

EXPERIMENT NO - 2

AIM: To Build your application using AWS CodeBuild and Deploy on S3 / SEBS using AWS Code pipeline, deploy Sample Application on EC2 Instance using AWS CodeDeploy.

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 Code Pipeline, 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 sample app's code.

You will also use AWS Elastic Beanstalk as the deployment target for sample app.

Your completed pipeline will be able to detect changes made to source repository containing the sample app and then automatically update your live sample app.

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.

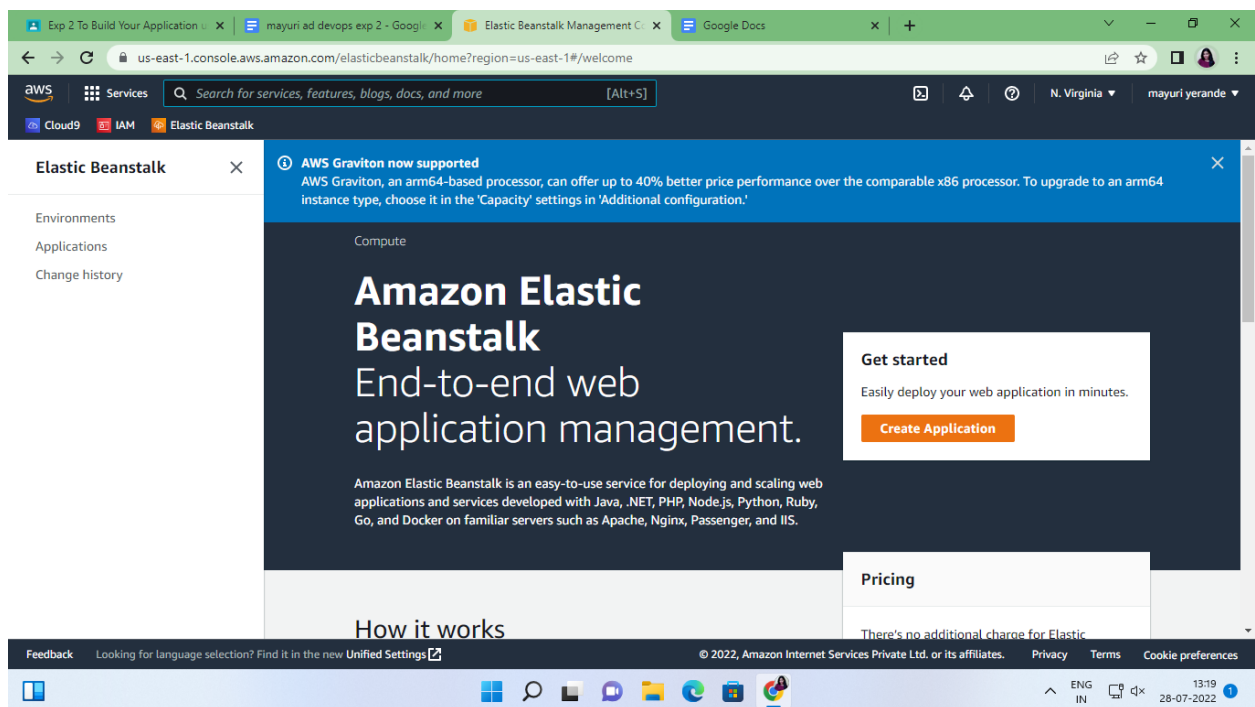
To simplify the process of setting up and configuring EC2 instances for this tutorial, you will spin up a sample environment using AWS Elastic Beanstalk. Elastic Beanstalk lets you easily host web applications without needing to launch, configure or operate virtual servers on your own. It automatically provisions and operates the infrastructure and provides the application stacks for you.

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

IMPLEMENTATION:

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.



a) 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 shows the AWS Elastic Beanstalk console in the 'us-east-1' region. The left sidebar has 'Elastic Beanstalk' selected. The main content area is titled '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](#)'. The 'Application information' section contains an 'Application name' field with 'MyEBS' entered. Below it, the 'Application tags' section shows a table with one tag: 'EBC' as the key and 'CID' as the value. There are 'Add tag' and 'Remove tag' buttons. The bottom of the console shows the AWS logo, a search bar, and the user's name 'mayuri.yerande'.

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/gettingStarted

aws Services Search for services, features, blogs, docs, and more [Alt+S] N. Virginia mayuri.yerande

Elastic Beanstalk ×

Environments
Applications
Change history

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

MyEBS

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	Value	
EBC	CID	Remove tag

Add tag

49 remaining

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The screenshot shows the AWS Elastic Beanstalk console in the 'us-east-1' region. The left sidebar has 'Elastic Beanstalk' selected. The main content area is titled 'Platform'. It contains three dropdown menus: 'Platform' set to 'PHP', 'Platform branch' set to 'PHP 8.0 running on 64bit Amazon Linux 2', and 'Platform version' set to '3.3.15 (Recommended)'. Below these is the 'Application code' section with two radio buttons: 'Sample application' (selected) and 'Upload your code'. The bottom of the console shows the AWS logo, a search bar, and the user's name 'mayuri.yerande'. At the bottom right, there are buttons for 'Cancel', 'Configure more options', and 'Create application'.

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/gettingStarted

aws Services Search for services, features, blogs, docs, and more [Alt+S] N. Virginia mayuri.yerande

Elastic Beanstalk ×

Environments
Applications
Change history

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**

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b) 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.

a. 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-demobucket- 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.

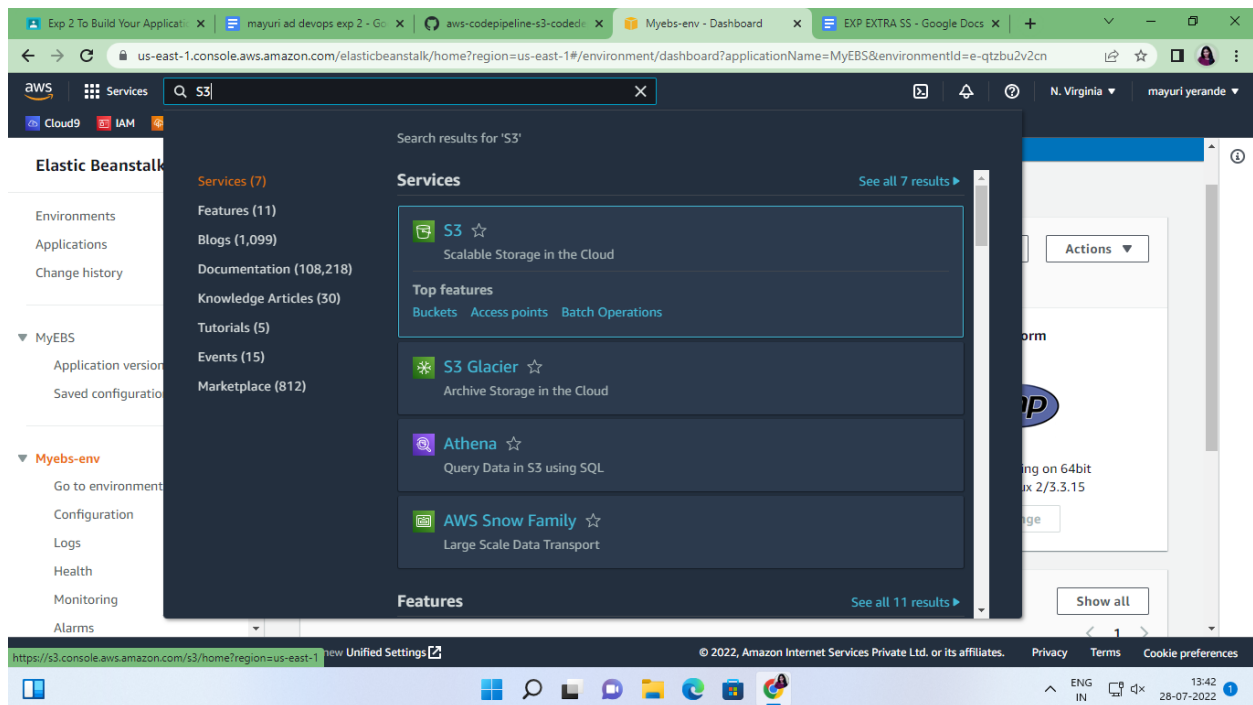
D .The console displays the newly created bucket, which is empty.

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

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.

Step 3: Creation of Bucket



Click on Create Bucket button

The screenshot shows the Amazon S3 console interface. The left sidebar contains the 'Amazon S3' menu with options like Buckets, Access Points, and Storage Lens. The main content area displays the 'Buckets (1)' list. At the top right of the bucket list, there is a 'Create bucket' button. The bucket list contains one entry: 'elasticbeanstalk-us-east-1-378963872694' in the 'US East (N. Virginia) us-east-1' region, with public access and a creation date of July 28, 2022.

Name	AWS Region	Access	Creation date
elasticbeanstalk-us-east-1-378963872694	US East (N. Virginia) us-east-1	Objects can be public	July 28, 2022, 13:21:43 (UTC+05:30)

The screenshot shows the 'Create bucket' wizard in the Amazon S3 console. The 'General configuration' section is active, showing the 'Bucket name' field with the value 'mayuri-bucket', the 'AWS Region' dropdown set to 'US East (N. Virginia) us-east-1', and a 'Choose bucket' button. The wizard includes instructions on bucket naming rules and an option to copy settings from an existing bucket.

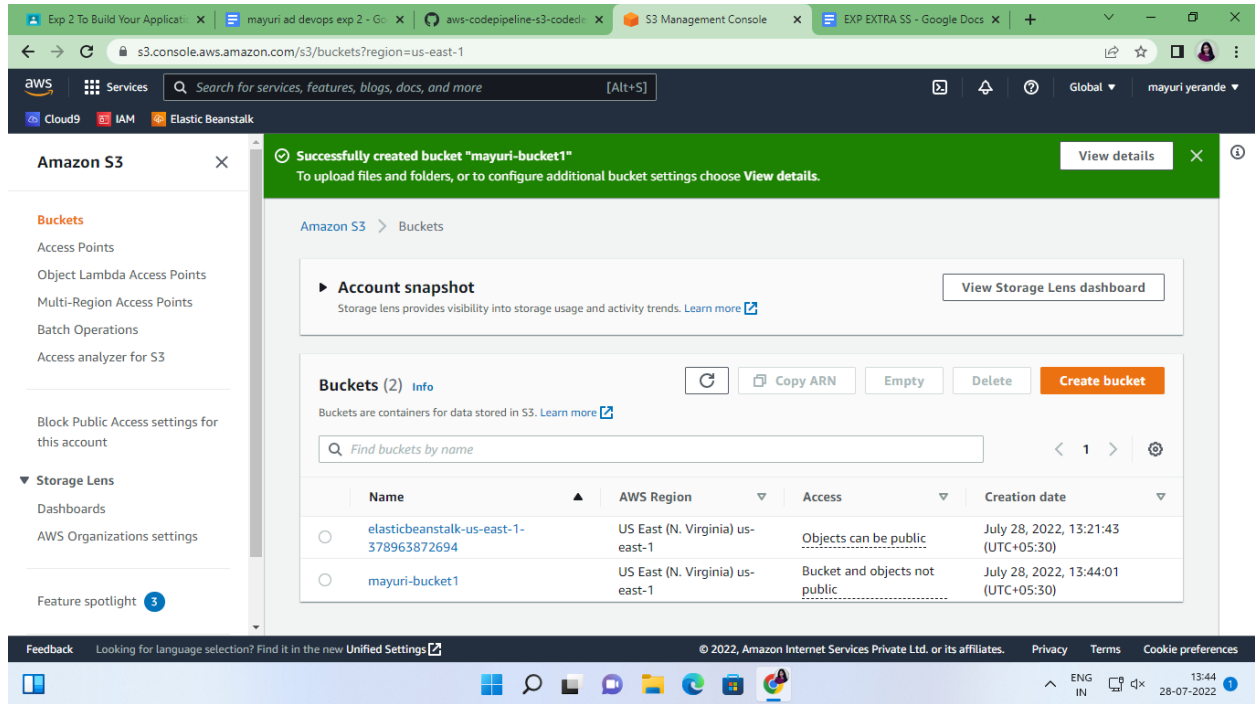
General configuration

Bucket name:

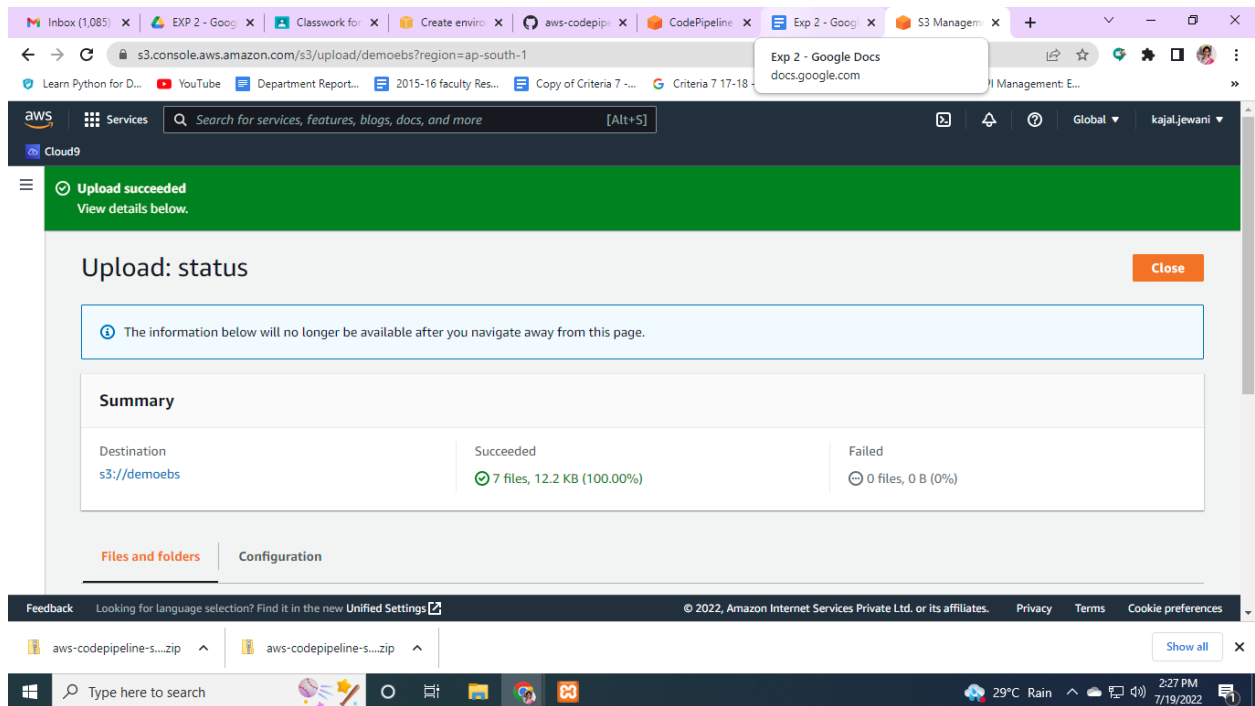
Bucket name must be unique and must not contain spaces or uppercase letters. See rules for bucket naming

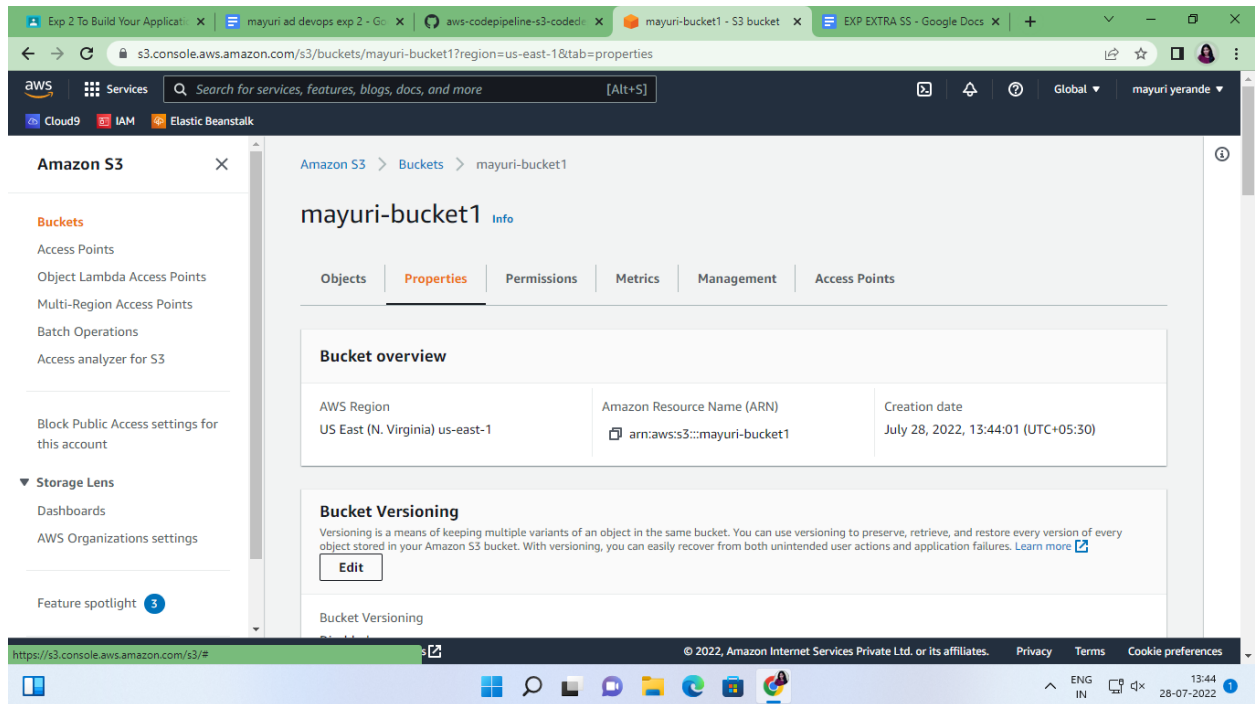
AWS Region:

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

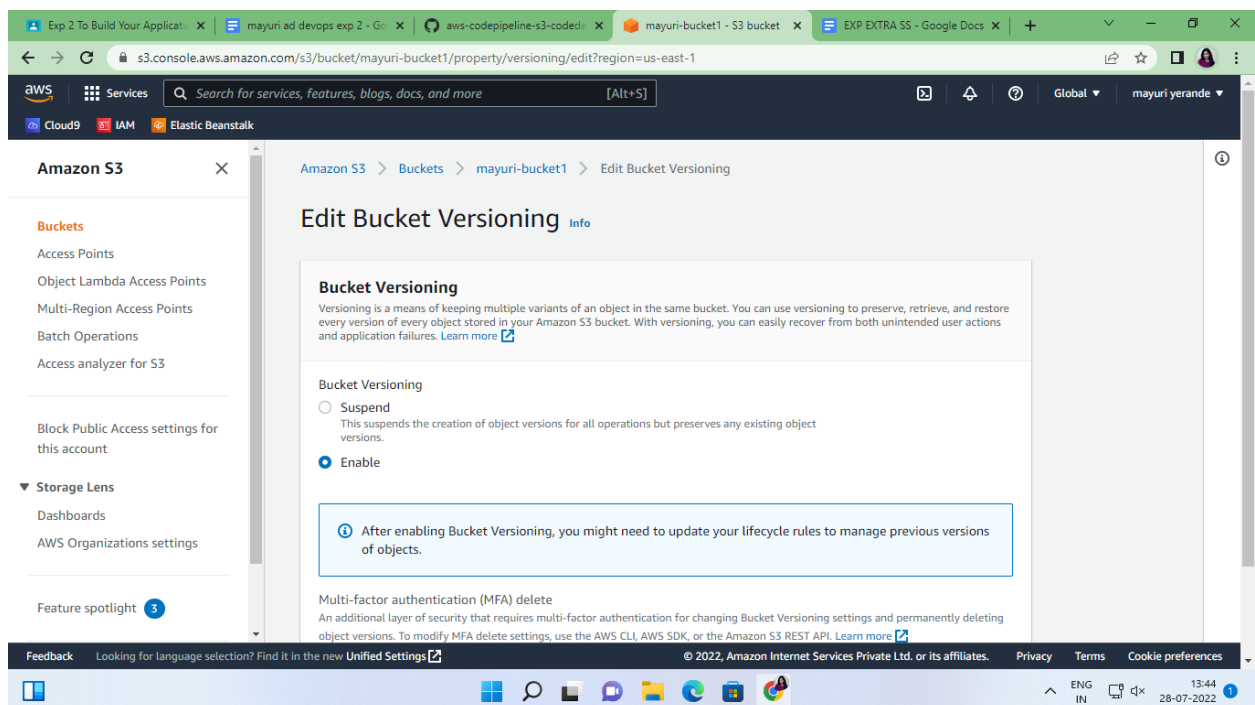


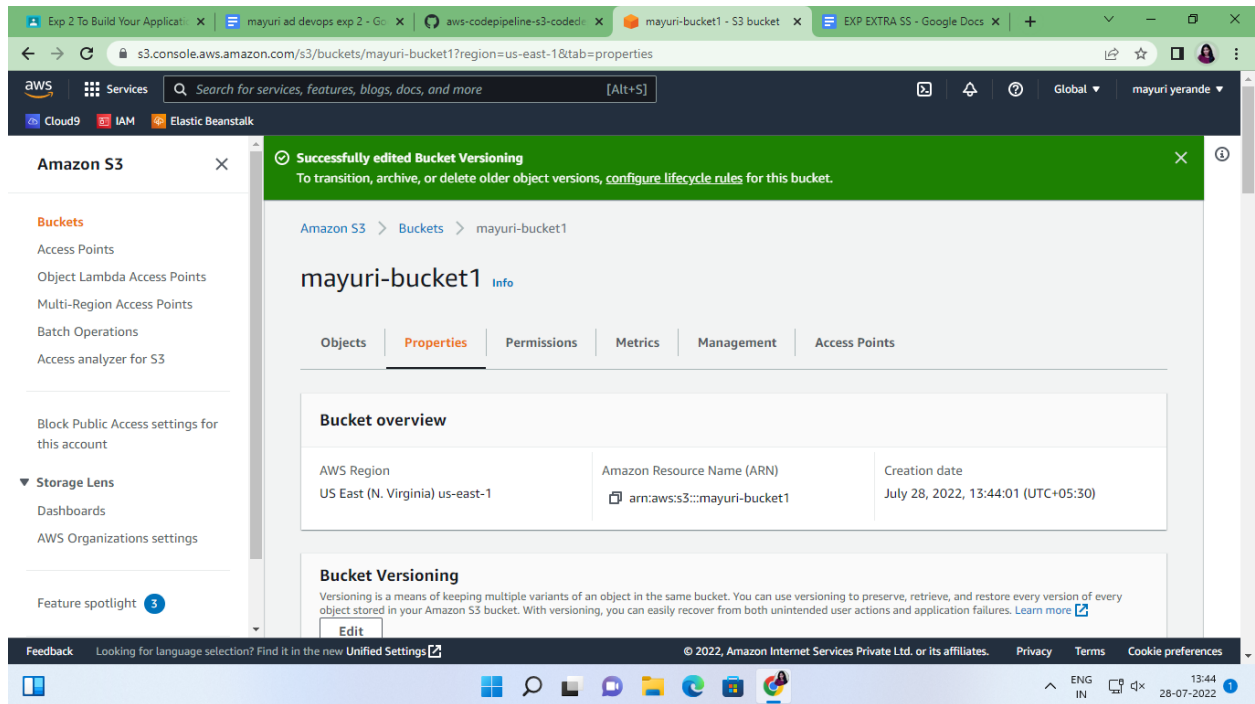
The bucket is created



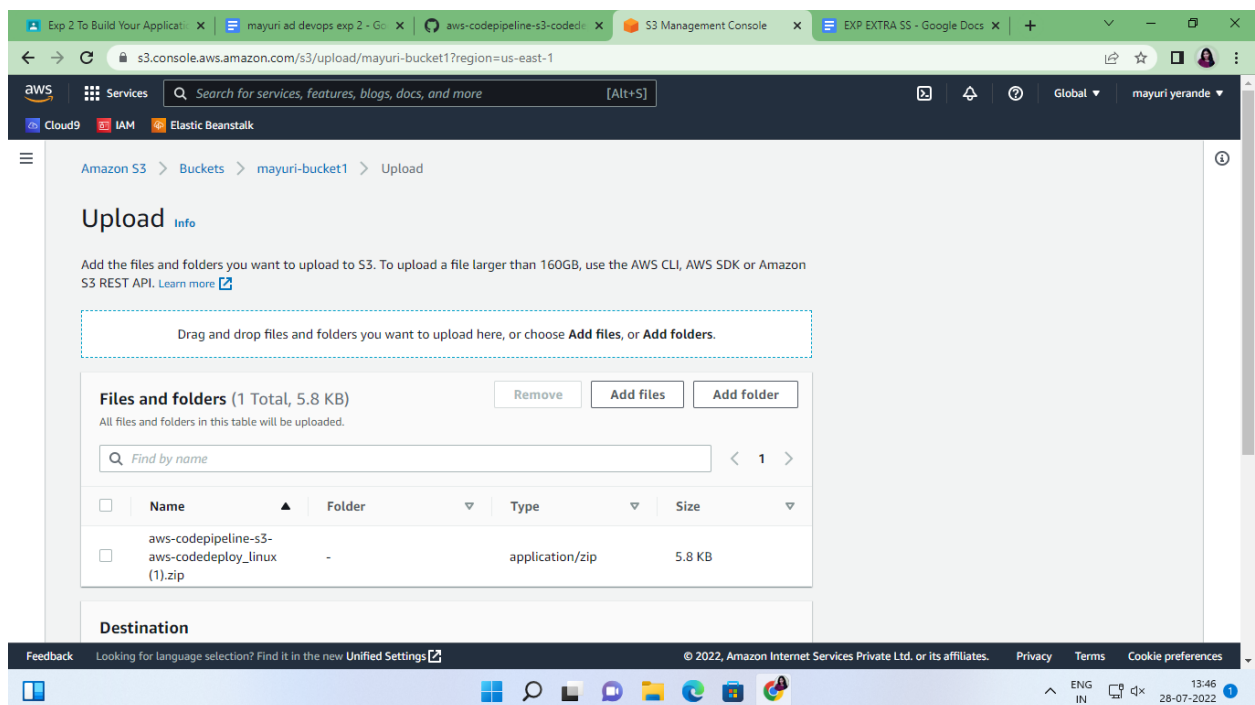


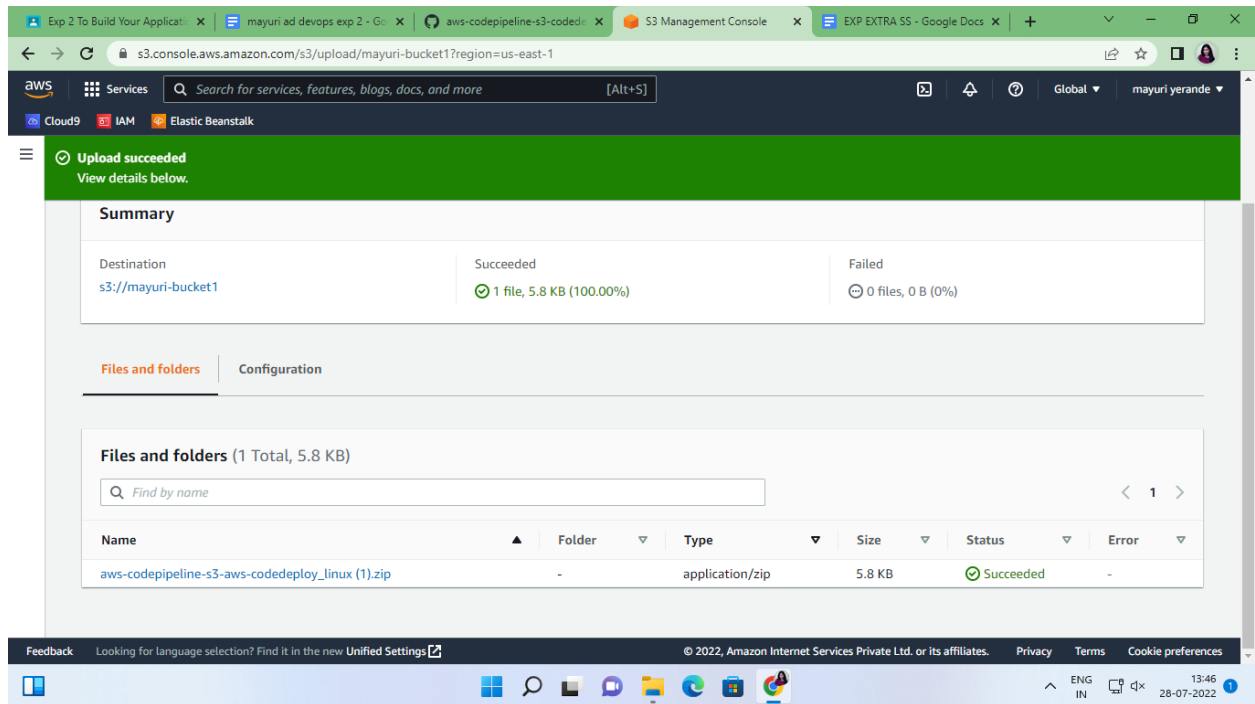
“Enable” Bucket versioning





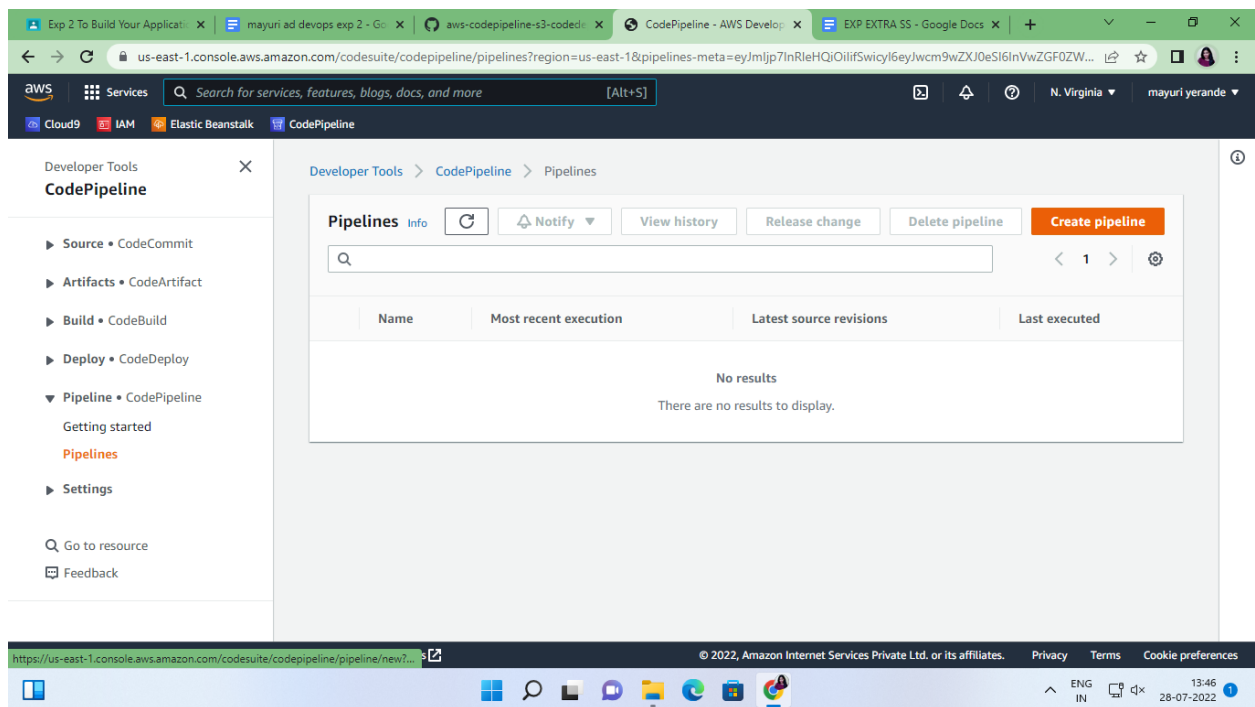
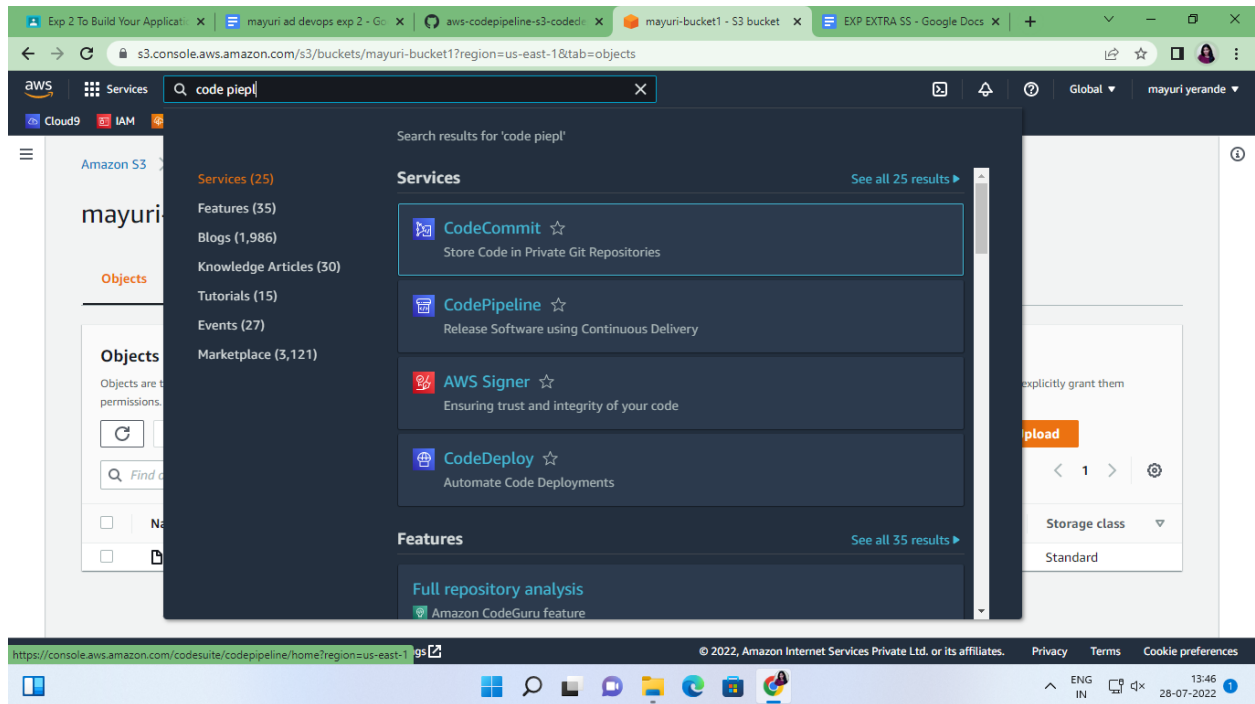
Step 4: Upload files into bucket

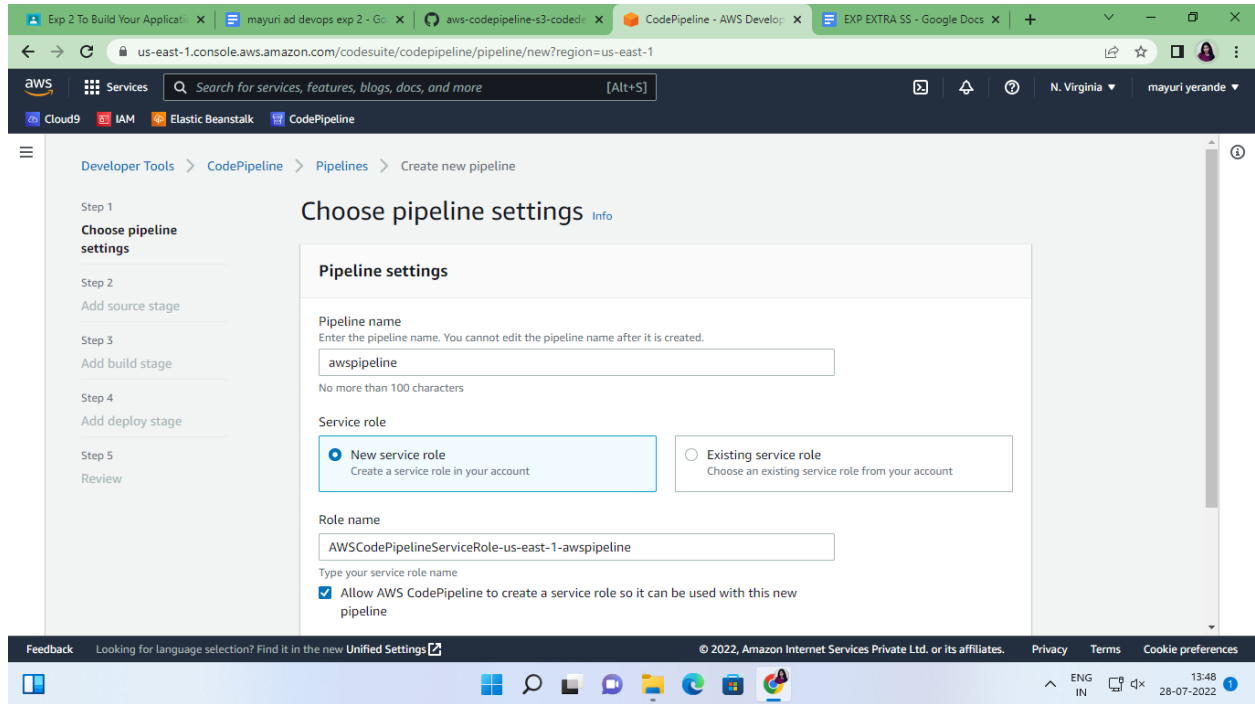




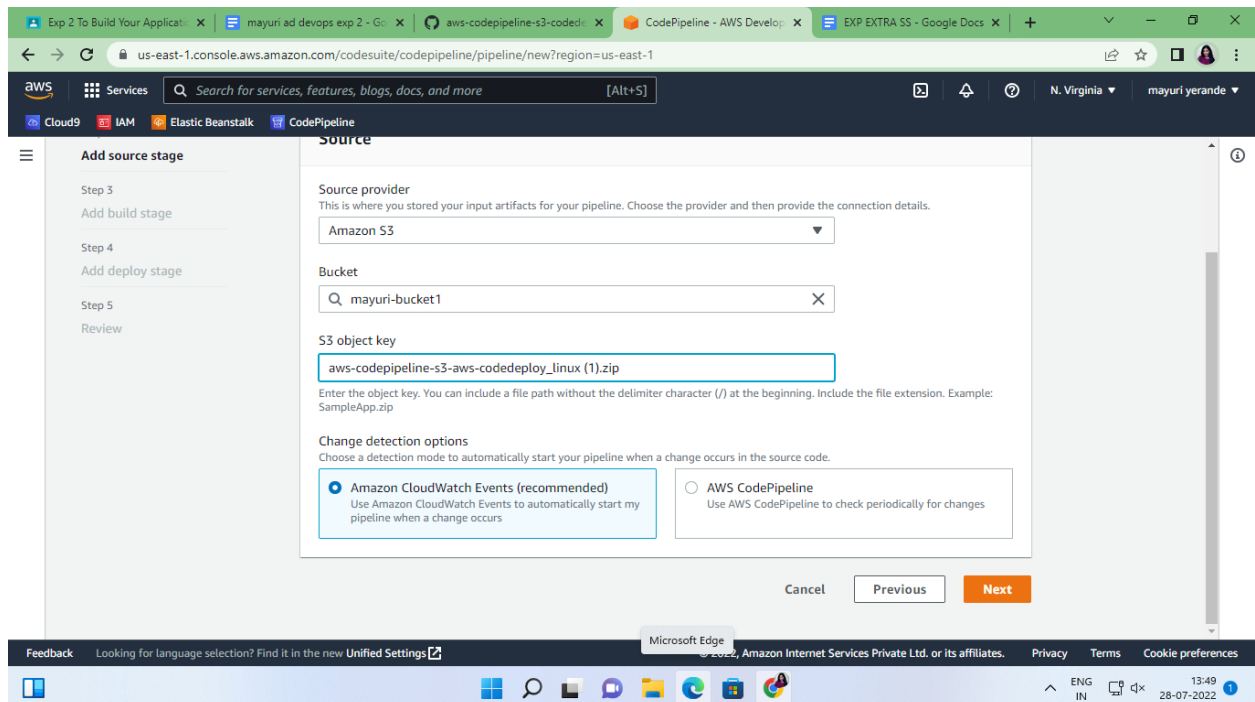
Step 5: Create your Pipeline

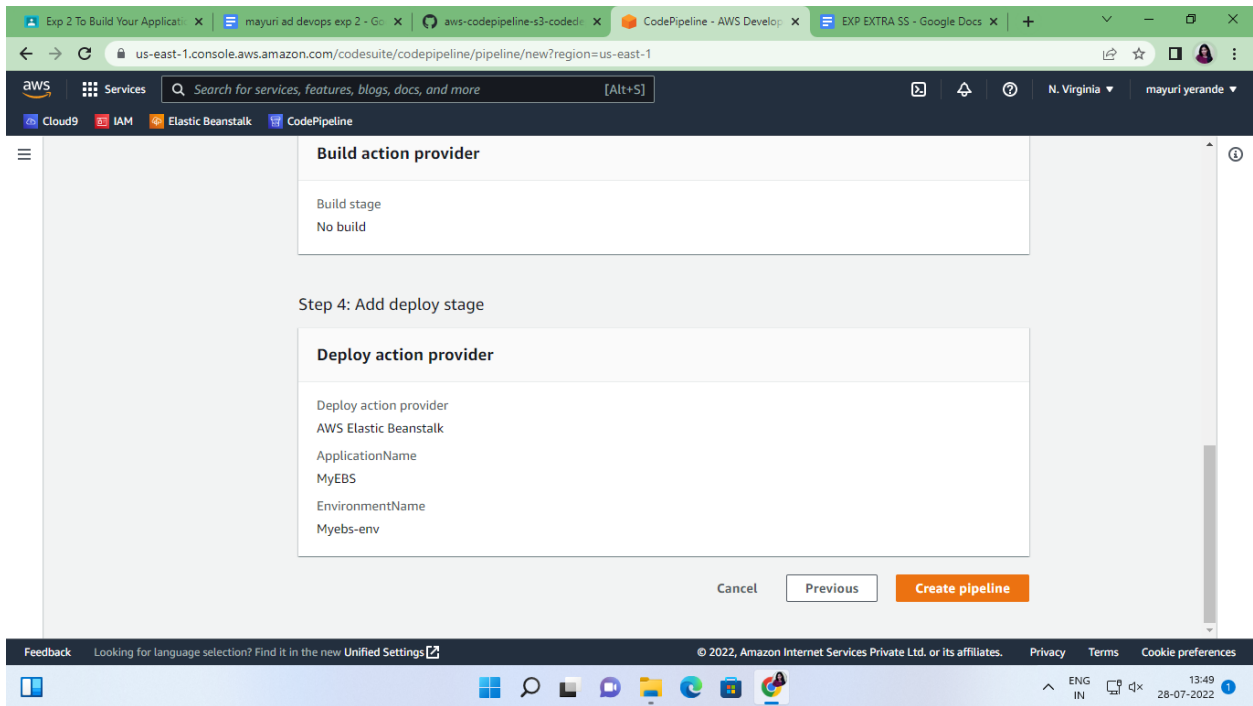
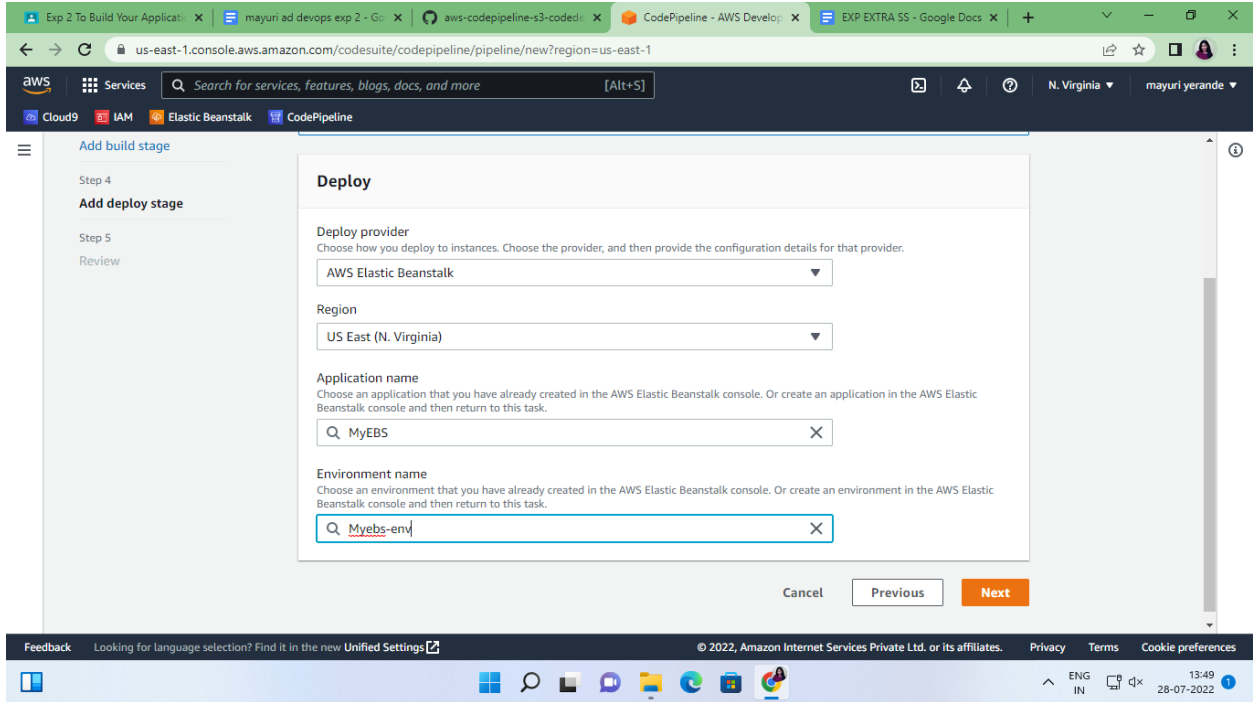
In this step, you will create and configure a simple pipeline with two actions: source and deploy. You will provide CodePipeline with the locations of your source repository and deployment environment. A true continuous deployment pipeline requires a build stage, where code is compiled and unit tested. 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





Copy the name of your folder and enter it in “s3 object key” section





Pipeline is created.

Developer Tools
CodePipeline

- Source • CodeCommit
- Artifacts • CodeArtifact
- Build • CodeBuild
- Deploy • CodeDeploy
- Pipeline • CodePipeline
 - Getting started
 - Pipelines
 - Pipeline**
 - History
 - Settings
- Settings

Go to resource

Success
Congratulations! The pipeline awspipeline has been created.

Create a notification rule for this pipeline

Developer Tools > CodePipeline > Pipelines > awspipeline

awspipeline

Notify Edit Stop execution Clone pipeline Release change

Source Succeeded
Pipeline execution ID: 4c71fa94-1f9b-42bf-84f4-d59346974f5c

Source
Amazon S3

Succeeded - Just now

Source: Amazon S3 version id: qcfmBRFRz2xlA1oeCIMG_sDQ0PvAqbnO

Disable transition

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Developer Tools
CodePipeline

- Source • CodeCommit
- Artifacts • CodeArtifact
- Build • CodeBuild
- Deploy • CodeDeploy
- Pipeline • CodePipeline
 - Getting started
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 - Pipeline**
 - History
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- Settings

Go to resource

Success
Congratulations! The pipeline awspipeline has been created.

Create a notification rule for this pipeline

Developer Tools > CodePipeline > Pipelines > awspipeline

awspipeline

Notify Edit Stop execution Clone pipeline Release change

Source Succeeded
Pipeline execution ID: 4c71fa94-1f9b-42bf-84f4-d59346974f5c

Source
Amazon S3

Succeeded - Just now

Source: Amazon S3 version id: qcfmBRFRz2xlA1oeCIMG_sDQ0PvAqbnO

Disable transition

Deploy Succeeded
Pipeline execution ID: 4c71fa94-1f9b-42bf-84f4-d59346974f5c

Deploy
AWS Elastic Beanstalk

Succeeded - Just now

Source: Amazon S3 version id: qcfmBRFRz2xlA1oeCIMG_sDQ0PvAqbnO

Disable transition

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Skip the build stage

In the Deploy Stage:

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

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 performs 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.

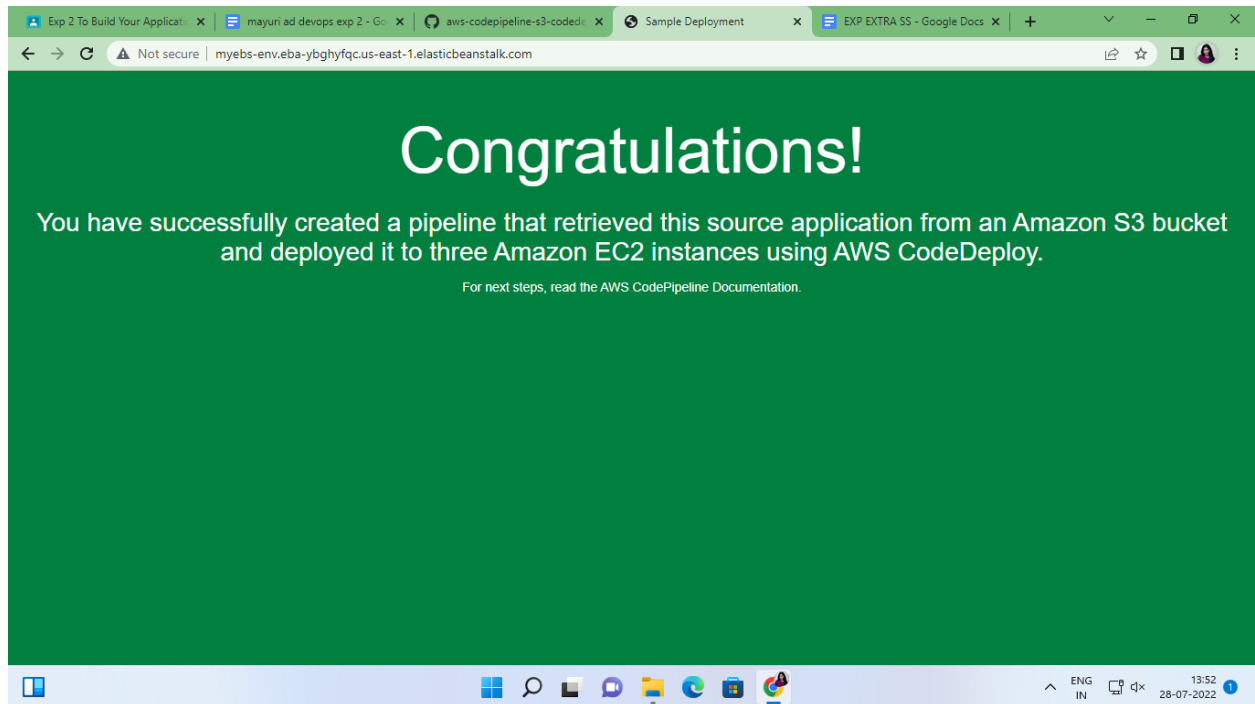
Now go to your EBS environment and click on the URL to view the sample website you deployed.

The screenshot displays the AWS Elastic Beanstalk console. On the left, the 'Elastic Beanstalk' sidebar is visible with options for 'Environments', 'Applications', and 'Change history'. The main content area shows 'All environments' with a search bar and a table of environments. A notification banner at the top states 'AWS Graviton now supported'. The table lists one environment, 'Myebs-env', which is in 'Ok' health. The environment's application is 'MyEBS', and its URL is 'Myebs-env.eba-ybghyfqc.us-east-1.elasticbeanstalk.com'. The console footer includes a feedback link, language selection, and copyright information for Amazon Internet Services Private Ltd.

Environment name	Health	Application name	Date created	Last modified	URL	Running version
Myebs-env	Ok	MyEBS	2022-07-28 13:21:49 UTC+0530	2022-07-28 13:51:36 UTC+0530	Myebs-env.eba-ybghyfqc.us-east-1.elasticbeanstalk.com	code-pipeline-16-qcfnBRFRz2xIA1c

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 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: An Application using AWS CodeBuild and Deploy on S3 using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy is successfully implemented.