CLOUD COMPUTING LAB

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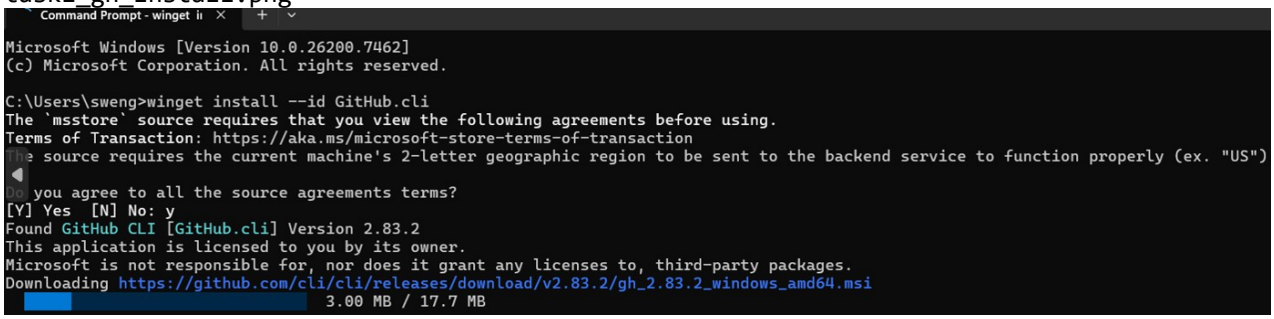
Submitted to: Sir Muhammad Shoaib Class: 5B

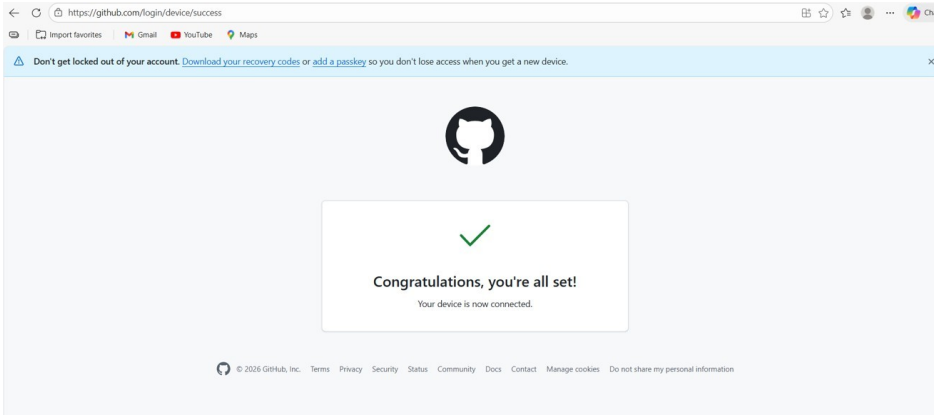
LAB #09

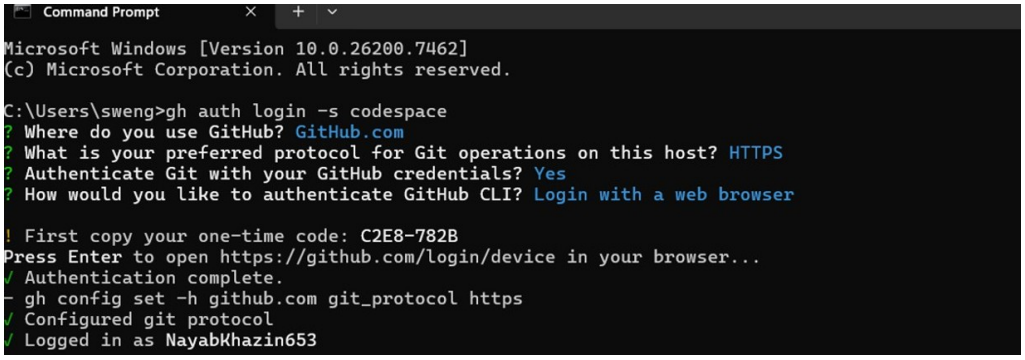
Task 1 — GitHub CLI, Codespace setup and authentication

task1_gh_install.png

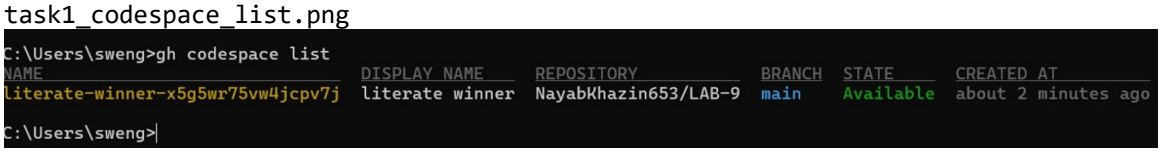


task1_gh_auth_login.png

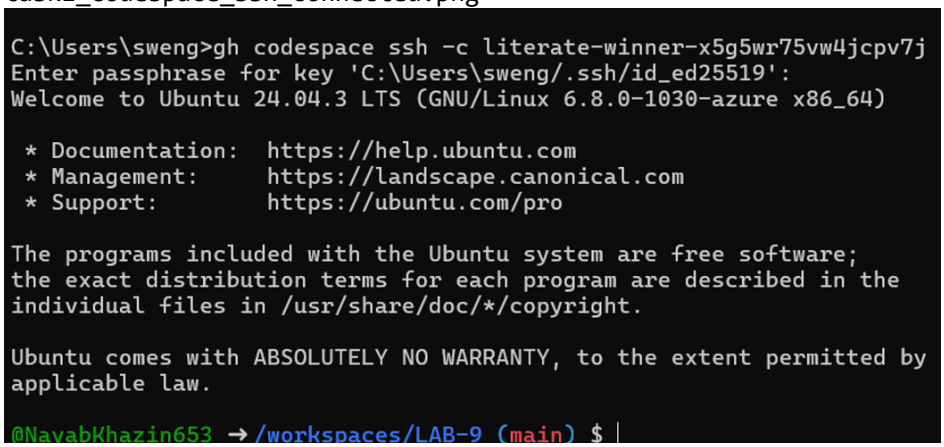




task1_codespace_list.png

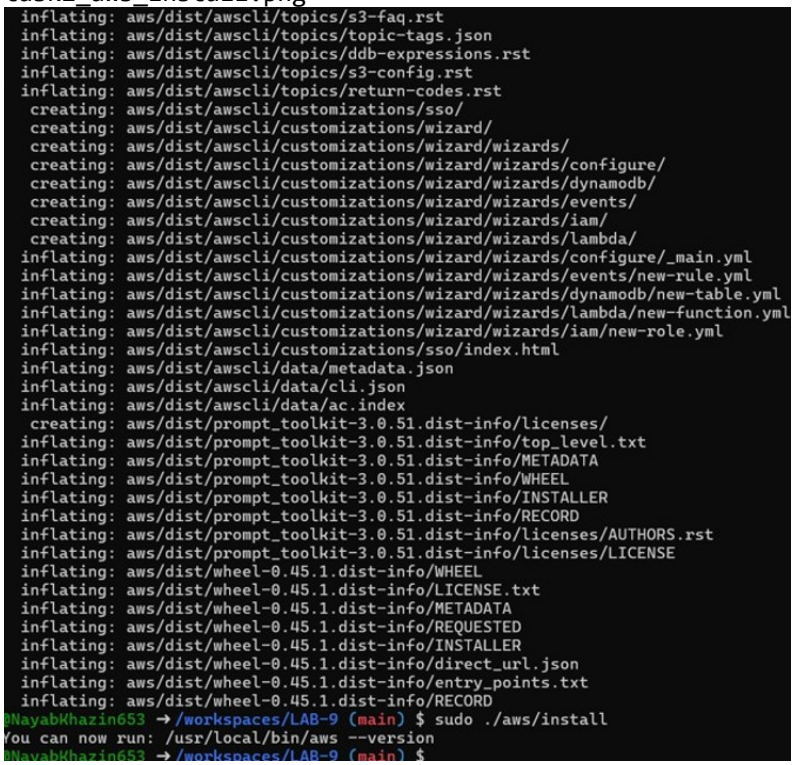


task1_codespace_ssh_connected.png

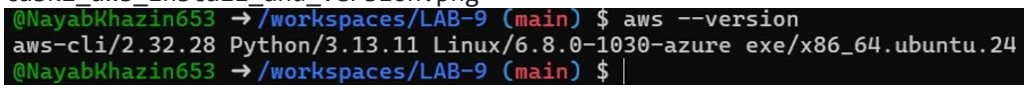


Task 2 — Install AWS CLI inside the Codespace and configure it

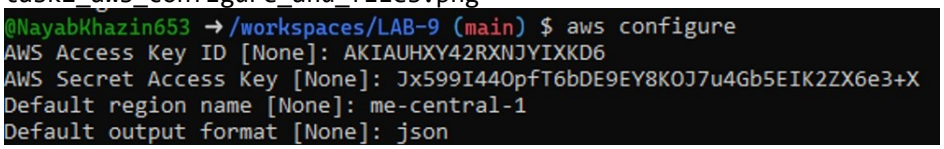
task2_aws_install.png



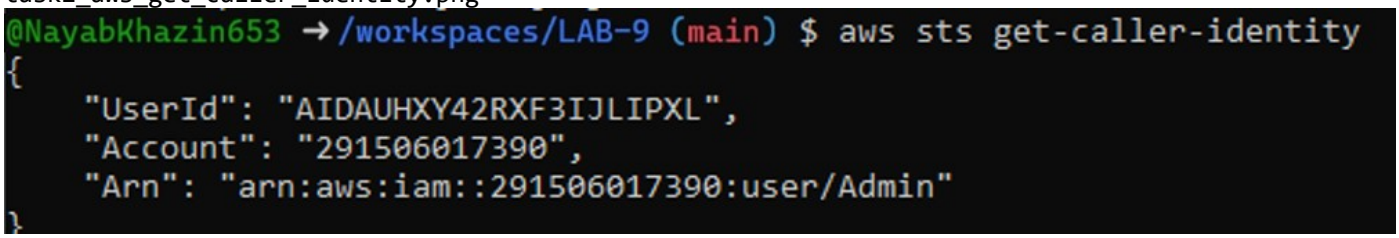
task2_aws_install_and_version.png



task2_aws_configure_and_files.png

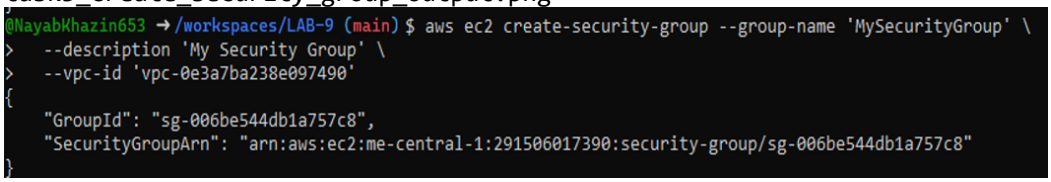


task2_aws_get_caller_identity.png



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

task3_create_security_group_output.png



task3_describe_sg_before_ingress.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-security-groups --group-ids sg-006be544db1a757c8
{
    "SecurityGroups": [
        {
            "GroupId": "sg-006be544db1a757c8",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0e3a7ba238e097490",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:291506017390:security-group/sg-006be544db1a757c8",
            "OwnerId": "291506017390",
            "GroupName": "MySecurityGroup",
            "Description": "My Security Group",
            "IpPermissions": []
        }
    ]
}
```

task3_codespace_public_ip.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ curl icanhazip.com
13.71.3.97
```

task3_authorize_ssh.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 authorize-security-group-ingress \
>     --group-id sg-006be544db1a757c8 \
>     --protocol tcp \
>     --port 22 \
>     --cidr 13.71.3.97/32
{
    "Return": true,
    "SecurityGroupRules": [
        {
            "SecurityGroupRuleId": "sgr-0e805ff79baa67f38",
            "GroupId": "sg-006be544db1a757c8",
            "GroupOwnerId": "291506017390",
            "IsEgress": false,
            "IpProtocol": "tcp",
            "FromPort": 22,
            "ToPort": 22,
            "CidrIpv4": "13.71.3.97/32",
            "SecurityGroupRuleArn": "arn:aws:ec2:me-central-1:291506017390:security-group-rule/sgr-0e805ff79baa67f38"
        }
    ]
}
```

task3 _describe.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-security-groups --group-ids sg-006be544db1a757c8
{
    "SecurityGroups": [
        {
            "GroupId": "sg-006be544db1a757c8",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0e3a7ba238e097490",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:291506017390:security-group/sg-006be544db1a757c8",
            "OwnerId": "291506017390",
            "GroupName": "MySecurityGroup",
            "Description": "My Security Group",
            "IpPermissions": [
                {
                    "IpProtocol": "tcp",
                    "FromPort": 22,
                    "ToPort": 22,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "13.71.3.97/32"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ]
        }
    ]
}
```

task3_authorize_http_and_describe.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 authorize-security-group-ingress \
>   --group-id sg-006be544db1a757c8 \
>   --ip-permissions '{"FromPort":80,"ToPort":80,"IpProtocol":"tcp","IpRanges":[{"CidrIp":"13.71.3.97/32"}]}'
{
    "Return": true,
    "SecurityGroupRules": [
        {
            "SecurityGroupRuleId": "sgr-061271e523ce54c97",
            "GroupId": "sg-006be544db1a757c8",
            "GroupOwnerId": "291506017390",
            "IsEgress": false,
            "IpProtocol": "tcp",
            "FromPort": 80,
            "ToPort": 80,
            "CidrIpv4": "13.71.3.97/32",
            "SecurityGroupRuleArn": "arn:aws:ec2:me-central-1:291506017390:security-group-rule/sgr-061271e523ce54c97"
        }
    ]
}
```

task3_describe_sg_final.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-security-groups --group-ids sg-006be544db1a757c8
{
    "SecurityGroups": [
        {
            "GroupId": "sg-006be544db1a757c8",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0e3a7ba238e097490",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:291506017390:security-group/sg-006be544db1a757c8",
            "OwnerId": "291506017390",
            "GroupName": "MySecurityGroup",
            "Description": "My Security Group",
            "IpPermissions": [
                {
                    "IpProtocol": "tcp",
                    "FromPort": 80,
                    "ToPort": 80,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "13.71.3.97/32"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                },
                {
                    "IpProtocol": "tcp",
                    "FromPort": 22,
                    "ToPort": 22,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "13.71.3.97/32"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
```

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

task4_create_keypair_output.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 create-key-pair \
>   --key-name MyED25519Key \
>   --key-type ed25519 \
>   --key-format pem \
>   --query 'KeyMaterial' \
>   --output text > MyED25519Key.pem
```

task4_describe_keypairs.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-key-pairs
{
    "KeyPairs": [
        {
            "KeyPairId": "key-0b3321e4b62c4b840",
            "KeyType": "ed25519",
            "Tags": [],
            "CreateTime": "2026-01-06T10:01:58.286000+00:00",
            "KeyName": "MyED25519Key",
            "KeyFingerprint": "hrChoNMA65kihbam0ALAncj7DjBaJ3R5lFSuSiHXiYs="
        }
    ]
}
```

task4_run_instances_output.png

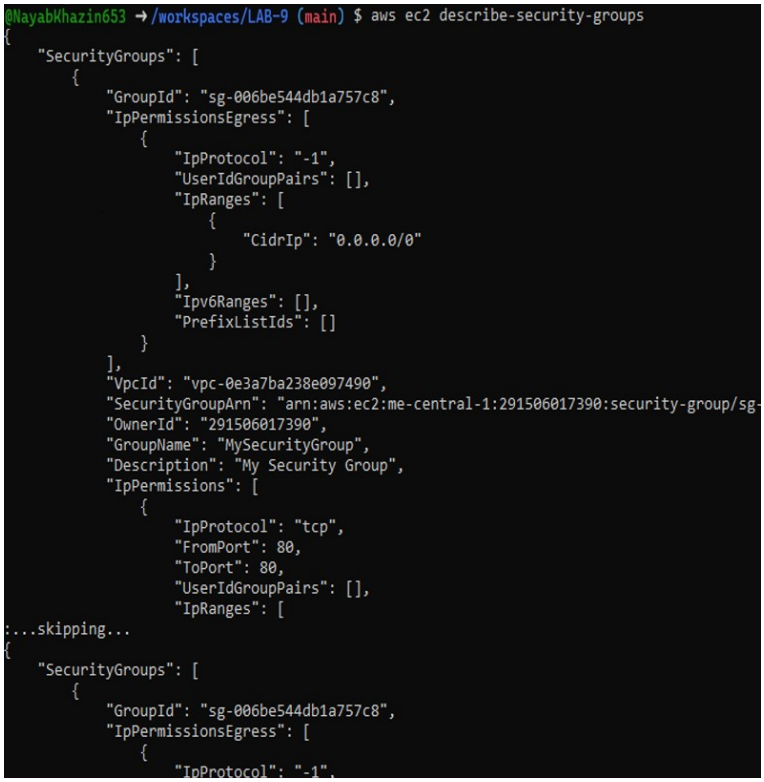
```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 run-instances \
>   --image-id ami-05e66df2bafcb7dea \
>   --count 1 \
>   --instance-type t3.micro \
>   --key-name MyED25519Key \
>   --security-group-ids sg-006be544db1a757c8 \
>   --subnet-id  subnet-0e02d581cfd0ee452 \
>   --tag-specifications "ResourceType=instance,Tags=[{Key=Name,Value=MyServer}]"
{
    "ReservationId": "r-0fac0d6675ffaf878",
    "OwnerId": "291506017390",
    "Groups": [],
    "Instances": [
        {
            "Architecture": "x86_64",
            "BlockDeviceMappings": [],
            "ClientToken": "372f1e5c-c8cc-4a4a-bec5-5f9995cf44e1",
            "EbsOptimized": false,
            "EnaSupport": true,
            "Hypervisor": "xen",
            "NetworkInterfaces": [
                {
                    "Attachment": {
                        "AttachTime": "2026-01-06T13:14:00+00:00",
                        "AttachmentId": "eni-attach-03795d98af75436f7",
                        "DeleteOnTermination": true,
                        "DeviceIndex": 0,
                        "Status": "attaching",
                        "NetworkCardIndex": 0
                    },
                    "Description": "",
                    "Groups": [
                        {
                            "GroupId": "sg-006be544db1a757c8",
                            "GroupName": "MySecurityGroup"
                        }
                    ],
                    "Ipv6Addresses": [],
                    "MacAddress": "0a:ad:95:4c:15:f5",
                    "NetworkInterfaceId": "eni-0fd644f08a9f5dbcb",
                    "OwnerId": "291506017390",
                    "PrivateDnsName": "ip-172-31-24-116.me-central-1.compute.internal",
                    "PrivateIpAddress": "172.31.24.116",
```

task4_describe_instances_public_ip.pn

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-instances --query "Reservations[*].Inst
PublicIpAddress,State.Name]" --output table
-------------------------------------------------
|                DescribeInstances              |
+---------------------+---------------+----------+
|  i-0fdbb82cc7e99be09 |  51.112.142.8  |  running |
+---------------------+---------------+----------+
```

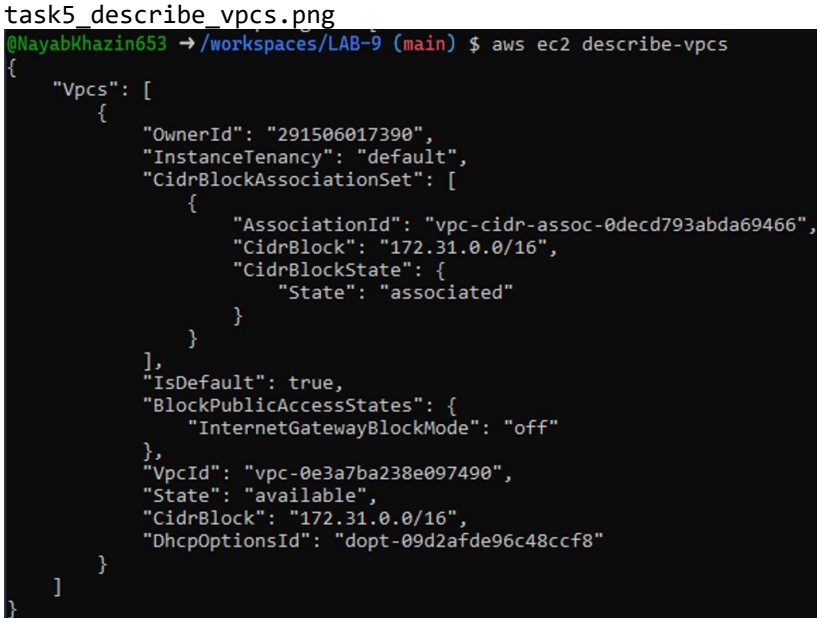
Task 5 — Understand AWS describe-* commands

task5_describe_security_groups.png



```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-security-groups
{
    "SecurityGroups": [
        {
            "GroupId": "sg-006be544db1a757c8",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
                    "UserIdGroupPairs": [],
                    "IpRanges": [
                        {
                            "CidrIp": "0.0.0.0/0"
                        }
                    ],
                    "Ipv6Ranges": [],
                    "PrefixListIds": []
                }
            ],
            "VpcId": "vpc-0e3a7ba238e097490",
            "SecurityGroupArn": "arn:aws:ec2:me-central-1:291506017390:security-group/sg-
            "OwnerId": "291506017390",
            "GroupName": "MySecurityGroup",
            "Description": "My Security Group",
            "IpPermissions": [
                {
                    "IpProtocol": "tcp",
                    "FromPort": 80,
                    "ToPort": 80,
                    "UserIdGroupPairs": [],
                    "IpRanges": [
:...skipping...
{
    "SecurityGroups": [
        {
            "GroupId": "sg-006be544db1a757c8",
            "IpPermissionsEgress": [
                {
                    "IpProtocol": "-1",
```

task5_describe_vpcs.png



```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-vpcs
{
    "Vpcs": [
        {
            "OwnerId": "291506017390",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0decd793abda69466",
                    "CidrBlock": "172.31.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": true,
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "VpcId": "vpc-0e3a7ba238e097490",
            "State": "available",
            "CidrBlock": "172.31.0.0/16",
            "DhcpOptionsId": "dopt-09d2afde96c48ccf8"
        }
    ]
}
```

task5_describe_subnets.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-subnets
{
    "Subnets": [
        {
            "AvailabilityZoneId": "mec1-az1",
            "MapCustomerOwnedIpOnLaunch": false,
            "OwnerId": "291506017390",
            "AssignIpv6AddressOnCreation": false,
            "Ipv6CidrBlockAssociationSet": [],
            "SubnetArn": "arn:aws:ec2:me-central-1:291506017390:subnet/subnet-06a59b3771
            "EnableDns64": false,
            "Ipv6Native": false,
            "PrivateDnsNameOptionsOnLaunch": {
                "HostnameType": "ip-name",
                "EnableResourceNameDnsARecord": false,
                "EnableResourceNameDnsAAAARecord": false
            },
            "BlockPublicAccessStates": {
                "InternetGatewayBlockMode": "off"
            },
            "SubnetId": "subnet-06a59b3771518f03a",
            "State": "available",
            "VpcId": "vpc-0e3a7ba238e097490",
            "CidrBlock": "172.31.32.0/20",
            "AvailableIpAddressCount": 4091,
            "AvailabilityZone": "me-central-1a",
            "DefaultForAz": true,
            "MapPublicIpOnLaunch": true
        },
        {
            "AvailabilityZoneId": "mec1-az2",
            "MapCustomerOwnedIpOnLaunch": false,
            "OwnerId": "291506017390",
            "AssignIpv6AddressOnCreation": false,
            "Ipv6CidrBlockAssociationSet": [],
            "SubnetArn": "arn:aws:ec2:me-central-1:291506017390:subnet/subnet-0e02d581cf
            "EnableDns64": false,
            "Ipv6Native": false,
```

task5_describe_instances.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws ec2 describe-instances
{
    "Reservations": [
        {
            "ReservationId": "r-0fac0d6675ffaf878",
            "OwnerId": "291506017390",
            "Groups": [],
            "Instances": [
                {
                    "Architecture": "x86_64",
                    "BlockDeviceMappings": [
                        {
                            "DeviceName": "/dev/xvda",
                            "Ebs": {
                                "AttachTime": "2026-01-06T13:14:01+00:00",
                                "DeleteOnTermination": true,
                                "Status": "attached",
                                "VolumeId": "vol-0fa829739547640a6"
                            }
                        }
                    ],
                    "ClientToken": "372f1e5c-c8cc-4a4a-bec5-5f9995cf44e1",
                    "EbsOptimized": false,
                    "EnaSupport": true,
                    "Hypervisor": "xen",
                    "NetworkInterfaces": [
                        {
                            "Association": {
                                "IpOwnerId": "amazon",
                                "PublicDnsName": "ec2-51-112-142-8.me-central-1.comp
                                "PublicIp": "51.112.142.8"
                            },
                            "Attachment": {
                                "AttachTime": "2026-01-06T13:14:00+00:00",
                                "AttachmentId": "eni-attach-03795d98af75436f7",
                                "DeleteOnTermination": true,
                                "DeviceIndex": 0,
                                "Status": "attached",
                                "NetworkCardIndex": 0
                            },
                            "Description": "",
                            "Groups": [
```

task5_describe_regions.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (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"
        },
```

task5_describe_availability_zones.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (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",
```

task6_create_group_and_user.png

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

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws iam create-group --group
pCli
{
    "Group": {
        "Path": "/",
        "GroupName": "MyGroupCli",
        "GroupId": "AGPAUHXY42RXNQM5VYWLT",
        "Arn": "arn:aws:iam::291506017390:group/MyGroupCli",
        "CreateDate": "2026-01-06T14:18:06+00:00"
    }
}
```

task6_create_group_and_user.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws iam get-group --group-name MyGroupCl
i
{
    "Users": [],
    "Group": {
        "Path": "/",
        "GroupName": "MyGroupCli",
        "GroupId": "AGPAUHXY42RXNQM5VYWLT",
        "Arn": "arn:aws:iam::291506017390:group/MyGroupCli",
        "CreateDate": "2026-01-06T14:18:06+00:00"
    }
}
```

task6_create_group_and_user.png

task6_create_group_and_user.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws iam get-user --user-name MyUserCli
{
    "User": {
        "Path": "/",
        "UserName": "MyUserCli",
        "UserId": "AIDAUHXY42RXNXZ4ISGJZ",
        "Arn": "arn:aws:iam::291506017390:user/MyUserCli",
        "CreateDate": "2026-01-06T14:19:06+00:00"
    }
}
```

task6_add_user_to_group_and_verify.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws iam add-user-to-group --user-name My
UserCli --group-name MyGroupCli
```

task6_add_user_to_group_and_verify.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws iam get-group --group-name MyGroupCl
{
    "Users": [
        {
            "Path": "/",
            "UserName": "MyUserCli",
            "UserId": "AIDAUHXY42RXNXZ4ISGJZ",
            "Arn": "arn:aws:iam::291506017390:user/MyUserCli",
            "CreateDate": "2026-01-06T14:19:06+00:00"
        }
    ],
    "Group": {
        "Path": "/",
        "GroupName": "MyGroupCli",
        "GroupId": "AGPAUHXY42RXNQM5VYWLT",
        "Arn": "arn:aws:iam::291506017390:group/MyGroupCli",
        "CreateDate": "2026-01-06T14:18:06+00:00"
    }
}
```

task6_policy_list_and_attach.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (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
AWSElasticBeanstalkCustomPlatformforEC2Role
AmazonEC2ContainerServiceEventsRole
AmazonEC2SpotFleetTaggingRole
AWSEC2SpotServiceRolePolicy
AWSServiceRoleForEC2ScheduledInstances
AWSEC2SpotFleetServiceRolePolicy
AWSApplicationAutoscalingEC2SpotFleetRequestPolicy
AWSEC2FleetServiceRolePolicy
AWSAutoScalingPlansEC2AutoScalingPolicy
EC2InstanceConnect
AmazonEC2RolePolicyForLaunchWizard
EC2InstanceProfileForImageBuilder
EC2FleetTimeShiftableServiceRolePolicy
AmazonEC2RoleforAWSCodeDeployLimited
EC2InstanceProfileForImageBuilderECRContainerBuilds
AWSApplicationMigrationEC2Access
AWSEC2CapacityReservationFleetRolePolicy
EC2FastLaunchServiceRolePolicy
AmazonSSMManagedEC2InstanceDefaultPolicy
AWSFaultInjectionSimulatorEC2Access
EC2ImageBuilderLifecycleExecutionPolicy
AWSEC2VssSnapshotPolicy
EC2FastLaunchFullAccess
```

task6_policy_list_and_attach.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (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 |
+-----------------------------------------------+----------------------+
```

task6_policy_list_and_attach.png

```
@NayabKhazin653 ➜ /workspaces/LAB-9 (main) $ aws iam attach-group-policy \
>   --group-name MyGroupCli \
>   --policy-arn arn:aws:iam::aws:policy/AmazonEC2FullAccess
```

task6_policy_list_and_attach.png

```
@NayabKhazin653 /workspaces/Lab-9 (main) $ aws iam list-attached-group-policies --g
roup-name MyGroupCli
{
    "AttachedPolicies": [
        {
            "PolicyName": "AmazonEC2FullAccess",
            "PolicyArn": "arn:aws:iam::aws:policy/AmazonEC2FullAccess"
        }
    ]
}
```

task6_create_login_profile_and_signin.png

task6_create_access_key_output.png

```
@NayabKhazin653 /workspaces/Lab-9 (main) $ aws iam create-access-key --user-name MyUserCli
{
    "AccessKey": {
        "UserName": "MyUserCli",
        "AccessKeyId": "AKIAUHXY42RXI2JEINEH",
        "Status": "Active",
        "SecretAccessKey": "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",
        "CreateDate": "2026-01-06T14:46:29+00:00"
    }
}
```

task6_create_access_key_output.pn

```
@NayabKhazin653 /workspaces/Lab-9 (main) $ aws iam list-access-keys --user-name MyUserCli
{
    "AccessKeyMetadata": [
        {
            "UserName": "MyUserCli",
            "AccessKeyId": "AKIAUHXY42RXI2JEINEH",
            "Status": "Active",
            "CreateDate": "2026-01-06T14:46:29+00:00"
        }
    ]
}
```

task6_create_access_key_output.png

task6_env_exports_and_get_user_error.png

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

```
>   --filters "Name=tag:Name,Values=MyServer" \
>   --query "Reservations[*].Instances[*].PublicIpAddress" \
>   --output text
40.172.230.52
```

task7_filter_by_instance_type.png

```
>   --filters "Name=instance-type,Values=t3.micro" \
>   --query "Reservations[].Instances[].InstanceId" \
>   --output table
-----------------------
|   DescribeInstances   |
+-----------------------+
|  i-0403609d04099cbcb  |
+-----------------------+
```

task7_filter_by_subnet.png

```
>   --filters "Name=subnet-id,Values= subnet-05d6cfad232c55c6f" \
>   --query "Reservations[*].Instances[*].InstanceId" \
>   --output table

------------------------
|   DescribeInstances   |
+-----------------------+
|  i-0403609d04099cbcb  |
+-----------------------+
```

task7_filter_by_vpc.png

```
>   --filters "Name=vpc-id,Values= vpc-0bfbc7302dc628797" \
>   --query "Reservations[*].Instances[*].InstanceId" \
>   --output table
------------------------
|   DescribeInstances   |
+-----------------------+
|  i-0403609d04099cbcb  |
+-----------------------+
```

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

task8_query_table_instances_name_ip.png

```
>   --filters "Name=tag:Name,Values=MyServer" \
>   --query "Reservations[*].Instances[*].[InstanceId,PublicIpAddress,Tags[?Key=='Name'].Value|[0]]" \
>   --output table
-----------------------------------------------------
|                DescribeInstances                  |
+----------------------+----------------+-----------+
|  i-0403609d04099cbcb |  40.172.230.52 |  MyServer |
+----------------------+----------------+-----------+
```

task8_query_table_instance_state.png

```
>   --query "Reservations[*].Instances[*].[InstanceId,State.Name]" \
>   --output table
-----------------------------------
|         DescribeInstances       |
+----------------------+----------+
|  i-0403609d04099cbcb |  running |
+----------------------+----------+
```

task8_query_table_instance_type_az.png

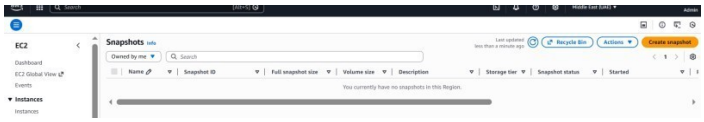
```
>   --query "Reservations[*].Instances[*].[InstanceId,InstanceType,Placement.AvailabilityZone]" \
>   --output table
-------------------------------------------------------
|                DescribeInstances                    |
+----------------------+-----------+-----------------+
|  i-0403609d04099cbcb |  t3.micro |  me-central-1b  |
+----------------------+-----------+-----------------+
```

Cleanup — Remove resources to avoid charges

cleanup_terminate_instance.png

```
@NayabKhazin653 /workspaces/Lab12 (main) $ aws ec2 terminate-instances --instance-ids  i-0403609d04099cbcb
{
    "TerminatingInstances": [
        {
            "InstanceId": "i-0403609d04099cbcb",
            "CurrentState": {
                "Code": 32,
                "Name": "shutting-down"
            },
            "PreviousState": {
                "Code": 16,
                "Name": "running"
            }
        }
    ]
}
```

cleanup_delete_volumes_snapshots.png



cleanup_delete_security_group_and_keypair.png

```
@NayabKhazin653 /workspaces/Lab-9 (main) $ aws ec2 delete-security-group --group-id sg-030a3daa25d097dca
{
    "Return": true,
    "GroupId": "sg-030a3daa25d097dca"
}
@NayabKhazin653 /workspaces/Lab-9 (main) $ aws ec2 delete-key-pair --key-name MyED25519Key
{
    "Return": true,
    "KeyPairId": "key-0d56d4d48d655a50f"
}
```

cleanup_iam_users_deleted.png

```
@NayabKhazin653 /workspaces/Lab12 (main) $ aws iam delete-access-key --user-name MyUserCli --access-key-id AKIAZCUSI5S7GM4AUFLM
@NayabKhazin653 /workspaces/Lab12 (main) $ aws iam delete-login-profile --user-name MyUserCli
@NayabKhazin653 /workspaces/Lab12 (main) $ aws iam remove-user-from-group --user-name MyUserCli --group-name MyGroupCli
@NayabKhazin653 /workspaces/Lab12 (main) $ aws iam delete-user --user-name MyUserCli
@NayabKhazin653 /workspaces/Lab12 (main) $ aws iam detach-group-policy --group-name MyGroupCli --policy-arn arn:aws:iam::aws:policy/AmazonEC2FullAccess
@NayabKhazin653 /workspaces/Lab12 (main) $ aws iam delete-group --group-name MyGroupCli
```

cleanup_summary.png