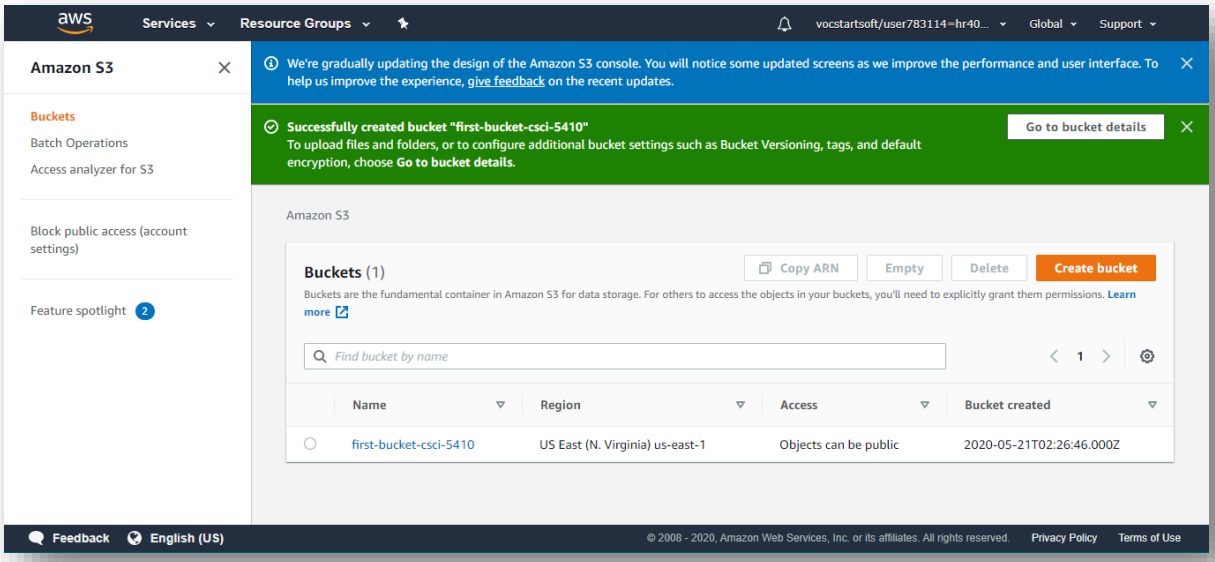
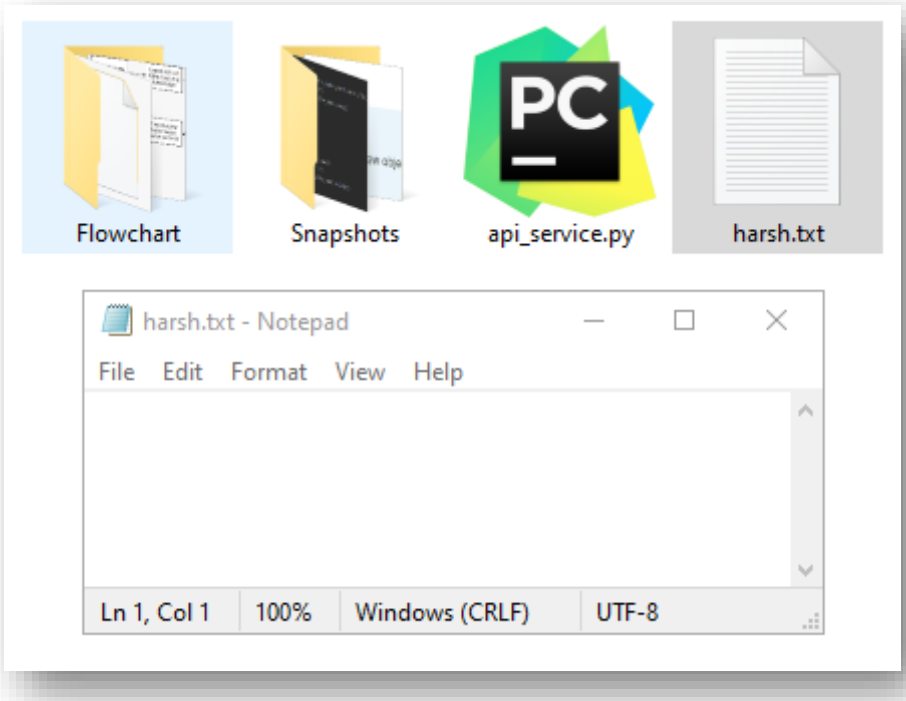
Part B: AWS S3 storage experiment

a.

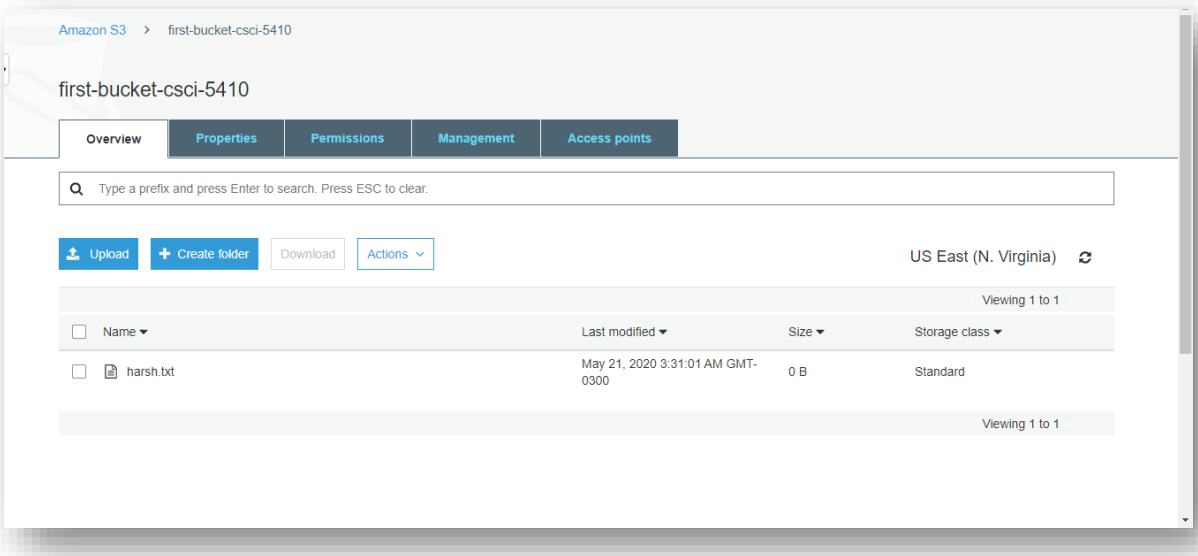
1. Create an empty bucket named “first-bucket-csci-5410”

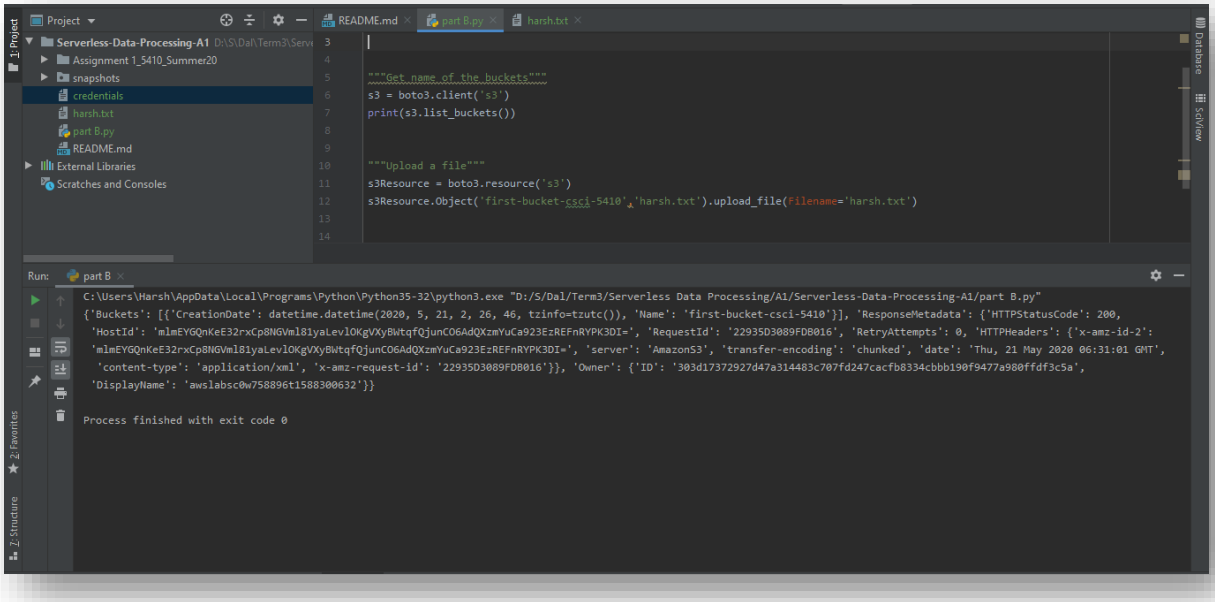


2. Create an empty text file ‘harsh.txt’



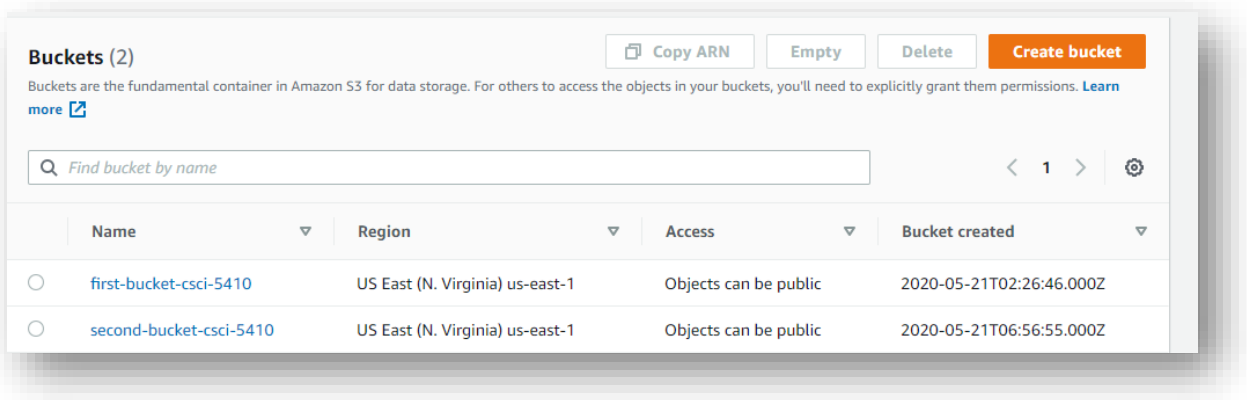
b. Upload the file on the bucket “first-bucket-csci-5410”





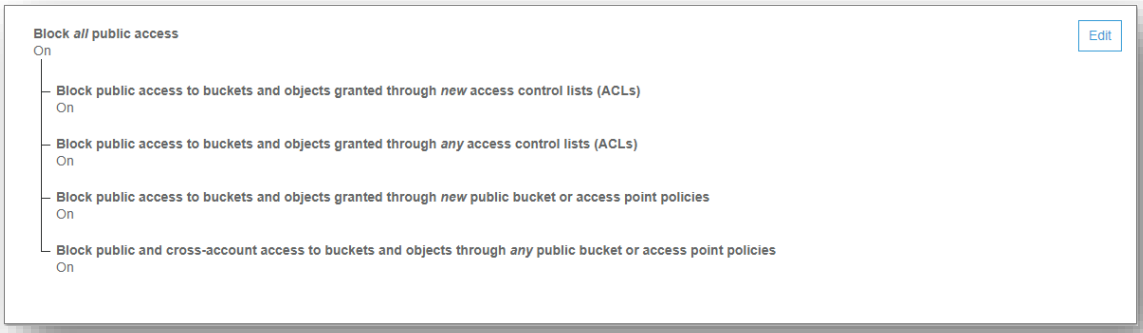
c.

1. Create a second bucket named “second-bucket-csci-5410” using python.



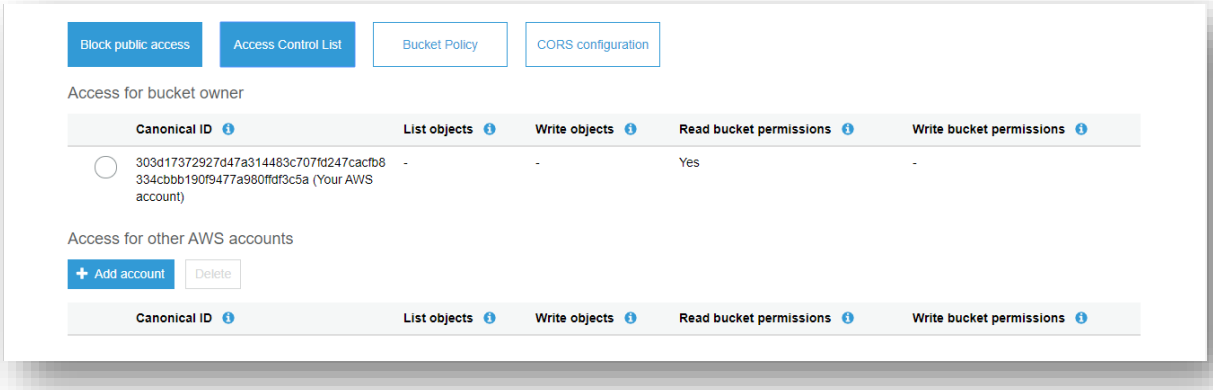

```
""" Creating another bucket """
def createBucket(self,bucket_name):
    s3Resource = boto3.resource('s3')
    s3Resource.create_bucket(Bucket=bucket_name, )
    print('Bucket created')
```

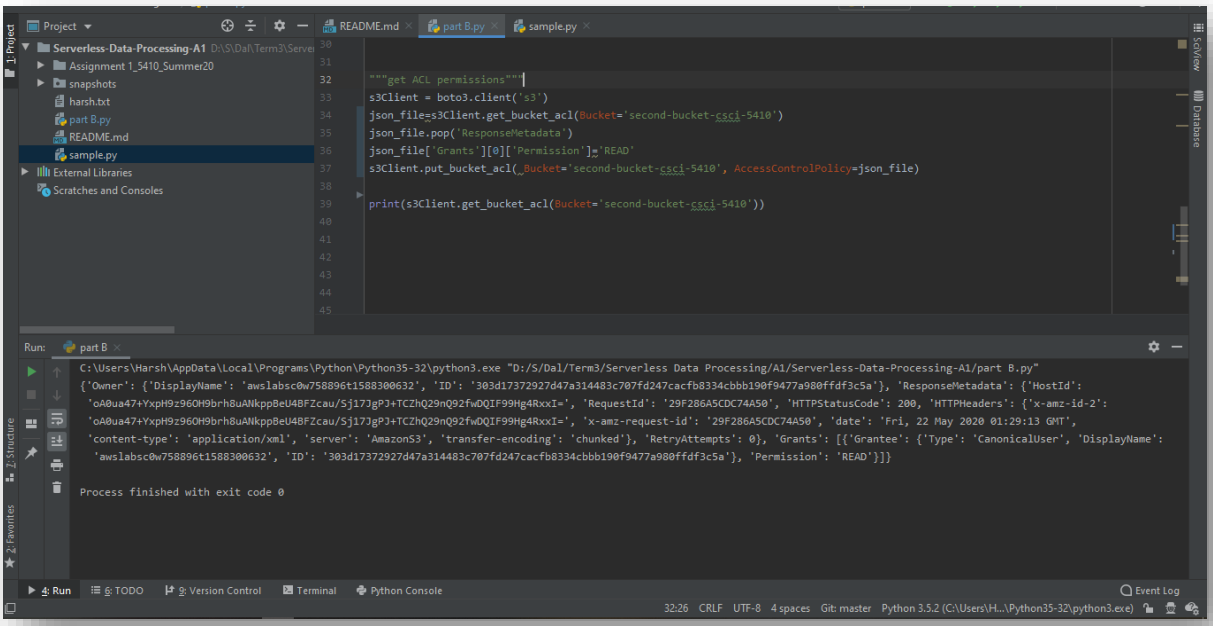
2. Change the access permission to “disable public access”



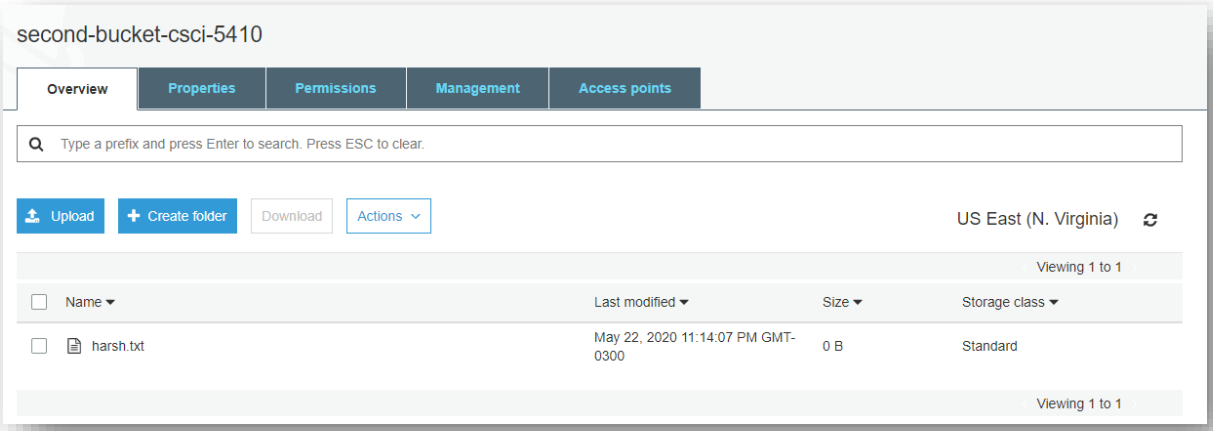
```
"""No Public Access"""
s3Client = boto3.client('s3',region_name='us-east-1')
s3Client.put_public_access_block(
    Bucket = "second-bucket-csci-5410",
    PublicAccessBlockConfiguration={
        'BlockPublicAcls': True,
        'IgnorePublicAcls': True,
        'BlockPublicPolicy': True,
        'RestrictPublicBuckets': True
    },
)
```

3. Change the ACL write option to “no” for bucket owner.





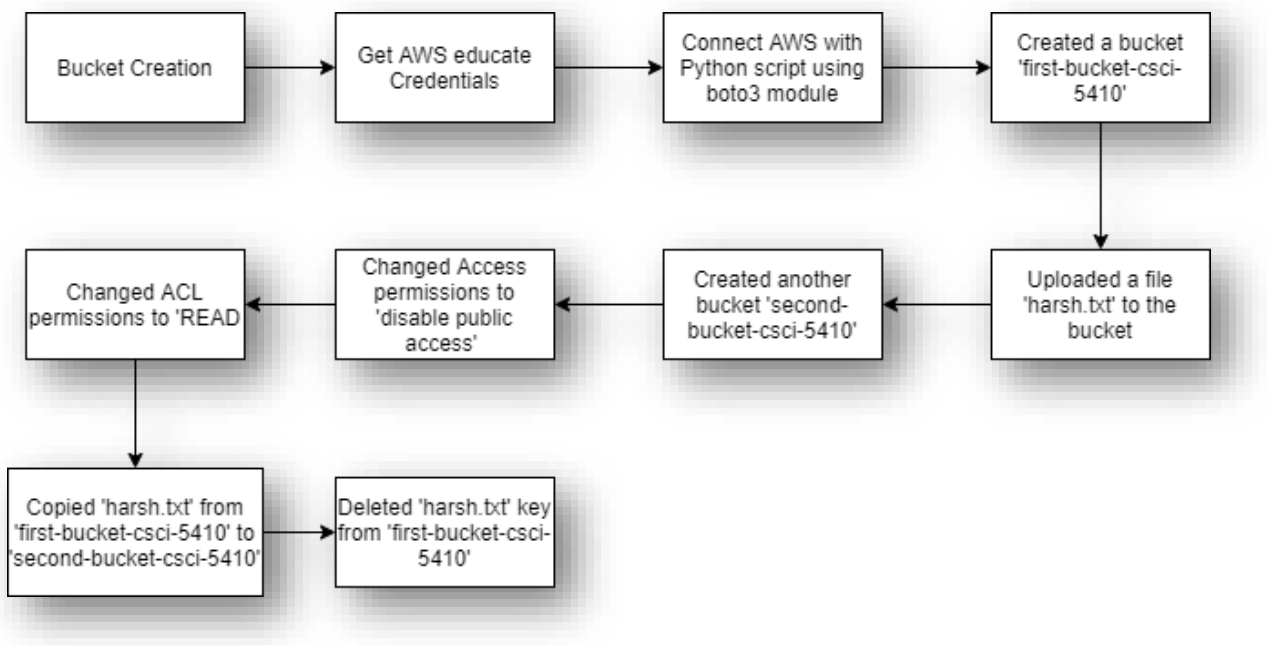
d. Move the file from “first-bucket-csci-5410” to “second-bucket-csci-5410”.




```
""" Copy keys between buckets """
def CopyKeysBetweenBuckets(self,source_bucket,dest_bucket,file_name):
    s3_resource = boto3.resource('s3')
    s3_resource.Object(dest_bucket,file_name).copy({
        'Bucket':source_bucket,
        'Key':file_name
    })
    print('key Copied')

""" Delete keys from a bucket """
def deleteKeys(self,bucketName,file_name):
    s3_resource = boto3.resource('s3')
    s3_resource.Object(bucketName,file_name).delete()
    print('Key deleted')
```

e. A flowchart showing the steps performed in the experiment



Source Code

```
import boto3


class s3Api:
    """ Get name of the buckets """

    def listBuckets(self):
        s3 = boto3.client('s3')
        return s3.list_buckets()

    """ Upload a file """

    def fileUpload(self, bucket_name, source_file_name, file_name):
        s3Resource = boto3.resource('s3')
        s3Resource.Object(bucket_name, source_file_name).upload_file(Filename=file_name)
        print('file uploaded')

    """ Creating another bucket """

    def createBucket(self, bucket_name):
        s3Resource = boto3.resource('s3')
        s3Resource.create_bucket(Bucket=bucket_name, )
        print('Bucket created')

    """ Change bucket access (private, public etc) """

    def manageBucketAccess(self, bucket_name, block_public_acls=True, ignore_public_acls=True,
block_public_policy=True, restrict_public_buckets=True, region='us-east-1'):
        s3_client = boto3.client('s3', region_name=region)
        s3_client.put_public_access_block(
            Bucket=bucket_name,
            PublicAccessBlockConfiguration={
                'BlockPublicAcls': block_public_acls,
                'IgnorePublicAcls': ignore_public_acls,
                'BlockPublicPolicy': block_public_policy,
                'RestrictPublicBuckets': restrict_public_buckets
            },
        )
        print('Access Changed')

    """ Get ACL permissions """

    def getAclPermissions(self, bucket_name):
        s3_client = boto3.client('s3')
        return s3_client.get_bucket_acl(Bucket=bucket_name)
```

```
    """ Set ACL permissions """

    def changeAclPermissions(self, bucket_name, permission):
        s3_client = boto3.client('s3')
        json_file = s3_client.get_bucket_acl(Bucket=bucket_name)
        json_file.pop('ResponseMetadata')
        json_file['Grants'][0]['Permission'] = permission
        s3_client.put_bucket_acl(Bucket=bucket_name, AccessControlPolicy=json_file)
        print('ACL permission changed')

    """ Copy keys between buckets """

    def copyKeysBetweenBuckets(self, source_bucket, dest_bucket, file_name):
        s3_resource = boto3.resource('s3')
        s3_resource.Object(dest_bucket, file_name).copy({
            'Bucket': source_bucket,
            'Key': file_name
        })
        print('key Copied')

    """ Delete keys from a bucket """

    def deleteKeys(self, bucketName, file_name):
        s3_resource = boto3.resource('s3')
        s3_resource.Object(bucketName, file_name).delete()
        print('Key deleted')

    """ Downloading a file from the bucket """

    def downloadFile(self, bucket_name, obj_name, dest_file_name):
        s3Client = boto3.client('s3')
        s3Client.download_file(bucket_name, obj_name, dest_file_name)
        print('file downloaded')


s3 = s3Api()
s3.listBuckets()
s3.fileUpload("first-bucket-csci-5410", "harsh.txt", "harsh.txt")
s3.createBucket("second-bucket-csci-5410")
s3.manageBucketAccess("second-bucket-csci-5410")
s3.getAclPermissions("second-bucket-csci-5410")
s3.changeAclPermissions("second-bucket-csci-5410", "READ")
s3.copyKeysBetweenBuckets("first-bucket-csci-5410", "second-bucket-csci-5410", "harsh.txt")
s3.deleteKeys("first-bucket-csci-5410", "harsh.txt")
s3.downloadFile("first-bucket-csci-5410", "Lookup5410.txt", "Lookup.txt")
```

References

[1]"Python S3 Examples — Ceph Documentation", *Docs.ceph.com*, 2020. [Online]. Available: https://docs.ceph.com/docs/master/radosgw/s3/python/. [Accessed: 25- May- 2020].

[2]"Amazon S3 examples — Boto3 Docs 1.13.16 documentation", *Boto3.amazonaws.com*, 2020. [Online]. Available: https://boto3.amazonaws.com/v1/documentation/api/latest/guide/s3-examples.html. [Accessed: 25- May- 2020].

[3]R. Python, "Python, Boto3, and AWS S3: Demystified – Real Python", *Realpython.com*, 2020. [Online]. Available: https://realpython.com/python-boto3-aws-s3/. [Accessed: 25- May- 2020].