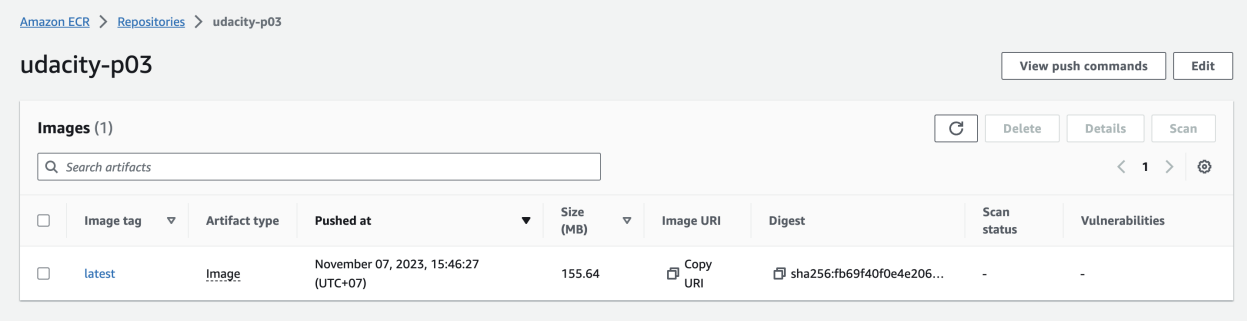
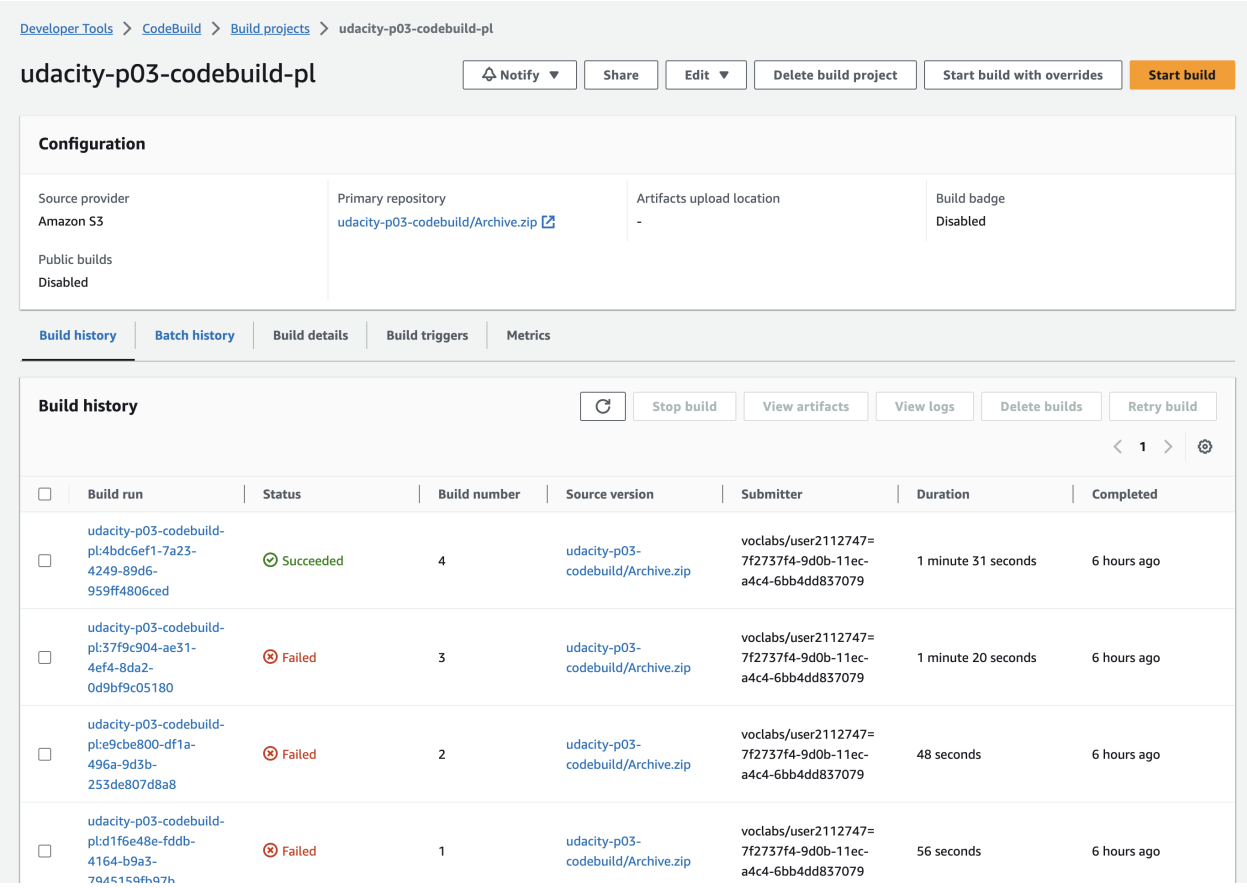
Project 03

I. Build and Deploy Containers to ECR

1. Store Docker images in ECR



2. Run CodeBuild pipeline to deploy Docker image to AWS ECR

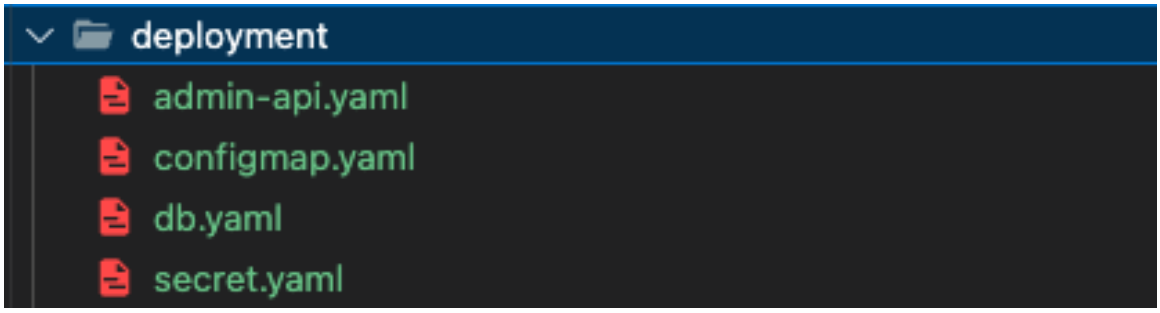


II. Kubernetes Configuration

1. Create functional Kubernetes YAML configuration files

The `deployment/` contains Kubernetes config files that:

- create the service's deployment in Kubernetes.
- create the service's services in Kubernetes.
- share plaintext environment variables in a configmap file
- share sensitive environment variables in a separate secrets file



2. Successfully deploy Kubernetes Service

- A screenshot of `kubectl get svc`

- A screenshot of `kubectl describes deployment <SERVICE_NAME>`

```
❯ kubectl describe deployment admin-api
Name:                   admin-api
Namespace:              default
CreationTimestamp:      Tue, 07 Nov 2023 16:11:17 +0700
Labels:                 name=admin-api
Annotations:            deployment.kubernetes.io/revision: 2
Selector:               service=admin-api
Replicas:               1 desired | 1 updated | 1 total | 1 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  service=admin-api
  Containers:
   admin-api:
    Image:      058700463501.dkr.ecr.us-east-1.amazonaws.com/udacity-p03
    Port:       <none>
    Host Port:  <none>
    Environment:
      DB_USERNAME:  <set to the key 'DB_USERNAME' of config map 'db-env'>  Optional: false
      DB_PASSWORD:  <set to the key 'DB_PASSWORD' in secret 'db-secret'>   Optional: false
      DB_HOST:      app-db
    Mounts:         <none>
  Volumes:          <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
  Progressing    True    NewReplicaSetAvailable
  Available      True    MinimumReplicasAvailable
OldReplicaSets:  <none>
NewReplicaSet:   admin-api-75bff4447 (1/1 replicas created)
Events:          <none>
```

- A screenshot of `kubectl get pods`

```
❯ kubectl get pods

NAME                         READY   STATUS    RESTARTS   AGE
admin-api-75bff4447-9tqxg    1/1     Running   0          5h35m
app-db-6748cfc8bd-bn5lw      1/1     Running   0          5h35m
```

3. Create a Kubernetes Database Service using Helm Chart

- A screenshot of `kubectl describe svc <DATABASE_SERVICE_NAME>` shows `app.kubernetes.io/managed-by=Helm` in the `Labels` section

```
❯ kubectl describe svc app-db
Name:              app-db-postgresql
Namespace:         default
Labels:            app.kubernetes.io/component=primary
                   app.kubernetes.io/instance=app-db
                   app.kubernetes.io/managed-by=Helm
                   app.kubernetes.io/name=postgresql
                   app.kubernetes.io/version=16.0.0
                   helm.sh/chart=postgresql-13.2.2
Annotations:       meta.helm.sh/release-name: app-db
                   meta.helm.sh/release-namespace: default
Selector:          app.kubernetes.io/component=primary,app.kubernetes.io/instance=app-db,app.kubernetes.io/name=postgresql
Type:              ClusterIP
IP Family Policy:  SingleStack
IP Families:       IPv4
IP:                10.100.221.38
IPs:               10.100.221.38
Port:              tcp-postgresql  5432/TCP
TargetPort:        tcp-postgresql/TCP
Endpoints:         <none>
Session Affinity:  None
Events:            <none>

Name:              app-db-postgresql-hl
Namespace:         default
Labels:            app.kubernetes.io/component=primary
                   app.kubernetes.io/instance=app-db
                   app.kubernetes.io/managed-by=Helm
                   app.kubernetes.io/name=postgresql
                   app.kubernetes.io/version=16.0.0
                   helm.sh/chart=postgresql-13.2.2
Annotations:       meta.helm.sh/release-name: app-db
                   meta.helm.sh/release-namespace: default
                   service.alpha.kubernetes.io/tolerate-unready-endpoints: true
Selector:          app.kubernetes.io/component=primary,app.kubernetes.io/instance=app-db,app.kubernetes.io/name=postgresql
Type:              ClusterIP
IP Family Policy:  SingleStack
IP Families:       IPv4
IP:                None
```

III. Logging and Documentation

1. Review CloudWatch logs to confirm that an application is operating normally