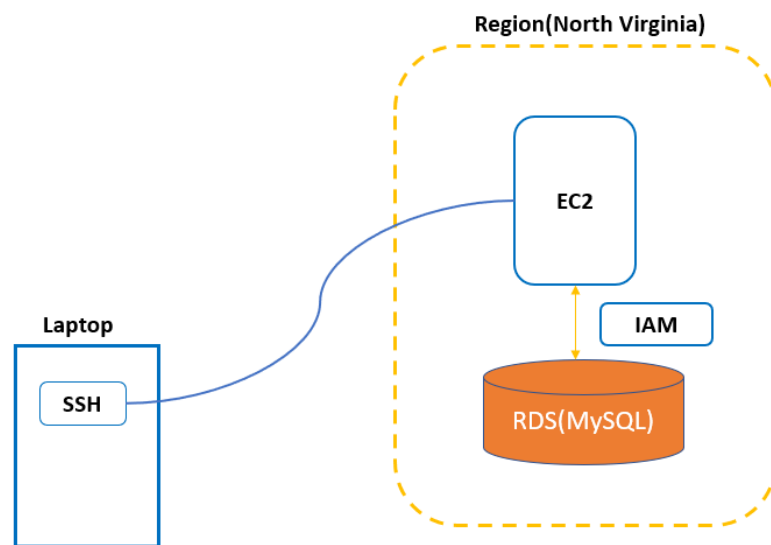


RDS | EC2 | Python

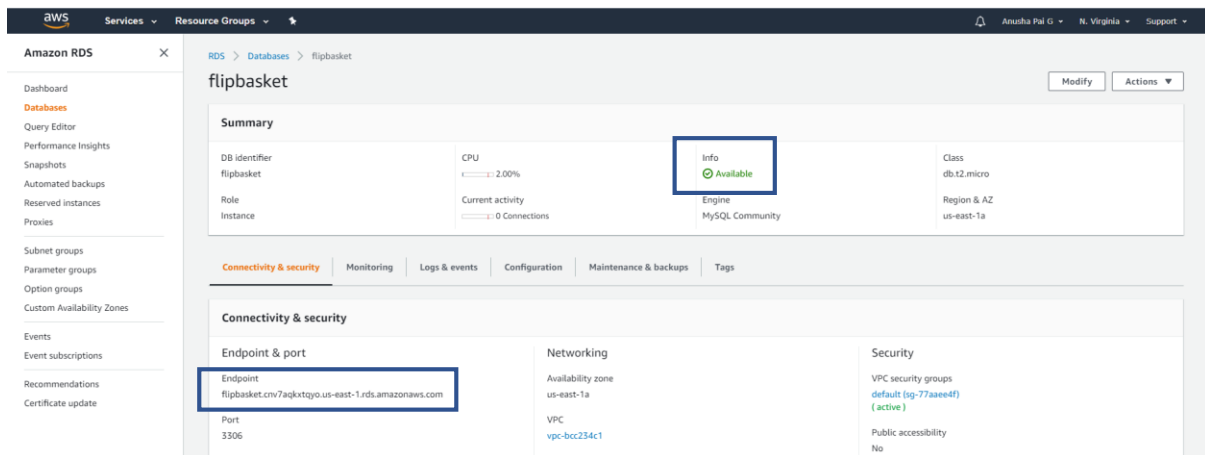
Create a MySQL database using RDS and access it using a custom program from an EC2 instance using an appropriate IAM role.

FINAL OUTCOME

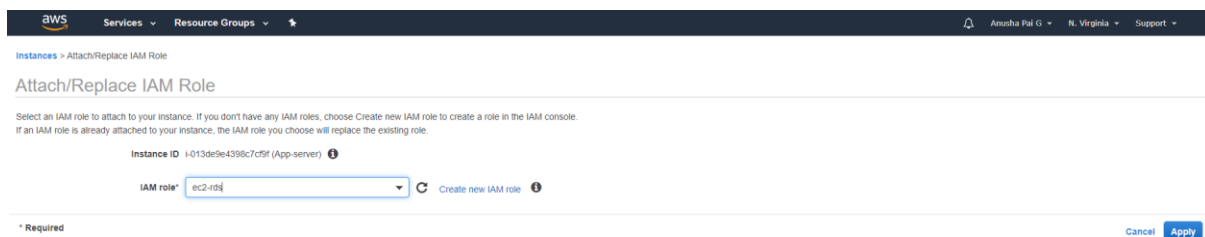
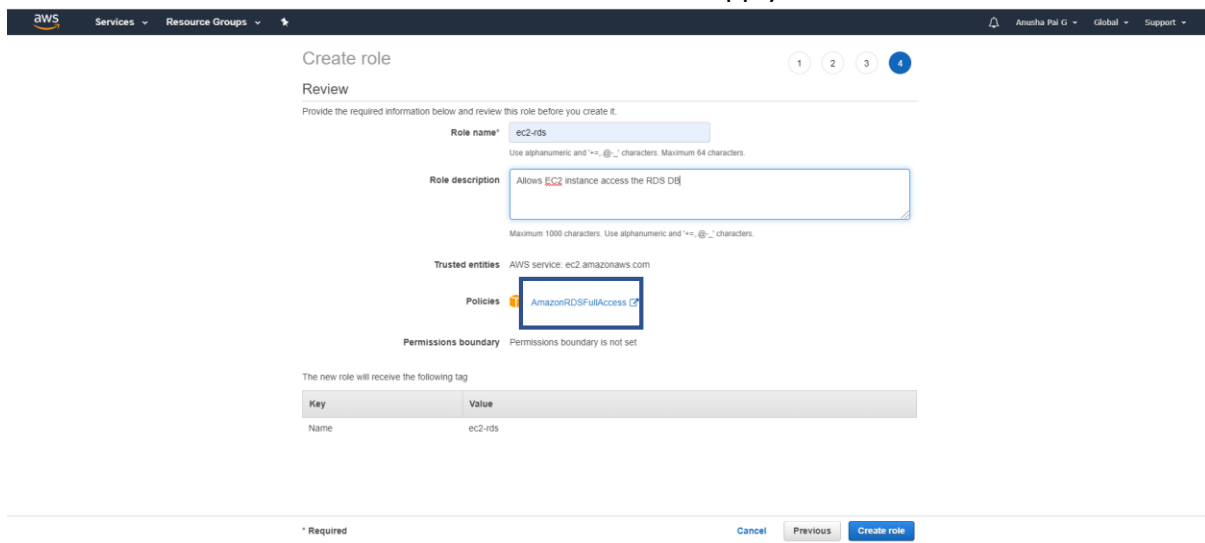


How to do it?

1. Create an Ubuntu EC2 instance using the 7 step work flow (SG – open port 22 for SSH)
2. Spin up a MYSQL RDS instance
 - Edition - MySQL Community
 - Templates – Free Tier
 - DB instance Name – flipbasket
 - Set up the Master username and password for your DB instance
 - DB instance size – t2.micro
 - Initial DB name – employees



3. Create an IAM role with full access to RDS and apply it to the EC2 instance



4. SSH to the EC2 instance and run the following commands

- sudo apt update
- sudo apt install mysql-client (To connect to the RDS instance)

5. Connect to the RDS instance & create the data

- Sudo wget <https://storage.googleapis.com/skl-training/aws-codelabs/rds/employees.sql>
(The data to be loaded in the DB)
- mysql -h [RDS end point] -u root -p (enter the password)
- use employees; (This DB was created while provisioning the DB)
- source employees.sql (To fetch the downloaded records to the employees DB)

```
mysql> show databases;
+-----+
| Database |
+-----+
| employees |
| information_schema |
| mysql |
| performance_schema |
+-----+
4 rows in set (0.01 sec)

mysql> show tables;
+-----+
| Tables_in_employees |
+-----+
| departments |
| dept_emp |
| dept_manager |
| employees |
| orderdetails |
| orders |
| products |
| salaries |
| titles |
+-----+
9 rows in set (0.01 sec)

mysql> |
```

e) describe employees; (keep track of the column names)

```
mysql> describe employees;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| emp_no | int(11) | NO | PRI | NULL | |
| birth_date | date | NO | | NULL | |
| first_name | varchar(14) | NO | | NULL | |
| last_name | varchar(16) | NO | | NULL | |
| gender | enum('M','F') | NO | | NULL | |
| hire_date | date | NO | | NULL | |
| password | varchar(45) | YES | | NULL | |
| email_id | varchar(100) | YES | | NULL | |
+-----+
8 rows in set (0.02 sec)

mysql> |
```

6. Below is a custom application written in python which is used to connect to the DB and perform operations

PREREQUISITE:

- sudo apt update
- sudo apt install python-minimal ; python -V
- sudo apt install python-pip
- sudo pip install boto3 (AWS Python SDK)
- sudo pip install mysql-connector-python (MYSQL connector)
- sudo pip install pymysql (MYSQL connector)

Python code:

```

ubuntu@ip-172-31-92-89:~$ cat rds.py
import pymysql
import mysql.connector

hostname = 'flipbasket.cnv7aqkxtqyo.us-east-1.rds.amazonaws.com'
username = 'root'
password = 'password'
database = 'employees'

# Simple routine to run a query on a database and print the results:
def doQuery(conn):
    cur = conn.cursor()
    cur.execute("SELECT emp_no, birth_date, first_name, last_name, gender, hire_date, password, email_id FROM employees limit 10"
)
    for emp, birthdate, firstname, lastname, gender, hiredate, password, email in cur.fetchall():
        print emp, birthdate, firstname, lastname, gender, hiredate, password, email

print "Using pymysql"
print "-----"
myConnection = pymysql.connect(host=hostname, user=username, passwd=password, db=database)
doQuery(myConnection)
myConnection.close()

print "\n\nUsing mysql.connector"
print "-----"
myConnection = mysql.connector.connect(host=hostname, user=username, passwd=password, db=database)
doQuery(myConnection)
myConnection.close()

ubuntu@ip-172-31-92-89:~$ |

```

OUTPUT:

```

ubuntu@ip-172-31-92-89:~$ python rds.py
Using pymysql
-----
10001 1953-09-02 Georgi Facello M 1986-06-26 password georgi.facello@email.com
10002 1964-06-02 Bezalel Simmel F 1985-11-21 password bezalel.simmel@email.com
10003 1959-12-03 Parto Bamford M 1986-08-28 password parto.bamford@email.com
10004 1954-05-01 Chirstian Koblick M 1986-12-01 password chirstian.koblick@email.com
10005 1955-01-21 Kyoichi Maliniak M 1989-09-12 password kyoichi.maliniak@email.com
10006 1953-04-20 Anneke Preusig F 1989-06-02 password anneke.preusig@email.com
10007 1957-05-23 Tzvetan Zielinski F 1989-02-10 password tzvetan.zielinski@email.com
10008 1958-02-19 Saniya Kalloufi M 1994-09-15 password saniya.kalloufi@email.com
10009 1952-04-19 Sumant Peac F 1985-02-18 password sumant.peac@email.com
10010 1963-06-01 Duangkaew Piveteau F 1989-08-24 password duangkaew.piveteau@email.com

Using mysql.connector
-----
10001 1953-09-02 Georgi Facello M 1986-06-26 password georgi.facello@email.com
10002 1964-06-02 Bezalel Simmel F 1985-11-21 password bezalel.simmel@email.com
10003 1959-12-03 Parto Bamford M 1986-08-28 password parto.bamford@email.com
10004 1954-05-01 Chirstian Koblick M 1986-12-01 password chirstian.koblick@email.com
10005 1955-01-21 Kyoichi Maliniak M 1989-09-12 password kyoichi.maliniak@email.com
10006 1953-04-20 Anneke Preusig F 1989-06-02 password anneke.preusig@email.com
10007 1957-05-23 Tzvetan Zielinski F 1989-02-10 password tzvetan.zielinski@email.com
10008 1958-02-19 Saniya Kalloufi M 1994-09-15 password saniya.kalloufi@email.com
10009 1952-04-19 Sumant Peac F 1985-02-18 password sumant.peac@email.com
10010 1963-06-01 Duangkaew Piveteau F 1989-08-24 password duangkaew.piveteau@email.com
ubuntu@ip-172-31-92-89:~$ |

```