

## Aim

To automate the process of building, testing, and deploying applications using a CI/CD pipeline on AWS, leveraging Visual Studio Code (VS Code) as the primary development environment to ensure efficient and reliable delivery of software changes.

## Objectives

1. **Integrate VS Code with AWS Services:** Use Visual Studio Code to manage source code and directly integrate with AWS services like CodeCommit
2. **Automate Build and Deployment Processes:** Set up a CI/CD pipeline that automatically builds and deploys code changes from within the VS Code environment to AWS.
3. **Continuous Integration and Deployment:** Implement a pipeline to continuously test and deploy changes, ensuring the application is always in a deployable state.
4. **Scalability and Flexibility:** Utilize AWS services that can scale with the application's needs and integrate with various development tools.

## Prerequisites

1. **AWS Account:** A valid AWS account with appropriate permissions to create and manage AWS services.
2. **Visual Studio Code:** Installed VS Code with the AWS Toolkit extension for VS Code.
3. **AWS CLI:** Installed and configured AWS Command Line Interface (CLI) for managing AWS services from the terminal.
4. **AWS IAM Role:** An IAM user with programmatic access configured in AWS CLI, providing the necessary permissions for AWS services used in the pipeline.
5. **Git Installed:** Git must be installed and configured to manage version control in the VS Code environment.
6. **Code Repository:** A source code repository set up in AWS CodeCommit
7. **Build Specification File:** A `buildspec.yml` file or equivalent, which defines the build and test commands for AWS CodeBuild.

8. **Deployment Configuration:** Prepared deployment configurations for AWS CodeDeploy

Create and Configure IAM User:

- Set up an IAM user with appropriate permissions for AWS CodeCommit.

IAM > Users > GITUSER

GITUSER

Info

Delete

Summary

ARN

arn:aws:iam::767397739485:user/GITUSER

Created

August 28, 2024, 16:36 (UTC+05:30)

Console access

Enabled without MFA

Last console sign-in

Never

Access key 1

Create access key

Permissions

Groups

Tags

Security credentials

Access Advisor

Permissions policies (1)

Permissions are defined by policies attached to the user directly or through groups.

Filter by Type

All types

Policy name

Type

Attached via

Attach policy: AWSCodeCommitFullAccess

Permissions policies (1)

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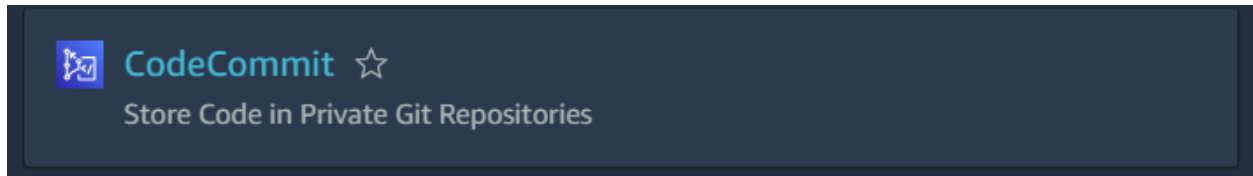
AWSCodeCommitFullAccess

AWS managed

Directly

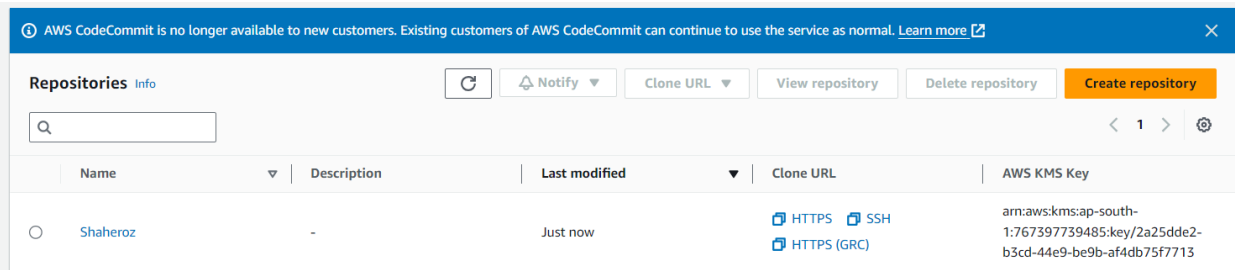
## SHAHEROZ ALAM KHAN

Setup AWS CodeCommit Repository:



### Create CodeCommit Repository:

- In the AWS Management Console, navigate to **CodeCommit**.
- Click **Create repository**.
- Enter a repository name and optional description.
- Click **Create**.



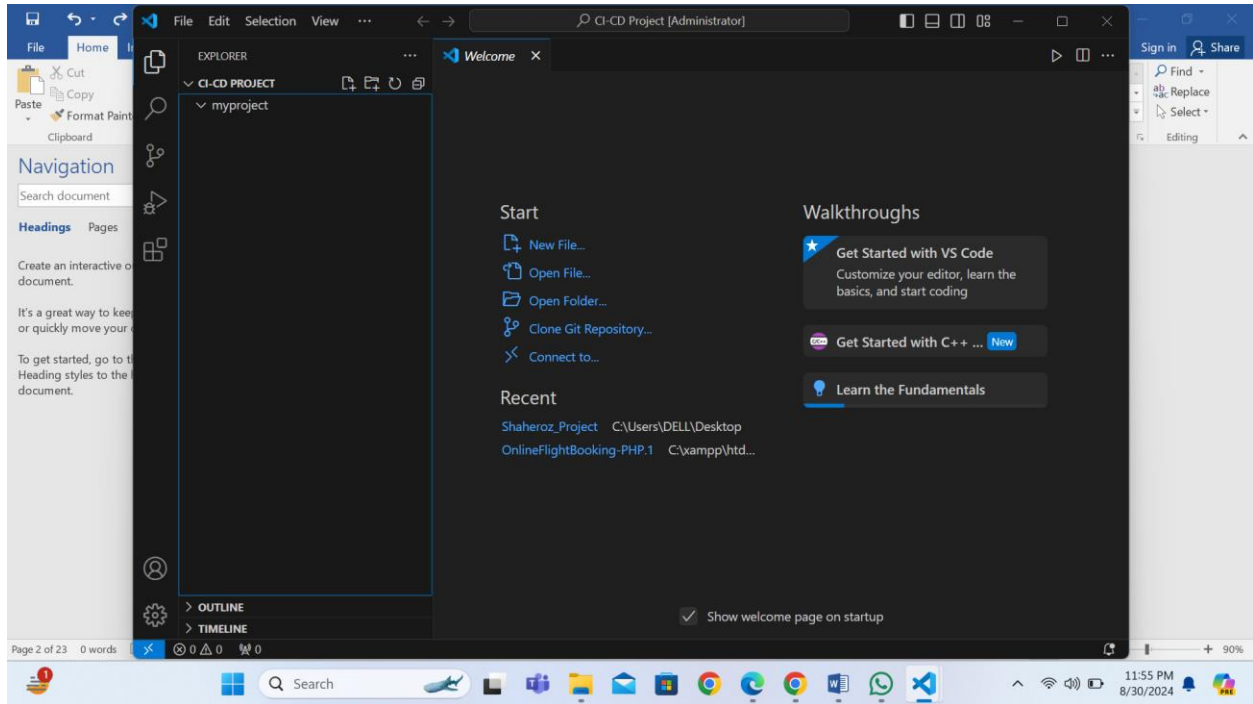
Make a folder in your Local Machine

CI-CD Project

8/30/2024 11:53 PM

File folder

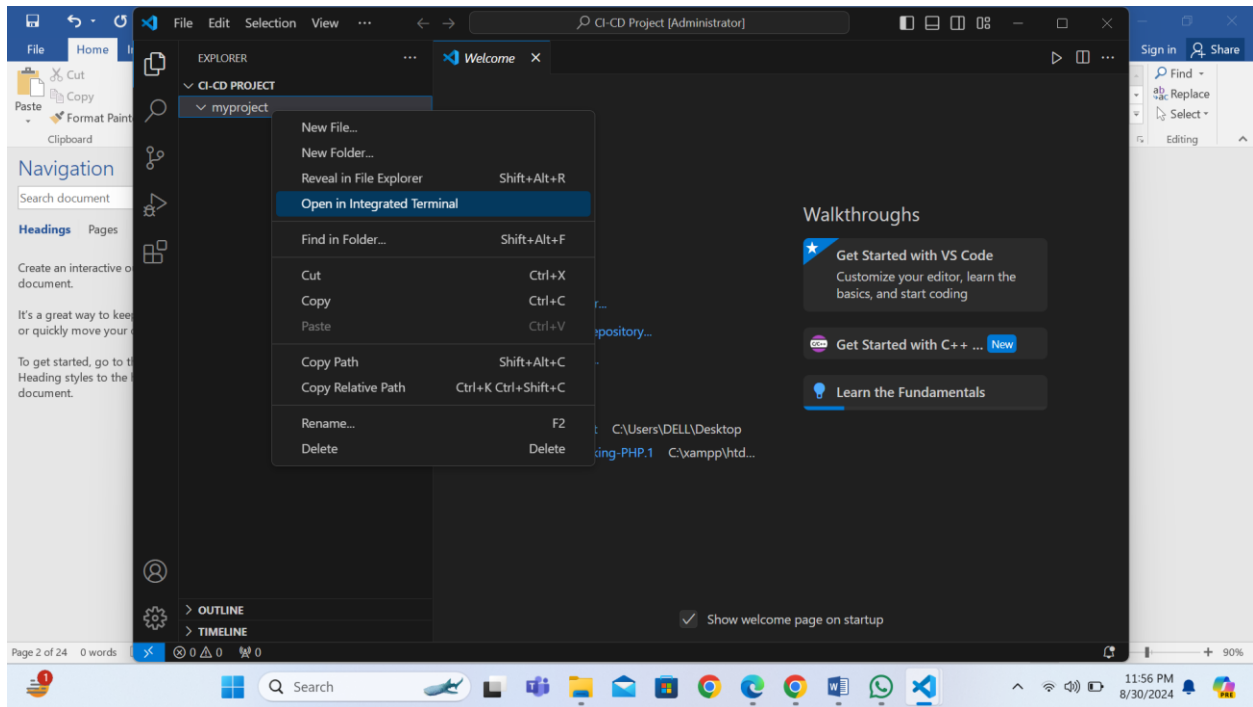
Open the folder in VS Code



Create another folder inside that folder i.e your project folder

Open the folder in interagtred Terminal

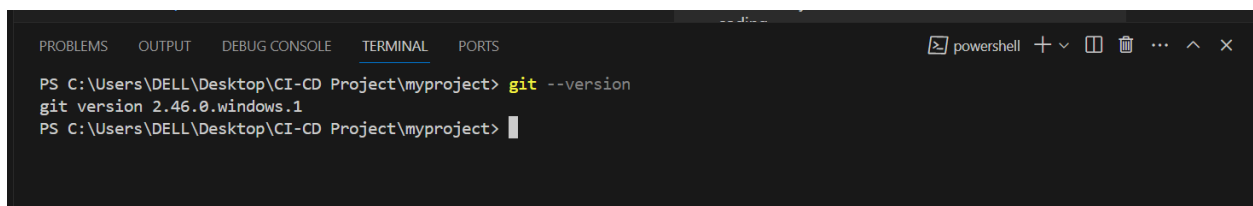
## SHAHEROZ ALAM KHAN



Check git version

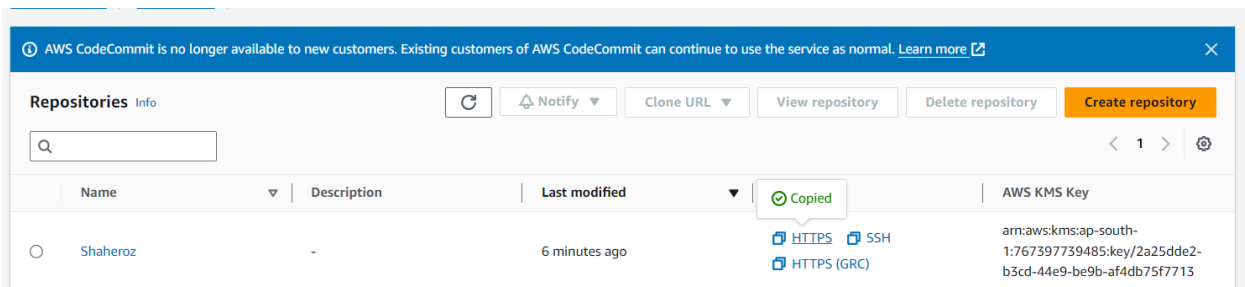
Git --version

If not downloaded make sure to download from official website



### Clone Repository to Local Machine:

- In the CodeCommit console, open the repository you created.
- Click **Clone URL** and copy the HTTPS URL.



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Open Visual Studio Code terminal and run:

git clone <CodeCommit-Repository-URL>


```
PS C:\Users\DELL\Desktop\CI-CD Project\myproject> git clone https://git-codecommit.ap-south-1.amazonaws.com/v1/repos/Shaheroz
Cloning into 'Shaheroz'...
warning: You appear to have cloned an empty repository.
PS C:\Users\DELL\Desktop\CI-CD Project\myproject> cd shaheroz
PS C:\Users\DELL\Desktop\CI-CD Project\myproject\shaheroz> |
```

Enter your IAM user credentials when prompted.

HTTPS Git credentials for AWS CodeCommit (2)			
		Actions ▼	Generate credentials
Generate a user name and password you can use to authenticate HTTPS connections to AWS CodeCommit repositories. You can have a maximum of 2 sets of credentials (active or inactive) at a time. <a href="#">Learn more</a>			
	User name	Created	Status
<input type="radio"/>	GITUSER-at-767397739485	2 days ago	✔ Active
<input type="radio"/>	GITUSER+1-at-767397739485	Now	✔ Active


## Generate credentials


×


 Your new credentials are available.

**Save your user name and password or download the credentials file.**

This is the only time you can view the password or download it. You cannot recover it later. However, you can reset your password at any time.

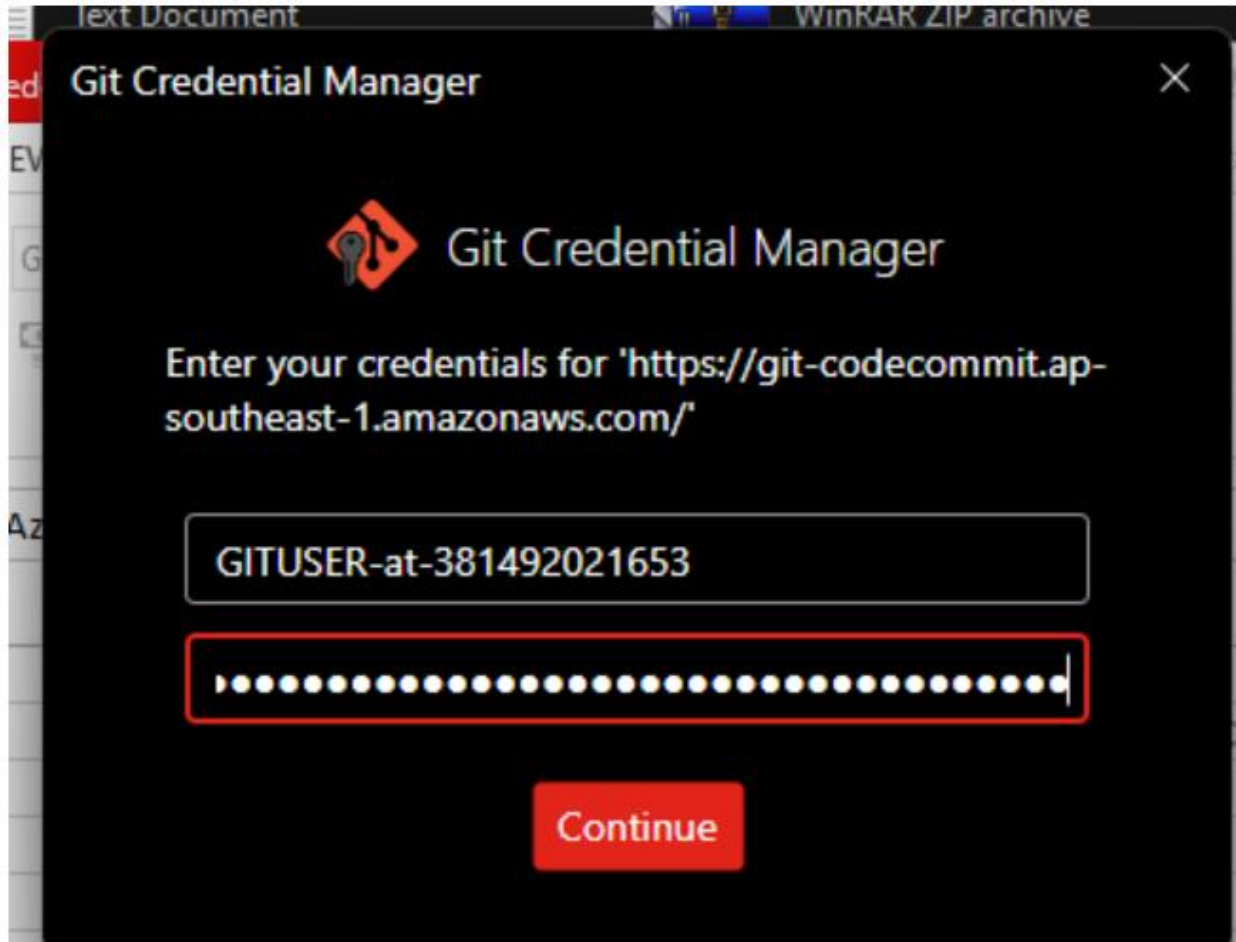
You can use these credentials when connecting from your local computer, or from tools that require a static user name and password. [Learn more](#) 

User name  
 GITUSER+1-at-767397739485

Password  
 \*\*\*\*\* [Show](#)

Download credentials

Close





## SHAHEROZ ALAM KHAN

Create a file in the project folder name

buildspec.yml

version: 0.2

phases:

install:

commands:

- echo Installing NGINX
- sudo apt-get update
- sudo apt-get install nginx -y

build:

commands:

- echo Build started on 'date'
- sudo cp index.html /var/www/html/

post\_build:

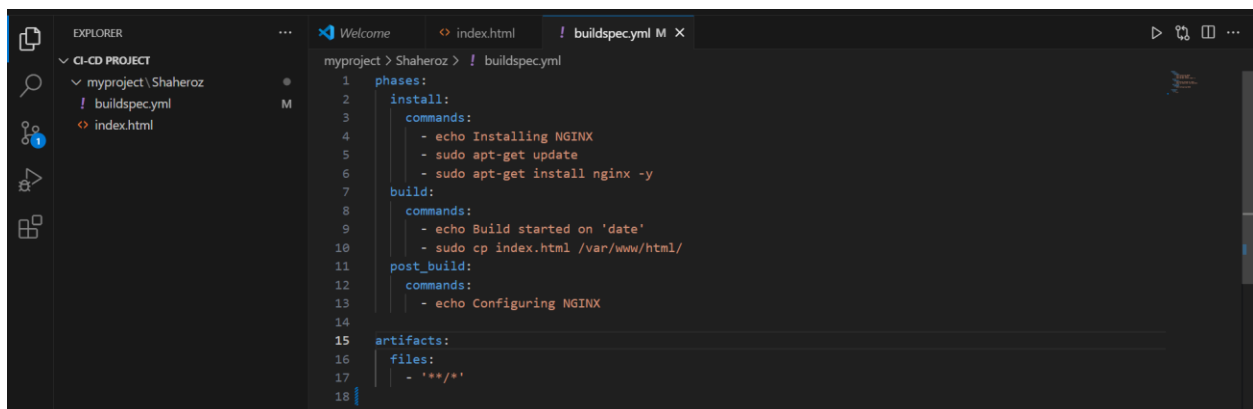
commands:

- echo Configuring NGINX

artifacts:

files:

- '\*\*/\*/\*'



The screenshot shows a code editor with a dark theme. On the left, the Explorer panel shows a project structure with a folder 'myproject' containing files 'buildspec.yml' and 'index.html'. The main editor area displays the content of 'buildspec.yml' with line numbers 1 through 18. The file content is as follows:

```
1 phases:
2   install:
3     commands:
4       - echo Installing NGINX
5       - sudo apt-get update
6       - sudo apt-get install nginx -y
7   build:
8     commands:
9       - echo Build started on 'date'
10      - sudo cp index.html /var/www/html/
11   post_build:
12     commands:
13       - echo Configuring NGINX
14
15 artifacts:
16   files:
17     - '**/*/*'
18 }
```

## SHAHEROZ ALAM KHAN

NOW push the file in AWS codecommit



git add .

git commit -m "1st commit"

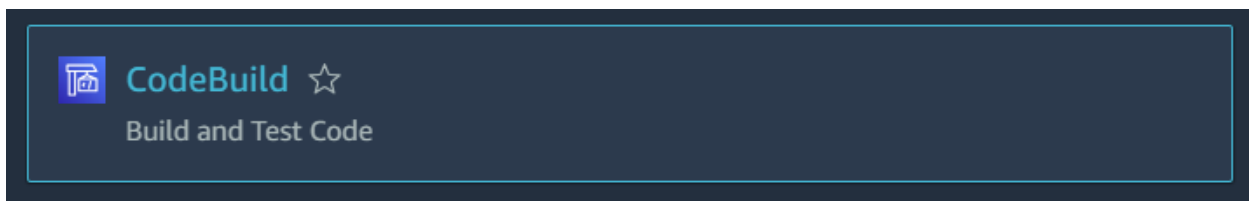
git push origin master

```
PS C:\Users\DELL\Desktop\CI-CD Project\myproject\shaheroz> git add .
PS C:\Users\DELL\Desktop\CI-CD Project\myproject\shaheroz> git commit -m "1st commit"
[master (root-commit) 53af46e] 1st commit
 2 files changed, 18 insertions(+)
 create mode 100644 buildspec.yml
 create mode 100644 index.html
PS C:\Users\DELL\Desktop\CI-CD Project\myproject\shaheroz> git push origin master
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 455 bytes | 151.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Validating objects: 100%
To https://git-codecommit.ap-south-1.amazonaws.com/v1/repos/Shaheroz
 * [new branch]      master -> master
PS C:\Users\DELL\Desktop\CI-CD Project\myproject\shaheroz>
```

Now the file is in your aws codecommit repository

Shaheroz <a href="#">Info</a>		<a href="#">Add file</a> ▼
	Name	
	buildspec.yml	
	index.html	

Configure AWS CodeBuild



## SHAHEROZ ALAM KHAN

- In the AWS Management Console, go to **CodeBuild**.
- Click **Create build project**.

Enter a project name and description.

[Developer Tools](#) > [CodeBuild](#) > [Build projects](#) > **Create build project**

### Create build project

#### Project configuration

Project name

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 \_.

#### ► Additional configuration

Description, Build badge, Concurrent build limit, tags

## SHAHEROZ ALAM KHAN

Choose **CodeCommit** as the source provider and select your repository and branch.

Source

Add source

Source 1 - Primary

Source provider

AWS CodeCommit

Repository

Shaheroz

Reference type

Choose the source version reference type that contains your source code.

☒ Branch

☐ Git tag

☐ Commit ID

Branch

Choose a branch that contains the code to build.

master

Commit ID - optional

Choose a commit ID. This can shorten the duration of your build.

Source version Info

refs/heads/master

53af46eb 1st commit


► Additional configuration

Git clone depth, Git submodules

In environment go with by default

And choose operating system “Ubuntu”

### Environment

Provisioning model [Info](#) 

☒ **On-demand**  
Automatically provision build infrastructure in response to new builds.

☐ **Reserved capacity**  
Use a dedicated fleet of instances for builds. A fleet's compute and environment type will be used for the project.

Environment image

☒ **Managed image**  
Use an image managed by AWS CodeBuild

☐ **Custom image**  
Specify a Docker image

Compute

☒ **EC2**  
Optimized for flexibility during action runs

☐ **Lambda**  
Optimized for speed and minimizes the start up time of workflow actions

Operating system

Ubuntu ▼

Runtime(s)

Standard ▼

Image

aws/codebuild/standard:7.0 ▼

Image version

Always use the latest image for this runtime version ▼

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Only enter the role name aws create it by self with necessary policy

Image

aws/codebuild/standard:7.0

Image version

Always use the latest image for this runtime version

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

code-build-role3

Type your service role name

► Additional configuration

Timeout, privileged, certificate, VPC, compute type, environment variables, file systems

## Buildspec

Choose : Use a buildspec file

Enter the file name

**Buildspec**

Build specifications

☐ Insert build commands  
Store build commands as build project configuration

☒ Use a buildspec file  
Store build commands in a YAML-formatted buildspec file

Buildspec name - *optional*

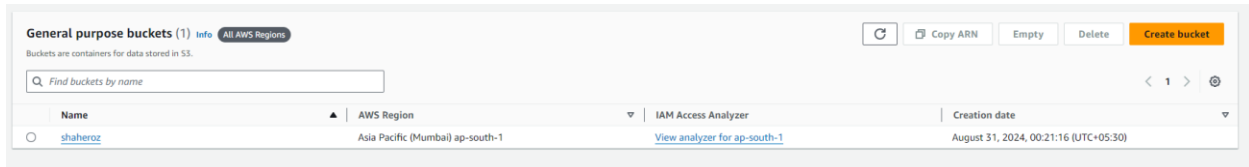
By default, CodeBuild looks for a file named buildspec.yml in the source code root directory. If your buildspec file uses a different name or location, enter its path from the source root here (for example, buildspec-two.yml or configuration/buildspec.yml).

buildspec.yml

## SHAHEROZ ALAM KHAN

Create simple s3 bucket (eithout versioning and all)

To save artifact



In artifact choose type Amazon S3

Seletect the bucket

Remaining is by default

### Artifacts

Add artifact

#### Artifact 1 - Primary

Type

Amazon S3

You might choose no artifacts if you are running tests or pushing a Docker image to Amazon ECR.

Bucket name

shaheroz

Name

The name of the folder or compressed file in the bucket that will contain your output artifacts. Use Artifacts packaging under Additional configuration to choose whether to use a folder or compressed file. If the name is not provided, defaults to project name.

☐ Enable semantic versioning

Use the artifact name specified in the buildspec file

Path - optional

The path to the build output ZIP file or folder.

Example: MyPath/MyArtifact.zip.

Namespace type - optional

None

Choose Build ID to insert the build ID into the path to the build output ZIP file or folder, e.g. MyPath/MyBuildID/MyArtifact.zip. Otherwise, choose None.

## Select Artifact packing .zip

**Name**  
The name of the folder or compressed file in the bucket that will contain your output artifacts. Use Artifacts packaging under Additional configuration to choose whether to use a folder or compressed file. If the name is not provided, defaults to project name.

☐ **Enable semantic versioning**  
Use the artifact name specified in the buildspec file

**Path - optional**  
The path to the build output ZIP file or folder.

Example: MyPath/MyArtifact.zip.

**Namespace type - optional**

None ▼

Choose Build ID to insert the build ID into the path to the build output ZIP file or folder, e.g. MyPath/MyBuildID/MyArtifact.zip. Otherwise, choose None.

**Artifacts packaging**

☐ **None**  
The artifact files will be uploaded to the bucket.

☒ **Zip**  
AWS CodeBuild will upload artifacts into a compressed file that is put into the specified bucket.

☐ **Disable artifact encryption**  
Disable encryption if using the artifact to publish a static website or sharing content with others

► **Additional configuration**  
Cache, encryption key

Click **Create build project**.

**Logs**

**CloudWatch**

☐ **CloudWatch logs - optional**  
Checking this option will upload build output logs to CloudWatch.

**S3**

☐ **S3 logs - optional**  
Checking this option will upload build output logs to S3.

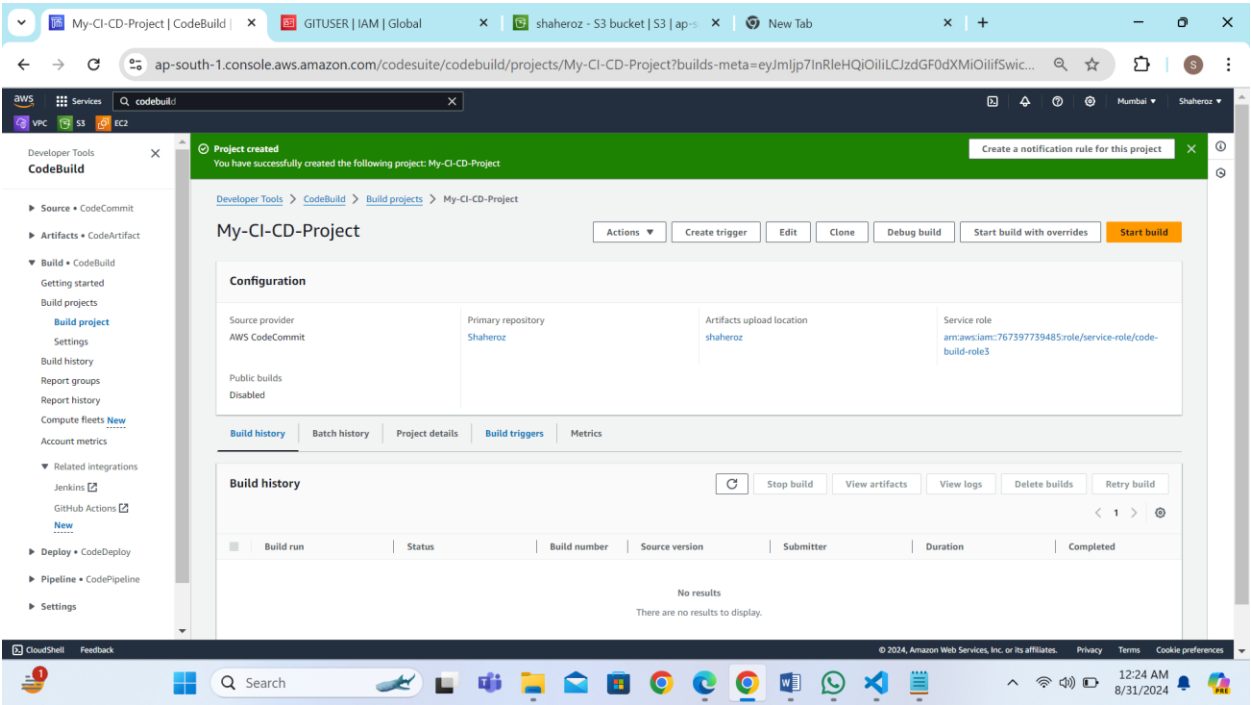
Cancel

Create build project



# SHAHEROZ ALAM KHAN

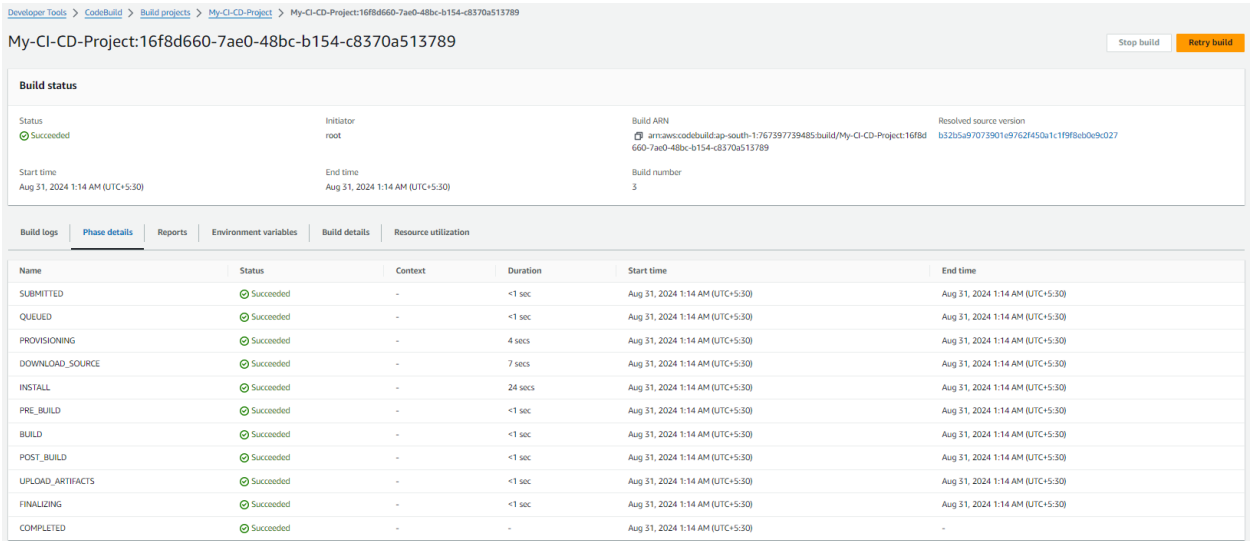
Now the code build is ready



Click on start build

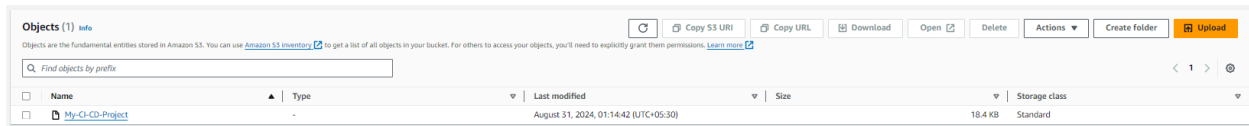


All the phases of code build must be succesfull

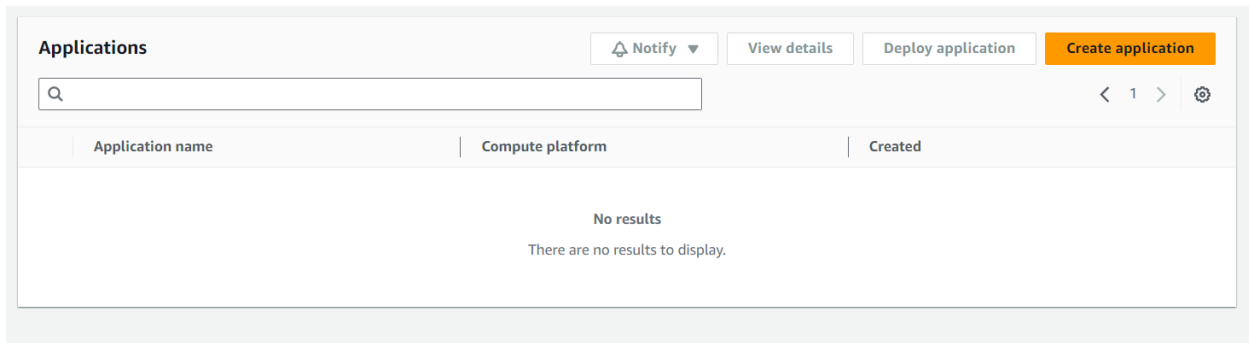


# SHAHEROZ ALAM KHAN

Now the artifact file is stored in s3 bucket



Set Up AWS CodeDeploy:



## Create an Application in CodeDeploy:

- Go to the AWS Management Console and open **CodeDeploy**.
- Click **Create application**.
- Enter an application name (e.g., `MyAppDeploy`).
- Choose the **Compute platform** (e.g., EC2/On-premises).

[Developer Tools](#) > [CodeDeploy](#) > [Applications](#) > Create application

## Create application

### Application configuration

Application name  
Enter an application name

100 character limit

Compute platform  
Choose a compute platform

Tags

Add tag

[Cancel](#) [Create application](#)

SHAHEROZ ALAM KHAN

Create IAM role deployment group

Aws service>codedeploy

[IAM](#) > [Roles](#) > [deployment-group](#)

deployment-group

Info

Delete

Allows CodeDeploy to call AWS services such as Auto Scaling on your behalf.

Summary

Edit

Creation date

August 29, 2024, 21:17 (UTC+05:30)

ARN

arn:aws:iam::767397739485:role/deploment-group

Last activity

-

Maximum session duration

1 hour

Permissions

Trust relationships

Tags

Access Advisor

Revoke sessions

Permissions policies (6)

Info

Refresh

Simulate

Remove

Add permissions

You can attach up to 10 managed policies.

Search

Filter by Type

All types

< 1 >

Settings

<input type="checkbox"/>	Policy name	Type	Attached entities
--------------------------	-------------	------	-------------------

Attach these policies

Permissions policies (6)

Info

Refresh

Simulate

Remove

Add permissions

You can attach up to 10 managed policies.

Search

Filter by Type

All types

< 1 >

Settings

<input type="checkbox"/>	Policy name	Type	Attached entities
<input type="checkbox"/>	<a href="#">AmazonEC2FullAccess</a>	AWS managed	2
<input type="checkbox"/>	<a href="#">AmazonEC2RoleforAWSCodeDe...</a>	AWS managed	1
<input type="checkbox"/>	<a href="#">AmazonEC2RoleforAWSCodeDe...</a>	AWS managed	1
<input type="checkbox"/>	<a href="#">AmazonS3FullAccess</a>	AWS managed	7
<input type="checkbox"/>	<a href="#">AWSCodeDeployFullAccess</a>	AWS managed	1
<input type="checkbox"/>	<a href="#">AWSCodeDeployRole</a>	AWS managed	1

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## Create IAM role for EC2 (server)

### Aws service > EC2

[IAM](#) > [Roles](#) > CI-CD-EC2

CI-CD-EC2 [Info](#)

Delete

Allows EC2 instances to call AWS services on your behalf.

Summary

Edit

Creation date August 29, 2024, 21:26 (UTC+05:30)	ARN arn:aws:iam::767397739485:role/CI-CD-EC2	Instance profile ARN arn:aws:iam::767397739485:instance-profile/CI-CD-EC2
Last activity -	Maximum session duration 1 hour	

Permissions

Trust relationships

Tags

Access Advisor

Revoke sessions

Permissions policies (3) [Info](#)

Simulate

Remove

Add permissions ▾

You can attach up to 10 managed policies.

Filter by Type

## Attach these polices

Permissions policies (3) [Info](#)

Simulate

Remove

Add permissions ▾

You can attach up to 10 managed policies.

Filter by Type  
All types ▾

< 1 >

<input type="checkbox"/>	Policy name	Type	Attached entities
<input type="checkbox"/>	<a href="#">AmazonEC2FullAccess</a>	AWS managed	<u>3</u>
<input type="checkbox"/>	<a href="#">AmazonS3FullAccess</a>	AWS managed	<u>8</u>
<input type="checkbox"/>	<a href="#">AWSCodeDeployFullAccess</a>	AWS managed	<u>2</u>

## Lauch a ec2 instace Ubuntu 22.04 (Allow SSH, HTTP AND HTTPS )

Instances (1/1) [Info](#)

Last updated less than a minute ago

Connect

Instance state ▾

Actions ▴

Launch instances ▾

All states ▾

Instance ID = i-08e3b45869066caee

Clear filters

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
<input checked="" type="checkbox"/>	Ec2-for-produ...	i-08e3b45869066caee	Running	t2.micro	2/2 checks passed	<a href="#">View alarms</a>

Change security groups

Get Windows password

Modify IAM role

Connect

View details

Manage instance state

Instance settings ▸ IPv4 DNS

Networking ▸ 205-186.a

Security ▸

Image and templates ▸

Monitor and troubleshoot ▸


And update the IAM role

[EC2](#) > [Instances](#) > [i-08e3b45869066caee](#) > **Modify IAM role**

## Modify IAM role [Info](#)

Attach an IAM role to your instance.



Instance ID

 [i-08e3b45869066caee](#) (Ec2-for-production)

IAM role

Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

CI-CD-EC2 ▼

 [Create new IAM role](#) 

[Cancel](#) [Update IAM role](#)

## SHAHEROZ ALAM KHAN

Connect the ec2

And create a file with .sh extension

Paste the below content

```
#!/bin/bash

# This installs the CodeDeploy agent and its prerequisites on Ubuntu 22.04.

sudo apt-get update

sudo apt-get install ruby-full ruby-webrick wget -y

cd /tmp

wget https://aws-codedeploy-ap-southeast-1.s3.ap-southeast-1.amazonaws.com/releases/codedeploy-agent_1.3.2-1902_all.deb

mkdir codedeploy-agent_1.3.2-1902_ubuntu22

dpkg-deb -R codedeploy-agent_1.3.2-1902_all.deb codedeploy-agent_1.3.2-1902_ubuntu22

sed 's/Depends:.*Depends:ruby3.0/' -i ./codedeploy-agent_1.3.2-1902_ubuntu22/DEBIAN/control

dpkg-deb -b codedeploy-agent_1.3.2-1902_ubuntu22/

sudo dpkg -i codedeploy-agent_1.3.2-1902_ubuntu22.deb

systemctl list-units --type=service | grep codedeploy

sudo service codedeploy-agent status
```

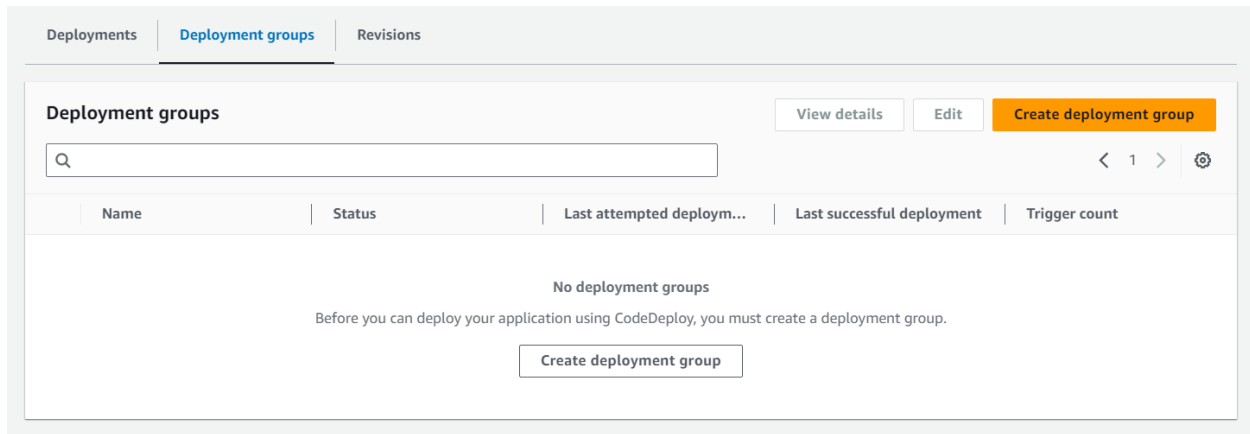
```
root@ip-172-31-46-226:/home/ubuntu# vi install.sh

root@ip-172-31-46-226:/home/ubuntu# cat install.sh
#!/bin/bash
# This installs the CodeDeploy agent and its prerequisites on Ubuntu 22.04.
sudo apt-get update
sudo apt-get install ruby-full ruby-webrick wget -y
cd /tmp
wget https://aws-codedeploy-ap-southeast-1.s3.ap-southeast-1.amazonaws.com/releases/codedeploy-agent_1.3.2-1902_all.deb
mkdir codedeploy-agent_1.3.2-1902_ubuntu22
dpkg-deb -R codedeploy-agent_1.3.2-1902_all.deb codedeploy-agent_1.3.2-1902_ubuntu22
sed 's/Depends:.*Depends:ruby3.0/' -i ./codedeploy-agent_1.3.2-1902_ubuntu22/DEBIAN/control
dpkg-deb -b codedeploy-agent_1.3.2-1902_ubuntu22/
sudo dpkg -i codedeploy-agent_1.3.2-1902_ubuntu22.deb
systemctl list-units --type=service | grep codedeploy
sudo service codedeploy-agent status
root@ip-172-31-46-226:/home/ubuntu# bash install.sh
```

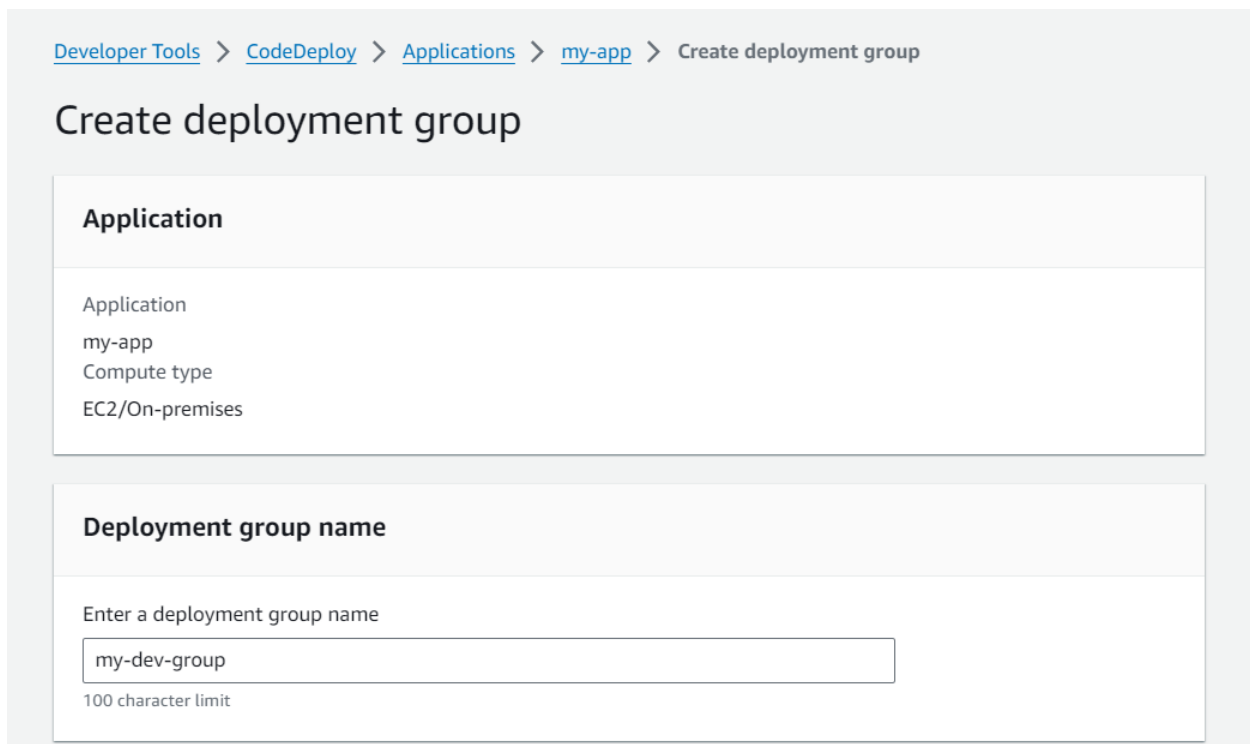
- Run that file” bash install.sh”

## Create a Deployment Group:

- Under your newly created application, click **Create deployment group**.



Enter a deployment group name (e.g., MyAppDeployGroup).





**Service Role:** Choose IAM role that created for deployment group

### Service role

Enter a service role

Enter a service role with CodeDeploy permissions that grants AWS CodeDeploy access to your target instances.

arn:aws:iam::767397739485:role/deploment-group

### Deployment type

Choose how to deploy your application

☒ In-place

Updates the instances in the deployment group with the latest application revisions. During a deployment, each instance will be briefly taken offline for its update

☐ Blue/green

Replaces the instances in the deployment group with new instances and deploys the latest application revision to them. After instances in the replacement environment are registered with a load balancer, instances from the original environment are deregistered and can be terminated.

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For EC2, specify the target EC2 instances by tags

Click **Create deployment group**.

### Environment configuration

Select any combination of Amazon EC2 Auto Scaling groups, Amazon EC2 instances, and on-premises instances to add to this deployment

☐ Amazon EC2 Auto Scaling groups

☒ Amazon EC2 instances  
1 unique matched instance. [Click here for details](#)

You can add up to three groups of tags for EC2 instances to this deployment group.  
**One tag group:** Any instance identified by the tag group will be deployed to.  
**Multiple tag groups:** Only instances identified by all the tag groups will be deployed to.

Tag group 1

Key	Value - <i>optional</i>	
<input type="text" value="Name"/>	<input type="text" value="Ec2-for-production"/>	<input type="button" value="Remove tag"/>

☐ On-premises instances

## SHAHEROZ ALAM KHAN

Create a Deployment Configuration File

Create a folder name script inside colone repository

And make two in script folder name install\_nginx.sh and start\_nginx.sh

And create a appspec.yml file in direct colone repository

### Content of script folder:

under scripts

start\_nginx.sh

```
#!/bin/bash
```

```
sudo service nginx start
```

---

```
install_nginx.sh
```

```
#!/bin/bash
```

```
sudo apt-get update
```

```
sudo apt-get install -y nginx
```

---

### Content of appspec.yml file

#configuration file for code deploy

version: 0.0

os: linux

files:

- source: /

- destination: /var/www/html

hooks:

AfterInstall:

- location: scripts/install\_nginx.sh

- timeout: 300

## SHAHEROZ ALAM KHAN

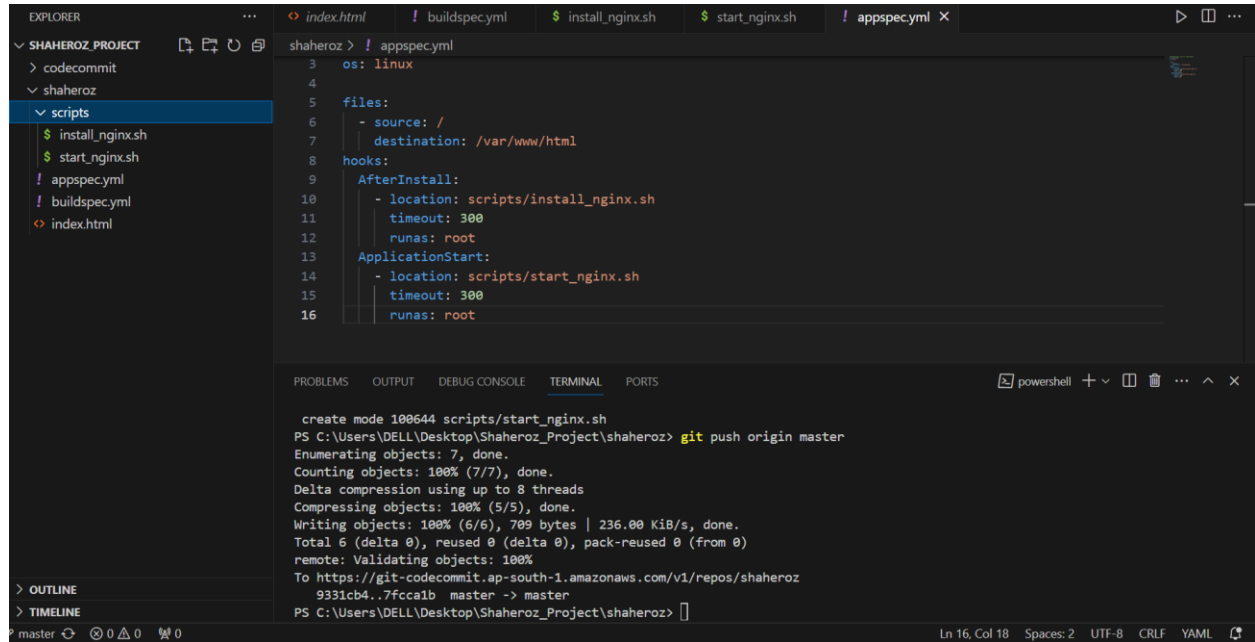
runas: root

ApplicationStart:

- location: scripts/start\_nginx.sh

timeout: 300

runas: root



```
shaheroz > ! appspectcmpl
3  os: linux
4
5  files:
6    - source: /
7      destination: /var/www/html
8  hooks:
9    AfterInstall:
10     - location: scripts/install_nginx.sh
11       timeout: 300
12       runas: root
13  ApplicationStart:
14     - location: scripts/start_nginx.sh
15       timeout: 300
16       runas: root
```

```
create mode 100644 scripts/start_nginx.sh
PS C:\Users\DELL\Desktop\Shaheroz_Project\shaheroz> git push origin master
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 709 bytes | 236.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Validating objects: 100%
To https://git-codecommit.ap-south-1.amazonaws.com/v1/repos/shaheroz
9331cb4..7fcca1b master -> master
PS C:\Users\DELL\Desktop\Shaheroz_Project\shaheroz>
```

SHAHEROZ ALAM KHAN

Now click on start build in codebuild>apliiaction

All the phases should be successfull

Developer Tools > CodeBuild > Build projects > my-project

my-project

Actions ▼Create triggerEditCloneDebug buildStart build with overridesStart build

Configuration

Source provider

AWS CodeCommit

Primary repository

shaheroz

Artifacts upload location

shaheroz

Service role

arn:aws:iam::767397739485:role/service-role/role-of-codebuild1

Public builds

Disabled

Build history

Batch historyProject detailsBuild triggersMetrics

Build history

Stop build

View artifacts

View logs

Delete builds

Retry build

< 1 > ⚙

<input type="checkbox"/>	Build run	Status	Build number	Source version	Submitter	Duration	Completed
<input type="checkbox"/>	my-project:d91e7bda-						

Build history

Stop build

View artifacts

View logs

Delete builds

Retry build

< 1 > ⚙

<input type="checkbox"/>	Build run	Status	Build number	Source version	Submitter	Duration	Completed
<input type="checkbox"/>	my-project:d91e7bda-33bb-4127-968c-0fa60aec902d	✔ Succeeded	2	refs/heads/master	root	34 seconds	1 minute ago

## SHAHEROZ ALAM KHAN

Create deployment inside the deployment group of codebuild application

Click on create deployment

[Developer Tools](#) > [CodeDeploy](#) > [Applications](#) > [my-app](#) > my-dev-group

### my-dev-group

Edit Delete **Create deployment**

**Deployment group details**

Deployment group name my-dev-group	Application name <a href="#">my-app</a>	Compute platform EC2/On-premises
Deployment type In-place	Service role ARN <a href="#">arn:aws:iam::767397739485:role/deploment-group</a>	Deployment configuration <a href="#">CodeDeployDefault.AllAtOnce</a>
Rollback enabled False	Agent update scheduler <a href="#">Learn to schedule update in AWS Systems Manager</a>	

**Environment configuration: Amazon EC2 instances**

Key	Value
Name	Ec2-for-production

**Triggers**

Enter the for deployment

Choose s3 in revision type

[Developer Tools](#) > [CodeDeploy](#) > [Applications](#) > [my-app](#) > Create deployment

## Create deployment

**Deployment settings**

Application  
my-app

Deployment group

Compute platform  
EC2/On-premises

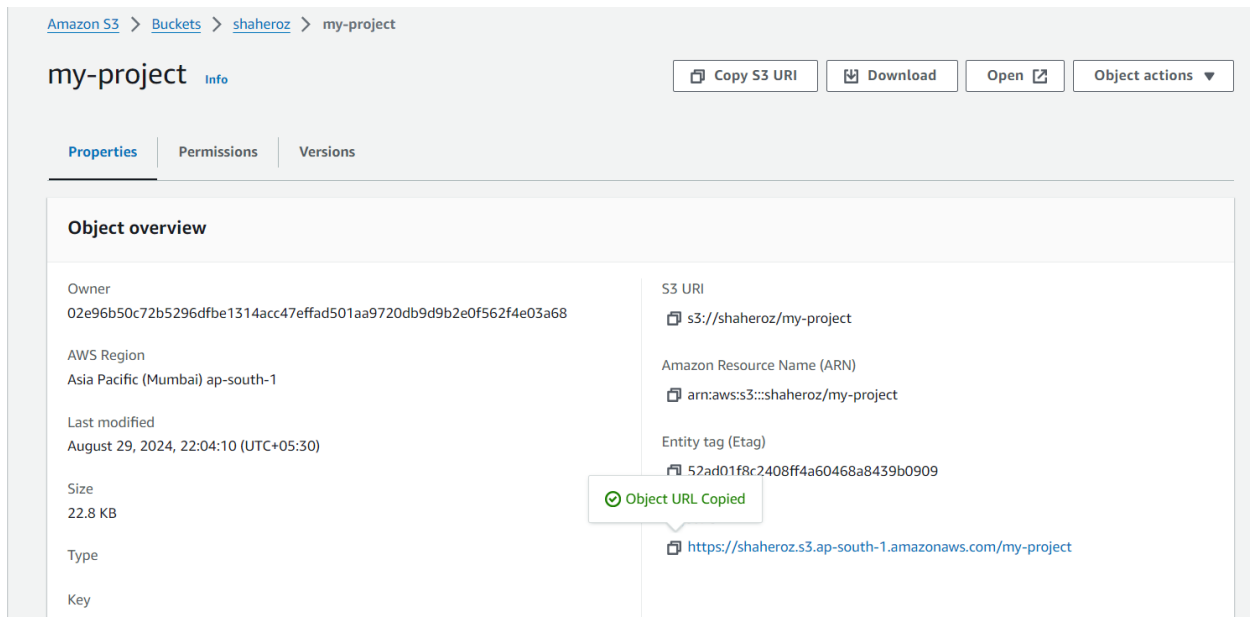
Deployment type  
In-place

Managed hook execution role  
The IAM role used by the CodeDeploy Managed Hook function to perform actions. [Edit Managed Hook execution role.](#)  
-

Revision type  
☒ My application is stored in Amazon S3 ☐ My application is stored in GitHub

## SHAHEROZ ALAM KHAN

Copy the uri of artifact (object)



Amazon S3 > Buckets > shaheroz > my-project

**my-project** [Info](#)

[Copy S3 URI](#) [Download](#) [Open](#) [Object actions](#)

[Properties](#) [Permissions](#) [Versions](#)

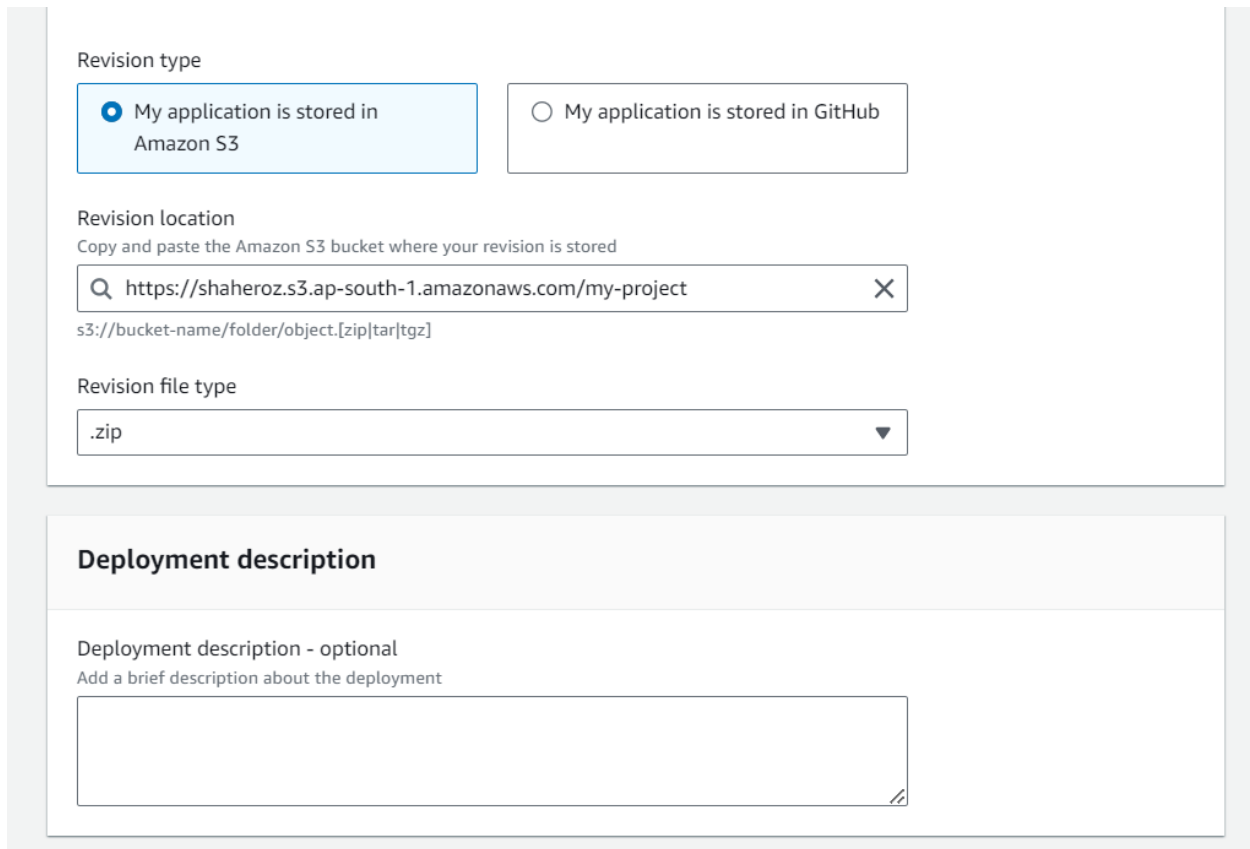
### Object overview

<b>Owner</b> 02e96b50c72b5296dfbe1314acc47effad501aa9720db9d9b2e0f562f4e03a68	<b>S3 URI</b> <a href="s3://shaheroz/my-project">s3://shaheroz/my-project</a>
<b>AWS Region</b> Asia Pacific (Mumbai) ap-south-1	<b>Amazon Resource Name (ARN)</b> <a href="arn:aws:s3::shaheroz/my-project">arn:aws:s3::shaheroz/my-project</a>
<b>Last modified</b> August 29, 2024, 22:04:10 (UTC+05:30)	<b>Entity tag (Etag)</b> <a href="#">52ad01f8c2408ff4a60468a8439b0909</a>
<b>Size</b> 22.8 KB	<b>Entity tag (Etag)</b> <a href="#">52ad01f8c2408ff4a60468a8439b0909</a>
<b>Type</b>	<b>Entity tag (Etag)</b> <a href="https://shaheroz.s3.ap-south-1.amazonaws.com/my-project">https://shaheroz.s3.ap-south-1.amazonaws.com/my-project</a>
<b>Key</b>	

Object URL Copied

In revision location enter the uri of artifact

And chose file type .zip



**Revision type**

☒ My application is stored in Amazon S3 ☐ My application is stored in GitHub

**Revision location**  
Copy and paste the Amazon S3 bucket where your revision is stored

s3://bucket-name/folder/object.[zip|tar|tgz]

**Revision file type**


### Deployment description

**Deployment description - optional**  
Add a brief description about the deployment

Deployment status should 1 of 1 updated

[Developer Tools](#) > [CodeDeploy](#) > [Deployments](#) > d-AYUZA1BX6

d-AYUZA1BX6




Copy deployment

Retry deployment


Deployment status

Installing application on your instances

100%

1 of 1 instances updated  Succeeded

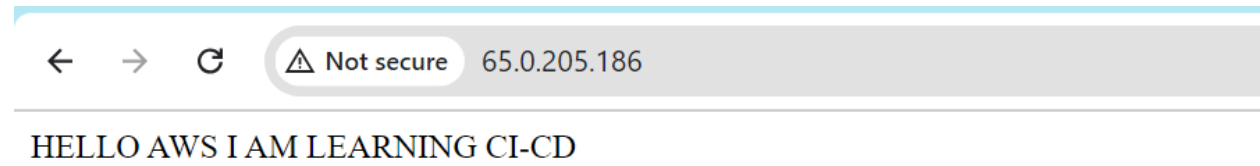
Deployment details

Application my-app	Deployment ID d-AYUZA1BX6	Status  Succeeded
Deployment configuration CodeDeployDefault.AllAtOnce	Deployment group my-dev-group	Initiated by User action



## SHAHEROZ ALAM KHAN

Now check with the public of ec2 that you application deployed



## Create a CI/CD Pipeline in AWS CodePipeline

### 1. Create a New Pipeline:

- Go to the AWS Management Console and open **CodePipeline**.
- Click **Create pipeline**.
- Enter a pipeline name (e.g., MyAppPipeline).
- Select execution mode ( queued (pipeline type v2 required))

## Choose pipeline settings [Info](#)

Step 1 of 5


### Pipeline settings

#### Pipeline name

Enter the pipeline name. You cannot edit the pipeline name after it is created.

No more than 100 characters

#### Pipeline type

 You can no longer create V1 pipelines through the console. We recommend you use the V2 pipeline type with improved release safety, pipeline triggers, parameterized pipelines, and a new billing model.

#### Execution mode

Choose the execution mode for your pipeline. This determines how the pipeline is run.

☐ Superseded

A more recent execution can overtake an older one. This is the default.

☒ Queued (Pipeline type V2 required)

Executions are processed one by one in the order that they are queued.

☐ Parallel (Pipeline type V2 required)

Executions don't wait for other runs to complete before starting or finishing.

## Source Stage:

- Select the source provider CodeCommit
- Choose the repository and branch.
- Detection option AWS CodePipeline

### Source

**Source provider**  
This is where you stored your input artifacts for your pipeline. Choose the provider and then provide the connection details.

AWS CodeCommit ▼

**Repository name**  
Choose a repository that you have already created where you have pushed your source code.

🔍 shaheroz ✕

**Branch name**  
Choose a branch of the repository

🔍 master ✕

**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

**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.

## Build Stage:

- Select **AWS CodeBuild**.
- Input artifact (source artifact)
- Choose the build project created earlier (MyAppBuild)

## Add build stage [Info](#)

Step 3 of 5

### 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

Asia Pacific (Mumbai)

#### Input artifacts

Choose an input artifact for this action. [Learn more](#)

SourceArtifact

Add

No more than 100 characters

#### 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.

my-project



or

Create project



#### 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)

SourceArtifact ▼

Add

No more than 100 characters

### 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.

🔍 my-project



or

Create project

### 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](#)

Add environment variable

### Build type



Single build

Triggers a single build.



Batch build

Triggers multiple builds as a single execution.

## Deploy Stage:

- If using CodeDeploy, select **AWS CodeDeploy**.
- Choose the application and deployment group created earlier

**Deploy - *optional***

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

AWS CodeDeploy

**Region**

Asia Pacific (Mumbai)

**Input artifacts**  
Choose an input artifact for this action. [Learn more](#)

BuildArtifact

No more than 100 characters

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

Q

my-app

X

**Deployment group**  
Choose a deployment group that you have already created in the AWS CodeDeploy console. Or create a deployment group in the AWS CodeDeploy console and then return to this task.

Q

my-dev-group

X

☐ Configure automatic rollback on stage failure

## SHAHEROZ ALAM KHAN

Click **Next** and then **Create pipeline**.

# Review

Info

Step 5 of 5

## Step 1: Choose pipeline settings

### Pipeline settings

Pipeline name

my-pipeline

Pipeline type

V2

Execution mode

QUEUED

Artifact location

A new Amazon S3 bucket will be created as the default artifact store for your pipeline

Service role name

AWSCodePipelineServiceRole-ap-south-1-my-pipeline

Now the pipeline stages in progress

After succesfull of all stages.

Developer Tools > CodePipeline > Pipelines > my-pipeline

## my-pipeline

Notify

Edit

Stop execution

Clone pipeline

Release change

Pipeline type: V2

Execution mode: QUEUED

Source

Succeeded

Pipeline execution ID: 5290db2d-6531-43c8-b467-4da9972653e9

Source

[AWS CodeCommit](#)

Succeeded - 2 minutes ago

7fcc1b7

View details

7fcc1b7

Source: 2nd master commit

Disable transition

Build

Succeeded

Pipeline execution ID: 5290db2d-6531-43c8-b467-4da9972653e9

Start rollback

✓

✓

✓

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<div data-bbox="217 281 384 300">✔ Build ⓘ Succeeded</div> <div data-bbox="1263 275 1396 306">Start rollback</div> <div data-bbox="217 312 602 327">Pipeline execution ID: <a href="#">5290db2d-6531-43c8-b467-4da9972653e9</a></div> <div data-bbox="228 390 313 428">Build <a href="#">AWS CodeBuild</a></div> <div data-bbox="228 443 397 459">✔ Succeeded - 2 minutes ago</div> <div data-bbox="228 474 350 504">View details</div> <div data-bbox="217 537 420 552"><a href="#">7fccafbf7</a> Source: 2nd master commit</div> <div data-bbox="246 592 407 621">Disable transition</div>	<div data-bbox="217 665 399 684">✔ Deploy ⓘ Succeeded</div> <div data-bbox="1263 659 1396 690">Start rollback</div> <div data-bbox="217 697 602 711">Pipeline execution ID: <a href="#">5290db2d-6531-43c8-b467-4da9972653e9</a></div> <div data-bbox="228 774 323 812">Deploy <a href="#">AWS CodeDeploy</a></div> <div data-bbox="228 827 393 844">✔ Succeeded - 1 minute ago</div> <div data-bbox="228 858 350 888">View details</div>
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**SHAHEROZ ALAM KHAN**

## Test and Validate the Pipeline

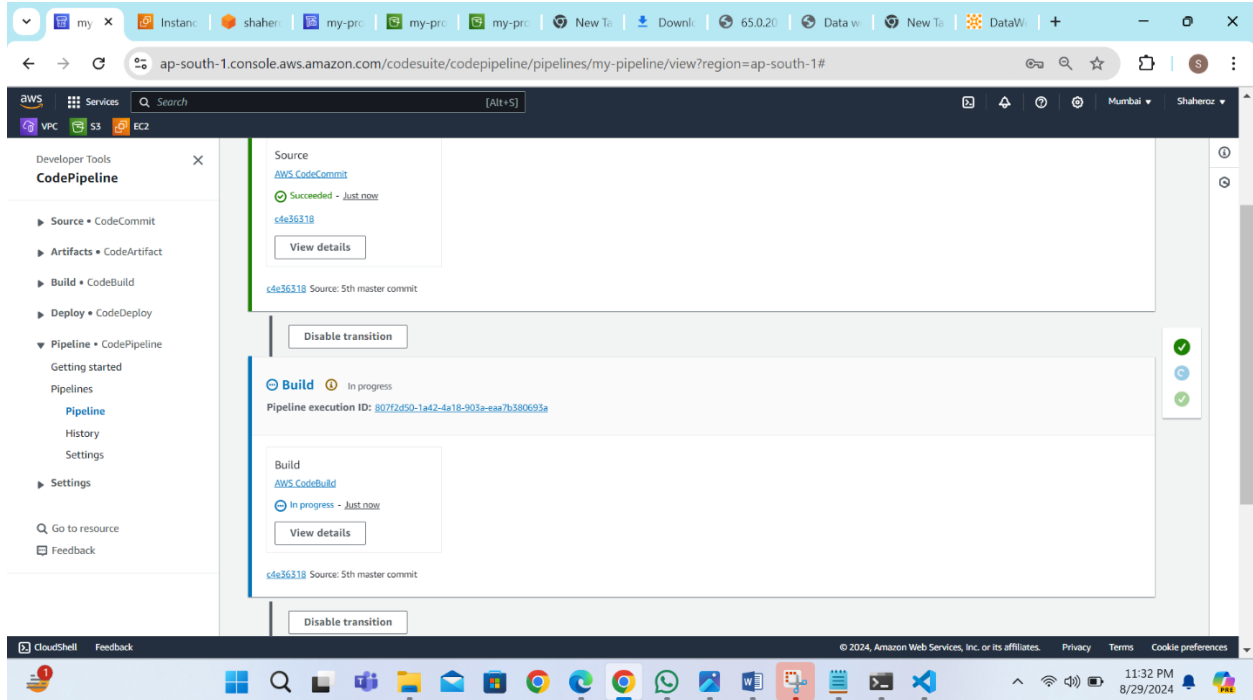
### 1. Make a Code Change in VS Code:

- Edit a file or make a code change in your project.
- Commit and push the changes to your repository.

The screenshot shows the VS Code interface. On the left, the Explorer sidebar displays the project structure for 'SHAHEROZ\_PROJECT', including folders like 'codecommit', 'shaheroz', and 'scripts', and files like 'install\_nginx.sh', 'start\_nginx.sh', 'appspec.yml', 'buildspec.yml', 'index.html', 'resume.html', 'skills.html', and 'work.html'. The main editor area shows the 'appspec.yml' file with a 'hooks' section. A terminal window at the bottom displays the output of a 'git push' command, showing object enumeration, compression, and upload progress. The terminal output includes details like 'Enumerating objects: 65, done.', 'Delta compression using up to 8 threads', and 'Total 62 (delta 12), reused 0 (delta 0), pack-reused 0 (from 0)'. The status bar at the bottom indicates the current file is 'master' and the terminal is at 'Ln 16, Col 18'.

## Monitor Pipeline Execution:

- Watch the pipeline execution in **AWS CodePipeline** from the AWS Management Console



## SHAHEROZ ALAM KHAN

Ensure the entire CI/CD pipeline runs smoothly and deploys the changes to the production environment without errors.



**SHAHEROZ ALAM KHAN**