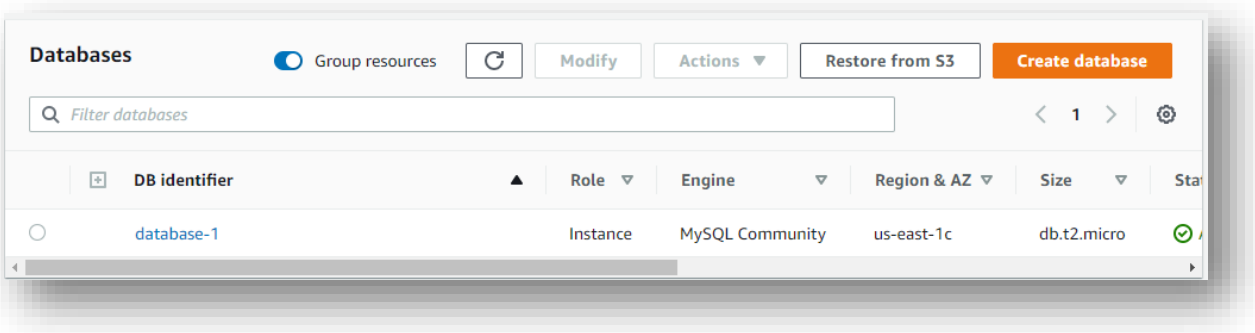
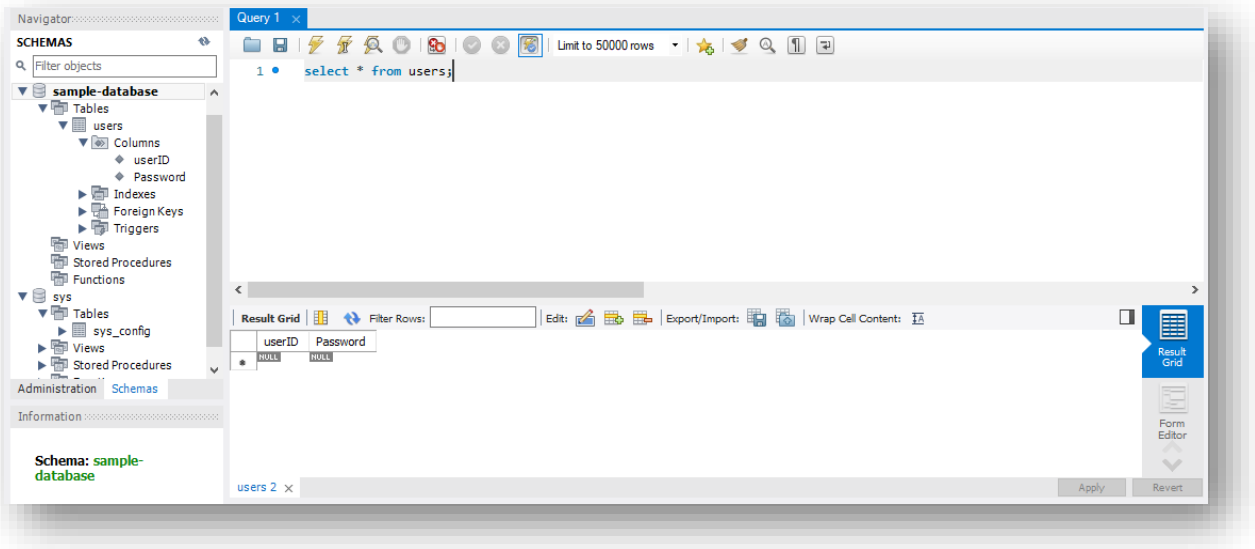
Part C: AWS RDS database service experiment

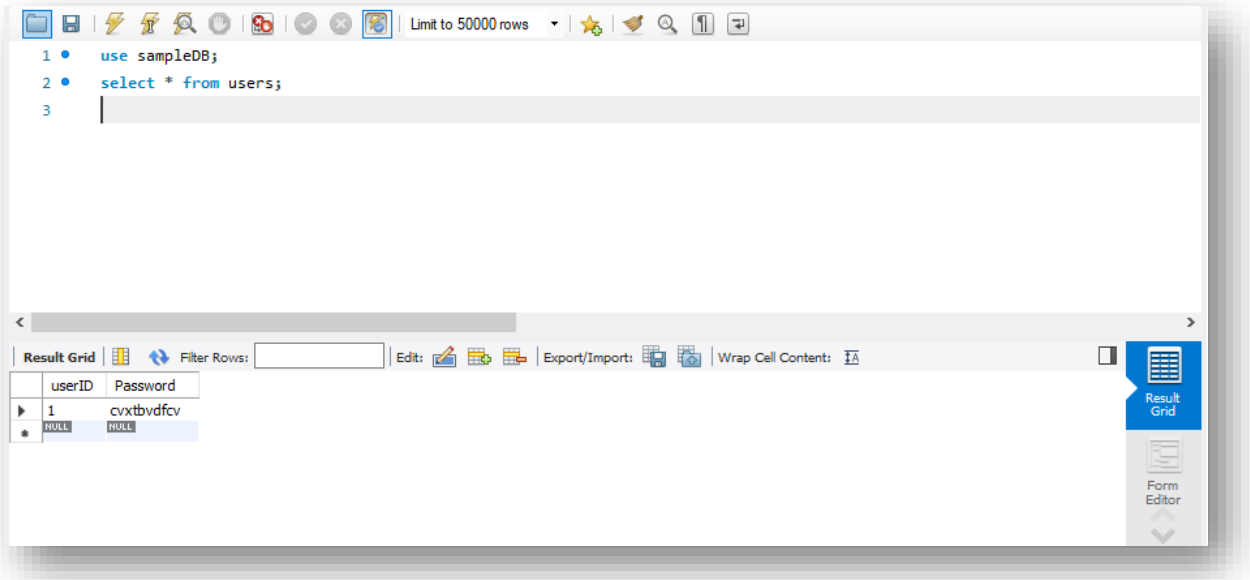
a. Create MySQL DB instance using RDS



b. Create single table database with two fields (‘userID’, ‘Password’)

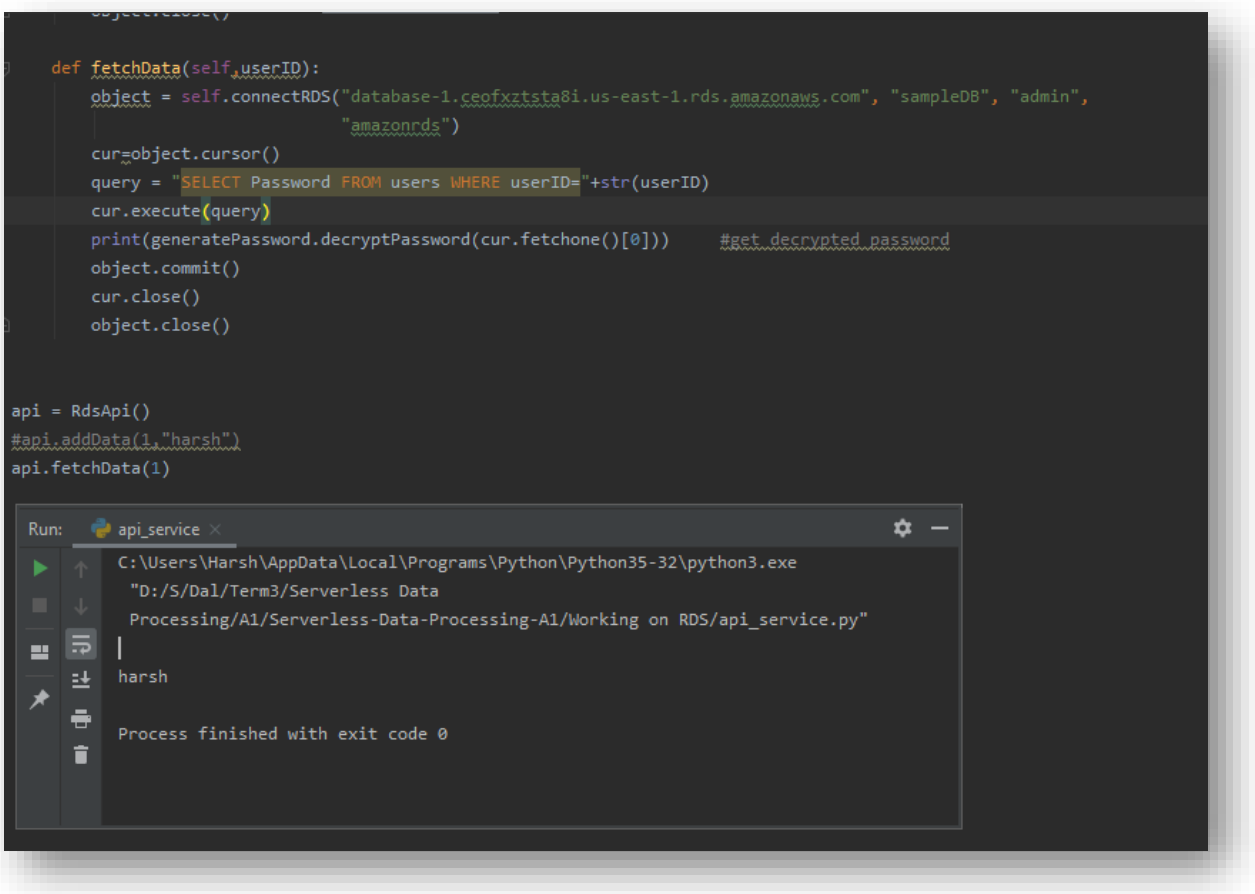


c. Insert userID and Password into the database




```
def addData(self,user_id,password):
    encrypted_password=generatePassword.encryptPassword(password) #encrypt password
    object = self.connectRDS("database-1.ceofxztsta8i.us-east-1.rds.amazonaws.com", "sampleDB", "admin",
                             "amazonrds")
    cur = object.cursor()
    query = "INSERT INTO users (userID,Password) VALUES ("+str(user_id)+","+encrypted_password+")"
    cur.execute(query)
    object.commit()
    cur.close()
    object.close()
```

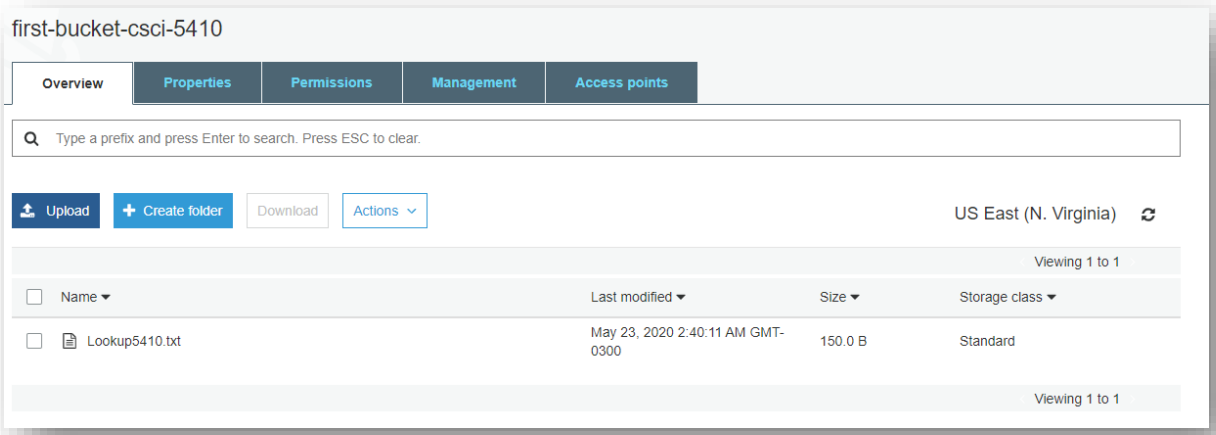
d. Write a function to Retrieve password from given userID



e. Python-mysql connector library for integration of RDS with python

f. The password must be encrypted before inserting and decrypted after fetching. The ‘Lookup5410.txt’ file is uploaded on S3 bucket and then downloaded back on the local system.

a. File upload:




```
""" 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')
```

b. File download

```
""" 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.downloadFile("first-bucket-csci-5410","Lookup5410.txt","Lookup.txt")
```

c. Password encryption and decryption function

```
def encryptPassword(password):
    password=password.lower()
    f = open('Lookup.txt')
    string=''
    for i in password:
        f.seek(0,0)
        for j in f.readlines():
            if(i==j[0]):
                j=j.rstrip()
                string+=j[2:]
    return string


def decryptPassword(password):
    f = open('Lookup.txt')
    string=''
    count=0
    while(count<len(password)):
        encryptedLetter=str(password[count])+str(password[count+1])
        count+=2
        f.seek(0,0)
        for j in f.readlines():
            j = j.rstrip()
            if(encryptedLetter==j[2:]):
                string+=j[0]
    return string
```

Note: The function for uploading the lookup file to the s3 bucket and downloading it to the local system is provided in the source code of **Part B**

Source code

api_service.py

```
import mysql.connector
    import generatePassword


    class RdsApi:

        def connectRDS(self,host,database,user,password):
            return mysql.connector.connect(
                host=host,
                database=database,
                user=user,
                password=password)

        def addData(self,user_id,password):
            encrypted_password=generatePassword.encryptPassword(password) #encrypt password
            object = self.connectRDS("database-1.ceofxztsta8i.us-east-1.rds.amazonaws.com", "sampleDB",
    "admin","amazonrds")
            cur = object.cursor()
            query = 'INSERT INTO users (userID,Password) VALUES
    ({0},"{1}")'.format(str(user_id),encrypted_password)
            cur.execute(query)
            object.commit()
            cur.close()
            object.close()

        def fetchData(self,userID):
            object = self.connectRDS("database-1.ceofxztsta8i.us-east-1.rds.amazonaws.com", "sampleDB",
    "admin",
                                     "amazonrds")
            cur=object.cursor()
            query = "SELECT Password FROM users WHERE userID="+str(userID)
            cur.execute(query)
            print(generatePassword.decryptPassword(cur.fetchone()[0]))     #get decrypted password
            object.commit()
            cur.close()
            object.close()


    api = RdsApi()
    api.addData(1,"harsh")
    api.fetchData(1)
```

generatePassword.py

```
def encryptPassword(password):
        password=password.lower()
        f = open('Lookup.txt')
        string=''
        for i in password:
            f.seek(0,0)
            for j in f.readlines():
                if(i==j[0]):
                    j=j.rstrip()
                    string+=j[2:]
        return string

    def decryptPassword(password):
        f = open('Lookup.txt')
        string=''
        count=0
        while(count<len(password)):
            encryptedLetter=str(password[count])+str(password[count+1])
            count+=2
            f.seek(0,0)
            for j in f.readlines():
                j = j.rstrip()
                if(encryptedLetter==j[2:]):
                    string+=j[0]
        return string
```

References

[1]*Pynative.com*, 2020. [Online]. Available: https://pynative.com/python-mysql-database-connection/. [Accessed: 25- May- 2020].