

CS7346 Lab 2: AWS Identity and Access Management

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To support the following lab exercises, please read the following chapters in the AWS Certified Solutions Architect Study Guide.

Chapter 6

Lab: Please complete the following lab exercises in the AWS Certified Solutions Architect Study Guide. When you are done, delete all the resources that you provisioned to avoid charges.

6.1 through 6.4 (inclusive)

Environment

Laptop: MacBook Air M2 2022, macOS 13.3

Chapter 6

6.1

EXERCISE 6.1

Lock Down the Root User

1. If necessary, create a regular user and then assign it the AdministratorAccess policy.
2. Make sure there are no active access keys associated with your root account.

IAM Identities

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3. Enable MFA for the root account, where short-lived authentication codes are sent to applications on preset mobile devices (including smartphones) to confirm a user's identity.
 4. Update your root login to a password that's long and complex and that includes nonalphanumeric characters.
 5. Confirm that you can still log in as root and then store the password safely.
-

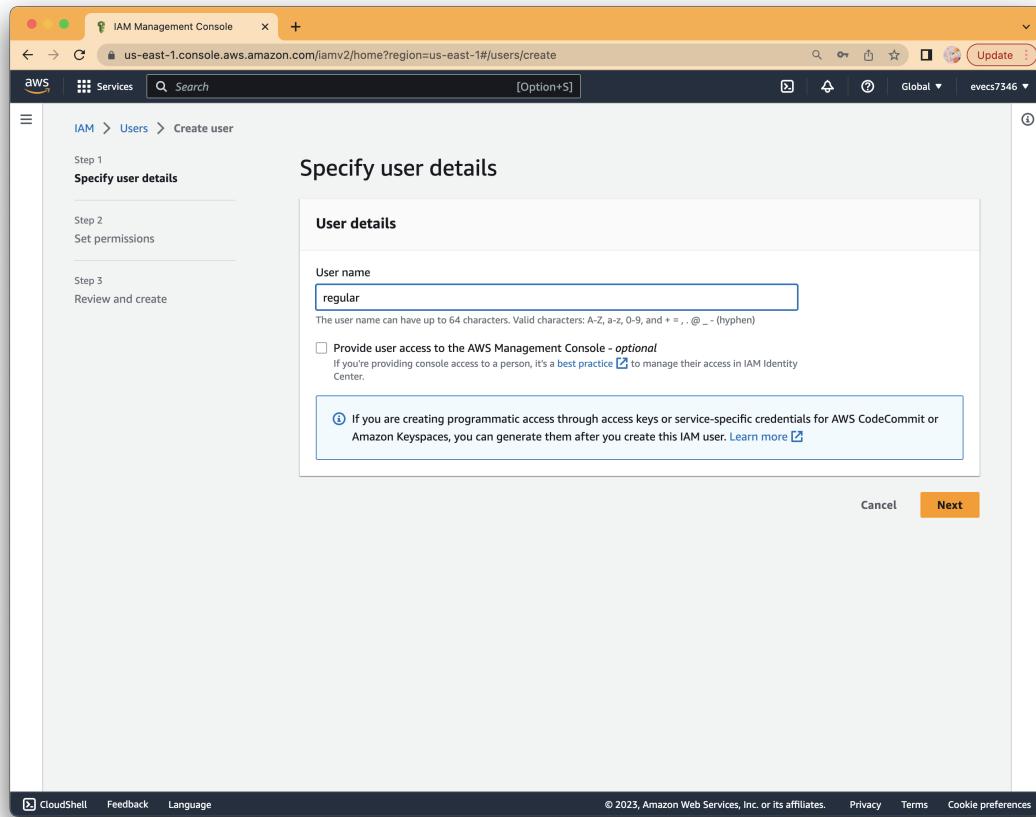
Solution:

1.

The screenshot shows the AWS IAM Management Console interface. The left sidebar is titled "Identity and Access Management (IAM)" and includes sections for 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)), and Related consoles (IAM Identity Center, AWS Organizations). The main content area is titled "Users (1) Info" and displays a single user named "eve". The user details are as follows:

User name	Groups	Last activity	MFA	Password age
eve	Developers	3 days ago	None	6 days ago

At the bottom of the page, there are links for CloudShell, Feedback, Language, and a footer with copyright information and links for Privacy, Terms, and Cookie preferences.



IAM Management Console

us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/users/create

Create a user 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](#)

User group name
Enter a meaningful name to identify this group.

Step 1 Specify user details

Step 2 Set permissions

Step 3 Review and create

Permissions policies (Selected 1/856)

Policy name	Type	Use...	Description
<input checked="" type="checkbox"/>  AdministratorAccess	AWS managed	Permis...	Provides full access to AWS services directly
<input type="checkbox"/>  AdministratorAcc...	AWS managed	None	Grants account administrative permission directly
<input type="checkbox"/>  AdministratorAcc...	AWS managed	None	Grants account administrative permission directly
<input type="checkbox"/>  AlexaForBusinessD...	AWS managed	None	Provide device setup access to Alexa devices
<input type="checkbox"/>  AlexaForBusinessF...	AWS managed	None	Grants full access to AlexaForBusiness
<input type="checkbox"/>  AlexaForBusinessG...	AWS managed	None	Provide gateway execution access to Alexa
<input type="checkbox"/>  AlexaForBusinessLi...	AWS managed	None	Provide access to Lifesize AVS devices
<input type="checkbox"/>  AlexaForBusinessP...	AWS managed	None	Provide access to Poly AVS devices
<input type="checkbox"/>  AlexaForBusinessR...	AWS managed	None	Provide read only access to Alexa
<input type="checkbox"/>  AmazonAPIGatewa...	AWS managed	None	Provides full access to create/edit/
<input type="checkbox"/>  AmazonAPIGatewa...	AWS managed	None	Provides full access to invoke APIs in
<input type="checkbox"/>  AmazonAppFlowF...	AWS managed	None	Allows API Gateway to push logs to
<input type="checkbox"/>  AmazonAppFlowF...	AWS managed	None	Provides full access to Amazon App

[Create policy](#)

[Cancel](#) [Create user group](#)

CloudShell Feedback Language

Global evecs7346

Created 2023-06-08 (6 days ago)

Next

Privacy Terms Cookie preferences

IAM Management Console

regular user group created.

IAM > Users > Create user

Step 1: Specify user details

Step 2: Set permissions

Step 3: Review and create

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 (Selected 1/2)

Group name	Users	Attached policies	Created
Developers	1	AdministratorAccess	2023-06-08 (6 d...)
<input checked="" type="checkbox"/> regular	0	AdministratorAccess	2023-06-14 (Now)

▶ Set permissions boundary - optional

Cancel Previous Next

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The screenshot shows the 'Set permissions' step of creating a user in the AWS IAM Management Console. The 'Add user to group' option is selected. A table lists two groups: 'Developers' (1 user, AdministratorAccess) and 'regular' (0 users, AdministratorAccess). The 'regular' group is selected. At the bottom are 'Previous' and 'Next' buttons.

IAM Management Console

regular user group created.

Step 1 Specify user details

Step 2 Set permissions

Step 3 Review and create

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 regular	Console password type None	Require password reset No

Permissions summary

Name	Type	Used as
regular	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

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The screenshot shows the 'Create user' wizard in the AWS IAM Management Console. The 'User details' section shows a user named 'regular' with no console password and no password reset requirement. The 'Permissions summary' section shows that the 'regular' user is a member of a 'Permissions group'. The 'Tags' section indicates no tags are associated with the user. At the bottom, there are 'Cancel', 'Previous', and 'Create user' buttons, with 'Create user' being the active button.

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/users. A green banner at the top indicates "User created successfully". The main area displays a table of users with two entries:

User name	Groups	Last activity	MFA	Password age
eve	Developers	None	None	None
regular	regular	None	None	None

The left sidebar includes sections for Dashboard, Access management (with sub-options like User groups, Users, Roles, Policies, Identity providers, Account settings), Access reports (with sub-options like Access analyzer, Archive rules, Analyzers, Settings, Credential report, Organization activity, Service control policies (SCPs)), and Related consoles (IAM Identity Center [New], AWS Organizations).

2.

The screenshot shows the AWS IAM Management Console interface. On the left, a sidebar navigation menu includes 'Identity and Access Management (IAM)', 'Dashboard', 'Access management' (with 'User groups', 'Users', 'Roles', 'Policies', 'Identity providers', 'Account settings'), 'Access reports' (with 'Access analyzer', 'Archive rules', 'Analyzers', 'Settings', 'Credential report', 'Organization activity', 'Service control policies (SCPs)'), and 'Related consoles' (with 'IAM Identity Center [New]' and 'AWS Organizations'). The main content area displays the 'regular' user details under the 'Users' section. The 'Summary' tab shows the ARN (arn:aws:iam::044042447389:user/regular), Console access (Disabled), and two Access keys (both Not enabled). The 'Created' date is June 14, 2023, at 16:44 (UTC-05:00). The 'Permissions' tab is selected, showing one attached policy: 'AdministratorAccess' (AWS managed - job function, Attached via Group regular). The 'Groups (1)' tab shows the user is part of the 'regular' group. The 'Tags' and 'Security credentials' tabs are also present. A 'Delete' button is visible in the top right corner of the summary card.

3.

IAM dashboard

Security recommendations

- Root user has MFA
- Root user has no active access keys

IAM resources

User groups	Users	Roles	Policies	Identity providers
2	2	4	0	0

What's new

- Advanced Notice: Amazon S3 will automatically enable S3 Block Public Access and disable access control lists for all new buckets starting in April 2023. 6 months ago
- AWS IAM Identity Center now supports session management capabilities for AWS Command Line Interface (AWS CLI) and SDKs. 7 months ago
- AWS Lambda announces support for Attribute-Based Access Control (ABAC) in AWS GovCloud (US) Regions.. 7 months ago
- Amazon ElastiCache simplifies password rotations with Secrets Manager. 7 months ago

AWS Account

Account ID: 044042447389
Account Alias: evecs7346

Quick Links

My security credentials, Tools (Policy simulator, Web identity federation playground), Account, Organization, Service Quotas, Billing Dashboard, Security credentials, Settings, My security credentials, Tools (Policy simulator).

4.

IAM dashboard

Security recommendations

- Root user has MFA
- Root user has no active access keys

IAM resources

User groups	Users	Roles	Policies	Identity providers
2	2	4	0	0

What's new

- Advanced Notice: Amazon S3 will automatically enable S3 Block Public Access and disable access control lists for all new buckets starting in April 2023. 6 months ago
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- Amazon ElastiCache simplifies password rotations with Secrets Manager. 7 months ago

Billing Management Console X +

us-east-1.console.aws.amazon.com/billing/home#/account

AWS Services Search [Option+S] Global Update evecs7346

Home Billing Bills Payments Credits Purchase orders Cost & usage reports Cost categories Cost allocation tags Free tier Billing Conductor Cost Management Cost explorer Budgets Budgets reports Savings Plans Preferences Billing preferences Payment preferences Consolidated billing

This page now uses granular permission.
Legacy format permissions have been deprecated and will no longer be supported. This page has been updated based on your granular IAM policy. If there are any permissions you're missing, ask your administrator to update your granular permissions using the policies tool. [Learn more](#)

Account Settings Edit

Account Id: 044042447389 Seller: Amazon Web Services, Inc.

Account Name: evecs7346 Password: *****

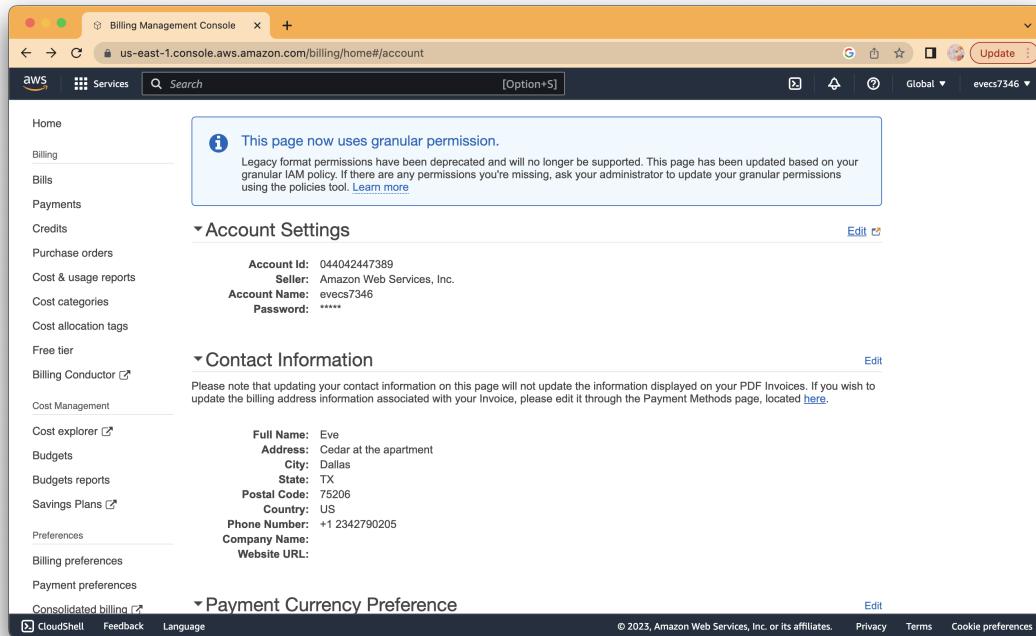
Contact Information Edit

Please note that updating your contact information on this page will not update the information displayed on your PDF Invoices. If you wish to update the billing address information associated with your Invoice, please edit it through the Payment Methods page, located [here](#).

Full Name: Eve Address: Cedar at the apartment City: Dallas State: TX Postal Code: 75206 Country: US Phone Number: +1 2342790205 Company Name: Website URL:

Payment Currency Preference Edit

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Amazon Web Services Sign-In X +

signin.aws.amazon.com/signin?redirect_uri=%2Fupdateaccount%3Fredirect_uri%3Dhttps%253A%252F%252Fconsole.aws.amazon.com

aws

Authentication required
To keep your account secure, you must sign in again to access your account data

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](#)

Root user email address

Next

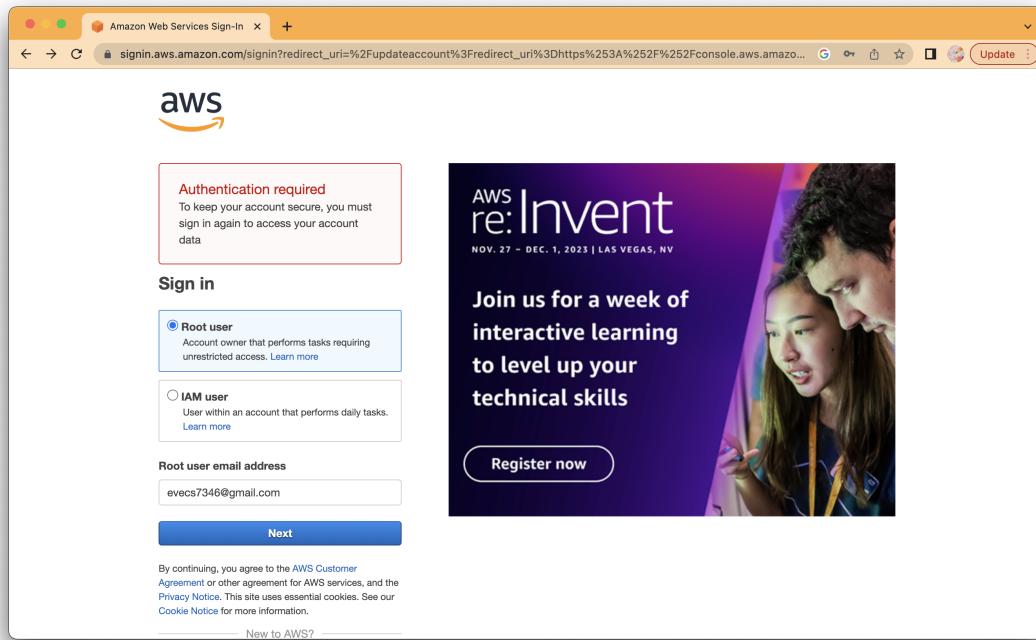
By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.

New to AWS?

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Join us for a week of interactive learning to level up your technical skills

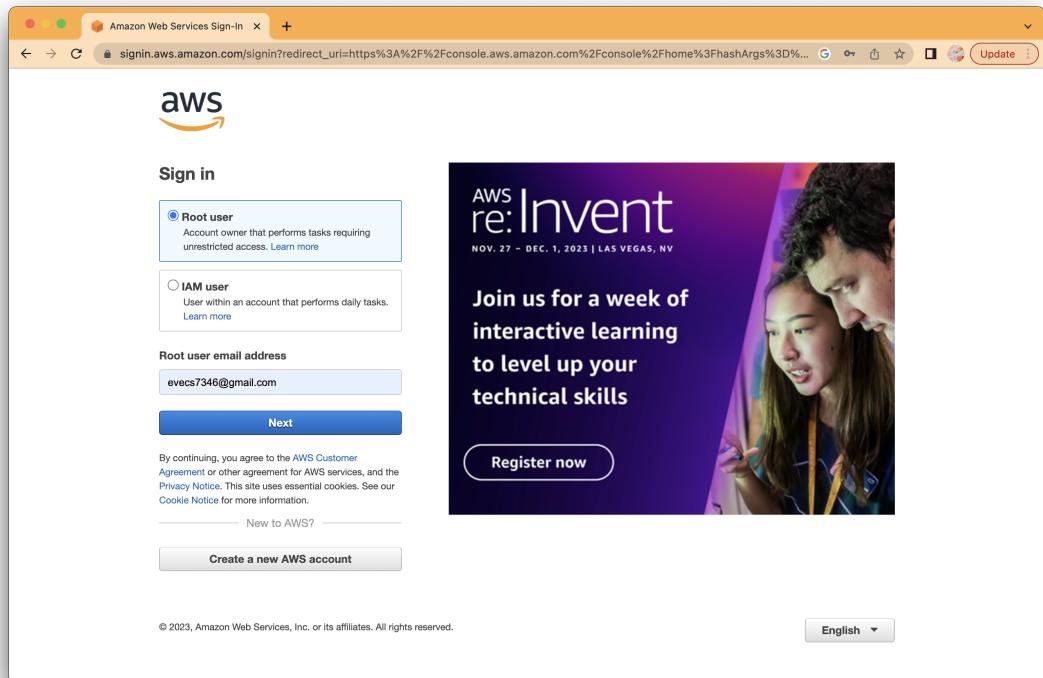
Register now



The screenshot shows a web browser window with the URL <https://signin.aws.amazon.com>. The page title is "Update account settings". It contains three input fields: "Name" (evecs7346), "Email" (evecs7346@gmail.com), and "Password" (*****). Each field has an "Edit" button below it. A large blue "Done" button is at the bottom. Below the form, a green box displays the message: "About Amazon.com Sign In" and "Amazon Web Services uses information from your Amazon.com account to identify you and allow access to Amazon Web Services. Your use of this site is governed by our Terms of Use and Privacy Policy linked below. Your use of Amazon Web Services products and services is governed by the AWS Customer Agreement linked below unless you".

The screenshot shows the same web browser window as the first one, but now with a green "Succeeded" message box at the top stating: "Your new password has been saved. Use this new password the next time you sign in." The rest of the page is identical to the first screenshot, showing the "Update account settings" form with Name, Email, and Password fields.

5.



The screenshot shows the AWS Management Console home page. At the top, there's a navigation bar with tabs for 'Services' and a search bar. Below the navigation is a 'Welcome to AWS' section with three cards: 'Getting started with AWS' (Learn the fundamentals), 'Training and certification' (Learn from AWS experts), and 'What's new with AWS?' (Discover new services). To the left of the welcome section are 'Recently visited' services (DynamoDB, RDS, S3, EC2) and a 'View all services' link. Below these are sections for 'AWS Health' (0 open issues) and 'Cost and usage'. The bottom of the page includes links for CloudShell, Feedback, Language, and cookie preferences, along with copyright and privacy information.

6.2

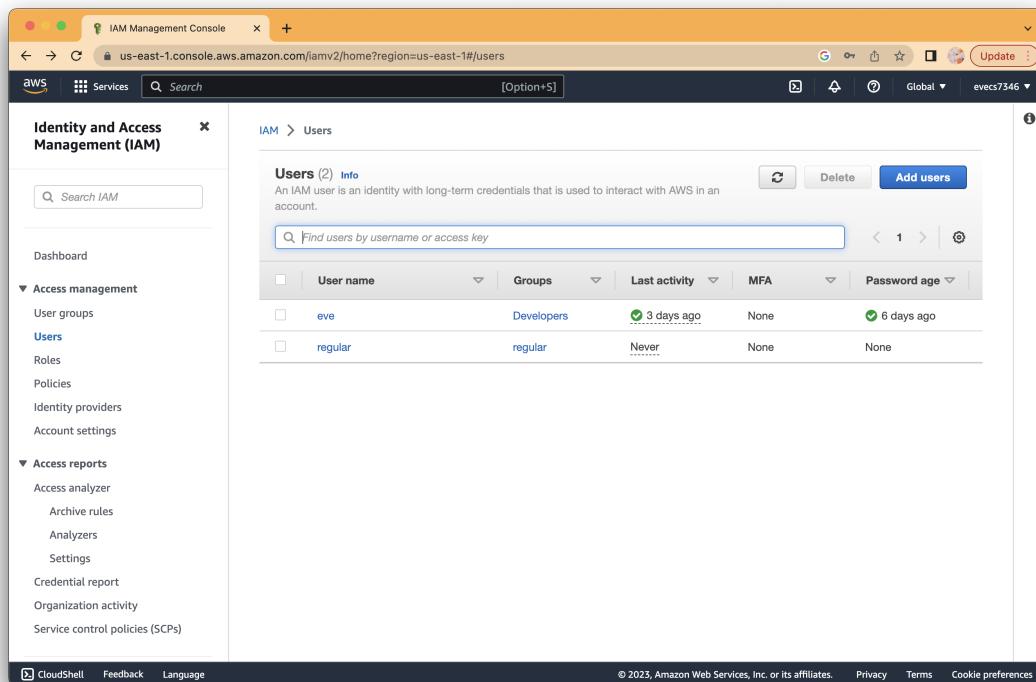
EXERCISE 6.2

Assign and Implement an IAM Policy

1. Create a new user in the IAM Dashboard.
2. Attach the AmazonS3FullAccess policy that will permit your user to create, edit, and delete S3 buckets. (Hint: You can search IAM policies using **s3** to display a much shorter list.)
3. Note the user login instructions that will be displayed.
4. Log in as your new user and try creating a new S3 bucket.
5. Just to prove everything is working, try launching an EC2 instance. Your request should be denied.

Solution:

1.



The screenshot shows the AWS IAM Management Console in a web browser. The left sidebar has 'Identity and Access Management (IAM)' selected. Under 'Access management', 'Users' is also selected. The main area displays a table of users with two entries: 'eve' and 'regular'. The 'eve' user is part of the 'Developers' group, last active 3 days ago, and has MFA enabled. The 'regular' user is part of the 'regular' group, last active never, and has no MFA. A search bar at the top right says 'Find users by username or access key'.

User Name	Groups	Last Activity	MFA	Password Age
eve	Developers	3 days ago	Enabled	6 days ago
regular	regular	Never	None	None

Specify user details

User details

User name
newuser

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**

2.

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.

Permissions policies (1099)

Choose one or more policies to attach to your new user.

Policy name	Type	Attached entities
AccessAnalyzerServiceRole	AWS managed	0
AdministratorAccess	AWS managed - job function	2
AdministratorAccess-Amzon	AWS managed	0
AdministratorAccess-AWS	AWS managed	0
AlexaForBusinessDeviceS...	AWS managed	0
AlexaForBusinessFullAccess	AWS managed	0

IAM Management Console Step 3 Review and create [Option+S] Update

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

Permissions policies (Selected 1/1099)
Choose one or more policies to attach to your new user.

Q s3 All types 11 matches

Policy name	Type	Attached entities
AmazonDMSRedshiftS3...	AWS managed	0
AmazonS3FullAccess	AWS managed	0
AmazonS3ObjectLambda...	AWS managed	0
AmazonS3OutpostsFullA...	AWS managed	0
AmazonS3OutpostsRead...	AWS managed	0
AmazonS3ReadOnlyAccess	AWS managed	0
AWSBackupServiceRoleP...	AWS managed	0
AWSBackupServiceRoleP...	AWS managed	0
IVSRecordToS3	AWS managed	0
QuickSightAccessForS3St...	AWS managed	0
S3StorageLensServiceRol...	AWS managed	0

▶ Set permissions boundary - optional

Cancel Previous **Next**

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The screenshot shows the AWS IAM Management Console interface. A success message at the top right states "User created successfully". The main area displays a table of users with the following data:

User name	Groups	Last activity	MFA	Password age	Active key
eve	Developers	5 days ago	None	8 days ago	8 days ago
newuser	None	Never	None	None	-
regular	regular	Never	None	None	-

The left sidebar includes sections for Identity and Access Management (IAM), Access management, and Access reports. The "Users" section is currently selected. The bottom of the page features standard AWS navigation links like CloudShell, Feedback, Language, and links to IAM Identity Center and AWS Organizations.

3.

The screenshot shows the AWS IAM Management Console interface. On the left, a sidebar navigation menu includes sections for Identity and Access Management (IAM), Access management, Access reports, and Related consoles (IAM Identity Center and AWS Organizations). The main content area displays the 'newuser' user details under the 'Users' section. The 'Summary' tab is selected, showing the ARN (arn:aws:iam::044042447589:user/newuser), which is disabled for console access and has two access keys (both not enabled). The 'Security credentials' tab is also visible. Below the summary, there's a 'Console sign-in' section with a link to https://evecs7346.sigin.aws.amazon.com/console and a note that console password is not enabled. The 'Multi-factor authentication (MFA)' section indicates no MFA devices assigned, with a button to 'Assign MFA device'. The bottom of the page includes standard AWS footer links for CloudShell, Feedback, Language, and cookie preferences.

Screenshot of the AWS IAM Management Console showing the 'Manage console access' dialog for a user named 'newuser'.

User Details:

- ARN: arn:aws:iam::044042447389:user/newuser
- Created: June 17, 2024
- Console access: Disabled
- Access key 1: Not enabled
- Access key 2: Not enabled

Manage console access Dialog:

Console access: Enable
 Disable

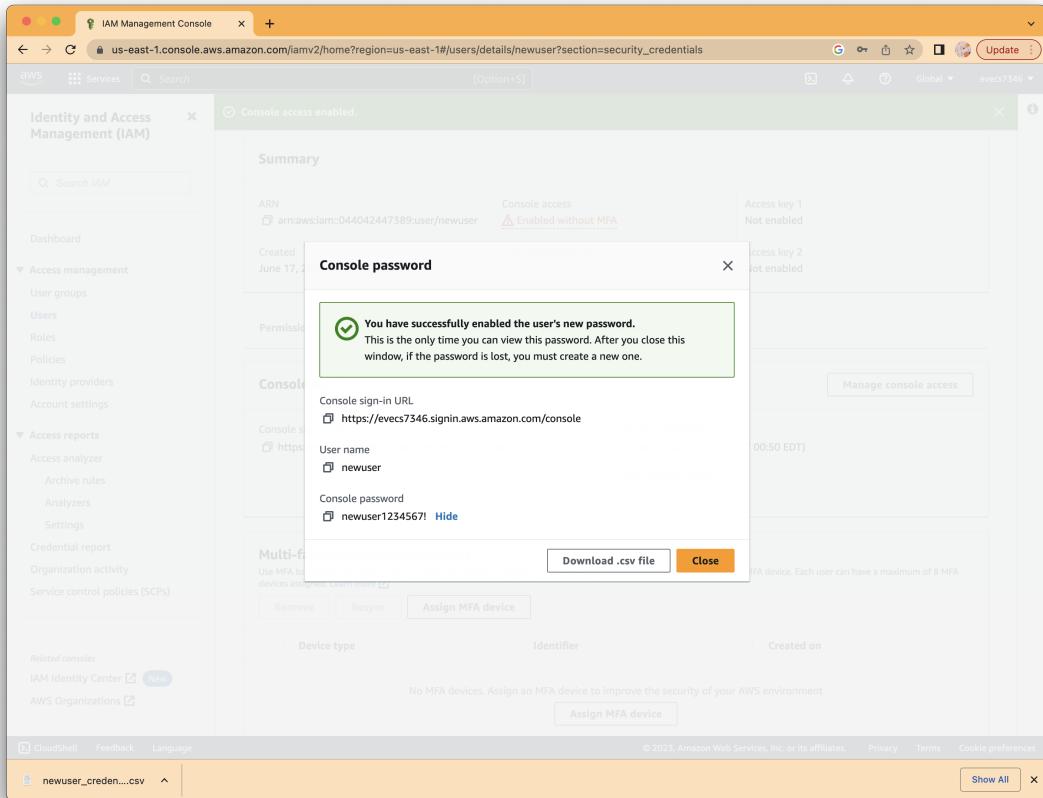
Set password:
 Keep existing password
 Autogenerated password
 Custom password
newuser1234567

Other Options:

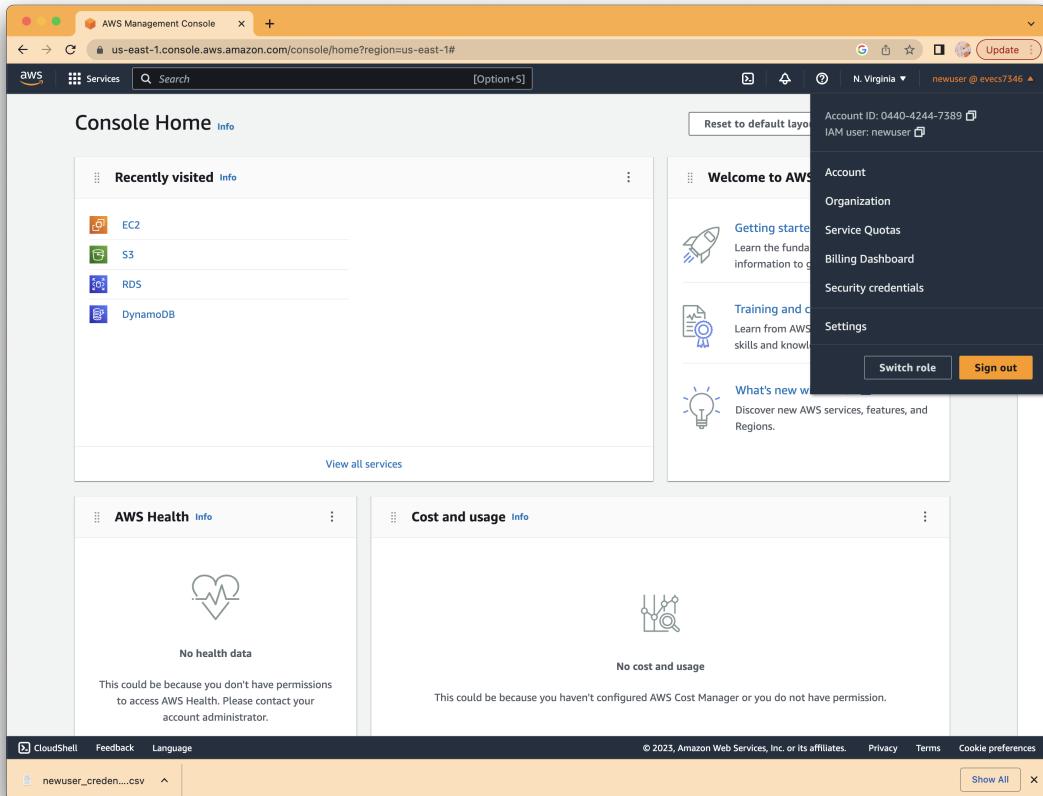
- Show password
- User must create new password at next sign-in

Access keys: Use access keys to send programmatic calls to AWS from the AWS CLI, AWS Tools for PowerShell, AWS SDKs, or direct AWS API calls. You can have a maximum of two access keys (active or inactive) at a time. Learn more

Buttons: Cancel, Apply



4.



The screenshot shows the AWS S3 Management Console interface. On the left, there is a sidebar with the following navigation options:

- Buckets
- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- IAM Access Analyzer for S3

Below this, under "Storage Lens":

- Block Public Access settings for this account
- Dashboards
- AWS Organizations settings

At the bottom of the sidebar, there is a "Feature spotlight" section and a link to "AWS Marketplace for S3".

The main content area is titled "Amazon S3" and contains the following sections:

Account snapshot

Last updated: Jun 15, 2023 by Storage Lens. Metrics are generated every 24 hours. [Learn more](#)

Total storage	Object count	Average object size	Metrics
6.4 KB	8	812.9 B	You can enable advanced metrics in the "default-account-dashboard" configuration.

Buckets (1) [Info](#)

Buckets are containers for data stored in S3. [Learn more](#)

Name	AWS Region	Access	Creation date
evebucket2023	US East (N. Virginia) us-east-1	Objects can be public	June 8, 2023, 05:03:59 (UTC-04:00)

At the bottom of the main content area, there are links for CloudShell, Feedback, Language, and a copyright notice: © 2023, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences. A "Show All" button is also present.

The screenshot shows the 'Create bucket' configuration page in the AWS S3 console. The 'General configuration' section includes a 'Bucket name' field containing 'evenewuserbucket', an 'AWS Region' dropdown set to 'US East (N. Virginia) us-east-1', and a 'Copy settings from existing bucket - optional' section with a 'Choose bucket' button. The 'Object Ownership' section shows 'ACLs disabled (recommended)' selected, indicating that all objects in the bucket are owned by the account. The 'Block Public Access settings for this bucket' section notes that public access is granted through ACLs, bucket policies, and access point policies. The bottom of the page includes standard AWS navigation links like CloudShell, Feedback, Language, and links to Privacy, Terms, and Cookie preferences.

The screenshot shows the AWS S3 Management Console. A green banner at the top indicates that a bucket named "evenewuserbucket" has been successfully created. Below the banner, the "Account snapshot" section provides a summary of storage metrics: Total storage (6.4 KB), Object count (8), and Average object size (812.9 B). It also includes a note about enabling advanced metrics. The main area displays a table of buckets, showing two entries: "evebucket2023" and "evenewuserbucket". Both buckets are located in the "US East (N. Virginia) us-east-1" region. The table includes columns for Name, AWS Region, Access, and Creation date.

Name	AWS Region	Access	Creation date
evebucket2023	US East (N. Virginia) us-east-1	Objects can be public	June 8, 2023, 05:03:59 (UTC-04:00)
evenewuserbucket	US East (N. Virginia) us-east-1	Bucket and objects not public	June 17, 2023, 00:53:53 (UTC-04:00)

5.

Screenshot of the AWS EC2 Management Dashboard (us-east-1) showing the Resources section.

Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

- Instances (running): 0
- Auto Scaling Groups: ✖ API Error
- Dedicated Hosts: ✖ API Error
- Elastic IPs: ✖ API Error
- Instances: ✖ API Error
- Key pairs: ✖ API Error
- Load balancers: ✖ API Error
- Placement groups: ✖ API Error
- Security groups: ✖ API Error
- Snapshots: ✖ API Error
- Volumes: ✖ API Error

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Service health

Region: US East (N. Virginia)

Status: ✖ This service is operating normally

Zones

Zone name	Zone ID
An error occurred	

An error occurred retrieving service health information

Account attributes

Supported platforms

- ✖ An error occurred An error occurred retrieving supported platforms
- ✖ An error occurred An error occurred checking for a default VPC

Explore AWS

- Get Up to 40% Better Price Performance
- Amazon GuardDuty Malware Protection
- Save up to 90% on EC2 with Spot Instances

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Launch an instance | EC2 Manager

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

AWS Services Search [Option+S] Update N. Virginia newuser @ evecs7346

Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name: newuserinstance

Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

Search our full catalog including 1000s of application and OS images

Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat S Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI

Free tier eligible

ami-022e1a32d3f742bd8 (64-bit (x86)) / ami-0b54418bdd76353ce (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

The AMI ID (ami-022e1a32d3f742bd8) is not valid. The AMI may no longer exist or may be specific to another account or region.

Summary

Number of instances Info
1

Software Image (AMI)
ami-022e1a32d3f742bd8

Virtual server type (instance type)

Firewall (security group)
New security group

Storage (volumes)

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) Instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Review commands

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This screenshot shows the 'Launch an instance' wizard in the AWS EC2 console. The user has entered 'newuserinstance' as the instance name. Under the 'Application and OS Images' section, they have selected the 'Amazon Linux 2023 AMI'. A validation error message is displayed: 'The AMI ID (ami-022e1a32d3f742bd8) is not valid. The AMI may no longer exist or may be specific to another account or region.' To the right, a summary panel shows one instance is being launched, using the specified AMI and security group. A tooltip provides information about the free tier benefits.

Launch an instance | EC2 Manager

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

Services Search [Option+S] Update N. Virginia newuser @ evecs7346

Instance type
Select All generations Compare instance types

An instance type is required

Key pair (login) Info You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required Select Create new key pair

Proceed without a key pair (Not recommended) Default value
You are not authorized to perform this operation. Specify a custom value

VPC - required Info No VPCs found, either this account doesn't have any VPCs in this region or an invalid search has been entered. Please refine the search query, create a new VPC or create a new default VPC

Subnet info Select Create new subnet

No subnets found, either this account has no subnets in this region or an invalid search has been entered. Please create a new subnet or refine the search query.

Auto-assign public IP Info Enable

Firewall (security groups) Info A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

Security group name - required

Summary

Number of instances Info 1

Software Image (AMI) ami-02e1a52d5f742bd8

Virtual server type (instance type)

Firewall (security group) New security group

Storage (volumes)

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) Instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance Review commands

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6.3

EXERCISE 6.3

Create, Use, and Delete an AWS Access Key

1. Create a new AWS access key, and save both the access key ID and secret access key somewhere secure.
2. Enter `aws configure` at your local command line to add the key to your AWS CLI configuration.

If you already have a different access key configured on your system, you can create and use multiple keys in parallel. By adding the `--profile` argument to the `aws configure` command, you can create separate profiles. You'll be prompted to enter configuration details for each new profile. Here's an example:

```
$ aws configure --profile account2
```

You can then invoke a profile by adding the argument to a regular command:

```
$ aws s3 ls --profile account2
```

3. Try performing some operation—such as listing your S3 buckets—and then uploading a local file using the AWS CLI and your new key.
 4. In the console, disable (select Make Inactive) or delete the key you just created from the IAM Dashboard.
 5. Confirm that you are now unable to administer your S3 buckets using the key.
-

Solution:

1.

Identity and Access Management (IAM)

newuser

Summary

ARN arn:aws:iam::044042447389:user/newuser	Console access Enabled without MFA	Access key 1 Not enabled
Created June 17, 2023, 00:38 (UTC-04:00)	Last console sign-in Yesterday	Access key 2 Not enabled

Permissions | **Groups** | **Tags** | **Security credentials** | **Access Advisor**

Console sign-in

Console sign-in link
<https://evecs7346.sigin.aws.amazon.com/console>

Console password
Updated Yesterday (2023-06-17 00:50 EDT)

Last console sign-in
Yesterday (2023-06-17 00:51 EDT)

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](#)

Device type | **Identifier** | **Created on**

No MFA devices. Assign an MFA device to improve the security of your AWS environment

Assign MFA device

Identity and Access Management (IAM)

Create access key

No access keys

As a best practice, avoid using long-term credentials like access keys. Instead, use tools which provide short term credentials. [Learn more](#)

Create access key

SSH public keys for AWS CodeCommit (0)

User SSH public keys to authenticate access to AWS CodeCommit repositories. You can have a maximum of five SSH public keys (active or inactive) at a time. [Learn more](#)

Actions | **Upload SSH public key**

SSH Key ID	Uploaded	Status
No SSH public keys		
Upload SSH public key		

HTTPS Git credentials for AWS CodeCommit (0)

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. [Learn more](#)

Actions | **Generate credentials**

User name	Created	Status
No credentials		
Generate credentials		

Credentials for Amazon Keypairs (for Apache Cassandra) (0)

Generate a user name and password you can use to authenticate to Amazon Keypairs. You can have a maximum of two sets of credentials (active or inactive) at a time. [Learn more](#)

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/users/details/newuser/create-access-key. The page is titled "Access key best practices & alternatives". It provides guidance on avoiding long-term credentials like access keys to improve security. It lists several use cases for access keys:

- Command Line Interface (CLI)
You plan to use this access key to enable the AWS CLI to access your AWS account.
- Local code
You plan to use this access key to enable application code in a local development environment to access your AWS account.
- Application running on an AWS compute service
You plan to use this access key to enable application code running on an AWS compute service like Amazon EC2, Amazon ECS, or AWS Lambda to access your AWS account.
- Third-party service
You plan to use this access key to enable access for a third-party application or service that monitors or manages your AWS resources.
- Application running outside AWS
You plan to use this access key to enable an application running on an on-premises host, or to use a local AWS client or third-party AWS plugin.
- Other
Your use case is not listed here.

Below these options is a section titled "Alternatives recommended" with the following bullet points:

- Use AWS CloudShell, a browser-based CLI, to run commands. [Learn more](#)
- Use the AWS CLI V2 and enable authentication through a user in IAM Identity Center. [Learn more](#)

At the bottom of the form is a checkbox labeled "I understand the above recommendation and want to proceed to create an access key." followed by "Cancel" and "Next" buttons.

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/users/details/newuser/create-access-key. The page is titled "Set description tag - optional". It asks for a description tag value for the access key. The input field contains "newuser". Below the input field is a note: "Maximum 256 characters. Allowed characters are letters, numbers, spaces representable in UTF-8, and: _ ; / = + - @". At the bottom of the form are "Cancel", "Previous", and "Create access key" buttons.

Access key created

This is the only time that the secret access key can be viewed or downloaded. You cannot recover it later. However, you can create a new access key any time.

Step 1 Access key best practices & alternatives

Step 2 - optional Set description tag

Step 3 Retrieve access keys

Access key best practices

- Never store your access key in plain text, in a code repository, or in code.
- Disable or delete access key when no longer needed.
- Enable least-privilege permissions.
- Rotate access keys regularly.

For more details about managing access keys, see the [Best practices for managing AWS access keys](#).

Access key

Access key	Secret access key
AKIAQUQJCNI02CC3EBFL	SD351sVoxdY039aYK5Giu4bYzkCb0RSE20B/nNs7 Hide

Download .csv file Done

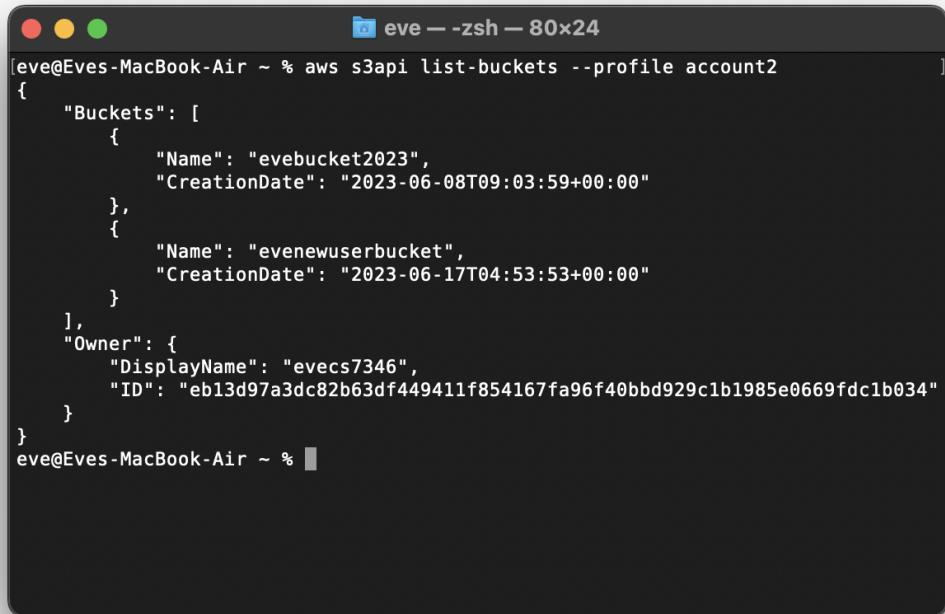
2.

```
Last login: Sat Jun 17 16:31:47 on ttys000
[eve@Eves-MacBook-Air ~ % aws configure --profile account2
AWS Access Key ID [None]: AKIAQUQJCNI02CC3EBFL
AWS Secret Access Key [None]: SD351sVoxdY039aYK5Giu4bYzkCb0RSE20B/nNs7
Default region name [None]:
Default output format [None]:
eve@Eves-MacBook-Air ~ %
```

```
eve — -zsh — 80x24
Last login: Sat Jun 17 16:31:47 on ttys000
[eve@Eves-MacBook-Air ~ % aws configure --profile account2
AWS Access Key ID [None]: AKIAQU0JCNI02CC3EBFL
AWS Secret Access Key [None]: SD351sVoxdY039aYK5Giu4bYzkCb0RSE20B/nNs7
Default region name [None]:
Default output format [None]:
[eve@Eves-MacBook-Air ~ % aws s3 ls --profile account2
2023-06-08 05:03:59 evebucket2023
2023-06-17 00:53:53 evenewuserbucket
eve@Eves-MacBook-Air ~ % ]
```

```
eve — -zsh — 80x24
AWS Secret Access Key [None]: SD351sVoxdY039aYK5Giu4bYzkCb0RSE20B/nNs7
Default region name [None]:
Default output format [None]:
[eve@Eves-MacBook-Air ~ % aws s3 ls --profile account2
2023-06-08 05:03:59 evebucket2023
2023-06-17 00:53:53 evenewuserbucket
[eve@Eves-MacBook-Air ~ % aws s3api list-buckets
{
    "Buckets": [
        {
            "Name": "evebucket2023",
            "CreationDate": "2023-06-08T09:03:59+00:00"
        },
        {
            "Name": "evenewuserbucket",
            "CreationDate": "2023-06-17T04:53:53+00:00"
        }
    ],
    "Owner": {
        "DisplayName": "evecs7346",
        "ID": "eb13d97a3dc82b63df449411f854167fa96f40bb929c1b1985e0669fdc1b034"
    }
}
eve@Eves-MacBook-Air ~ % ]
```

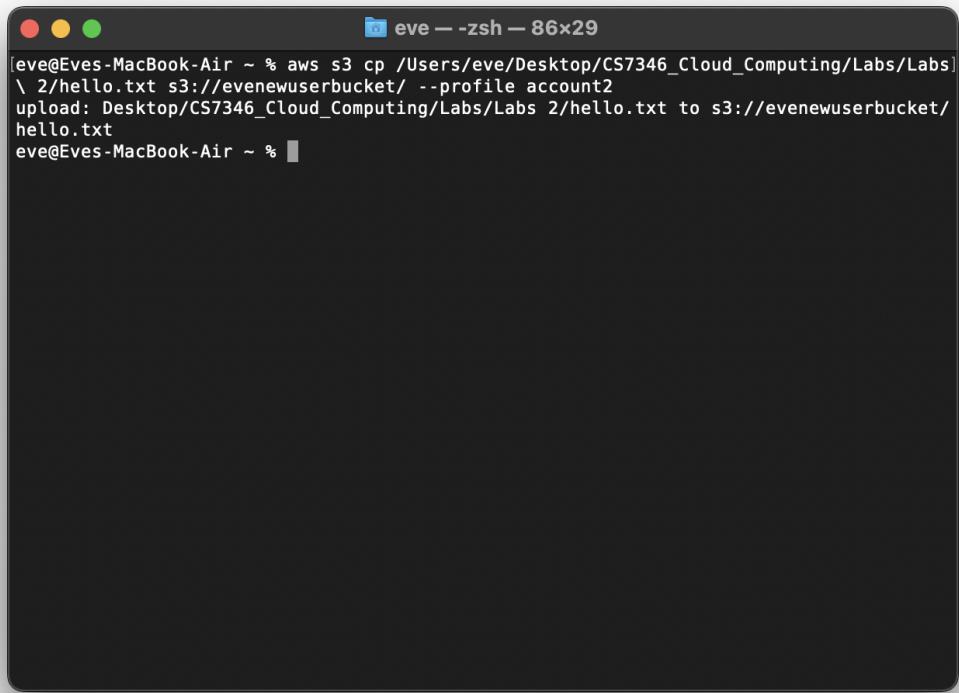
3.



```
[eve@Eves-MacBook-Air ~ % aws s3api list-buckets --profile account2
{
    "Buckets": [
        {
            "Name": "evebucket2023",
            "CreationDate": "2023-06-08T09:03:59+00:00"
        },
        {
            "Name": "evenewuserbucket",
            "CreationDate": "2023-06-17T04:53:53+00:00"
        }
    ],
    "Owner": {
        "DisplayName": "evecs7346",
        "ID": "eb13d97a3dc82b63df449411f854167fa96f40bb929c1b1985e0669fdc1b034"
    }
}
eve@Eves-MacBook-Air ~ % ]
```



```
Labs 2 — nvim hello.txt ▶ nvim — 80x24
Hello world newuser !
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
~  
hello.txt [+]           1,21          All
:wq!
```



A screenshot of a macOS terminal window titled "eve — -zsh — 86x29". The window shows the command "aws s3 cp /Users/eve/Desktop/CS7346_Cloud_Computing/Labs/Labs\\ 2/hello.txt s3://evenewuserbucket/ --profile account2" being run. The output indicates that the file "hello.txt" was uploaded from the local path "Desktop/CS7346_Cloud_Computing/Labs/Labs\\ 2/hello.txt" to the S3 bucket "evenewuserbucket". The command concludes with "eve@Eves-MacBook-Air ~ %".

4.

Screenshot of the AWS IAM Management Console showing the Multi-factor authentication (MFA) section. The page title is "Multi-factor authentication (MFA) (0)". It includes a note about using MFA for security and a "Assign MFA device" button. Below this is a table for MFA devices, which currently shows "No MFA devices. Assign an MFA device to improve the security of your AWS environment". A "Assign MFA device" button is also present here. The main content area shows "Access keys (1)" for user "newuser". The access key "AKIAQUQJCNI02CC3EBFL" is listed with the following details:

Description	Status
newuser	Active
Last used	Created 14 minutes ago
Last used region	Last used service
us-east-1	SS

Actions for this access key include "Edit description", "Deactivate" (which is highlighted), "Activate", and "Delete". Below the access key section is a "SSH public keys for AWS CodeCommit (0)" section with a "Upload SSH public key" button.

Screenshot of the AWS IAM Management Console showing the Multi-factor authentication (MFA) section. The page title is "Multi-factor authentication (MFA) (0)". It includes a note about using MFA for security and a "Assign MFA device" button. Below this is a table for MFA devices, which currently shows "No MFA devices. Assign an MFA device to improve the security of your AWS environment". A "Assign MFA device" button is also present here. The main content area shows "Access keys (1)" for user "newuser". The access key "AKIAQUQJCNI02CC3EBFL" is listed with the following details:

Description	Status
newuser	Active
Last used	Created 16 minutes ago
IAM user	
Account	044042447589
Last used region	Last used service
us-east-1	SS

A modal dialog titled "Deactivate AKIAQUQJCNI02CC3EBFL" is open, displaying a message: "Deactivate access key AKIAQUQJCNI02CC3EBFL? You can't use an inactive key to make AWS API calls but you can activate it again later." It also lists the access key's last used information. At the bottom of the modal are "Cancel" and "Deactivate" buttons.

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/users/details/newuser?section=security_credentials. The main title bar says "Access Key deactivated".

The left sidebar shows the navigation menu under "Identity and Access Management (IAM)". The "Users" section is selected. The "Access keys" section shows one access key listed:

Identifier	Created on
AKIAQUQJCNI02CC3EBFL	1 hour ago

Details for the access key:

Description	Status
newuser	Inactive

Log details:

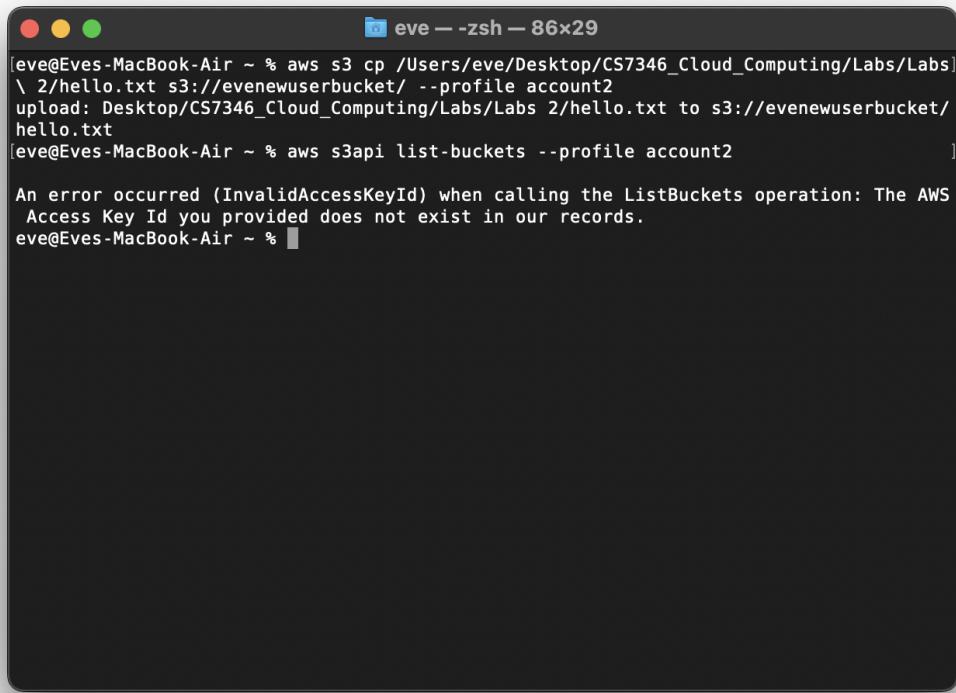
Last used	Last used service
16 minutes ago	s3
Last used region	
us-east-1	

Actions button: Actions ▾

Below the access key section, there is a link to "SSH public keys for AWS CodeCommit (0)".

Bottom navigation bar: CloudShell, Feedback, Language, © 2023, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, Cookie preferences.

5.



A screenshot of a macOS terminal window titled "eve — -zsh — 86x29". The window contains the following text:

```
[eve@Eves-MacBook-Air ~ % aws s3 cp /Users/eve/Desktop/CS7346_Cloud_Computing/Labs/Labs \
\ 2/hello.txt s3://evenewuserbucket/ --profile account2
upload: Desktop/CS7346_Cloud_Computing/Labs/Labs 2/hello.txt to s3://evenewuserbucket/
hello.txt
[eve@Eves-MacBook-Air ~ % aws s3api list-buckets --profile account2
]
An error occurred (InvalidAccessKeyId) when calling the ListBuckets operation: The AWS
Access Key Id you provided does not exist in our records.
eve@Eves-MacBook-Air ~ % ]
```

6.4

EXERCISE 6.4

Create and Configure an IAM Group

1. Make sure you have at least two IAM users in your account.
2. Create a new IAM group and attach at least one policy—perhaps IAMUserChangePassword.
3. Add your two users to the group.
4. Confirm that your users can now change their own passwords.
5. Delete the group or change its policies and then confirm that your users can no longer update their passwords.

Solution:

1. Create user1 and user2

The screenshot shows the AWS IAM Management Console interface. The left sidebar is titled "Identity and Access Management (IAM)" and includes sections for 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)), and Related consoles (IAM Identity Center [New], AWS Organizations [New]).

The main content area displays a success message: "User created successfully" and "You can view and download the user's password and email instructions for signing in to the AWS Management Console." Below this, the "Users (5) Info" section shows a table of users:

User name	Groups	Last activity	MFA	Password age	Active key age
eve	...	1 hour ago	None	10 days ago	10 days ago
newuser	...	41 minutes ago	None	Yesterday	-
regular	...	Never	None	None	-
user1	None
user2	None

At the bottom of the page, there are links for CloudShell, Feedback, Language, and a footer with copyright information: "© 2023, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences".

2.

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/groups/details/UserChangePassword?section=permissions. The left sidebar is titled "Identity and Access Management (IAM)" and includes sections for Dashboard, Access management (User groups, Users, Roles, Policies, Identity providers, Account settings), Access reports (Archive rules, Analyzers, Settings, Credential report, Organization activity, Service control policies (SCPs)), and Related consoles (IAM Identity Center [New], AWS Organizations [New]). The main content area is titled "UserChangePassword" and shows the "Permissions" tab selected under "Summary". It displays the following information:

User group name	Creation time	ARN
UserChangePassword	June 18, 2023, 12:51 (UTC-04:00)	arn:aws:iam::044042447389:group/UserChangePassword

Below this, a table lists the "Permissions policies (1) Info" attached to the group:

Policy name	Type	Description
IAMUserChangePassword	AWS managed	Provides the ability for an IAM user to

3.

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/groups/details/UserChangePassword?section=users. The left sidebar is titled "Identity and Access Management (IAM)" and includes sections for 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)), and Related consoles (IAM Identity Center [New], AWS Organizations [New]). The main content area is titled "UserChangePassword" and shows the "Summary" tab. It displays the user group name "UserChangePassword", creation time "June 18, 2023, 12:51 (UTC-04:00)", and ARN "arn:aws:iam::044042447389:group/UserChangePassword". Below this, there are tabs for "Users", "Permissions", and "Access Advisor". The "Users" tab shows a table with two users: "user1" and "user2". Both users have 1 group, last activity at 3 minutes ago, and were created 3 minutes ago.

User Name	Groups	Last Activity	Creation Time
user1	1	None	3 minutes ago
user2	1	None	3 minutes ago

4.

The screenshot shows the AWS IAM Management Console with the URL https://us-east-1.console.aws.amazon.com/iamv2/home#/users/details/user1?section=security_credentials. The left sidebar is collapsed, and the main area shows a summary for User1. A modal window titled "Manage console access" is open, containing the following information:

Console access

Enable (radio button selected) Disable

Set password

Keep existing password Autogenerated password Custom password (User11234567! Show password)

User must create new password at next sign-in (Users automatically get the [IAMUserChangePassword](#) policy to allow them to change their own password.)

Access key 1 Not enabled **Access key 2** Not enabled

Enable console access

No MFA devices. Assign an MFA device to improve the security of your AWS environment. [Assign MFA device](#)

Created on: June 18, 2023

Cancel Apply

The screenshot shows the AWS IAM Management Console with the same URL as the previous screenshot. The modal window now displays a success message:

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://evecs7346.signin.aws.amazon.com/console>

User name: user1
Console password: User11234567! [Hide](#)

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 [\[?\]](#)

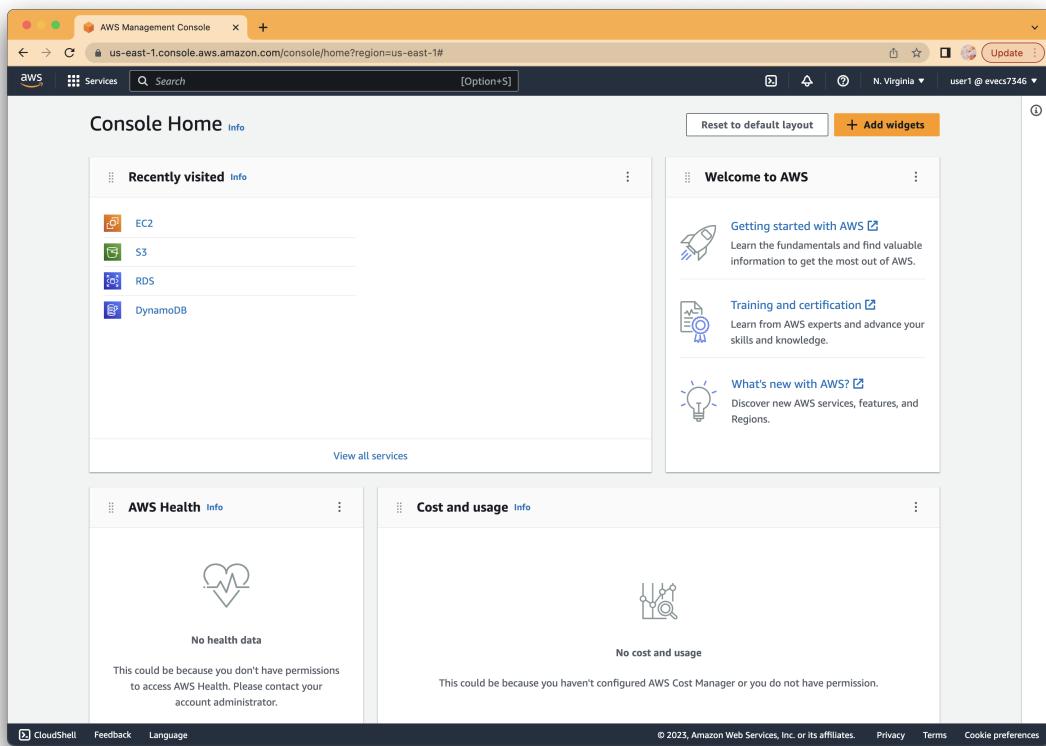
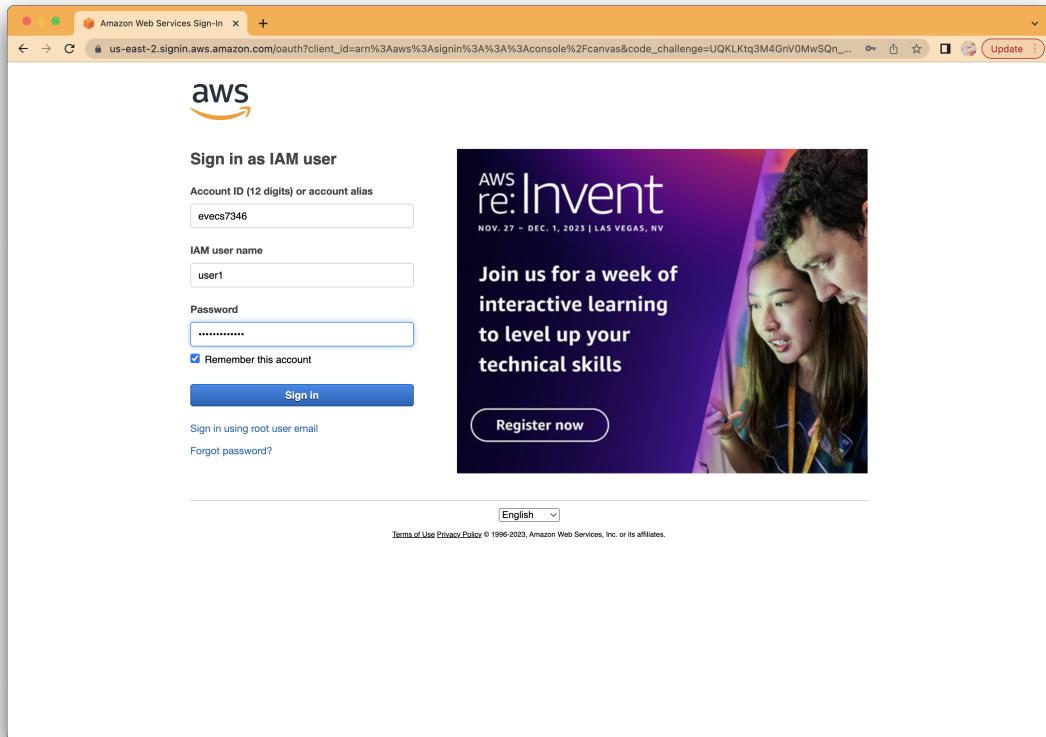
Download .csv file Close

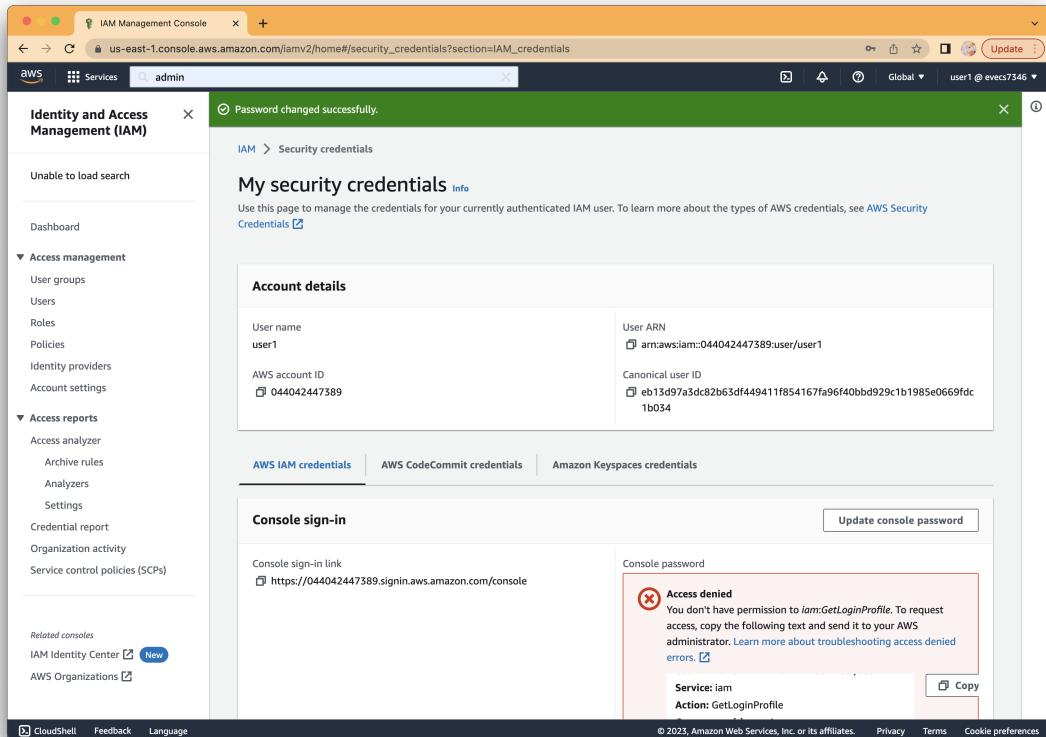
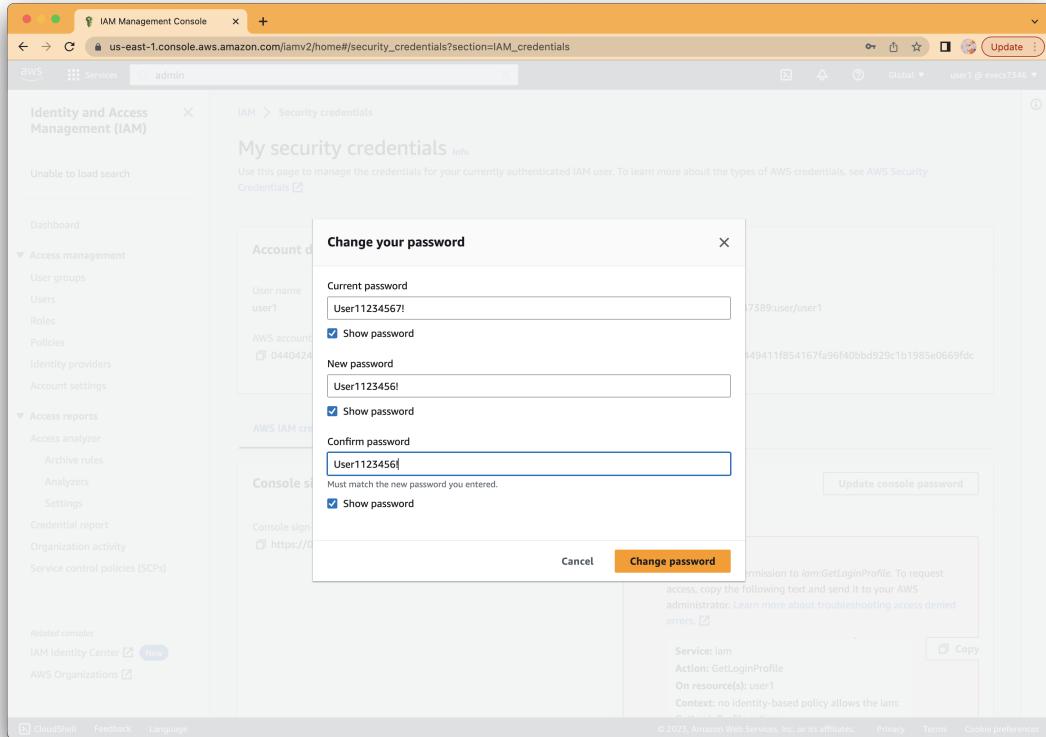
Device type Identifier Created on: 12:55 EDT

No MFA devices. Assign an MFA device to improve the security of your AWS environment. [Assign MFA device](#)

Screenshot of the AWS IAM Management Console showing the 'Manage console access' dialog for user 'user2'. The dialog allows setting a custom password ('User21234567!') and enabling console access. The 'Custom password' field is highlighted.

Screenshot of the AWS IAM Management Console showing the 'Console password' dialog for user 'user2'. It displays a success message: 'You have successfully enabled the user's new password.' The password is listed as 'User21234567!'.





5.

The screenshot shows the AWS IAM Management Console with the URL us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/groups. The left sidebar is open, showing the 'Access management' section with 'User groups' selected. The main area displays a table titled 'User groups (Selected 1/3)'. The table has columns for 'Group name', 'Users', 'Permissions', and 'Creation time'. It lists three groups: 'Developers' (creation time: 10 days ago), 'regular' (creation time: 3 days ago), and 'UserChangePassword' (creation time: 19 minutes ago). The 'UserChangePassword' group is highlighted with a blue border. At the top right of the table, there are 'Create group' and 'Delete' buttons. Below the table is a search bar and a pagination control.

This screenshot is identical to the one above, but it includes a modal dialog box in the center. The dialog is titled 'Delete UserChangePassword?' and contains the message: 'Delete UserChangePassword permanently? All the users in this group will lose the group permissions.' Below this, it says 'This action cannot be undone.' and 'To confirm deletion, enter the group name in the text input field.' A text input field contains the group name 'UserChangePassword'. At the bottom of the dialog are 'Cancel' and 'Delete' buttons.

IAM Management Console

us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#/groups

Identity and Access Management (IAM)

User groups

Dashboard

Access management

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

Access reports

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

Related consoles

- IAM Identity Center
- AWS Organizations

CloudShell Feedback Language

User group deleted.

User groups (2) 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

Group name	Users	Permissions	Creation time
Developers	1	Defined	10 days ago
regular	1	Defined	3 days ago

Create group

CloudShell Feedback Language

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AWS Management Console

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

Console Home Info

Recently visited

- IAM
- AWS Organizations
- EC2
- S3
- RDS
- DynamoDB

View all services

Welcome to AWS

Getting started with AWS

Learn the fundamentals and find valuable information to get the most out of AWS.

Training and certification

Learn from AWS experts and advance your skills and knowledge.

What's new with AWS?

Discover new AWS services, features, and Regions.

AWS Health

No health data

This could be because you don't have permissions to access AWS Health. Please contact your account administrator.

Cost and usage

No cost and usage

This could be because you haven't configured AWS Cost Manager or you do not have permission.

CloudShell Feedback Language

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The screenshot shows the AWS IAM Management Console with the URL https://us-east-1.console.aws.amazon.com/iamv2/home#/security_credentials?section=IAM_credentials. The left sidebar is titled "Identity and Access Management (IAM)" and includes sections for "Access management", "Access reports", and "Related consoles". The main content area is titled "My security credentials" and displays "Account details" for the user "user1". It shows the User name as "user1", User ARN as "arn:aws:iam::044042447389:user/user1", AWS account ID as "044042447389", and Canonical user ID as "eb13d97a3dc82b63df449411f854167fa96f40bb929c1b1985e0669fdc1b034". Below this, there are tabs for "AWS IAM credentials", "AWS CodeCommit credentials", and "Amazon Keypairs credentials". A "Console sign-in" section shows a "Console sign-in link" at <https://044042447389.signin.aws.amazon.com/console>. A red-bordered "Access denied" box appears, stating: "You don't have permission to iam:GetLoginProfile. To request access, copy the following text and send it to your AWS administrator. Learn more about troubleshooting access denied errors." It lists the User: "arn:aws:iam::044042447389:user/user1", Service: "iam", Action: "GetLoginProfile", and On resource(s): "user1". There is a "Copy" button next to the error message. At the bottom right, there are links for "Update", "Global", "user1 @ evcs7346", "Cookie preferences", and "Privacy Terms".

The screenshot shows the AWS IAM Management Console with the same URL as the previous screenshot. The "Change your password" dialog is open in the center. It has fields for "Current password" (User12345!), "New password" (User12345!), and "Confirm password" (User12345!). There are checkboxes for "Show password" and "Must match the new password you entered.". Below the dialog, a red-bordered "Access denied" box is visible, identical to the one in the first screenshot. At the bottom right of the dialog, there are "Cancel" and "Change password" buttons. The rest of the interface is identical to the first screenshot, including the sidebar, main content area, and footer.

