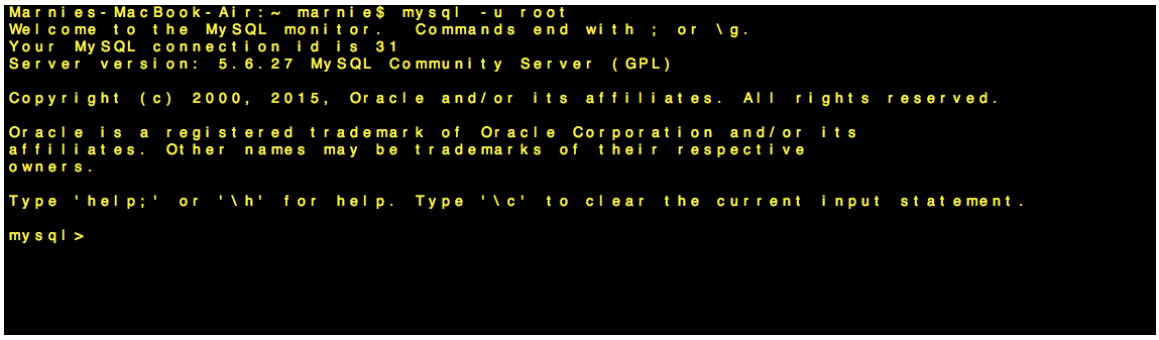
E90_ScullyMarnieHW05.pdf

HU Extension Assignment 05 E-90 Cloud Computing
Handed out: 10/03/2015 Due by 11:59 PM EST on Friday, 10/09/2015

Place all of your narratives and illustrations in a single Word or PDF document named E90_LastNameFirstNameHW05.docx [.pdf]. Use this assignment as the initial template. Add your steps and your code below problem statements used for that problem. Upload your homework file and your working code (e.g., filename.java) into your Assignment 5 folder. Do not include executables.

Problem 1. MySQL Community Edition.
Download and install MySQL Community Edition server to your local machine. Create a new database (your local MySQL database) within that server and a new user that has all the privileges on that database. In the database create table FLOWERS that will contain information on the name of every flower, typical height in inches and a brief description of the flower. Populate your table with information on 3 flowers. Query the data. Delete a record. Close the database connection.
[15 points]

Download and install MySQL Community Edition server to your local machine.



Create a new database (your local MySQL database) within that server
I chose the name marnie_local_db

Create a new user that has all the privileges on that database.

I chose the user name marnie_local

```
mysql> CREATE USER marnie_local IDENTIFIED BY 'marnie123';
Query OK, 0 rows affected (0.00 sec)

mysql>
```

```
mysql> grant usage on *.* to marnie_local@localhost;
Query OK, 0 rows affected (0.00 sec)

mysql>
```

```
mysql> grant all privileges on marnie_local_db.* to marnie_local@localhost;
Query OK, 0 rows affected (0.00 sec)

mysql>
```

Create table FLOWERS

name of every flower,
typical height in inches
and a brief description of the flower.

```
mysql> CREATE TABLE FLOWERS (
    -> flower_name VARCHAR(30) NOT NULL,
    -> height INT,
    -> description VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.01 sec)

mysql> desc flowers;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| flower_name | varchar(30) | NO   |     | NULL    |       |
| height      | int(11)     | YES  |     | NULL    |       |
| description | varchar(50) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql>
```

Populate your table with information on 3 flowers.

```
mysql> INSERT INTO FLOWERS VALUES ('Rose', 5,'Red');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO FLOWERS VALUES ('Tiger lily', 15,'Orange');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO FLOWERS VALUES ('Carnation', 10,'Ugly and Cheap');
Query OK, 1 row affected (0.00 sec)

mysql> SELECT Count(*) FROM FLOWERS;
+----------+
| Count(*) |
+----------+
|        3 |
+----------+
1 row in set (0.01 sec)

mysql>
```

Query the data.

```
mysql> SELECT * FROM FLOWERS;
+--------------+--------+-------------------+
| flower_name  | height | description       |
+--------------+--------+-------------------+
| Rose         |      5 | Red               |
| Tiger lily   |     15 | Orange            |
| Carnation    |     10 | Ugly and Cheap    |
+--------------+--------+-------------------+
3 rows in set (0.00 sec)

mysql>
```

Delete a record.

```
mysql> DELETE FROM FLOWERS WHERE flower_name='Carnation';
Query OK, 1 row affected (0.01 sec)

mysql> Select * FROM FLOWERS;
+-------------+--------+-------------+
| flower_name | height | description |
+-------------+--------+-------------+
| Rose        |      5 | Red         |
| Tiger lily  |     15 | Orange      |
+-------------+--------+-------------+
2 rows in set (0.00 sec)

mysql>
```

Close the database connection.

```
mysql> exit;
Bye
Marnies-MacBook-Air:~ marnie$
```

Problem 2. Use any programming language (e.g., Java, .NET, Python, …).
Starting with the attached classes PersonDAO.java and MySQLAccess.java we used in class, write new Java classes or classes in any other language of your choice that will populate and query existing table FLOWERS in your local MySQL database. Close the database connection.
[20 points]

Write new Java classes (Starting with PersonDAO.java and MySQLAccess.java) to:
Populate existing table FLOWERS in your local MySQL database
Query existing table FLOWERS in your local MySQL database
Close the database connection.

Problem_2 Java Code

Flowers.java

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
```

```
// Renamed Class to Flowers to make it
specific to our HW
public class Flowers {
  private Connection connect = null;
  private Statement statement = null;
  private PreparedStatement
preparedStatement = null;
  private ResultSet resultSet = null;

  public void readDataBase() throws
Exception {
    try {
      // This will load the MySQL
driver, each DB has its own driver

Class.forName("com.mysql.jdbc.Driver");
      // Setup the connection with the
DB
      connect = DriverManager

            // Use Local DB for Problem
2
          .getConnection("jdbc:mysql://
localhost/marnie_local_db?" +
```

```
"user=marnie_local&password=marnie123")
;

      //.getConnection("jdbc:mysql://
jelenainst.c5cxb8gzb9wo.us-
east-1.rds.amazonaws.com:3306/jaca?" +
        //
"user=jelena&password=jelena123");

      // Statements allow to issue SQL
queries to the database
      statement =
connect.createStatement();
      // Result set get the result of
the SQL query
      resultSet = statement
          .executeQuery("select * from
marnie_local_db.FLOWERS");
      System.out.println("The Original
Flowers before Insert");
      writeResultSet(resultSet);
      System.out.println("");
      System.out.println("");

      // 1st Flower added
```

```
      preparedStatement = connect
          .prepareStatement("insert
into marnie_local_db.FLOWERS values
( ?, ?, ?)");
      // ("flower_name, height,
description");

      preparedStatement.setString(1,
"Daffodil");
      preparedStatement.setInt(2, 10);

preparedStatement.setString(3,"Yellow")
;

preparedStatement.executeUpdate();

   // 2nd Flower added
      preparedStatement = connect
          .prepareStatement("insert
into marnie_local_db.FLOWERS values
( ?, ?, ?)");
      // ("flower_name, height,
description");
```

```
      preparedStatement.setString(1,
"Mum");
      preparedStatement.setInt(2, 10);

preparedStatement.setString(3,"Orange")
;

preparedStatement.executeUpdate();


      // Show the added flowers
      preparedStatement = connect
          .prepareStatement("SELECT
flower_name, height, description from
marnie_local_db.FLOWERS");
      resultSet =
preparedStatement.executeQuery();
      System.out.println("The added
flowers");
      writeResultSet(resultSet);
      System.out.println("");


    } catch (Exception e) {
      throw e;
```

```
    } finally {
       // Close Database connection
      close();
    }

  }

  private void writeResultSet(ResultSet
resultSet) throws SQLException {
    // ResultSet is initially before
the first data set
    while (resultSet.next()) {
      // It is possible to get the
columns via name
      // also possible to get the
columns via the column number
      // which starts at 1
      // e.g. resultSet.getSTring(2);
      String flower_name =
resultSet.getString("flower_name");
      Integer height =
resultSet.getInt("height");
      String description =
resultSet.getString("description");
```

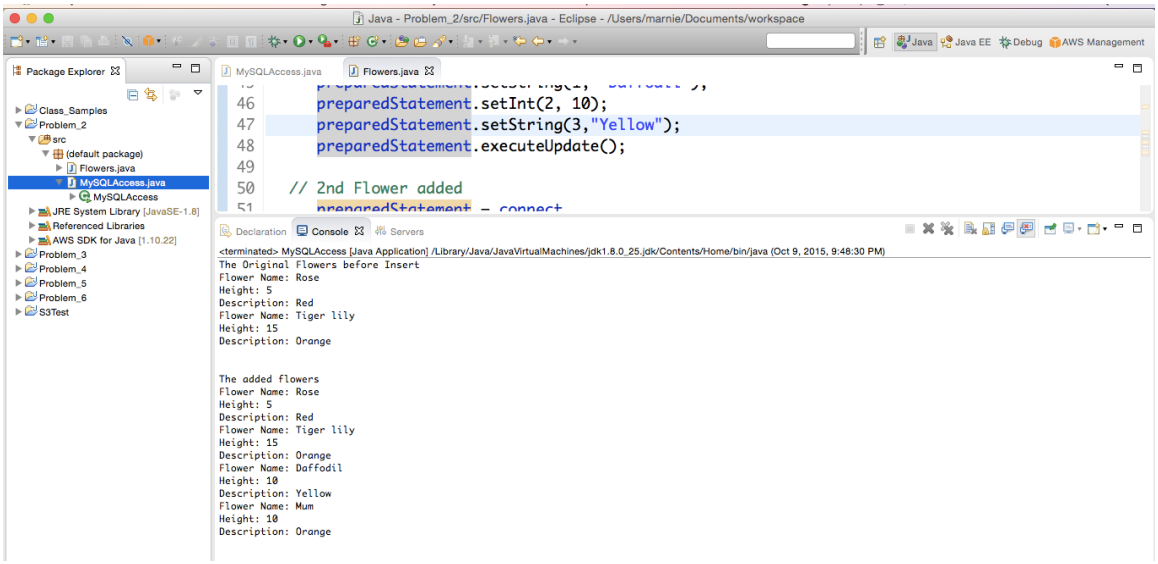
```
      System.out.println("Flower Name:
" + flower_name);
      System.out.println("Height: " +
height);
      System.out.println("Description:
" + description);
    }
  }

  // You need to close the resultSet
  private void close() {
    try {
      if (resultSet != null) {
        resultSet.close();
      }

      if (statement != null) {
        statement.close();
      }

      if (connect != null) {
        connect.close();
      }
    } catch (Exception e) {
```

```
        }
    }

}
```

MySQLAccess.java

```
public class MySQLAccess {
  public static void main(String[] args) throws Exception {
    // Changed PersonDAO and dao to Flowers and flower
          Flowers flower = new Flowers();
          flower.readDataBase();
  }

}
```

Result of Successful Code run in Console



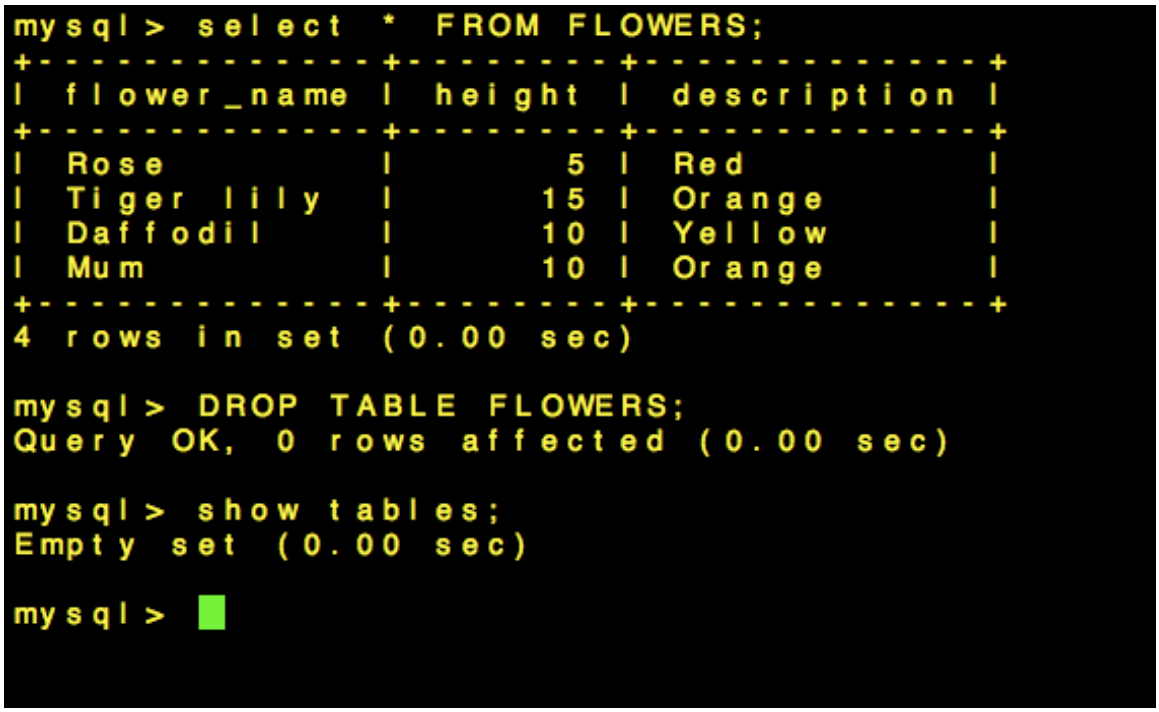
Text Output

```
The Original Flowers before Insert
Flower Name: Rose
Height: 5
Description: Red
```

```
Flower Name: Tiger lily
Height: 15
Description: Orange


The added flowers
Flower Name: Rose
Height: 5
Description: Red
Flower Name: Tiger lily
Height: 15
Description: Orange
Flower Name: Daffodil
Height: 10
Description: Yellow
Flower Name: Mum
Height: 10
Description: Orange
```

Problem 3. Use MySQL Client and any programming language (e.g., Java, .NET, Python, …).
Manually delete table FLOWERS (MySQL Client) and then extend the program from Problem 2 (in the language of your choice) so that when connected to the database it can recreate table FLOWERS and perform: insert a few records, query the data, delete a record. Close the database connection.
[15 points]

Manually delete table FLOWERS (MySQL Client)



Manually Delete Flowers table

```
mysql> select * FROM FLOWERS;
+--------------+--------+--------------+
| flower_name  | height | description  |
+--------------+--------+--------------+
| Rose         |      5 | Red          |
| Tiger lily   |     15 | Orange       |
| Daffodil     |     10 | Yellow       |
| Mum          |     10 | Orange       |
+--------------+--------+--------------+
4 rows in set (0.00 sec)

mysql> DROP TABLE FLOWERS;
Query OK, 0 rows affected (0.00 sec)

mysql> show tables;
Empty set (0.00 sec)

mysql>
```

Extend the program from Problem 2 to:

- Connect to the database
- Recreate table FLOWERS
- Insert a few records
- Query the data
- Delete a record
- Close the database connection

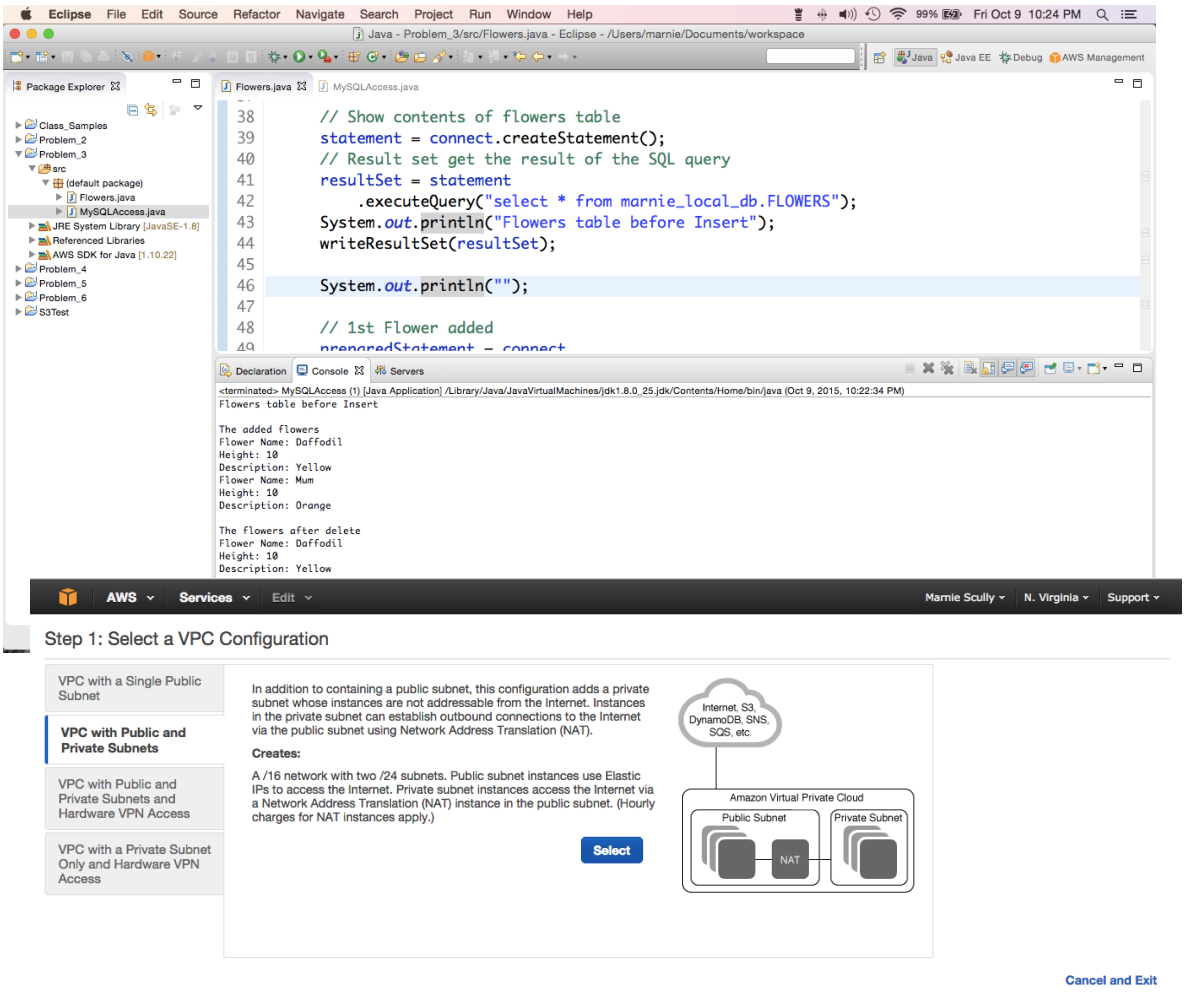
Flowers.java from Problem 3

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;


// Renamed Class to Flowers to make it specific to our HW
public class Flowers {
  private Connection connect = null;
  private Statement statement = null;
```

```
  private PreparedStatement preparedStatement = null;
  private ResultSet resultSet = null;
  private String sql= null;

  public void readDataBase() throws Exception {
    try {
      // This will load the MySQL driver, each DB has its own driver
      Class.forName("com.mysql.jdbc.Driver");
      // Setup the connection with the DB
      connect = DriverManager


                        // Use Local DB for Problem 3
// Connect to Database
         .getConnection("jdbc:mysql://localhost/marnie_local_db?" +
"user=marnie_local&password=marnie123");

      //.getConnection("jdbc:mysql://jelenainst.c5cxb8gzb9wo.us-
east-1.rds.amazonaws.com:3306/jaca?" +
        // "user=jelena&password=jelena123");

// Recreate the table flowers
      statement = connect.createStatement();
      sql = "CREATE TABLE FLOWERS " +
            "(flower_name VARCHAR(30), " +
            " height INT, " +
            " description VARCHAR(30))";
      statement.executeUpdate(sql);

      // Show contents of flowers table
      statement = connect.createStatement();
      // Result set get the result of the SQL query
      resultSet = statement
         .executeQuery("select * from marnie_local_db.FLOWERS");
      System.out.println("Flowers table before Insert");
      writeResultSet(resultSet);

      System.out.println("");

// Insert a few records

      // 1st Flower added
      preparedStatement = connect
```

```
        .prepareStatement("insert into marnie_local_db.FLOWERS values ( ?, ?, ?)");
    // ("flower_name, height, description");

    preparedStatement.setString(1, "Daffodil");
    preparedStatement.setInt(2, 10);
    preparedStatement.setString(3,"Yellow");
    preparedStatement.executeUpdate();

  // 2nd Flower added
    preparedStatement = connect
        .prepareStatement("insert into marnie_local_db.FLOWERS values ( ?, ?, ?)");
    // ("flower_name, height, description");

    preparedStatement.setString(1, "Mum");
    preparedStatement.setInt(2, 10);
    preparedStatement.setString(3,"Orange");
    preparedStatement.executeUpdate();


    // Show the added flowers
    preparedStatement = connect
        .prepareStatement("SELECT flower_name, height, description from
marnie_local_db.FLOWERS");
    resultSet = preparedStatement.executeQuery();
    System.out.println("The added flowers");
    writeResultSet(resultSet);
    System.out.println("");

    // Delete a Record
    statement = connect.createStatement();
    sql = "DELETE FROM FLOWERS " +
          "WHERE flower_name = 'Mum'" ;
    statement.executeUpdate(sql);

    // Show the  flowers after the delete
    preparedStatement = connect
        .prepareStatement("SELECT flower_name, height, description from
marnie_local_db.FLOWERS");
    resultSet = preparedStatement.executeQuery();
    System.out.println("The flowers after delete");
    writeResultSet(resultSet);
    System.out.println("");
```

```
  } catch (Exception e) {
    throw e;
  } finally {
        // Close Database connection
    close();
  }

}

private void writeResultSet(ResultSet resultSet) throws SQLException {
  // ResultSet is initially before the first data set
  while (resultSet.next()) {
    // It is possible to get the columns via name
    // also possible to get the columns via the column number
    // which starts at 1
    // e.g. resultSet.getSTring(2);
    String flower_name = resultSet.getString("flower_name");
    Integer height = resultSet.getInt("height");
    String description = resultSet.getString("description");
    System.out.println("Flower Name: " + flower_name);
    System.out.println("Height: " + height);
    System.out.println("Description: " + description);
  }
}

// You need to close the resultSet
private void close() {
  try {
    if (resultSet != null) {
      resultSet.close();
    }

    if (statement != null) {
      statement.close();
    }

    if (connect != null) {
      connect.close();
    }
  } catch (Exception e) {

  }
}
```



}

The Output Text in the Console

```
Flowers table before Insert

The added flowers
Flower Name: Daffodil
Height: 10
Description: Yellow
Flower Name: Mum
Height: 10
Description: Orange

The flowers after delete
Flower Name: Daffodil
Height: 10
```

E90_ScullyMarnieHW05.pdf

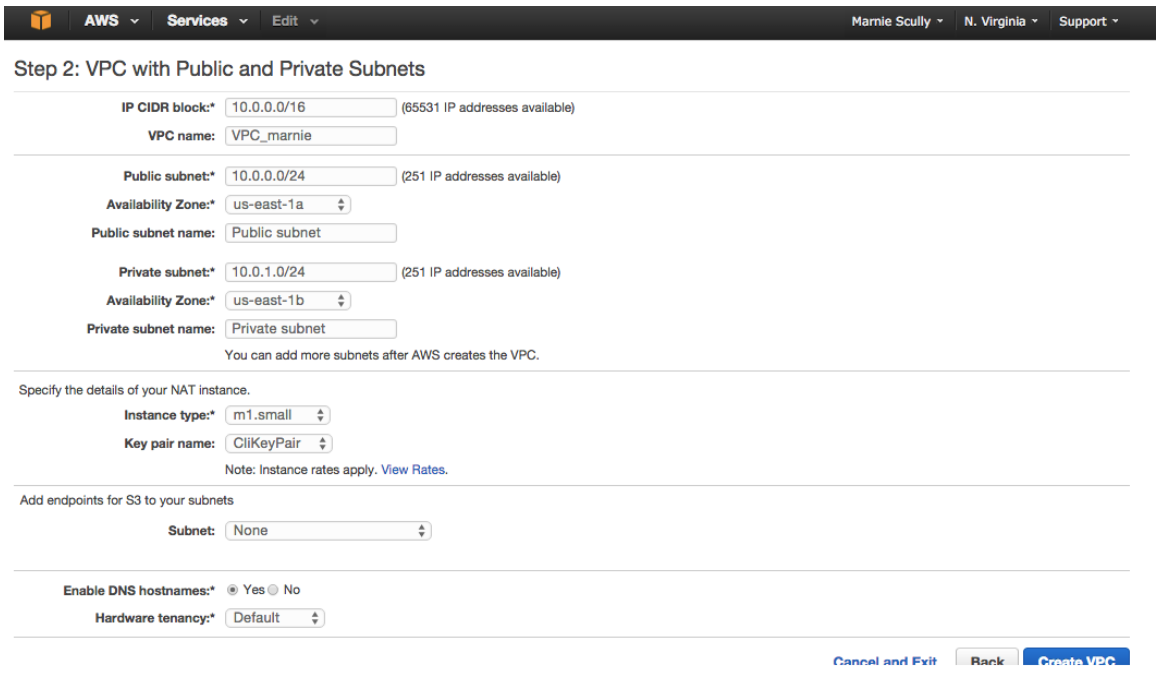
```
Description: Yellow
```

Problem 4. Use AWS Console and MySQL Client.

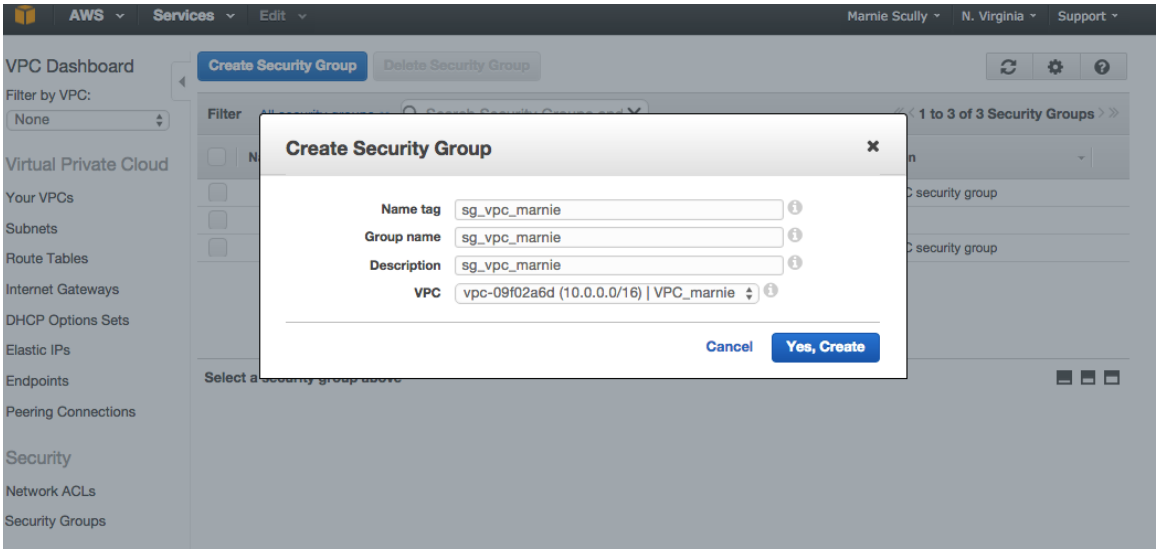
1. Create new VPC with two subnets (one public and one private). Create a new security group associated with your new VPC, and adjust permissions (CIDR) of that security group so that you can access future RDS from your local machine.
2. Create a new micro instance of MySQL database in Amazon RDS service – using AWS Console.
3. Demonstrate that you can connect to the remote RDS database using your local MySQL client.

[15 points]

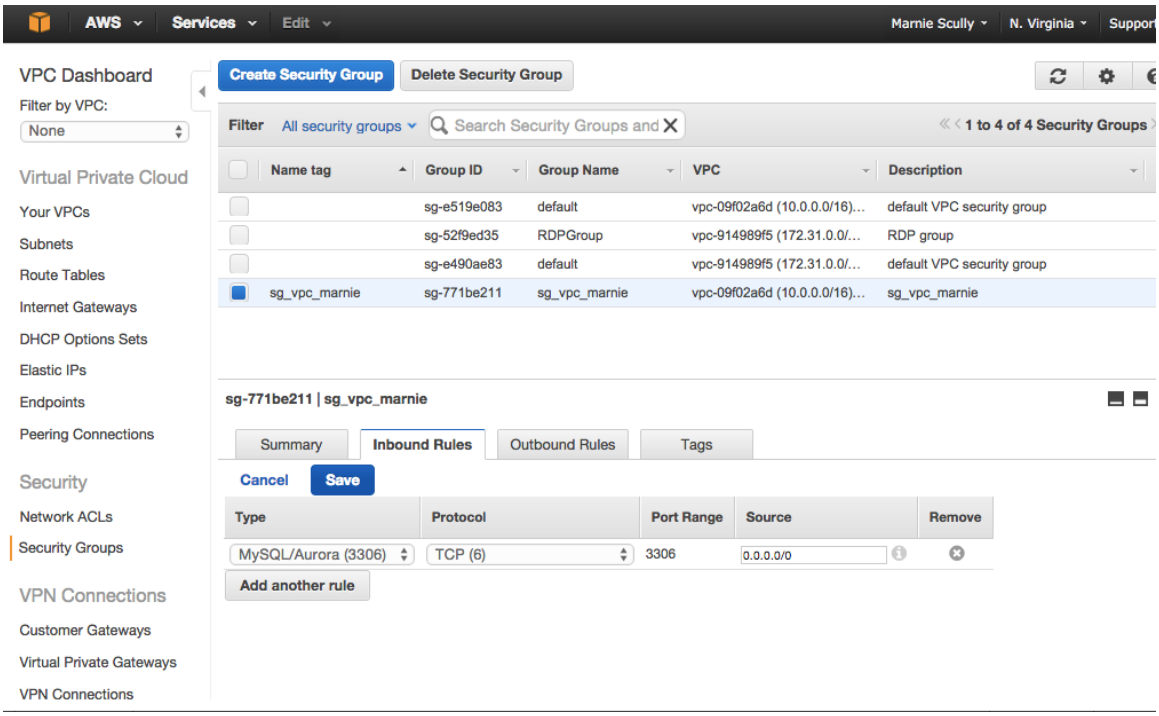
1. Create new VPC with two subnets (one public and one private)



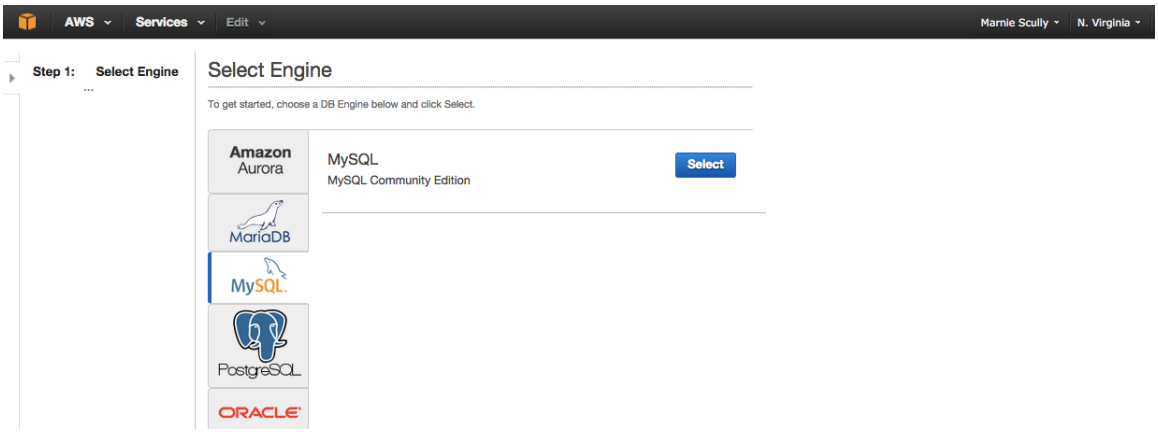
2. Create a new security group associated with your new VPC

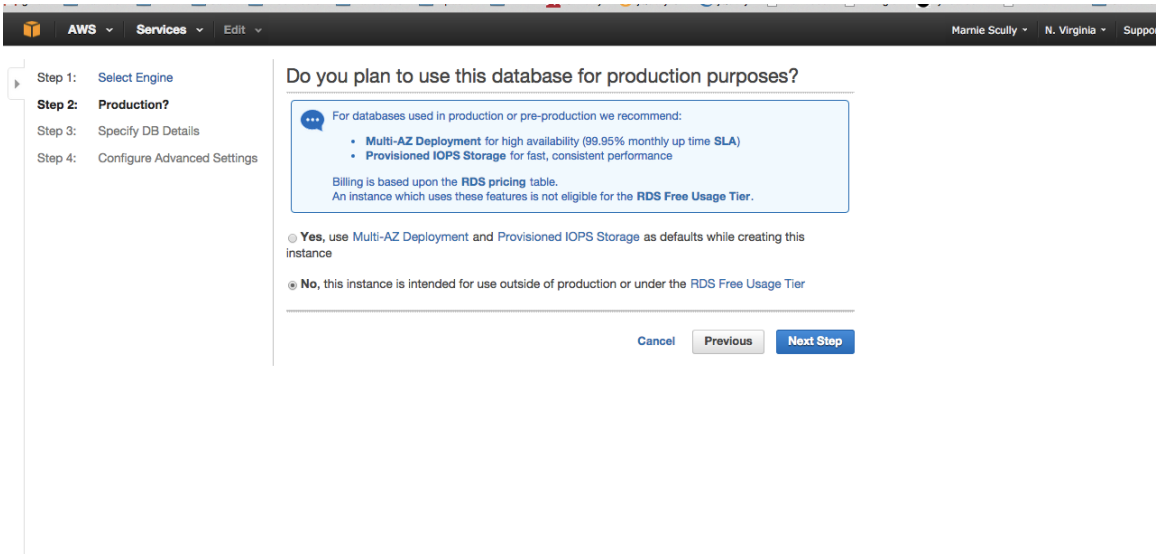


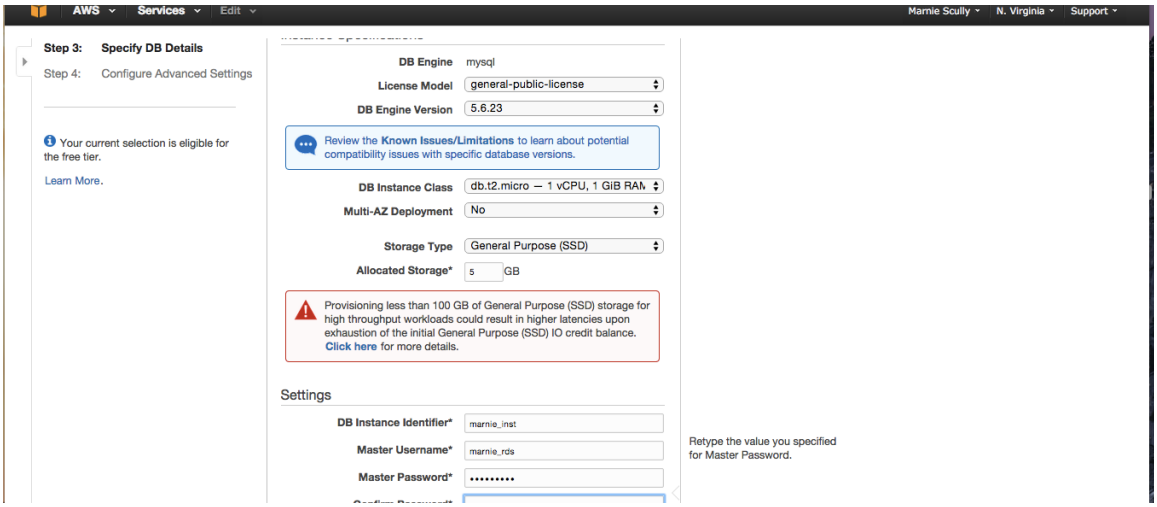
3. Adjust permissions (CIDR) of that security group so that you can access future RDS from your local machine.



4. Create a new micro instance of MySQL database in Amazon RDS service – using AWS Console.

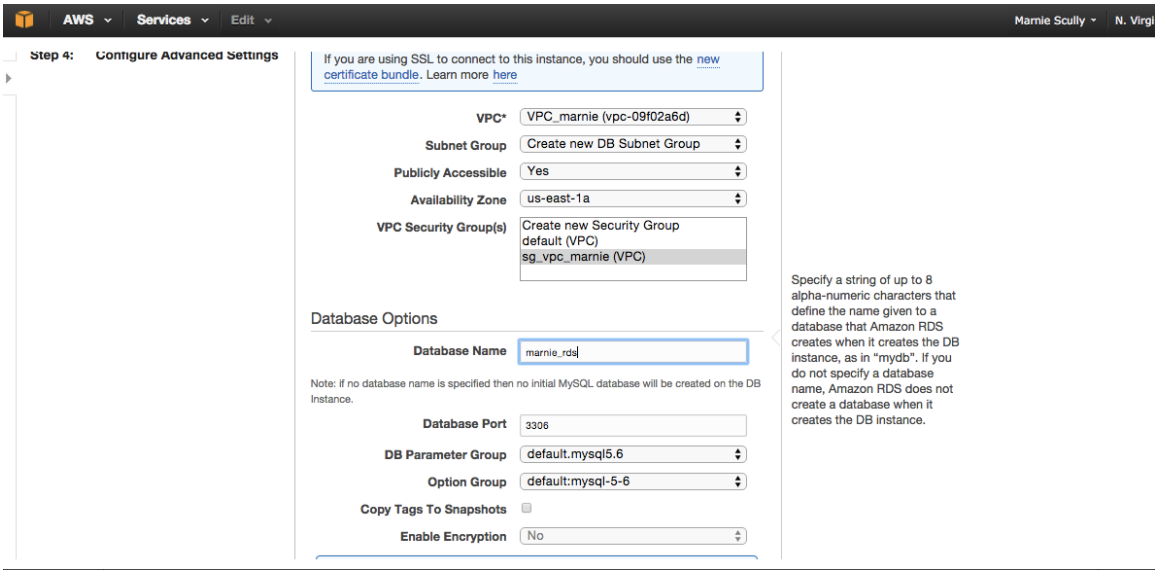


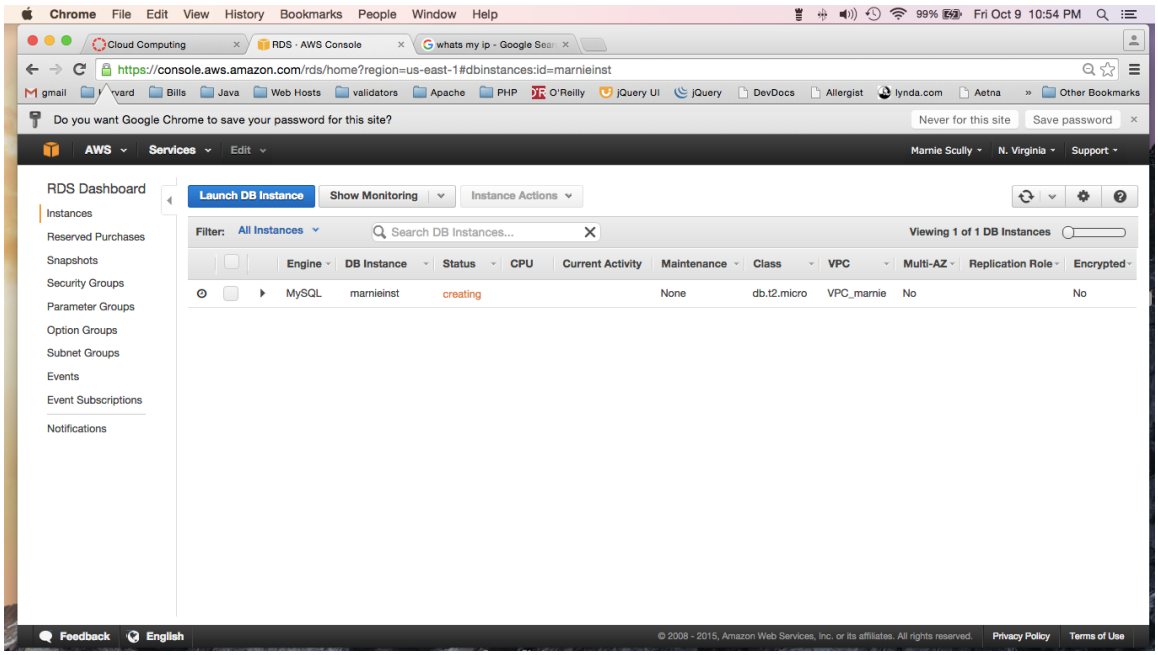




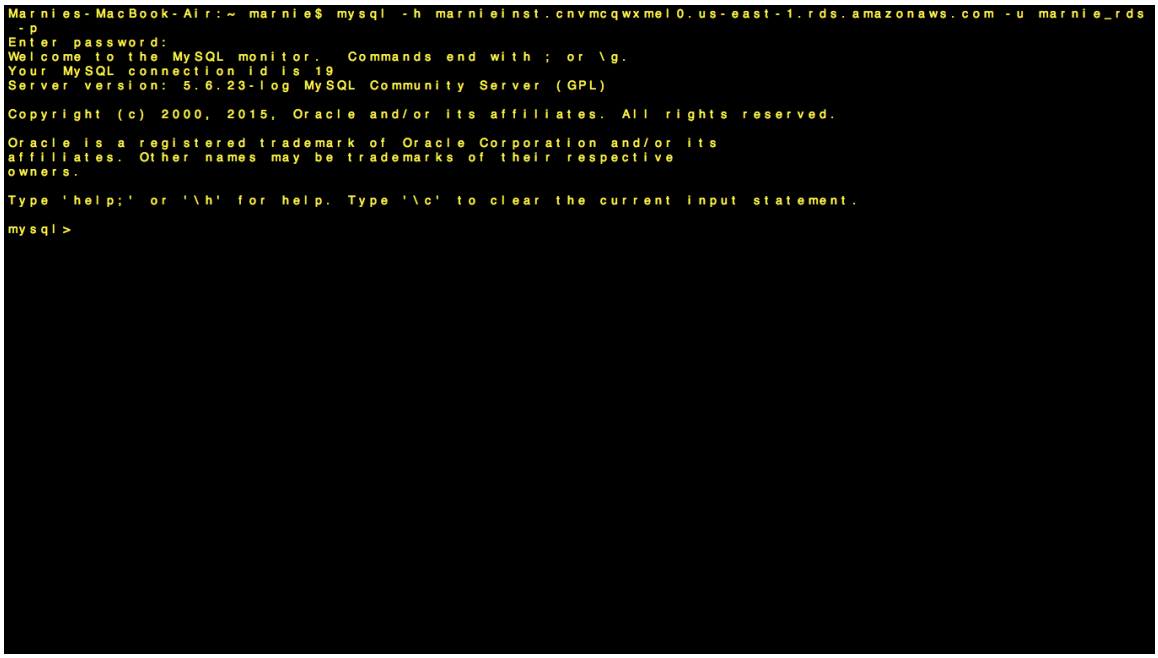
E90_ScullyMarnieHW05.pdf

Make sure you choose the VPC and Security Group created earlier





5. Demonstrate that you can connect to the remote RDS database using your local MySQL client.



Problem 5. Use any programming language (e.g., Java, .NET, Python, …).

1. Modify the code developed in Problem 3 so that it can now connect to your Amazon's RDS database instance that you created in problem 4.
2. Demonstrate that your client code could perform on remote RDS database instance the same operations it performed on the local database (create table, insert a few records, query the data, delete a record (on your remote RDS database instance). Close the database connection.

[15 points]

1. Modify the code developed in Problem 3 so that it can now connect to your Amazon's RDS database instance that you created in problem 4
2. On remote RDS database instance:
    a. create table
    b. insert a few records
    c. query the data
    d. delete a record
3. Close the database connection

E90_ScullyMarnieHW05.pdf

Modified Flowers.java

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;


// Renamed Class to Flowers to make it specific to our HW
public class Flowers {
  private Connection connect = null;
  private Statement statement = null;
  private PreparedStatement preparedStatement = null;
  private ResultSet resultSet = null;
  private String sql= null;

  public void readDataBase() throws Exception {
    try {
      // This will load the MySQL driver, each DB has its own driver
      Class.forName("com.mysql.jdbc.Driver");
      // Setup the connection with the DB
      connect = DriverManager

                        // Use Remote DB for Problem 5
        //.getConnection("jdbc:mysql://localhost/marnie_local_db?" +
"user=marnie_local&password=marnie123");

      .getConnection("jdbc:mysql://marnieinst.cnvmcqwxmel0.us-
east-1.rds.amazonaws.com/marnie_rds?" +
          "user=marnie_rds&password=marnie123");

      // Create Table Flowers
      statement = connect.createStatement();
      sql = "CREATE TABLE FLOWERS " +
            "(flower_name VARCHAR(30), " +
            " height INT, " +
            " description VARCHAR(30))";
      statement.executeUpdate(sql);

      // Show contents of flowers table
```

```
      statement = connect.createStatement();
      // Result set get the result of the SQL query
      resultSet = statement
          .executeQuery("select * from marnie_rds.FLOWERS");
      System.out.println("Flowers table before Insert");
      writeResultSet(resultSet);

      System.out.println("");

// insert a few records
      // 1st Flower added
      preparedStatement = connect
          .prepareStatement("insert into marnie_rds.FLOWERS values ( ?, ?, ?)");
      // ("flower_name, height, description");

      preparedStatement.setString(1, "Daffodil");
      preparedStatement.setInt(2, 10);
      preparedStatement.setString(3,"Yellow");
      preparedStatement.executeUpdate();

    // 2nd Flower added
      preparedStatement = connect
          .prepareStatement("insert into marnie_rds.FLOWERS values ( ?, ?, ?)");
      // ("flower_name, height, description");

      preparedStatement.setString(1, "Mum");
      preparedStatement.setInt(2, 10);
      preparedStatement.setString(3,"Orange");
      preparedStatement.executeUpdate();


      // Show the added flowers
      preparedStatement = connect
          .prepareStatement("SELECT flower_name, height, description from
marnie_rds.FLOWERS");
      resultSet = preparedStatement.executeQuery();
      System.out.println("The added flowers");
      writeResultSet(resultSet);
      System.out.println("");

      // Delete a Record
      statement = connect.createStatement();
      sql = "DELETE FROM FLOWERS " +
```

```
            "WHERE flower_name = 'Mum'" ;
      statement.executeUpdate(sql);

      // Show the  flowers after the delete
      preparedStatement = connect
          .prepareStatement("SELECT flower_name, height, description from
marnie_rds.FLOWERS");
      resultSet = preparedStatement.executeQuery();
      System.out.println("The flowers after delete");
      writeResultSet(resultSet);
      System.out.println("");

    } catch (Exception e) {
      throw e;
    } finally {
          // Close Database connection
      close();
    }

  }

  private void writeResultSet(ResultSet resultSet) throws SQLException {
    // ResultSet is initially before the first data set
    while (resultSet.next()) {
      // It is possible to get the columns via name
      // also possible to get the columns via the column number
      // which starts at 1
      // e.g. resultSet.getSTring(2);
      String flower_name = resultSet.getString("flower_name");
      Integer height = resultSet.getInt("height");
      String description = resultSet.getString("description");
      System.out.println("Flower Name: " + flower_name);
      System.out.println("Height: " + height);
      System.out.println("Description: " + description);
    }
  }

  // You need to close the resultSet
  private void close() {
    try {
      if (resultSet != null) {
        resultSet.close();
      }
```

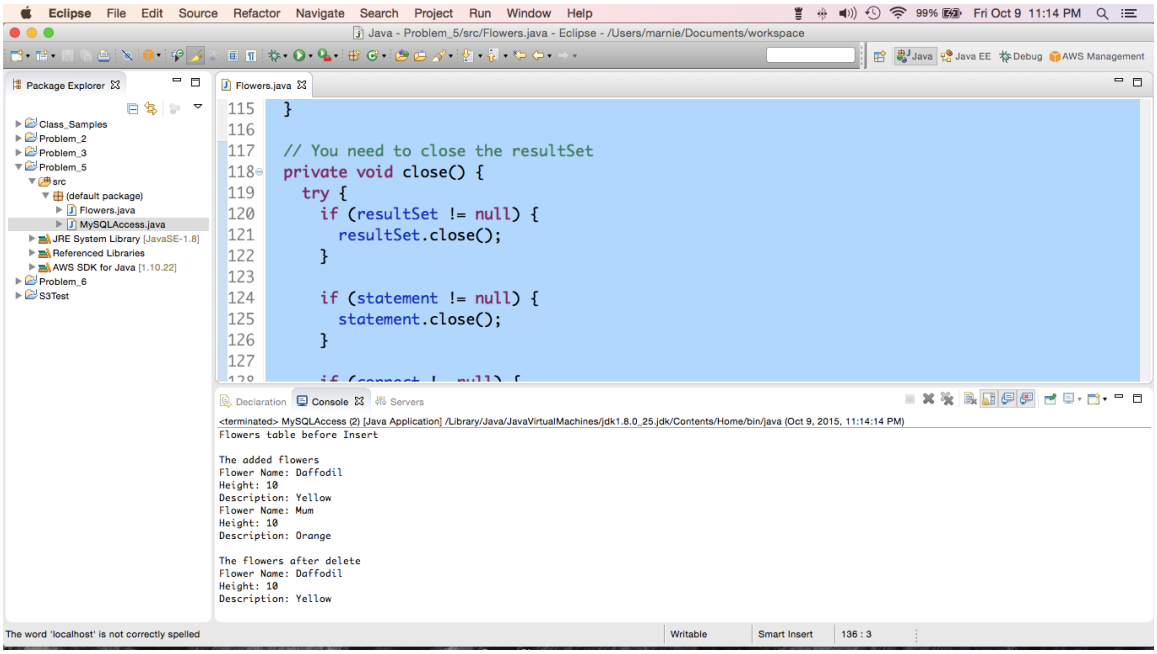
```
    if (statement != null) {
      statement.close();
    }

    if (connect != null) {
      connect.close();
    }
   } catch (Exception e) {

   }
  }

}
```

Output in Console
Flowers table before Insert

```
The added flowers
Flower Name: Daffodil
Height: 10
Description: Yellow
Flower Name: Mum
Height: 10
Description: Orange

The flowers after delete
Flower Name: Daffodil
Height: 10
Description: Yellow
```

E90_ScullyMarnieHW05.pdf

Screen Shot in Eclipse



Problem 6. Use AWS SDK for any programming language (e.g., Java, .NET, Python, …).

Write a program that when given a bucket name will go out to S3 and wipe that bucket out. That program has to locate all objects in all the folders, first delete those objects, then delete those folders and finally delete the bucket. Try first with a single S3 Bucket folder with several objects (files). Finally write a program that could handle an arbitrarily nested folder structure with objects of any S3 bucket.

[20 points]

Write a program that when given a bucket name will go out to S3 and wipe a bucket out that contains a bucket with a single folder with several objects.

S3DeleteBucket.java

```
import java.io.BufferedReader;

import java.io.File;

import java.io.FileOutputStream;

import java.io.IOException;
```

```
import java.io.InputStream;

import java.io.InputStreamReader;

import java.io.OutputStreamWriter;

import java.io.Writer;

import java.util.ArrayList;

import java.util.List;

import java.util.UUID;


import com.amazonaws.AmazonClientException;

import com.amazonaws.AmazonServiceException;

import com.amazonaws.auth.AWSCredentials;

import com.amazonaws.auth.profile.ProfileCredentialsProvider;

import com.amazonaws.regions.Region;

import com.amazonaws.regions.Regions;

import com.amazonaws.services.s3.AmazonS3;

import com.amazonaws.services.s3.AmazonS3Client;

import com.amazonaws.services.s3.model.Bucket;

import com.amazonaws.services.s3.model.DeleteObjectsRequest;

import com.amazonaws.services.s3.model.DeleteObjectsRequest.KeyVersion;

import com.amazonaws.services.s3.model.DeleteObjectsResult;

import com.amazonaws.services.s3.model.GetObjectRequest;
```

```
import com.amazonaws.services.s3.model.ListObjectsRequest;
import com.amazonaws.services.s3.model.MultiObjectDeleteException;
import com.amazonaws.services.s3.model.ObjectListing;
import com.amazonaws.services.s3.model.PutObjectRequest;
import com.amazonaws.services.s3.model.S3Object;
import com.amazonaws.services.s3.model.S3ObjectSummary;


// Gratefully adapted from the Sample for S3 from amazon
public class S3DeleteBucket {
    public static void main(String[] args) throws IOException {
        /*
         * The ProfileCredentialsProvider will return your [marniescully]
         * credential profile by reading from the credentials file located at
         * (/Users/marnie/.aws/credentials).
         */
        AWSCredentials credentials = null;
        try {
            credentials = new ProfileCredentialsProvider("marniescully").getCredentials();
        } catch (Exception e) {
            throw new AmazonClientException(
                    "Cannot load the credentials from the credential profiles file. " +
```

```
            "Please make sure that your credentials file is at the correct " +
            "location (/Users/marnie/.aws/credentials), and is in valid format.",
            e);
    }

    AmazonS3 s3 = new AmazonS3Client(credentials);
    Region usEast1 = Region.getRegion(Regions.US_EAST_1);
    s3.setRegion(usEast1);
    String bucketName = "my-first-s3-bucket-" + UUID.randomUUID();
    String key1 = "MyObjectKey1";
    String key2 = "MyObjectKey2";
    String key3 = "MyObjectKey3";


    System.out.println("===========================================");
    System.out.println("Getting Started with Amazon S3");
    System.out.println("===========================================\n");


    try {
       /*
```

```
         * Create a new S3 bucket - Amazon S3 bucket names are globally unique,
         * so once a bucket name has been taken by any user, you can't create
         * another bucket with that same name.
         *
         * You can optionally specify a location for your bucket if you want to
         * keep your data closer to your applications or users.
         */
        System.out.println("Creating bucket " + bucketName + "\n");
        s3.createBucket(bucketName);


        /*
         * List the buckets in your account
         */
        System.out.println("Listing buckets");
        for (Bucket bucket : s3.listBuckets()) {
            System.out.println(" - " + bucket.getName());
        }
        System.out.println();


        /*
         * Upload an object to your bucket - You can easily upload a file to
```

```
         * S3, or upload directly an InputStream if you know the length of
         * the data in the stream. You can also specify your own metadata
         * when uploading to S3, which allows you set a variety of options
         * like content-type and content-encoding, plus additional metadata
         * specific to your applications.
         */
        System.out.println("Uploading a new object to S3 from a file\n");
        s3.putObject(new PutObjectRequest(bucketName, key1, createSampleFile()));


        System.out.println("Uploading a new object to S3 from a file\n");
        s3.putObject(new PutObjectRequest(bucketName, key2, createSampleFile()));


        System.out.println("Uploading a new object to S3 from a file\n");
        s3.putObject(new PutObjectRequest(bucketName, key3, createSampleFile()));


        /*
         * List objects in your bucket by prefix - There are many options for
         * listing the objects in your bucket.  Keep in mind that buckets with
         * many objects might truncate their results when listing their objects,
         * so be sure to check if the returned object listing is truncated, and
         * use the AmazonS3.listNextBatchOfObjects(...) operation to retrieve
```

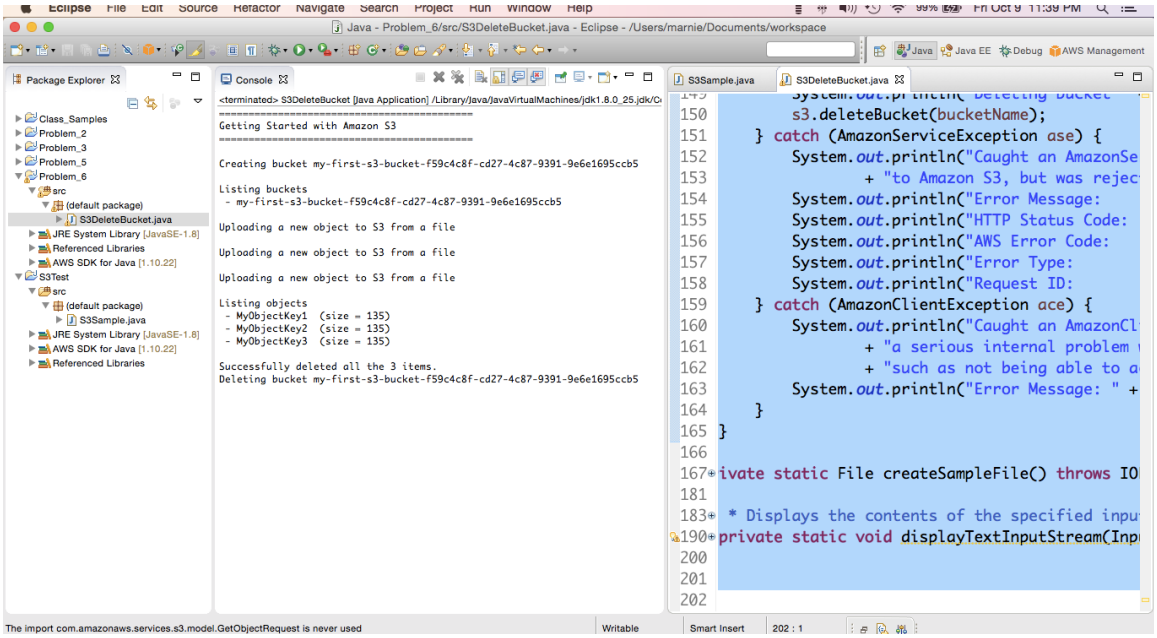
```
         * additional results.
         */
        System.out.println("Listing objects");
        ObjectListing objectListing = s3.listObjects(new ListObjectsRequest()
                .withBucketName(bucketName)
                .withPrefix("My"));
        for (S3ObjectSummary objectSummary : objectListing.getObjectSummaries())
    {
            System.out.println(" - " + objectSummary.getKey() + "  " +
                    "(size = " + objectSummary.getSize() + ")");
        }
        System.out.println();


        /*
         * This snippet was from the Amazon help file
         * http://docs.aws.amazon.com/AmazonS3/latest/dev/
    DeletingMultipleObjectsUsingJava.html
         */
        DeleteObjectsRequest multiObjectDeleteRequest = new
    DeleteObjectsRequest(bucketName);


        List<KeyVersion> keys = new ArrayList<KeyVersion>();
```

```
        keys.add(new KeyVersion(key1));

        keys.add(new KeyVersion(key2));

        keys.add(new KeyVersion(key3));



        multiObjectDeleteRequest.setKeys(keys);



        try {

            DeleteObjectsResult delObjRes =
    s3.deleteObjects(multiObjectDeleteRequest);

            System.out.format("Successfully deleted all the %s items.\n",
    delObjRes.getDeletedObjects().size());



        } catch (MultiObjectDeleteException e) {

            // Process exception.

        }




        /*

         * Delete a bucket - A bucket must be completely empty before it can be

         * deleted, so remember to delete any objects from your buckets before

         * you try to delete them.

         */
```

```
            System.out.println("Deleting bucket " + bucketName + "\n");
            s3.deleteBucket(bucketName);
        } catch (AmazonServiceException ase) {
            System.out.println("Caught an AmazonServiceException, which means your
        request made it "
                    + "to Amazon S3, but was rejected with an error response for some
        reason.");
            System.out.println("Error Message:    " + ase.getMessage());
            System.out.println("HTTP Status Code: " + ase.getStatusCode());
            System.out.println("AWS Error Code:   " + ase.getErrorCode());
            System.out.println("Error Type:       " + ase.getErrorType());
            System.out.println("Request ID:       " + ase.getRequestId());
        } catch (AmazonClientException ace) {
            System.out.println("Caught an AmazonClientException, which means the client
        encountered "
                    + "a serious internal problem while trying to communicate with S3, "
                    + "such as not being able to access the network.");
            System.out.println("Error Message: " + ace.getMessage());
        }
    }

    private static File createSampleFile() throws IOException {
```

```
        File file = File.createTempFile("aws-java-sdk-", ".txt");
        file.deleteOnExit();

        Writer writer = new OutputStreamWriter(new FileOutputStream(file));
        writer.write("abcdefghijklmnopqrstuvwxyz\n");
        writer.write("01234567890112345678901234\n");
        writer.write("!@#$%^&*()-=[]{};':',.<>/?\n");
        writer.write("01234567890112345678901234\n");
        writer.write("abcdefghijklmnopqrstuvwxyz\n");
        writer.close();

        return file;
    }

    /**
     * Displays the contents of the specified input stream as text.
     *
     * @param input
     *            The input stream to display as text.
     *
     * @throws IOException
```

```
        */
    private static void displayTextInputStream(InputStream input) throws IOException {
        BufferedReader reader = new BufferedReader(new InputStreamReader(input));
        while (true) {
            String line = reader.readLine();
            if (line == null) break;

            System.out.println("    " + line);
        }
        System.out.println();
    }

}
```



Output in Console

```
==========================================
Getting Started with Amazon S3
==========================================

Creating bucket my-first-s3-bucket-f59c4c8f-
cd27-4c87-9391-9e6e1695ccb5

Listing buckets
 - my-first-s3-bucket-f59c4c8f-cd27-4c87-9391-9e6e1695ccb5

Uploading a new object to S3 from a file

Uploading a new object to S3 from a file

Uploading a new object to S3 from a file

Listing objects
 - MyObjectKey1  (size = 135)
 - MyObjectKey2  (size = 135)
 - MyObjectKey3  (size = 135)

Successfully deleted all the 3 items.
Deleting bucket my-first-s3-bucket-f59c4c8f-
cd27-4c87-9391-9e6e1695ccb5
```

E90_ScullyMarnieHW05.pdf

Write a program that when given a bucket name with an arbitrarily nested folder structure can wipe that bucket out.

I changed the code from

```
DeleteObjectsRequest multiObjectDeleteRequest = new
        DeleteObjectsRequest(bucketName);

           List<KeyVersion> keys = new ArrayList<KeyVersion>();

           keys.add(new KeyVersion(key1));

           keys.add(new KeyVersion(key2));

           keys.add(new KeyVersion(key3));

           multiObjectDeleteRequest.setKeys(keys);

           try {

              DeleteObjectsResult delObjRes =
        s3.deleteObjects(multiObjectDeleteRequest);

              System.out.format("Successfully deleted all the %s items.\n",
        delObjRes.getDeletedObjects().size());

           } catch (MultiObjectDeleteException e) {

              // Process exception.

           }
```

to

```
        DeleteObjectsRequest multiObjectDeleteRequest = new
        DeleteObjectsRequest(bucketName);

       List<KeyVersion> keys = new ArrayList<KeyVersion>();

// Deletes any # of objects in bucket

      for (S3ObjectSummary objectSummary : objectListing.getObjectSummaries()) {
```

```
                keys.add(new KeyVersion(objectSummary.getKey()));

}


        multiObjectDeleteRequest.setKeys(keys);


        try {

            DeleteObjectsResult delObjRes =
      s3.deleteObjects(multiObjectDeleteRequest);

            System.out.format("Successfully deleted all the %s items.\n",
      delObjRes.getDeletedObjects().size());


        } catch (MultiObjectDeleteException e) {

            // Process exception.

        }
```

Output on Console

```
==========================================
Getting Started with Amazon S3
==========================================

Creating bucket my-first-s3-bucket-9e41957e-9e37-4555-8b31-
ab2df6b7bb1e

Listing buckets
 - my-first-s3-bucket-9e41957e-9e37-4555-8b31-ab2df6b7bb1e

Uploading a new object to S3 from a file
```

E90_ScullyMarnieHW05.pdf

```
Uploading a new object to S3 from a file

Uploading a new object to S3 from a file

Uploading a new object to S3 from a file

Listing objects
 - MyObjectKey1  (size = 135)
 - MyObjectKey2  (size = 135)
 - MyObjectKey3  (size = 135)
 - MyObjectKey4  (size = 135)

Successfully deleted all the 4 items.
Deleting bucket my-first-s3-bucket-9e41957e-9e37-4555-8b31-
ab2df6b7bb1e
```