



**Academic Year: 2022-23**

**Semester: V**

**Class / Branch: TE IT**

**Subject: Advanced Devops Lab (ADL)**

**Subject Lab Incharge: Prof. Manasi Choche**

### **EXPERIMENT NO. 01**

**Aim: To understand the benefits of Cloud Infrastructure and Setup AWS Cloud9 IDE, Launch AWS Cloud9 IDE and Perform Collaboration Demonstration.**

#### **Theory:**

AWS Cloud9 is a cloud-based integrated development environment (IDE) that lets you write, run, and debug your code with just a browser. It includes a code editor, debugger, and terminal. Cloud9 comes prepackaged with essential tools for popular programming languages, including JavaScript, Python, PHP, and more, so you don't need to install files or configure your development machine to start new projects. Since your Cloud9 IDE is cloud-based, you can work on your projects from your office, home, or anywhere using an internet-connected machine. Cloud9 also provides a seamless experience for developing serverless applications enabling you to easily define resources, debug, and switch between local and remote execution of serverless applications. With Cloud9, you can quickly share your development environment with your team, enabling you to pair program and track each other's inputs in real time.

#### **Benifits:**

#### **CODE WITH JUST A BROWSER**

AWS Cloud9 gives you the flexibility to run your development environment on a managed Amazon EC2 instance or any existing Linux server that supports SSH. This means that you can write, run, and debug applications with just a browser, without needing to install or maintain a local IDE. The Cloud9 code editor and integrated debugger include helpful, time-saving features such as code hinting, code completion, and step-through debugging. The Cloud9 terminal provides a browser-based shell experience enabling you to install additional software, do a git push, or enter commands.

#### **CODE TOGETHER IN REAL TIME**

AWS Cloud9 makes collaborating on code easy. You can share your development environment with your team in just a few clicks and pair program together. While collaborating, your team members can see each other type in real time, and instantly chat with one another from within the IDE.



## **BUILD SERVERLESS APPLICATIONS WITH EASE**

AWS Cloud9 makes it easy to write, run, and debug serverless applications. It preconfigures the development environment with all the SDKs, libraries, and plug-ins needed for serverless development. Cloud9 also provides an environment for locally testing and debugging AWS Lambda functions. This allows you to iterate on your code directly, saving you time and improving the quality of your code.

## **DIRECT TERMINAL ACCESS TO AWS**

AWS Cloud9 comes with a terminal that includes sudo privileges to the managed Amazon EC2 instance that is hosting your development environment and a preauthenticated AWS Command Line Interface. This makes it easy for you to quickly run commands and directly access AWS services

## **START NEW PROJECTS QUICKLY**

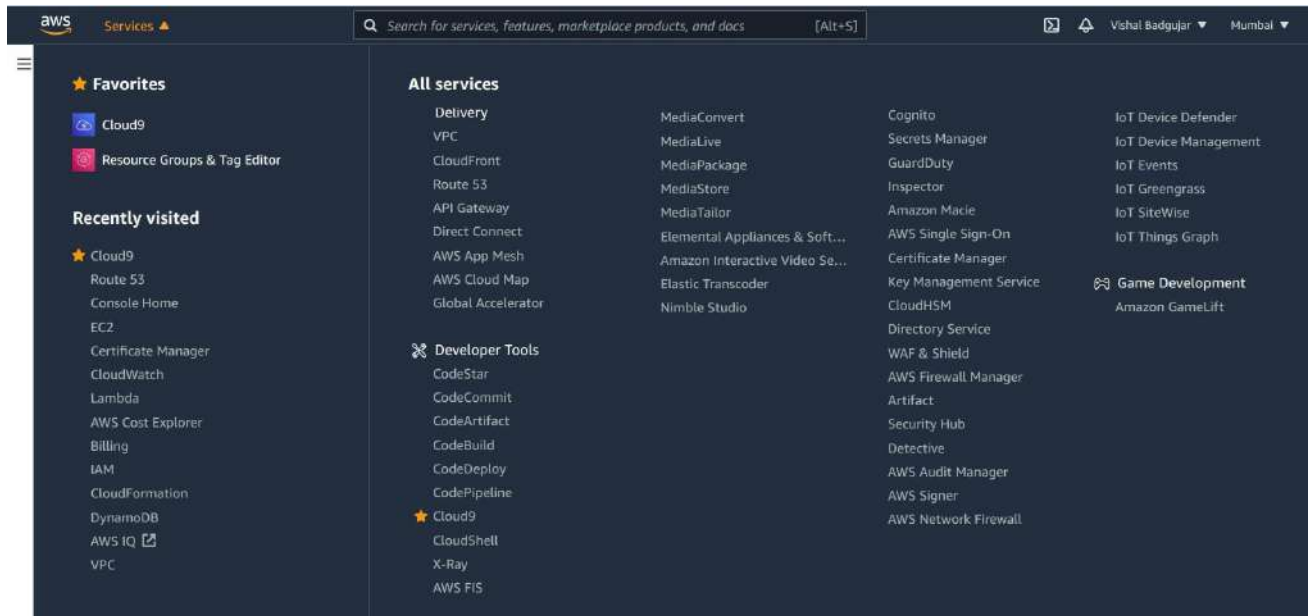
AWS Cloud9 makes it easy for you to start new projects. Cloud9's development environment comes prepackaged with tooling for over 40 programming languages, including Node.js, JavaScript, Python, PHP, Ruby, Go, and C++. This enables you to start writing code for popular application stacks within minutes by eliminating the need to install or configure files, SDKs, and plug-ins for your development machine. Because Cloud9 is cloud-based, you can easily maintain multiple development environments to isolate your project's resources.

### **Steps:**

- 1. Login with your AWS account.**
- 2. Navigate to Cloud 9 service from Developer tools section as below:**



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### 3. Click on Create Environment :





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**4. Provide name for the Environment (WebAppIDE) and click on next.**

AWS Cloud9 > Environments > Create environment

Step 1  
**Name environment**

Step 2  
Configure settings

Step 3  
Review

### Name environment

#### Environment name and description

**Name**  
The name needs to be unique per user. You can update it at any time in your environment settings.

Limit: 60 characters

**Description - Optional**  
This will appear on your environment's card in your dashboard. You can update it at any time in your environment settings.

*Write a short description for your environment*

Limit: 200 characters

Cancel **Next step**



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**5. Keep all the Default settings as shown in below:**

AWS Cloud9

Your environments

Shared with you

Account environments

How-to guide

AWS Cloud9 > Environments > Create environment

Step 1  
Name environment

Step 2  
Configure settings

Step 3  
Review

## Configure settings

### Environment settings

**Environment type** [Info](#)  
Run your environment in a new EC2 instance or an existing server. With EC2 instances, you can connect directly through Secure Shell (SSH) or connect via AWS Systems Manager (without opening inbound ports).

- ☒ **Create a new EC2 instance for environment (direct access)**  
Launch a new instance in this region that your environment can access directly via SSH.
- ☐ **Create a new no-ingress EC2 instance for environment (access via Systems Manager)**  
Launch a new instance in this region that your environment can access through Systems Manager.
- ☐ **Create and run in remote server (SSH connection)**  
Configure the secure connection to the remote server for your environment.

**Instance type**

- ☒ **t2.micro (1 GiB RAM + 1 vCPU)**  
Free-tier eligible. Ideal for educational users and exploration.
- ☐ **t3.small (2 GiB RAM + 2 vCPU)**  
Recommended for small-sized web projects.
- ☐ **m5.large (8 GiB RAM + 2 vCPU)**  
Recommended for production and general-purpose development.
- ☐ **Other instance type**  
Select an instance type.

t3.nano

**Platform**

- ☒ **Amazon Linux 2 (recommended)**
- ☐ Amazon Linux AMI
- ☐ Ubuntu Server 18.04 LTS

**Cost-saving setting**  
Choose a predetermined amount of time to auto-hibernate your environment and prevent unnecessary charges. We recommend a hibernation settings of half an hour of no activity to maximize savings.

After 30 minutes (default)

**IAM role**  
AWS Cloud9 creates a service-linked role for you. This allows AWS Cloud9 to call other AWS services on your behalf. You can delete the role from the AWS IAM console once you no longer have any AWS Cloud9 environments. [Learn more](#)

AWSServiceRoleForAWSCloud9

**Network settings (advanced)**

No tags associated with the resource.

Add new tag

You can add 50 more tags.

Cancel

Previous step

Next step



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## 6. Review the Environment name and Settings and click on Create Environment:

**AWS Cloud9** X

Your environments

Shared with you

Account environments

How-to guide

AWS Cloud9 > Environments > Create environment

Step 1  
Name environment

Step 2  
Configure settings

Step 3  
Review

## Review

### Environment name and settings

Name

WebAppIDE

Description

No description provided

Environment type

EC2

Instance type

t2.micro

Subnet

Platform

Amazon Linux 2 (recommended)

Cost-saving settings

After 30 minutes (default)

IAM role

AWSServiceRoleForAWSCloud9 (generated)

We recommend the following best practices for using your AWS Cloud9 environment

- Use **source control and backup** your environment frequently. AWS Cloud9 does not perform automatic backups.
- Perform regular **updates of software** on your environment. AWS Cloud9 does not perform automatic updates on your behalf.
- Turn on AWS CloudTrail in your AWS account** to track activity in your environment. [Learn more](#)
- Only share your environment with **trusted users**. Sharing your environment may put your AWS access credentials at risk. [Learn more](#)

Cancel

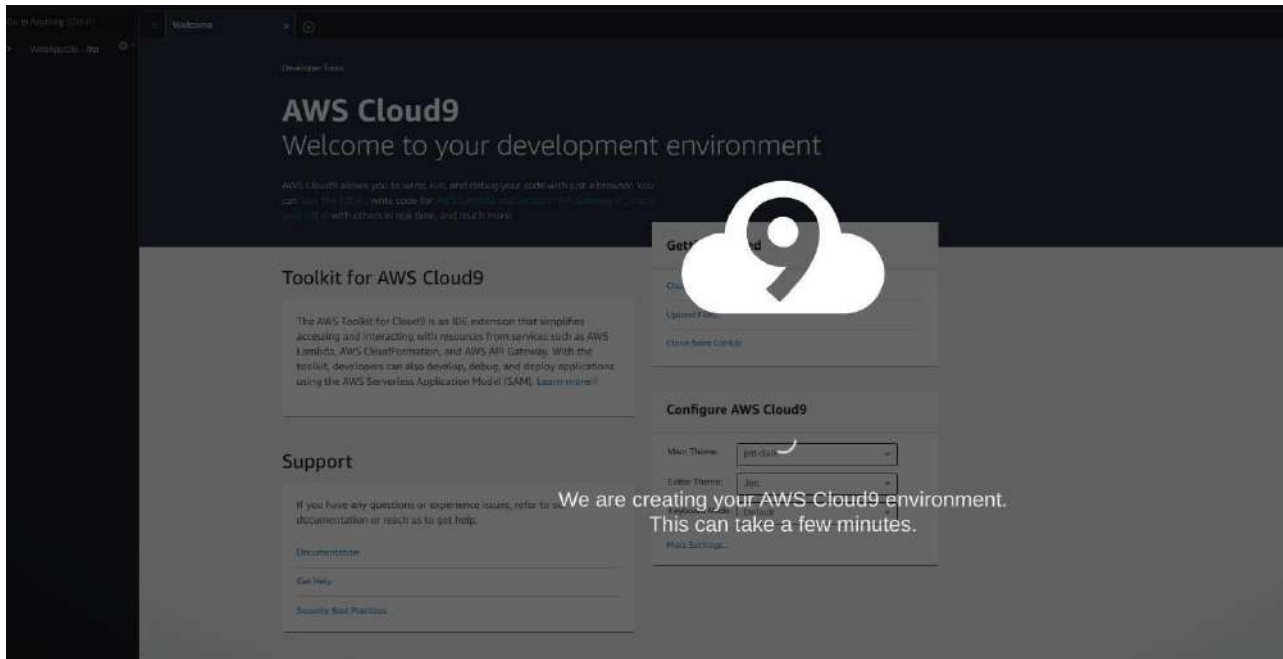
Previous step

Create environment



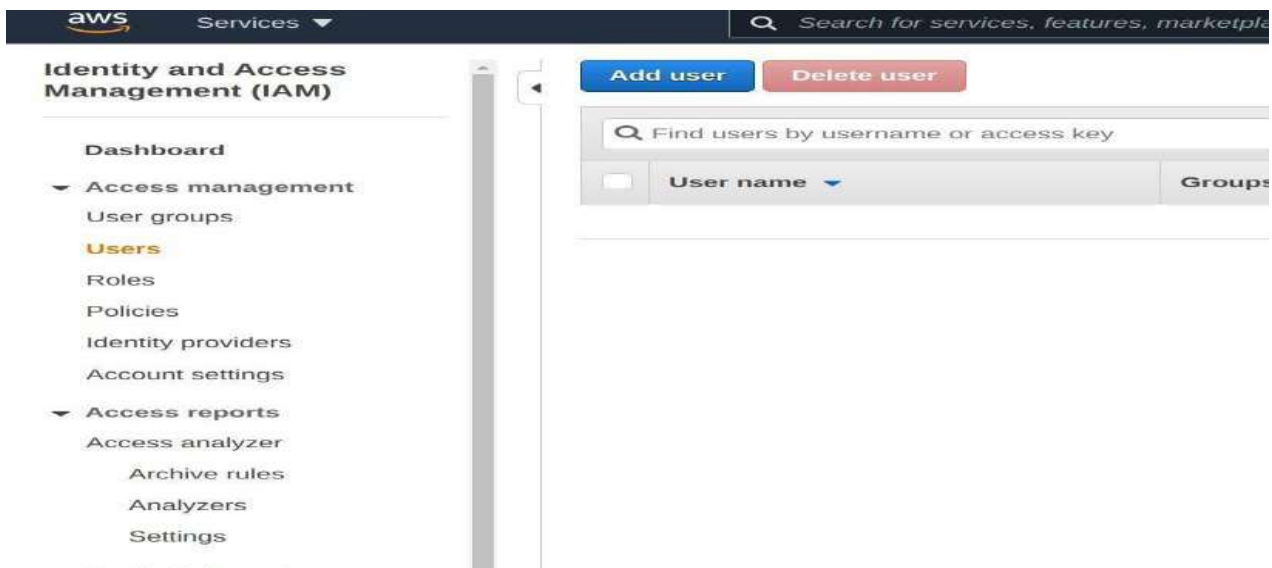


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It will take few minutes to create aws instance for your Cloud 9 Enviornment.

**7. Till that time open IAM Identity and Access Management in order to Add user In other tab.**





8. Add user provide manual password if you want and click on Next permission tab.

Add user

12345

Set user details

You can add multiple users at once with the same access type and permissions. [Learn more](#)

User name\*

apsit

+ Add another user

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

Access type\*

☐ Programmatic access

Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

☒ AWS Management Console access

Enables a **password** that allows users to sign-in to the AWS Management Console.

Console password\*

☐ Autogenerated password

☒ Custom password

\*\*\*\*\*

☐ Show password

Require password reset

☐ User must create a new password at next sign-in

Users automatically get the [IAMUserChangePassword](#) policy to allow them to change their own password.

\* Required

Cancel

Next: Permissions

9. Click on Create group

Add user

1

Set permissions

Add user to group

Copy permissions from existing user

Attach existing policies directly

**Get started with groups**

You haven't created any groups yet. Using groups is a best-practice way to manage users' permissions by job access, or your custom permissions. Get started by creating a group. [Learn more](#)

Create group

Set permissions boundary





## 10. Provide group name and click on create group.

Create group

Create a group and select the policies to be attached to the group. Using groups is a best practice way to manage users' permissions by job functions, AWS service access, or your custom permissions. [Learn more](#)

Group name

Create policy

Refresh

Filter policies

Q Search

Showing 669 results

	Policy name	Type	Used as	Description
<input type="checkbox"/>	AdministratorAccess	Job function	None	Provides full access to AWS services and resources.
<input type="checkbox"/>	AdministratorAccess-Amplify	AWS managed	None	Grants account administrative permissions while explicitly allowing direct access to resour...
<input type="checkbox"/>	AdministratorAccess-AWSElasticBeanst...	AWS managed	None	Grants account administrative permissions. Explicitly allows developers and administrators...
<input type="checkbox"/>	AlexaForBusinessDeviceSetup	AWS managed	None	Provide device setup access to AlexaForBusiness services
<input type="checkbox"/>	AlexaForBusinessFullAccess	AWS managed	None	Grants full access to AlexaForBusiness resources and access to related AWS Services
<input type="checkbox"/>	AlexaForBusinessGatewayExecution	AWS managed	None	Provide gateway execution access to AlexaForBusiness services
<input type="checkbox"/>	AlexaForBusinessLifesizeDelegatedAcc...	AWS managed	None	Provide access to Lifesize AVS devices

Cancel

Create group

## 11. After that group is created click on next if u want to provide tag else click on Review for user settings and click on create user as shown in fig.

Add user

1

2

3

4

5

Review

Review your choices. After you create the user, you can view and download the autogenerated password and access key.

User details

User name	apsit
AWS access type	AWS Management Console access - with a password
Console password type	Custom
Require password reset	No
Permissions boundary	Permissions boundary is not set

Permissions summary

The user shown above will be added to the following groups.

Type	Name
Group	WebAppapsitgroup

Tags

No tags were added.

Cancel

Previous

Create user



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## 12. Now close that window and Navigate to user Groups from left pane in IAM.

Identity and Access Management (IAM)

Dashboard

Access management

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

Access reports

- Access analyzer
- Archive rules
- Analyzers
- Settings
- Credential report
- Organization activity
- Service control policies (SCPs)

Introducing the new User groups experience  
We've redesigned the User groups experience to make it easier to use. Let us know what you think.

IAM > User groups

User groups (1) Info  
A user group is a collection of IAM users. Use groups to specify permissions for a collection of users.

Filter User groups by property or group name and press enter

<input type="checkbox"/>	Group name	Users	Permissions	Creation time
<input type="checkbox"/>	WebAppapsitgroup	1	Not defined	4 minutes ago

## 13. click on your group name which you have created and navigate to permission tab as shown:

Identity and Access Management (IAM)

Dashboard

Access management

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

Access reports

- Access analyzer
- Archive rules
- Analyzers
- Settings
- Credential report
- Organization activity
- Service control policies (SCPs)

IAM > User groups > WebAppapsitgroup

WebAppapsitgroup

Summary

Users Permissions Access advisor

Permissions policies (0) Info  
You can attach up to 10 managed policies.

Filter policies by property or policy name and press enter

<input type="checkbox"/>	Policy Name	Type	Attached entities
No resources to display			



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**14. Now click on Add permission and select Attach Policy after that search for Cloud9 related policy and select Awscloud9EnvironmentMember policy and add it.**

Other permission policies (Selected 1/669) [Info](#)

You can attach up to 10 managed policies to this user group. All of the users in this group inherit the attached permissions.

Filter policies by property or policy name and press enter 4 matches

Cloud9 Clear filters

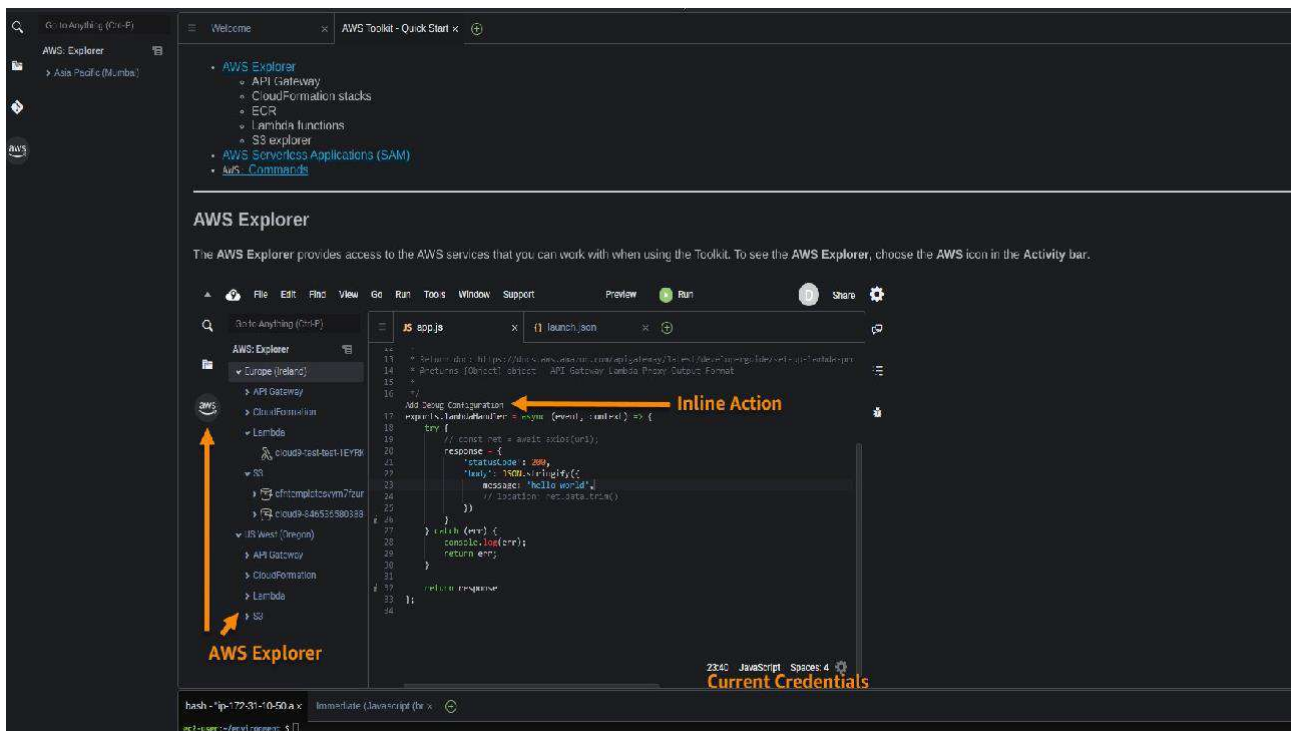
	Policy Name	Type	Attached entities
<input checked="" type="checkbox"/>	AWSCloud9EnvironmentMember	AWS managed	0
<input type="checkbox"/>	AWSCloud9Administrator	AWS managed	0
<input type="checkbox"/>	AWSCloud9User	AWS managed	0
<input type="checkbox"/>	AWSCloud9SSMInstanceProfile	AWS managed	0

Cancel Add permissions

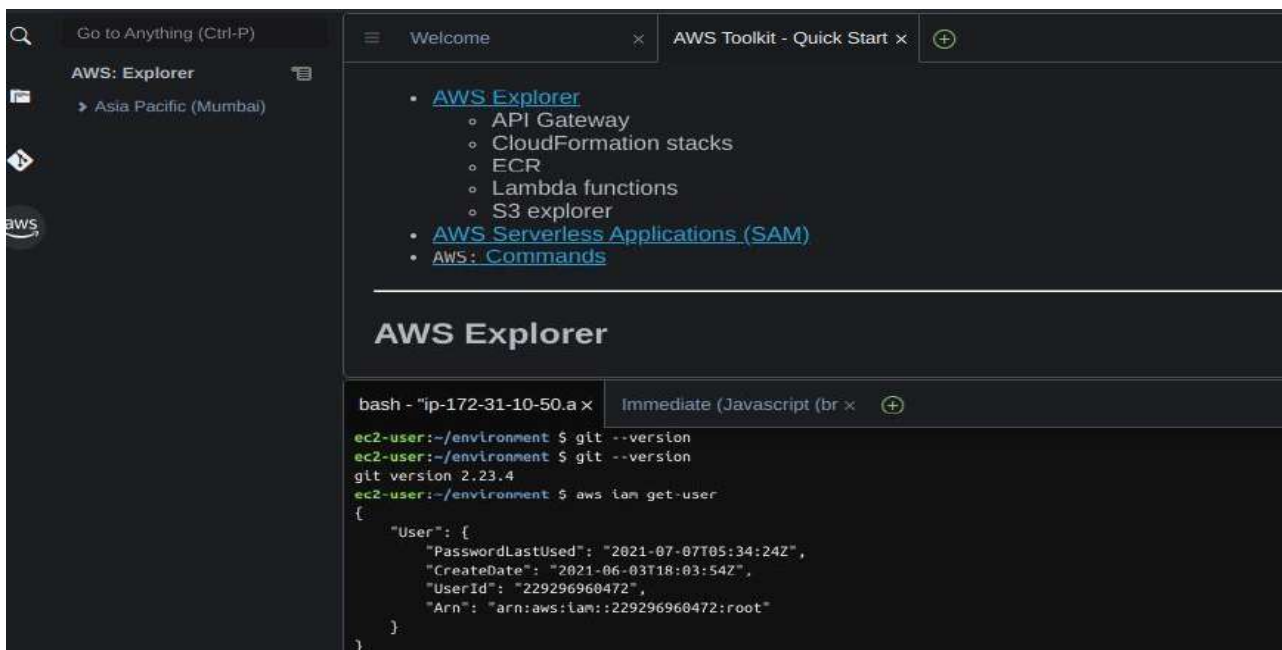
**15. now we move towards our cloud9 IDE Environment tab it shows as shown :**



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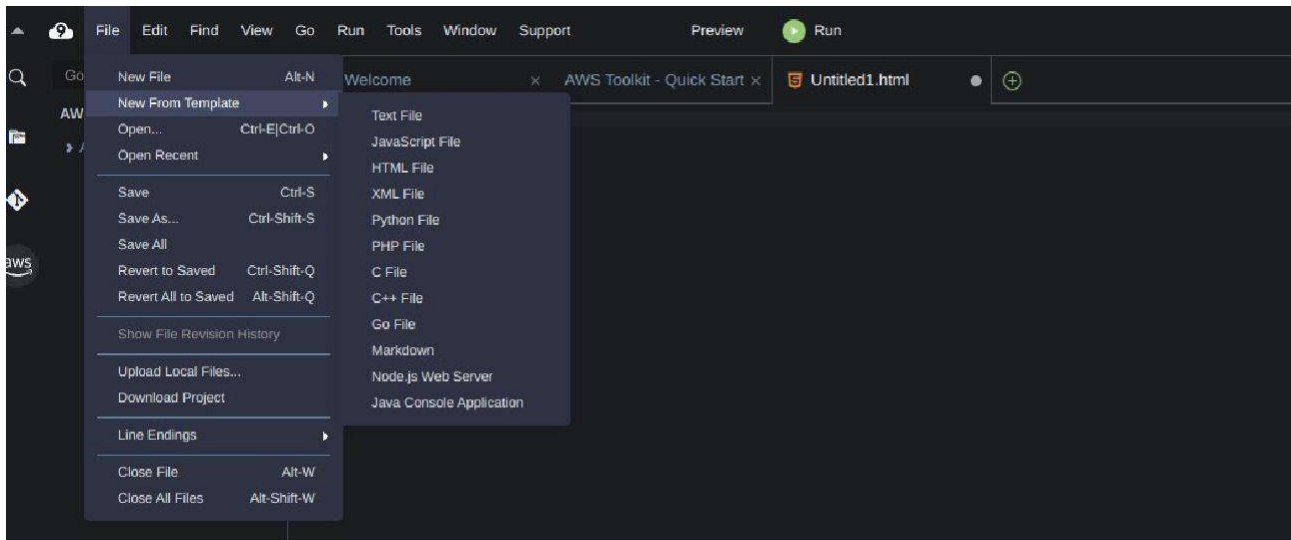


16. If you check at bottom side Cloud9 IDE also giving you and aws CLI for command operations: as we here checked git version, iam user details and so on...

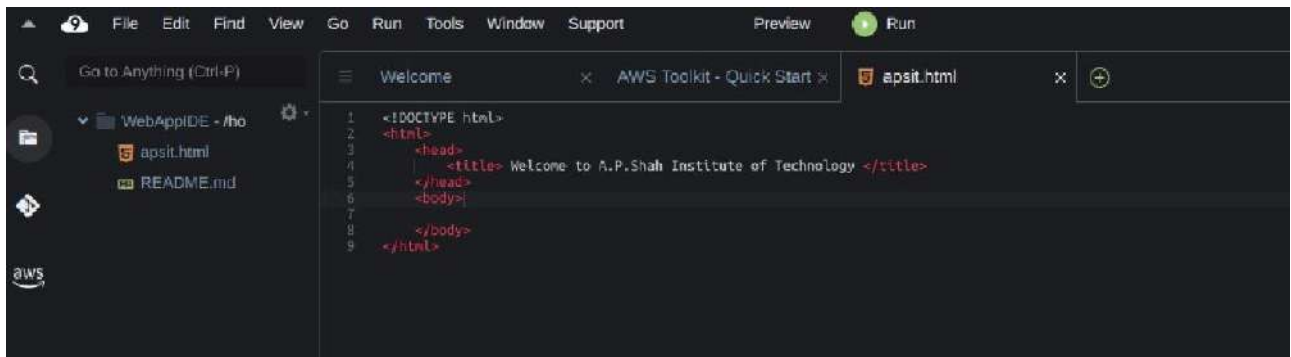




17. Now we will setup collaborative environment Click on File you can create new file or choose from template, here m opting html file to collaborate.

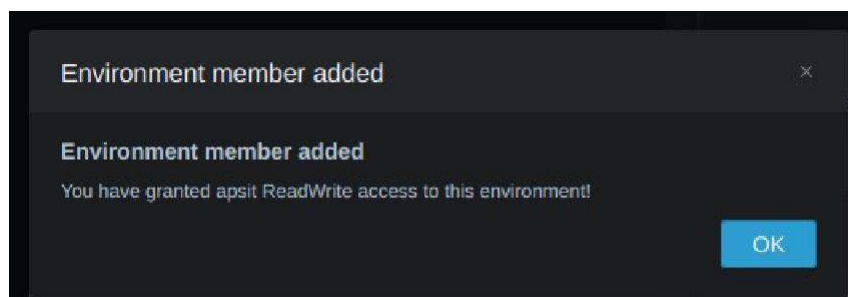
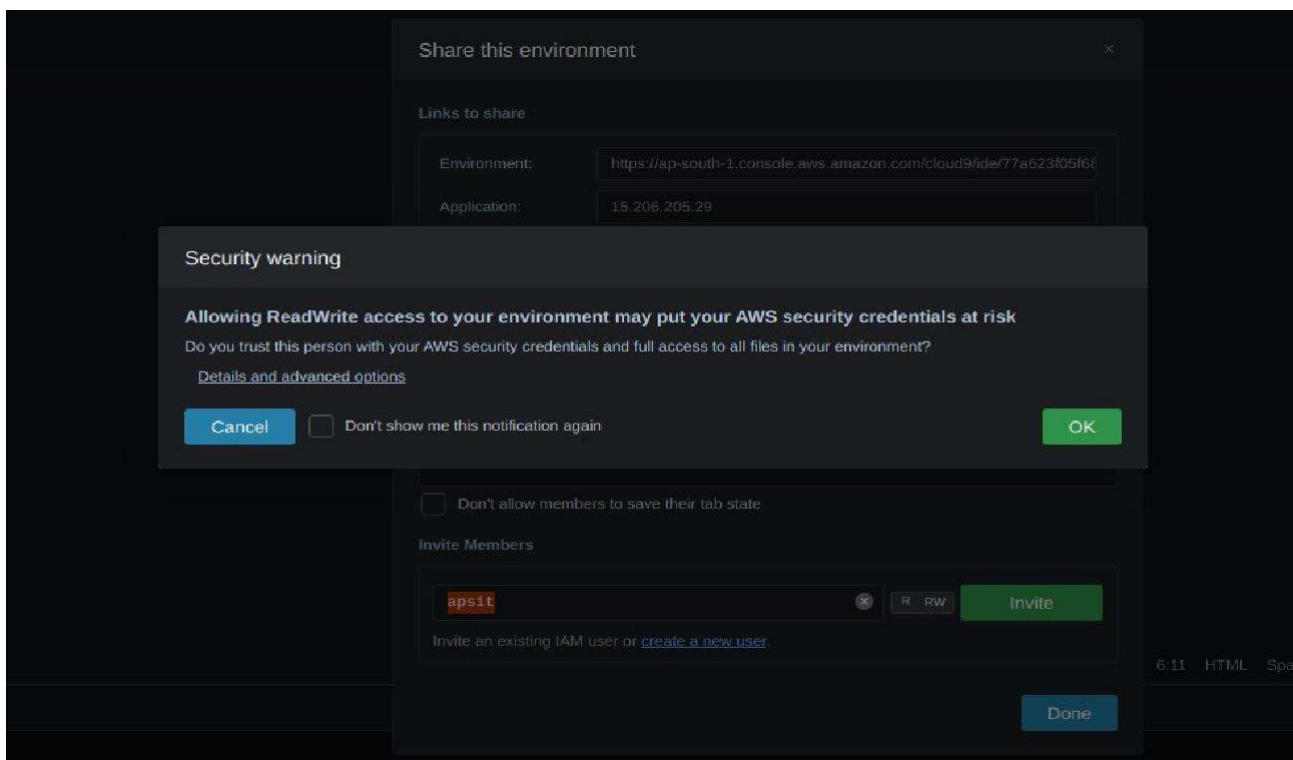


18. Edit html file and save it





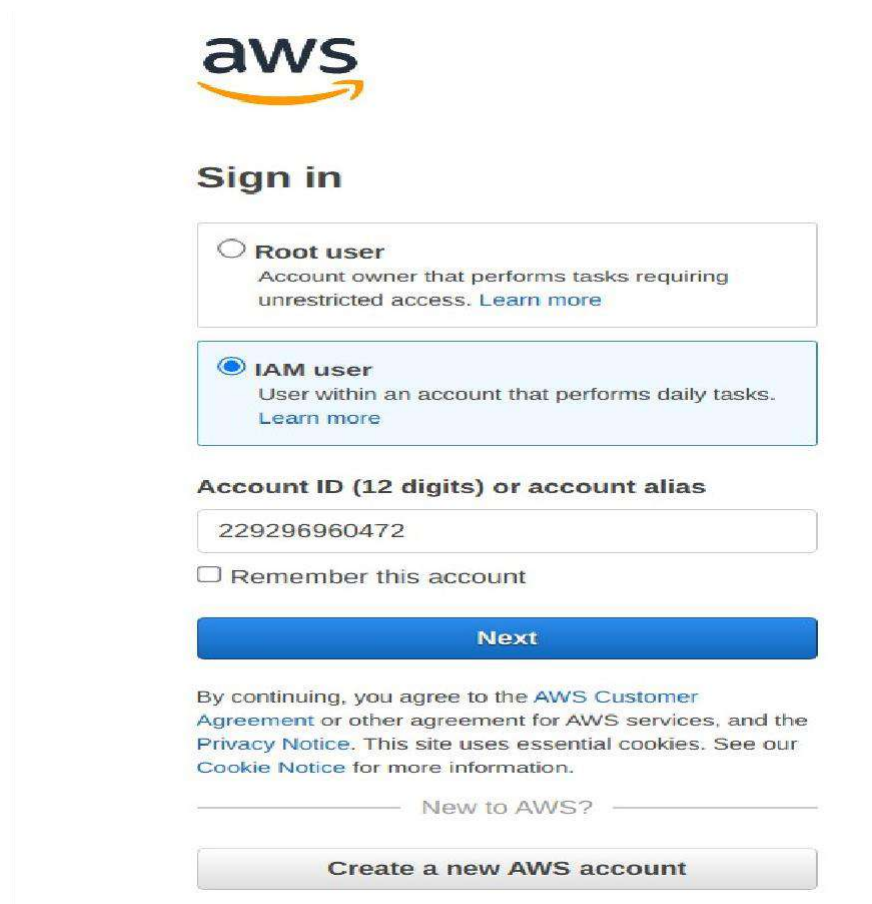
19. now in order to share this file to collaborate with other members of your team click on Share option on Right Pane and username which you created in IAM before into Invite members and enable permission as RW (Read and Write) and click on Done. Click OK for Security warning.







20. Now Open your Browsers Incognito Window and login with IAM user which you configured before.



The screenshot shows the AWS Sign in page. At the top is the AWS logo. Below it is the heading "Sign in". There are two radio button options: "Root user" (unselected) and "IAM user" (selected). The "IAM user" option is highlighted with a blue border. Below the options is a text input field for "Account ID (12 digits) or account alias" containing the value "229296960472". There is a checkbox for "Remember this account" which is unchecked. A blue "Next" button is below the input field. At the bottom, there is a link to the "AWS Customer Agreement" and a "Privacy Notice" link. Below these links is a link for "New to AWS?" and a "Create a new AWS account" button.

**aws**

### Sign in

☐ **Root user**  
Account owner that performs tasks requiring unrestricted access. [Learn more](#)

☒ **IAM user**  
User within an account that performs daily tasks. [Learn more](#)

**Account ID (12 digits) or account alias**

229296960472

☐ Remember this account

**Next**

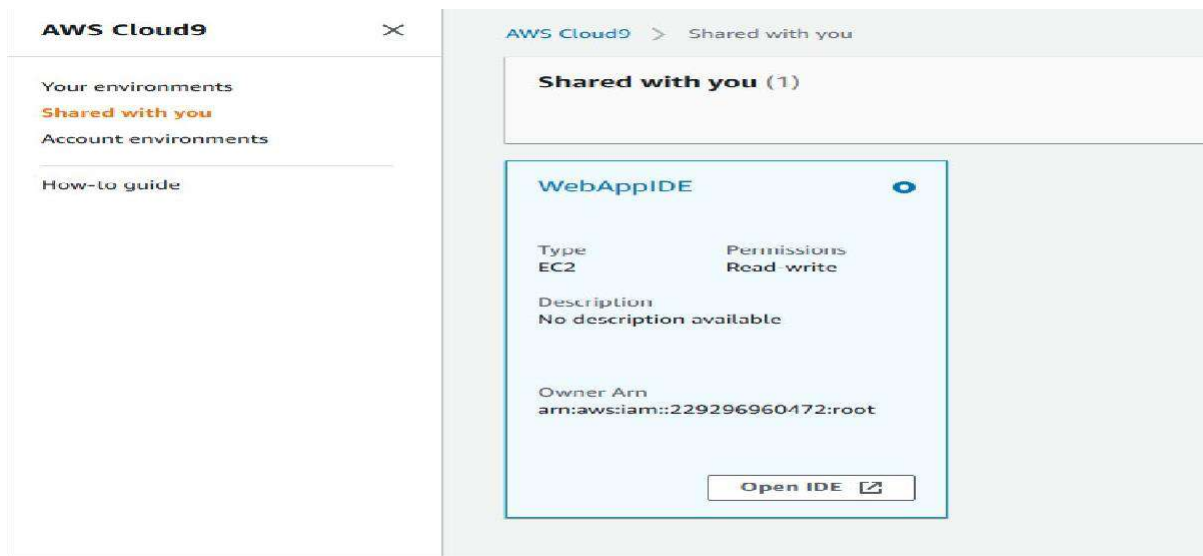
By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.

[New to AWS?](#)

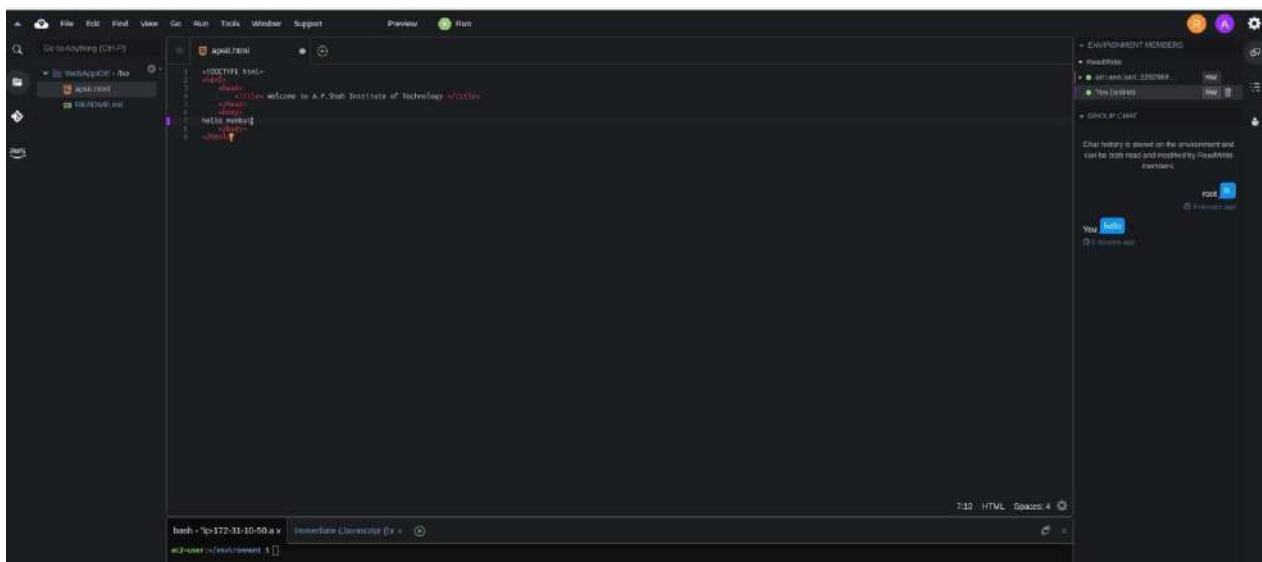
**Create a new AWS account**



**21. After Successful login with IAM user open Cloud9 service from dashboard services and click on shared with you enviornment to collaborate.**

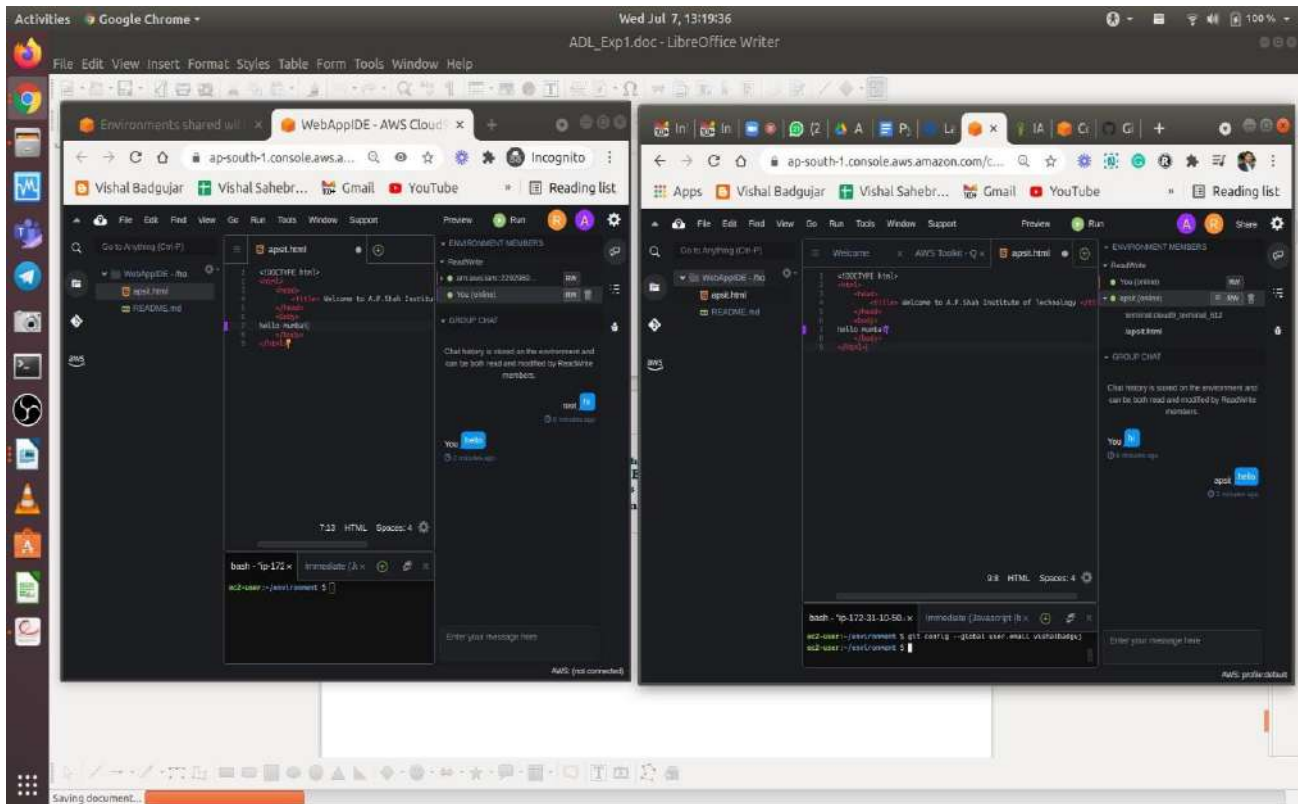


**22. Click on Open IDE you will same interface as your other member have to collaborate in real time, also you all within team can do group chats as shown below:**



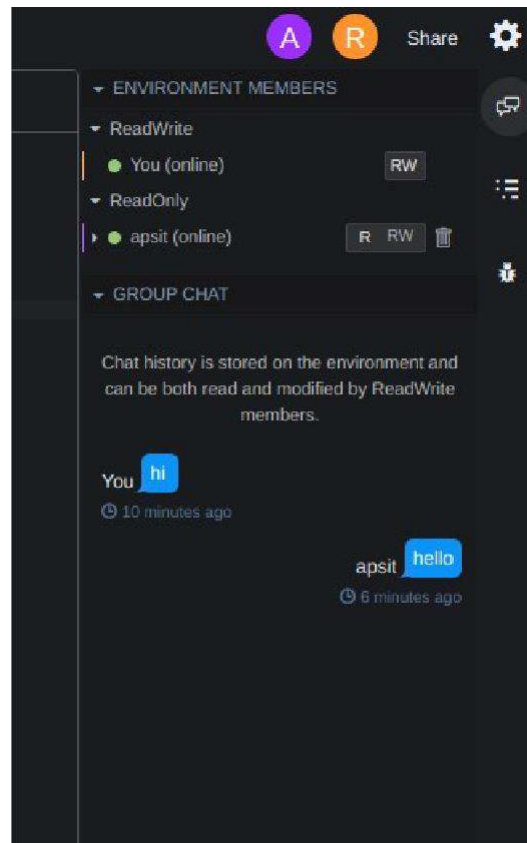


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24. you can also explore settings where you can update permissions of your temmates as from RW to R only or you can remove user too.



For more info related to AWS-Cloud 9 you all can refer following Docs.

<https://docs.aws.amazon.com/cloud9/latest/user-guide/aws-cloud9-ug.pdf>

**Conclusion:** Write your own findings.