CSYE 6225: Network Structure & Cloud Computing Course

Tutorial and Practice: AWS CLI

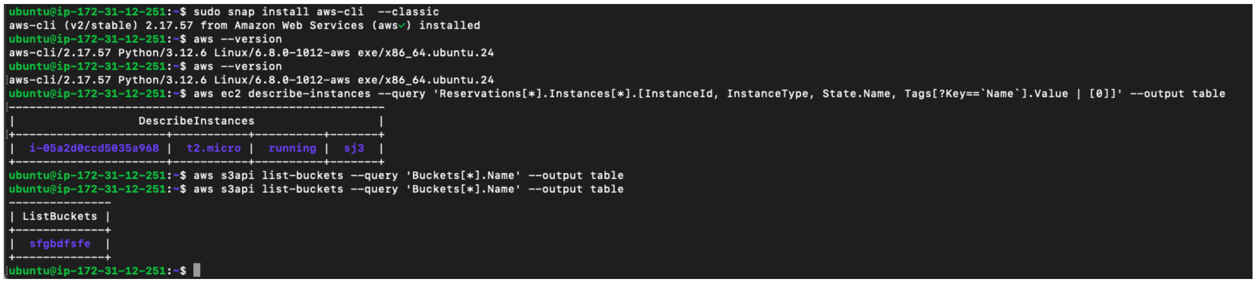
Objectives: Learn and practice setting up AWS CLI and the usage of basic commands in AWS CLI.

Prerequisites: Access to AWS account.

Setup AWS CLI:

- Create a t2.mico EC2 instance in your AWS account with Ubuntu.
- Create a Role and assign the role to this EC2 instance. Attached suitable AWS managed policies to this Role.
- Install AWS CLI:
  - `$sudo snap install aws-cli --classic`
- **Check version:**
  - `$aws −version`
- **Check all available EC2 instances:**
  - `$aws ec2 describe-instances --query 'Reservations[*].Instances[*].[InstanceId, InstanceType, State.Name, Tags[?Key==`Name`].Value | [0]]' --output table`
- **Check Available S3:**

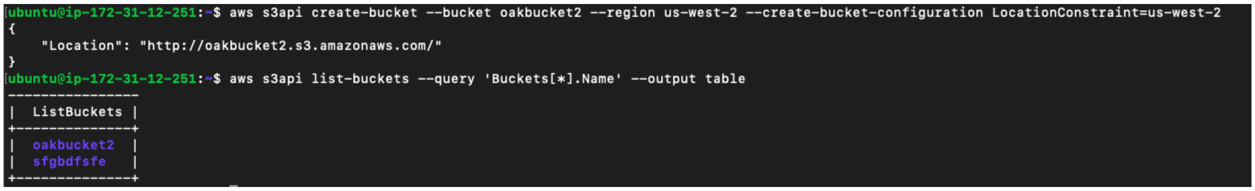
  $aws s3api list-buckets --query 'Buckets[*].Name' --output table



```
ubuntu@ip-172-31-12-251:~$ sudo snap install aws-cli  --classic
aws-cli (v2/stable) 2.17.57 from Amazon Web Services (aws✓) installed
ubuntu@ip-172-31-12-251:~$ aws --version
aws-cli/2.17.57 Python/3.12.6 Linux/6.8.0-1012-aws exe/x86_64.ubuntu.24
ubuntu@ip-172-31-12-251:~$ aws --version
aws-cli/2.17.57 Python/3.12.6 Linux/6.8.0-1012-aws exe/x86_64.ubuntu.24
ubuntu@ip-172-31-12-251:~$ aws ec2 describe-instances --query 'Reservations[*].Instances[*].[InstanceId, InstanceType, State.Name, Tags[?Key==`Name`].Value | [0]]' --output table
-------------------------------------------------------
|                  DescribeInstances                  |
+----------------------+------------+-----------+-------+
|  i-05a2d0ccd5035a968 |  t2.micro  |  running  |  sj3  |
+----------------------+------------+-----------+-------+
ubuntu@ip-172-31-12-251:~$ aws s3api list-buckets --query 'Buckets[*].Name' --output table
ubuntu@ip-172-31-12-251:~$ aws s3api list-buckets --query 'Buckets[*].Name' --output table
---------------
| ListBuckets |
+-------------+
|  sfgbdfsfe  |
+-------------+
ubuntu@ip-172-31-12-251:~$
```

- **Create S3:**

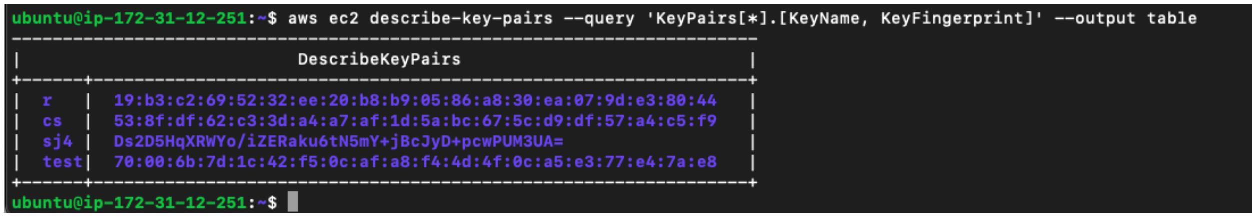
  ```
  $aws s3api create-bucket --bucket oakbucket --region
  us-west-2 --create-bucket-configuration
  LocationConstraint=us-west-2
  ```



```
ubuntu@ip-172-31-12-251:~$ aws s3api create-bucket --bucket oakbucket2 --region us-west-2 --create-bucket-configuration LocationConstraint=us-west-2
{
    "Location": "http://oakbucket2.s3.amazonaws.com/"
}
ubuntu@ip-172-31-12-251:~$ aws s3api list-buckets --query 'Buckets[*].Name' --output table
----------------
|  ListBuckets |
+--------------+
|  oakbucket2  |
|  sfgbdfsfe   |
+--------------+
```

- **Check Available key pair:**

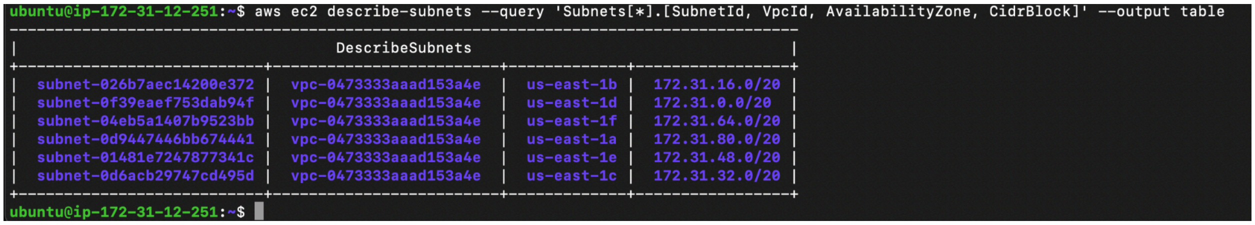
  -
    ```
    aws ec2 describe-key-pairs --query
    'KeyPairs[*].[KeyName, KeyFingerprint]'
    --output table
    ```



```
ubuntu@ip-172-31-12-251:~$ aws ec2 describe-key-pairs --query 'KeyPairs[*].[KeyName, KeyFingerprint]' --output table
---------------------------------------------------------------------
|                          DescribeKeyPairs                         |
+------+------------------------------------------------------------+
|  r   |  19:b3:c2:69:52:32:ee:20:b8:b9:05:86:a8:30:ea:07:9d:e3:80:44  |
|  cs  |  53:8f:df:62:c3:3d:a4:a7:af:1d:5a:bc:67:5c:d9:df:57:a4:c5:f9  |
|  sj4 |  Ds2D5HqXRWYo/iZERaku6tN5mY+jBcJyD+pcwPUM3UA=                 |
|  test|  70:00:6b:7d:1c:42:f5:0c:af:a8:f4:4d:4f:0c:a5:e3:77:e4:7a:e8  |
+------+------------------------------------------------------------+
ubuntu@ip-172-31-12-251:~$
```

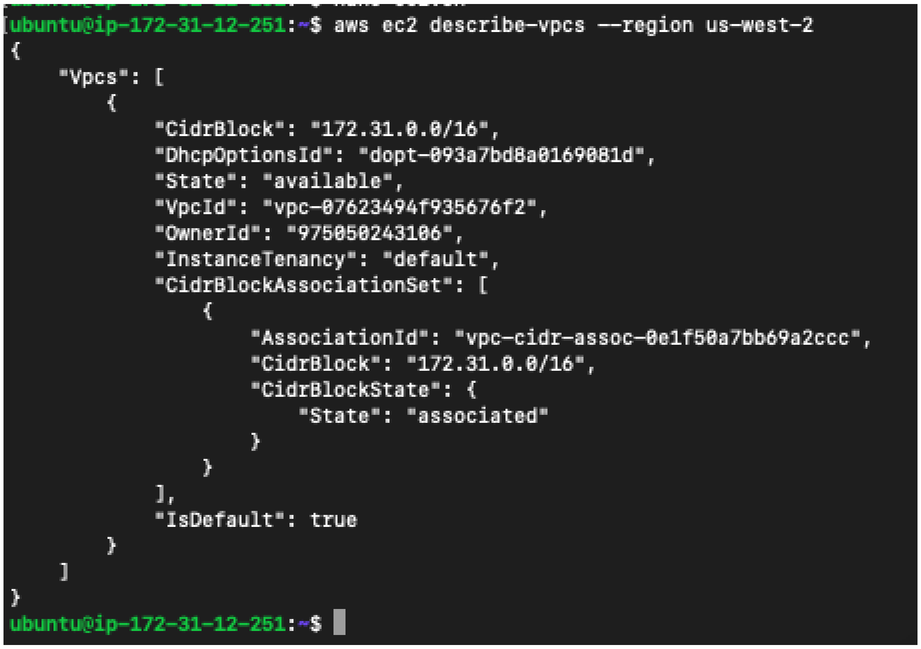
- **Check available subnets:**

```
$aws ec2 describe-subnets --query
'Subnets[*].[SubnetId, VpcId, AvailabilityZone,
CidrBlock]' --output table
```



```
ubuntu@ip-172-31-12-251:~$ aws ec2 describe-subnets --query 'Subnets[*].[SubnetId, VpcId, AvailabilityZone, CidrBlock]' --output table
-------------------------------------------------------------------------------------------
|                                     DescribeSubnets                                     |
+---------------------------+--------------------------+--------------+------------------+
|  subnet-026b7aec14200e372 |  vpc-0473333aaad153a4e   |  us-east-1b |  172.31.16.0/20  |
|  subnet-0f39eaef753dab94f |  vpc-0473333aaad153a4e   |  us-east-1d |  172.31.0.0/20   |
|  subnet-04eb5a1407b9523bb |  vpc-0473333aaad153a4e   |  us-east-1f |  172.31.64.0/20  |
|  subnet-0d9447446bb674441 |  vpc-0473333aaad153a4e   |  us-east-1a |  172.31.80.0/20  |
|  subnet-01481e7247877341c |  vpc-0473333aaad153a4e   |  us-east-1e |  172.31.48.0/20  |
|  subnet-0d6acb29747cd495d |  vpc-0473333aaad153a4e   |  us-east-1c |  172.31.32.0/20  |
+---------------------------+--------------------------+--------------+------------------+
ubuntu@ip-172-31-12-251:~$
```

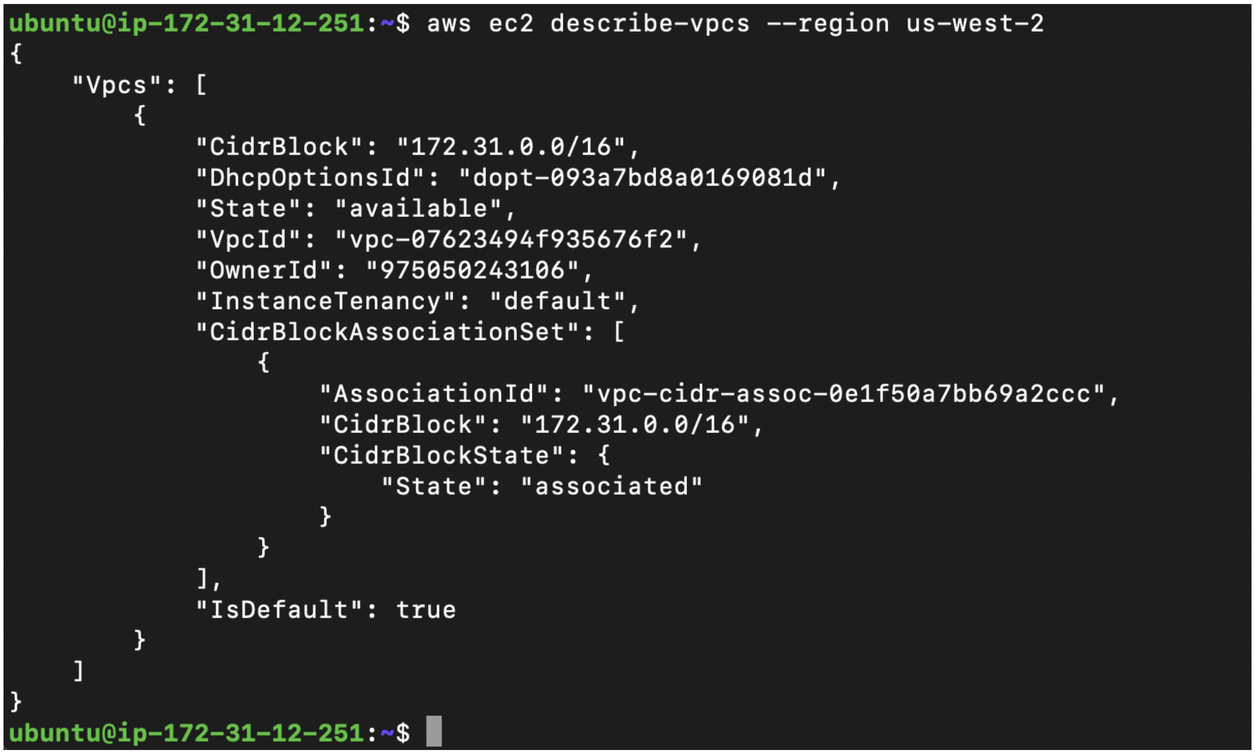
```
$aws ec2 describe-vpcs --region us-west-2
```



```
ubuntu@ip-172-31-12-251:~$ aws ec2 describe-vpcs --region us-west-2
{
    "Vpcs": [
        {
            "CidrBlock": "172.31.0.0/16",
            "DhcpOptionsId": "dopt-093a7bd8a0169081d",
            "State": "available",
            "VpcId": "vpc-07623494f935676f2",
            "OwnerId": "975050243106",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0e1f50a7bb69a2ccc",
                    "CidrBlock": "172.31.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": true
        }
    ]
}
ubuntu@ip-172-31-12-251:~$
```

- **Check available VPC in us-west-2**

```
$aws ec2 describe-vpcs --region us-west-2
```



```
ubuntu@ip-172-31-12-251:~$ aws ec2 describe-vpcs --region us-west-2
{
    "Vpcs": [
        {
            "CidrBlock": "172.31.0.0/16",
            "DhcpOptionsId": "dopt-093a7bd8a0169081d",
            "State": "available",
            "VpcId": "vpc-07623494f935676f2",
            "OwnerId": "975050243106",
            "InstanceTenancy": "default",
            "CidrBlockAssociationSet": [
                {
                    "AssociationId": "vpc-cidr-assoc-0e1f50a7bb69a2ccc",
                    "CidrBlock": "172.31.0.0/16",
                    "CidrBlockState": {
                        "State": "associated"
                    }
                }
            ],
            "IsDefault": true
        }
    ]
}
ubuntu@ip-172-31-12-251:~$
```

Create EC2 instance:

```
$aws ec2 run-instances  --instance-type t2.micro --image-id
ami-0e86e20dae9224db8 --key-name sj4 --subnet-id
subnet-026b7aec14200e372   --associate-public-ip-address
--tag-specifications
'ResourceType=instance,Tags=[{Key=Name,Value=MyEC2Instance}]'
--region us-east-1
```

Note: Ensure that all parameters (ami, subnet, key) are in the same region.

Output:

```
{
    "Groups": [],
    "Instances": [
        {
            "AmiLaunchIndex": 0,
            "ImageId": "ami-0e86e20dae9224db8",
            "InstanceId": "i-08010befcdde4038f",
            "InstanceType": "t2.micro",
            "KeyName": "sj4",
            "LaunchTime": "2024-09-24T07:45:29+00:00",
            "Monitoring": {
                "State": "disabled"
            },
            "Placement": {
```

```
    "AvailabilityZone": "us-east-1b",
    "GroupName": "",
    "Tenancy": "default"
},
"PrivateDnsName": "ip-172-31-23-214.ec2.internal",
"PrivateIpAddress": "172.31.23.214",
"ProductCodes": [],
"PublicDnsName": "",
"State": {
    "Code": 0,
    "Name": "pending"
},
"StateTransitionReason": "",
"SubnetId": "subnet-026b7aec14200e372",
"VpcId": "vpc-0473333aaad153a4e",
"Architecture": "x86_64",
"BlockDeviceMappings": [],
"ClientToken": "a862aca3-64c7-45f4-a92e-d6cac0e06217",
"EbsOptimized": false,
"EnaSupport": true,
"Hypervisor": "xen",
"NetworkInterfaces": [
    {
        "Attachment": {
            "AttachTime": "2024-09-24T07:45:29+00:00",
            "AttachmentId": "eni-attach-08bfd82bec939bd58",
            "DeleteOnTermination": true,
            "DeviceIndex": 0,
            "Status": "attaching",
            "NetworkCardIndex": 0
        },
        "Description": "",
        "Groups": [
            {
                "GroupName": "default",
                "GroupId": "sg-03c17cd54b95e47ba"
            }
        ],
        "Ipv6Addresses": [],
        "MacAddress": "0a:ff:c5:f7:75:49",
        "NetworkInterfaceId": "eni-036fd0d1d97fe5726",
        "OwnerId": "975050243106",
        "PrivateDnsName": "ip-172-31-23-214.ec2.internal",
        "PrivateIpAddress": "172.31.23.214",
        "PrivateIpAddresses": [
            {
                "Primary": true,
                "PrivateDnsName": "ip-172-31-23-214.ec2.internal",
                "PrivateIpAddress": "172.31.23.214"
            }
        ],
        "SourceDestCheck": true,
        "Status": "in-use",
        "SubnetId": "subnet-026b7aec14200e372",
        "VpcId": "vpc-0473333aaad153a4e",
        "InterfaceType": "interface"
    }
],
"RootDeviceName": "/dev/sda1",
            "RootDeviceType": "ebs",
            "SecurityGroups": [
                {
                    "GroupName": "default",
                    "GroupId": "sg-03c17cd54b95e47ba"
                }
            ],
            "SourceDestCheck": true,
            "StateReason": {
                "Code": "pending",
                "Message": "pending"
            },
            "Tags": [
                {
                    "Key": "Name",
                    "Value": "MyEC2Instance"
                }
            ],
            "VirtualizationType": "hvm",
            "CpuOptions": {
                "CoreCount": 1,
                "ThreadsPerCore": 1
            },
            "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",
                "EnableResourceNameDnsARecord": false,
                "EnableResourceNameDnsAAAARecord": false
            },
            "MaintenanceOptions": {
                "AutoRecovery": "default"
            },
            "CurrentInstanceBootMode": "legacy-bios"
        }
    ],
    "OwnerId": "975050243106",
    "ReservationId": "r-080f164f09ba80e3e"
}
```

End Tutorial