Project 2b: Containerized Microservices with EKSs

GitHub repo: https://github.com/Mithra1995/ekscode

Objective

To design, deploy, and manage a containerized microservices architecture using AWS services, specifically EKS (Elastic Kubernetes Service). The goal is to create a robust, scalable, and secure infrastructure to run microservices in the cloud using Docker containers. The project will include the following:
- **Containerization of Microservices** using Docker
- **Deployment using **EKS**
- **CI/CD pipeline for continuous delivery and management** of microservices
- **Monitoring and Logging** for performance insights

Architecture Overview

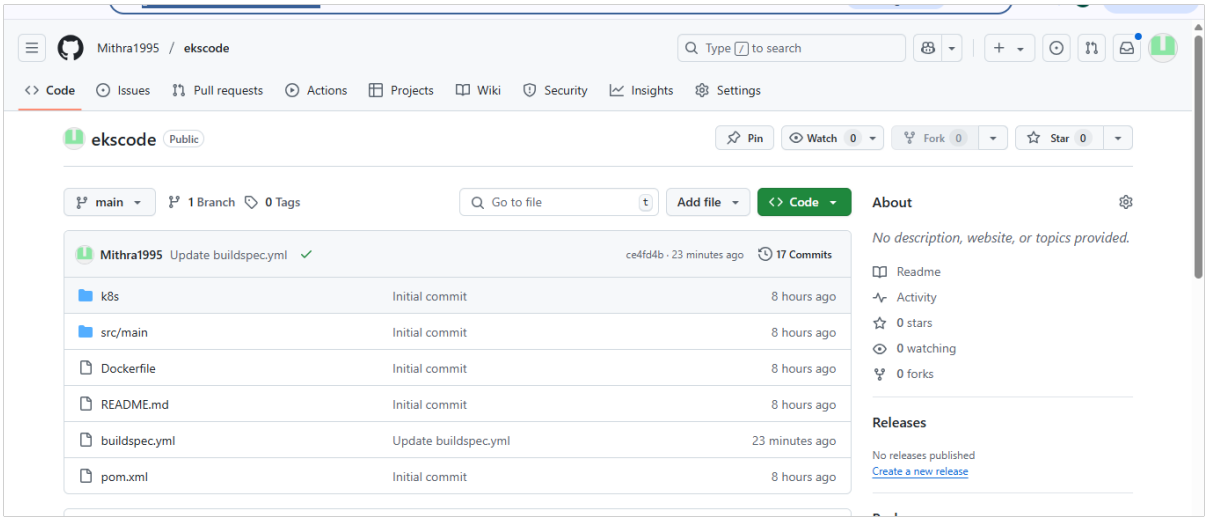
The architecture consists of multiple AWS services to support microservices, which include EKS for container orchestration, Application Load Balancer (ALB) for traffic routing. This will be coupled with CI/CD pipelines using Jenkins or AWS CodePipeline.

? Services Used

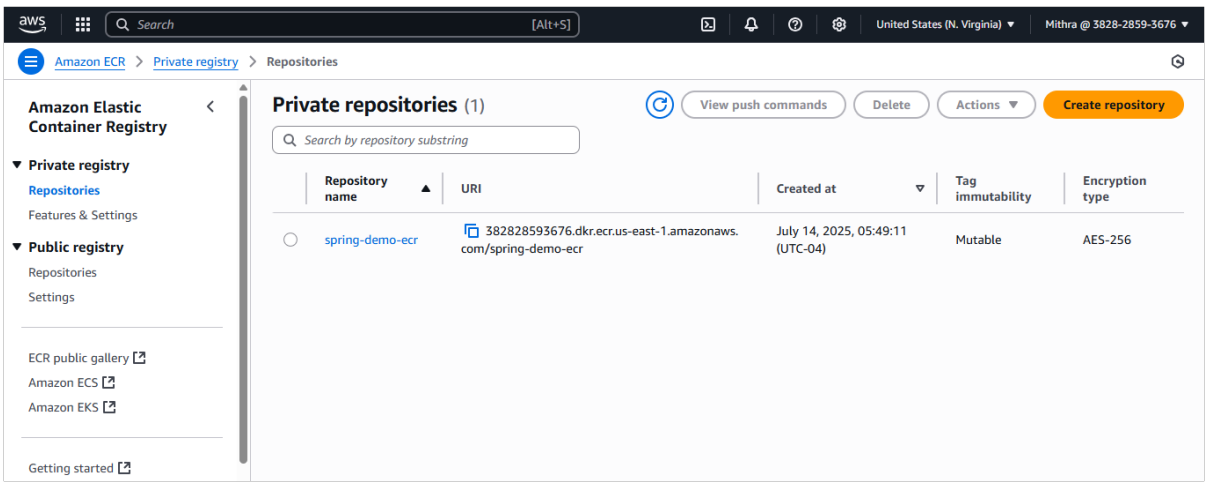
- **Amazon **Amazon EKS** (Elastic Kubernetes Service) for container orchestration
- **AWS Application Load Balancer** (ALB) for routing traffic to microservices
- **Amazon VPC** (Virtual Private Cloud) for networking and security
- **AWS CloudWatch** for monitoring and logging
- **Docker** for containerizing microservices
- **Amazon ECR** (Elastic Container Registry) for storing Docker images
- **AWS CodePipeline ** for CI/CD automation

Step-by-Step Implementation Tasks

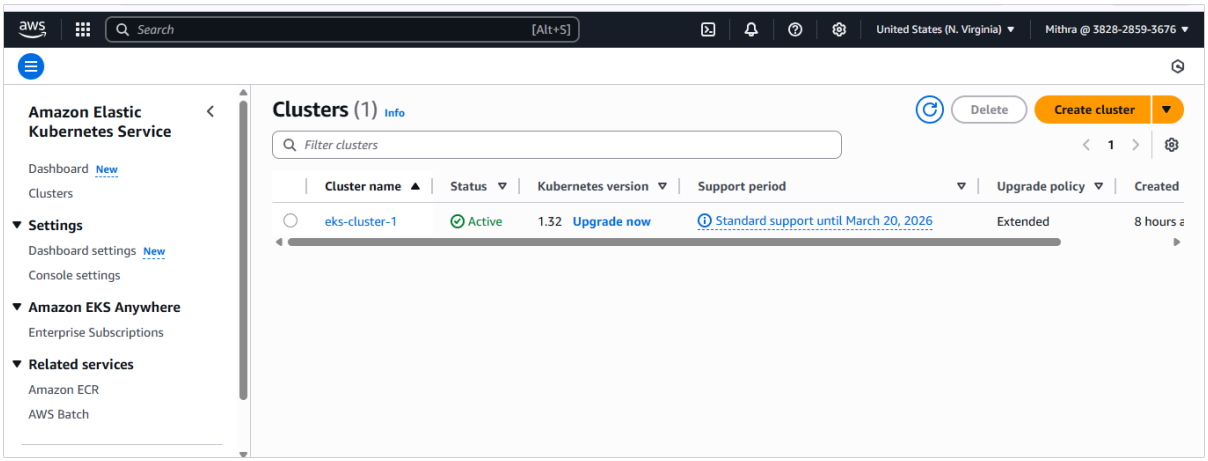
Step 1: Push the code to you GitHub repo



Step 2: Create ECR repo



Step 3: Create EKS using cloudshell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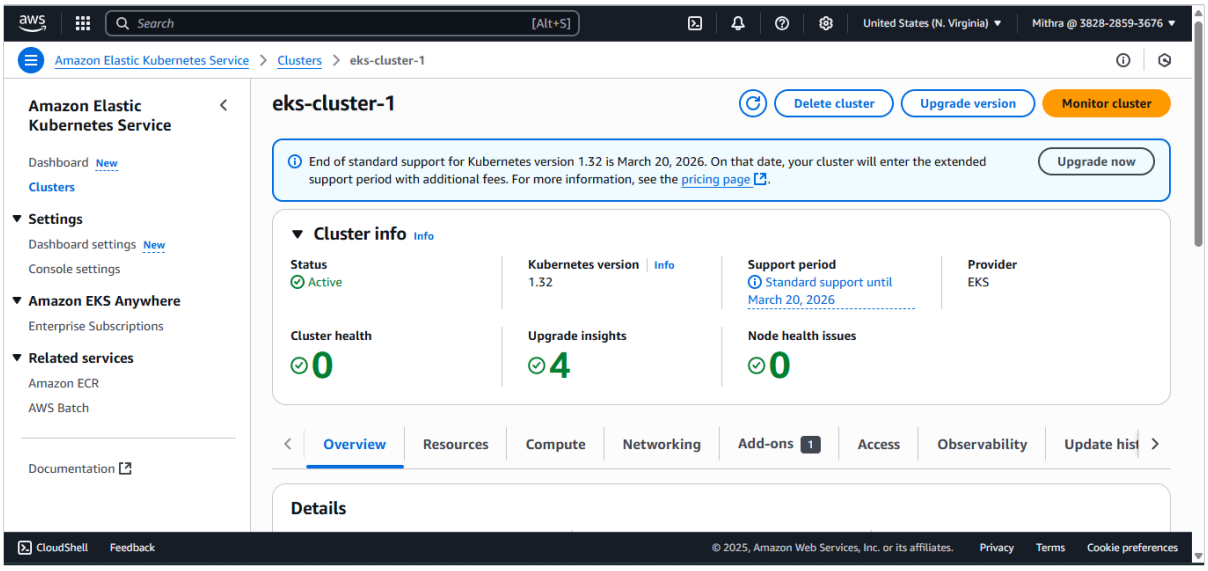
Amazon Elastic Kubernetes Service
Dashboard New
Clusters
Settings
Dashboard settings New
Console settings
Amazon EKS Anywhere
Enterprise Subscriptions
Related services
Amazon ECR
AWS Batch
Clusters (1) Info
Filter clusters
Delete
Create cluster
Cluster name
Status
Kubernetes version
Support period
Upgrade policy
Created
eks-cluster-1
Active
1.32 Upgrade now
Standard support until March 20, 2026
Extended
8 hours a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Amazon Elastic Kubernetes Service
Clusters
eks-cluster-1
Amazon Elastic Kubernetes Service
Dashboard New
Clusters
Settings
Dashboard settings New
Console settings
Amazon EKS Anywhere
Enterprise Subscriptions
Related services
Amazon ECR
AWS Batch
Documentation
eks-cluster-1
Delete cluster
Upgrade version
Monitor cluster
End of standard support for Kubernetes version 1.32 is March 20, 2026. On that date, your cluster will enter the extended support period with additional fees. For more information, see the pricing page.
Upgrade now
Cluster info Info
Status
Active
Kubernetes version Info
1.32
Support period
Standard support until March 20, 2026
Provider
EKS
Cluster health
0
Upgrade insights
4
Node health issues
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Overview
Resources
Compute
Networking
Add-ons 1
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Observability
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Feedback
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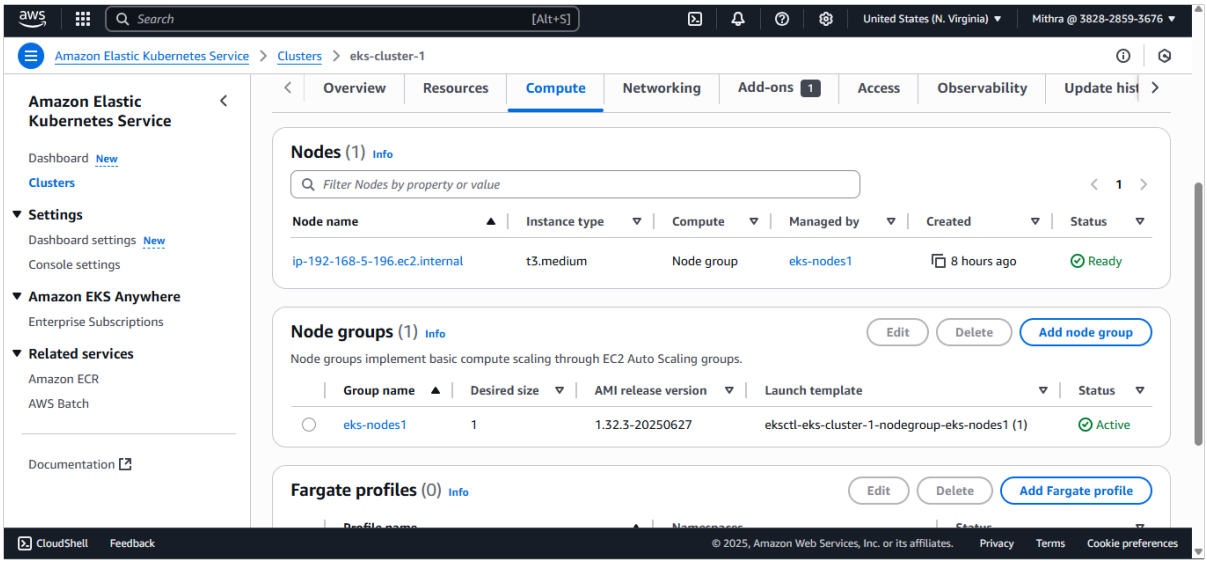
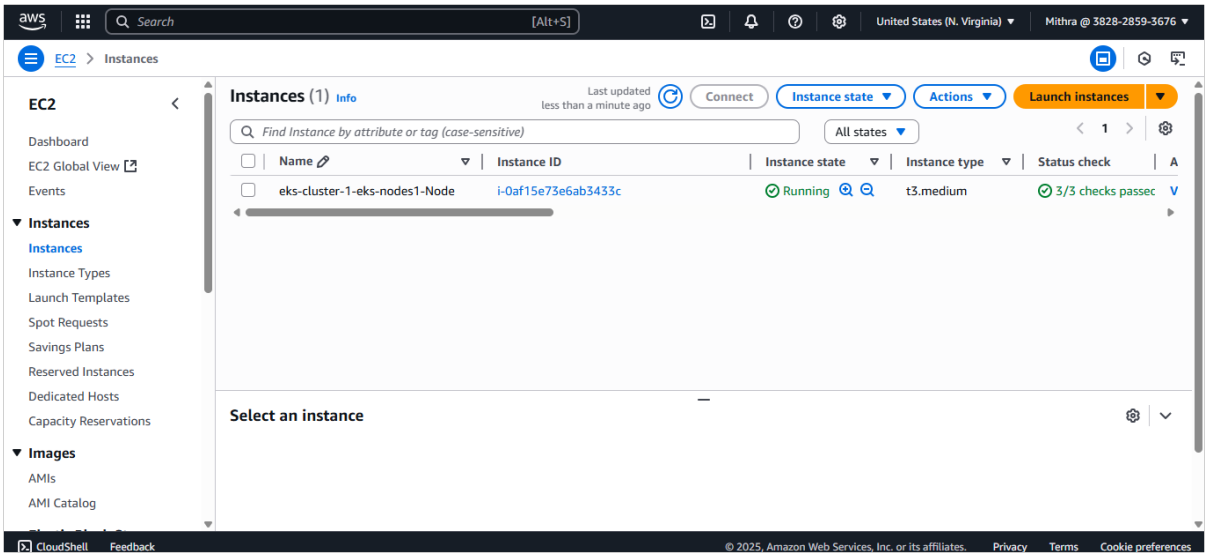
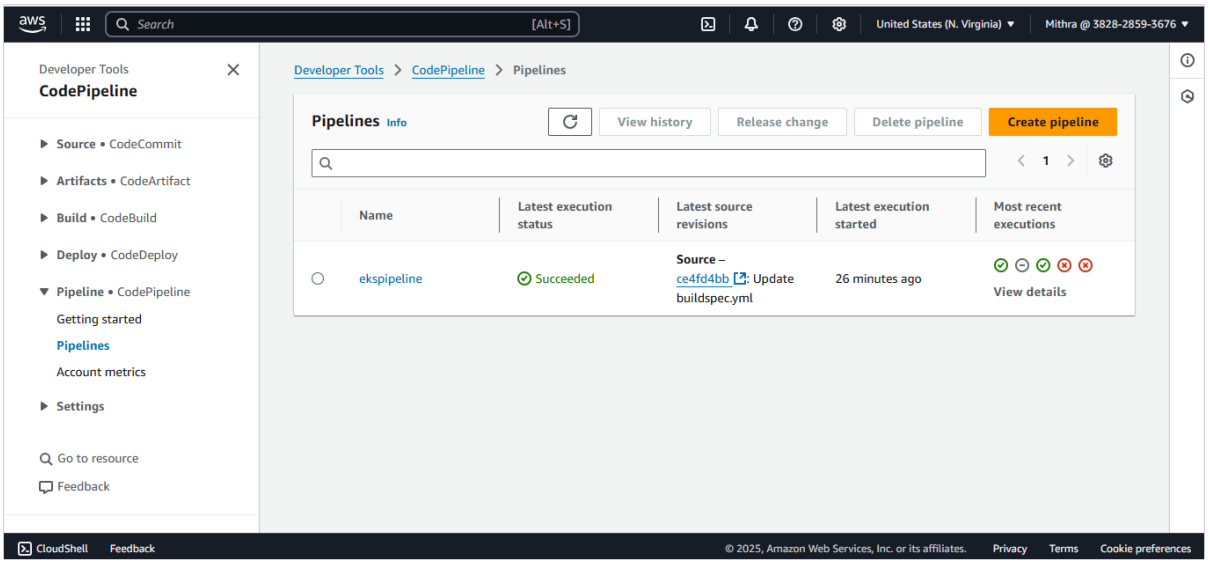
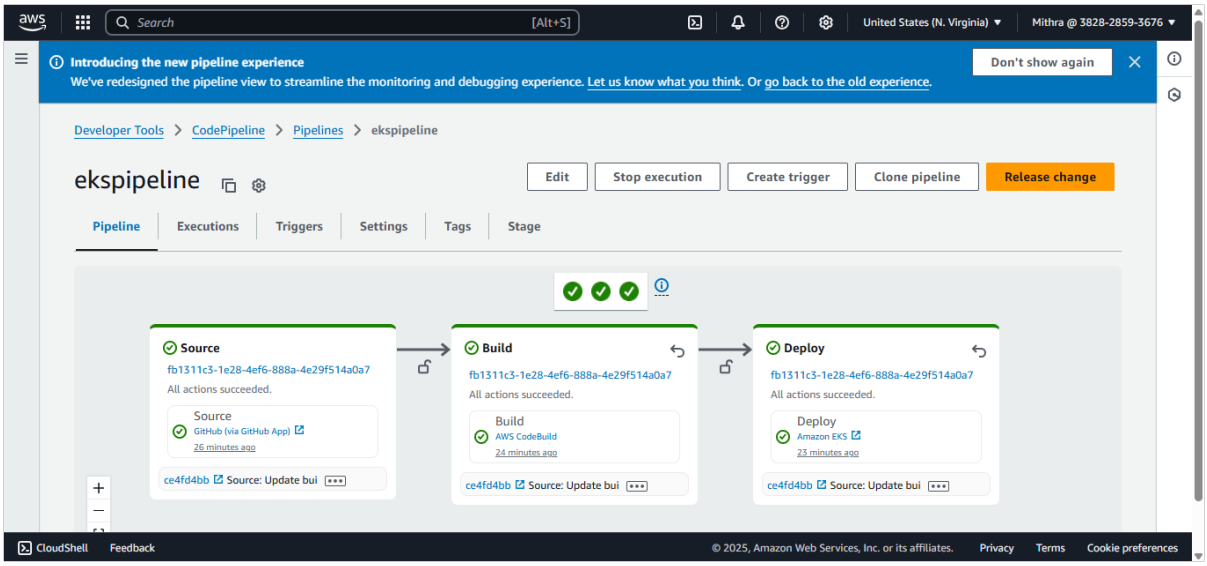


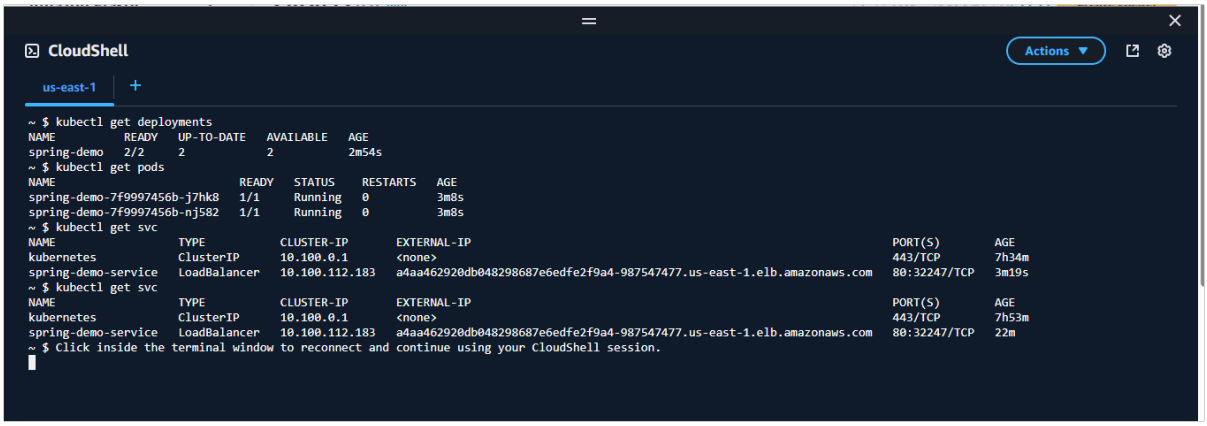


Step 4: create code pipeline using the GitHub repo

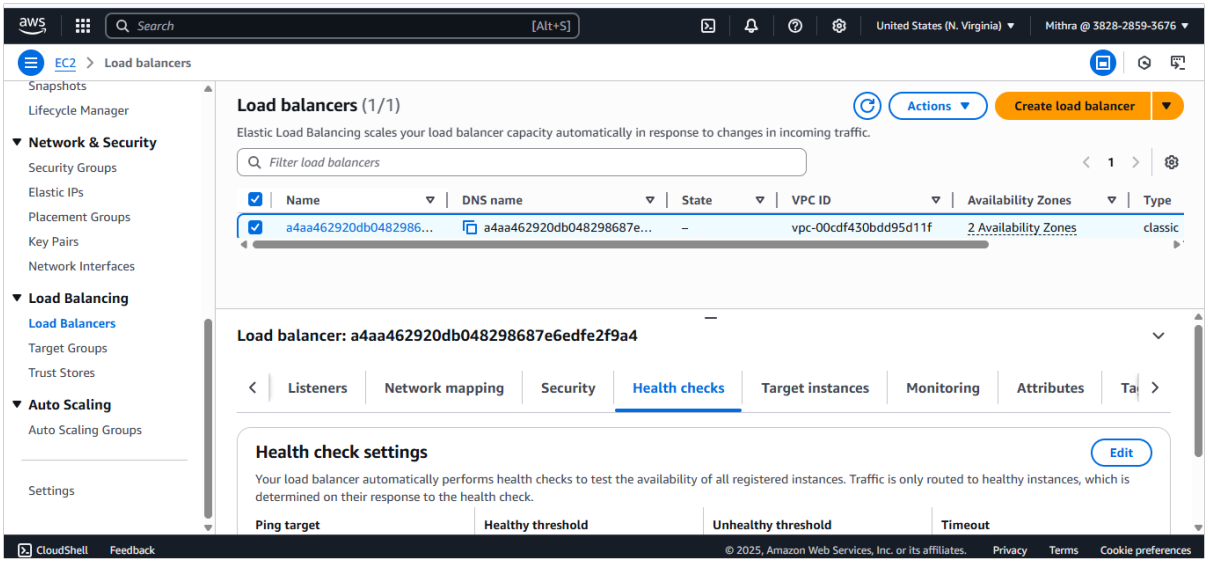


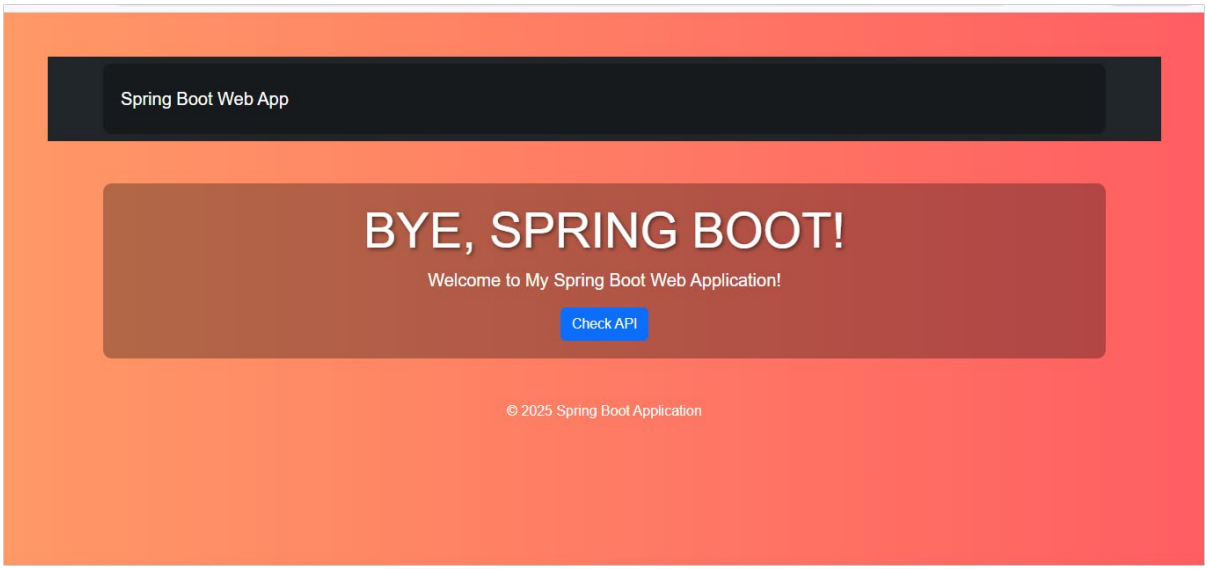


Step 5: Check the deployment and service got created

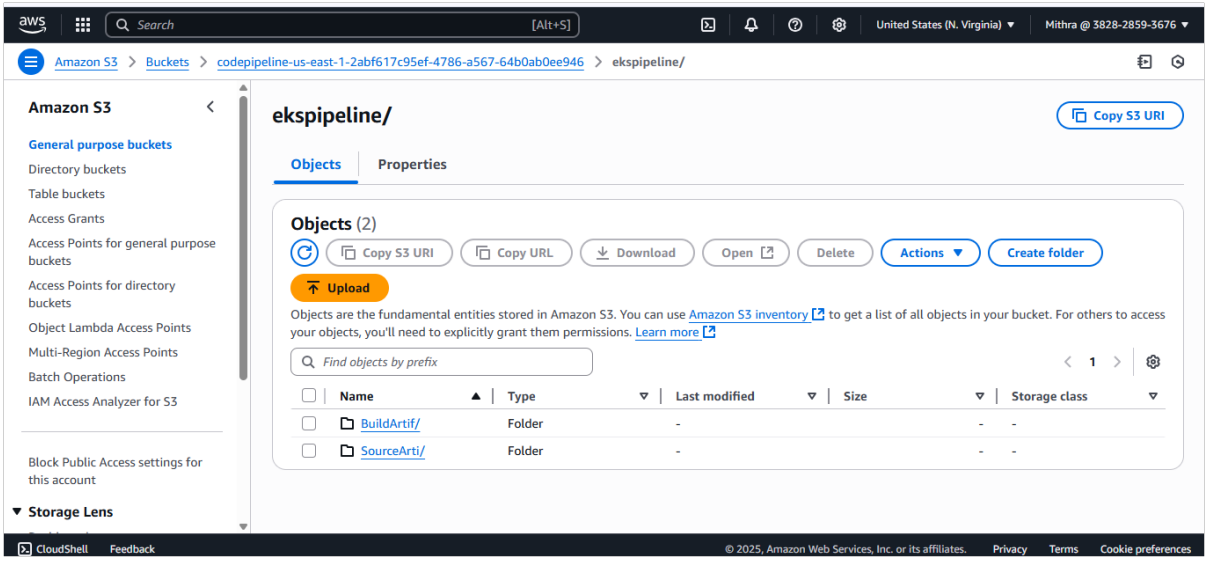


Step 6: Output webpage loaded using load balancer





Step 7: Input and output artifacts got stored in S3 bucker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Amazon S3
General purpose buckets
Directory buckets
Table buckets
Access Grants
Access Points for general purpose buckets
Access Points for directory buckets
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
Storage Lens
ekspipeline/
Copy S3 URI
Objects
Properties
Objects (2)
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more
Find objects by prefix
1
Name
Type
Last modified
Size
Storage class
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