70ce843
ip-192-168-77-5.ap-south-1.compute.internal     Ready    <none>   8m21s   v1.34.3-eks-70ce843
ip-192-168-84-124.ap-south-1.compute.internal   Ready    <none>   7m50s   v1.34.3-eks-70ce843
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl get pods
NAME                                    READY   STATUS    RESTARTS   AGE
brain-tasks-deployment-58b58b9c5b-6fr4k   1/1     Running   0          76s
brain-tasks-deployment-58b58b9c5b-dtxtm   1/1     Running   0          76s
brain-tasks-deployment-58b58b9c5b-f5gdz   1/1     Running   0          76s
brain-tasks-deployment-58b58b9c5b-jfpsg   1/1     Running   0          76s
brain-tasks-deployment-58b58b9c5b-wc48h   1/1     Running   0          76s
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl get svc
NAME                TYPE           CLUSTER-IP       EXTERNAL-IP                                                                PORT(S)
 AGE
kubernetes          ClusterIP      10.100.0.1       <none>                                                                     443/TCP
 13m
```

Verified app using Load balance ARN

```
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl get svc
NAME                TYPE           CLUSTER-IP       EXTERNAL-IP                                                                PORT(S)
 AGE
kubernetes          ClusterIP      10.100.0.1       <none>                                                                     443/TCP
 13m
react-app-service   LoadBalancer   10.100.161.114   acad287db33ec4e00b9782564ace4198-844710803.ap-south-1.elb.amazonaws.com   80:30514/TCP
 81s
root@ip-172-31-45-41:~/Brain-Tasks-App# ^C
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

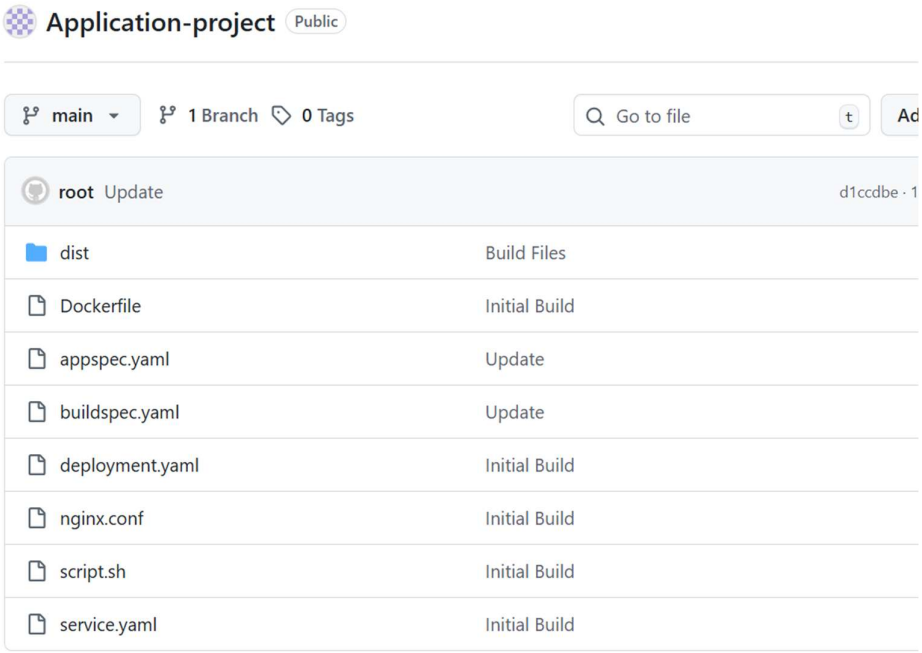
Access the load balance ARN in browser

acad287db33ec4e00b9782564ace4198-844710803.ap-south-1.elb.amazonaws.com



Pushed code to Github repo

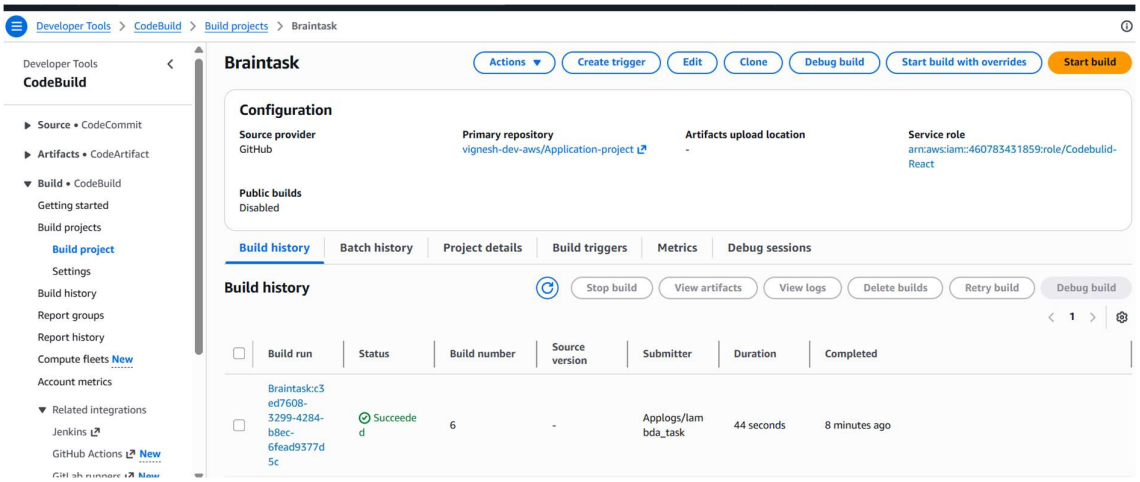
```
root@ip-172-31-45-41:~/Brain-Tasks-App# git remote set-url origin https://github.com/vignesh-dev-aws/Application-project.git
root@ip-172-31-45-41:~/Brain-Tasks-App# git push -u origin main
Username for 'https://github.com': vignesh-dev-aws
Password for 'https://vignesh-dev-aws@github.com':
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 2 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (8/8), 100.04 KiB | 100.04 MiB/s, done.
Total 8 (delta 0), reused 8 (delta 0), pack-reused 0
To https://github.com/vignesh-dev-aws/Application-project.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
root@ip-172-31-45-41:~/Brain-Tasks-App#
```



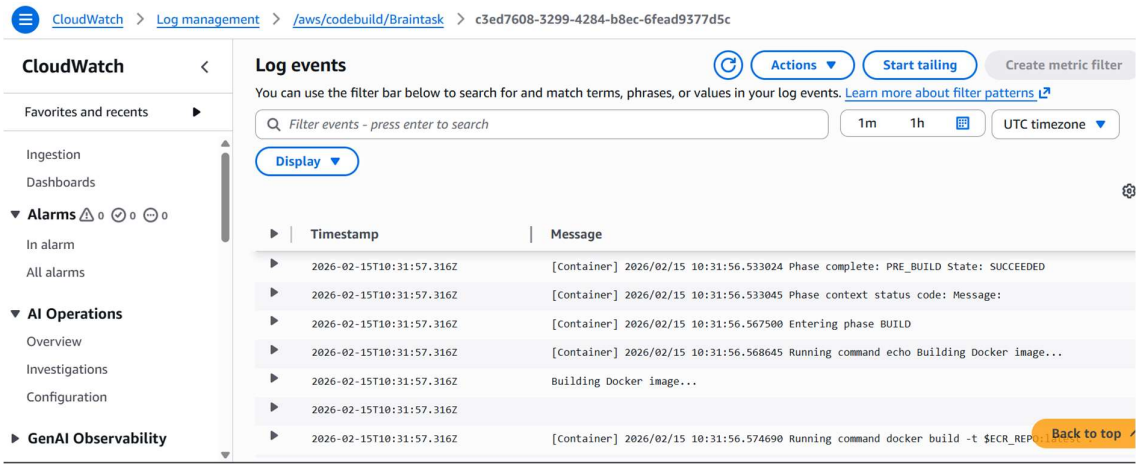
Updated the cluster configmap with the codebuild role ARN for EKS access

```
root@ip-172-31-45-41:~/Brain-Tasks-App# kubectl apply -f aws-auth.yaml
configmap/aws-auth configured
root@ip-172-31-45-41:~/Brain-Tasks-App# cat aws-auth.yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: aws-auth
  namespace: kube-system
data:
  mapRoles: |
    - rolearn: arn:aws:iam::460783431859:role/Codebulid-React
      username: codebuild
      groups:
        - system:bootstrappers
        - system:masters
root@ip-172-31-45-41:~/Brain-Tasks-App#
```

Build project executed in codebuild using Lambda



Verified the logs in CloudWatch



Verified the pods logs in EC2