DALHOUSIE UNIVERSITY

Serverless Data Processing

(CSCI-5410)

Part – C

AWS RDS DATABASE SERVICE EXPERIMENT

Submitted by:

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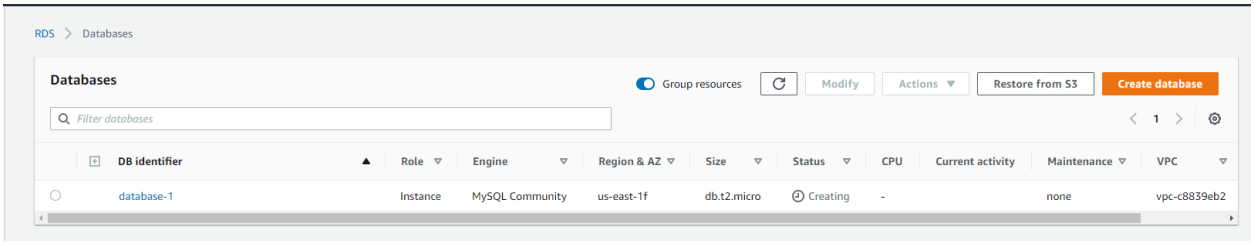
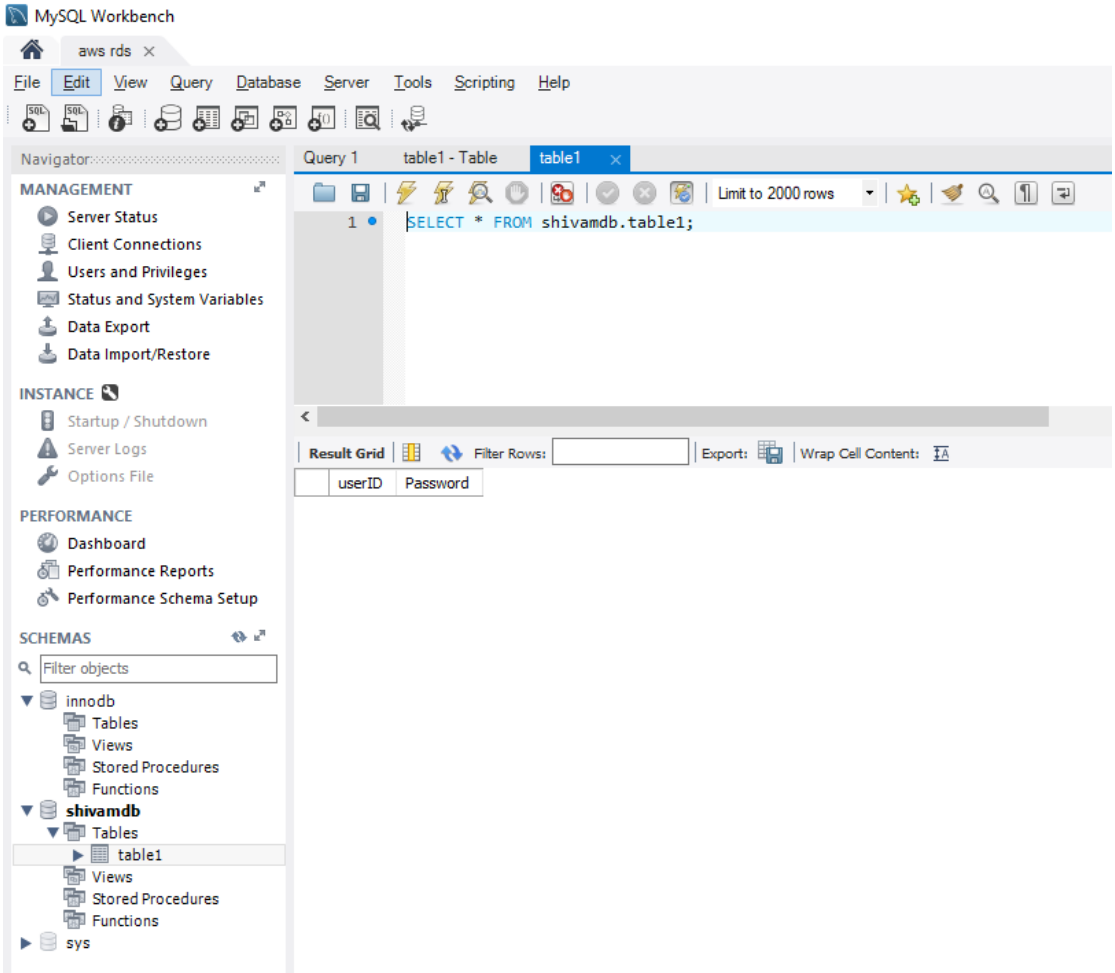
a) AWS RDS is created: MySQL instance:



Db connected to MySQL workbench:

b)

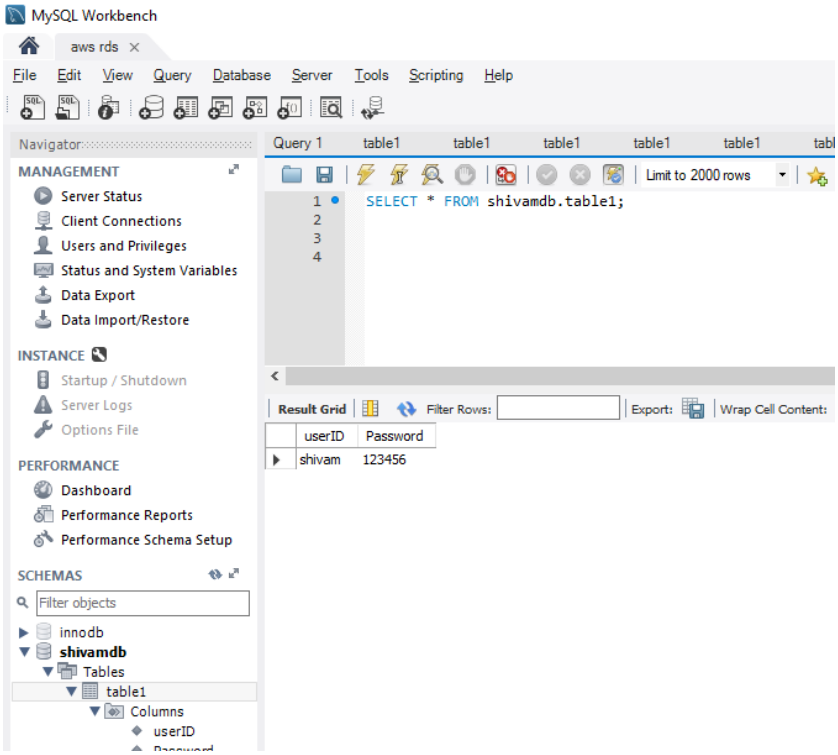
Single table database created:



c) Insert data using python:

ubuntu@ip-172-31-51-24: ~

```
import pymysql

endpoint='database-1.ced0uufebde1.us-east-1.rds.amazonaws.com'
username='admin'
password= 'Shivaml!'
dbname='shivamdb'
connection = pymysql.connect(endpoint, user=username, passwd=password, db=dbname
)

cursor= connection.cursor()

cursor.execute("INSERT INTO table1(userID,Password) VALUES ('shivam',123456)")
connection.commit()
#cursor.execute("SELECT * from shivamdb.table1")
#rows= cursor.fetchall()
#print(rows)
~
~
~
~
~
~
~
```



d) Program to retrieve password based on given id.

```
import pymysql

endpoint='database-1.ced0uufebdel.us-east-1.rds.amazonaws.com'
username='admin'
password= 'Shivaml!'
dbname='shivamdb'
connection = pymysql.connect(endpoint, user=username, passwd=password, db=dbname)

cursor= connection.cursor()

#cursor.execute("INSERT INTO table1(userID,Password) VALUES ('shivam',123456)")

query2= "SELECT Password  from table1 WHERE userID='shivam'"


cursor.execute(query2)
#connection.commit()
#cursor.execute("SELECT * from shivamdb.table1")
rows= cursor.fetchall()
print("THE PASSWORD IS")
for i in rows:
    print("{0}".format(i[0]))
~
~
~
```

```
ubuntu@ip-172-31-51-24:~$ vi partc_c.py
ubuntu@ip-172-31-51-24:~$ python partc_c.py
THE PASSWORD IS
123456
```

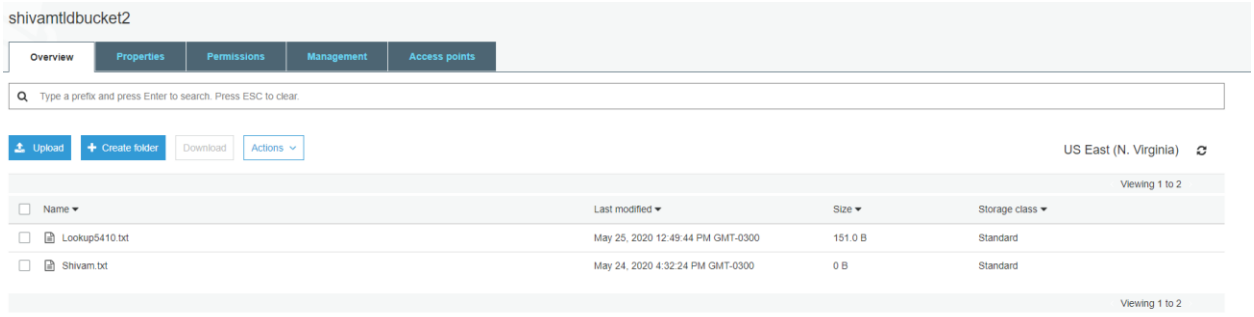
e) Used pymysql connector:

```
import pymysql

endpoint='database-1.ced0uufebdel.us-east-1.rds.amazonaws.com'
username='admin'
password= 'Shivaml!'
dbname='shivamdb'
connection = pymysql.connect(endpoint, user=username, passwd=password, db=dbname)

cursor= connection.cursor()
```

f) Program to put lookupfile to S3 bucket:

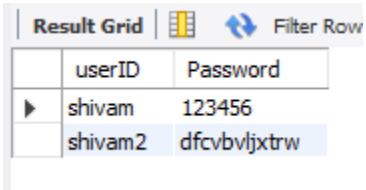
```
import boto3
from botocore.client import Config

ACCESS_KEY_ID = 'ASIAQG34WVL6ZDTJOWN2'
ACCESS_SECRET_KEY = 'e/urHZmCjpzYfnF5Gi4+SBSU/Sq6mOwLotRirwot'
AWS_SESSION_TOKEN='FwoGZXIvYXdzEEkaDAl8OBD3zikPorIHqCLCAYX2gue0ghhdXT/3qwusMLqaBvZQi9
5pFuhEM5F9bcS9PfUM+EeLQnXvAdYFwfYaOooyoa8owuVq/L7QCYPyxo8EJCfLBdyt3MW+bM4zFYzHKJXGr/Y
BUCKET_NAME = 'shivamtldbucket2'

data = open('Lookup5410.txt', 'rb')

s3= boto3.resource ('s3',
 aws_access_key_id = ACCESS_KEY_ID,
 aws_secret_access_key= ACCESS_SECRET_KEY,
 aws_session_token=AWS_SESSION_TOKEN,
 config=Config(signature_version='s3v4')
 )
s3.Bucket(BUCKET_NAME).put_object(Key='Lookup5410.txt', Body= data)

print("done")
```

Lookup file:



Password encryption and insert into RDS:

Encrypted password for shivam is inserted for userid-shivam2:




```
ubuntu@ip-172-31-51-24:~$ python partc_c.py
('password before encryption', 'shivam')
('password after encryption', 'dfcvbvljxtrw')
('user id=', 'shivam2')
('decrypted pass is', 'shrvam', '\n')
```

Note: here I and R has ‘bv’ as their encryption, that is why the program decryption has issues.

Program script:

```
import pymysql
import re
import pandas as pd
from io import StringIO
import boto3
from botocore.client import Config

ACCESS_KEY_ID = 'ASIAQG34WVL6ZDTJOWN2'
ACCESS_SECRET_KEY = 'e/urHZmCjpzYfnF5Gi4+SBSU/Sq6mOwLotRirwot'
AWS_SESSION_TOKEN='FwoGZXIvYXdzEEkaDAl8OBD3zikPorIHqCLCAYX2gue0ghhdXT/3q
wusMLqaBvZQi9HbcWM7JcjZQPgzN9ibxB214qTdx93BjaXhgbBKsV/UcZUTYb5Jqx108SO8
9zuesE307/V0EyLrDr3TwMYNNc4i0nt78sNAKOMTh2T3HbwufF18piXBZlXc4i7trgk4E8aFb
mfpQkVNlceuEvXtGQpGe65pFuhEM5F9bcS9PfUM+EeLQnXvAdYFwfYaOooyoa8owuVq/L
7QCYPyxo8EJCfLBdyt3MW+bM4zFYzHKJXGr/YFMi2GRhumJr7NjQn90YnjwuYpJf+QEMIsL
IcKPcjfcYfIhwQEBf4bdOyF1+t0TCQ='
BUCKET_NAME = 'shivamtldbucket2'
s3= boto3.client ('s3',
 aws_access_key_id = ACCESS_KEY_ID,
 aws_secret_access_key= ACCESS_SECRET_KEY,
 aws_session_token=AWS_SESSION_TOKEN,
 config=Config(signature_version='s3v4')
 )
filename= 'Lookup5410.txt'


req= s3.select_object_content(
      Bucket= BUCKET_NAME,
      Key=filename,
      ExpressionType='SQL',
      Expression="SELECT * from s3object",
      InputSerialization= {'CSV':{'FileHeaderInfo':
         'Use','FieldDelimiter':'\t',}},
      OutputSerialization={'CSV':{}},
      )
records=[]
for event in req['Payload']:
```

```
    if 'Records' in event:
        records.append(event['Records']['Payload'])
    elif 'Stats' in event:
        stats=event['Stats']['Details']
filestring=''.join(r.decode('utf-8') for r in records)

select_df= pd.read_csv(StringIO(filestring),
        names=['Alphabet','Replacement'])

alpha= select_df.Alphabet.to_list()
repl=select_df.Replacement.to_list()
dictionary=dict(zip(alpha,repl))
decryptdict=dict(zip(repl,alpha))

endpoint ='database-1.ced0uufebdel.us-east-1.rds.amazonaws.com'
username ='admin'
password = 'Shivam1!'
dbname ='shivamdb'
connection = pymysql.connect(endpoint, user=username, passwd=password,
db=dbname)

cursor= connection.cursor()



userid= 'shivam2'
passwd= 'shivam'
print("password before encryption", passwd)

def encrypt(password,lookup1):
    checklist=[]
    newpwd=[]
    for i in range(0,len(password)):
        if i not in checklist:
            if password[i] in lookup1.keys():
                checklist.append(i)
                newpwd.append(lookup1[password[i]])
    return ''.join(newpwd)

def decrypt(encrypt1,lookup2):
    originalpwd=[]
```

```
    for i in range(0,len(encrypt1)):
        if(encrypt1[i] in lookup2.keys()):
            originalpwd.append(lookup2[encrypt1[i]])
    return originalpwd

encrypted_pass= encrypt(passwd,dictionary)
print("password after encryption", encrypted_pass)



record_tuple= (userid,encrypted_pass)


cursor.execute("INSERT INTO table1(userID,Password) VALUES (%s,%s)",record_tuple)
#connection.commit()

def getpass(uid):
    endpoint ='database-1.ced0uufebdel.us-east-1.rds.amazonaws.com'
    username ='admin'
    password = 'Shivam1!'
    dbname ='shivamdb'
    connection = pymysql.connect(endpoint, user=username, passwd=password,
db=dbname)
    cursor1= connection.cursor()
    cursor1.execute("SELECT * FROM table1 where userID=%s",(uid,))
    record=cursor1.fetchall()
    for i in record:
        print("user id=",i[0],)
        encryptedpassword=re.findall('..',i[1])
        originalpwd=decrypt(encryptedpassword,decryptdict)
        print("decrypted pass is", ''.join(originalpwd),"\n")

getpass("shivam2")
```