1 Introduction to Snowflake and Snowflake Objects

1.1 Lab Introduction

1.1.1 Purpose

The purpose of this lab is to familiarize you with Snowflake's Snowsight user interface. Specifically, you will learn how to create and use Snowflake objects that you will need to use to run queries and conduct data analysis in your day-to-day work.

If you're a data engineer, you'll learn skills important to your role. If you're not a data engineer, the process of creating the objects will both help you learn how to navigate the Snowsight interface and become familiar with warehouses, databases, roles and schemas, all of which together form the context for any SQL statements you are likely to execute.

Context refers to the resources and objects that must be specified in order for SQL statements to execute.

1.1.2 What you'll learn

- How to navigate Snowsight to find the tools you'll need
- How to create and manage folders and worksheets
- How to set the context via the Snowsight UI or with SQL code
- How to create warehouses, databases, schemas and tables
- How to run a simple query

1.1.3 How to complete this lab

In order to complete this lab, you can type the SQL commands below directly into a worksheet. It is not recommended that you cut and paste from the workbook pdf as that sometimes results in errors.

You can also use the SQL code file for this lab that was provided at the start of the class. You would simply need to open it in TextEdit (Mac) or Notepad (Windows), and then copy and paste the SQL code directly into a worksheet.

1.1.4 Scenario

You are a data engineer working for Snowbear Air, which is an airline that flies to fun destinations all over the world. You've been tasked to design and implement data sets that will be used by business analysts that create flight profitability reports for executive management. You have been asked to create a few Snowflake objects in a development environment to test out your SQL statements. You will need to create:

- A database
- A schema

- A warehouse
- A table you will then populate with the regions and countries that Snowbear Air serves.

Let's get started!

1.2 Launching Snowsight

1.2.1 Access the URL provided to you for this course.

1.2.2 You will be taken to a login page. Enter the username and password provided to you for this course.

1.2.3 You will be prompted to change the password. Follow the prompts to change the password and click Submit.

1.2.4 Log in with your new password.

Your screen should look similar to the screen below:

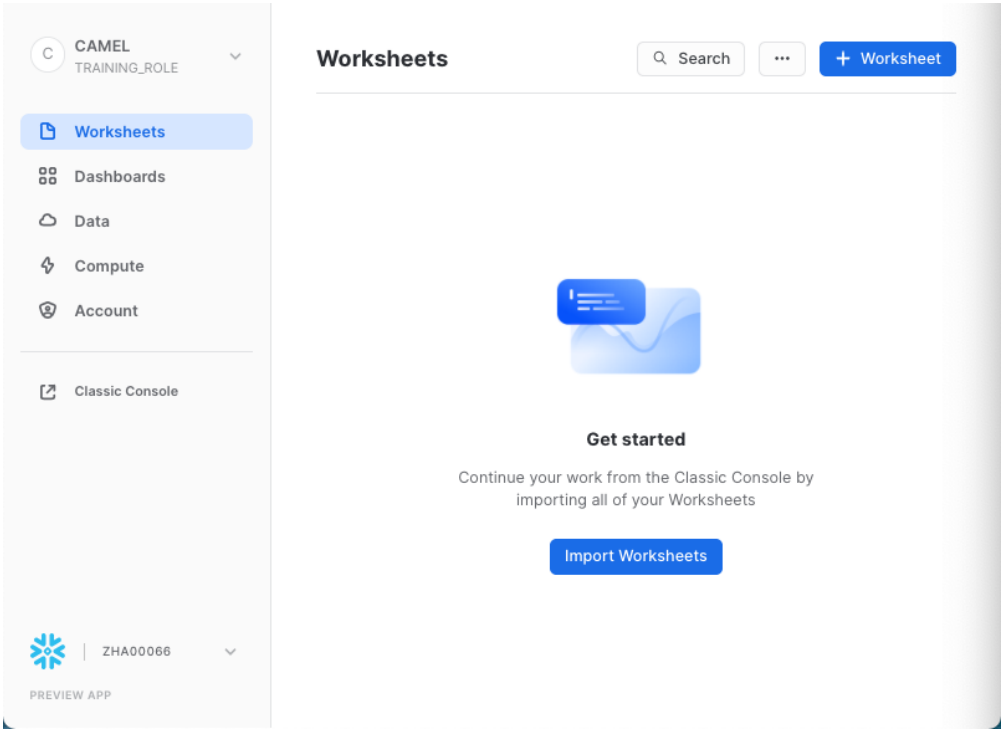

Figure 1: Home

Now let's get familiar with the left-hand navigation bar and its contents.

1.2.5 Click on Dashboards in the left-hand navigation bar.

You should see the blank screen below. If you had access to any dashboards, they would appear in the Dashboards pane that takes up the majority of the screen.

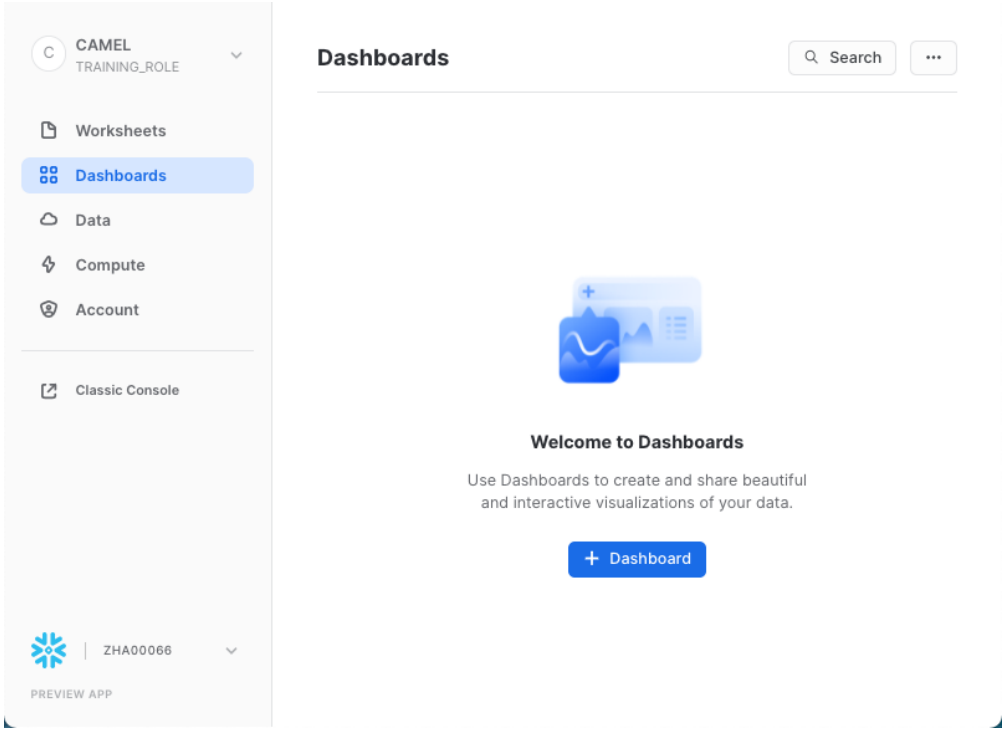

Figure 2: Dashboards

1.2.6 Click on Data in the left-hand navigation bar.

You should see the screen below. An Object Selection Pane and an Object Detail Pane should now be visible.

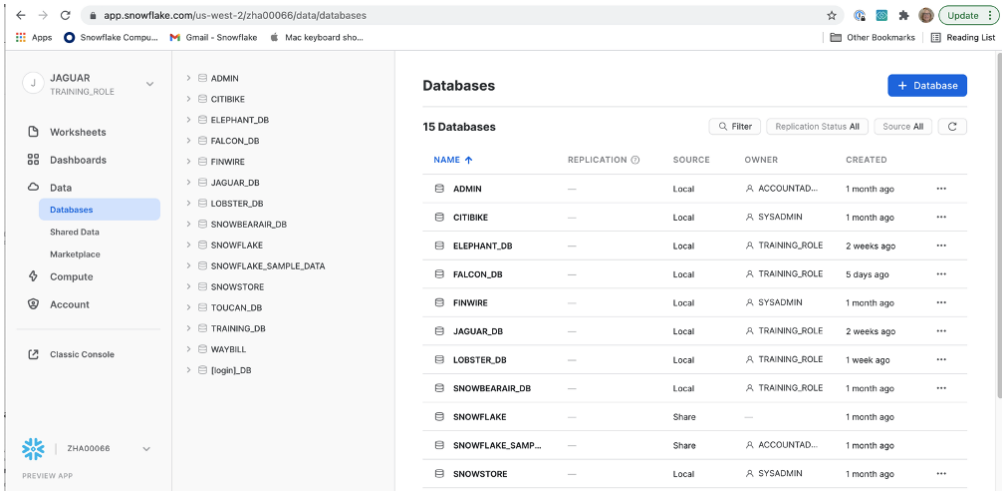

Figure 3: Object Panes

Now let's navigate to a table.

1.2.7 Click SNOWBEARAIR_DB in the Object Selection Pane.

1.2.8 Click schema PROMO_CATALOG_SALES.

1.2.9 Click Tables to expand the table tree.

1.2.10 Click any table to view details about the table.

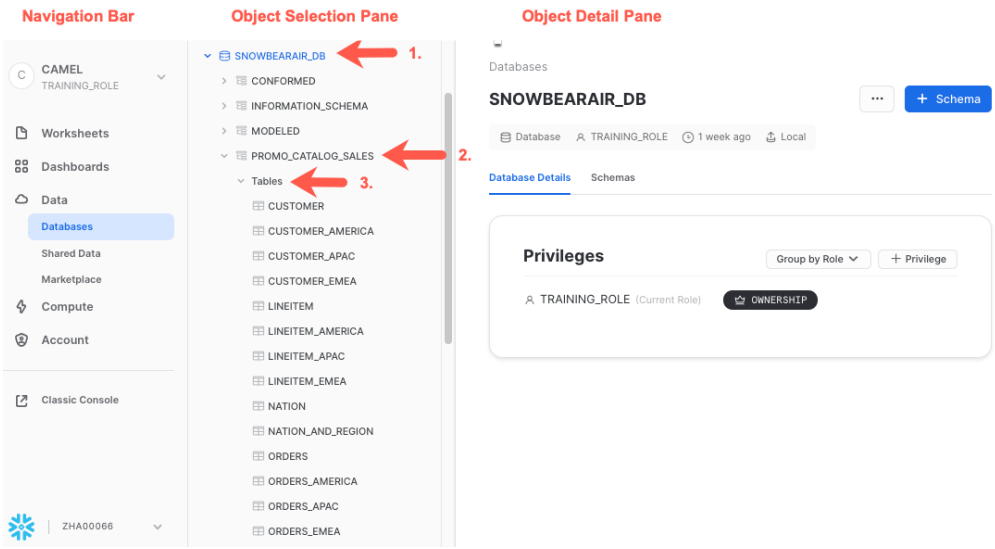

Figure 4: Navigating to a Table

By navigating the tree in the Object Selection pane, you can view details about many Snowflake Objects. Try to click through a few more to get familiar with the tree.

1.2.11 Now click on Shared Data in the left-hand navigation bar.

You should now see a few data sets that are available for you to consume.

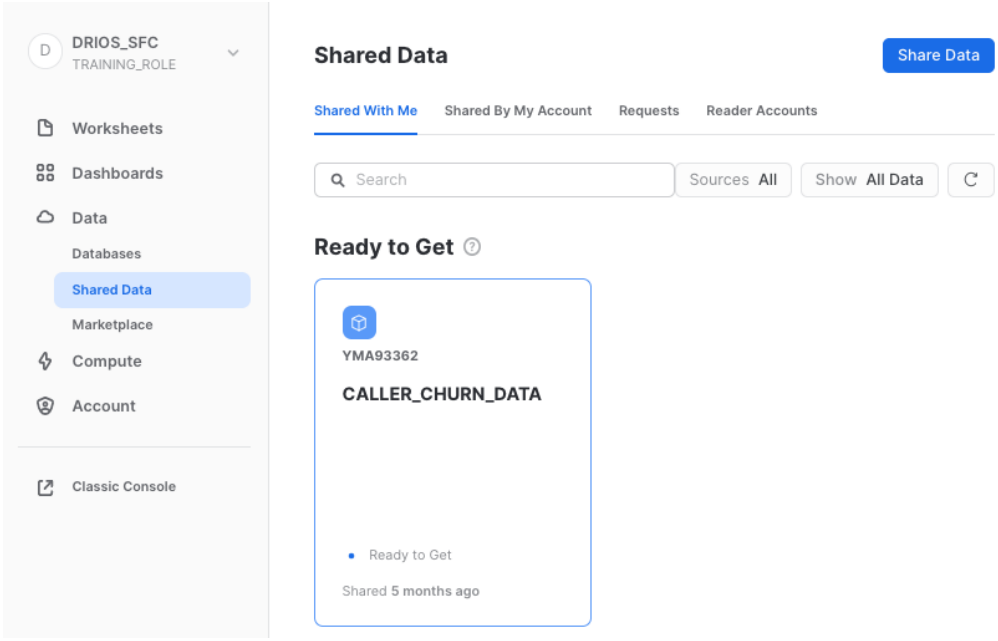

Figure 5: Data Sharing

1.2.12 Now click on Marketplace in the left-hand navigation bar.

You should now see a few data sets that are available for you to consume.

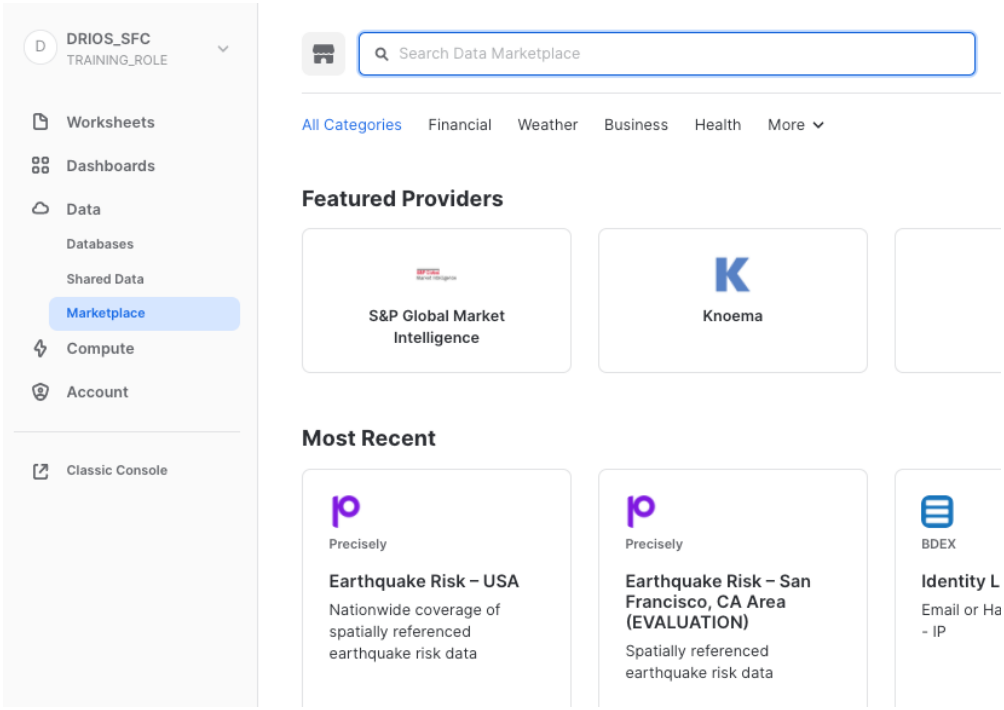

Figure 6: Marketplace

Scroll through this section and take a look at the offerings. You may see sections titled Featured Providers,

Most Recent, Financial, Business, Marketing, Local and Demographics. What you see may differ as the Data Marketplace is dynamic and new types of data sets are being added every day.

As you can imagine, both the Shared Data tab and the Marketplace tab are likely to be useful to many Snowflake users in their day-to-day work.

1.2.13 Now click on Compute in the left-hand navigation bar.

The Query History sub-option under Compute should be selected by default. Your query history will be empty, but after running queries your screen will eventually look similar to the one shown below:

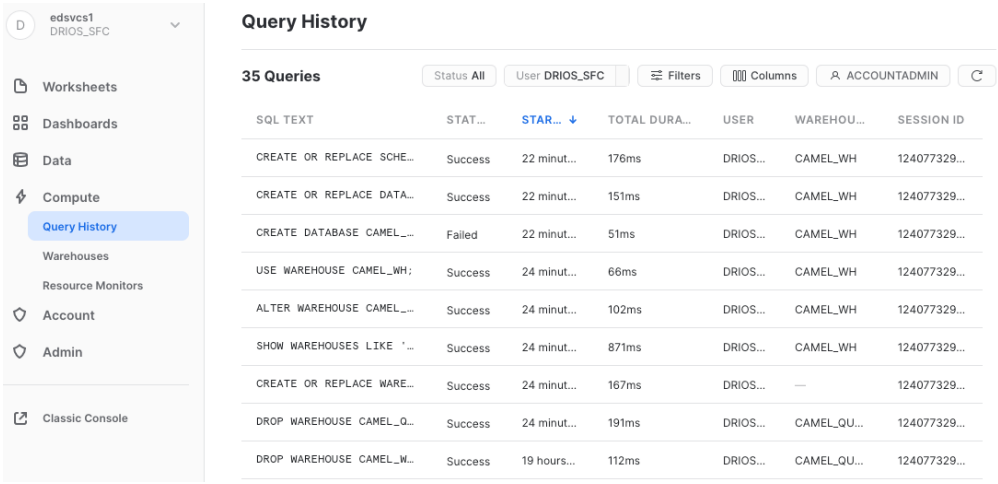

Figure 7: Compute

There should be a list of SQL statements including the status of the execution, when it was started, the total duration, the user who executed the SQL statement, the warehouse, and a session ID.

1.2.14 Now click on Warehouses in the left-hand navigation bar.

You may see a list of virtual warehouses and their statuses. However, as this is a training environment, there may not be any virtual warehouses yet. Just know that this is where you can go to see what virtual warehouses exist.

Remember, unlike on-premises data warehouses you may be used to, in Snowflake storage and compute are separated. A Snowflake virtual warehouse is a cluster of servers used to run and execute queries, and it provides compute power, memory, and some local SSD storage for caching operations. Other than that, no data is stored in the warehouse. Instead, data is stored in Snowflake's cloud storage layer. At runtime are storage and compute dynamically combined to execute your queries.

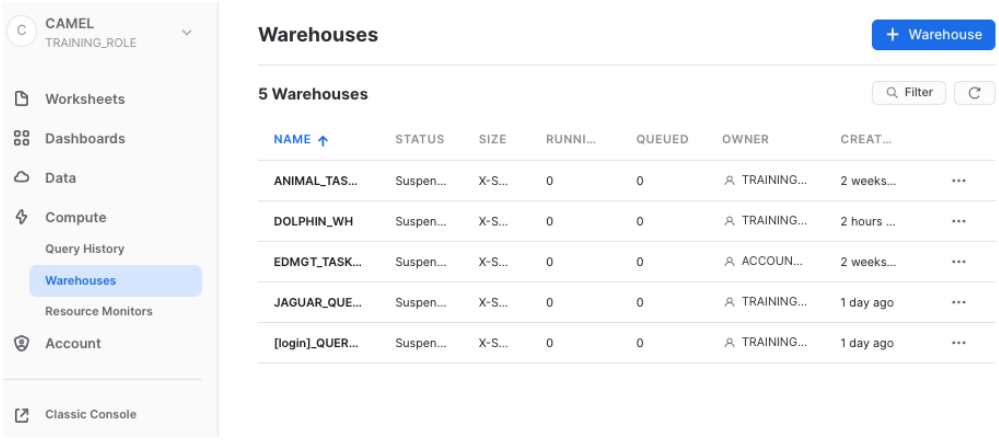

Figure 8: Warehouses

1.3 Creating Snowflake Objects

Now let's get started on our Snowflake objects. We will need a database, a schema, a warehouse and a table. Let's make sure you create the objects in the role you will be using throughout the course, which is TRAINING_ROLE. This will ensure that your role will own the objects, which will enable you to do whatever you need to in each lab.

1.3.1 Click Data in the left-hand navigation bar. Click on Databases. If your role is not already TRAINING_ROLE, click the down arrow next to your role. There should now be a pop up menu that says Switch Role. Select the arrow next to your role and select TRAINING_ROLE.

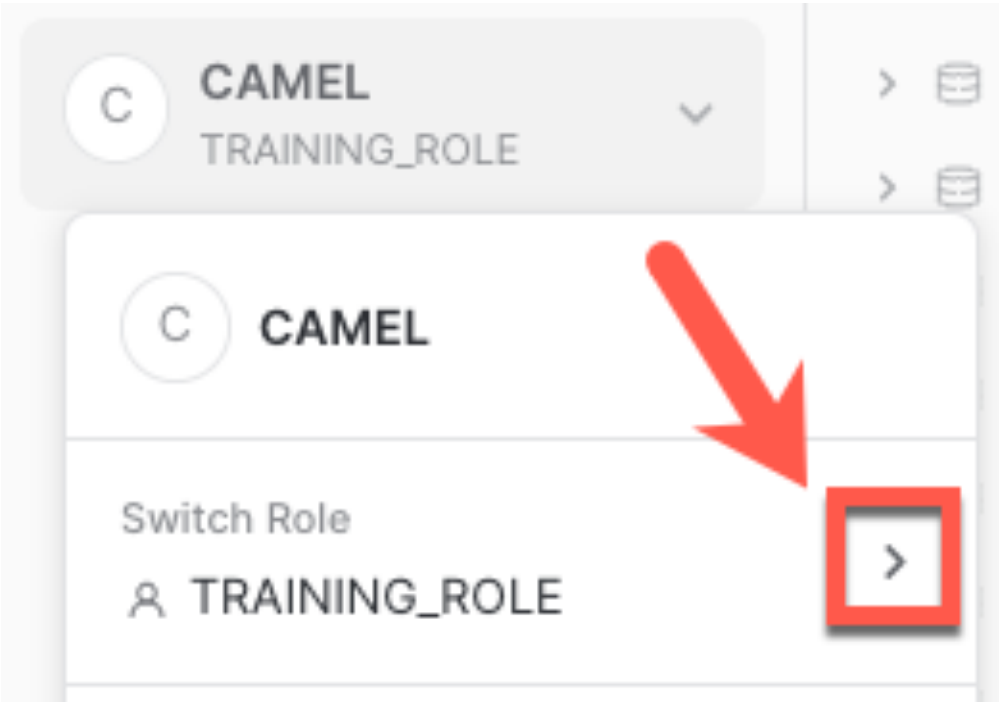

Figure 9: Changing the role

1.3.2 Now let's create a database. Click the New Database button (It's a big blue button with "+ Database") in the Object Details pane. The New Database dialog box will appear.

1.3.3 Name your database [login]_db and click the Create button.

The details of your new database should be shown in the Object Details pane.

1.3.4 Select your new database in the Object Selection pane.

1.3.5 Click the Schemas tab in the Object Detail pane to view the schemas INFORMATION_SCHEMA AND PUBLIC.

1.3.6 Next click the new Schema button to create your new schema:

1.3.7 In the New Schema dialog box, name your schema [login]_schema and click the Create button.

Your schema should now be listed along with schemas INFORMATION_SCHEMA and PUBLIC.

We haven't created our table yet, but we'll come back to create that after we've created our warehouse.

1.3.8 To create your warehouse, click Compute -> Warehouses in the navigation bar.

1.3.9 Now click the + Warehouse button to create a new Warehouse.

1.3.10 In the New Warehouse dialog box, name your warehouse [login]_WH.

1.3.11 Choose X-Small for the size.

1.3.12 Expand the Advanced Warehouse Options to confirm Auto Resume and Auto Suspend are selected.

1.3.13 Click the Create Warehouse button.

Your warehouse should now be listed and started.

Now let's create one of the first tables we need for our business analysts. It is a table that contains the regions and nations served by Snowbear Air and it will used in many reports across all the company's business functions.

In order to create this table, we need to run SQL statements in a worksheet. We will first create a folder. Then we will create a worksheet in that folder and run the appropriate SQL statements within the worksheet.

A worksheet is a container in which you can draft, revise, execute and save SQL statements, and folders are used to organize those worksheets.

1.3.14 Click on Worksheets in the navigation bar.

1.3.15 Click the ellipsis next to the New Worksheet button in the upper right hand corner of the screen.

The three dots in a row just to the left of the blue +Worksheet button is an ellipsis.

1.3.16 Click New Folder.

1.3.17 In the New Folder Dialog box, type WORKING WITH OBJECTS and then click the Create Folder Button.

The folder should now be created and its contents (empty of course) shown in the right hand pane. Notice that at the top-left of this pane is a link titled "Worksheets". This is a bread crumb trail that you can use to go up a level.

Note that at the right of the folder name is a down arrow. If you click it you will see an editable version of the folder name.

Now let's create a worksheet.

1.3.18 Click the New Worksheet button.

You should now see the contents of worksheet, which is a blank space where you can type SQL statements. The bread crumb at the top-left of the screen now contains the file name in a date/time format. The top right of the screen contains:

- A + sign for creating new worksheets
- The current role (TRAINING_ROLE) and warehouse.
- A Share button
- A button consisting of a circle with an arrow. This is used to execute SQL statements.
- A database name and schema name just above the empty SQL statement area.

1.3.19 If your warehouse isn't already selected, select it now by clicking warehouse and selecting [login]_WH.

1.3.20 Now complete the context of your worksheet by selecting [login]_db and [login]_schema from the down arrow right above the empty SQL pane.

Now let's rename the worksheet. Remember, it's in the upper-left hand corner in date/time format.

1.3.21 Rename the worksheet by clicking the arrow to the right of the worksheet name, name it Region and nation in the dialog box and hit enter.

Now let's create the region_and_nation table. It's a simple example with a query that will populate it.

Remember, you can type the SQL commands directly into your worksheet. You can also use the SQL code file provided for this lab at the start of class. Just open the file in TextEdit (Mac) or Notepad (Windows), and then copy and paste the SQL code directly into your worksheet.

It is not recommended that you cut and paste from this workbook pdf as that sometimes results in errors.

1.3.22 Run the SQL statements below in the SQL pane to create and populate your table:

```
CREATE OR REPLACE TABLE region_and_nation (
      id INTEGER
    , region TEXT
    , nation TEXT
);

INSERT INTO region_and_nation
SELECT
      N_NATIONKEY
    , R_NAME
    , N_NAME
FROM
    TRAINING_DB.TPCH_SF1.NATION N
    INNER JOIN TRAINING_DB.TPCH_SF1.REGION R ON N.N_REGIONKEY = R.R_REGIONKEY
ORDER BY
```



```
    R_NAME, N_NAME;
```

1.3.23 Now run the statement below to confirm your data was properly inserted:

```
SELECT
    *
FROM
    region_and_nation
ORDER BY
    REGION, NATION;
```

You should now see a result set in the bottom half of the pane.

1.4 Creating Objects Exclusively with SQL Statements

Now let's practice creating objects but strictly with SQL statements. You'll see how quickly and efficiently you can accomplish object creation with SQL code.

1.4.1 Using what you've learned, navigate to your folder for this lab, create a new worksheet and name it SQL.

1.4.2 Set the context

The context defines the default database/schema location in which our SQL statements run, and the WH and role to use in support of this. So, let's set the context so we can run our SQL statements.

Run the following statements in the SQL portion of this worksheet.

```
USE ROLE TRAINING_ROLE;
USE WAREHOUSE [login]_WH;
USE DATABASE [login]_DB;
USE SCHEMA [login]_SCHEMA;
```

1.4.3 Drop all the objects previously created

Now we're going to drop everything we created with the Snowsight UI:

```
DROP TABLE region_and_nation;
DROP SCHEMA [login]_SCHEMA;
DROP DATABASE [login]_DB;
DROP WAREHOUSE [login]_WH;
```

1.4.4 Create the warehouse by executing the following statement


```
CREATE WAREHOUSE [login]_WH
  WITH WAREHOUSE_SIZE = 'XSMALL'
       AUTO_SUSPEND = 180
       AUTO_RESUME = TRUE
       INITIALLY_SUSPENDED = TRUE;
```

Since we set INITIALLY_SUSPENDED = TRUE, the warehouse isn't actually running. Let's confirm its status and then start the warehouse.

1.4.5 Run the following statements to confirm the warehouse status and to start it

```
-- Use this to confirm the warehouse's status
SHOW WAREHOUSES like '[login]_WH';

-- RESUME will start the warehouse, SUSPEND will stop the warehouse
ALTER WAREHOUSE [login]_WH RESUME;

-- Now add this warehouse to the current context
USE WAREHOUSE [login]_WH;
```

1.4.6 Run the following statements to create the required database objects, to complete the context and to create and populate the table.

```
-- These statements create the database and schema
CREATE DATABASE [login]_DB;
CREATE SCHEMA [login]_SCHEMA;

-- These statements determine which database and warehouse will be used
USE DATABASE [login]_DB;
USE SCHEMA [login]_SCHEMA;

-- These statements create and populate the table
CREATE OR REPLACE TABLE region_and_nation (
      id INTEGER
    , region TEXT
    , nation TEXT
);

INSERT INTO region_and_nation
SELECT
      N_NATIONKEY
    , R_NAME
    , N_NAME
FROM
    TRAINING_DB.TPCH_SF1.NATION N
    INNER JOIN TRAINING_DB.TPCH_SF1.REGION R ON N.N_REGIONKEY = R.R_REGIONKEY
ORDER BY
    R_NAME, N_NAME;

-- Use this statement to confirm the table was populated
SELECT
```



```
    *
FROM
    region_and_nation
ORDER BY
    REGION, NATION;
```

You should now see the results of your query in the query pane.

1.5 Key Takeaways

- You can create database objects both via the Snowsight UI and by executing SQL code in a worksheet.
- Data Sharing options such Data Marketplace can be accessed via Snowsight by users with the appropriate privileges.
- You can browse database objects and view their details by using the navigation bar, the Object Selection and Object Details panes.
- The context of a worksheet session consists of a role, schema, database and warehouse.
- The context of a worksheet can be set via the Snowsight UI or via SQL statements.
- A Snowflake user can create folders in which to save and organize worksheets.

