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Experiment 4

Aim:-To study AWS code pipeline and deploy web application using code pipeline

Theory:-

AWS CodePipeline is a fully managed continuous delivery service that helps automate the release pipelines for fast and reliable application and infrastructure updates. It allows you to model, visualize, and automate the steps required to release your software. Here are some key points about AWS CodePipeline:

Automation of Software Release Process: AWS CodePipeline automates the build, test, and deployment phases of your release process every time there is a code change, based on the release model you define.

Integration with Different Services: It integrates with a variety of third-party services and AWS services such as AWS CodeBuild, AWS CodeDeploy, and AWS CloudFormation, enabling you to have a fully automated release process for your applications.

Customizable Pipeline: CodePipeline allows you to build custom release workflows with multiple stages and actions. Each stage can have one or more actions, and you can define the actions to be performed at each stage, such as source code versioning, building, testing, and deployment.

Visual Workflow: It provides a visual representation of your release process, allowing you to see the stages and actions in the pipeline and monitor the progress of each release.

Integration with Third-Party Tools: It supports integration with a wide range of third-party tools and services through its extensible architecture, enabling you to incorporate your favorite tools into the release process.

Flexibility and Control: CodePipeline provides flexibility and control over the release process, allowing you to define custom rules for the execution of each action and the transition between stages.

Security: It integrates with AWS Identity and Access Management (IAM) to control access to your pipelines, ensuring that only authorized users have the necessary permissions to view or modify the pipelines.

Monitoring and Logging: AWS CodePipeline provides monitoring and logging capabilities, allowing you to track the execution of each action and stage in the pipeline and quickly identify any issues or failures.

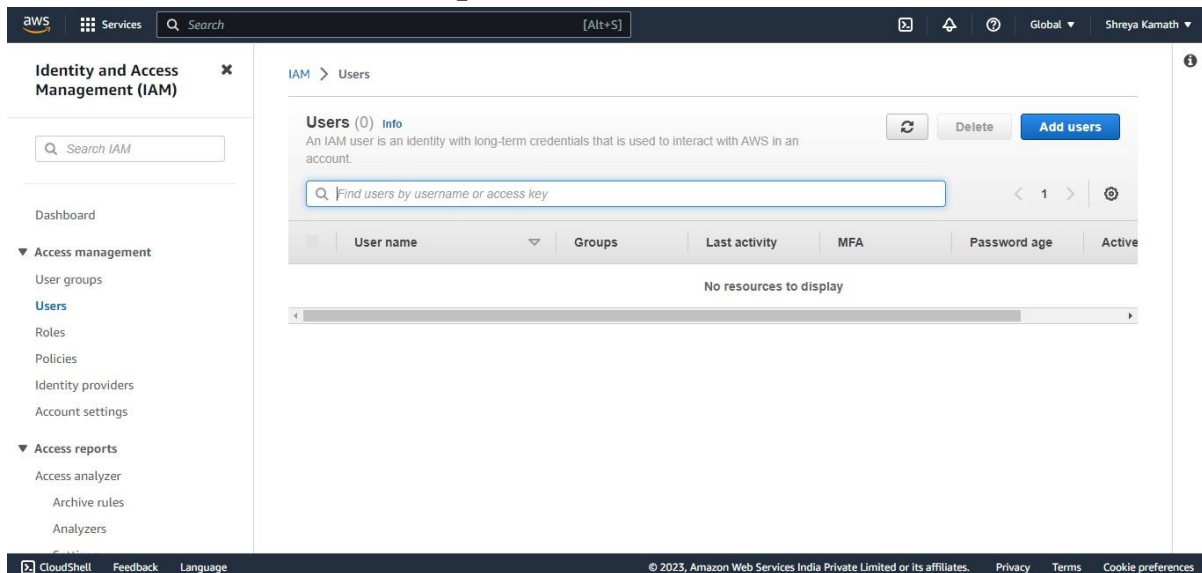
Scalability and Availability: As a fully managed service, AWS CodePipeline offers scalability and high availability, ensuring that your release pipelines can handle any workload and are always accessible.

Cost-Effective: With a pay-as-you-go pricing model, AWS CodePipeline helps you optimize costs by charging only for the resources you use.

Steps :-

1) Login to AWS account and in search bar search IAM and click on it

2) Dashboard of IAM user open and then create a new user



aws Services Search [Alt+S] Global Shreya Kamath

IAM > Users > Create user

Step 1
Specify user details

Step 2
Set permissions

Step 3
Review and create

Specify user details

User details

User name

shreyakamath

The user name can have up to 64 characters. Valid characters: A-Z, a-z, 0-9, and +, =, ., @, _ (hyphen)

☐ Provide user access to the AWS Management Console - *optional*
If you're providing console access to a person, it's a best practice [to](#) manage their access in IAM Identity Center.

i If you are creating programmatic access through access keys or service-specific credentials for AWS CodeCommit or Amazon Keyspaces, you can generate them after you create this IAM user. [Learn more](#)

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2) Set the permissions for the new user

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Step 2
Set permissions

Step 3
Review and create

Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. [Learn more](#)

Permissions options

☒ Add user to group
Add user to an existing group, or create a new group. We recommend using groups to manage user permissions by job function.

☐ Copy permissions
Copy all group memberships, attached managed policies, and inline policies from an existing user.

☐ Attach policies directly
Attach a managed policy directly to a user. As a best practice, we recommend attaching policies to a group instead. Then, add the user to the appropriate group.

i Get started with groups
Create a group and select policies to attach to the group. We recommend using groups to manage user permissions by job function, AWS service access, or custom permissions. [Learn more](#)

Create group

► Set permissions boundary - *optional*

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3) Create user and user name , usergroup will be visible on dashboard

[Create policy](#)

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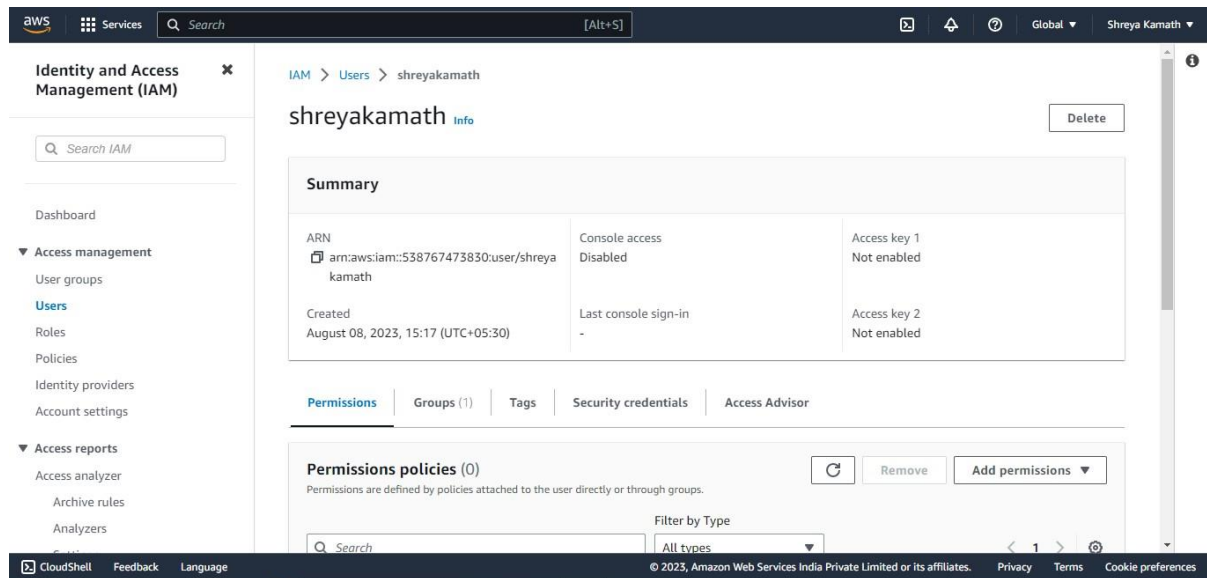
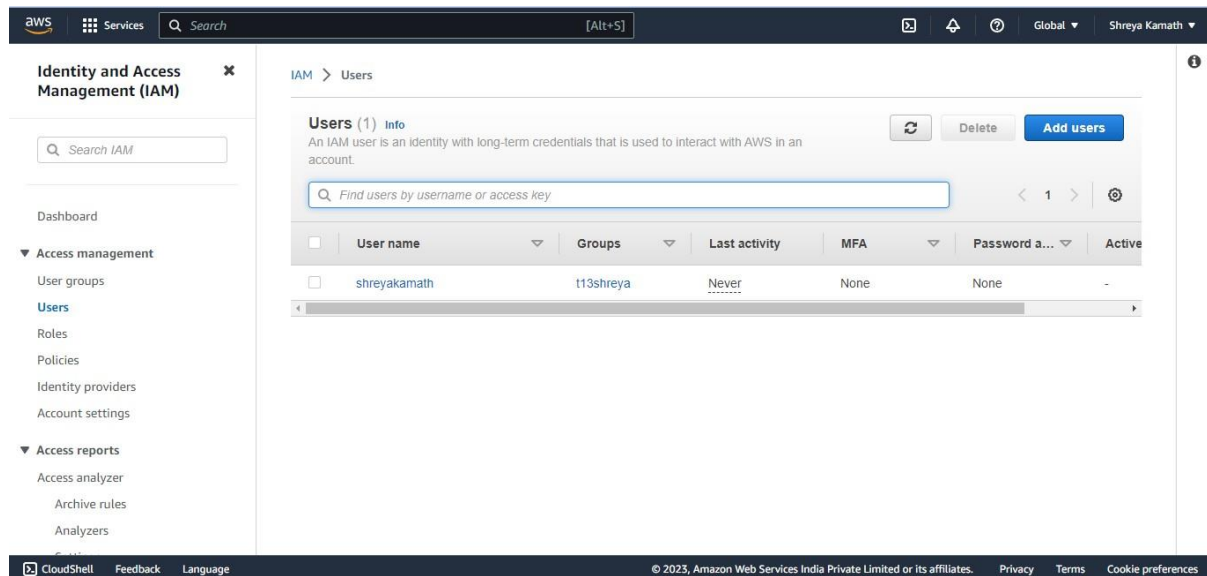
The screenshot shows the AWS IAM console interface. At the top, a green notification banner states "User created successfully" with a "View user" button. The left sidebar contains the "Identity and Access Management (IAM)" menu with options like Dashboard, Access management, and Access reports. The main content area displays the "Users" page. It includes a search bar, a table with columns for User name, Groups, Last activity, MFA, Password, and Active status, and a table with one user named "shreyakamath".

	User name	Groups	Last activity	MFA	Password a...	Active
<input type="checkbox"/>	shreyakamath	None	Never	None	None	-

4) See the summary of created user and usergroup

The screenshot shows the AWS IAM console interface. At the top, a green notification banner states "Users added to this group." The left sidebar contains the "Identity and Access Management (IAM)" menu with options like Dashboard, Access management, and Access reports. The main content area displays the "User groups" page for the group named "t13shreya". It includes a search bar, a table with columns for User group name, Creation time, and ARN, and a table with one user named "t13shreya".

User group name	Creation time	ARN
t13shreya	August 08, 2023, 15:17 (UTC+05:30)	arn:aws:iam::538767473830:group/t13shreya



5) Go to security credentials tab and see for console password and other details , take screenshot of these details

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Identity and Access Management (IAM)

Search IAM

Dashboard

▼ Access management

- User groups
- Users**
- Roles
- Policies
- Identity providers
- Account settings

▼ Access reports

- Access analyzer
- Archive rules
- Analysers

ARN: `arn:aws:iam::538767473830:user/shreyakamath`

Created: August 08, 2023, 15:17 (UTC+05:30)

Console access: Disabled

Last console sign-in: -

Access key 1: Not enabled

Access key 2: Not enabled

Permissions Groups (1) Tags **Security credentials** Access Advisor

Console sign-in

Enable console access

Console sign-in link: `https://538767473830.signin.aws.amazon.com/console`

Console password: Not enabled

Multi-factor authentication (MFA) (0)

Use MFA to increase the security of your AWS environment. Signing in with MFA requires an authentication code from an MFA device. Each user can have a maximum of 8 MFA devices assigned. [Learn more](#)

Remove Resync Assign MFA device

Device type Identifier Certifications Created on

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Console password

✓ You have successfully enabled the user's new password. This is the only time you can view this password. After you close this window, if the password is lost, you must create a new one.

Console sign-in URL

`https://538767473830.signin.aws.amazon.com/console`

User name

`shreyakamath`

Console password

`*****` [Show](#)

[Download .csv file](#) [Close](#)

6) Go to dashboard and search codecommit in search bar

The screenshot displays the AWS Management Console interface. At the top, the navigation bar includes the AWS logo, a search bar, and the user's profile (shreyakamath). The main content area shows the 'Console Home' dashboard with sections for 'Recently visited' (listing Cloud9 and EC2) and 'Welcome to AWS' (with links for getting started, training, and new services). Below this, there are tabs for 'AWS Health' and 'Cost and usage'. A green notification banner at the bottom of the dashboard states 'shreyat13 user group created.'.

The 'Permissions options' screen is visible, showing three radio button options: 'Add user to group' (selected), 'Copy permissions', and 'Attach policies directly'. Below these options is a table titled 'User groups (1)' with a search bar and a 'Create group' button. The table lists one group, 'shreyat13', with 0 users, attached policy 'AdministratorAccess', and a creation date of '2023-08-08 (Now)'. At the bottom of the screen, there are 'Cancel' and 'Next' buttons.

Group name	Users	Attached policies	Created
shreyat13	0	AdministratorAccess	2023-08-08 (Now)

7) Go to repositories option and create a new repository , give a name to it

The image shows two screenshots of the AWS CodeCommit interface. The top screenshot displays the 'Repositories' page, which includes a left sidebar with navigation options like 'Source', 'Artifacts', 'Build', 'Deploy', 'Pipeline', and 'Settings'. The main content area shows a list of repositories, currently empty, with a 'Create repository' button. The bottom screenshot shows the 'Repository settings' page for a repository named 'adv devops'. It includes fields for 'Repository name', 'Description', and 'Tags'. The 'Tags' section shows a tag with key 'Name' and value 'repo1'. There is also a checkbox for 'Enable Amazon CodeGuru Reviewer for Java and Python'.

Top Screenshot: AWS CodeCommit Repositories

Developer Tools > CodeCommit > Repositories

Repositories Info

Buttons: Refresh, Notify, Clone URL, View repository, Delete repository, **Create repository**

Search: [Q]

Name	Description	Last modified	Clone URL
No results There are no results to display.			

Bottom Screenshot: Repository settings

Repository name: adv devops
100 characters maximum. Other limits apply.

Description - optional: [Text area]
1,000 characters maximum

Tags

Key: Name Value - optional: repo1 Remove tag

Add tag

☐ Enable Amazon CodeGuru Reviewer for Java and Python - optional
Get recommendations to improve the quality of the Java and Python code for all pull requests in this repository.
A service-linked role will be created in IAM on your behalf if it does not exist.

8) Go to code option in left sidebar and select https there

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Repository settings

Repository name

adv devops

100 characters maximum. Other limits apply.

Description - optional

1,000 characters maximum

Tags

Key

Name

Value - optional

repo1

Remove tag

Add tag

☐ Enable Amazon CodeGuru Reviewer for Java and Python - optional

Get recommendations to improve the quality of the Java and Python code for all pull requests in this repository.

A service-linked role will be created in IAM on your behalf if it does not exist.

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Developer Tools

CodeCommit

Source • CodeCommit

Getting started

Repositories

Code

Pull requests

Commits

Branches

Git tags

Settings

Approval rule templates

Artifacts • CodeArtifact

Build • CodeBuild

Deploy • CodeDeploy

Pipeline • CodePipeline

Success

Repository successfully created

Create a notification rule for this repository

Developer Tools > CodeCommit > Repositories > advdevops

advdevops

Clone URL

Connection steps

HTTPS

SSH

HTTPS (GRC)

Step 1: Prerequisites

You must use a Git client that supports Git version 1.7.9 or later to connect to an AWS CodeCommit repository. If you do not have a Git client, you can install one from Git downloads. [View Git downloads page](#)

You must have an AWS CodeCommit managed policy attached to your IAM user, belong to a CodeStar project team, or have the equivalent permissions. [Learn how to create and configure an IAM user for accessing AWS CodeCommit.](#) | [Learn how to add team members to an AWS CodeStar Project.](#)

Step 2: Git credentials

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Developer Tools

CodeCommit

Source • CodeCommit

Getting started

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Approval rule templates

Artifacts • CodeArtifact

Build • CodeBuild

Deploy • CodeDeploy

Pipeline • CodePipeline

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Step 2: Git credentials

Create Git credentials for your IAM user, if you do not already have them. Download the credentials and save them in a secure location. [Generate Git Credentials](#)

Step 3: Clone the repository

Clone your repository to your local computer and start working on code. Run the following command:

git clone https://git-codecommit.eu-north-1.amazonaws.com/v1/repos/advdevops

Copy

Additional details

You can find more detailed instructions in the documentation. [View documentation](#)

9) Create a new application and give name to it , create a deployment group for deployment of application created

The image shows two screenshots of the AWS Management Console. The top screenshot is the 'Create application' page, and the bottom screenshot is the 'Create deployment group' page.

Create application

Application configuration

Application name
Enter an application name
shreyaT13
100 character limit

Compute platform
Choose a compute platform
EC2/On-premises

Tags
Key
Name
Value - optional
webapp1
Remove tag
Add tag

Cancel Create application

Create deployment group

Deployment group name

Enter a deployment group name
webappdeploymentgroup1
100 character limit

Service role

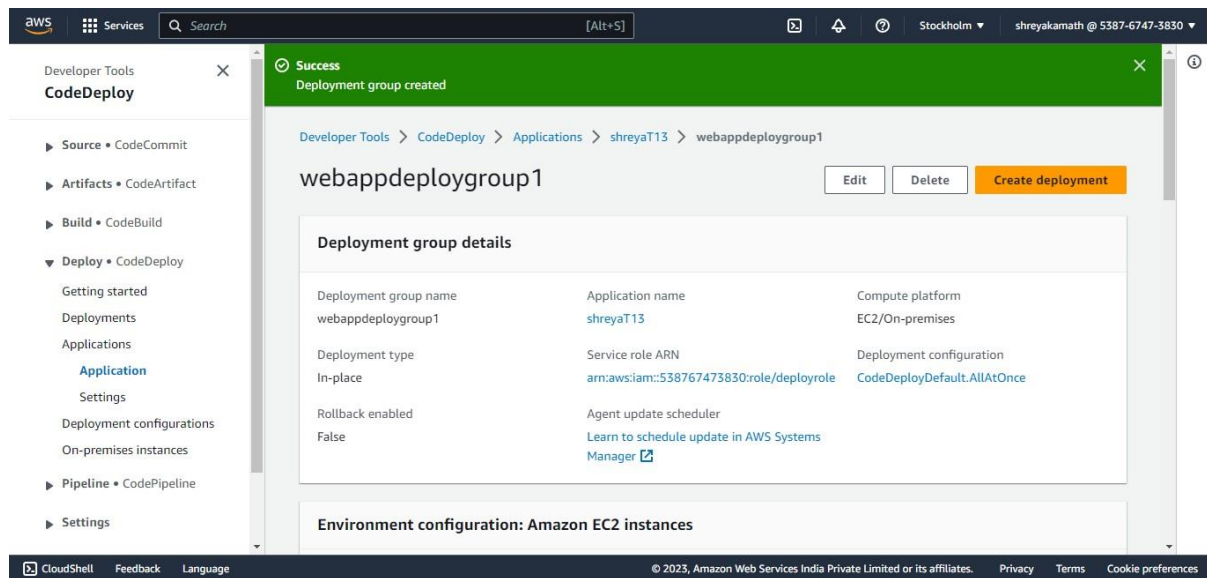
Enter a service role
Enter a service role with CodeDeploy permissions that grants AWS CodeDeploy access to your target instances.
service1

Deployment type

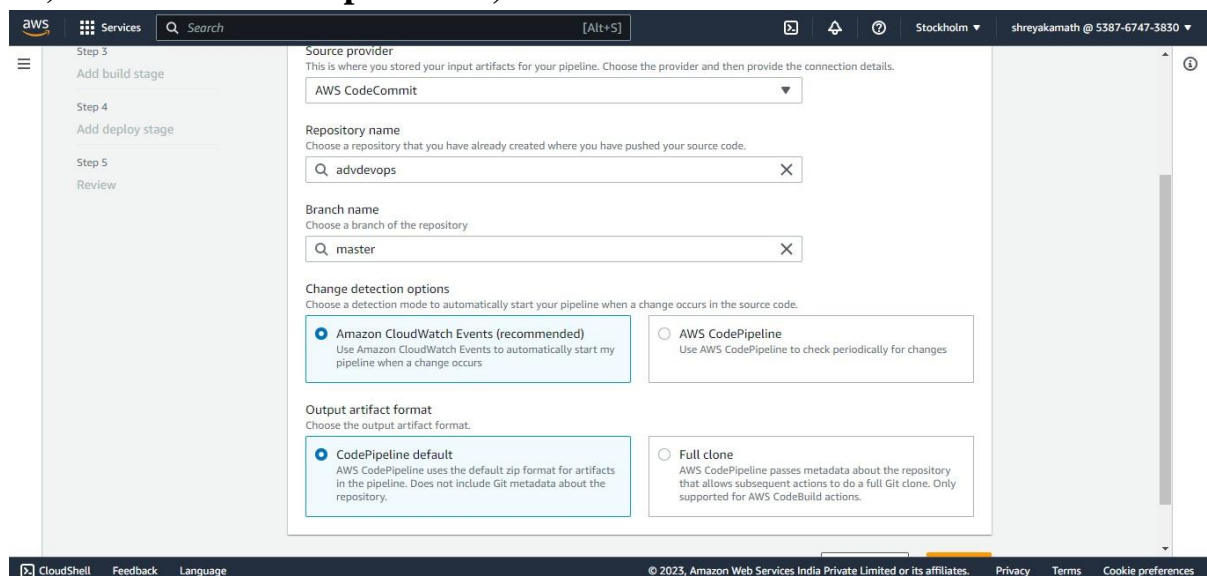
Choose how to deploy your application

☒ In-place
Updates the instances in the deployment group with the new version of the application.

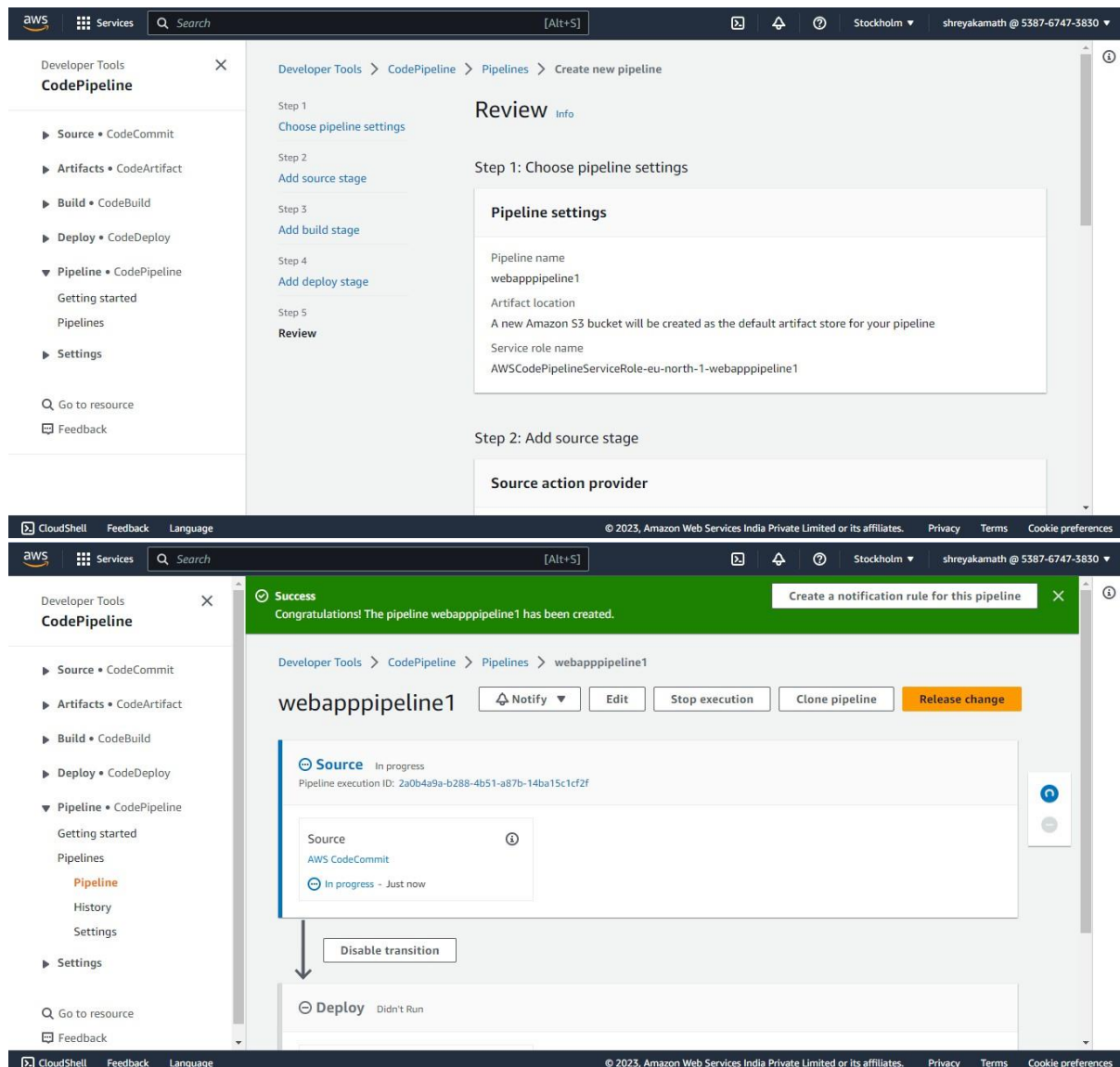
☐ Blue/green
Replaces the instances in the deployment group with new instances.



10) Select the source provider , artifact



11) Review the application and then click on deploy , after deploying success message is displayed on screen



Conclusion :-

Learnt about creation and deployment of web application using AWS codepipeline ,hence learnt about basic components of codepipeline in AWS such as codebuild , codecommit , codedeploy and built , committed and deployed a web application using codepipeline