CLOUD COMPUTING LAB

SUBMITTED TO

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SUBMITTED BY

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2023-BSE-025

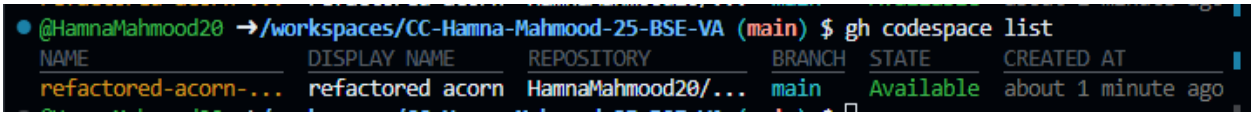
BSE V-A

Lab 13

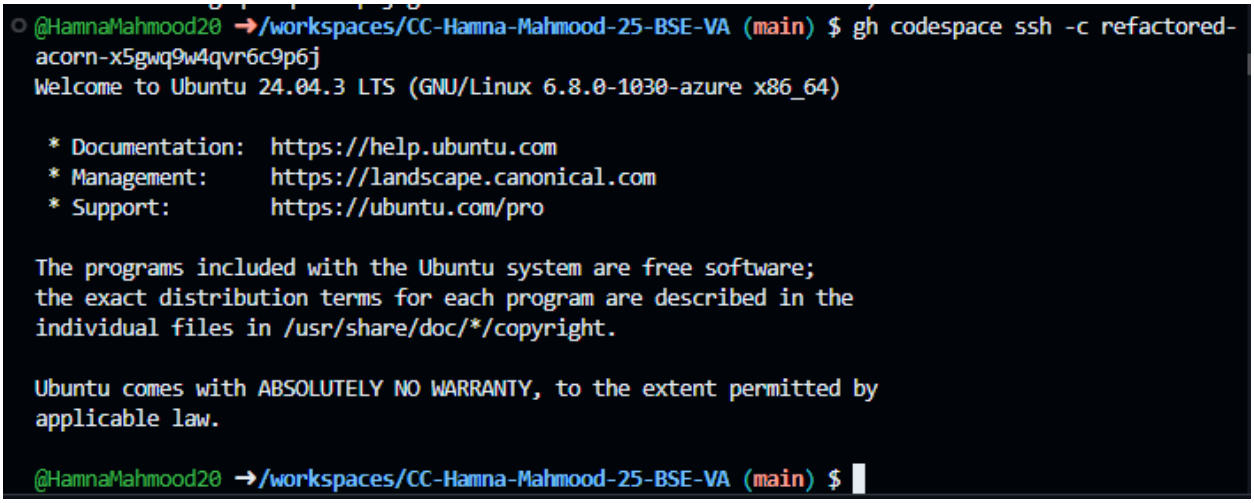
Terraform IAM Management with AWS

Task 0 Lab Setup (Codespace & GH CLI)

- task0_codespace_create_and_list.png



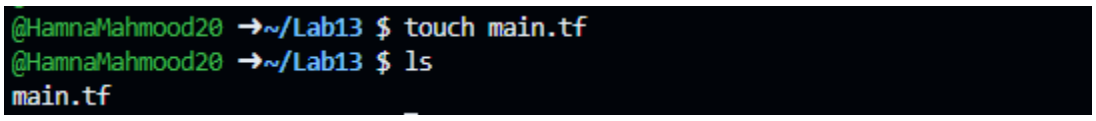
- task0_codespace_ssh_connected.png



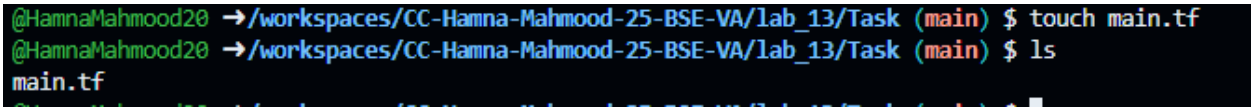
Task 1 Create IAM Group and Output Details

- task1_project_directory.png

- task1_file_created.png



- task1_main_tf.png



```
lab_13 > Task > main.tf > output "group_details"
1   provider "aws" {
2     shared_config_files      = ["~/.aws/config"]
3     shared_credentials_files = ["~/.aws/credentials"]
4   }
5
6   resource "aws_iam_group" "developers" {
```

- task1_terraform_init.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA/lab_13/Task (main) $ terraform init
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.
```

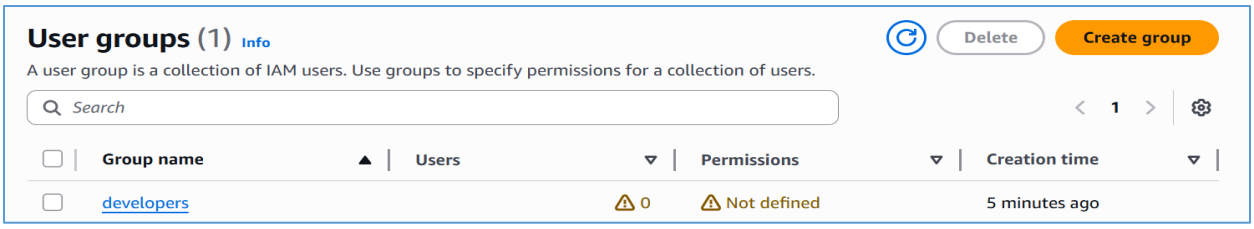
- task1_terraform_apply.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA/lab_13/Task (main) $ terraform apply auto-
approve
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

group_details = {
  "group_arn" = "arn:aws:iam::941618064465:group/groups/developers"
  "group_name" = "developers"
  "unique_id" = "AGPA5WPGPNRIWSOVQPNE5"
}
commands will detect it and remind you to do so if necessary.
```

- task1_terraform_output.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA/lab_13/Task (main) $ terraform output
group_details = {
  "group_arn" = "arn:aws:iam::941618064465:group/groups/developers"
  "group_name" = "developers"
  "unique_id" = "AGPA5WPGPNRIWSOVQPNE5"
```

- task1_aws_console_group.png

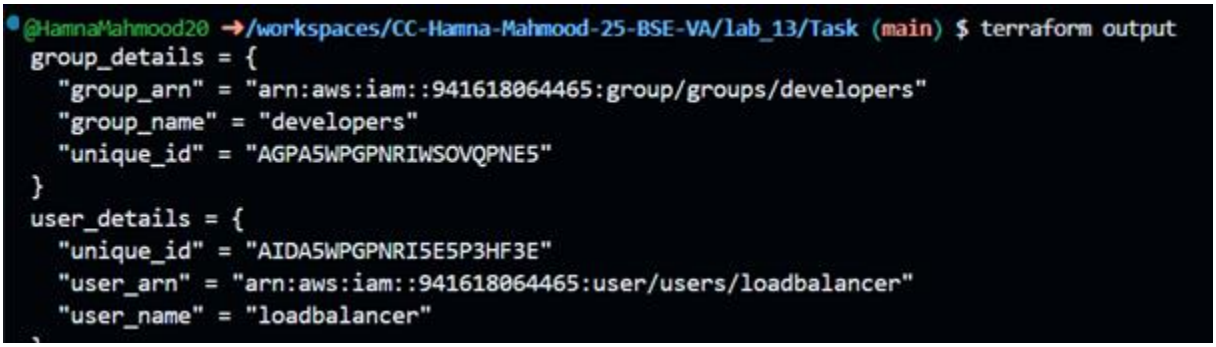


Task 2 – Create IAM User with Group Membership

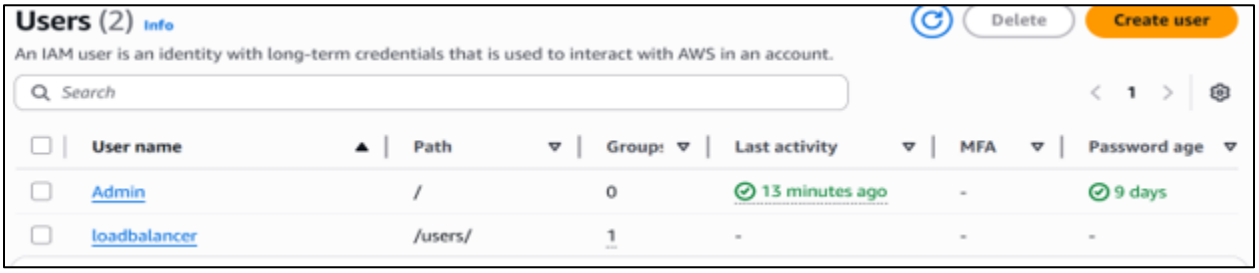
- task2_main_tf_user.png

- task2_terraform_apply.png

- task2_terraform_output.png



- task2_aws_console_user.png



- task2_aws_console_user_groups.png

Task 3 – Attach Policies to IAM Group

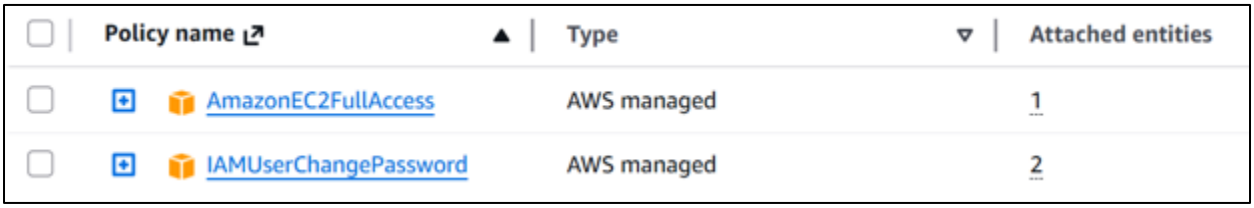
- task3_main_tf_policies.png

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

- task3_terraform_apply.png

```
@HamnaMahmood20 →/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ terraform apply -auto-approve
Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

Outputs:

group_details = {
  "group_arn" = "arn:aws:iam::941618064465:group/groups/developers"
  "group_name" = "developers"
  "unique_id" = "AGPA5WPGPNBIWSOVOPNE5"
```

- task3_aws_console_policies.png



Task 4 – Create Login Profile for IAM User

- task4_variables_tf.png

```
Task > variables.tf > variable "iam_password"
variable "iam_password" {
  description = "Temporary password for the IAM user"
  type        = string
  sensitive   = true
  default = "1dontKnow"
```

- task4_create_login_script.png

README.md U | main.tf U | variables.tf U | $ create-login-profile.sh U

lab_13 > Task > $ create-login-profile.sh

```
#!/usr/bin/env bash
set -euo pipefail

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

- task4_chmod_script.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ chmod +x create-login -profile.sh
```

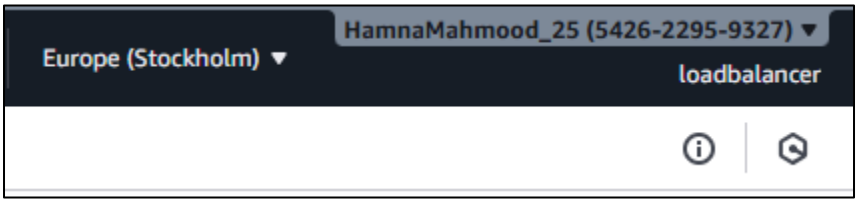
- task4_terraform_apply.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ terraform apply -auto-approve -var="iam_password=MySecurePass123!"
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

group_details = {
  "group_arn" = "arn:aws:iam::941618064465:group/groups/developers"
  "group_name" = "developers"
```

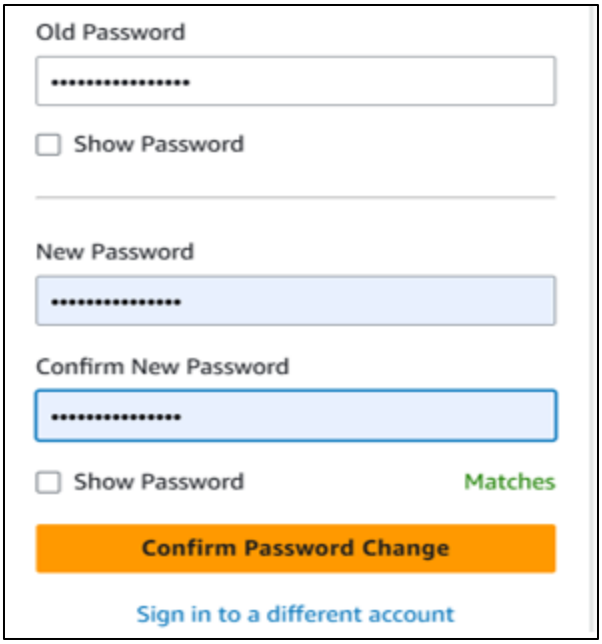
- task4_aws_cli_verify.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ aws iam get-login-pro
file --user-name loadbalancer
{
    "LoginProfile": {
        "UserName": "loadbalancer",
        "CreateDate": "2026-01-28T08:31:30+00:00",
        "PasswordResetRequired": true
```

- task4_aws_console_login.png



- task4_aws_console_password_reset.png



Task 5- Generate Access Keys for IAM Users

- task5_main_tf_access_keys.png

```
lab_13 > Task > main.tf > ...
 66   # Access key for IAM user
 67   resource "aws_iam_access_key" "lb_access_key" {
 68     user = aws_iam_user.lb.name
```

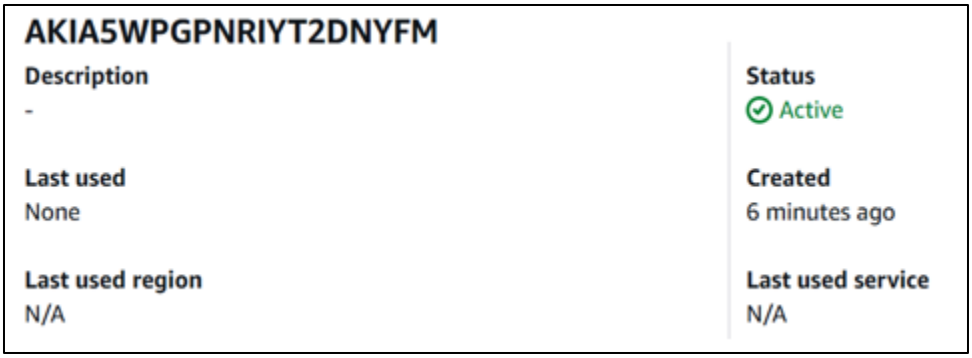
- task5_terraform_apply.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ terraform apply -auto
-approve -var="iam_password=MySecurePass123!"
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
```

- task5_tfstate_secret. Png

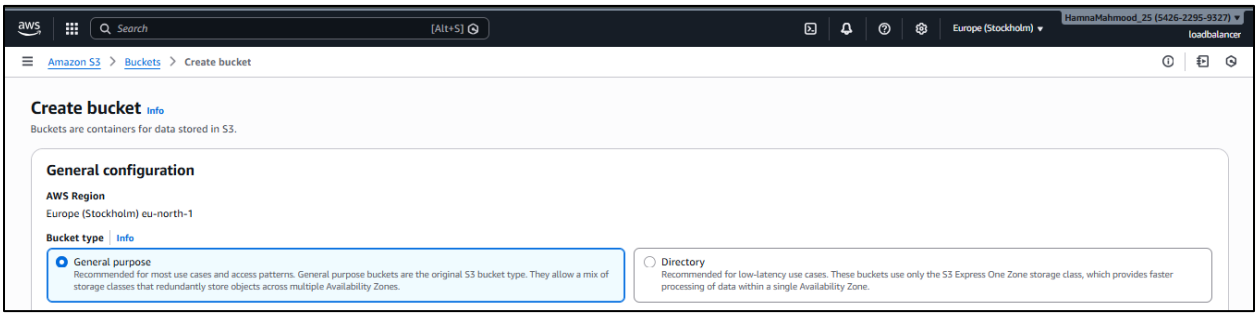
```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ cat terraform.tfstate
 | grep -A 10 "access_key_secret"
    "access_key_secret": {
      "value": "O9BbFIWKW7J5vRngwSzuIVZTiMkUXFtCMoBc9122",
      "type": "string",
      "sensitive": true
    },
    "group_details": {
      "value": {
        "group_arn": "arn:aws:iam::941618064465:group/groups/developers",
        "group_name": "developers",
        "unique_id": "AGPA5WPGPNRIWSOVQPNE5"
```

- task5_aws_console_access_keys. Png

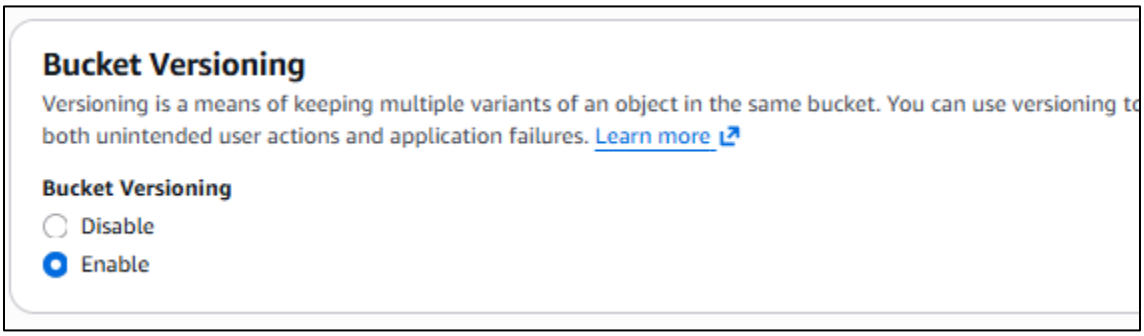


Task 6 – Implement Terraform State with S3

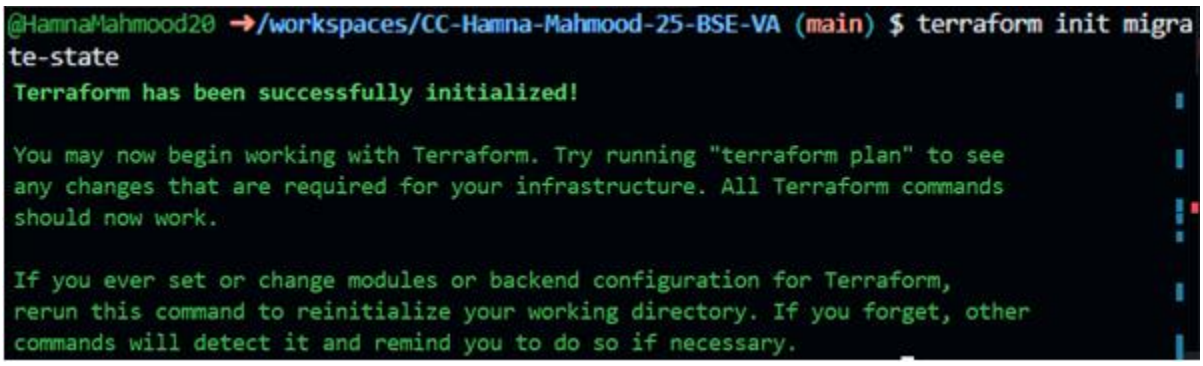
- task6_s3_bucket_create.png



- task6_s3_bucket_versioning.png



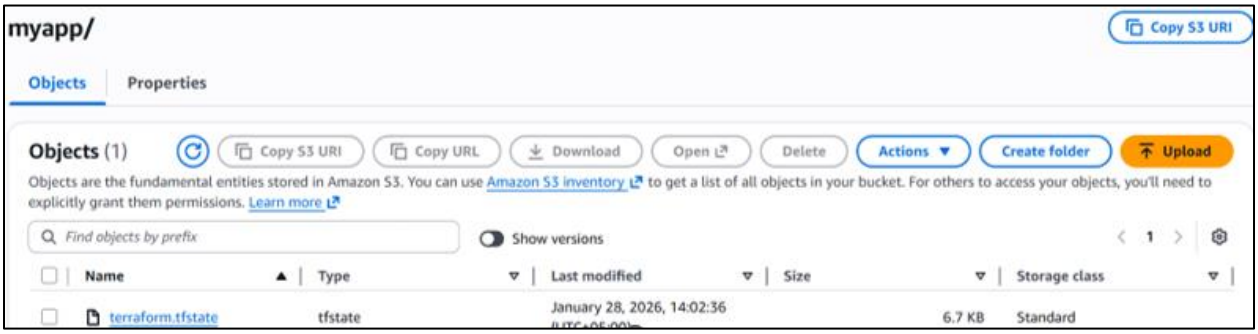
- task6_terraform_init_migrate.png



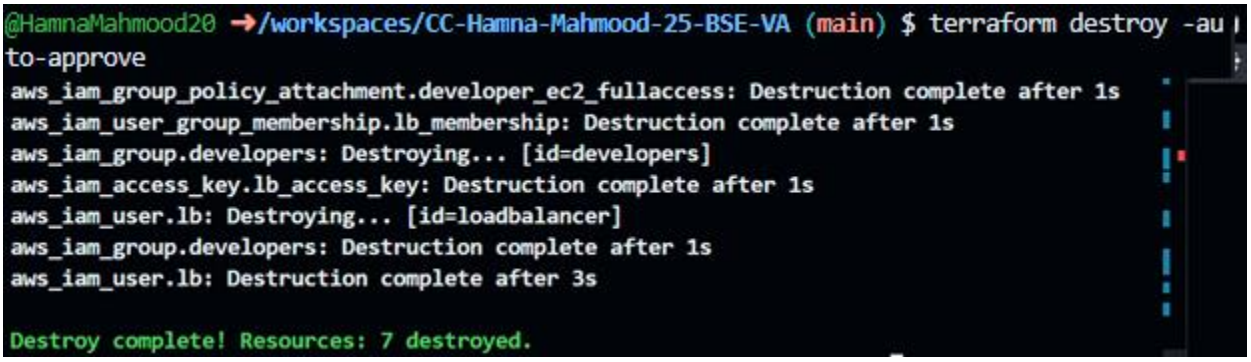
- task6_terraform_apply.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ terraform apply -auto
-approve -var="iam_password=MySecurePass123!"
Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
```

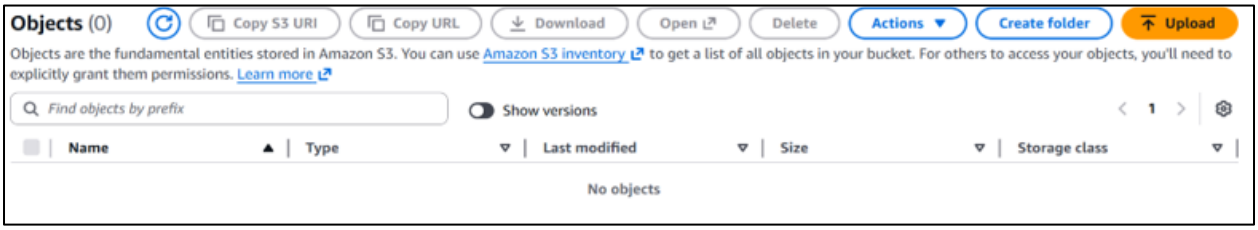
- task6_s3_tfstate_file.png



- task6_terraform_destroy.png



- task6_s3_tfstate_destroyed.png



Task 7 – Create Multiple Users From CSV File

- task7_locals_tf.png

```
locals {
  users = csvdecode(file("users.csv"))
```

- task7_users_csv.png

```
user_name
Michael
Dwight
Jim
Pam
Ryan
```

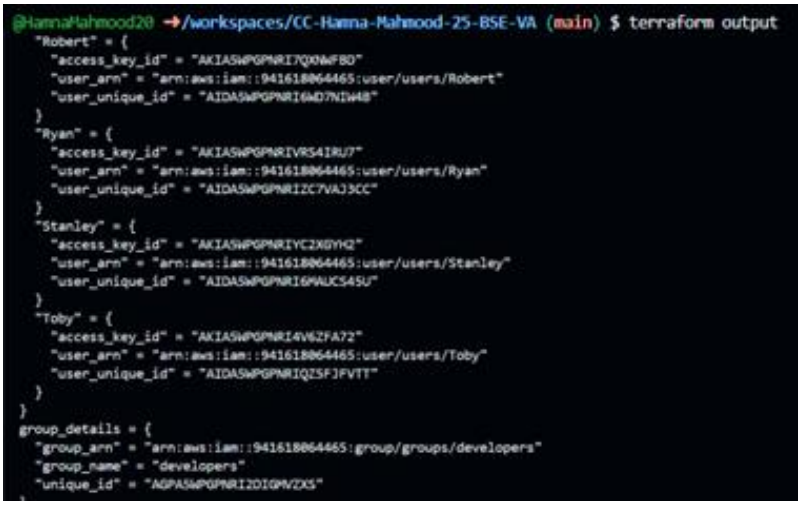
- task7_main_tf_multiple_users.png

```
# 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/"
```

- task7_terraform_apply.png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ terraform apply -auto-approve
 -var="iam_password=MySecurePass123!"
 Apply complete! Resources: 107 added, 0 changed, 0 destroyed.
```

- task7_terraform_output.png

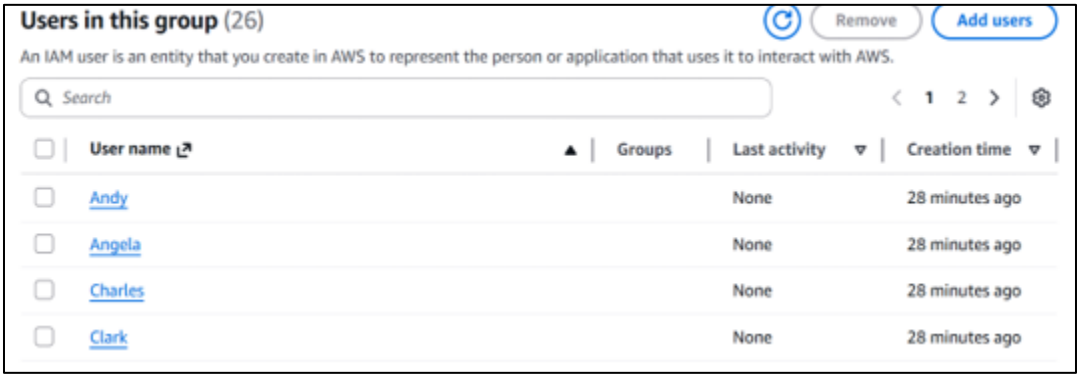


- task7_tfstate_secrets. Png

```
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $ cat terraform.tfstate
| grep -A 5 "all_access_key_secrets"
@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA (main) $
```

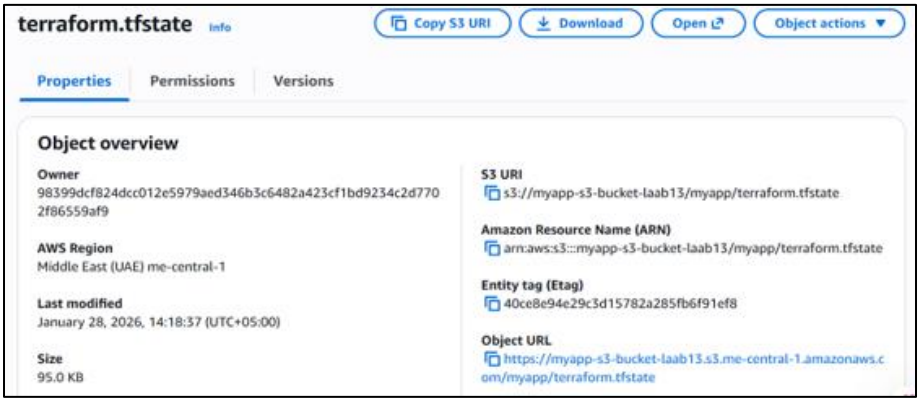
- task7_aws_console_all_users. Png

- task7_aws_console_group_members. Png



- task7_aws_console_user_access_key.png

- task7_s3_tfstate_multiple_users.png

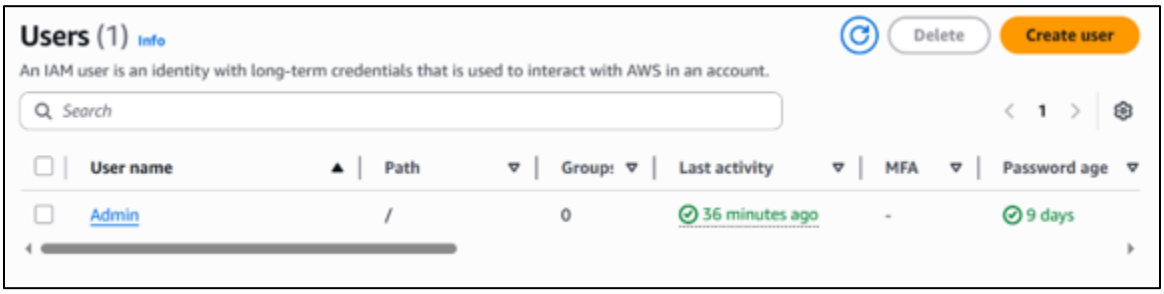


Cleanup

- cleanup_destroy_complete.png

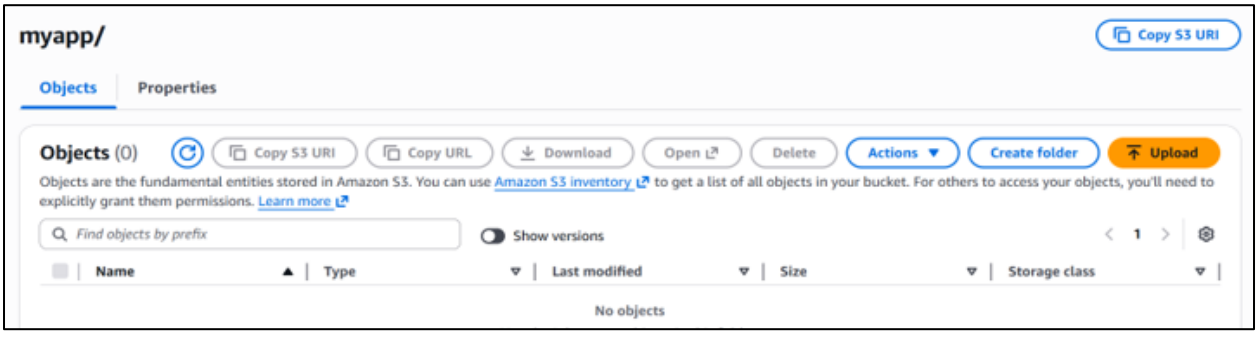
```
aws_iam_user.users["Peter"]: Destruction complete after 3s
aws_iam_user.users["Michael"]: Destruction complete after 3s
aws_iam_user.users["Meredith"]: Destruction complete after 5s
aws_iam_user.users["Kevin"]: Destruction complete after 8s

Destroy complete! Resources: 107 destroyed.
```

- cleanup_aws_console_users_deleted.png

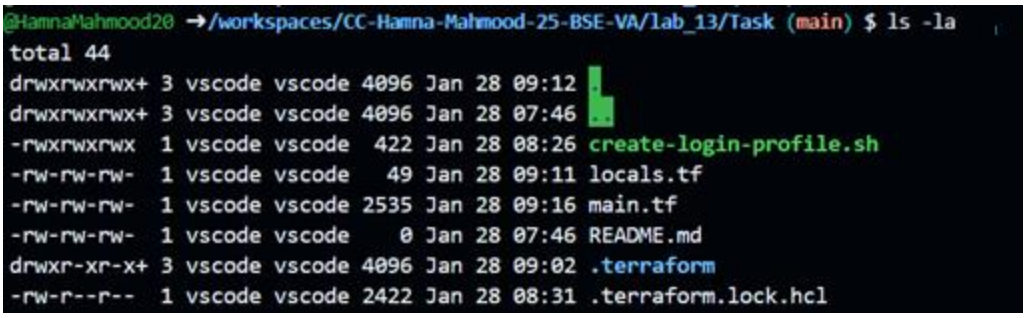


- cleanup_aws_console_group_deleted.png

- cleanup_s3_empty_state.png



- cleanup_final_files.png


@HamnaMahmood20 ➜/workspaces/CC-Hamna-Mahmood-25-BSE-VA/lab_13/Task (main) $ ls -la
total 44
drwxrwxrwx+ 3 vscode vscode 4096 Jan 28 09:12 .
drwxrwxrwx+ 3 vscode vscode 4096 Jan 28 07:46 ..
-rwxrwxrwx 1 vscode vscode 422 Jan 28 08:26 create-login-profile.sh
-rw-rw-rw- 1 vscode vscode   49 Jan 28 09:11 locals.tf
-rw-rw-rw- 1 vscode vscode 2535 Jan 28 09:16 main.tf
-rw-rw-rw- 1 vscode vscode   0 Jan 28 07:46 README.md
drwxr-xr-x+ 3 vscode vscode 4096 Jan 28 09:02 .terraform
-rw-r--r-- 1 vscode vscode 2422 Jan 28 08:31 .terraform.lock.hcl