VIT Vidyalankar Institute of Technology Accredited A+ by NAAC

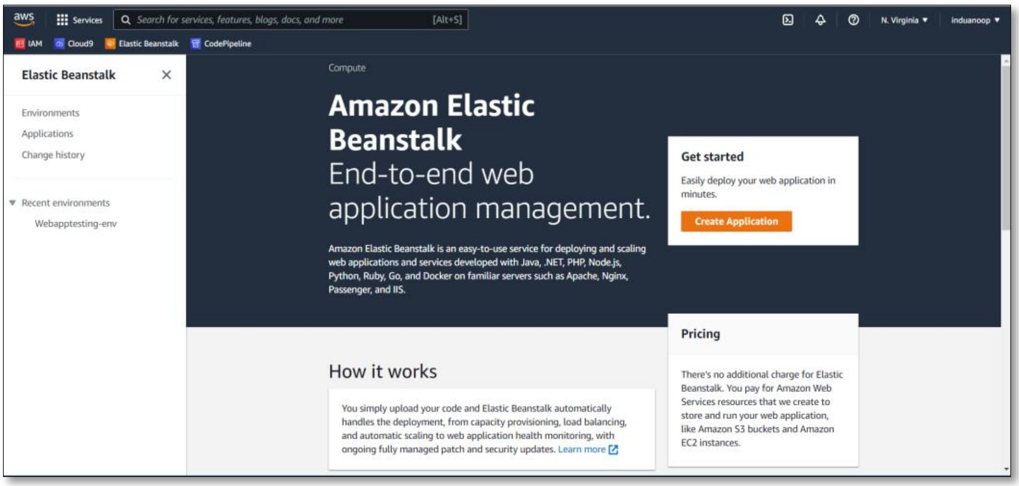
DEPARTMENT OF INFORMATION TECHNOLOGY

Semester	T.E. Semester V – Information Technology
Subject	Advance DevOps Lab
Subject Professor In-charge	Prof. Indu Anoop
Laboratory	(Leave blank for now)

Student Name	Rahul Chougule	
Roll Number	20101A0055	
Grade and Subject Teacher’s Signature		

Experiment	2	
Problem Statement	To Build Your Application using AWS CodeBuild and Deploy on S3 / SEBS using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy.	
Resources / Apparatus Required	Hardware: Computer System	Software: Web Browser
Details	**Theory:** Continuous deployment allows you to deploy revisions to a production environment automatically without explicit approval from a developer, making the entire software release process automated. You will create the pipeline using AWS CodePipeline, a service that builds, tests, and deploys your code every time there is a code change. You will use your GitHub account, an Amazon Simple Storage Service (S3) bucket, or an AWS CodeCommit repository as the source location for the sample app’s code. You will also use AWS Elastic Beanstalk as the deployment target for the sample app. Your completed pipeline will be able to detect changes made to the source repository containing the sample app and then automatically update your live sample app	
Code	**Steps:** **Step1: Create a deployment environment** Your continuous deployment pipeline will need a target environment containing virtual servers, or Amazon EC2 instances, where it will deploy sample code. You will prepare this environment before creating the pipeline. To simplify the process of setting up and configuring EC2	

instances for this experiment, you will spin up a sample environment using AWS Elastic Beanstalk. Elastic Beanstalk lets you easily host web applications without needing to launch, configure, or operate virtual servers on your own. It automatically provisions and operates the infrastructure (e.g., virtual servers, load balancers, etc.) and provides the application stack (e.g., OS, language and framework, web, and application server, etc.) for you.



Amazon Elastic Beanstalk
End-to-end web application management.

Amazon Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

Get started

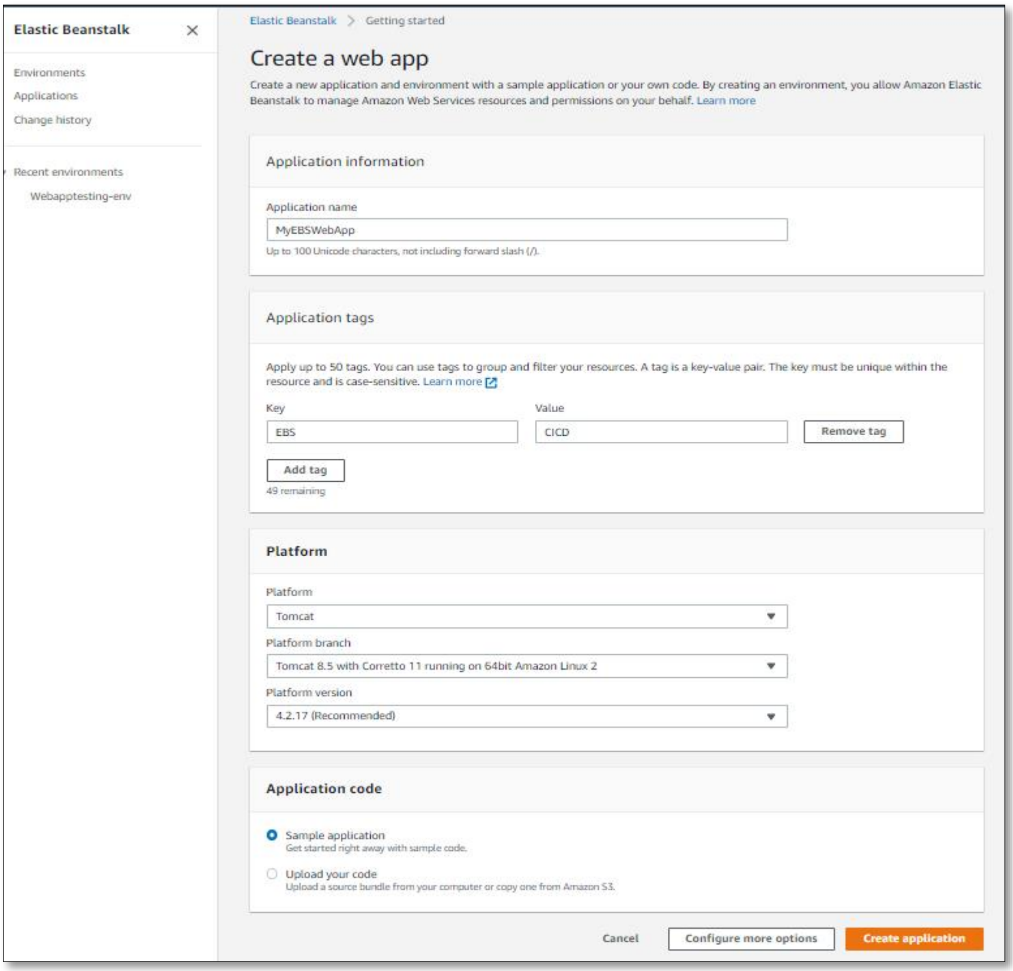
Easily deploy your web application in minutes.

How it works

You simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, and automatic scaling to web application health monitoring, with ongoing fully managed patch and security updates. Learn more

Pricing

There's no additional charge for Elastic Beanstalk. You pay for Amazon Web Services resources that we create to store and run your web application, like Amazon S3 buckets and Amazon EC2 instances.



Elastic Beanstalk > Getting started

Create a web app

Create a new application and environment with a sample application or your own code. By creating an environment, you allow Amazon Elastic Beanstalk to manage Amazon Web Services resources and permissions on your behalf. Learn more

Application information

Application name: MyEBSWebApp

Up to 100 Unicode characters, not including forward slash (/).

Application tags

Apply up to 50 tags. You can use tags to group and filter your resources. A tag is a key-value pair. The key must be unique within the resource and is case-sensitive. Learn more

Key: EBS

Value: CICD

49 remaining

Platform

Platform: Tomcat

Platform branch: Tomcat 8.5 with Corretto 11 running on 64bit Amazon Linux 2

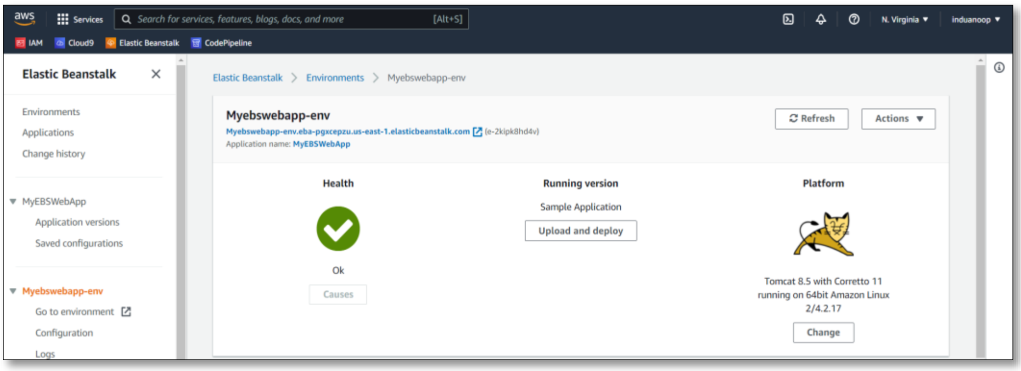
Platform version: 4.2.17 (Recommended)

Application code

● Sample application
Get started right away with sample code.

○ Upload your code
Upload a source bundle from your computer or copy one from Amazon S3.

Elastic Beanstalk will begin creating a sample environment for you to deploy your application to. It will create an Amazon EC2 instance, a security group, an Auto Scaling group, an Amazon S3 bucket, Amazon CloudWatch alarms, and a domain name for your application. Note: This will take several minutes to complete.



Elastic Beanstalk > Environments > Myebswebapp-env

Myebswebapp-env

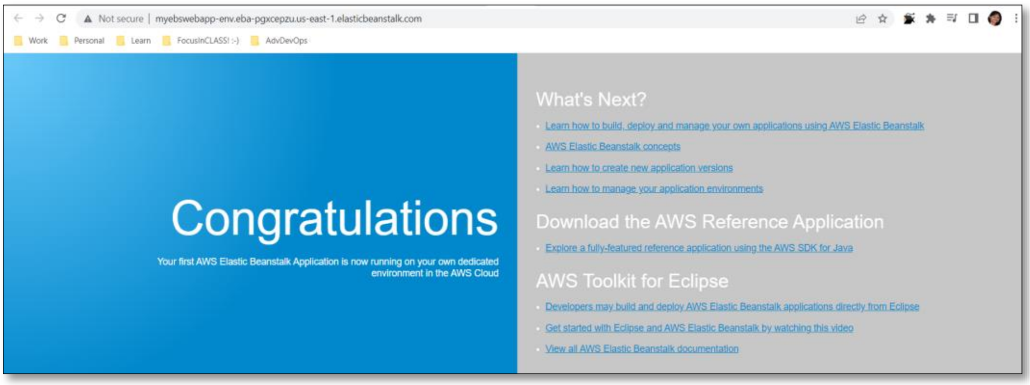
Myebswebapp-env.eba-pgxcepzu.us-east-1.elasticbeanstalk.com (e-2kipk8hd4v)

Application name: MyEBSWebApp

Health: Ok

Running version: Sample Application

Platform: Tomcat 8.5 with Corretto 11 running on 64bit Amazon Linux 2/4.2.17



Not secure | myebswebapp-env.eba-pgxcepzu.us-east-1.elasticbeanstalk.com
Work
Personal
Learn
FocusInCLASS! :-)
AdvDevOps

Congratulations

Your first AWS Elastic Beanstalk Application is now running on your own dedicated environment in the AWS Cloud

What's Next?

- Learn how to build, deploy and manage your own applications using AWS Elastic Beanstalk
- AWS Elastic Beanstalk concepts
- Learn how to create new application versions
- Learn how to manage your application environments

Download the AWS Reference Application

- Explore a fully-featured reference application using the AWS SDK for Java

AWS Toolkit for Eclipse

- Developers may build and deploy AWS Elastic Beanstalk applications directly from Eclipse
- Get started with Eclipse and AWS Elastic Beanstalk by watching this video
- View all AWS Elastic Beanstalk documentation

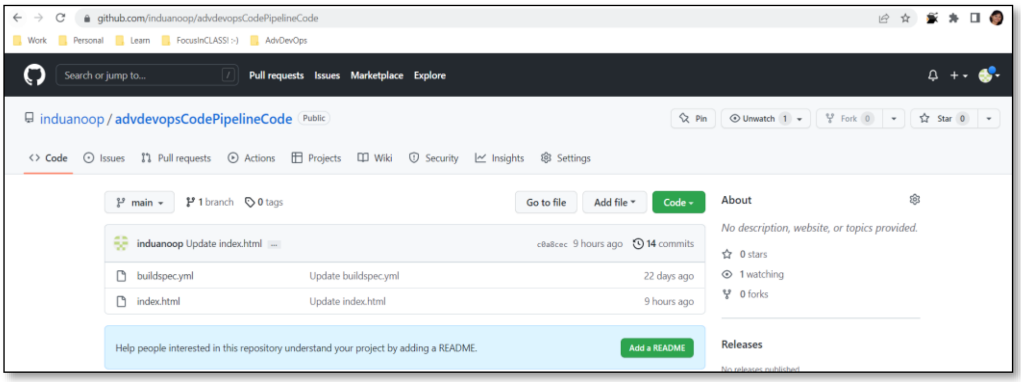
Step2: Get a copy of the sample code

In this step, you will retrieve a copy of the sample app's code and choose a source to host the code. The pipeline takes code from the source and then performs actions on it. You can use one of three options as your source:

- **a GitHub repository,**
- an Amazon S3 bucket, or
- an AWS CodeCommit repository.

A sample project's GitHub repository can be created in your GitHub account, or you can fork(clone) the following GitHub repository. (Ensure there is a buildspec.yml file in your repository for the Build Phase)

https://github.com/induanoop/advdevopsCodePipelineCode.git



induanoop Update index.html ... c0a8cec 9 hours ago 14 commits

buildspec.yml	Update buildspec.yml	22 days ago
index.html	Update index.html	9 hours ago

Help people interested in this repository understand your project by adding a README.

About

No description, website, or topics provided.

0 stars

1 watching

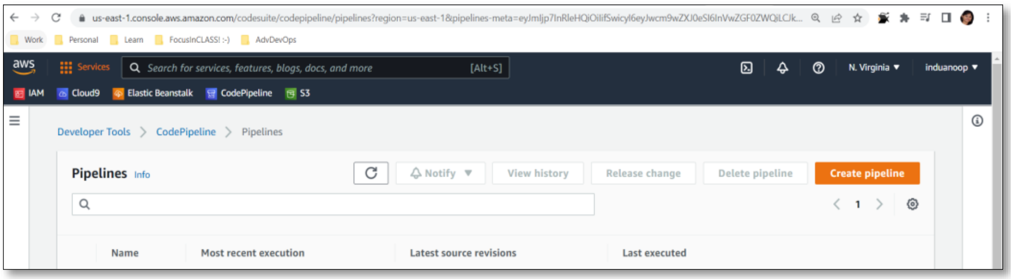
0 forks

Releases

No releases published

Step3: Create your Pipeline

In this step, you will create and configure a CICD pipeline. You will provide CodePipeline with the locations of your source repository [In this case GitHub repository] and deployment environment [AWS Elastic Beanstalk environment created in Step 1]. A true continuous deployment pipeline requires a build stage before deployment, where code is compiled, and unit tested. CodePipeline lets you plug your preferred build provider .[although optional, we will be using AWS CodeDeploy] into your pipeline



us-east-1.console.aws.amazon.com/codesuite/codepipeline/pipelines?region=us-east-1&pipelines-meta=eyJmljp7InRleHQiOilifSwicyl6eyJwcm9wZXJ0eSI6InVwZGF0ZWQiLCJk...

Work · Personal · Learn · FocusInCLASS! :-) · AdvDevOps

Services · Search for services, features, blogs, docs, and more [Alt+S] · N. Virginia ▼ · induanoop ▼

IAM · Cloud9 · Elastic Beanstalk · CodePipeline · S3

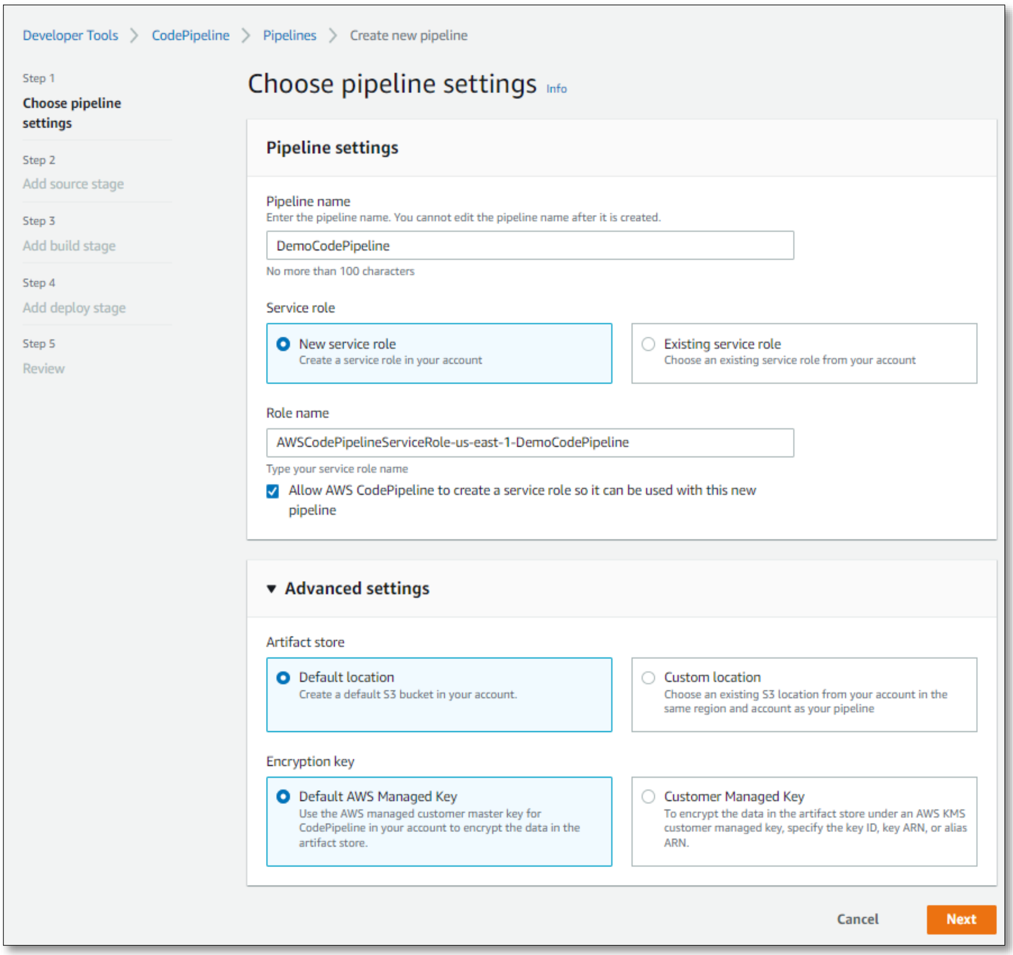
Developer Tools > CodePipeline > Pipelines

Pipelines Info

Notify ▼ · View history · Release change · Delete pipeline · Create pipeline

< 1 >

Name	Most recent execution	Latest source revisions	Last executed



Developer Tools > CodePipeline > Pipelines > Create new pipeline

Step 1
Choose pipeline settings

Step 2
Add source stage

Step 3
Add build stage

Step 4
Add deploy stage

Step 5
Review

Choose pipeline settings Info

Pipeline settings

Pipeline name
Enter the pipeline name. You cannot edit the pipeline name after it is created.
DemoCodePipeline
No more than 100 characters

Service role

● New service role
Create a service role in your account

○ Existing service role
Choose an existing service role from your account

Role name
AWSCodePipelineServiceRole-us-east-1-DemoCodePipeline
Type your service role name

☑ Allow AWS CodePipeline to create a service role so it can be used with this new pipeline

▼ Advanced settings

Artifact store

● Default location
Create a default S3 bucket in your account.

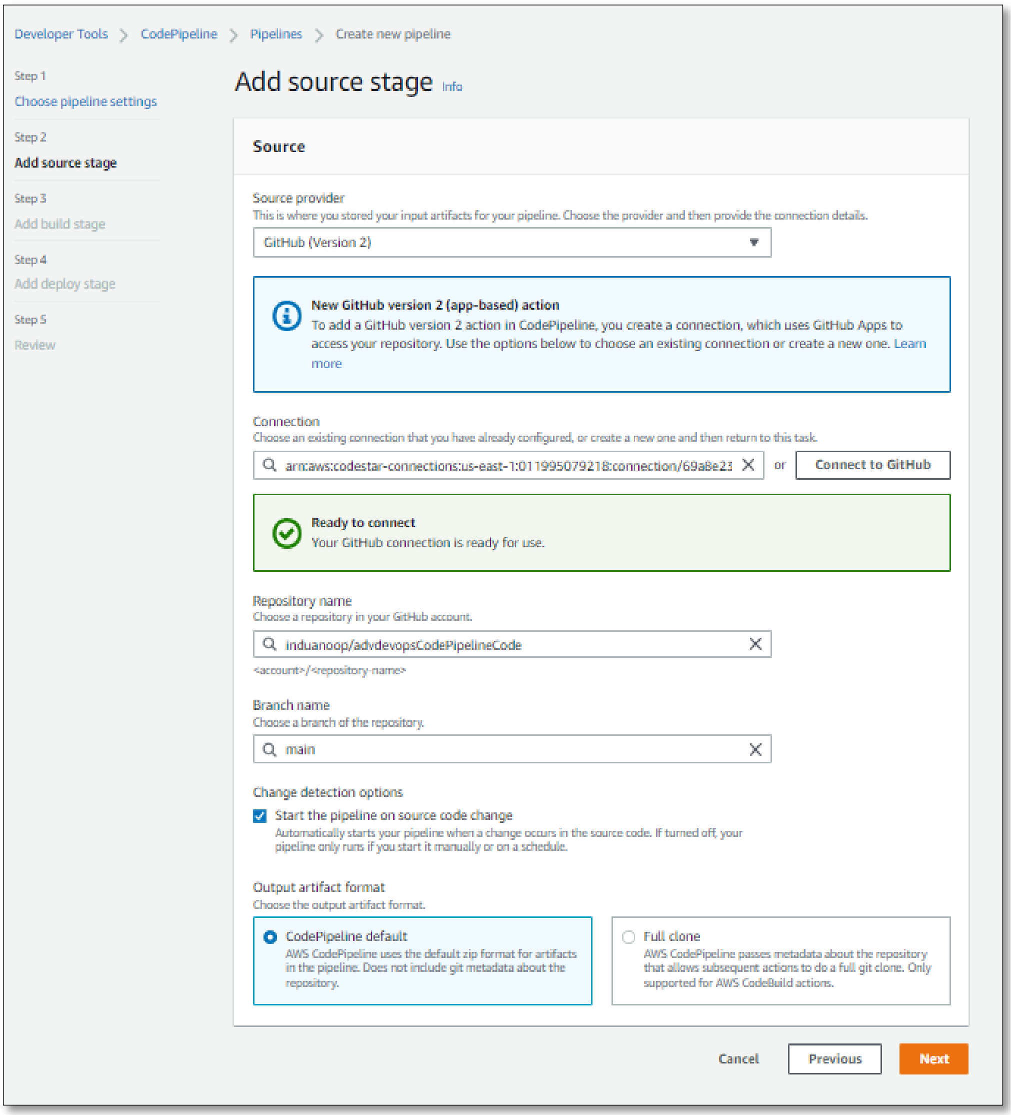
○ Custom location
Choose an existing S3 location from your account in the same region and account as your pipeline

Encryption key

● Default AWS Managed Key
Use the AWS managed customer master key for CodePipeline in your account to encrypt the data in the artifact store.

○ Customer Managed Key
To encrypt the data in the artifact store under an AWS KMS customer managed key, specify the key ID, key ARN, or alias ARN.

Cancel · Next



Developer Tools > CodePipeline > Pipelines > Create new pipeline

Add source stage Info

Source

Source provider
This is where you stored your input artifacts for your pipeline. Choose the provider and then provide the connection details.
GitHub (Version 2) ▼

New GitHub version 2 (app-based) action
To add a GitHub version 2 action in CodePipeline, you create a connection, which uses GitHub Apps to access your repository. Use the options below to choose an existing connection or create a new one. Learn more

Connection
Choose an existing connection that you have already configured, or create a new one and then return to this task.
arn:aws:codestar-connections:us-east-1:011995079218:connection/69a8e23 or Connect to GitHub

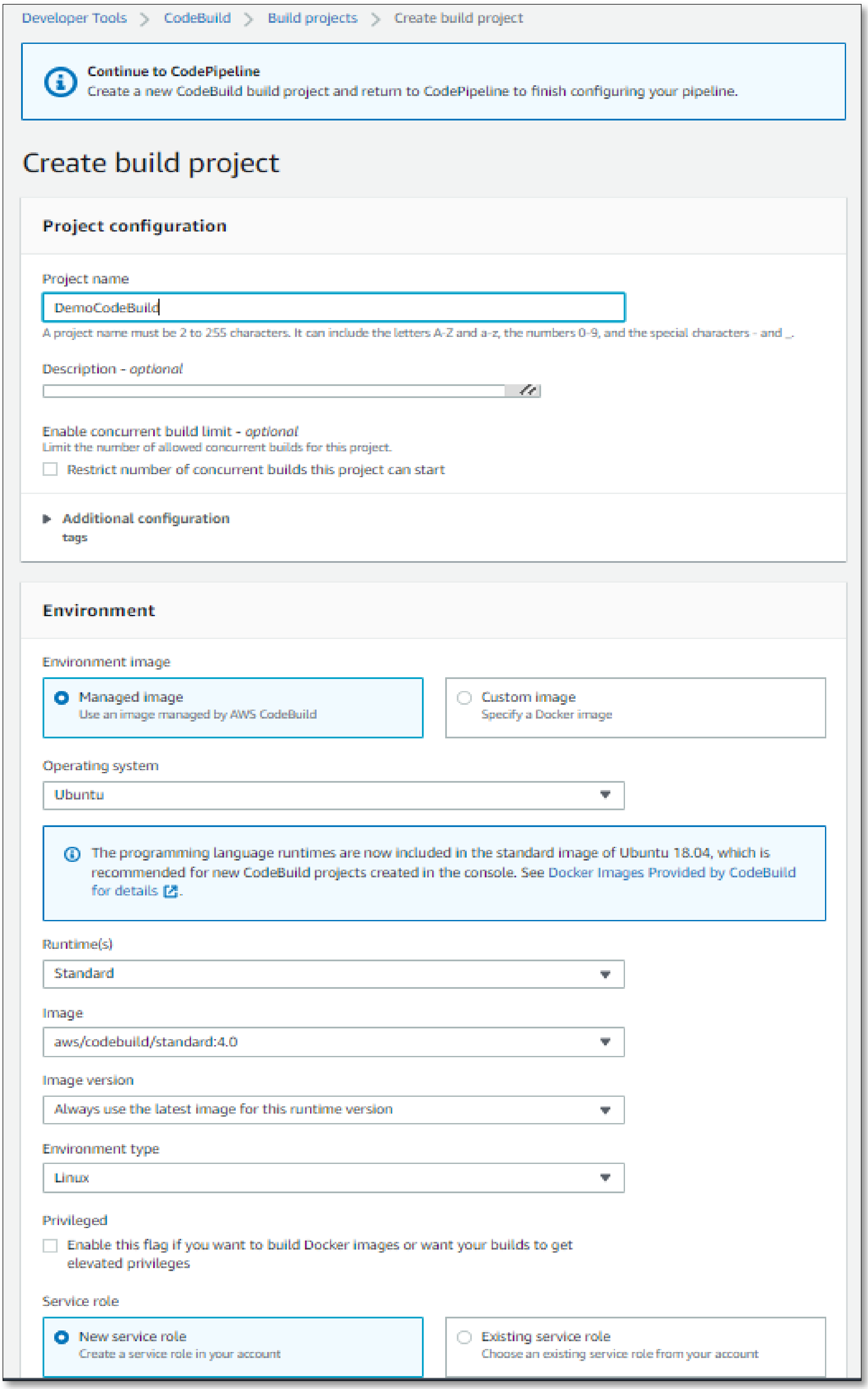
Ready to connect
Your GitHub connection is ready for use.

Repository name
Choose a repository in your GitHub account.
induanoop/advdevopsCodePipelineCode
<account>/<repository-name>

Branch name
Choose a branch of the repository.
main

Change detection options
☑ Start the pipeline on source code change
Automatically starts your pipeline when a change occurs in the source code. If turned off, your pipeline only runs if you start it manually or on a schedule.

Output artifact format
Choose the output artifact format.
● CodePipeline default
AWS CodePipeline uses the default zip format for artifacts in the pipeline. Does not include git metadata about the repository.
○ Full clone
AWS CodePipeline passes metadata about the repository that allows subsequent actions to do a full git clone. Only supported for AWS CodeBuild actions.



Developer Tools > CodeBuild > Build projects > Create build project

Continue to CodePipeline
Create a new CodeBuild build project and return to CodePipeline to finish configuring your pipeline.

Create build project

Project configuration

Project name
DemoCodeBuild
A project name must be 2 to 255 characters. It can include the letters A-Z and a-z, the numbers 0-9, and the special characters - and _.

Description - *optional*

Enable concurrent build limit - *optional*
Limit the number of allowed concurrent builds for this project.
□ Restrict number of concurrent builds this project can start

▶ Additional configuration
tags

Environment

Environment image
● Managed image
Use an image managed by AWS CodeBuild
○ Custom image
Specify a Docker image

Operating system
Ubuntu

The programming language runtimes are now included in the standard image of Ubuntu 18.04, which is recommended for new CodeBuild projects created in the console. See Docker Images Provided by CodeBuild for details.

Runtime(s)
Standard

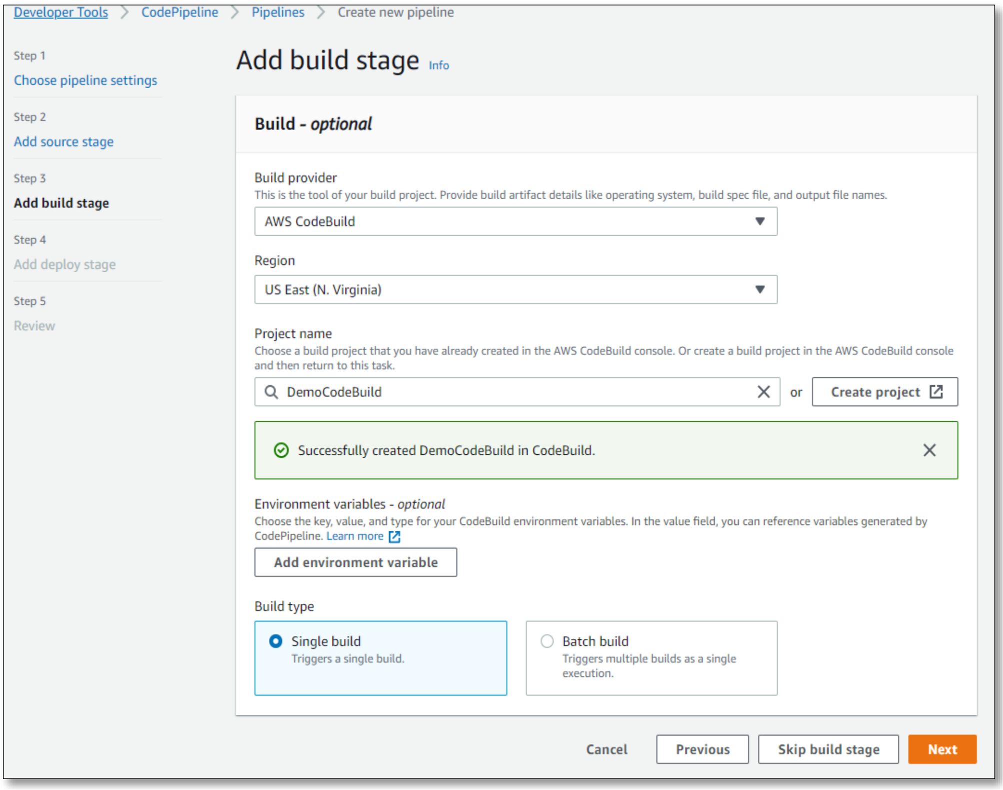
Image
aws/codebuild/standard:4.0

Image version
Always use the latest image for this runtime version

Environment type
Linux

Privileged
□ Enable this flag if you want to build Docker images or want your builds to get elevated privileges

Service role
● New service role
Create a service role in your account
○ Existing service role
Choose an existing service role from your account



Developer Tools > CodePipeline > Pipelines > Create new pipeline

Add build stage Info

Build - *optional*

Build provider
This is the tool of your build project. Provide build artifact details like operating system, build spec file, and output file names.
AWS CodeBuild

Region
US East (N. Virginia)

Project name
Choose a build project that you have already created in the AWS CodeBuild console. Or create a build project in the AWS CodeBuild console and then return to this task.
DemoCodeBuild

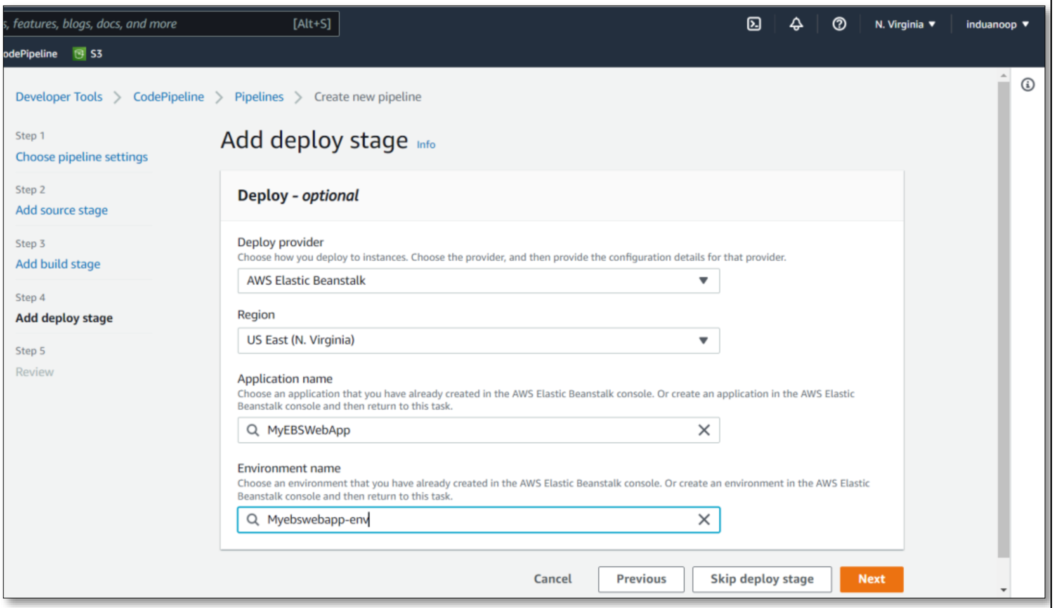
Successfully created DemoCodeBuild in CodeBuild.

Environment variables - *optional*
Choose the key, value, and type for your CodeBuild environment variables. In the value field, you can reference variables generated by CodePipeline. Learn more

Build type

● Single build
Triggers a single build.

○ Batch build
Triggers multiple builds as a single execution.



Developer Tools > CodePipeline > Pipelines > Create new pipeline

Add deploy stage Info

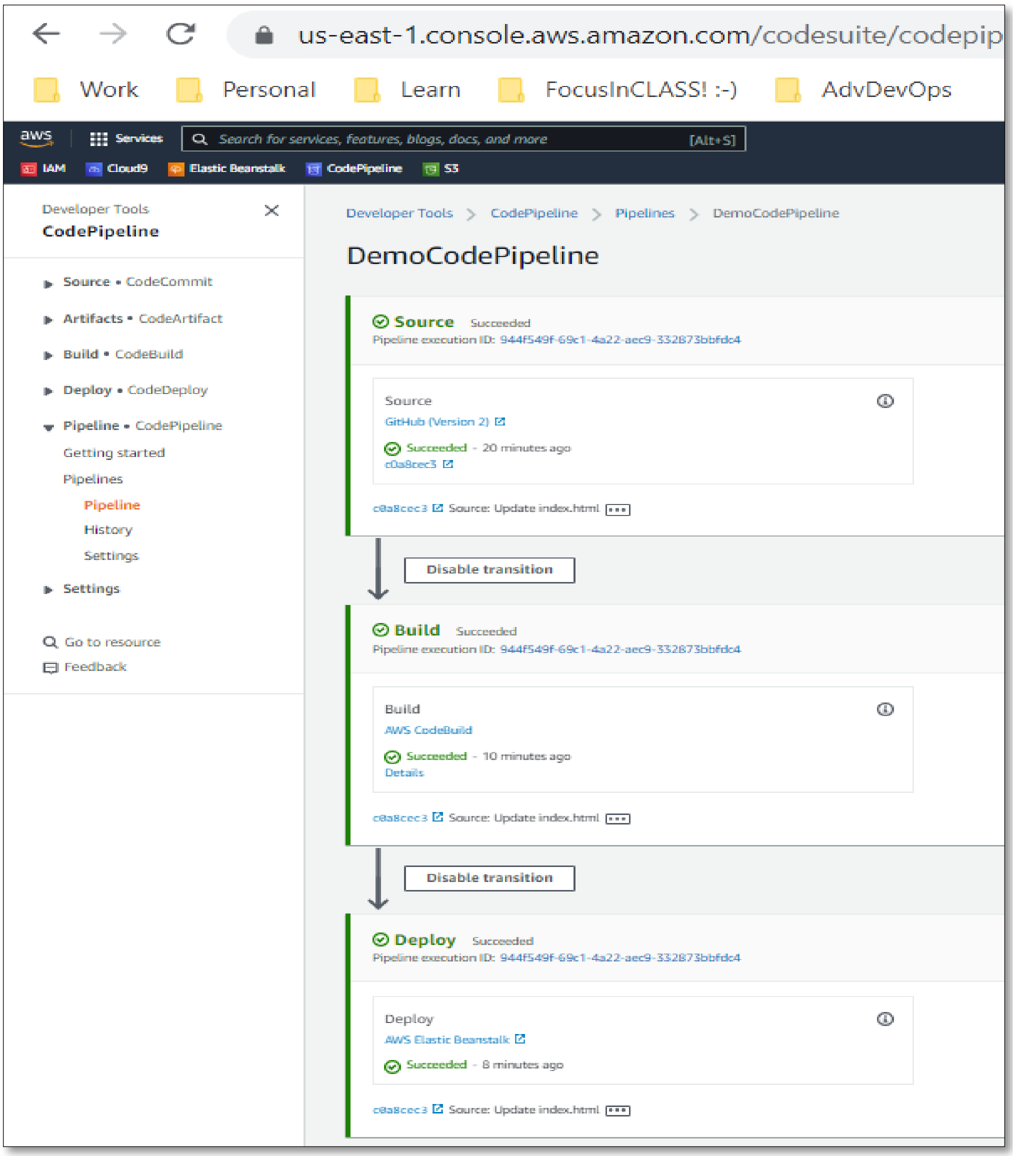
Deploy - *optional*

Deploy provider
Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.
AWS Elastic Beanstalk

Region
US East (N. Virginia)

Application name
Choose an application that you have already created in the AWS Elastic Beanstalk console. Or create an application in the AWS Elastic Beanstalk console and then return to this task.
MyEBSWebApp

Environment name
Choose an environment that you have already created in the AWS Elastic Beanstalk console. Or create an environment in the AWS Elastic Beanstalk console and then return to this task.
Myebswebapp-env



us-east-1.console.aws.amazon.com/codesuite/codepip

Developer Tools > CodePipeline > Pipelines > DemoCodePipeline

DemoCodePipeline

Source Succeeded
Pipeline execution ID: 944f549f-69c1-4a22-aec9-332873bbfdc4

Source
GitHub (Version 2)
Succeeded - 20 minutes ago
c0a8cec3

c0a8cec3 Source: Update index.html

Build Succeeded
Pipeline execution ID: 944f549f-69c1-4a22-aec9-332873bbfdc4

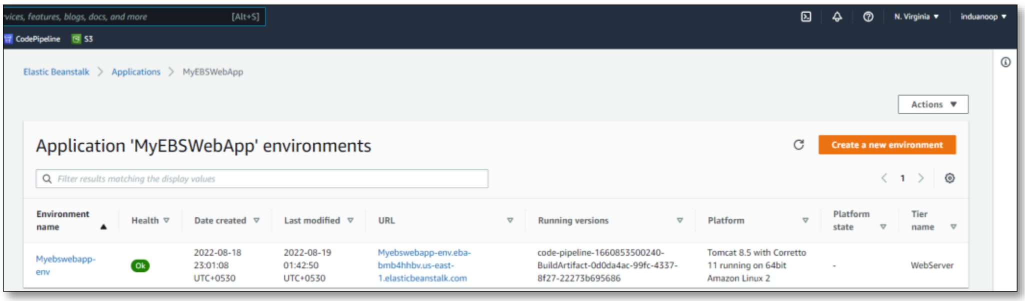
Build
AWS CodeBuild
Succeeded - 10 minutes ago
Details

c0a8cec3 Source: Update index.html

Deploy Succeeded
Pipeline execution ID: 944f549f-69c1-4a22-aec9-332873bbfdc4

Deploy
AWS Elastic Beanstalk
Succeeded - 8 minutes ago

c0a8cec3 Source: Update index.html



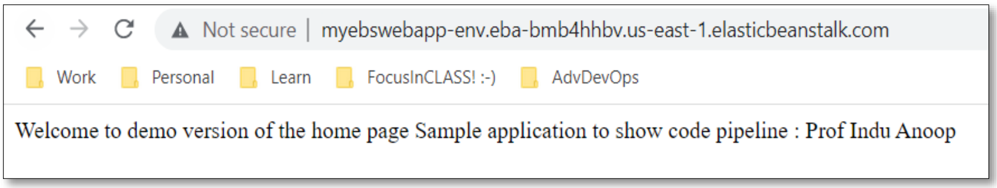
Elastic Beanstalk > Applications > MyEBSWebApp

Application 'MyEBSWebApp' environments

Environment name	Health	Date created	Last modified	URL	Running versions	Platform	Platform state	Tier name
Myebswebapp-env	Ok	2022-08-18 23:01:08 UTC+0530	2022-08-19 01:42:50 UTC+0530	Myebswebapp-env.eba-bmb4hhbv.us-east-1.elasticbeanstalk.com	code-pipeline-1660853500240-BuildArtifact-0d0da4ac-99fc-4337-8f27-22273b695686	Tomcat 8.5 with Corretto 11 running on 64bit Amazon Linux 2	-	WebServer

vices, features, blogs, docs, and more
[Alt+S]
CodePipeline
S3
N. Virginia
induanoop
Actions
Create a new environment
Filter results matching the display values
1

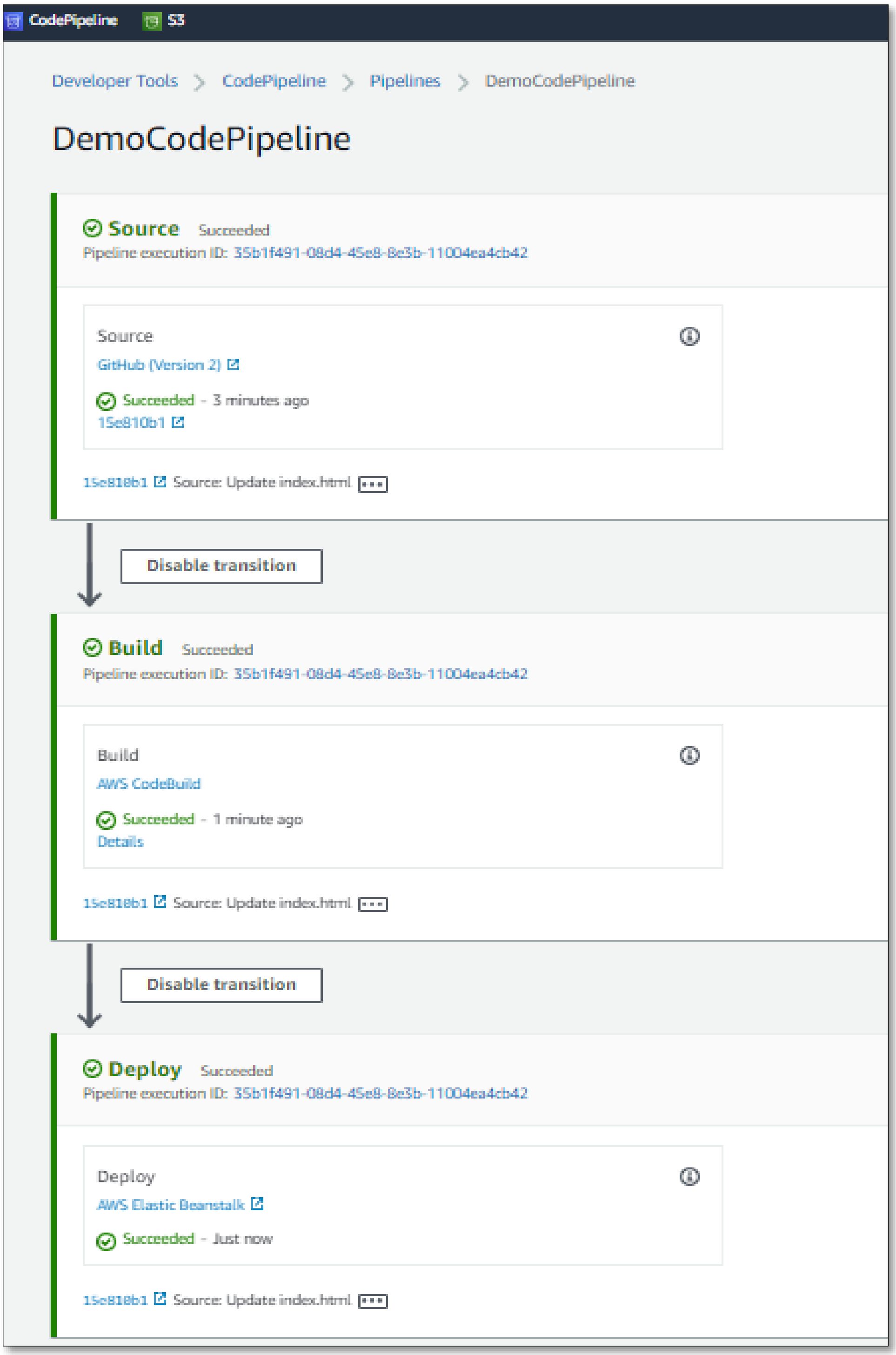
You have successfully created an automated software release pipeline using AWS CodePipeline! Using CodePipeline, you created a pipeline that uses GitHub as the source location for application code and then deploys the code to an Amazon EC2 instance managed by AWS Elastic Beanstalk. Click on the Environment URL to view application.



Welcome to demo version of the home page Sample application to show code pipeline : Prof Indu Anoop

Step 5: Commit a change to repository and view update of webpage

In this step, you will revise the sample code and commit the change to your GitHub repository. CodePipeline will detect your updated sample code and then automatically initiate deploying it to your EC2 instance via Elastic Beanstalk



CodePipeline S3

Developer Tools > CodePipeline > Pipelines > DemoCodePipeline

DemoCodePipeline

Source Succeeded
Pipeline execution ID: 35b1f491-08d4-45e8-8e3b-11004ea4cb42

Source
GitHub (Version 2)
Succeeded - 3 minutes ago
15e810b1

15e818b1 Source: Update index.html

Disable transition

Build Succeeded
Pipeline execution ID: 35b1f491-08d4-45e8-8e3b-11004ea4cb42

Build
AWS CodeBuild
Succeeded - 1 minute ago
Details

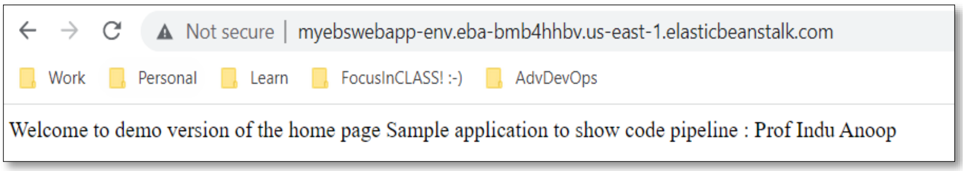
15e818b1 Source: Update index.html

Disable transition

Deploy Succeeded
Pipeline execution ID: 35b1f491-08d4-45e8-8e3b-11004ea4cb42

Deploy
AWS Elastic Beanstalk
Succeeded - Just now

15e818b1 Source: Update index.html



Not secure | myebswebapp-env.eba-bmb4hhbv.us-east-1.elasticbeanstalk.com

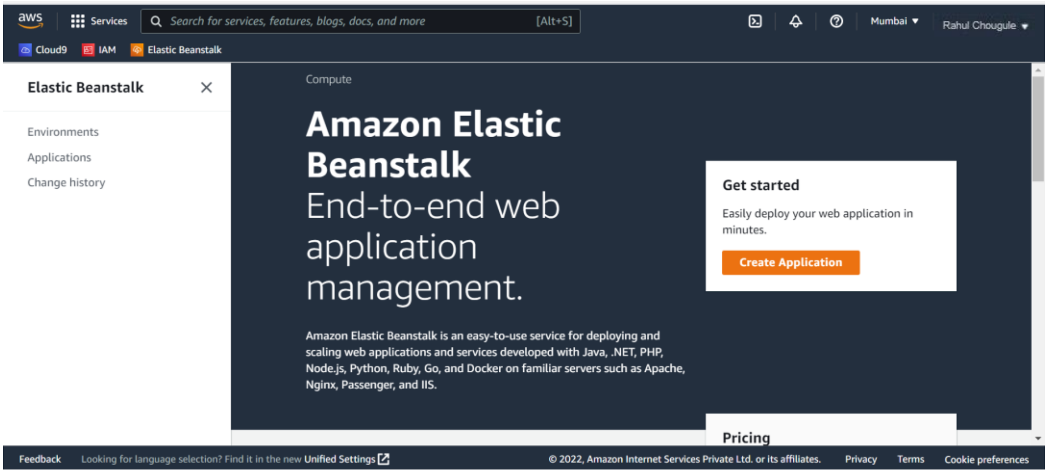
Welcome to demo version of the home page Sample application to show code pipeline : Prof Indu Anoop

Step 6: Clean up your resources

To avoid future charges, you will delete all the resources you launched throughout this tutorial, which includes the pipeline, the Elastic Beanstalk application, and the source you set up to host the code.

a. First, you will delete your pipeline:
   - In the pipeline view, click Edit.
   - Click Delete.
   - Type in the name of your pipeline and click Delete.

b. Second, delete your Elastic Beanstalk application:
   - Visit the Elastic Beanstalk console.
   - Click Actions.
   - Then click Terminate Environment

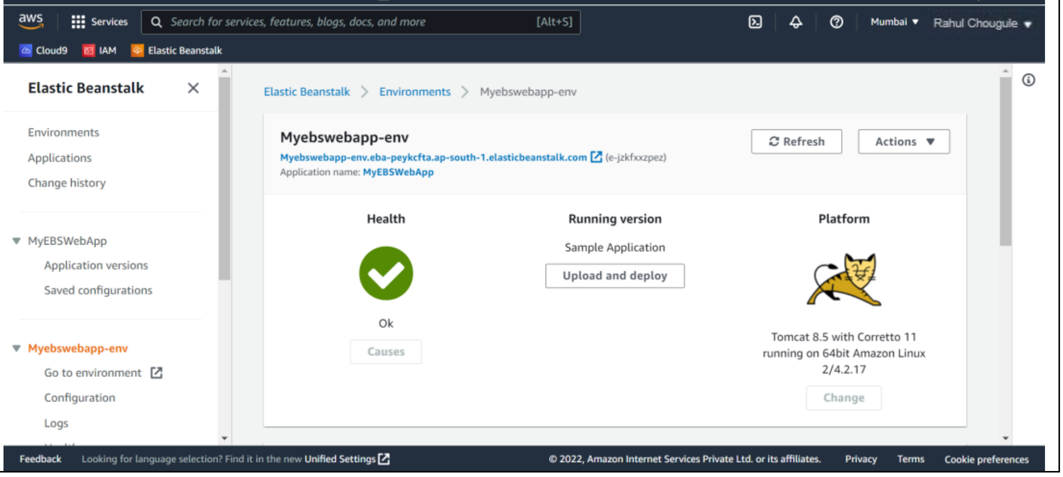


Amazon Elastic Beanstalk

End-to-end web application management.

Amazon Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

Easily deploy your web application in minutes.



Myebswebapp-env

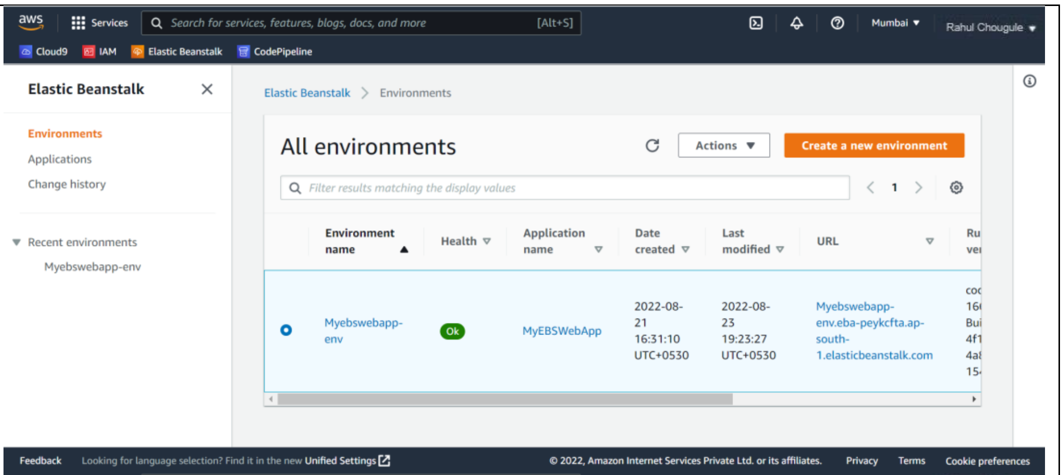
Myebswebapp-env.eba-peykcfta.ap-south-1.elasticbeanstalk.com (e-jzkfxxzpez)

Application name: MyEBSWebApp

Health: Ok

Running version: Sample Application

Platform: Tomcat 8.5 with Corretto 11 running on 64bit Amazon Linux 2/4.2.17



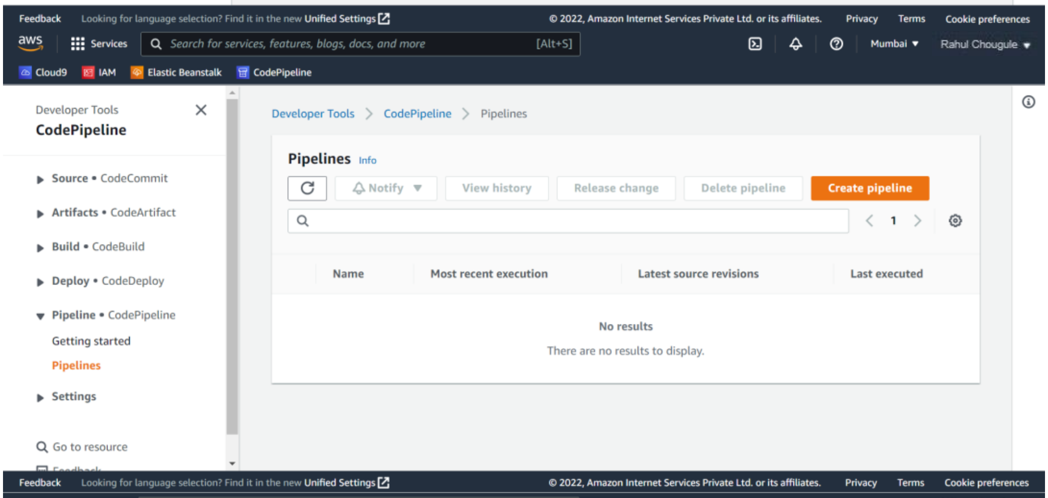
Elastic Beanstalk > Environments

All environments

Create a new environment

Environment name	Health	Application name	Date created	Last modified	URL	Ru ver
● Myebswebapp-env	Ok	MyEBSWebApp	2022-08-21 16:31:10 UTC+0530	2022-08-23 19:23:27 UTC+0530	Myebswebapp-env.eba-peykcfta.ap-south-1.elasticbeanstalk.com	coc 16(Bui 4f1 4al 15

aws
Services
Search for services, features, blogs, docs, and more
[Alt+S]
Mumbai
Rahul Chougule
Cloud9
IAM
Elastic Beanstalk
CodePipeline
Elastic Beanstalk
Environments
Applications
Change history
Recent environments
Myebswebapp-env
Actions
Filter results matching the display values
1
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences



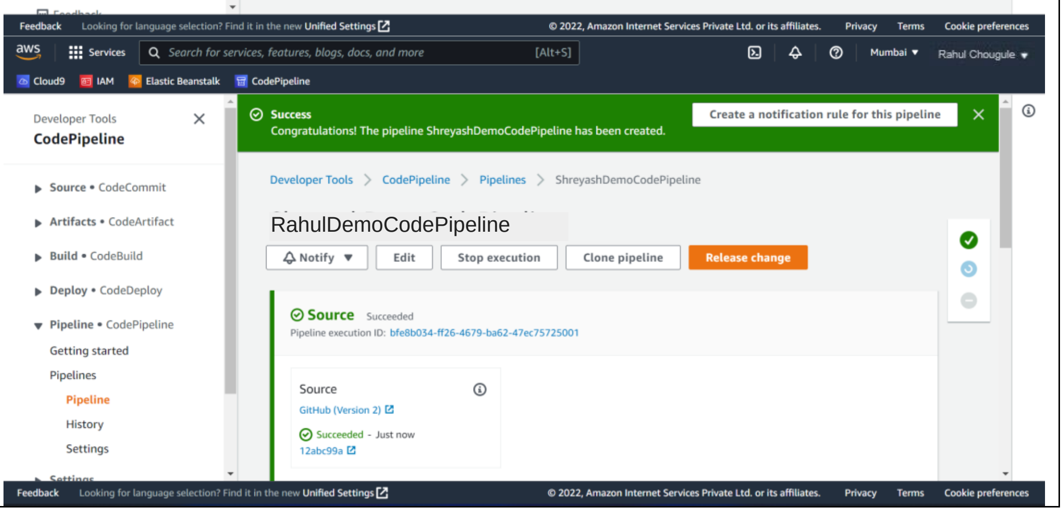
Developer Tools > CodePipeline > Pipelines

Pipelines Info

Name	Most recent execution	Latest source revisions	Last executed

No results

There are no results to display.



Success

Congratulations! The pipeline ShreyashDemoCodePipeline has been created.

Developer Tools > CodePipeline > Pipelines > ShreyashDemoCodePipeline

RahulDemoCodePipeline

Source Succeeded

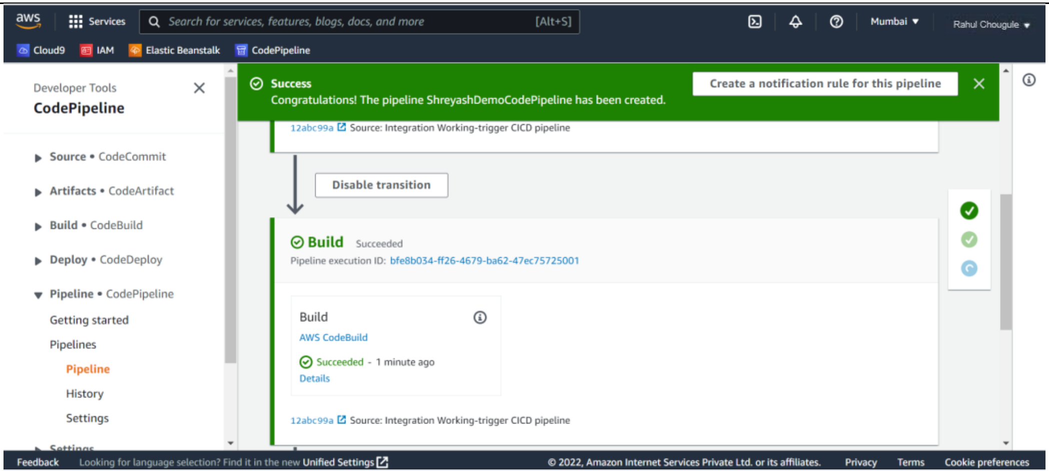
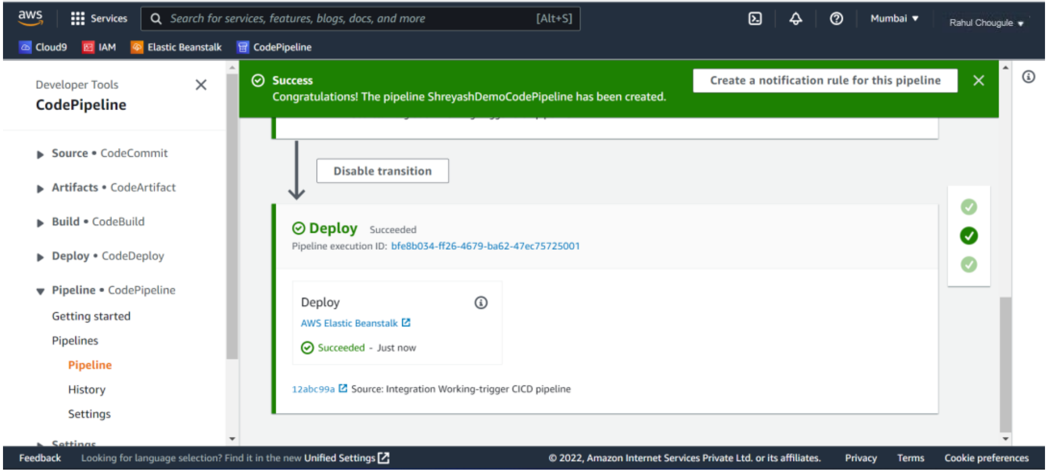
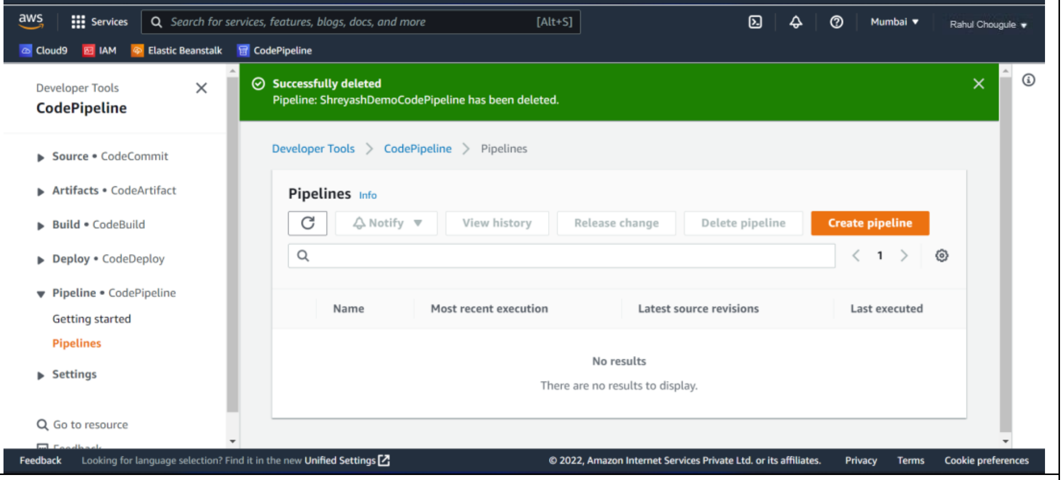
Pipeline execution ID: bfe8b034-ff26-4679-ba62-47ec75725001

Source

GitHub (Version 2)

Succeeded - Just now

12abc99a

	 Success Congratulations! The pipeline ShreyashDemoCodePipeline has been created. Create a notification rule for this pipeline 12abc99a Source: Integration Working-trigger CICD pipeline Disable transition Build Succeeded Pipeline execution ID: bfe8b034-ff26-4679-ba62-47ec75725001 Build AWS CodeBuild Succeeded - 1 minute ago Details 12abc99a Source: Integration Working-trigger CICD pipeline  Success Congratulations! The pipeline ShreyashDemoCodePipeline has been created. Create a notification rule for this pipeline Disable transition Deploy Succeeded Pipeline execution ID: bfe8b034-ff26-4679-ba62-47ec75725001 Deploy AWS Elastic Beanstalk Succeeded - Just now 12abc99a Source: Integration Working-trigger CICD pipeline  Successfully deleted Pipeline: ShreyashDemoCodePipeline has been deleted. Developer Tools > CodePipeline > Pipelines Pipelines Info Notify ▾ View history Release change Delete pipeline Create pipeline Name | Most recent execution | Latest source revisions | Last executed No results There are no results to display.
Conclusion	Successfully created an automated software release pipeline using AWS CodePipeline. Using CodePipeline, you created a pipeline that uses GitHub as the source location for application code and then deployed the code to an Amazon EC2 instance managed by AWS Elastic Beanstalk. The pipeline will automatically deploy the code every time there is a code change that is committed to the repository.