

CLOUD COMPUTING LAB

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Class: 5B

LAB #13

Task 0 Lab Setup (Codespace & GH CLI)

- task0_codespace_create_and_list.png

```
C:\Users\A>gh codespace list
NAME          DISPLAY NAME      REPOSITORY      BRANCH  STATE    CREATED AT
refactored-umbrella-v6j6vpxjwwxx...  refactored umbrella  mariamalik11/Lab-9  main*   Shutdown  about 16 days ago
fictional-pancake-wrqr7vwqxg6rhq6g  fictional pancake  mariamalik11/CC_Mari...  main*   Shutdown  about 6 days ago
```

- task0_codespace_ssh_connected.png

```
C:\Users\A>gh codespace ssh -c fictional-pancake-wrqr7vwqxg6rhq6g
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-1030-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro
Last login: Sun Jan 18 13:13:55 2026 from ::1
```

Task 1 — Create IAM Group and Output Details

- task1_project_directory.png

```
@mariamalik11 ② /workspaces/CC_Maria_076 (main) $ cd lab13
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $
```

- task1_file_created.png

```
SafaJahangir09 ② /workspaces/CC_Safa_056/Lab13 (main) $ touch main.tf
SafaJahangir09 ② /workspaces/CC_Safa_056/Lab13 (main) $ ls
EADME.md  main.tf
```

- task1_main_tf.png

```
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ cat main.tf
provider "aws" {
    shared_config_files      = ["~/.aws/config"]
    shared_credentials_files = ["~/.aws/credentials"]
}

resource "aws_iam_group" "developers" {
    name = "developers"
    path = "/groups/"
}

output "group_details" {
    value = {
        group_name = aws_iam_group.developers.name
        group_arn  = aws_iam_group.developers.arn
        unique_id  = aws_iam_group.developers.unique_id
    }
}
```

- task1_terraform_init.png

```
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v6.28.0...
- Installed hashicorp/aws v6.28.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
```

- task1_terraform_apply.png

```
Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
+ group_details = {
    + group_arn  = (known after apply)
    + group_name = "developers"
    + unique_id  = (known after apply)
}
aws_iam_group.developers: Creating...
aws_iam_group.developers: Creation complete after 2s [id=developers]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

group_details = {
    "group_arn" = "arn:aws:iam::291506017390:group/groups/developers"
    "group_name" = "developers"
    "unique_id" = "AGPAUHXY42RXDWDNXBYRY"
}
```

- task1_terraform_output.png

```
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ terraform output
group_details = {
  "group_arn" = "arn:aws:iam::291506017390:group/groups/developers"
  "group_name" = "developers"
  "unique_id" = "AGPAUHXY42RXDWDNXBYRY"
}
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ -
```

- task1_aws_console_group.png

The screenshot shows the AWS IAM Groups page. At the top, there's a header with 'User groups (3)' and a 'Create group' button. Below the header, a search bar and a table are displayed. The table has columns for 'Group name', 'Users', 'Permissions', and 'Creation time'. A single row is visible for the group 'developers', which was created 28 minutes ago. The 'Permissions' column shows 'Not defined'.

Task 2 — Create IAM User with Group Membership

- task2_main_tf_user.png

```
output "group_details" {
  value = {
    group_name = aws_iam_group.developers.name
    group_arn = aws_iam_group.developers.arn
    unique_id = aws_iam_group.developers.unique_id
  }
}

resource "aws_iam_user" "lb" {
  name = "Loadbalancer"
  path = "/users/"
  force_destroy = true
  tags = {
    DisplayName = "Load Balancer"
  }
}

resource "aws_iam_user_group_membership" "lb_membership" {
  user = aws_iam_user.lb.name
  groups = [
    aws_iam_group. developers.name
  ]
}

output "user_details" {
  value = {
    user_name = aws_iam_user.lb.name
    user_arn = aws_iam_user.lb.arn
    unique_id = aws_iam_user.lb.unique_id
  }
}

-- TNSERT --
```

- task2_terraform_apply.png

```
Changes to Outputs:
+ user_details = {
    + unique_id = (known after apply)
    + user_arn = (known after apply)
    + user_name = "loadbalancer"
  }
aws_iam_user.lb: Creating...
aws_iam_user.lb: Creation complete after 2s [id=loadbalancer]
aws_iam_user_group_membership.lb_membership: Creating...
aws_iam_user_group_membership.lb_membership: Creation complete a
m-20260122075722802400000001]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
```

- task2_terraform_output.png

```
@mariamalik11 eworkspaces/CC_Maria_076/lab13 (main) $ terraform output
group_details = {
  "group_arn" = "arn:aws:iam::291506017390:group/groups/developers"
  "group_name" = "developers"
  "unique_id" = "AGPAUHXY42RXDWDNXBYRY"
}
user_details = {
  "unique_id" = "AIDAUHXY42RXMMBWVDQJK"
  "user_arn" = "arn:aws:iam::291506017390:user/users/loadbalancer"
  "user_name" = "loadbalancer"
}
@mariamalik11 eworkspaces/CC_Maria_076/lab13 (main) $ -
```

- task2_aws_console_user.png

Users (4) <small>Info</small>							
An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.							
<input type="button" value="Search"/> <input type="button" value="Delete"/> <input type="button" value="Create user"/>							
User name	Path	Group:	Last activity	MFA	Password age	Console last sign-in	Access key ID
Admin	/	0	3 minutes ago	-	16 days	3 days ago	Active - AKIAUHXY42

- task2_aws_console_user_groups.png

Users (5) <small>Info</small>							
An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.							
<input type="button" value="Search"/> <input type="button" value="Delete"/> <input type="button" value="Create user"/>							
User name	Path	Group:	Last activity	MFA	Password age	Console	
Admin	/	0	15 minutes ago	-	16 days	3 day	
Lab8User	/	0	53 minutes ago	-	16 days	53 m	
loadbalancer	/users/	1	-	-	-	-	

Task 3 — Attach Policies to IAM Group

- task3_main_tf_policies.png

```
  unique_id = aws_iam_user.id.unique_id
}

resource "aws_iam_group_policy_attachment" "developer_ec2_fullaccess" {
  group = aws_iam_group.developers.name
  policy_arn = "arn:aws:iam::aws:policy/AmazonEC2FullAccess"
}

resource "aws_iam_group_policy_attachment" "change_password" {
  group = aws_iam_group.developers.name
  policy_arn = "arn:aws:iam::aws:policy/IAMUserChangePassword"
}

:wd_
```

- task3_terraform_apply.png

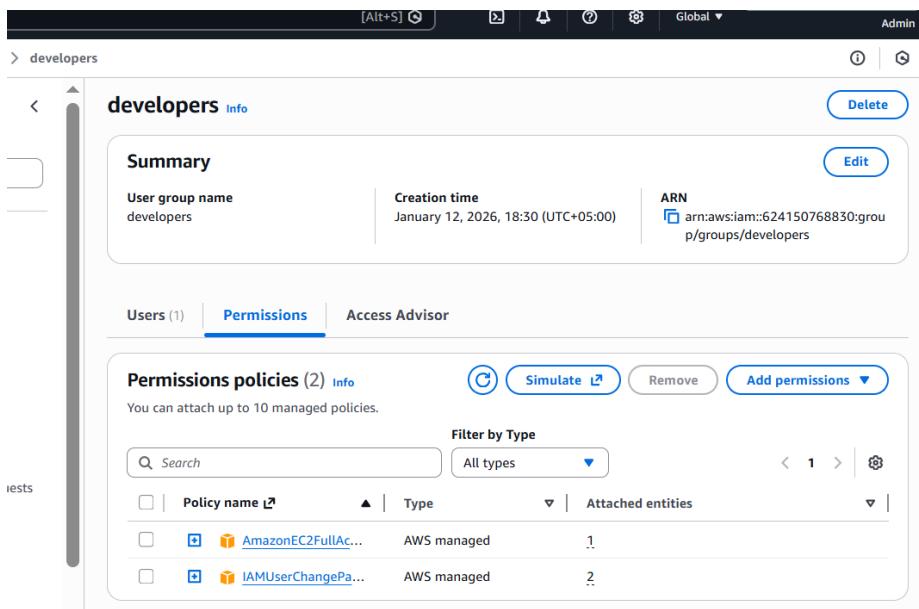
```

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

Outputs:

group_details = {
    "group_arn" = "arn:aws:iam::291506017390:group/groups/developers"
    "group_name" = "developers"
    "unique_id" = "AGPAUHXY42RXDWDNXBYRY"
}
user_details = {
    "unique_id" = "AIDAUHXY42RXMMBWVDQJK"
    "user_arn" = "arn:aws:iam::291506017390:user/users/loadbalancer"
    "user_name" = "loadbalancer"
}
@ mariamalik11 ~ /workspaces/CC_Maria_076/lab13 (main) $
```

- task3_aws_console_policies.png



Task 4 — Create Login Profile for IAM User

- task4_variables_tf.png

```

@mariamalik11 ~ /workspaces/CC_Maria_076/lab13 (main) $ cat variables.tf
variable "iam_password" {
    type      = string
    sensitive = true
    default   = "1dontKnow"
}
```

- task4_create_login_script.png

```
GNU nano 7.2                               create-login-profile.sh
#!/usr/bin/env bash
set -e

USERNAME="$1"
PASSWORD="$2"

aws iam create-login-profile \
--user-name "$USERNAME" \
--password "$PASSWORD" \
--password-reset-required || true
```

- task4_chmod_script.png

```
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ chmod +x create-login-profile.sh
```

- task4_main_tf_login_profile.png

```
resource "null_resource" "create_login_profile" {
  triggers = {
    password_hash = sha256(var.iam_password)
    user          = aws_iam_user.lb.name
  }

  depends_on = [aws_iam_user.lb]

  provisioner "local-exec" {
    command = "${path.module}/create-login-profile.sh ${aws_iam_user.lb.name} '${var.iam_password}'"
  }
}
```

- task4_terraform_apply.png

```
Plan: 1 to add, 0 to change, 0 to destroy.
null_resource.create_login_profile: Creating...
null_resource.create_login_profile: Provisioning with 'local-exec'...
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profile: Creation complete after 7s [id=1355112466946589324]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
```

- task4_aws_cli_verify.png

```
@SafaJahangir09 ② /workspaces/CC_Safa_056/Lab13 (main) $ aws iam get-login-profile --user-name loadbalancer
{
  "LoginProfile": {
    "UserName": "loadbalancer",
    "CreateDate": "2026-01-13T04:20:43+00:00",
    "PasswordResetRequired": true
  }
}
```

- task4_aws_console_login.png

IAM user sign in ⓘ

Account ID or alias (Don't have?)
291506017390

Remember this account

IAM username
loadbalancer

Password
.....

Show Password [Having trouble?](#)

Sign in

[Sign in using root user email](#)

[Create a new AWS account](#)

Task 5 — Generate Access Keys for IAM User

- task5_main_tf_access_keys.png

```
  command = "${path.module}/create-login-profile.sh ${aws_iam_user.lb.name}"  
}  
}  
  
resource "aws_iam_access_key" "lb_access_key" {  
  user = aws_iam_user.lb.name  
}  
  
output "access_key_id" {  
  value = aws_iam_access_key.lb_access_key.id  
}  
  
output "access_key_secret" {  
  value = aws_iam_access_key.lb_access_key.secret  
  sensitive = true  
}  
:  
:wq
```

- task5_terraform_apply.png

```
Plan: 1 to add, 0 to change, 0 to destroy.  
  
Changes to Outputs:  
+ access_key_id      = (known after apply)  
+ access_key_secret = (sensitive value)  
aws_iam_access_key.lb_access_key: Creating...  
aws_iam_access_key.lb_access_key: Creation complete after 1s [id=AKIAZCUSI5S7HDDJJD6J]  
  
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
```

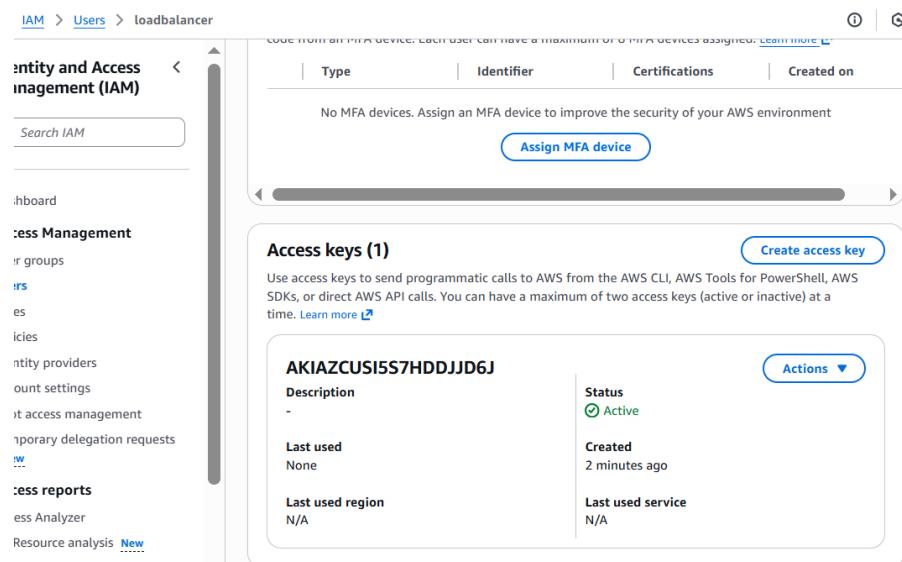
- task5_terraform_output.png

```
@mariamalik11 ~/workspaces/CC_Maria_076/lab13 (main) $ terraform output
access_key_id = "AKIAZCUSI5S7HDDJJD6J"
access_key_secret = <sensitive>
group_details = {
  "group_arn" = "arn:aws:iam::624150768830:group/groups/developers"
  "group_name" = "developers"
  "unique_id" = "AGPAZCUSI5S7AOCKZMXY3"
}
```

- task5_tfstate_secret. Png

```
@mariamalik11 ~/workspaces/CC_Maria_076/lab13 (main) $ cat terraform.tfstate
"access_key_secret": {
  "value": "6jTDuQi0350TPaRCwhzWQwGUHBkenlIRjZeNJy9Q",
  "type": "string",
  "sensitive": true
},
"group_details": {
  "value": {
    "group_arn": "arn:aws:iam::624150768830:group/groups/developers",
    "group_name": "developers",
    "unique_id": "AGPAZCUSI5S7AOCKZMXY3"
  },
}
```

- task5_aws_console_access_keys. Png



Task 6 — Implement Terraform Remote State with S3

- task6_s3_bucket_create.png

Create bucket [Info](#)

Buckets are containers for data stored in S3.

General configuration

AWS Region

Middle East (UAE) me-central-1

Bucket name [Info](#)

myapp-s3-bucket-056

Bucket names must be 3 to 63 characters and unique within the global namespace. Bucket names must also begin and end with a letter or number. Valid characters are a-z, 0-9, periods (.), and hyphens (-). [Learn more](#)

Copy settings from existing bucket - optional

Only the bucket settings in the following configuration are copied.

[Choose bucket](#)

Format: s3://bucket/prefix

Object Ownership [Info](#)

Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.

Object Ownership

ACLs disabled (recommended)

All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.

ACLs enabled

Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.

Object Ownership

Bucket owner enforced

Block Public Access settings for this bucket

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to this bucket and its objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to this bucket or objects within, you can customize the individual settings below to suit your specific storage use cases. [Learn more](#)

Block all public access

Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

- Block public access to buckets and objects granted through new access control lists (ACLs)**
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through any access control lists (ACLs)**
S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through new public bucket or access point policies**
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through any public bucket or access point policies**
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)

Bucket Versioning

Disable

Enable

- task6_s3_bucket_versioning.png

myapp-s3-bucket-056 [Info](#)

Properties

Bucket overview

AWS Region: Middle East (UAE) me-central-1

Amazon Resource Name (ARN): arnaws:s3:::myapp-s3-bucket-056

Creation date: January 13, 2026, 09:47:24 (UTC+05:00)

Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)

Bucket Versioning: Enabled

Multi-factor authentication (MFA) delete

An additional layer of security that requires multi-factor authentication for changing Bucket Versioning settings and permanently deleting object versions. To modify MFA delete settings, use the AWS CLI, AWS SDK, or the Amazon S3 REST API. [Learn more](#)

Bucket ABAC

Attribute-based access control (ABAC) is an authorization strategy that defines permissions based on attributes. With ABAC, you can attach tags to your general purpose buckets and AWS Identity and Access Management (IAM) entities (users or roles), then scale access to objects in your S3 general purpose buckets using tag-based policies. [Learn more](#)

- task6_main_tf_backend.png

```
terraform {
  backend "s3" {
    bucket = "myapp-s3-bucket-056"
    key    = "myapp/terraform.tfstate"
    region = "me-central-1"
    encrypt = true
    use_lockfile = true
  }
}

provider "aws" {
```

- task6_terraform_init_migrate.png

```
@mariamalikii @ /workspaces/CC_Maria_076/lab13 (main) $ terraform init -migrate-state
Initializing the backend...
Do you want to copy existing state to the new backend?
Pre-existing state was found while migrating the previous "local" backend to the
newly configured "s3" backend. No existing state was found in the newly
configured "s3" backend. Do you want to copy this state to the new "s3"
backend? Enter "yes" to copy and "no" to start with an empty state.

Enter a value: yes

Successfully configured the backend "s3"! Terraform will automatically
use this backend unless the backend configuration changes.
Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
- Reusing previous version of hashicorp/null from the dependency lock file
- Using previously-installed hashicorp/aws v6.28.0
- Using previously-installed hashicorp/null v3.2.4

Terraform has been successfully initialized!
```

- task6_terraform_apply.png

```
aws_iam_user_group_membership.lb_membership: Refreshing state... [id=terraform-20260112140940444400000001]
aws_iam_access_key.lb_access_key: Refreshing state... [id=AKIAZCUSI5S7HDDJJD6J]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no
changes are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
```

- task6_s3_tfstate_file.png

The screenshot shows the AWS S3 console interface. At the top, there's a navigation bar with 'Account ID: 6241-5076-8830' and 'Admin'. Below it, the path 'Buckets > myapp-s3-bucket-056 > myapp/' is shown. On the left, there's a sidebar with 'Objects' and 'Properties' tabs. The main area is titled 'myapp/' and shows 'Objects (1)'. A table lists the single object: 'terraform.tfstate' (tfstate, 6.7 KB, Standard storage class). The object was last modified on January 13, 2026, at 09:51:59 (UTC+05:00).

- task6_local_state_backup.png

```
@mariamalikii ② /workspaces/CC_Maria_076/lab13 (main) $ ls -la terraform.tfstate*
-rw-rw-rw- 1 codespace codespace    0 Jan 13 04:51 terraform.tfstate
-rw-rw-rw- 1 codespace codespace 6882 Jan 13 04:51 terraform.tfstate.backup
```

- task6_terraform_destroy.png

```
aws_iam_group_policy_attachment.change_password: Destruction complete after 1s
aws_iam_group_policy_attachment.developer_ec2_fullaccess: Destruction complete after 1s
aws_iam_user_group_membership.lb_membership: Destruction complete after 1s
aws_iam_user.lb: Destroying... [id=loadbalancer]
aws_iam_group.developers: Destroying... [id=developers]
aws_iam_group.developers: Destruction complete after 0s
aws_iam_user.lb: Destruction complete after 3s

Destroy complete! Resources: 7 destroyed.
```

- task6_s3_tfstate_destroyed. Png

```
pretty-print ↴

{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 2,
  "lineage": "46f2a50a-befd-1786-5486-911df1a43971",
  "outputs": {},
  "resources": [],
  "check_results": null
}
```

Task 7 — Create Multiple Users from CSV File

- task7_locals_tf.png

```
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ vim locals.tf
@mariamalik11 ② /workspaces/CC_Maria_076/lab13 (main) $ cat locals.tf
locals {
    users = csvdecode(file("users.csv"))
}
```

- task7_users_csv.png

```
GNU nano 7.2          users
Michael
Dwight
Jim
Pam
Ryan
Andy
Robert
Stanley
Kevin
Angela
Oscar
Phyllis
Toby
Kelly
Darryl
Creed
Meredith
Erin
Gabe
Jan
David
Holly
Charles
Jo
Clark
Peter
```

- task7_main_tf_multiple_users.png

```

@mariamalik11 7/worksaces/CC_Maria_076/lab13 (main) $ cat main.tf
terraform {
  backend "s3" {
    bucket = "myapp-s3-bucket-056"
    key    = "myapp/terraform.tfstate"
    region = "me-central-1"
    encrypt = true
    use_lockfile = true
  }
}

provider "aws" {
  shared_config_files      = ["~/.aws/config"]
  shared_credentials_files = ["~/.aws/credentials"]
}

resource "aws_iam_group" "developers" {
  name = "developers"
  path = "/groups/"
}

output "group_details" {
  value = {
    group_name = aws_iam_group.developers.name
    group_arn  = aws_iam_group.developers.arn
    unique_id  = aws_iam_group.developers.unique_id
  }
}

# Create multiple IAM users from CSV
resource "aws_iam_user" "users" {
  for_each = { for user in local.users : user.user_name => user }

  name      = each.value.user_name
  path      = "/users/"
  force_destroy = true
}

```

- task7_terraform_init.png

```

@mariamalik11 7/ /workspaces/CC_Maria_076/lab13 (main) $ terraform init
Initializing the backend...
Initializing provider plugins...
- Reusing previous version of hashicorp/null from the dependency lock file
- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/null v3.2.4
- Using previously-installed hashicorp/aws v6.28.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, o
commands will detect it and remind you to do so if necessary.

```

- task7_terraform_apply.png

```

null_resource.create_login_profiles["Meredith"] (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profiles["Meredith"] (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profiles["Meredith"] (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profiles["Meredith"] (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profiles["Meredith"] (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profiles["Meredith"] (local-exec): (output suppressed due to sensitive value in configuration)
null_resource.create_login_profiles["Meredith"] (local-exec): Creation complete after 10s [id=8521261764303816648]

Apply complete! Resources: 26 added, 0 changed, 26 destroyed.

```

- task7_terraform_output.png

```
@mariamalik11 ~ /workspaces/CC_Maria_076/lab13 (main) $ terraform output
all_access_key_secrets = <sensitive>
all_users_details = {
  "Andy" = {
    "access_key_id" = "AKIAZCUSI5S7DTWGSAXQ"
    "user_arn" = "arn:aws:iam::624150768830:user/users/Andy"
    "user_unique_id" = "AIDAZCUSI5S7EU66BIZMN"
  }
  "Angela" = {
    "access_key_id" = "AKIAZCUSI5S7JFJMRYV6"
    "user_arn" = "arn:aws:iam::624150768830:user/users/Angela"
    "user_unique_id" = "AIDAZCUSI5S7MJJHZDLXE"
  }
  "Charles" = {
    "access_key_id" = "AKIAZCUSI5S7DCMWLCW2"
    "user_arn" = "arn:aws:iam::624150768830:user/users/Charles"
    "user_unique_id" = "AIDAZCUSI5S7II2DWPH4H"
  }
  "Clark" = {
    "access_key_id" = "AKIAZCUSI5S7CF4EMTBO"
    "user_arn" = "arn:aws:iam::624150768830:user/users/Clark"
    "user_unique_id" = "AIDAZCUSI5S7DOBR3VI4X"
  }
}
```

- task7_tfstate_secrets. Png

```
@mariamalik11 ~ /workspaces/CC_Maria_076/lab13 (main) $ terraform state pull | grep -A 5 "all_access_key_secrets"
"all_access_key_secrets": {
  "value": {
    "Andy": "xSH56b/f9rl28TKyZkVHLqBx80+HCCJSA+bDB/1A",
    "Angela": "EQVFQJetu7FkIEDaVdNbt21wZ8xdm73flaXug7dP",
    "Charles": "vNbQvIth16w3qsLVsq1SXWL8nLvJQIbEineNCise",
    "Clark": "bY8ye5Ya762nEcnuEK2Z8UmCrgGa2q6NuOExsTTz",
  }
}
```

- task7_aws_console_all_users. Png

User name	Path	Groups	Last activity	MFA	Password age	Console last sign-in	Access key ID	Actions
Admin	/	0	5 minutes ago	-	15 days	33 minutes ago	Active - AKIAZCUSI5S...	
Andy	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Angela	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Charles	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Clark	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Creed	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Darryl	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
David	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Dwight	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Erin	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Gabe	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	
Holly	/users/	1	-	-	4 minutes	-	Active - AKIAZCUSI5S...	

- task7_aws_console_group_members. Png

Summary

User group name: developers Creation time: January 13, 2026, 10:09 (UTC+05:00) ARN: arn:aws:iam::624150768830:group/groups/developers

Users in this group (26)			
An IAM user is an entity that you create in AWS to represent the person or application that uses it to interact with AWS.			
<input type="text"/> Search Remove			
User name	Groups	Last activity	Creation time
Andy		None	7 minutes ago
Angela		None	7 minutes ago
Charles		None	7 minutes ago
Clark		None	7 minutes ago
Creed		None	7 minutes ago
Darryl		None	7 minutes ago

- task7_aws_console_user_access_key.png

Access keys (1)

AKIAZCUCU557K3BWG7FZ

Description: -

Status: Active

Created: 10 minutes ago

Last used: None

Last used region: N/A

Last used service: N/A

- task7_s3_tfstate_multiple_users.png

```
{
  "version": 4,
  "terraform_version": "1.14.3",
  "serial": 5,
  "lineage": "46f2a50a-befd-1786-5486-911df1a43971",
  "outputs": {
    "all_access_key_secrets": {
      "value": {
        "Andy": "xSH56b/f9r128TKyZkVHLqBx80+HCCJSA+bDB/1A",
        "Angela": "EQVFQJetu7fkIEidavdNbtl2wZ8xdm73#1aXug7dP",
        "Charles": "vNbQvIth16w3qsLVSq1SXWL8nLvJQIBEineNCise",
        "Clark": "bY8ye5Ya762nEcnuEK2Z8UmCrgGa2a6Nu0ExsTTz",
        "Creed": "LhNNtIlgCIHwToBUP/wBY7WRubMGzvDf3JOliq",
        "Darryl": "+TIBY0x1o4VJa54JESfsqsMG+168fun2EODLzR+",
        "David": "/NjUr5QyVoxBRUYc0yvJf+HCXYx+uII1Au04dmTb",
        "Dwight": "1Ca+g3uuSA+Pb7T3ubaEnDeEEkjTJ1G90eNgsJge",
        "Erin": "DPK9wN03vi0s1Un/Gu+MSOe7tXmhcpwsq1ssFqy",
        "Gabe": "omPpczXRMWqN0rTPifxYRsZ8u1/RYUXk4nkH/f5L",
        "Holly": "tsR0ybcsVx4nD/5MXotsSwNnhvIM/Uw3bwNZUNVq",
        "Jan": "K6SN+yFTygBK9qtvrbbM9Iav2MuUObv2WTCv1bQQ2",
        "Jim": "Xe9oyCqW+eb1eEqD3cDZC4NXEm3aMQMcylDt/Hbx",
        "Jo": "YYve4ljr2hkFx6dmjxtzkkj2pshkF4jwgmk0vdAOA",
        "Kelly": "iaQ3HM1RZkyIFRkByNucoGiL2dqeqlBmFn0oVJGcT",
        "Kevin": "Aedm3PKPd1EBQGe1C5kzgRrUyRF1oTvyl0B1z4vp",
        "Meredith": "a61ZiBMxF20gMeI2Z1C50ThLur6UMXut8AxR17lh",
        "Michael": "PV5sO2R+oP88190enneuShc3HyNGkQupmpUDo0gn",
        "Oscar": "z3VtCwkSVTo3k23XA5hmt0gZbsgWiuwoY5XmK55",
        "Pam": "Miw9nmV1XmUFxQxwmMqC6FwH+XcwIFINCgs4P0S",
        "Peter": "YKKNKnpcolu4kk04UR2iv25ZGIQ6SlgyssWQHGWNLw",
        "Phyllis": "f86kJun03jR0hpYu+0Femj0V/4Q8/DT9+FBF2sG5",
        "Robert": "vxyOK0beJ7hP9mGHTdxpZXOU9JazR+K2ROCR5a",
        "Ryan": "10pFHRRparpOvgveJUG4fxtvwGgiPRvL54pdLmio"
      }
    }
}
```

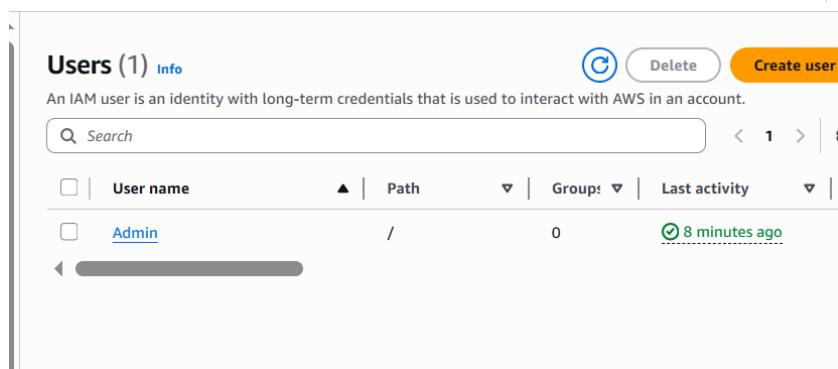
Cleanup

- cleanup_destroy_complete.png

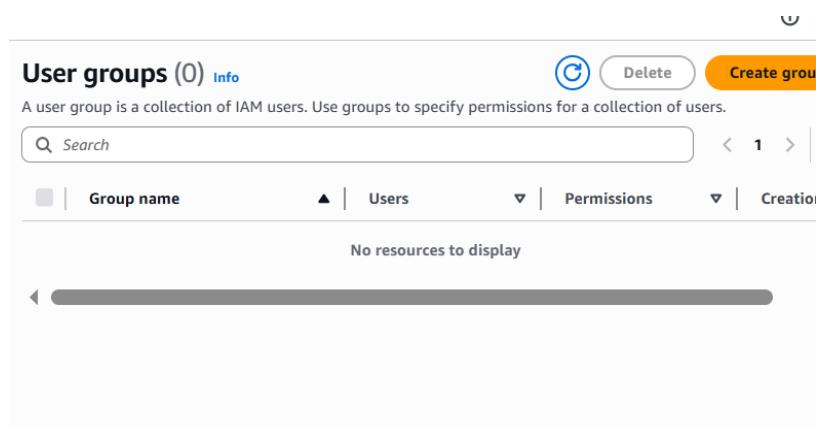
```
aws_iam_user.users["Clark"]: Destroying... [id=Clark]
aws_iam_user.users["Jan"]]: Destruction complete after 8s
aws_iam_user.users["Andy"]]: Destroying... [id=Andy]
aws_iam_user.users["Jo"]]: Destruction complete after 2s
aws_iam_user.users["Gabe"]]: Destruction complete after 8s
aws_iam_user.users["David"]]: Destruction complete after 3s
aws_iam_user.users["Creed"]]: Destruction complete after 4s
aws_iam_user.users["Michael"]]: Destruction complete after 5s
aws_iam_user.users["Holly"]]: Destruction complete after 4s
aws_iam_user.users["Andy"]]: Destruction complete after 2s
aws_iam_user.users["Oscar"]]: Destruction complete after 5s
aws_iam_user.users["Pam"]]: Destruction complete after 4s
aws_iam_user.users["Clark"]]: Destruction complete after 5s
```

```
Destroy complete! Resources: 107 destroyed.
```

- cleanup_aws_console_users_deleted.png



- cleanup_aws_console_group_deleted.png



- cleanup_s3_empty_state.png

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<Error>
  <Code>AccessDenied</Code>
  <Message>Access Denied</Message>
  <RequestId>FJJH1VJEQ1ZCP910</RequestId>
  <HostId>XpGVya1jGgR52SDDhZi6HTAbco2VmTZ6u5pTqbk080MB525CPjZM9E3iuJbj7/9ACP7c2fN+A3oas4z66vSgI+N9+fTIaES</HostId>
</Error>
```

- cleanup_final_files.png

```
@mariamalik11  /workspaces/CC_Maria_076/lab13 (main) $ ls -la
total 65324
drwxrwxrwx+ 4 codespace root      4096 Jan 13 05:10 .
drwxrwxrwx+ 17 codespace root     4096 Jan 12 14:05 ..
drwxr-xr-x+ 3 codespace codespace 4096 Jan 13 04:51 .terraform
-rw-r--r--  1 codespace codespace  2422 Jan 13 04:20 .terraform.lock.hcl
-rw-rw-rw-  1 codespace root       0 Jan 12 13:05 README.md
drwxr-xr-x+ 3 codespace codespace 4096 Jan  9 19:14 aws
-rw-rw-rw-  1 codespace codespace 66842323 Jan 12 13:21 awscliv2.zip
-rw-rw-rwx  1 codespace codespace   423 Jan 13 04:17 create-login-profile.sh
-rw-rw-rw-  1 codespace codespace    50 Jan 13 05:00 locals.tf
-rw-rw-rw-  1 codespace codespace 2509 Jan 13 05:10 main.tf
-rw-rw-rw-  1 codespace codespace    0 Jan 13 04:51 terraform.tfstate
-rw-rw-rw-  1 codespace codespace 6882 Jan 13 04:51 terraform.tfstate.backup
-rw-rw-rw-  1 codespace codespace   167 Jan 13 05:02 users.csv
-rw-rw-rw-  1 codespace codespace   150 Jan 13 04:15 variables.tf
```