

Name: Hrishikesh Kumbhar

Div: D15A

Roll no: 32

Sub: Advanced DevOps

Experiment No: 2

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Experiment No. 2

Aim:- To build your application using AWS Codebuild and Deploy on S3 / SEBS using AWS CodePipeline, deploy Sample application

Theory:-

Continuous deployment allows you to deploy revisions to production environment automatically without explicitly approval from a developer, making the entire software release process automated.

We 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.

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.

1) To simplify the process of setting up and configuring EC2 instances for this tutorial, 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.

2) Name your web app and choose PHP from the drop-down menu(or any other language you are interested in) and then click Create Application.

The screenshot displays the Amazon Elastic Beanstalk landing page. At the top left, the word 'Compute' is visible. The main heading reads 'Amazon Elastic Beanstalk' followed by 'End-to-end web application management.' Below this, a descriptive paragraph states: '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.' To the right, a 'Get started' box contains the text 'Easily deploy your web application in minutes.' and a prominent orange 'Create Application' button. Further down, a 'Pricing' box explains that there is no additional charge for Elastic Beanstalk itself, but users pay for the underlying AWS services like Amazon S3 and Amazon EC2. A 'How it works' section on the left describes the automated process from code upload to deployment, scaling, and updates, with a 'Learn more' link.

Compute

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.

[Create Application](#)

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.

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](#)

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

Cerberus

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

Cerberus

Value

CICD

Remove tag

Add tag

49 remaining

Platform

Platform

PHP

Platform branch

PHP 8.0 running on 64bit Amazon Linux 2

Platform version

3.3.15 (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.

Cancel

Configure more options

Create application

3) 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.

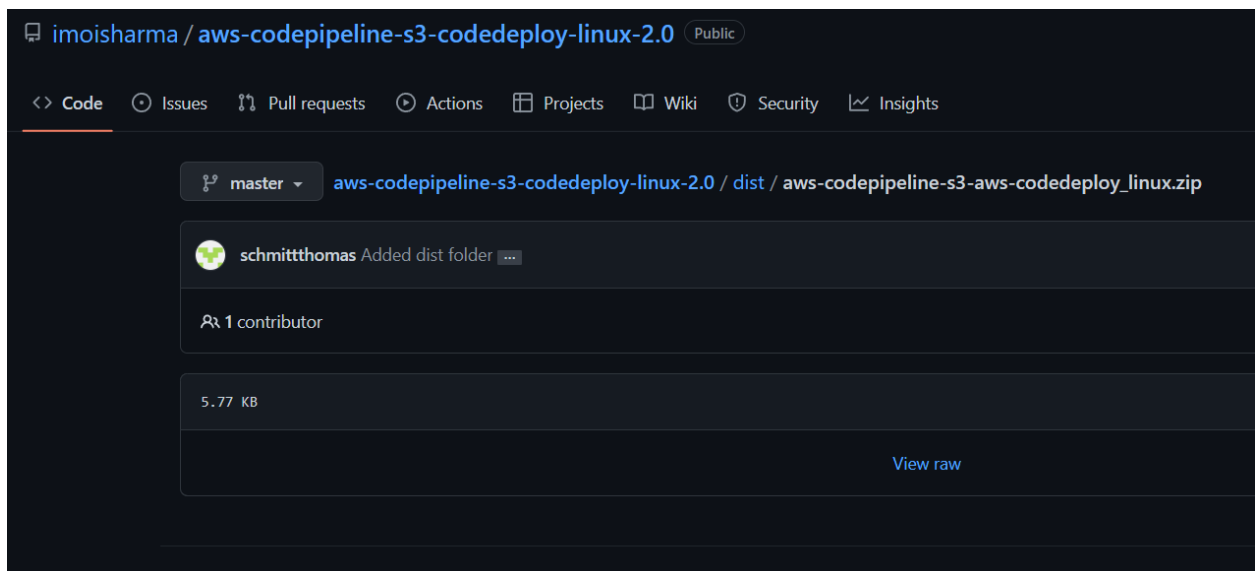
Note: This will take several minutes to complete.

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. Select your preference and follow the steps below:

a. If you plan to use Amazon S3 as your source, you will retrieve the sample code from the

- AWS GitHub repository, save it to your computer, and upload it to an Amazon S3 bucket.
- Visit our GitHub repository containing the sample code at <https://github.com/imoisharma/aws-codepipeline-s3-codedeploy-linux-2.0>
- Click the dist folder.



b. Save the source files to your computer:

- Click the file named aws-codepipeline-s3-aws-codedeploy_linux.zip
- Click View Raw.
- Save the sample file to your local computer.

c. open the Amazon S3 console and create your Amazon S3 bucket:
Click Create Bucket

- Bucket Name: type a unique name for your bucket, such as `awscodepipeline-cerberus-bucket-variables`. All bucket names in Amazon S3 must be unique, so use one of your own, not one with the name shown in the example.
- Region: In the drop-down, select the region where you will create your pipeline, such as `ap-South-1`
- Click Create.

Amazon S3 > Buckets > Create bucket

Create bucket [Info](#)

Buckets are containers for data stored in S3. [Learn more](#) [↗](#)

General configuration

Bucket name

Bucket name must be unique and must not contain spaces or uppercase letters. [See rules for bucket naming](#) [↗](#)

AWS Region

Asia Pacific (Mumbai) ap-south-1 ▼

Copy settings from existing bucket - *optional*
Only the bucket settings in the following configuration are copied.

Choose bucket

d. The console displays the newly created bucket, which is empty.

- Click Properties.
- Expand Versioning and select Enable Versioning. When versioning is enabled, Amazon S3 saves every version of every object in the bucket.

The screenshot shows the Amazon S3 console interface for the bucket 'awscodepipeline-cerberus-bucket-variables'. The breadcrumb navigation at the top reads 'Amazon S3 > Buckets > awscodepipeline-cerberus-bucket-variables'. Below the bucket name, there is a tabbed interface with 'Properties' selected. The 'Bucket overview' section contains a table with the following details:

AWS Region	Amazon Resource Name (ARN)	Creation date
Asia Pacific (Mumbai) ap-south-1	arn:aws:s3:::awscodepipeline-cerberus-bucket-variables	July 31, 2022, 15:23:18 (UTC+05:30)

Below the overview, the 'Bucket Versioning' section is visible. It includes a description of versioning and an 'Edit' button. At the bottom, it shows 'Bucket Versioning' is 'Enabled' and a link for 'Multi-factor authentication (MFA) delete'.

e. You will now upload the sample code to the Amazon S3 bucket:

- Click Upload.
- Follow the on-screen directions to upload the .zip file containing the sample code you downloaded from GitHub.

you can upload directly zip file here from

<https://github.com/imoisharma/aws-codepipeline-s3-codedeploy-linux-2.0>

Amazon S3 > Buckets > awscodepipeline-cerberus-bucket-variables > Upload

Upload [Info](#)

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)

Drag and drop files and folders you want to upload here, or choose **Add files**, or **Add folders**.

Files and folders (1 Total, 5.8 KB)

Remove

Add files

Add folder

All files and folders in this table will be uploaded.

Find by name

< 1 >

<input type="checkbox"/>	Name	Folder	Type	Size
<input type="checkbox"/>	aws-codepipeline-s3-aws-codedeploy_linux.zip	-	application/zip	5.8 KB

Destination

Destination

s3://awscodepipeline-cerberus-bucket-variables

Upload succeeded
View details below.

The information below will no longer be available after you navigate away from this page.

Summary

Destination

s3://awscodepipeline-cerberus-bucket-variables

Succeeded

1 file, 5.8 KB (100.00%)

Failed

0 files, 0 B (0%)

Files and folders

Configuration

Files and folders (1 Total, 5.8 KB)

Find by name

< 1 >

Name	Folder	Type	Size	Status	Error
aws-codepipeline-s3-aws-codedeploy_linux.zip	-	application/zip	5.8 KB	Succeeded	-

Step3: Create your Pipeline

In this step, you will create and configure a simple pipeline with two actions: source and deploy. You will provide CodePipeline with the locations of your source repository and deployment environment.

A true continuous deployment pipeline requires a build stage, where code is compiled and unit tested. CodePipeline lets you plug your preferred build provider into your pipeline. However, in this we will skip the build stage.

Goto Pipeline again and create it

Go to Developer tools -> CodePipeline and Click Create Pipeline

The screenshot shows the AWS CodePipeline console interface. At the top, under the 'Developer Tools' header, is a large section for 'AWS CodePipeline' with the tagline 'visualize and automate the different stages of your software release process'. Below this, a brief description states: 'AWS CodePipeline is a continuous integration and continuous delivery service for fast and reliable application and infrastructure updates. CodePipeline builds, tests, and deploys your code every time there is a code change, based on the release process models you define..'. To the right of this text is a white box titled 'Create AWS CodePipeline pipeline' containing the text 'Get started with AWS CodePipeline by creating your first continuous delivery and continuous integration pipeline.' and an orange 'Create pipeline' button. Below the main heading is a 'How it works' section featuring a video player with the title 'Introduction to AWS CodePipeline - Continuous D...' and a 'Copy link' button. The video player has several yellow star ratings and a play button. To the right of the video player is a 'Pricing (US)' section showing 'Each active pipeline**' at '\$1/month*'. Below the pricing is a note: '*All pipelines are free for the first 30 days.' and a '**Learn more' link. At the bottom right is a 'Getting started' section with a 'What is AWS CodePipeline?' link.

Developer Tools

AWS CodePipeline

visualize and automate the different stages of your software release process

AWS CodePipeline is a continuous integration and continuous delivery service for fast and reliable application and infrastructure updates. CodePipeline builds, tests, and deploys your code every time there is a code change, based on the release process models you define..

Create AWS CodePipeline pipeline

Get started with AWS CodePipeline by creating your first continuous delivery and continuous integration pipeline.

[Create pipeline](#)

How it works

aws Introduction to AWS CodePipeline - Continuous D... Copy link

Each active pipeline** \$1/month*

*All pipelines are free for the first 30 days.
**Learn more [🔗](#)

Getting started

[What is AWS CodePipeline? 🔗](#)

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.

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

Type your service role name

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

► Advanced settings

Cancel

Next

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.

Amazon S3

Bucket

awscodepipeline-cerberus-bucket-variables

S3 object key

aws-codepipeline-s3-aws-codedeploy_linux.zip

Enter the object key. You can include a file path without the delimiter character (/) at the beginning. Include the file extension. Example: SampleApp.zip

Change detection options

Choose a detection mode to automatically start your pipeline when a change occurs in the source code.



Amazon CloudWatch Events (recommended)

Use Amazon CloudWatch Events to automatically start my pipeline when a change occurs



AWS CodePipeline

Use AWS CodePipeline to check periodically for changes

Cancel

Previous

Next

In above you can give zip file name in S3 object Key and choose bucket name which you created

Skip the step 3: add build stage

In Step 4: Deploy Stage:

- Deployment provider: Click AWS Elastic Beanstalk.
- Application name: Cerberus.
- Environment name: Click Cerberus-env.
- Click Next step.

The screenshot shows the 'Add deploy stage' configuration page in the AWS CodePipeline console. The breadcrumb trail at the top reads: 'Developer Tools > CodePipeline > Pipelines > Create new pipeline'. On the left sidebar, the steps are listed: Step 1 (Choose pipeline settings), Step 2 (Add source stage), Step 3 (Add build stage), Step 4 (Add deploy stage - currently selected), and Step 5 (Review). The main content area is titled 'Add deploy stage' with an 'Info' link. A blue information box states: 'You cannot skip this stage. Pipelines must have at least two stages. Your second stage must be either a build or deployment stage. Choose a provider for either the build stage or deployment stage.' Below this, the 'Deploy' configuration section includes: 'Deploy provider' (AWS Elastic Beanstalk), 'Region' (Asia Pacific (Mumbai)), 'Application name' (Cerberus), and 'Environment name' (Cerberus-env). At the bottom right, there are 'Cancel', 'Previous', and 'Next' buttons.

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

Add deploy stage [Info](#)

You cannot skip this stage
Pipelines must have at least two stages. Your second stage must be either a build or deployment stage. Choose a provider for either the build stage or deployment stage.

Deploy

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

AWS Elastic Beanstalk ▼

Region

Asia Pacific (Mumbai) ▼

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.

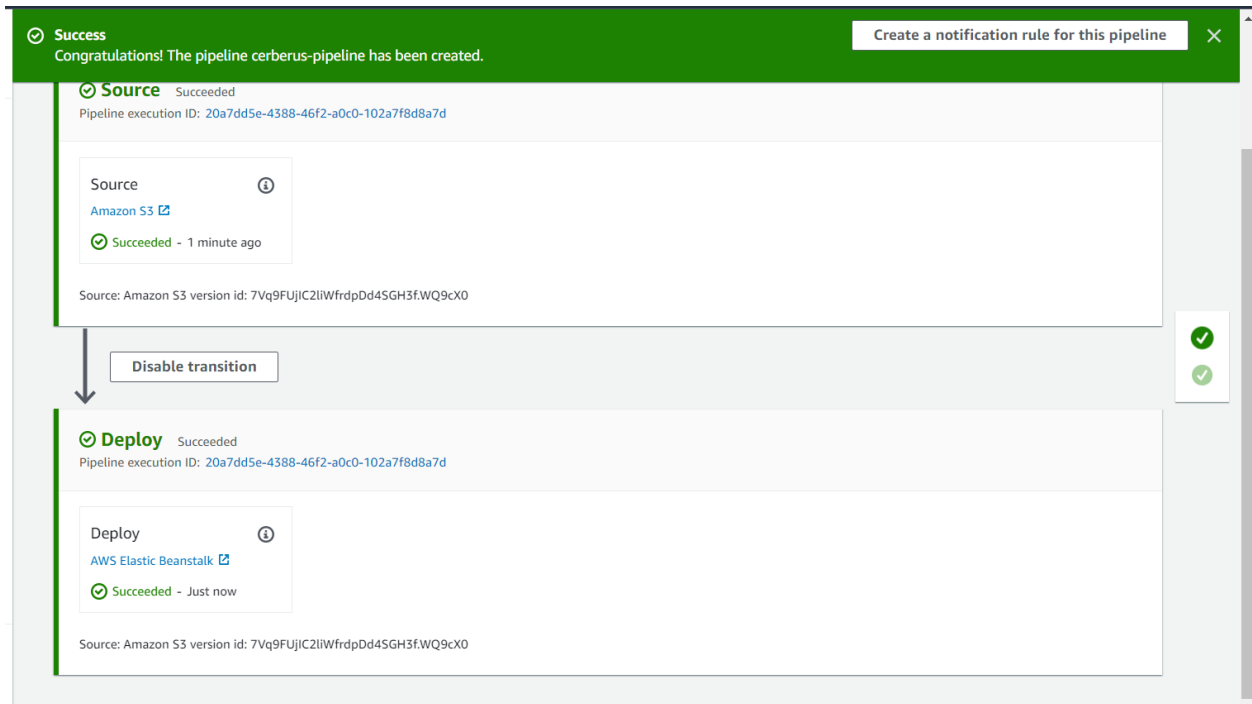
Q Cerberus X

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.

Q Cerberus-env X

Cancel Previous **Next**

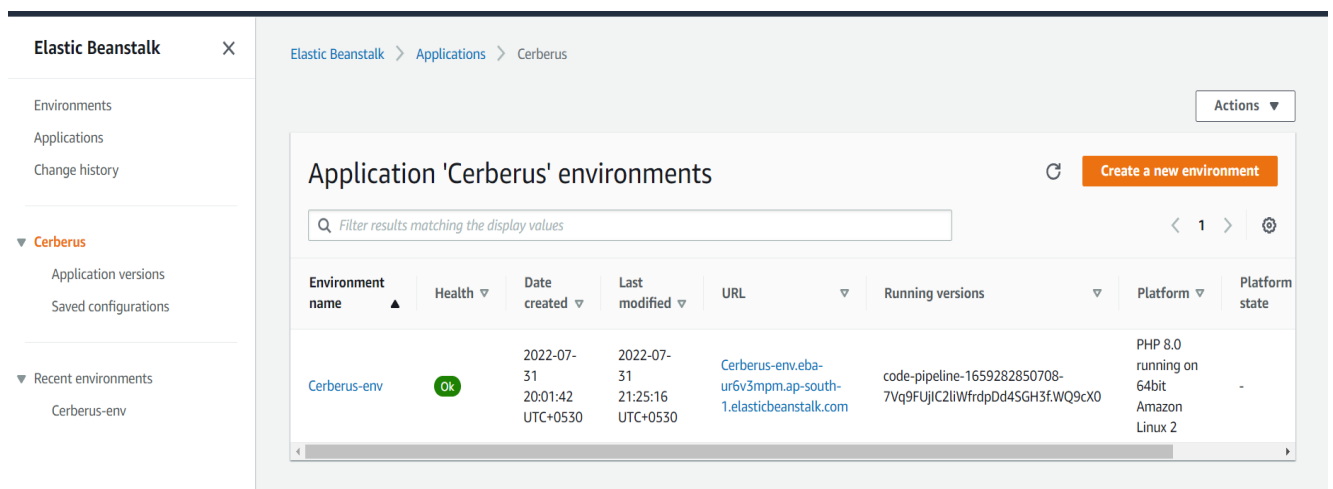
Go to review and click create pipeline



After your pipeline is created, the pipeline status page appears and the pipeline automatically starts to run. You can view progress as well as success and failure messages as the pipeline perform each action.

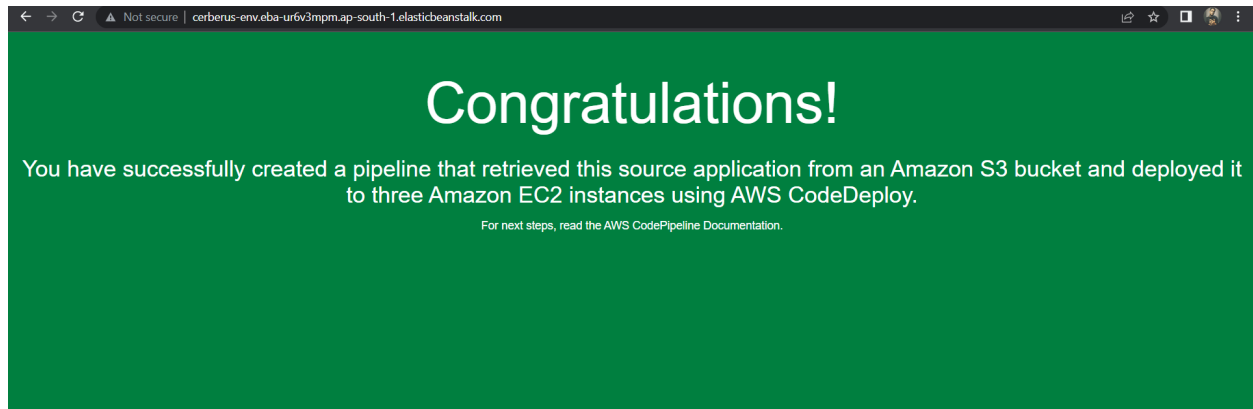
To verify your pipeline ran successfully, monitor the progress of the pipeline as it moves through each stage. The status of each stage will change from No executions yet to In Progress, and then to either Succeeded or Failed. The pipeline should complete the first run within a few minutes.

Now go to your Cerberus environment and click on the URL to view the sample website you deployed.



You have successfully created an automated software release pipeline using AWS CodePipeline!

Using CodePipeline, you created a pipeline that uses GitHub, Amazon S3, or AWS CodeCommit as the source location for application code and then deploys the code to an Amazon EC2 instance managed by AWS Elastic Beanstalk.



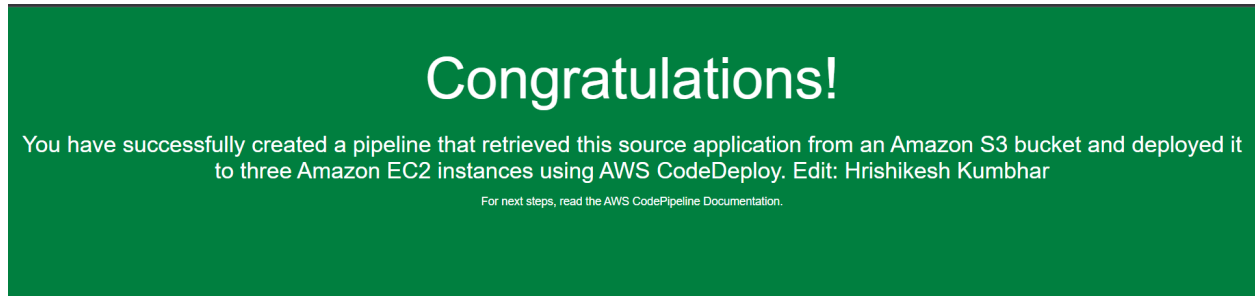
Step 5: Commit a change and then update your app

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

Note that the sample web page you deployed refers to AWS CodeDeploy, a service that automates code deployments. In CodePipeline, CodeDeploy is an alternative to using Elastic Beanstalk for deployment actions. Let's update the sample code so that it correctly states that you deployed the sample using Elastic Beanstalk.

- a. Visit your own copy of the repository that you forked in GitHub. Open index.html Select the Edit icon
 - b. Update the webpage by copying and pasting the following text on line 30:
 - c. Commit the change to your repository.
 - d. Return to your pipeline in the CodePipeline console. In a few minutes, you should see the Source change to blue, indicating that the pipeline has detected the changes you made to your source repository. Once this occurs, it will automatically move the updated code to Elastic Beanstalk.
- After the pipeline status displays Succeeded, in the status area for the Beta stage, click AWS Elastic Beanstalk.

e. The AWS Elastic Beanstalk console opens with the details of the deployment. Select the environment you created earlier. And click the URL again from the Cerberus environment again.



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.

You have successfully created an automated software release pipeline using AWS CodePipeline!

Using CodePipeline, you created a pipeline that uses GitHub, Amazon S3, or AWS CodeCommit as the source location for application code and then deploys the code to an Amazon EC2 instance managed by AWS Elastic Beanstalk. Your pipeline will automatically deploy your code every time there is a code change.

Conclusion:-

Developed a pipeline that pulls application code from GitHub, Amazon S3, or AWS CodeCommit and deploys it to an Amazon EC2 instance run by AWS Elastic Beanstalk. Every time there is a code change, your pipeline will deploy your code automatically.