

Assignment 2 - Setup your person AWS account

Task 1 – Enable MFA

Enable MFA for the root user. Install and use **Authy** app on your phone. Refer: [Enabling a virtual multi-factor authentication \(MFA\) device \(console\)](#)

Task 2 – Create an IAM user

Create an admin group with an administrator policy. Create a user for yourself in that group. Always use that IAM user. Refer: [Set Up an AWS Account and Create an Administrator User](#)

The best practice is always to use an IAM user. Never use your root user. If the IAM user credentials are compromised, you can use the root user and disable the IAM user. If you lose your root user credentials, no one can do anything about it even AWS and your card is linked there.

Task 3 – Set up a billing alarm

Refer: [Create a billing alarm to monitor your estimated AWS charges](#)

- a. Make sure the region is **North Virginia**
- b. Go to CloudWatch
- c. In Alarms, you will see “Billing” which selects the billing metric automatically.

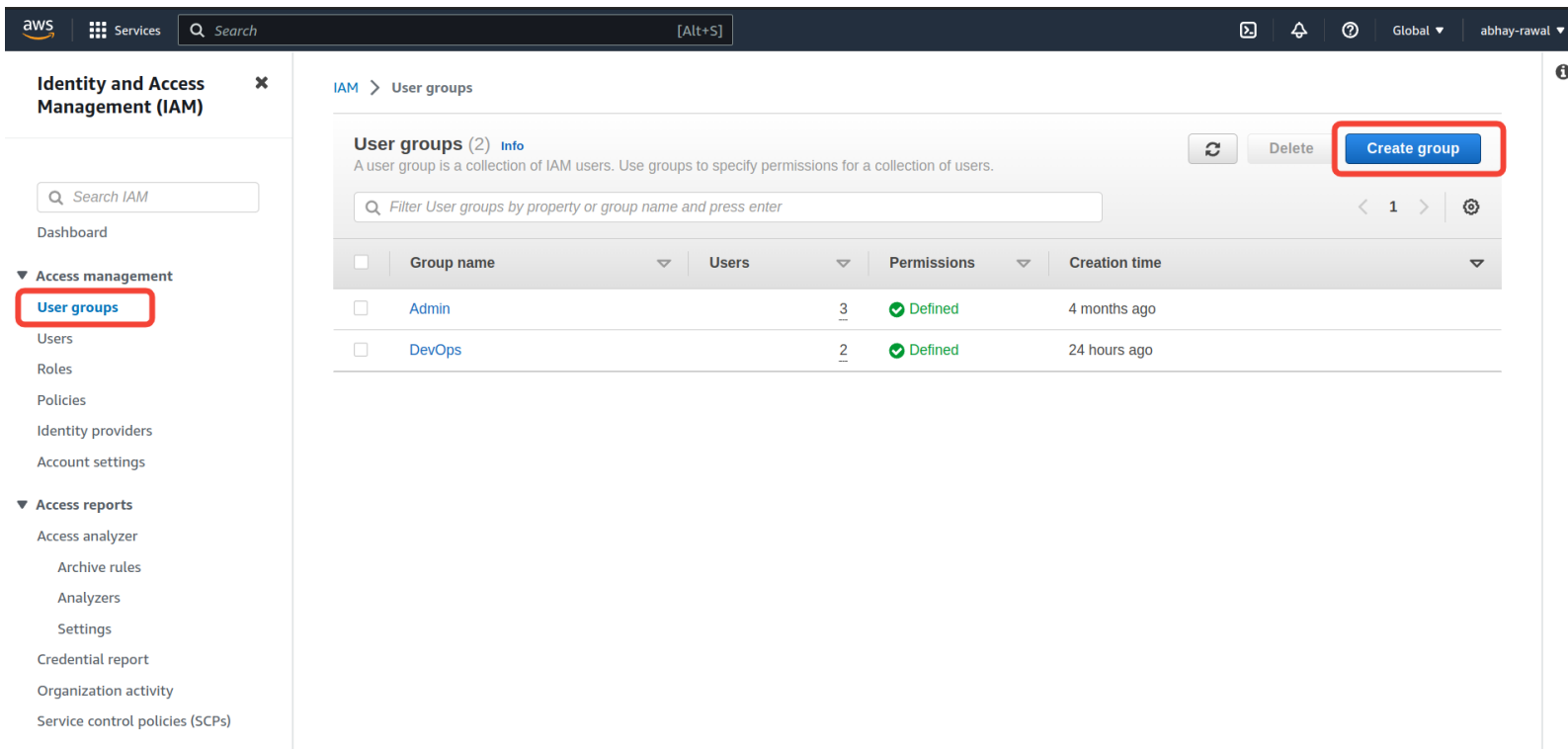
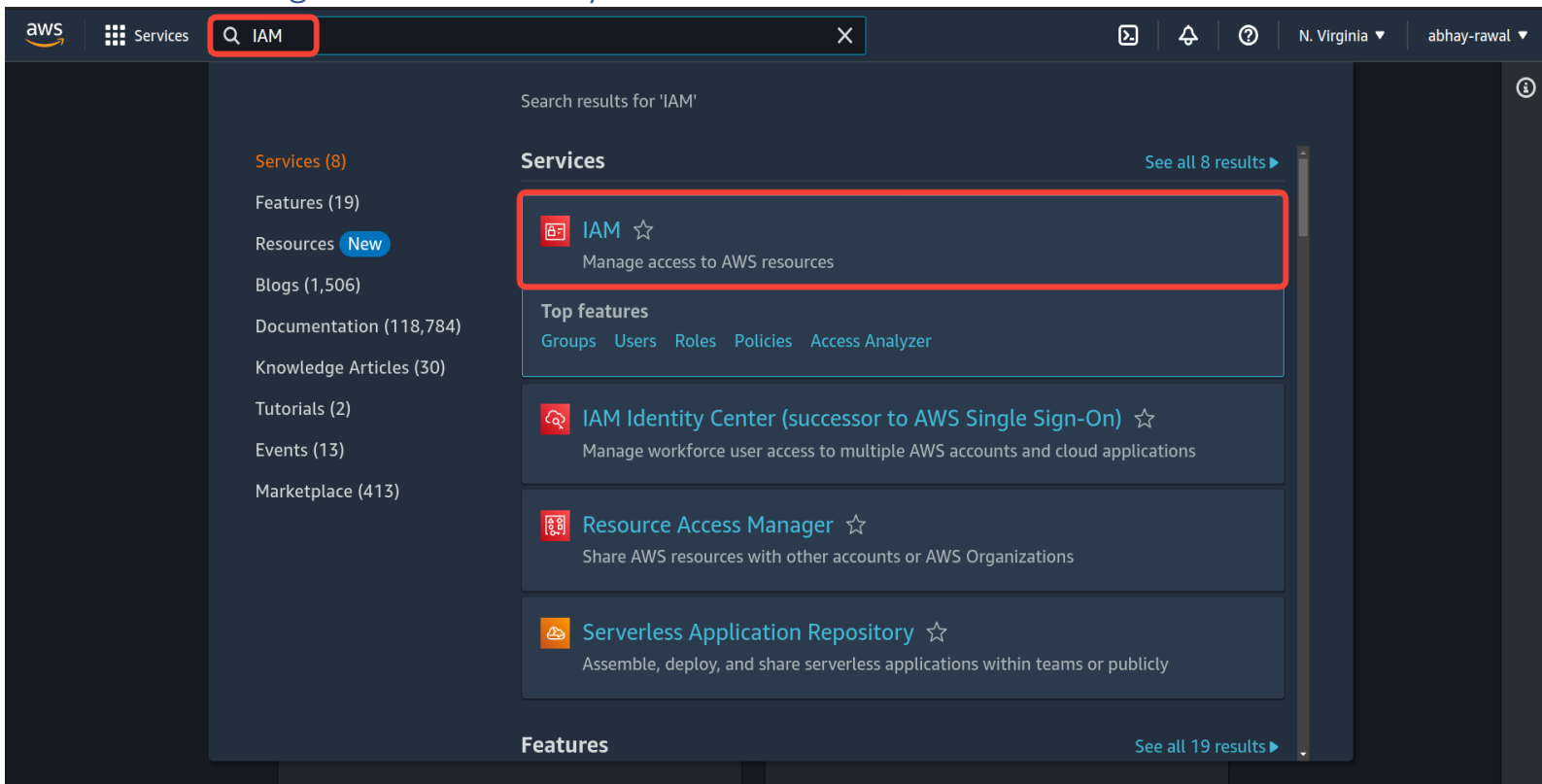
Task 4 – Practice IAM condition

List buckets based on a user tag. Write a custom IAM policy with a condition.

If the user has a “teams” tag which equals to “DevOps”, then allow them to list buckets.

1. Create a custom IAM policy that allows ListBuckets and ListObjects in a bucket with a condition, allow if the principle tag equals to DevOps. {tagName = teams, value = DevOps}
2. Create group named “Developer”. Associate with the IAM policy above.
3. Create Two Users,
 - a. User1-DevOps with a Tag “teams” = “DevOps”
 - b. User2-Tester
4. Create S3 Bucket
5. Put Object/file to the Bucket
6. Test

Creating an IAM user for yourself



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

Analyzers

Settings

Credential report

Organization activity

Service control policies (SCPs)

IAM > User groups > Create user group

Create user group

Name the group

User group name

Enter a meaningful name to identify this group.

Administrator

Maximum 128 characters. Use alphanumeric and '+', '@', '-' characters.

Add users to the group - Optional (7) Info

An IAM user is an entity that you create in AWS to represent the person or application that uses it to interact with AWS. A user can belong to up to 10 groups.

Search

< 1 >

<input type="checkbox"/>	User name	Groups	Last activity	Creation time
<input type="checkbox"/>	abhay-admin1	1	18 days ago	4 months ago
<input type="checkbox"/>	abhay-admin2	1	None	4 months ago
<input type="checkbox"/>	abhay-cloud	1	24 hours ago	24 hours ago
<input type="checkbox"/>	abhay-devops	1	20 hours ago	24 hours ago

Identity and Access Management (IAM)

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Credential report

Organization activity

Service control policies (SCPs)

abhay-devops

1

20 hours ago

24 hours ago

abhay-devops1

1

8 hours ago

24 hours ago

abhay-iam-assume

0

14 days ago

18 days ago

TestAdmin

0

None

29 minutes ago

Attach permissions policies - Optional (Selected 1/816) Info

You can attach up to 10 policies to this user group. All the users in this group will have permissions that are defined in the selected policies.

AdministratorAccess

4 matches

< 1 >

"AdministratorAccess" X

Clear filters

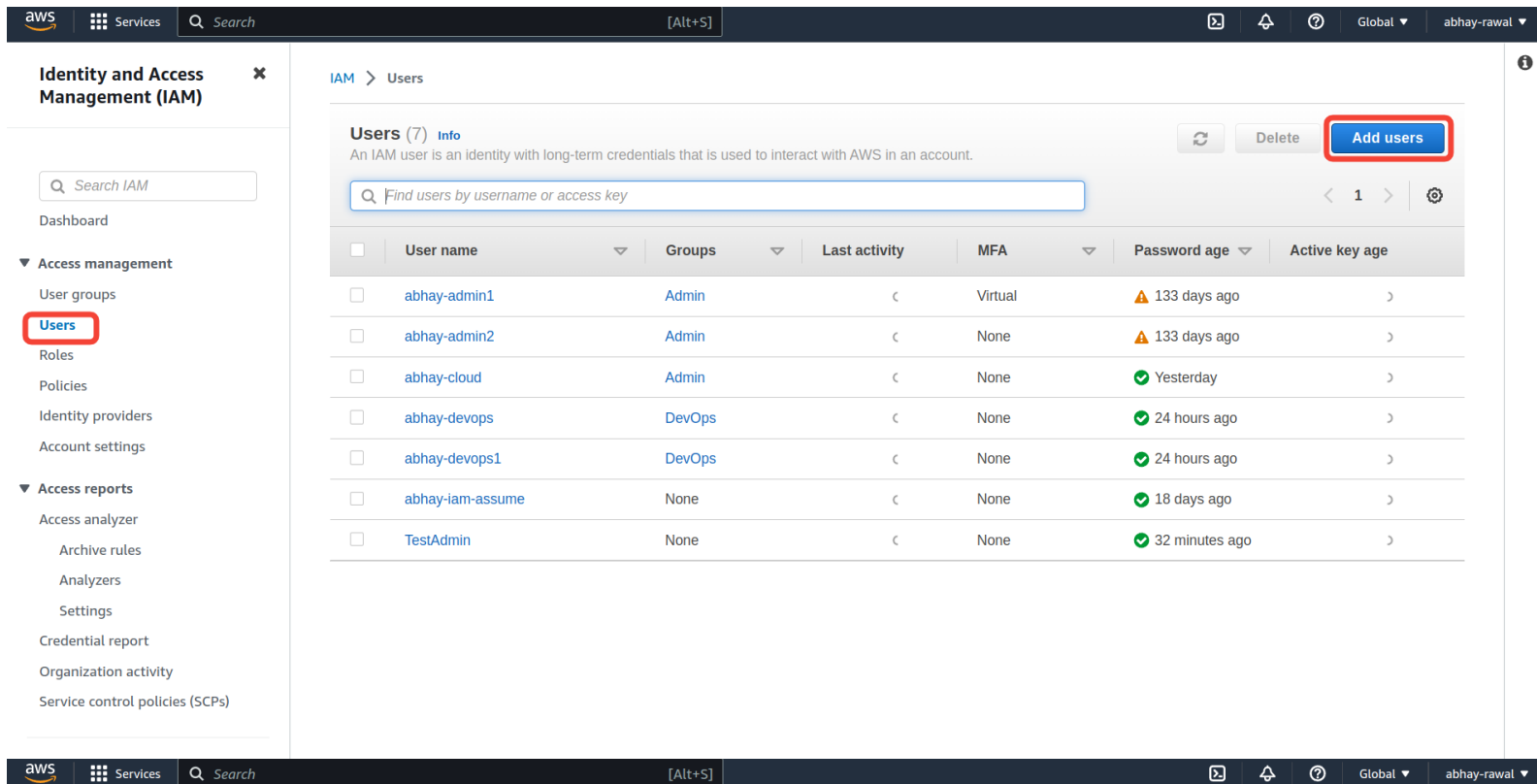
<input type="checkbox"/>	Policy name	Type	Description
<input checked="" type="checkbox"/>	AdministratorAccess	AWS managed - job function	Provides full access to A
<input type="checkbox"/>	AdministratorAccess-Amplify	AWS managed	Grants account administr
<input type="checkbox"/>	AdministratorAccess-AWSElasticBeanstalk	AWS managed	Grants account administr
<input type="checkbox"/>	AWSAuditManagerAdministratorAccess	AWS managed	Provides administrative a

Cancel

Create group

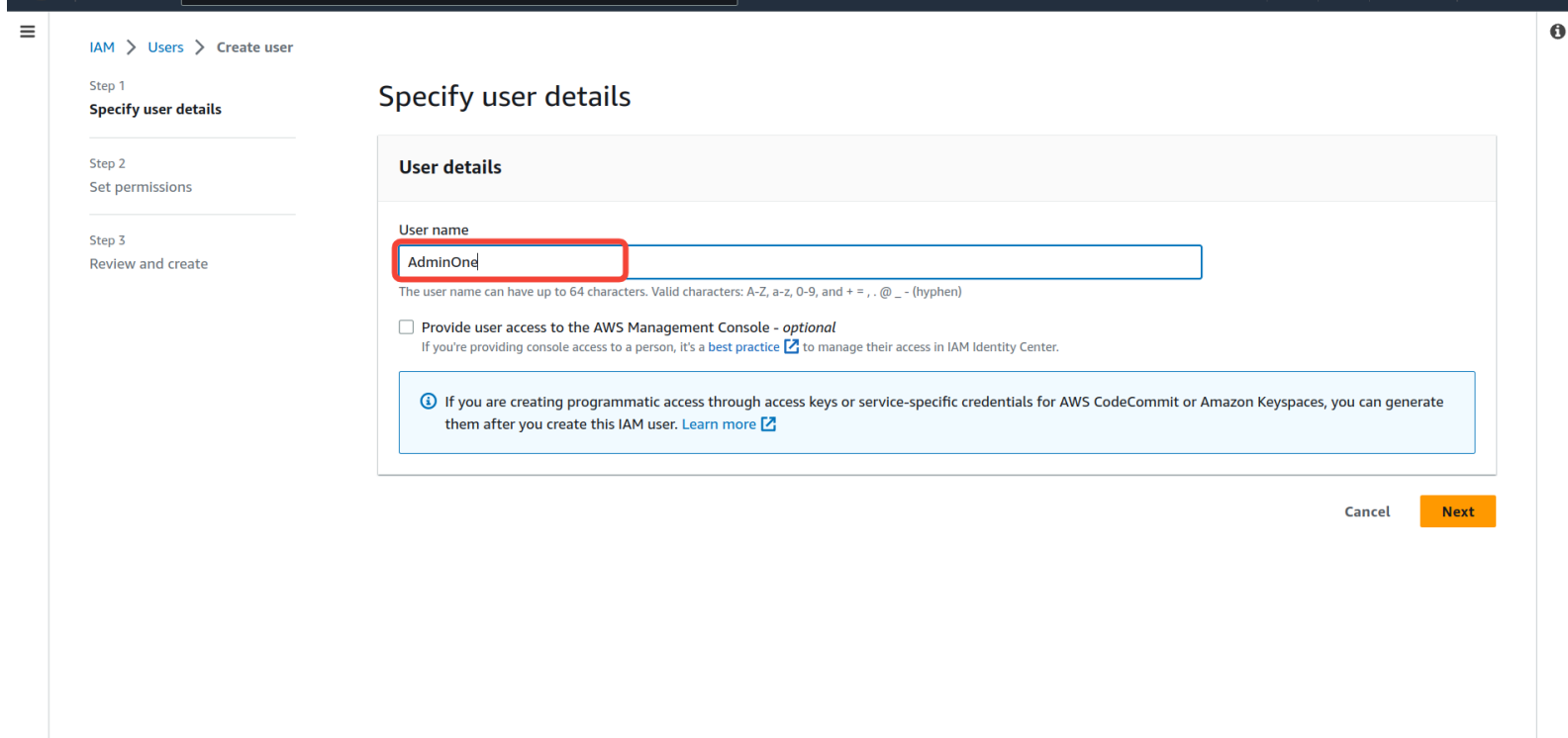
Creating IAM users and adding to a group

1. Sign into the AWS Management Console and open the IAM console
2. In the navigation pane, choose **Users** and then select **Add users**.



The screenshot shows the AWS IAM console interface. On the left, the 'Identity and Access Management (IAM)' navigation pane is visible, with 'Users' highlighted. The main content area shows the 'Users (7)' page. At the top right of this page, the 'Add users' button is highlighted with a red box. Below the button is a search bar and a table of existing users.

	User name	Groups	Last activity	MFA	Password age	Active key age
<input type="checkbox"/>	abhay-admin1	Admin	◀	Virtual	⚠ 133 days ago	➤
<input type="checkbox"/>	abhay-admin2	Admin	◀	None	⚠ 133 days ago	➤
<input type="checkbox"/>	abhay-cloud	Admin	◀	None	✅ Yesterday	➤
<input type="checkbox"/>	abhay-devops	DevOps	◀	None	✅ 24 hours ago	➤
<input type="checkbox"/>	abhay-devops1	DevOps	◀	None	✅ 24 hours ago	➤
<input type="checkbox"/>	abhay-iam-assume	None	◀	None	✅ 18 days ago	➤
<input type="checkbox"/>	TestAdmin	None	◀	None	✅ 32 minutes ago	➤



The screenshot shows the 'Specify user details' page in the AWS IAM console. The 'User name' field is highlighted with a red box and contains the text 'AdminOne'. Below the field, there is a checkbox for 'Provide user access to the AWS Management Console - optional' and a blue information box with a tip about programmatic access.

Specify user details

User details

User name

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.

ⓘ 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](#)

Cancel **Next**

Note: 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.

- a. Now we need to select if we want to Specify a user in Identity Center or Create an IAM user. **Choose "I want to create an IAM user"**.
 - After selecting **I want to create an IAM user**, you can choose one of the Password:
 - a. **Autogenerated password.** Each user gets a randomly generated password that meets the account password policy. You can view or download the passwords when you get to the **Final** page.
 - b. **Custom password.** Each user is assigned the password that you type in the box.
 - For this demo uncheck **Users must create a new password at next sign-in.**
 - Click Next

The screenshot shows the 'Create user' page in the AWS IAM console. The 'User name' field is filled with 'AdminOne'. Under 'Provide user access to the AWS Management Console - optional', the checkbox is checked. In the 'Are you providing console access to a person?' section, the radio button for 'I want to create an IAM user' is selected. In the 'Console password' section, the 'Custom password' radio button is selected, and a password is entered in the text box. A red arrow points to the 'Show password' checkbox, which is unchecked. Below the password field, the checkbox 'Users must create a new password at next sign-in (recommended)' is also unchecked. At the bottom right, the 'Next' button is highlighted with a red box. The left sidebar shows the navigation menu with 'Step 3: Review and create' and 'Step 4: Retrieve password'.

aws

Services

Search

[Alt+S]

Global

abhay-rawal

IAM > Users > Create user

Step 1
Specify user details

Step 2
Set permissions

Step 3
Review and create

Step 4
Retrieve password

Set permissions

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.

User groups (1/3)

☐

Admin

3

AdministratorAccess

2022-10-19 (4 months ago)

☒ Administrator0AdministratorAccess2023-03-01 (2 minutes ago)

☐ DevOps2None2023-02-28 (Yesterday)

Permissions boundary - optional

Set a permissions boundary to control the maximum permissions for this user. Use this advanced feature used to delegate permission management to others. [Learn more](#)

Cancel

Previous

Next

aws

Services

Search

[Alt+S]

Global

abhay-rawal

IAM > Users > Create user

Step 1
Specify user details

Step 2
Set permissions

Step 3
Review and create

Step 4
Retrieve password

Review and create

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

User details

User name
AdminOne

Console password type
Custom password

Require password reset
No

Permissions summary

Name

Type

Used as

Administrator

Group

Permissions group

Tags - optional

Tags are key-value pairs you can add to AWS resources to help identify, organize, or search for resources. Choose any tags you want to associate with this user.

No tags associated with the resource.

Add new tag

You can add up to 50 more tags.

Cancel

Previous

Create user

 **User created successfully**

You can view and download the user's password and email instructions for signing in to the AWS Management Console.

View user 


[IAM](#) > [Users](#) > Create user


- Step 1
Specify user details
- Step 2
Set permissions
- Step 3
Review and create
- Step 4
Retrieve password


Retrieve password

You can view and download the user's password below or email users instructions for signing in to the AWS Management Console. This is the only time you can view and download this password.

Console sign-in details [Email sign-in instructions](#)

Console sign-in URL
 <https://abhay-root-aws.signin.aws.amazon.com/console>

User name
 AdminOne

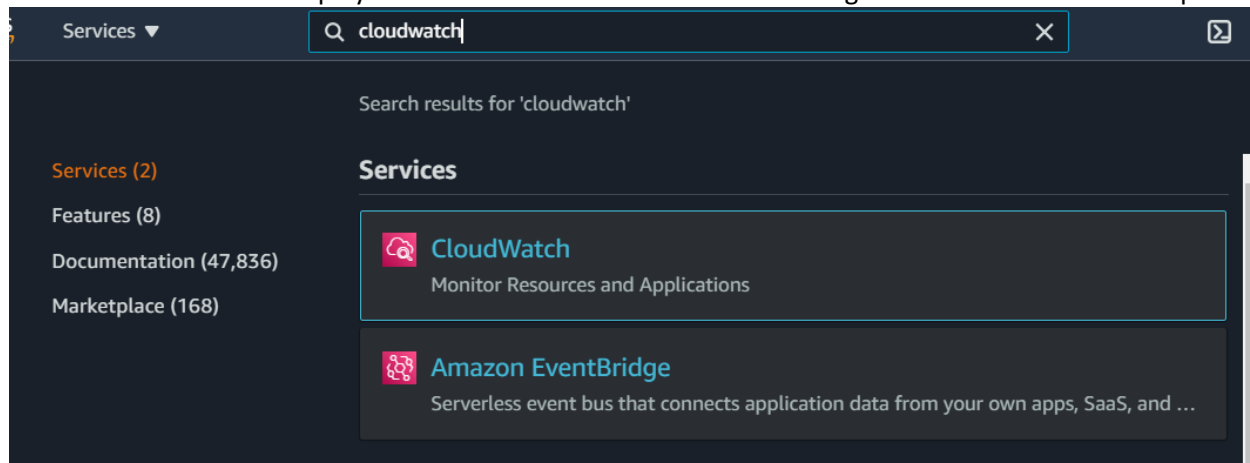
Console password
 ***** [Show](#)

Download .csv file

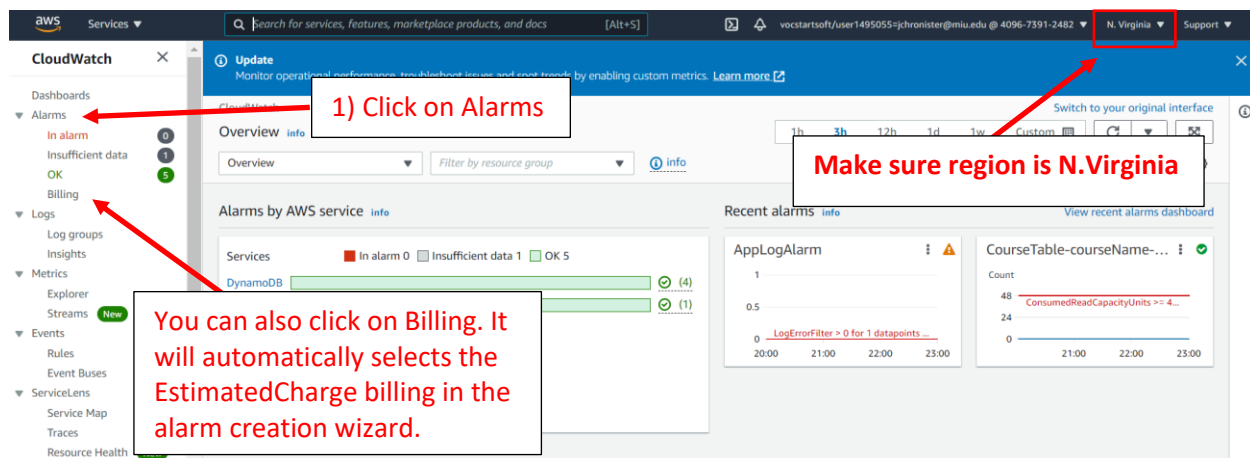
Return to users list

Setting up a billing alarm on CloudWatch

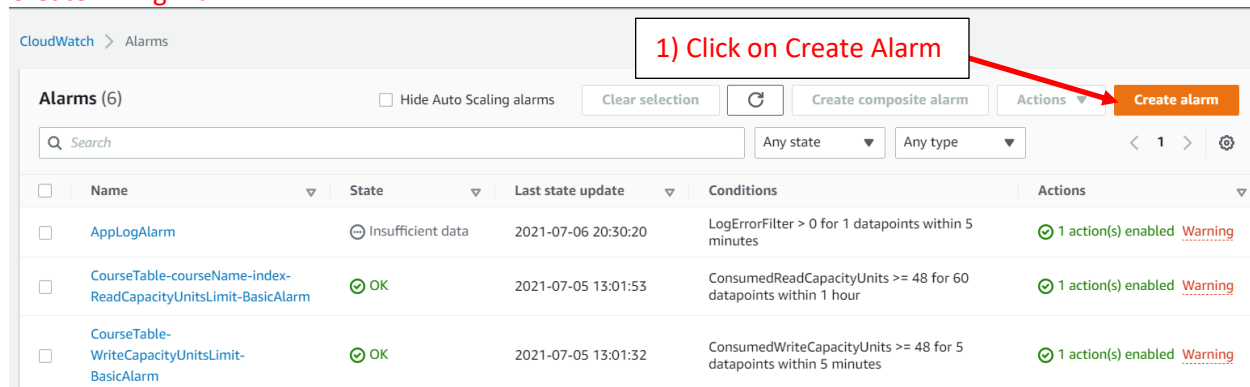
Go to the CloudWatch Display. Search or Find under All Services Management & Governance Group



Go to the Alarms Display. You must select us-east-1 **N.Virginia** region. Otherwise, billing metric is not there.



Create Billing Alarm



Step 1

Specify metric and conditions

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Specify metric and conditions

Metric

Graph

Preview of the metric or metric expression and the alarm threshold.

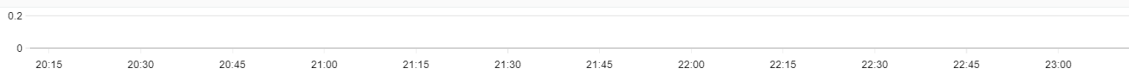
[Select metric](#)

2) Click Select Metric

Cancel

Next

Select metric



▼ AWS Namespaces

ApiGateway

11

ApplicationELB

177

Billing

14

DynamoDB

23

EBS

189

EC2

392

Events

5

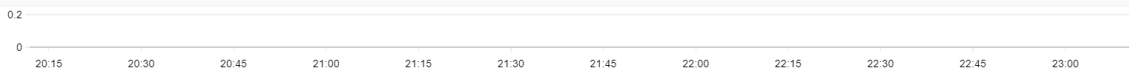
Lambda

26

Cancel

Select a single metric to continue

Select metric



Metrics (14)

All > Billing

Graph search

View graphed metrics

By Service

13

Total Estimated Charge

1

4) Click Total Estimated Charge

Cancel

Select a single metric to continue

Metrics (1)

Graph searchView graphed metrics (1)

All > Billing > Total Estimated Charge

Search for any metric, dimension or resource id

Currency (1)

Metric Name

USD

EstimatedCharges

5) Select USD Currency

6) Click Select Metric

CancelSelect metric

CloudWatch > Alarms > Create alarm

Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add name and description

Step 4
Preview and create

Specify metric and conditions

Metric

Edit

Graph

This alarm will trigger when the blue line goes above the red line for 1 datapoints within 6 hours.

No unit

1

0.8

0.6

0.4

0.2

0

07/0107/0307/0507/07

EstimatedCharges

Namespace

AWS/Billing

Metric name

EstimatedCharges

Currency

USD

Statistic

Maximum

Period

6 hours

...

Conditions

Threshold type

☒ Static
Use a value as a threshold

☐ Anomaly detection
Use a band as a threshold

Whenever EstimatedCharges is...

Define the alarm condition.

☐ Greater
> threshold

☒ Greater/Equal
≥ threshold

☐ Lower/Equal
≤ threshold

☐ Lower
< threshold

than...

Define the threshold value.

1

USD

Must be a number

7) Pick Some Conditions

8) Click Next

► Additional configuration

Cancel

Next

Step 1

Specify metric and
conditions

Step 2

Configure actions

Step 3

Add name and
description

Step 4

Preview and create

Configure actions

Notification

Alarm state trigger

Define the alarm state that will trigger this action.

Remove

☒ **In alarm**

The metric or expression is
outside of the defined
threshold.

☐ **OK**

The metric or expression is
within the defined threshold.

☐ **Insufficient data**

The alarm has just started or
not enough data is available.

Select an SNS topic

Define the SNS (Simple Notification Service) topic that will receive the notification.

☐ Select an existing SNS topic

☒ **Create new topic**

☐ Use topic ARN

9) Select Create New SNS Topic

Create a new topic...

The topic name must be unique.

MyBillingAlarm

10) Name Topic

SNS topic names can contain only alphanumeric characters, hyphens (-) and underscores (_).

Email endpoints that will receive the notification...

Add a comma-separated list of email addresses. Each address will be added as a subscription to the topic above.

jc@miu.edu

user1@example.com, user2@example.com

11) Enter Email

Create topic

Add notification

12) Click Create Topic

...

Send a notification to...

🔍 MyBillingAlarm ✕

Only email lists for this account are available.

Email (endpoints)

jc@miu.edu - [View in SNS Console](#) 🔗

Add notification

Auto Scaling action

Add Auto Scaling action

EC2 action

This action is only available for EC2 Per-Instance Metrics.

Add EC2 action

Systems Manager action [Info](#) 🔗

This action will create an Incident or OpsItem in Systems Manager when the alarm is **In alarm** state.

Add Systems Manager action

13) Click Next

Cancel

Previous

Next

Add name and description

Name and description

Alarm name

MyBillingAlarm

14) Name Alarm

Alarm description - *optional*

Alarm description

Up to 1024 characters (0/1024)

15) Click Next

Cancel Previous Next

...

Step 3: Add name and description

Edit

Name and description

Name

MyBillingAlarm

Description

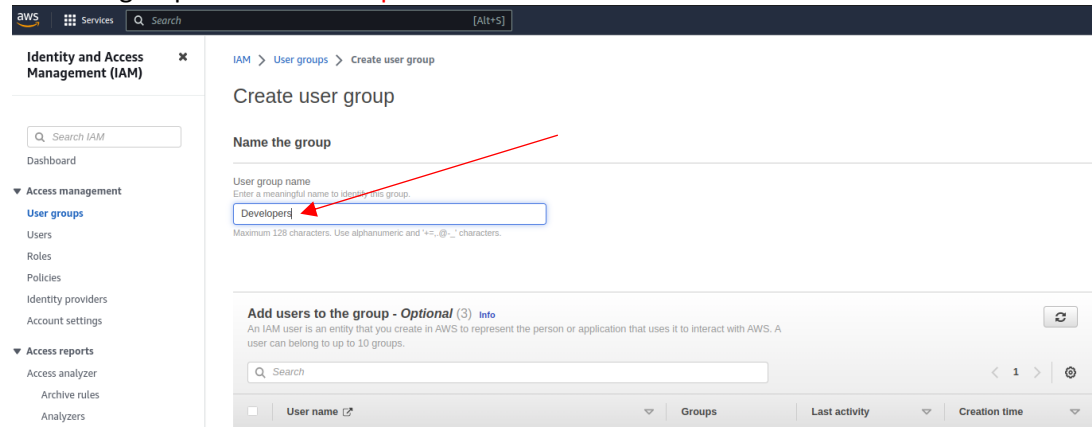
-

16) Preview Alarm and Click Create Alarm

Cancel Previous Create alarm

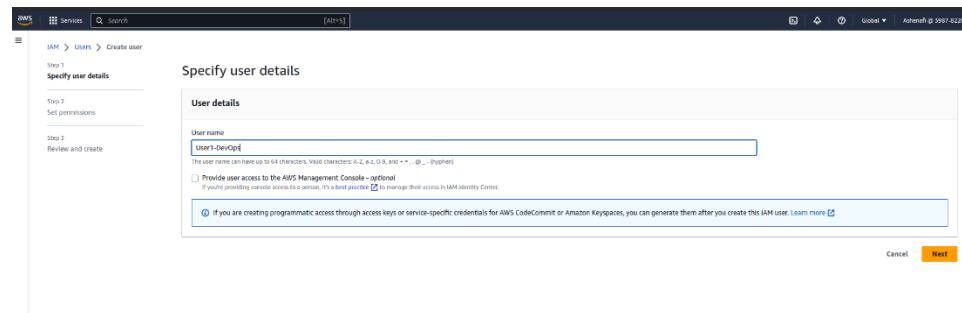
Practicing an IAM policy with a condition

1 Create group named “Developer”

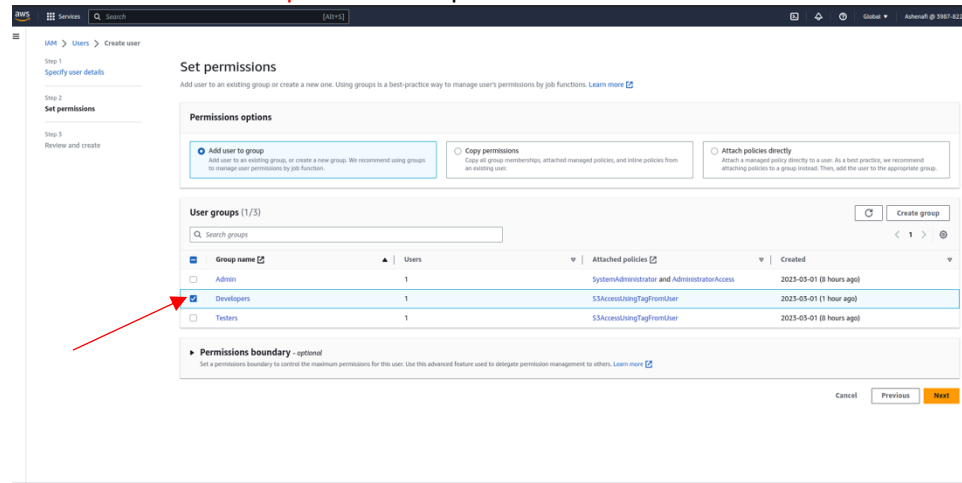


2 Create Two Users E.g

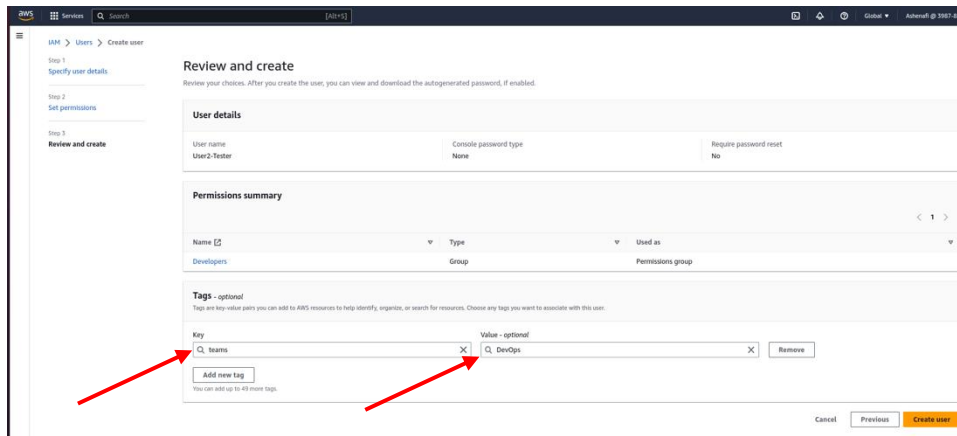
- User1-DevOps with Tag “teams” = “DevOps”



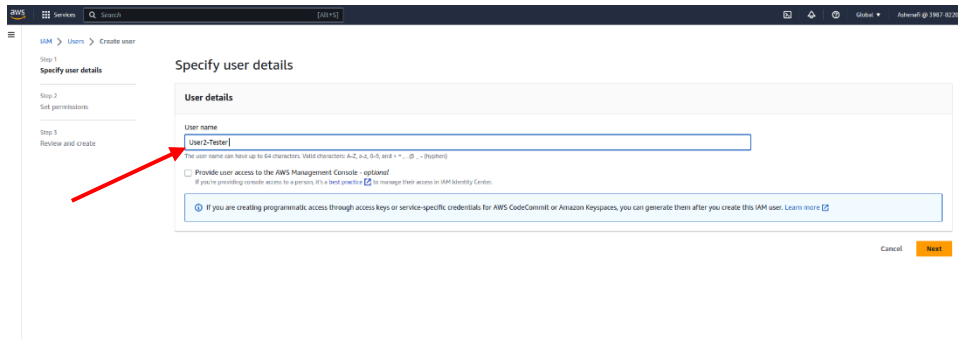
Add the user to Developer user Group



Add tag to user



• User2-Tester



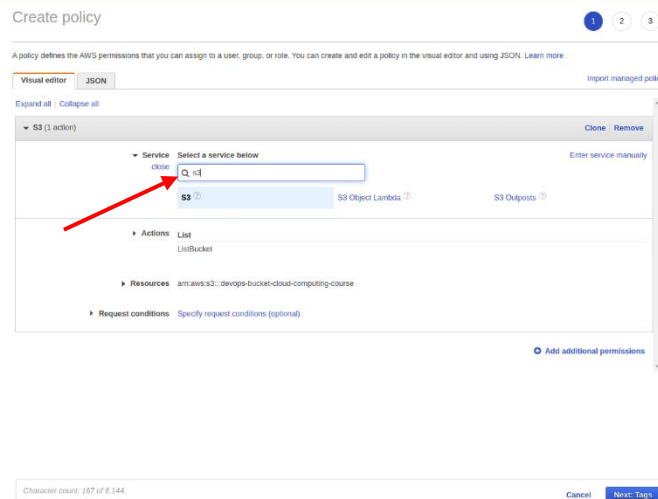
3 Create S3 Bucket

devops-bucket-cloud-computing-course

4 Put Object/file to the Bucket

file1.txt

5 Create a custom IAM policy with Condition {tag name= teams value=DevOps}



Create policy

1 2 3

A policy defines the AWS permissions that you can assign to a user, group, or role. You can create and edit a policy in the visual editor and using JSON. [Learn more](#)

Visual editor JSON Import managed policy

Expand all Collapse all

▼ S3 (1 action) Clone Remove

Service Select a service below Enter service manually

Q: s3

S3 S3 Object Lambda S3 Outposts

Actions List ListBucket

Resources arn:aws:s3::devops-bucket-cloud-computing-course

Request conditions Specify request conditions (optional)

Add additional permissions

Character count: 287 of 6,144 Cancel Next: Tags

Create policy

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Visual editor JSON Import managed policy

Expand all Collapse all

▼ S3 (1 action) Clone Remove

Service Select a service below Enter service manually

Q: s3

S3 S3 Object Lambda S3 Outposts

Actions List ListBucket

Resources arn:aws:s3::devops-bucket-cloud-computing-course

Request conditions Specify request conditions (optional)

Add additional permissions

Character count: 287 of 6,144 Cancel Next: Tags

Edit ARN

Amazon Resource Names (ARNs) uniquely identify AWS resources. Resources are unique to each service. [Learn more](#)

Specify ARN for bucket

arn:aws:s3::devops-bucket-cloud-computing-course

Bucket name * devops-bucket-cloud-computing-course Any

Cancel Save changes

Character count: 287 of 6,144 Cancel Next: Tags

Create policy

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Visual editor JSON Import managed policy

Expand all Collapse all

▼ S3 (1 action) Clone Remove

Service Select a service below Enter service manually

Q: s3

S3 S3 Object Lambda S3 Outposts

Actions List ListBucket

Resources arn:aws:s3::devops-bucket-cloud-computing-course

Request conditions Specify request conditions (optional)

Add additional permissions

Character count: 287 of 6,144 Cancel Next: Tags

Add request condition

Condition key aws:PrincipalTag[TagKey]

TagKey teams

Qualifier Default

Operator StringEquals

Value DevOps

Add another condition value

Cancel Add

Create policy 1 2 3

A policy defines the AWS permissions that you can assign to a user, group, or role. You can create and edit a policy in the visual editor and using JSON. [Learn more](#)

Visual editor **JSON** [Import managed policy](#)

[Expand all](#) | [Collapse all](#)

▼ **S3 (1 action)** [Clone](#) [Remove](#)

- Service: S3
- Actions: List, ListBucket
- Resources: arn:aws:s3:::devops-bucket-cloud-computing-course

▼ **Request conditions** [close](#)

- ☐ **MFA required**
Requires console users and those with temporary credentials to authenticate with an MFA device for these actions. [Learn more](#)
- ☐ **Source IP**
Allow access to the specified actions only when the request comes from the specified IP address range.
- ☒ **aws:PrincipalTagteams (StringEquals DevOps)** (Edit | Remove)
[Add another condition](#)

[Add additional permissions](#)

Character count: 232 of 6,144

[Cancel](#) [Next: Tags](#)

Create policy 1 2 3

Review policy

Name* DevOpsTagAccessToS3
Use alphanumeric and "+", "-", "." characters. Maximum 128 characters.

Description this allows a user with a tag name teams and tag value DevOps a permission to access an s3 bucket
Maximum 1000 characters. Use alphanumeric and "+", "-", "." characters.

Summary

Service	Access level	Resource	Request condition
Allow (1 of 369 services) Show remaining 368			
S3	Limited: List	BucketName string like devops-bucket-cloud-computing-course	aws:PrincipalTagteams = DevOps

Tags

Key	Value
No tags associated with the resource.	

*** Required** [Cancel](#) [Previous](#) [Create policy](#)

Attach the create Policy to the user group “Developers”

Identity and Access Management (IAM)

Developers [Delete](#) [Edit](#)

Summary

User group name: Developers
Creation time: March 01, 2023, 14:55 (UTC-06:00)
ARN: arn:aws:iam::388782202019:group/Developers

Permissions policies (1) [info](#)

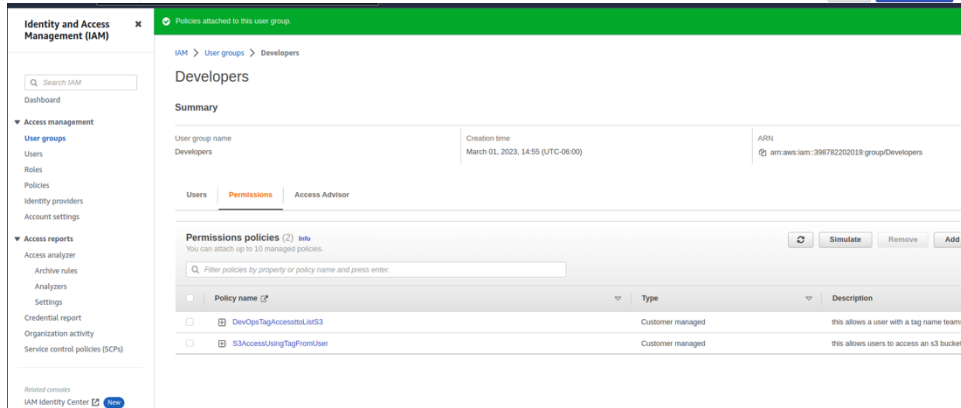
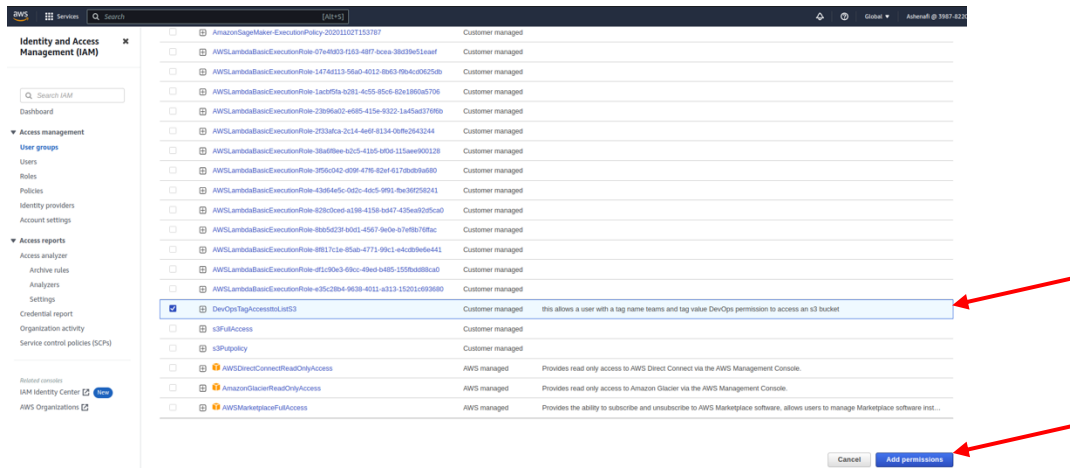
You can attach up to 10 managed policies.

[Filter policies by property or policy name and press enter.](#)

[Simulate](#) [Remove](#) [Add permissions](#)

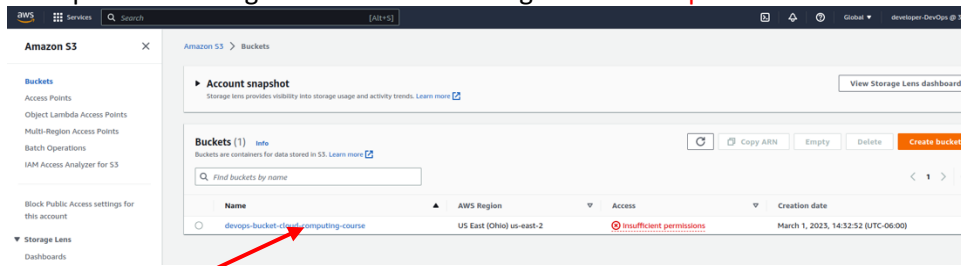
[Attach policies](#)
[Create inline policy](#)

Policy name	Type	Description
S3AccessUsingTagFromUser	Customer managed	this allows users to access an s3 bucket using the users tag name if userType is equal DevOps



6 Test

Log in using both users created above and try to access you S3 buckets
DevOpsUser with tag name **“teams”** and tag value **“DevOps”**



Tester User with not tag name and value

