

LAB 09

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LAB TASK

Codespaces + AWS: GH CLI (Codespaces), AWS CLI, EC2, IAM, Security Groups, Filters & Queries

Task 1 — GitHub CLI, Codespace setup and authentication

task1 gh install

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Syed> winget install --id GitHub.cli
The 'msstore' source requires that you view the following agreements before using.
Terms of Transaction: https://aka.ms/microsoft-store-terms-of-transaction
The source requires the current machine's 2-letter geographic region to be sent to the backend service to function properly (ex. "US").

Do you agree to all the source agreements terms?
[Y] Yes [N] No: Y
Found GitHub CLI [GitHub.cli] Version 2.83.1
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://github.com/cli/cli/releases/download/v2.83.1/gh_2.83.1_windows_amd64.msi
          17.6 MB / 17.6 MB
Successfully verified installer hash
Starting package install...
Successfully installed
PS C:\Users\Syed>
```

task1 gh auth login

```
PS C:\Users\Syed> gh --version
gh version 2.83.1 (2025-11-13)
https://github.com/cli/cli/releases/tag/v2.83.1
PS C:\Users\Syed> gh auth login -s codespace
? Where do you use GitHub? GitHub.com
? What is your preferred protocol for Git operations on this host? HTTPS
? Authenticate Git with your GitHub credentials? Yes
? How would you like to authenticate GitHub CLI? Paste an authentication token
Tip: you can generate a Personal Access Token here https://github.com/settings/tokens
The minimum required scopes are 'repo', 'read:org', 'workflow'.
? Paste your authentication token: *****
- gh config set -h github.com git_protocol https
  Configured git protocol
  Logged in as 23-22411-061-rgb
PS C:\Users\Syed>
```

task1 codespace list

```
Logged in as 23-22411-061-rgb
PS C:\Users\Syed> gh codespace list
NAME          DISPLAY NAME      REPOSITORY           BRANCH STATE    CREATED AT
friendly-succotash-wrqrx469p765cv49 friendly succotash 23-22411-061-rgb/UbuntuMachine main Shutdown about 24 days ago PS C:\Users\Syed>
```

task1 codespace ssh connected

```
special-space-funicular-97g7wxqqr9x2pgxr
PS C:\Users\Syed> gh codespace create --repo 23-22411-061-rgb/CC-_Shumail-zahra_-2023-BSE-061- --branch main --machine basicLinux32gb
No Codespace usage for this repository is paid for by 23-22411-061-rgb
studious-spork-5g7g59647wv4cvjg
PS C:\Users\Syed>
```

```
PS C:\Users\Syed> gh codespace list
NAME          DISPLAY NAME      REPOSITORY           BRANCH STATE    CREATED AT
friendly-succotash-wrqrx469p765cv49 friendly succotash 23-22411-061-rgb/UbuntuMachine main Shutdown about 28 days ago
special-space-funicular-97g7wxqqr9x2pgxr special space funicular 23-22411-061-rgb/CC-_Shumail-zahra_-2023-BSE-061- main Available about 16 minutes ago
studious-spork-5g7g59647wv4cvjg studious spork 23-22411-061-rgb/CC-_Shumail-zahra_-2023-BSE-061- main Available about 16 minutes ago
PS C:\Users\Syed> gh codespace ssh -c studious-spork-5g7g59647wv4cvjg
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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

Task 2 — Install AWS CLI inside the Codespace and configure it

task2_aws_install_and_version

```
inflating: aws/dist/awscli/data/metadata.json
inflating: aws/dist/awscli/data/cli.json
inflating: aws/dist/awscli/topics/s3-config.rst
inflating: aws/dist/awscli/topics/topic-tags.json
inflating: aws/dist/awscli/topics/config-vars.rst
inflating: aws/dist/awscli/topics/ddb-expressions.rst
inflating: aws/dist/awscli/topics/s3-faq.rst
inflating: aws/dist/awscli/topics/return-codes.rst
creating: aws/dist/awscli/customizations/sso/
creating: aws/dist/awscli/customizations/wizard/
creating: aws/dist/awscli/customizations/wizard/wizards/
creating: aws/dist/awscli/customizations/wizard/wizards/configure/
creating: aws/dist/awscli/customizations/wizard/wizards/dynamodb/
creating: aws/dist/awscli/customizations/wizard/wizards/events/
creating: aws/dist/awscli/customizations/wizard/wizards/iam/
creating: aws/dist/awscli/customizations/wizard/wizards/lambda/
inflating: aws/dist/awscli/customizations/wizard/wizards/configure/_main.yml
inflating: aws/dist/awscli/customizations/wizard/wizards/dynamodb/new-table.yml
inflating: aws/dist/awscli/customizations/wizard/wizards/iam/new-role.yml
inflating: aws/dist/awscli/customizations/wizard/wizards/events/new-rule.yml
inflating: aws/dist/awscli/customizations/wizard/wizards/lambda/new-function.yml
inflating: aws/dist/awscli/customizations/sso/index.html
creating: aws/dist/prompt_toolkit-3.0.51.dist-info/licenses/
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/METADATA
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/RECORD
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/INSTALLER
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/top_level.txt
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/WHEEL
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/licenses/LICENSE
inflating: aws/dist/prompt_toolkit-3.0.51.dist-info/licenses/AUTHORS.rst
inflating: aws/dist/wheel-0.45.1.dist-info/METADATA
inflating: aws/dist/wheel-0.45.1.dist-info/INSTALLER
inflating: aws/dist/wheel-0.45.1.dist-info/direct_url.json
inflating: aws/dist/wheel-0.45.1.dist-info/RECORD
inflating: aws/dist/wheel-0.45.1.dist-info/LICENSE.txt
inflating: aws/dist/wheel-0.45.1.dist-info/REQUESTED
inflating: aws/dist/wheel-0.45.1.dist-info/entry_points.txt
inflating: aws/dist/wheel-0.45.1.dist-info/WHEEL
@23-22411-061-rgb 🐯 /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ sudo ./aws/install
You can now run: /usr/local/bin/aws --version
@23-22411-061-rgb 🐯 /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $
inflating: aws/dist/wheel-0.45.1.dist-info/WHEEL
@23-22411-061-rgb 🐯 /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ sudo ./aws/install
You can now run: /usr/local/bin/aws --version
@23-22411-061-rgb 🐯 /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ aws --version
aws-cli/2.32.10 Python/3.13.9 Linux/6.8.0-1030-azure exe/x86_64.ubuntu.24
@23-22411-061-rgb 🐯 /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $
```

```
task2 aws configure and files
Last login: Fri Dec  3 12:59:19 2023  from :1
@23-22411-061-rgb ~ /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ aws configure
AWS Access Key ID [None]: AKIARC5V6TLZ6NFKFNXP
AWS Secret Access Key [None]: 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
Default region name [None]: me-central-1
Default output format [None]: json
@23-22411-061-rgb ~ /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ cat ~/.aws/credentials
[default]
aws_access_key_id = AKIARC5V6TLZ6NFKFNXP
aws_secret_access_key = 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
@23-22411-061-rgb ~ /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ cat ~/.aws/config
[default]
region = me-central-1
output = json
@23-22411-061-rgb ~ /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $
```

```
task2 aws get caller identity
@23-22411-061-rgb [ /workspaces/CC_-Shumail-zahra- -2023-BSE-061- (main) $ aws sts get-caller-identity
{
    "UserId": "AIDARC5V6TLZ4NBM72TWI",
    "Account": "075006647027",
    "Arn": "arn:aws:iam::075006647027:user/Admin"
}
@23-22411-061-rgb [ /workspaces/CC_-Shumail-zahra- -2023-BSE-061- (main) $
```

Task 3 — Create security group and add ingress rules using Codespace IP

task3 create security group output

```
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws ec2 describe-vpcs
{
    "Vpcs": [
        {
            "OwnerId": "075006647027",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0c5d06f771e76a9c6",
                    "CidrBlock": "172.31.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": true,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-0f993bf131956a286",
            "State": "available",
            "CidrBlock": "172.31.0.0/16",
            "DhcpOptionsId": "dopt-0e0af21c8a35300b5"
        }
    ]
}
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws ec2 create-security-group --group-name 'MySecurityGroup' \
> --description 'My Security Group' \
> --vpc-id 'vpc-0f993bf131956a286'
{
    "GroupId": "sg-08993822688556c15",
    "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15"
}
```

task3_describe_sg_before_ingress

```
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws ec2 describe-security-groups --group-ids sg-08993822688556c15
{
    "SecurityGroups": [
        {
            "GroupId": "sg-08993822688556c15",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0f993bf131956a286",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15",
            "OwnerId": "075006647027",
            "GroupName": "MySecurityGroup",
            "Description": "My Security Group",
            "IpPermissions": []
        }
    ]
}
```

task3_codespace_public_ip

```
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ curl icanhazip.com
20.192.21.51
```

task3_authorize_ssh_and_describe

```

#23-22411-061-rgb @ /workspaces/CC_-Shumail-zahra_-_2023-050-061- (main) $ aws ec2 authorize-security-group-ingress \
> --group-id sg-08993822688556c15 \
> --protocol tcp \
> --port 22 \
> --cidr 20.192.21.51/32
{
  "Return": true,
  "SecurityGroupRules": [
    {
      "SecurityGroupRuleId": "sgr-01c18859adc5fd49d",
      "GroupId": "sg-08993822688556c15",
      "GroupOwnerId": "075006647027",
      "IsEgress": false,
      "IpProtocol": "tcp",
      "FromPort": 22,
      "ToPort": 22,
      "CidrIpv4": "20.192.21.51/32",
      "SecurityGroupRuleArn": "arn:aws:ec2:me-central-1:075006647027:security-group-rule/sgr-01c18859adc5fd49d"
    }
  ]
}
#23-22411-061-rgb @ /workspaces/CC_-Shumail-zahra_-_2023-050-061- (main) $ aws ec2 describe-security-groups --group-ids sg-08993822688556c15
{
  "SecurityGroups": [
    {
      "GroupId": "sg-08993822688556c15",
      "IpPermissionsEgress": [
        {
          "IpProtocol": "-1",
          "UserIdGroupPairs": [],
          "IpRanges": [
            {
              "CidrIp": "0.0.0.0/0"
            }
          ],
          "Ipv6Ranges": [],
          "PrefixListIds": []
        }
      ],
      "VpcId": "vpc-0f993bf131956a286",
      "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15",
      "OwnerId": "075006647027",
      "GroupName": "MySecurityGroup",
      "GroupDescription": null
    }
  ]
}

```

```

#23-22411-061-rgb @ /workspaces/CC_-Shumail-zahra_-_2023-050-061- (main) $ aws ec2 describe-security-groups --group-ids sg-08993822688556c15
{
  "SecurityGroups": [
    {
      "GroupId": "sg-08993822688556c15",
      "IpPermissionsEgress": [
        {
          "IpProtocol": "-1",
          "UserIdGroupPairs": [],
          "IpRanges": [
            {
              "CidrIp": "0.0.0.0/0"
            }
          ],
          "Ipv6Ranges": [],
          "PrefixListIds": []
        }
      ],
      "VpcId": "vpc-0f993bf131956a286",
      "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15",
      "OwnerId": "075006647027",
      "GroupName": "MySecurityGroup",
      "GroupDescription": "My Security Group",
      "IpPermissions": [
        {
          "IpProtocol": "tcp",
          "FromPort": 22,
          "ToPort": 22,
          "UserIdGroupPairs": [],
          "IpRanges": [
            {
              "CidrIp": "20.192.21.51/32"
            }
          ],
          "Ipv6Ranges": [],
          "PrefixListIds": []
        }
      ]
    }
  ]
}
#23-22411-061-rgb @ /workspaces/CC_-Shumail-zahra_-_2023-050-061- (main) $

```

task3_authorize_http_and_describe

```
p23-22411-061-rgb [ /workspaces/CC-Shumail-zahra- -2023-BSE-061- (main) $ aws ec2 authorize-security-group-ingress \
> --group-id 'sg-08993822688556c15' \
> --ip-permissions '[{"FromPort":80,"ToPort":80,"IpProtocol":"tcp","IpRanges":[{"CidrIp":"20.192.21.51/32"}]}'
{
    "Return": true,
    "SecurityGroupRules": [
        {
            "SecurityGroupRuleId": "sgr-0b7b8916cedd62cf7",
            "GroupId": "sg-08993822688556c15",
            "GroupOwnerId": "075006647027",
            "IsIngress": false,
            "IpProtocol": "tcp",
            "FromPort": 80,
            "ToPort": 80,
            "CidrIpv4": "20.192.21.51/32",
            "SecurityGroupRuleArn": "arn:aws:ec2:me-central-1:075006647027:security-group-rule/sgr-0b7b8916cedd62cf7"
        }
    ]
}
p23-22411-061-rgb [ /workspaces/CC-Shumail-zahra- -2023-BSE-061- (main) $
```

task3_describe_sg_final

```
p23-22411-061-rgb [ /workspaces/CC-Shumail-zahra- -2023-BSE-061- (main) $ aws ec2 describe-security-groups --group-ids sg-08993822688556c15
{
    "SecurityGroups": [
        {
            "GroupId": "sg-08993822688556c15",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0f093bfff131956a386",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15",
            "OwnerId": "075006647027",
            "GroupName": "MySecurityGroup",
            "Description": "My Security Group",
            "IpPermissions": [
                {
                    "IpProtocol": "tcp",
                    "FromPort": 80,
                    "ToPort": 80,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "20.192.21.51/32"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                },
                {
                    "IpProtocol": "tcp",
                    "FromPort": 22,
                    "ToPort": 22,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "20.192.21.51/32"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ]
        }
    ]
}
```

```

    "IpPermissionsEgress": [
      {
        "IpProtocol": "-1",
        "UserIdGroupPairs": [],
        "IpRanges": [
          {
            "CidrIp": "0.0.0.0/0"
            "CidrIp": "0.0.0.0/0"
          }
        ],
        "Ipv6Ranges": [],
        "PrefixListIds": []
      }
    ],
    "VpcId": "vpc-0f993bf131956a286",
    "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15",
    "OwnerId": "075006647027",
    "GroupName": "MySecurityGroup",
    "Description": "My Security Group",
    "IpPermissions": [
      {
        "IpProtocol": "tcp",
        "FromPort": 80,
        "ToPort": 80,
        "UserIdGroupPairs": [],
        "IpRanges": [
          {
            "CidrIp": "20.192.21.51/32"
          }
        ],
        "Ipv6Ranges": [],
        "PrefixListIds": []
      },
      {
        "IpProtocol": "tcp",
        "FromPort": 22,
        "ToPort": 22,
        "UserIdGroupPairs": [],
        "IpRanges": [
          {
            "CidrIp": "20.192.21.51/32"
          }
        ],
        "Ipv6Ranges": [],
        "PrefixListIds": []
      }
    ]
  }
}

```

Task 4 — Create a key pair, describe key pairs, and launch EC2 instance

task4_create_keypair_output

```

@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $ aws ec2 create-key-pair \
> --key-name MyED25519Key \
> --key-type ed25519 \
> --key-format pem \
> --query 'KeyMaterial' \
> --output text > MyED25519Key.pem
@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $ ls -l MyED25519Key.pem
-rw-rw-rw- 1 codespace codespace 388 Dec  5 13:23 MyED25519Key.pem
@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $

```

task4_describe_keypairs

```

@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $ aws ec2 describe-key-pairs
{
  "KeyPairs": [
    {
      "KeyId": "key-0a9be170950d81144",
      "KeyType": "ed25519",
      "Tags": [],
      "CreateTime": "2025-12-05T13:23:59.551000+00:00",
      "KeyName": "MyED25519Key",
      "KeyFingerprint": "iSzJvBqE8531xQik87qC798p0lu3j9oQz1pe0FRExCc="
    }
  ]
}
@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $

```

task4_delete_keypair_optional

```
[@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra--2023-BSE-061- (main) $ aws ec2 delete-key-pair --key-name MyED25519Key
{
    "Returnn": true,
    "KeyId": "key-0a9be170950d81144"
}
[@23-22411-061-rgb ~ /workspaces/CC_Shumail-zahra--2023-BSE-061- (main) $
```

task4_run_instances_output

```

@23-22411-061.rgh: /workspaces/CC_Shumail-zahra_-2023-BSE-001- (main) $ aws ec2 run-instances \
> --image-id ami-05e66df2bafcb7dea \
> --count 1 \
> --instance-type t3.micro \
> --key-name MyED25519Key \
> --security-group-ids sg-08993822688556c15 \
> --subnet-id subnet-0d8f9fccb79043cbc \
> --tag-specifications "ResourceType=instance,Tags=[{Key=Name,Value=MyServer}]"
{
  "ReservationId": "r-07c6d39550b039046",
  "OwnerId": "075006647027",
  "Groups": [],
  "Instances": [
    {
      "Architecture": "x86_64",
      "BlockDeviceMappings": [],
      "ClientToken": "2d5b5f21-6bcf-4e2f-9842-16d5a4ce48f6",
      "EbsOptimized": false,
      "EnaSupport": true,
      "Hypervisor": "xen",
      "NetworkInterfaces": [
        {
          "Attachment": {
            "AttachTime": "2025-12-05T13:36:33+00:00",
            "AttachmentId": "eni-attach-0da824320c24a466a",
            "DeleteOnTermination": true,
            "DeviceIndex": 0,
            "Status": "attaching",
            "NetworkCardIndex": 0
          },
          "Description": "",
          "Groups": [
            {
              "GroupId": "sg-08993822688556c15",
              "GroupName": "MySecurityGroup"
            }
          ],
          "Ipv6Addresses": [],
          "MacAddress": "0e:47:65:7b:28:67",
          "NetworkInterfaceId": "eni-019bd90f8245df3e4",
          "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
          "PrivateIpAddress": "172.31.0.144",
          "PrivateIpAddresses": [
            {
              "Primary": true,
              "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
              "PrivateIpAddress": "172.31.0.144"
            }
          ],
          "SourceDestCheck": true,
          "Status": "in-use",
          "SubnetId": "subnet-0d8f9fccb79043cbc",
          "VpcId": "vpc-0f993bf131956a286",
          "InterfaceType": "interface",
          "Operator": {
            "Managed": false
          }
        }
      ],
      "RootDeviceName": "/dev/xvda",
      "RootDeviceType": "ebs",
      "SecurityGroups": [
        {
          "GroupId": "sg-08993822688556c15",
          "GroupName": "MySecurityGroup"
        }
      ],
      "SourceDestCheck": true,
      "StateReason": {
        "Code": "pending",
        "Message": "pending"
      },
      "Tags": [
        {
          "SourceDestCheck": true
        }
      ]
    }
  ]
}

```

```

        "StateReason": {
            "Code": "pending",
            "Message": "pending"
        },
        "Tags": [
            {
                "Key": "Name",
                "Value": "MyServer"
            }
        ],
        "VirtualizationType": "hvm",
        "CpuOptions": {
            "CoreCount": 1,
            "ThreadsPerCore": 2
        },
        "CapacityReservationSpecification": {
            "CapacityReservationPreference": "open"
        },
        "MetadataOptions": {
            "State": "pending",
            "HttpTokens": "required",
            "HttpPutResponseHopLimit": 2,
            "HttpEndpoint": "enabled",
            "HttpProtocolIpv6": "disabled",
            "InstanceMetadataTags": "disabled"
        },
        "EnclaveOptions": {
            "Enabled": false
        },
        "BootMode": "uefi-preferred",
        "PrivateDnsNameOptions": {
            "HostnameType": "ip-name",
            "EnableResourceNameDnsRecord": false,
            "EnableResourceNameDnsAAAARecord": false
        },
        "MaintenanceOptions": {
            "AutoRecovery": "default",
            "RebootMigration": "default"
        },
        "CurrentInstanceBootMode": "uefi",
        "Operator": {
            "Managed": false
        },
        "PrivateDnsNameOptions": {
            "HostnameType": "ip-name",
            "EnableResourceNameDnsRecord": false,
            "EnableResourceNameDnsAAAARecord": false
        },
        "MaintenanceOptions": {
            "AutoRecovery": "default",
            "RebootMigration": "default"
        },
        "CurrentInstanceBootMode": "uefi",
        "Operator": {
            "Managed": false
        },
        "InstanceId": "i-0dcf5e8e4fdd23377",
        "ImageId": "ami-05e66df2bafcb7dea",
        "State": {
            "Code": 0,
            "Name": "pending"
        },
        "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
        "PublicDnsName": "",
        "StateTransitionReason": "",
        "KeyName": "MyED25519Key",
        "AmiLaunchIndex": 0,
        "ProductCodes": [],
        "InstanceType": "t3.micro",
        "LaunchTime": "2025-12-05T13:36:33+00:00",
        "Placement": {
            "AvailabilityZoneId": "mec1-az3",
            "GroupName": "",
            "Tenancy": "default",
            "AvailabilityZone": "me-central-1c"
        },
        "Monitoring": {
            "State": "disabled"
        },
        "SubnetId": "subnet-0d8f9fccb79043cbc",
        "VpcId": "vpc-0f993bf131956a286",
        "PrivateIpAddress": "172.31.0.144"
    }
}
]

```

task4_describe_instances_public_ip

```
@23-22411-061-rgb ~ /workspaces/CC_-Shumail-zahra_-2023-BSE-061- (main) $ aws ec2 describe-instances \
> --query "Reservations[*].Instances[*].[InstanceId,PublicIpAddress]" \
> --output table
-----
|      DescribeInstances      |
+-----+-----+
| i-0dcf5e8e4fdd23377 | 3.29.235.138 |
+-----+-----+
```

task4_ssh_permission_error_and_fix

```
#23-22411-061-rgb [~] /workspaces/CC-_Shumail-zahra-_-2023-BSE-061- (main) $ chmod 400 MyED25519Key.pem
#23-22411-061-rgb [~] /workspaces/CC-_Shumail-zahra-_-2023-BSE-061- (main) $ ssh -i MyED25519Key.pem ec2-user@3.29.235.138
The authenticity of host '3.29.235.138 (3.29.235.138)' can't be established.
ED25519 key fingerprint is SHA256:uKpYtqXC/tmBoL0mh/d6qIYQf1oxnAr5Zx/Bm6aOzwE.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '3.29.235.138' (ED25519) to the list of known hosts.

      #
  ~\_\_ #####          Amazon Linux 2023
~~ \_\_ #####\
~~   \###| |
~~     \#/  ____ https://aws.amazon.com/linux/amazon-linux-2023
~~       \~` '-'-
~~~      /
~~-.  _/
~/  _/
/m/ ^
```

task4_stop_start_terminate_commands

The image shows two side-by-side terminal windows in the VS Code interface, both titled "MyED25519Key.pem".

Terminal 1 (Left):

```
@23-22411-061-rgb → /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ @23-22411-061-rgb → /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 stop-instances --instance-ids i-0dcf5e8e4fd23377
{
  "StoppingInstances": [
    {
      "InstanceId": "i-0dcf5e8e4fd23377",
      "CurrentState": {
        "Code": 64,
        "Name": "stopping"
      },
      "PreviousState": {
        "Code": 16,
        "Name": "running"
      }
    }
  ]
}
@23-22411-061-rgb → /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 start-instances --instance-ids i-0dcf5e8e4fd23377
{
  "StartingInstances": [
    {
      "InstanceId": "i-0dcf5e8e4fd23377",
      "CurrentState": {
        "Code": 0,
        "Name": "pending"
      },
      "PreviousState": {
        "Code": 80,
        "Name": "stopped"
      }
    }
  ]
}
...skipping...
```

Terminal 2 (Right):

```
@23-22411-061-rgb → /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 start-instances --instance-ids i-0dcf5e8e4fd23377
{
  "StartingInstances": [
    {
      "InstanceId": "i-0dcf5e8e4fd23377",
      "CurrentState": {
        "Code": 0,
        "Name": "pending"
      },
      "PreviousState": {
        "Code": 80,
        "Name": "stopped"
      }
    }
  ]
}
...
(END)...skipping...
```

The left terminal shows the stopping of an instance (Code 64, Name: "stopping") and the subsequent starting of the same instance (Code 0, Name: "pending"). The right terminal shows the starting of the instance (Code 0, Name: "pending"), followed by an ellipsis, and then "(END)...skipping...".

The image shows two side-by-side terminal windows in the VS Code interface, both titled "CC_Shumail-zahra_-2023-BSE-061- [Codespaces: studious spork]".

Terminal 1 (Top):

```
@23-22411-061-rgb →/workspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws ec2 start-instances --instance-ids i-0dcf5e8e4fdd23377
```

Terminal 2 (Bottom):

```
{ "StartingInstances": [ { "InstanceId": "i-0dcf5e8e4fdd23377", "CurrentState": { "Code": 0, "Name": "pending" }, "PreviousState": { "Code": 80, "Name": "stopped" } } ] }
```

The code in Terminal 2 is a JSON object representing the state of the instance after it has been started. It includes fields for the instance ID, current state (Code 0, Name pending), and previous state (Code 80, Name stopped).

Task 5 — Understand AWS describe-* commands

task5_describe_security_groups

```
g23-22411-061-rgb B ./aws/ec2/ec2_describe-security-groups.sh > main $ aws ec2 describe-security-groups
{
    "SecurityGroups": [
        {
            "GroupId": "sg-00517f6d675cbaf12",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0f993bf131956a286",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-00517f6d675cbaf12",
            "OwnerId": "075006647027",
            "GroupName": "default",
            "Description": "default VPC security group",
            "IpPermissions": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [
                        {
                            "UserId": "075006647027",
                            "GroupId": "sg-00517f6d675cbaf12"
                        }
                    ],
                    "IpRanges": [],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                },
                {
                    "IpProtocol": "tcp",
                    "FromPort": 22,
                    "ToPort": 22,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "39.58.206.178/32"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                },
                {
                    "IpProtocol": "tcp",
                    "FromPort": 3000,
                    "ToPort": 3000,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "Description": "Gitea Web UI",
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "GroupId": "sg-08993822688556c15",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "Tags": [
                {
                    "Key": "Name",
                    "Value": "default"
                }
            ]
        }
    ]
}
```

```

        "Ipv6Ranges": [],
        "PrefixListIds": []
    },
    "VpcId": "vpc-0f993bf131956a286",
    "SecurityGroupArn": "arn:aws:ec2:me-central-1:075006647027:security-group/sg-08993822688556c15",
    "OwnerId": "075006647027",
    "GroupName": "MySecurityGroup",
    "Description": "My Security Group",
    "IpPermissions": [
        {
            "IpProtocol": "tcp",
            "FromPort": 80,
            "ToPort": 80,
            "UserIdGroupPairs": [],
            "IpRanges": [
                {
                    "CidrIp": "20.192.21.51/32"
                }
            ],
            "Ipv6Ranges": [],
            "PrefixListIds": []
        },
        {
            "IpProtocol": "tcp",
            "FromPort": 22,
            "ToPort": 22,
            "UserIdGroupPairs": [],
            "IpRanges": [
                {
                    "CidrIp": "20.192.21.51/32"
                },
                {
                    "CidrIp": "4.240.39.199/32"
                }
            ],
            "Ipv6Ranges": [],
            "PrefixListIds": []
        }
    ]
}

```

task5_describe_vpcs

```
#23-22411-061-rgb ② /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $ aws ec2 describe-vpcs
{
    "Vpcs": [
        {
            "OwnerId": "075006647027",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0c5d06f771e76a9c6",
                    "CidrBlock": "172.31.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": true,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-0f993bf131956a286",
            "State": "available",
            "CidrBlock": "172.31.0.0/16",
            "DhcpOptionsId": "dopt-0e0af21c8a35300b5"
        }
    ]
}
#23-22411-061-rgb ② /workspaces/CC_-Shumail-zahra-_-2023-BSE-061- (main) $
```

task5_describe_subnets

```

x23-23411-061-rgb ~ /workspaces/CC_Shumail-zahra-_-2023-BSE-061- (main) $ aws ec2 describe-subnets
{
  "Subnets": [
    {
      "AvailabilityZoneId": "mec1-az3",
      "MapCustomerOwnedIpOnLaunch": false,
      "OwnerId": "075006647027",
      "AssignIpv6AddressOnCreation": false,
      "Ipv6CidrBlockAssociationSet": [],
      "SubnetArn": "arn:aws:ec2:me-central-1:075006647027:subnet/subnet-0d8f9fccb79043cbc",
      "EnableDns64": false,
      "Ipv6Native": false,
      "PrivateDnsNameOptionsOnLaunch": {
        "HostnameType": "ip-name",
        "EnableResourceNameDnsARecord": false,
        "EnableResourceNameDnsAAAARecord": false
      },
      "BlockPublicAccessStates": {
        "InternetGatewayBlockMode": "off"
      },
      "SubnetId": "subnet-0d8f9fccb79043cbc",
      "State": "available",
      "VpcId": "vpc-0f993bf131956a286",
      "CidrBlock": "172.31.0.0/20",
      "AvailableIpAddressCount": 4096,
      "AvailabilityZone": "me-central-1c",
      "DefaultForAz": true,
      "MapPublicIpOnLaunch": true
    },
    {
      "AvailabilityZoneId": "mec1-az2",
      "MapCustomerOwnedIpOnLaunch": false,
      "OwnerId": "075006647027",
      "AssignIpv6AddressOnCreation": false,
      "Ipv6CidrBlockAssociationSet": [],
      "SubnetArn": "arn:aws:ec2:me-central-1:075006647027:subnet/subnet-0375aad5c579a82c4",
      "EnableDns64": false,
      "Ipv6Native": false,
      "PrivateDnsNameOptionsOnLaunch": {
        "HostnameType": "ip-name",
        "EnableResourceNameDnsARecord": false,
        "EnableResourceNameDnsAAAARecord": false
      },
      "PrivateDnsNameOptionsOnLaunch": {
        "HostnameType": "ip-name",
        "EnableResourceNameDnsARecord": false,
        "EnableResourceNameDnsAAAARecord": false
      },
      "BlockPublicAccessStates": {
        "InternetGatewayBlockMode": "off"
      },
      "SubnetId": "subnet-0375aad5c579a82c4",
      "State": "available",
      "VpcId": "vpc-0f993bf131956a286",
      "CidrBlock": "172.31.16.0/20",
      "AvailableIpAddressCount": 4091,
      "AvailabilityZone": "me-central-1b",
      "DefaultForAz": true,
      "MapPublicIpOnLaunch": true
    },
    {
      "AvailabilityZoneId": "mec1-az1",
      "MapCustomerOwnedIpOnLaunch": false,
      "OwnerId": "075006647027",
      "AssignIpv6AddressOnCreation": false,
      "Ipv6CidrBlockAssociationSet": [],
      "SubnetArn": "arn:aws:ec2:me-central-1:075006647027:subnet/subnet-05bc73f40fefb9fe1",
      "EnableDns64": false,
      "Ipv6Native": false,
      "PrivateDnsNameOptionsOnLaunch": {
        "HostnameType": "ip-name",
        "EnableResourceNameDnsARecord": false,
        "EnableResourceNameDnsAAAARecord": false
      },
      "BlockPublicAccessStates": {
        "InternetGatewayBlockMode": "off"
      },
      "SubnetId": "subnet-05bc73f40fefb9fe1",
      "State": "available",
      "VpcId": "vpc-0f993bf131956a286",
      "CidrBlock": "172.31.32.0/20",
      "AvailableIpAddressCount": 4091,
      "AvailabilityZone": "me-central-1a",
      "DefaultForAz": true,
      "MapPublicIpOnLaunch": true
    }
  ]
}

```

task5_describe_instances

```
#23-22411-061-rgb eworkspaces/cc_shumail-zahra_-2023-BSE-061- (main) $ aws ec2 describe-instances
{
    "Reservations": [
        {
            "ReservationId": "r-07c6d39550b039046",
            "OwnerId": "075006647027",
            "Groups": [],
            "Instances": [
                {
                    "Architecture": "x86_64",
                    "BlockDeviceMappings": [
                        {
                            "DeviceName": "/dev/xvda",
                            "Ebs": {
                                "AttachTime": "2025-12-05T13:36:34+00:00",
                                "DeleteOnTermination": true,
                                "Status": "attached",
                                "VolumeId": "vol-0e732619af635e18b"
                            }
                        }
                    ],
                    "ClientToken": "2d5b5f21-6bcf-4e2f-9842-16d5a4ce48f6",
                    "EbsOptimized": false,
                    "EnaSupport": true,
                    "Hypervisor": "xen",
                    "NetworkInterfaces": [
                        {
                            "Association": {
                                "IpOwnerId": "amazon",
                                "PublicDnsName": "ec2-3-28-240-198.me-central-1.compute.amazonaws.com",
                                "PublicIp": "3.28.240.198"
                            },
                            "Attachment": {
                                "AttachTime": "2025-12-05T13:36:33+00:00",
                                "AttachmentId": "eni-attach-0da824320c24a466a",
                                "DeleteOnTermination": true,
                                "DeviceIndex": 0,
                                "Status": "attached",
                                "NetworkCardIndex": 0
                            },
                            "Description": "",
                            "Groups": [
                                {
                                    "GroupId": "sg-08993822688556c15",
                                    "OwnerId": "075006647027"
                                }
                            ],
                            "Ipv6Addresses": [],
                            "MacAddress": "0e:47:65:7b:28:67",
                            "NetworkInterfaceId": "eni-019bd90f8245df3e4",
                            "OwnerId": "075006647027",
                            "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
                            "PrivateIpAddress": "172.31.0.144",
                            "PrivateIpAddresses": [
                                {
                                    "Association": {
                                        "IpOwnerId": "amazon",
                                        "PublicDnsName": "ec2-3-28-240-198.me-central-1.compute.amazonaws.com",
                                        "PublicIp": "3.28.240.198"
                                    },
                                    "Primary": true,
                                    "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
                                    "PrivateIpAddress": "172.31.0.144"
                                }
                            ],
                            "SourceDestCheck": true,
                            "Status": "in-use",
                            "SubnetId": "subnet-0d8f9fccb79043cbc",
                            "VpcId": "vpc-0f993bf131956a286",
                            "InterfaceType": "interface",
                            "Operator": {
                                "Managed": false
                            }
                        }
                    ],
                    "RootDeviceName": "/dev/xvda",
                    "RootDeviceType": "ebs",
                    "Securitygroups": [

```

```
        }
    ],
    "RootDeviceName": "/dev/xvda",
    "RootDeviceType": "ebs",
    "SecurityGroups": [
        {
            "GroupId": "sg-08993822688556c15",
            "GroupName": "MySecurityGroup"
        }
    ],
    "SourceDestCheck": true,
    "Tags": [
        {
            "Key": "Name",
            "Value": "MyServer"
        }
    ],
    "VirtualizationType": "hvm",
    "CpuOptions": {
        "CoreCount": 1,
        "ThreadsPerCore": 2
    },
    "CapacityReservationSpecification": {
        "CapacityReservationPreference": "open"
    },
    "HibernationOptions": {
        "Configured": false
    },
    "MetadataOptions": {
        "State": "applied",
        "HttpTokens": "required",
        "HttpPutResponseHopLimit": 2,
        "HttpEndpoint": "enabled",
        "HttpProtocolIpv6": "disabled",
        "InstanceMetadataTags": "disabled"
    },
    "EnclaveOptions": {
        "Enabled": false
    },
    "BootMode": "uefi-preferred",
    "PlatformDetails": "Linux/UNIX",
    "UsageOperation": "RunInstances",
    "UsageOperationUpdateTime": "2025-12-05T13:36:33+00:00",
    "PrivateDnsNameOptions": {
        "PublicName": "ip-172-31-240-198",
        "UsageOperationUpdateTime": "2025-12-05T13:36:33+00:00",
        "PrivateDnsNameOptions": {
            "HostnameType": "ip-name",
            "EnableResourceNameDnsARecord": false,
            "EnableResourceNameDnsAAARecord": false
        },
        "MaintenanceOptions": {
            "AutoRecovery": "default",
            "RebootMigration": "default"
        },
        "CurrentInstanceBootMode": "uefi",
        "NetworkPerformanceOptions": {
            "BandwidthWeighting": "default"
        },
        "Operator": {
            "Managed": false
        },
        "InstanceId": "i-0dcf5e8e4fdd23377",
        "ImageId": "ami-05e66df2bafcb7dea",
        "State": {
            "Code": 16,
            "Name": "running"
        },
        "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
        "PublicDnsName": "ec2-3-28-240-198.me-central-1.compute.amazonaws.com",
        "StateTransitionReason": "",
        "KeyName": "MyEd25519Key",
        "AmiLaunchIndex": 0,
        "ProductCodes": [],
        "InstanceType": "t3.micro",
        "LaunchTime": "2025-12-05T17:54:22+00:00",
        "Placement": {
            "AvailabilityZoneId": "mec1-az3",
            "GroupName": "",
            "Tenancy": "default",
            "AvailabilityZone": "me-central-1c"
        },
        "Monitoring": {
            "State": "disabled"
        },
        "SubnetId": "subnet-0d8f9fccb79043cbc",
        "VpcId": "vpc-0f993bf131956a28e",
        "PrivateIpAddress": "172.31.0.144",
        "PublicIpAddress": "3.28.240.198"
    }
}
```

```

    "UsageOperationUpdateTime": "2025-12-05T13:36:33+00:00",
    "PrivateDnsNameOptions": {
        "HostnameType": "ip-name",
        "EnableResourceNameDnsARecord": false,
        "EnableResourceNameDnsAAAARecord": false
    },
    "MaintenanceOptions": {
        "AutoRecovery": "default",
        "RebootMigration": "default"
    },
    "CurrentInstanceBootMode": "uefi",
    "NetworkPerformanceOptions": {
        "BandwidthWeighting": "default"
    },
    "Operator": {
        "Managed": false
    },
    "InstanceId": "i-0dcf5e8e4fdd23377",
    "ImageId": "ami-05e66df2bafcb7dea",
    "State": {
        "Code": 16,
        "Name": "running"
    },
    "PrivateDnsName": "ip-172-31-0-144.me-central-1.compute.internal",
    "PublicDnsName": "ec2-3-28-240-198.me-central-1.compute.amazonaws.com",
    "StateTransitionReason": "",
    "KeyName": "MyED25519Key",
    "AmiLaunchIndex": 0,
    "ProductCodes": [],
    "InstanceType": "t3.micro",
    "LaunchTime": "2025-12-05T17:54:22+00:00",
    "Placement": {
        "AvailabilityZoneId": "mec1-az3",
        "GroupName": "",
        "Tenancy": "default",
        "AvailabilityZone": "me-central-1c"
    },
    "Monitoring": {
        "State": "disabled"
    },
    "SubnetId": "subnet-0d8f9fccb79043cbc",
    "VpcId": "vpc-0f993bf131956a286",
    "PrivateIpAddress": "172.31.0.144",
    "PublicIpAddress": "3.28.240.198"
}
]
}
]
}
(END)

```

task5_describe_regions

```
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_- 2023-BSE-061 (main) $ aws ec2 describe-regions
{
    "Regions": [
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-south-1",
            "Endpoint": "ec2.ap-south-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-north-1",
            "Endpoint": "ec2.eu-north-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-west-3",
            "Endpoint": "ec2.eu-west-3.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-west-2",
            "Endpoint": "ec2.eu-west-2.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-west-1",
            "Endpoint": "ec2.eu-west-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-northeast-3",
            "Endpoint": "ec2.ap-northeast-3.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-northeast-2",
            "Endpoint": "ec2.ap-northeast-2.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-northeast-1",
            "Endpoint": "ec2.ap-northeast-1.amazonaws.com"
        },
        {
            "OptInStatus": "opted-in",
            "RegionName": "me-central-1",
            "Endpoint": "ec2.me-central-1.amazonaws.com"
        }
    ],
    "Regions": [
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-south-1",
            "Endpoint": "ec2.ap-south-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-north-1",
            "Endpoint": "ec2.eu-north-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-west-3",
            "Endpoint": "ec2.eu-west-3.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-west-2",
            "Endpoint": "ec2.eu-west-2.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "eu-west-1",
            "Endpoint": "ec2.eu-west-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-northeast-3",
            "Endpoint": "ec2.ap-northeast-3.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-northeast-2",
            "Endpoint": "ec2.ap-northeast-2.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-northeast-1",
            "Endpoint": "ec2.ap-northeast-1.amazonaws.com"
        },
        {
            "OptInStatus": "opted-in",
            "RegionName": "me-central-1",
            "Endpoint": "ec2.me-central-1.amazonaws.com"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "RegionName": "ap-south-1",
            "Endpoint": "ec2.ap-south-1.amazonaws.com"
        }
    ]
}
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_- 2023-BSE-061 (main) $
```

task5_describe_availability_zones

```
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws ec2 describe-availability-zones
{
    "AvailabilityZones": [
        {
            "OptInStatus": "opt-in-not-required",
            "Messages": [],
            "RegionName": "me-central-1",
            "ZoneName": "me-central-1a",
            "ZoneId": "mec1-az1",
            "GroupName": "me-central-1-zg-1",
            "NetworkBorderGroup": "me-central-1",
            "ZoneType": "availability-zone",
            "GroupLongName": "Middle East (UAE) 1",
            "State": "available"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "Messages": [],
            "RegionName": "me-central-1",
            "ZoneName": "me-central-1b",
            "ZoneId": "mec1-az2",
            "GroupName": "me-central-1-zg-1",
            "NetworkBorderGroup": "me-central-1",
            "ZoneType": "availability-zone",
            "GroupLongName": "Middle East (UAE) 1",
            "State": "available"
        },
        {
            "OptInStatus": "opt-in-not-required",
            "Messages": [],
            "RegionName": "me-central-1",
            "ZoneName": "me-central-1c",
            "ZoneId": "mec1-az3",
            "GroupName": "me-central-1-zg-1",
            "NetworkBorderGroup": "me-central-1",
            "ZoneType": "availability-zone",
            "GroupLongName": "Middle East (UAE) 1",
            "State": "available"
        }
    ]
}
```

Task 6 — IAM: create group, user, attach policies, create console login & keys

task6_create_group_and_user

```
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam create-group --group-name MyGroupCli
{
    "Group": {
        "Path": "/",
        "GroupName": "MyGroupCli",
        "GroupId": "AGPARC5V6TLZQ0MOP7DK",
        "Arn": "arn:aws:iam::075006647027:group/MyGroupCli",
        "CreateDate": "2025-12-05T18:07:57+00:00"
    }
}
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam get-group --group-name MyGroupCli
{
    "Users": [],
    "Group": {
        "Path": "/",
        "GroupName": "MyGroupCli",
        "GroupId": "AGPARC5V6TLZQ0MOP7DK",
        "Arn": "arn:aws:iam::075006647027:group/MyGroupCli",
        "CreateDate": "2025-12-05T18:07:57+00:00"
    }
}
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam create-user --user-name MyUserCli
{
    "User": {
        "Path": "/",
        "UserName": "MyUserCli",
        "UserId": "AIDARC5V6TLZXWCP0WP36",
        "Arn": "arn:aws:iam::075006647027:user/MyUserCli",
        "CreateDate": "2025-12-05T18:08:56+00:00"
    }
}
#23-22411-061-rgb ② /workspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam get-user --user-name MyUserCli
{
    "User": {
        "Path": "/",
        "UserName": "MyUserCli",
        "UserId": "AIDARC5V6TLZXWCP0WP36",
        "Arn": "arn:aws:iam::075006647027:user/MyUserCli",
        "CreateDate": "2025-12-05T18:08:56+00:00"
    }
}
```

task6_add_user_to_group_and_verify

```
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ aws iam add-user-to-group --user-name MyUserCli --group-name MyGroupCli
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ aws iam get-group --group-name MyGroupCli
{
  "Users": [
    {
      "Path": "/",
      "UserName": "MyUserCli",
      "UserId": "AIDAR5V6LZXMCP0WP36",
      "Arn": "arn:aws:iam::07500647027:user/MyUserCli",
      "CreateDate": "2025-12-05T18:08:56+00:00"
    }
  ],
  "Group": {
    "Path": "/",
    "GroupName": "MyGroupCli",
    "GroupId": "AGPARCSV6TLZQOMFP7DK",
    "Arn": "arn:aws:iam::07500647027:group/MyGroupCli",
    "CreateDate": "2025-12-05T18:07:57+00:00"
  }
}
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $
```

task6_policy_list_and_attach

```
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ aws iam list-policies \
> --query "Policies[?contains(PolicyName, 'EC2')].{Name:PolicyName}" \
> --output text
AmazonEC2FullAccess
AmazonEC2ReadOnlyAccess
AmazonElasticMapReduceforEC2Role
AmazonEC2RoleforDataPipelineRole
AmazonEC2ContainerServiceforEC2Role
AmazonEC2ContainerServiceRole
AmazonEC2RoleforAWSCodeDeploy
AmazonEC2RoleforSSM
CloudWatchActionsEC2Access
AmazonEC2ContainerRegistryReadOnly
AmazonEC2ContainerRegistryPowerUser
AmazonEC2ContainerRegistryFullAccess
AmazonEC2ContainerServiceAutoscaleRole
AmazonEC2SpotFleetAutoscaleRole
AmazonElasticBeanstalkCustomPlatformforEC2Role
AmazonEC2ContainerServiceEventsRole
AmazonEC2SpotFleetTaggingRole
AWSComputeServiceRolePolicy
AWSLambdaRoleForEC2ScheduledInstances
AWSComputeServiceRolePolicy
AWSApplicationAutoScalingEC2SpotFleetRequestPolicy
AWSComputeServiceRolePolicy
AWSAutoScalingPlansEC2AutoScalingPolicy
EC2InstanceConnect
AmazonEC2RolePolicyForLaunchWizard
EC2InstanceProfileForImageBuilder
EC2FleetTimeShiftableServiceRolePolicy
AmazonEC2RoleforAWSCodeDeployLimited
EC2InstanceProfileForImageBuilderECRContainerBuilds
AWSApplicationMigrationEC2Access
AWSComputeCapacityReservationFleetRolePolicy
EC2FastLaunchServiceRolePolicy
AmazonSSMManagedEC2InstanceDefaultPolicy
AWSFaultInjectionSimulatorEC2Access
EC2ImageBuilderLifecycleExecutionPolicy
AWSComputeVssSnapshotPolicy
EC2FastLaunchFullAccess
AmazonEC2ContainerRegistryPullOnly
DeclarativePoliciesEC2Report
AmazonEC2ImageReferenceAccessPolicy
AWSComputeCapacityManagerServiceRolePolicy
AWSCompute2SqliHaServiceRolePolicy
AWSCompute2SqliHaInstancePolicy
AWSLambdaManagedEC2ResourceOperator
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $
```

```
[EC2ImageBuilderLifecycleExecutionPolicy
AWSComputeVssSnapshotPolicy
EC2FastLaunchFullAccess
AmazonEC2ContainerRegistryPullOnly
DeclarativePoliciesEC2Report
AmazonEC2ImageReferenceAccessPolicy
AWSComputeCapacityManagerServiceRolePolicy
AWSCompute2SqliHaServiceRolePolicy
AWSCompute2SqliHaInstancePolicy
AWSLambdaManagedEC2ResourceOperator
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ aws iam list-policies --query 'Policies[?PolicyName=="AmazonEC2FullAccess"].{Name:PolicyName, ARN:Arn}' --output table
+-----+-----+
|      ListPolicies      |
+-----+-----+
|      ARN      |      Name      |
+-----+-----+
| arn:aws:iam::aws:policy/AmazonEC2FullAccess | AmazonEC2FullAccess |
+-----+-----+
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ aws iam attach-group-policy \
> --group-name MyGroupCli \
> --policy-arn arn:aws:iam::aws:policy/AmazonEC2FullAccess
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ 
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $ aws iam list-attached-group-policies --group-name MyGroupCli
{
  "AttachedPolicies": [
    {
      "PolicyName": "AmazonEC2FullAccess",
      "PolicyArn": "arn:aws:iam::aws:policy/AmazonEC2FullAccess"
    }
  ]
}
[23-22411-061-rgb] /workspaces/CC_Shumaile-zahra_-2023-BSE-061- [main] $
```

task6_create_login_profile_and_signin

```

}
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam create-login-profile \
> --user-name MyUserCli \
> --password [REDACTED] \
> --password-reset-required

{
  "LoginProfile": {
    "UserName": "MyUserCli",
    "CreateDate": "2025-12-05T18:14:19+00:00",
    "PasswordResetRequired": true
  }
}
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ 
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ 
}
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ 
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam attach-group-policy --group-name MyGroupCli --policy-arn arn:aws:iam::aws:policy/IAMUserChangePassword
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam detach-group-policy --group-name MyGroupCli --policy-arn arn:aws:iam::aws:policy/IAMUserChangePassword

```

task6_create_access_key_output

```

@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam create-access-key --user-name MyUserCli
{
  "AccessKey": {
    "UserName": "MyUserCli",
    "AccessKeyId": "AKIARC5V6TLZ46TSJRSJ",
    "Status": "Active",
    "SecretAccessKey": "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",
    "CreateDate": "2025-12-05T18:19:35+00:00"
  }
}
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam list-access-keys --user-name MyUserCli
{
  "AccessKeyMetadata": [
    {
      "UserName": "MyUserCli",
      "AccessKeyId": "AKIARC5V6TLZ46TSJRSJ",
      "Status": "Active",
      "CreateDate": "2025-12-05T18:19:35+00:00"
    }
  ]
}

```

task6_env_exports_and_get_user_error

```

@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ export AWS_ACCESS_KEY_ID=AKIARC5V6TLZ6NFKNXP
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ export AWS_SECRET_ACCESS_KEY=7Tdbm2u+EOrMgojzVQntxAZ79oafqDquotK3UgC
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ printenv | grep AWS_
AWS_ACCESS_KEY_ID=AKIARC5V6TLZ6NFKNXP
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam get-user --user-name MyUserCli
{
  "User": {
    "Path": "/",
    "UserName": "MyUserCli",
    "UserId": "AIDARC5V6TLZXWCP0WP36",
    "Arn": "arn:aws:iam::075006647027:user/MyUserCli",
    "CreateDate": "2025-12-05T18:08:56+00:00"
  }
}

```

task6_after_logout_and_get_user_success

```

@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ exit
logout
Connection to localhost closed.
PS C:\Users\Syed> aws iam get-user --user-name MyUserCli
aws : The term 'aws' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify again.
At line:1 char:1
> aws iam get-user --user-name MyUserCli
> ~~~
> + CategoryInfo          : ObjectNotFound: (aws:String) [], CommandNotFoundException
> + FullyQualifiedErrorId : CommandNotFoundException
PS C:\Users\Syed> gh codespace ssh -c studious-spork-5g7g59647wvdcvjg
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: Fri Dec  5 17:44:46 2025 from ::1
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ aws iam get-user --user-name MyUserCli
{
  "User": {
    "Path": "/",
    "UserName": "MyUserCli",
    "UserId": "AIDARC5V6TLZXWCP0WP36",
    "Arn": "arn:aws:iam::075006647027:user/MyUserCli",
    "CreateDate": "2025-12-05T18:08:56+00:00"
  }
}
@23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061- (main) $ 

```

Task 7 — Filters: query with filters to find instances and their attributes

task7_filter_by_tag_public_ip

```
#23-22411-001-rgb [ /workspaces/CC - Shumail-zahra - 2023-BSE-001- (main) $ aws ec2 describe-instances \
> --filters "Name>tag:Name,Values=MyServer" \
> --query "Reservations[*].Instances[*].PublicIpAddress" \
> --output text
3.28.240.198
```

task7_filter_by_instance_type

```
023-22411-001-rgb ~ /workspaces/CC - Shumail-Zahra - 2023-05-06! (main) $ aws ec2 describe-instances \
> --filters "Name=instance-type,Values=t3.micro" \
> --query "Reservations[].[Instances[].[InstanceId]" \
> --output table

|  DescribeInstances  |
+-----+-----+
| i-0dc75e8ed4fd23377 |
```

task7_filter_by_subnet

```
└── output table
@23-22411-061-rgb 🐎 /workspaces/CC -Shumail-zahra- -2023-BSE-061- (main) $ aws ec2 describe-instances \
>   --filters "Name=subnet-id,Values=subnet-0600df5fa8ce60857" \
>   --query "Reservations[*].Instances[*].InstanceId" \
>   --output table
@23-22411-061-rgb 🐎 /workspaces/CC -Shumail-zahra- -2023-BSE-061- (main) $ aws ec2 describe-instances \
>   --query "Reservations[*].Instances[*].[InstanceId,SubnetId]" \
>   --output table

+-----+-----+
|       DescribeInstances      |
+-----+-----+
| i-0dcf5e8e4fdd23377 | subnet-0d8f9fccb79043cbc |
+-----+-----+
@23-22411-061-rgb 🐎 /workspaces/CC -Shumail-zahra- -2023-BSE-061- (main) $ aws ec2 describe-instances \
@23-22411-061-rgb 🐎 /workspaces/CC -Shumail-zahra- -2023-BSE-061- (main) $ aws ec2 describe-instances \
>   --filters "Name=subnet-id,Values=subnet-0d8f9fccb79043cbc" \
>   --query "Reservations[*].Instances[*].InstanceId" \
>   --output table
+-----+
|   DescribeInstances   |
+-----+
| i-0dcf5e8e4fdd23377 |
+-----+
@23-22411-061-rgb 🐎 /workspaces/CC -Shumail-zahra- -2023-BSE-061- (main) $
```

task7 filter by vpc

```
#23-22411-061-rgb 🐧 /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 describe-subnets --subnet-ids subnet-0d8f9fccb79043cbc
{
  "Subnets": [
    {
      "AvailabilityZoneId": "mec1-az3",
      "MapCustomerOwnedIpOnLaunch": false,
      "OwnerId": "075006647027",
      "AssignIpv6AddressOnCreation": false,
      "Ipv4CidrBlockAssociationSet": [],
      "SubnetArn": "arn:aws:ec2:me-central-1:075006647027:subnet/subnet-0d8f9fccb79043cbc",
      "EnableDns64": false,
      "Ipv6Native": false,
      "PrivateDnsNameOptionsOnLaunch": {
        "HostnameType": "ip-name",
        "EnableResourceNameDnsARecord": false,
        "EnableResourceNameDnsAAAARecord": false
      },
      "BlockPublicAccessStates": {
        "InternetGatewayBlockMode": "off"
      },
      "SubnetId": "subnet-0d8f9fccb79043cbc",
      "State": "available",
      "VpcId": "vpc-0f993bf131956a286",
      "CidrBlock": "172.31.0.0/28",
      "AvailableIpAddressCount": 4090,
      "AvailabilityZone": "me-central-1c",
      "DefaultForAz": true,
      "MapPublicIpOnLaunch": true
    }
  ]
}
#23-22411-061-rgb 🐧 /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 describe-instances \
> --filters "Name=vpc-id,Values=vpc-0f993bf131956a286" \
> --query "Reservations[*].Instances[*].InstanceId" \
> --output table
-----
| DescribeInstances |
+-----+
| i-0dcf5e8e4fdd23377 |
```

Task 8 — Use --query to format outputs for reporting

task8_query_table_instances_name_ip

```
#23-22411-061-rgb 🐧 /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 describe-instances \
> --filters "Name=tag:Name,Values=MyServer" \
> --query "Reservations[*].Instances[*].[InstanceId,PublicIpAddress,Tags[?Key=='Name'].Value|[0]]" \
> --output table
-----
| DescribeInstances |
+-----+
| i-0dcf5e8e4fdd23377 | 3.28.240.198 | MyServer |
```

task8_query_table_instance_state

```
#23-22411-061-rgb 🐧 /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 describe-instances \
> --query "Reservations[*].Instances[*].[InstanceId,State.Name]" \
> --output table
-----
| DescribeInstances |
+-----+
| i-0dcf5e8e4fdd23377 | running |
```

task8_query_table_instance_type_az

```
+-----+
@23-22411-061-rgb 🐧 /workspaces/CC_Shumaile-zahra_-2023-BSE-061- (main) $ aws ec2 describe-instances \
> --query "Reservations[*].Instances[*].[InstanceId,InstanceType,Placement.AvailabilityZone]" \
> --output table
-----
| DescribeInstances |
+-----+
| i-0dcf5e8e4fdd23377 | t3.micro | me-central-1c |
```

Cleanup — Remove resources to avoid charges

cleanup_terminate_instance

```
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws ec2 terminate-instances --instance-ids i-0dcf5e8e4fd23377
{
  "TerminatingInstances": [
    {
      "InstanceId": "i-0dcf5e8e4fd23377",
      "CurrentState": {
        "Code": 32,
        "Name": "shutting-down"
      },
      "PreviousState": {
        "Code": 16,
        "Name": "running"
      }
    }
  ]
}
```

cleanup_delete_volumes_snapshots

The screenshot shows two separate views from the AWS Management Console:

- Volumes Info:** Shows a table header with columns: Name, Volume ID, Type, Size, IOPS, Throughput, Snapshot ID, Source volume ID, and Created. A message below the table states: "You currently have no volumes in this region".
- Snapshots Info:** Shows a table header with columns: Name, Snapshot ID, Full snapshot size, Volume size, Description, Storage tier, and Snapshot status. A message below the table states: "You currently have no snapshots in this Region".

The left sidebar contains navigation links for Dedicated Hosts, Capacity Reservations, Images (AMIs, AMI Catalog), Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), and Load Balancing (Load Balancers).

cleanup_delete_security_group_and_keypair

```
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws ec2 delete-security-group --group-id sg-08993822688556c15
{
  "Return": true,
  "GroupId": "sg-08993822688556c15"
}
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws ec2 delete-key-pair --key-name MyED25519Key
{
  "Return": true,
  "KeyPairId": "key-0b81774c1d1176a6a"
}
```

cleanup_iam_users_deleted

```
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws iam delete-access-key --user-name MyUserCli --access-key-id AKIARC5V6TLZ46TSJR5J
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws iam delete-login-profile --user-name MyUserCli
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws iam remove-user-from-group --user-name MyUserCli --group-name MyGroupCli
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws iam delete-user --user-name MyUserCli
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws iam detach-group-policy --group-name MyGroupCli --policy-arm arn:aws:iam::aws:policy/AmazonEC2FullAccess
#23-22411-061-rgb eworkspaces/CC_Shumail-zahra_-2023-BSE-061-(main)$ aws iam delete-group --group-name MyGroupCli
```

cleanup_summary

Screenshot of the AWS Resource Groups interface showing the 'Find resources to tag in the current region - Middle East (UAE)' search page.

The search bar contains the query: "Find resources to tag in the current region - Middle East (UAE)".

Resource types dropdown: "Select resource types".

Tags - Optional section:

- Tag key: "Tag key" input field.
- Tag value - optional: "Tag value" input field.
- "Add" button.

Search resources button.

Resource search results page.

Export to CSV and Manage tags of selected resources buttons.

Filter resources input field.

Table headers: Identifier, Tag: Name, Service, Type, Region, Tags.

To see results, click the Search resources button.

Billing and Cost Management interface showing the Bills page.

Billing period: December 2025.

AWS estimated bill summary:

Account ID: 075006647027	Billing period: December 1 - December 31, 2025	Bill status: Pending
Service provider: Amazon Web Services, Inc.		Total in USD: USD 0.00
Estimated grand total: USD 0.00		

Payment information:

Highest service spend: USD 0.00	Trend compared to prior month: No data to display.
Highest AWS Region spend: USD 0.08	Trend compared to prior month: No data to display.

Billing and Cost Management interface showing the Amazon Web Services, Inc. charges by service page.

Total active services: 9

Total pre-tax service charges in USD: USD 0.00

Description	Usage Quantity	Amount in USD
Data Transfer		USD 0.00
Elastic Compute Cloud		USD 0.00
Glue		USD 0.00
Key Management Service		USD 0.00
Secrets Manager		USD 0.00
Simple Notification Service		USD 0.00
Simple Queue Service		USD 0.00
Simple Storage Service		USD 0.00
Virtual Private Cloud		USD 0.00