



Integrated Cloud Applications & Platform Services

Oracle Autonomous Database Workshop

Activity Guide

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Authors

Soumyadeep Mitra
Aravind Gidijala

Technical Contributors and Reviewers

Susan Jang
Sailaja Pasupuleti
Sandeep Arora
Sharath Bhujani

Editors

Aju Kumar
Moushmi Mukherjee
Nikita Abraham
Arijit Ghosh

Graphic Editor

Prakash Dharmalingam

Publishers

Michael Sebastian Almeida
Asief Baig
Sumesh Koshy

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**Course Practice
Environment: Security
Credentials**

Course Practice Environment: Security Credentials

Your practice environment consists of:

- A local system, i.e. a laptop or a desktop with a Windows 64-bit Operating System
- An Oracle Cloud Infrastructure (OCI) account assigned to you using which you will create Autonomous Database instances with the following workloads:
 - Autonomous Data Warehouse (ADWC)
 - Autonomous Transaction Processing (ATP)

Oracle Cloud Infrastructure (OCI) Account Credentials	
Account Specification	Information/Password
Domain/Tenant	<i>Provided as part of account information</i>
Cloud Account Username	<i>Provided as part of account information</i>
Cloud Account Password	<i>Provided as part of account information</i>
Compartment to be used	<i>Provided as part of account information</i>

Important:

- All instructions in this course, unless specified otherwise, assume you are working on a local Windows system.
- Connection to ADWC and ATP instances will be initiated from the local system.
- You should be on an open internet connection, i.e. not connected to any VPN or working in a restricted network that blocks the connection from your local system to cloud service instances.

The following is an example of the convention used throughout the course. This is just a sample task.

Task: Click **Open** on the **File** menu and open the SQL file which has the following command:

```
SQL> CREATE DIRECTORY dp_from_onprem AS  
'/u01/app/oracle/admin/MYORCL/dpdump/from_onprem';  
  
Directory created.  
  
SQL>
```

Note:

- In general, **bold text** indicates graphical user interface elements associated with an action, or terms defined in text.
- ***Bold italic text*** indicates a field into which you need to enter a value. Ensure you substitute your account details or enter values associated with your account wherever you see this.
- In general, codes and commands are in “Courier New” font.
- Parts of a code or command that need to be altered according the participant’s account information are in bold, red, and “***Courier New***” font. Ensure you substitute your account details wherever you see this.

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Practices for Lesson 1: Course Overview

Practices for Lesson 1

There are no practices for this lesson.

Practices for Lesson 2: Oracle Cloud Platform for Database in the Cloud

Practices for Lesson 2

There are no practices for this lesson.

Practices for Lesson 3: Getting Started with Oracle Cloud Infrastructure Essentials

Practices for Lesson 3

There are no practices for this lesson.

Practices for Lesson 4: Oracle Autonomous Database Overview

Practices for Lesson 4: Overview

Overview

In these practices, you get an overview of the lab prerequisites.

Your practice environment consists of:

- A local system, i.e. a laptop or a desktop with a Windows 64-bit Operating System
- An Oracle Cloud Infrastructure (OCI) account assigned to you using which you will create Autonomous Database instances with the following workloads:
 - Autonomous Data Warehouse (ADWC)
 - Autonomous Transaction Processing (ATP)

Important: All instructions in this course, unless specified otherwise, assume you are working on a local Windows system. Connection to ADW and ATP instances will also be initiated from the same system.

Practice 4-1: Understanding the Lab Environment

Overview

In this practice, you understand the lab prerequisites and set up your laptop or desktop according to the instructions.

Assumptions

All information related to your Oracle Cloud Infrastructure (OCI) account, also referred to as Oracle Cloud account, has been assigned to you. Be sure to record the following:

- Domain/Tenant
- Username
- Password
- Compartment to be used

Tasks

1. You need SQL Developer installed on your local system to perform the practices in this course. Follow these steps to install **SQL Developer 18.2** depending on your Windows platform.
 - a. Download the version of “SQL Developer” from this link
<https://www.oracle.com/technetwork/developer-tools/sql-developer/downloads/index.html> by reading and accepting the license agreement.

Note: Download the latest version of SQL Developer available with “JDK” included. As part of this lab, you use “SQL Developer 18.2 - Windows 64-bit with JDK 9 included”.

- b. Install the “SQL Developer” software by following the **Installation Notes** in the download link.

Practice 4-2: Exploring the Oracle Cloud Infrastructure Console

Overview

In this practice, you explore the Oracle Cloud Infrastructure Console and get an overview of the Cloud Dashboard.

Assumptions

All information related to your Oracle Cloud Infrastructure (OCI) account, also referred to as Oracle Cloud account, has been assigned to you. Be sure to record the following:

- Domain/Tenant
- Username
- Password
- Compartment to be used

Tasks

1. Launch a web browser and go to <https://console.us-ashburn-1.oraclecloud.com/>.
2. Click **Change tenant**, enter the tenant or the domain assigned to you as part of your account information, and click **Continue**.
3. Under the **Oracle Cloud Infrastructure** section, enter the cloud account **Username** and **Password** assigned to you and click **Sign In**.
4. At this point, you should be logged in to **Oracle Cloud Infrastructure (OCI) Dashboard**.
5. Click the **Menu** on the top left and explore the options available. ≡ MENU
6. Click **Autonomous Data Warehouse**.
7. You are now logged in to the **Autonomous Databases** home page, displaying databases with the Data Warehouse type workload.
8. Go back to the **Menu** on the top left and explore the options available. ≡ MENU
9. Now click **Autonomous Transaction Processing**.
10. You are now logged in to the **Autonomous Databases** home page, displaying databases with the Transaction Processing type workload.

You will navigate these pages and the service console throughout this course.

Practices for Lesson 5: Provisioning an Oracle Autonomous Database Instance

Practices for Lesson 5: Overview

Overview

In these practices, you create an Oracle Autonomous Database (ADB) with the Data Warehouse workload and one with the Transaction Processing workload. These Autonomous databases will be your target cloud databases.

Important: This is a mandatory practice for the upcoming practices.

Assumptions: These assumptions are applicable for all practices in this document.

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.
- You are not connected to any VPN or working in a restricted network that blocks the connection from your local system to the ADB instance.

Practice 5-1: Creating an Autonomous Database with Data Warehouse Workload on OCI

Overview

In this practice, you create your own ADB with the Data Warehouse workload, taking the following into consideration:

- The ADW instance **Display Name** should be named as follows:
<student_initials>ADWC<no_of_minutes_on_your_clock_right_now>.
(Throughout the practice, the database deployment will be referred to as **MYADWC**.)
- The database should be named
<student_initials>ORCL<no_of_minutes_on_your_clock_right_now>.
- (For simplicity throughout the practice, the database name will be referred to as **MYORCL**.)
- Set a strong password for the **admin** database user.
- You need **2 OCPU** and **1 TB** for the databases.

Important: Duplicate names are not allowed for display names within a tenant. Because we will have more than one user within a tenant, it is important to follow the above naming convention.

Assumptions

All information related to your Oracle Cloud Infrastructure (OCI) account, also referred to as Oracle Cloud account, has been assigned to you. Be sure to record the following:

- Domain/Tenant
- Username
- Password
- Compartment to be used

Tasks

1. Launch the web browser from your laptop/desktop and navigate to <https://console.us-ashburn-1.oraclecloud.com/>. Log in to your assigned OCI account as described in the previous practice.
2. Expand the options available under **Menu**.
3. Click **Autonomous Data Warehouse**.
4. Select the compartment assigned to you as part of account information.



5. Click **Create Autonomous Database** to start creating your ADW instance.

6. Select or fill in the following values in the Create Autonomous Database wizard:

Important: Instance creation will fail if there is duplication in the name of the instance or the database name in a given tenancy/domain. Hence, take extra care to ensure the names you enter are unique.

Workload Type: **AUTONOMOUS DATA WAREHOUSE**

Display Name: **MYADWC**

(Students should enter a unique name using the naming convention

<student_initials>ADWC<no_of_minutes_on_your_clock_right_now>)

Database Name: **MYORCL**

(Students should enter a unique name using the naming convention

<student_initials>ORCL<no_of_minutes_on_your_clock_right_now>)

CPU Core Count: **2**

Storage (TB): **1**

Password: Set the password for your Autonomous Database **ADMIN** user

LICENSE TYPE: **Subscribe To New Database Software License And The Database Cloud Service.**

TAGS: Ignore this section

Note: The password must be 12 to 30 characters and contain at least one uppercase letter, one lowercase letter, and one number. The password cannot contain the double quote ("") character. It must be different from the last four passwords.

7. After you have filled the details, click **Create Autonomous Database**.

Note:

- Initially, the status of the service instance will read “Provisioning.”
- If there was duplication in the name you had provided for the instance or the database, then the status will read “Unavailable.” If this happens, you need to terminate this instance and start over again.
- Generally, provisioning takes anywhere between 10 to 30 minutes to complete depending on resource availability. **Allow sufficient time for this to complete.**

8. Refresh the Instances page after a while to see if your instance is created.

9. Check if the Status for your instance is “**Available**,” indicating your instance is ready to use.

Practice 5-2: Creating an Autonomous Database with Transaction Processing Workload on OCI

Overview

In this practice, you create your own ADB with the Transaction Processing workload, taking the following into consideration:

- The ATP instance **Display Name** should be named as follows:
`<student_initials>TRAINING<no_of_minutes_on_your_clock_right_now>`. (For simplicity throughout the practice, the instance display name will be referred to as **TRAINING**.)
- The **Database Name** should be named
`<student_initials>ATPTRAINING<no_of_minutes_on_your_clock_right_now>`. (For simplicity throughout the practice, the database name will be referred to as **ATPTRAINING**.)
- Set a strong password for the **ADMIN** database user.
- You need **1 OCPU** and **1 TB** storage for the databases.

Important: Duplicate names are not allowed for display names within a tenant. Because we will have more than one user within a tenant, it is important to follow the previous naming convention.

Assumptions

All information related to your Oracle Cloud Infrastructure (OCI) account, also referred to as the Oracle Cloud account, has been assigned to you. Be sure to record the following:

- Domain/Tenant
- Username
- Password
- Compartment to be used

Tasks

1. Launch the web browser from your laptop or desktop and navigate to <https://console.us-ashburn-1.oraclecloud.com/>. Log in to your assigned OCI account as described in the previous practice.
2. Expand the options available under **Menu**.
3. Click **Autonomous Transaction Processing**.

- Select the compartment associated with your assigned account. The compartment should be listed by default in the drop-down list.

A screenshot of a dropdown menu titled "COMPARTMENT". The menu contains a single item, "C01", which is highlighted with a blue border. There is a small downward arrow icon at the bottom right of the dropdown.

- Click **Create Autonomous Database**.

- Select or enter the following values in the Create Autonomous Database wizard:

Important: Instance creation will fail if there is duplication in the name of the instance or the database name in a given tenancy or domain. Hence, take extra care to ensure the names you enter are unique.

Workload Type: ***AUTONOMOUS TRANSACTION PROCESSING***

Display Name: ***TRAINING***

(Students should enter a unique name using the naming convention

<student_initials>TRAINING<no_of_minutes_on_your_clock_right_now>
)

Database Name: ***ATPTRAINING***

(Students should enter a unique name using the naming convention

<student_initials>ATPTRAINING<no_of_minutes_on_your_clock_right_now>

CPU Core Count: **1**

Storage (TB): **1**

Password: Set a password for the Autonomous Database **ADMIN** user (Make a note of this password carefully).

LICENSE TYPE: Select **Subscribe To New Database Software License And The Database Cloud Service**.

TAGS: Ignore this section

Note: The password must be 12 to 30 characters and contain at least one uppercase letter, one lowercase letter, and one number. The password cannot contain the double quote ("") character. It must be different from the last four passwords.

- After you have filled the wizard, click **Create Autonomous Database**.

Note

- Initially, the status of the service instance will read “Provisioning.”
- If there was duplication in the name you had provided for the instance or the database, then the status will read “Unavailable.” If this happens, you need to terminate this instance and start over again.
- Generally, provisioning takes anywhere between 10 to 30 minutes to complete, depending on resource availability. **Allow sufficient time for this to complete.**

- Refresh the Instances page after a while to see if your instance is created.

9. Check if the Status of your instance is **Available**, indicating that your instance is ready to use.

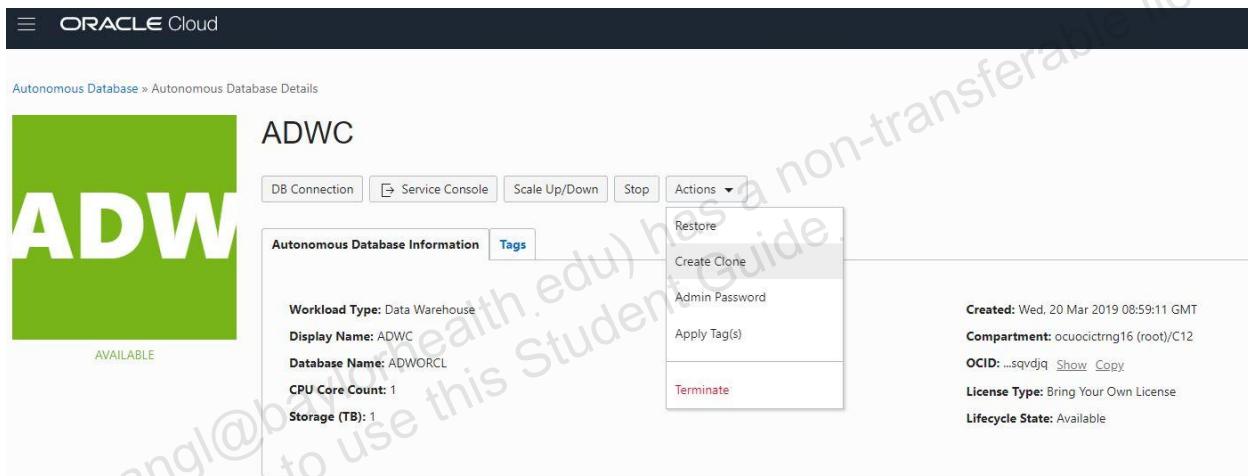
Practice 5-3: Creating a Clone of an Existing Autonomous Database on OCI

Overview

In this practice, you create a clone of an existing Autonomous Database, taking the following into consideration:

Tasks

1. Log in to your assigned OCI account as described in the previous practice.
2. Click **Menu** and select the **ADW** or **ATP** for which you want to create the clone.
3. In this example, we are using the ADW created in the previous practice for cloning.
4. In the Autonomous Database details page, go to Actions and click **Create Clone**.



5. In the **Create Autonomous Database Clone** dialog box, select **FULL CLONE**.
6. Enter the **Display Name**, **Database Name**, and **Password**. Select **SUBSCRIBE TO NEW DATABASE SOFTWARE LICENSES AND THE DATABASE CLOUD SERVICE** for **LICENSE TYPE**.
7. Click **Create Autonomous Database Clone** to create a clone of an existing database.

Practices for Lesson 6: Connecting to Autonomous Database

Practices for Lesson 6: Overview

Overview

In these practices, you connect to an Autonomous Database instance using SQL Developer with low and high services, and run a query.

Assumptions

- As part of your course environment, SQL Developer is installed on the laptop/desktop.
- All previous practices are completed successfully.
- You are not connected to any VPN or working in a restricted network that blocks the connection from your local system to the ADB instance.

Important: These assumptions are applicable for all practices in this document.

Note: SQL Developer Version 18.2 is used for this practice.

Practice 6-1: Connecting to the Autonomous Database with Data Warehouse Workload Using SQL Developer

Overview

In this practice, you connect to the Autonomous Database instance using SQL Developer.

Tasks

1. Download the credentials wallet.

As ADB accepts only secure connections, you need to download a wallet file containing credentials first. The wallet is downloaded from the ADB service console.

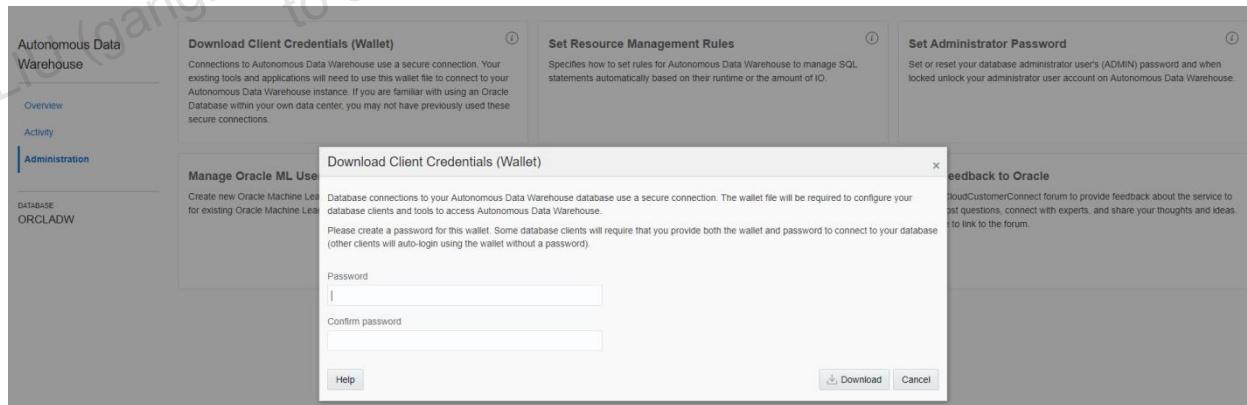
- a. On the Instances page, find your database and click **Service Console** in the actions menu.
- b. This will open a new browser tab for the service console. If prompted, **Sign in** to the service console with the following information.

Username: **admin**

Password: ***The administrator password you specified during provisioning***

- c. Click the **Administration** tab and click **Download Client Credentials (Wallet)** to download the wallet.

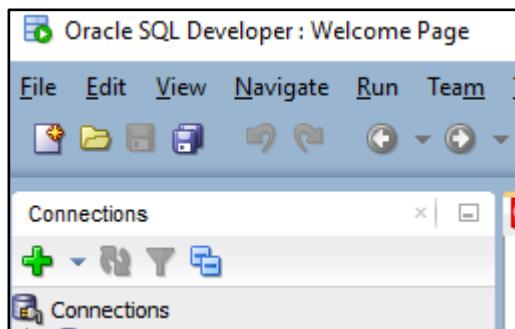
Note: Specify a password of your choice for the wallet. You will need this password when connecting to the database later. Note that this password is separate from the admin password. You will need this password as your keystore password when connecting JDBC thin applications.



- d. Click **Download** to download the wallet file to your client machine.
2. Connect to the database using SQL Developer.

Start SQL Developer and create a connection for your database using the default administrator account, ADMIN, by following these steps:

- a. Click the **Create Connection** icon in the Connections toolbox on the top left of the SQL Developer home page.



- b. Enter the connection details as follows:

Connection Name: **admin_low**

Username: **admin**

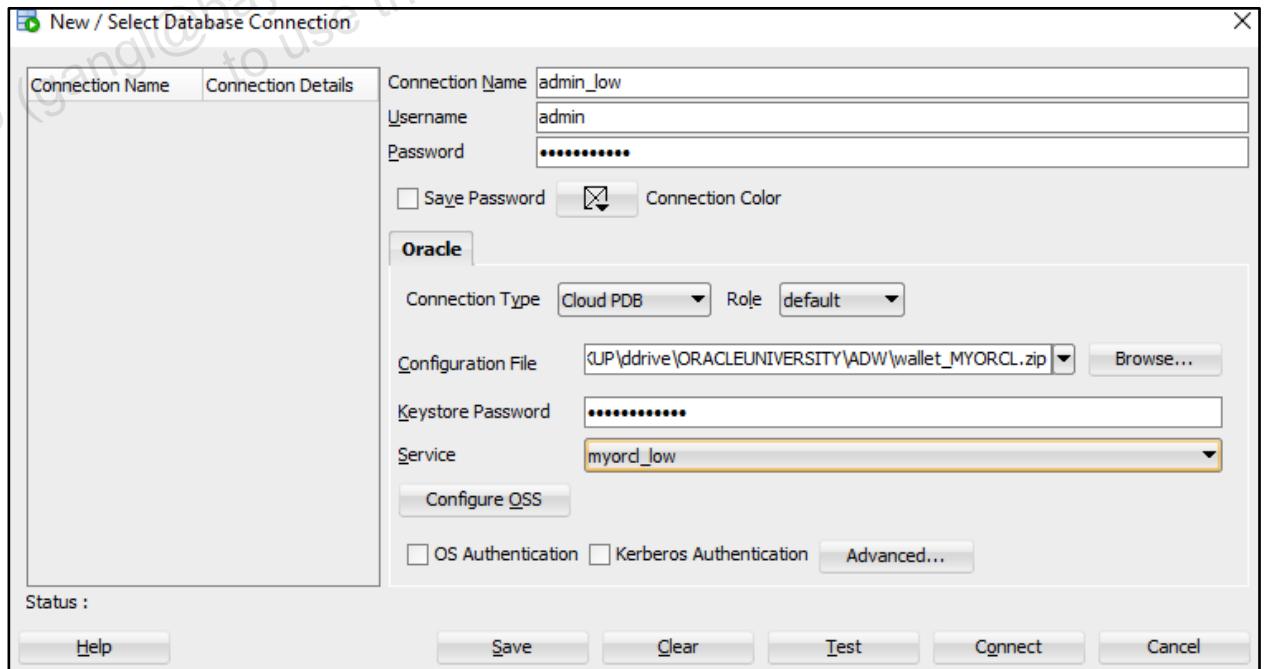
Password: **The password you specified during instance creation**

Connection Type: **Cloud PDB**

Configuration File: **Full path for the Client Credentials wallet file** you downloaded earlier

Keystore Password: The password you specified when downloading the wallet from the ADWC service console. **Note:** Required only if the SQL Developer version is less than 18.2

Service: There are three preconfigured database services for each database. Pick **myorcl_low** for this lab (Select the name corresponding to your instance).

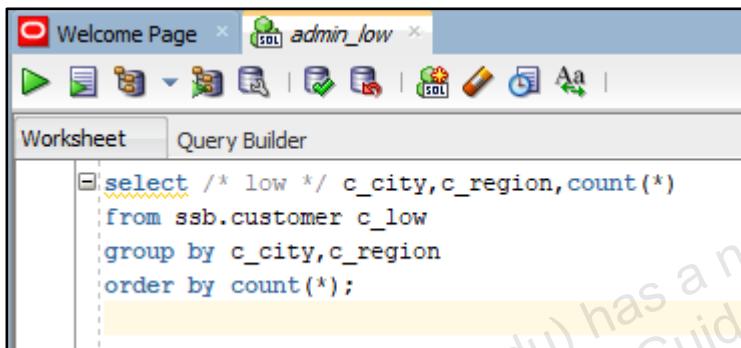


- c. Test your connection by clicking the **Test** button. If it succeeds, save your connection information by clicking **Save**.

- d. Connect to your database by clicking the **Connect** button.
- e. In SQL Developer, run this query with the **admin_low** connection you created before and note the response time.

```
select /* low */ c_city,c_region,count(*)  
from ssb.customer c_low  
group by c_city,c_region  
order by count(*);
```

- f. Make sure you click the **Run Script** button in SQL Developer so that all the rows are displayed on the screen.



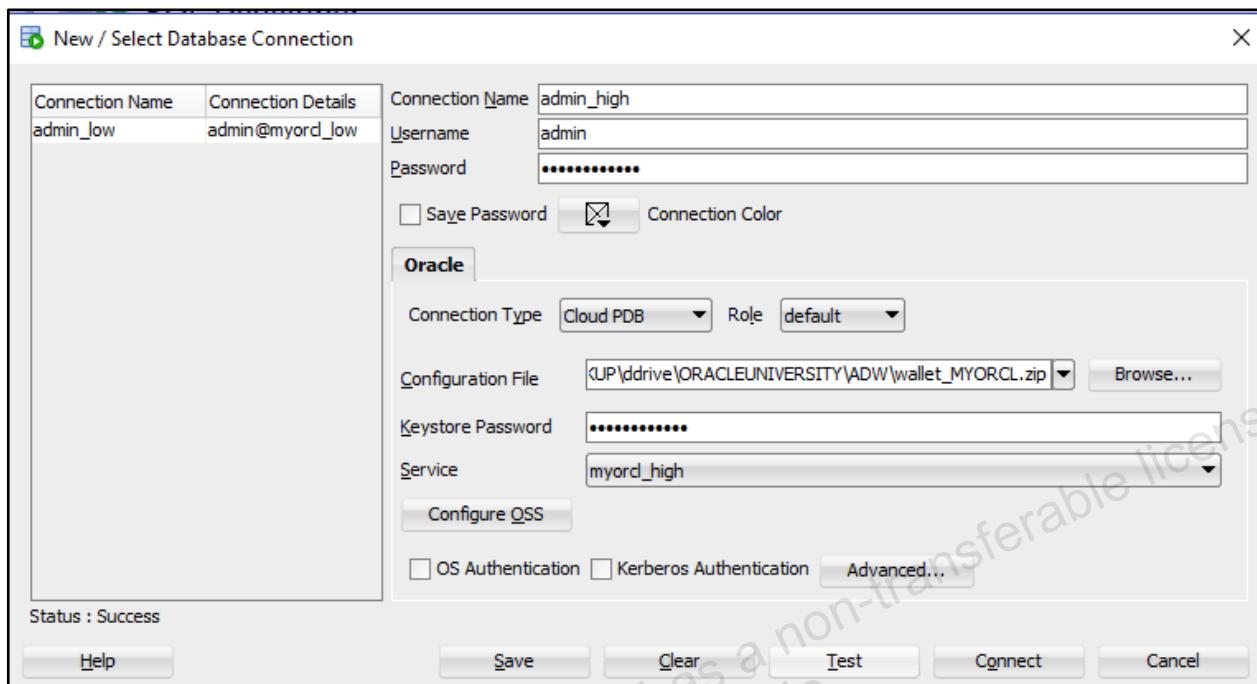
- g. Note the response time.

A screenshot of the SQL Developer interface showing the 'Script Output' tab. The title bar says 'Script Output' and 'Task completed in 9.765 seconds'. The output area displays the results of the query:

C_CITY	C_REGION	COUNT (*)
UNITED KI1	EUROPE	119082
UNITED ST4	AMERICA	119245
MOZAMBIQU2	AFRICA	119283
INDIA	2 ASIA	119380
ETHIOPIA	5 AFRICA	119393
BRAZIL	6 AMERICA	119393

Note: In this example, the query with the LOW database service finished in around 9.7 seconds.

3. Create another connection named **admin_high** using the same information as in **step 2**. This time, pick **myorcl_high** as the service name.

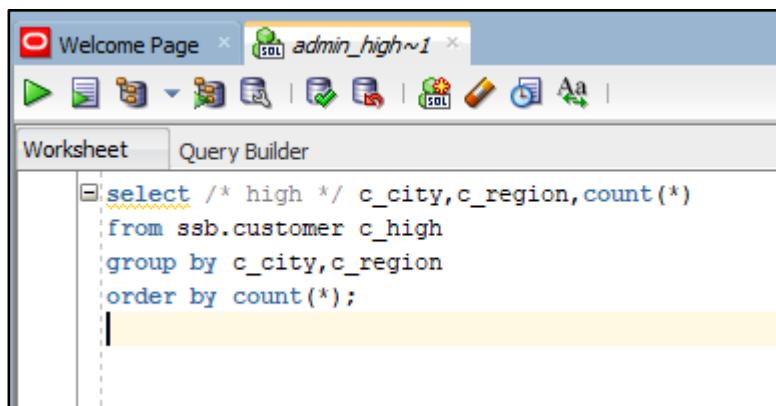


- a. In SQL Developer, run this query with the **admin_high** connection you created before and note the response time.

```
select /* high */ c_city,c_region,count(*)
from ssb.customer c_high
group by c_city,c_region
order by count(*);
```

Note: These two queries are basically the same except for the comment after the select keyword and the table alias.

- b. Make sure you click the **Run Script** button in SQL Developer so that all the rows are displayed on the screen.



- c. Note the response time.

C_CITY	C_REGION	COUNT(*)
1 UNITED KI1	EUROPE	119082
2 UNITED ST4	AMERICA	119245
3 MOZAMBIQU2	AFRICA	119283
4 INDIA	2 ASIA	119380
5 ETHIOPIA	5 AFRICA	119393
6 BRAZIL	6 AMERICA	119393
7 KENYA	6 AFRICA	119415

- d. **Note:** In the following example, the query with the HIGH database service finished in around 5.4 seconds. A query running in the HIGH database service can use more resources and run faster compared to a query running in the LOW database service.

Practice 6-2: Connecting to the Autonomous Database with Transaction Processing Workload Using SQL Developer

Overview

In this practice, you connect to the ATP instance using SQL Developer, and create user schema and SQL Developer connections, which will be used throughout the course practices.

Tasks

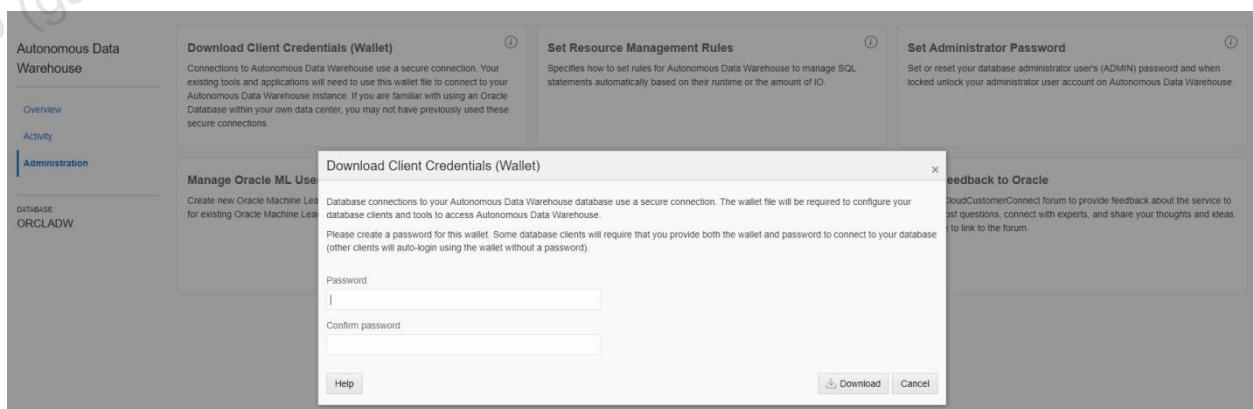
1. Download the credentials wallet. Because ATP only accepts secure connections to the database, you first need to download a wallet file containing your credentials. The wallet is downloaded from the ATP Service Console.
 - a. On the Instances page, find your database and click **Service Console** in the actions menu.
 - b. This will open a new browser tab for the service console. If prompted, **Sign in** to the service console with the following information:

Username: ADMIN

Password: *The administrator password you specified during instance creation*

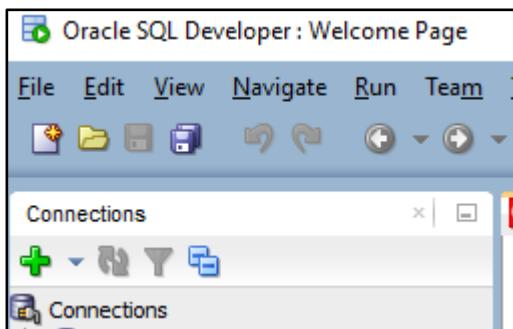
- c. Click the **Administration** tab and click **Download Client Credentials (Wallet)** to download the wallet.

Note: Specify a password of your choice for the wallet. You will need this password when connecting to the database later. Note that this password is separate from the admin password. You will need this password as your keystore password when connecting JDBC thin applications.



- d. Click **Download** to download the wallet file to your client machine.
2. Connect to the database using SQL Developer. Start SQL Developer on your local system and follow these instructions to create a connection for your database using the default administrator account **ADMIN**.

- Click the **Create Connection** icon in the Connections toolbox on the top left of the SQL Developer home page.



- Enter the connection details as follows. Test and save the connection.

Connection Name: **c3** (Provide any meaningful name and make a note of it.)

Username: **ADMIN**

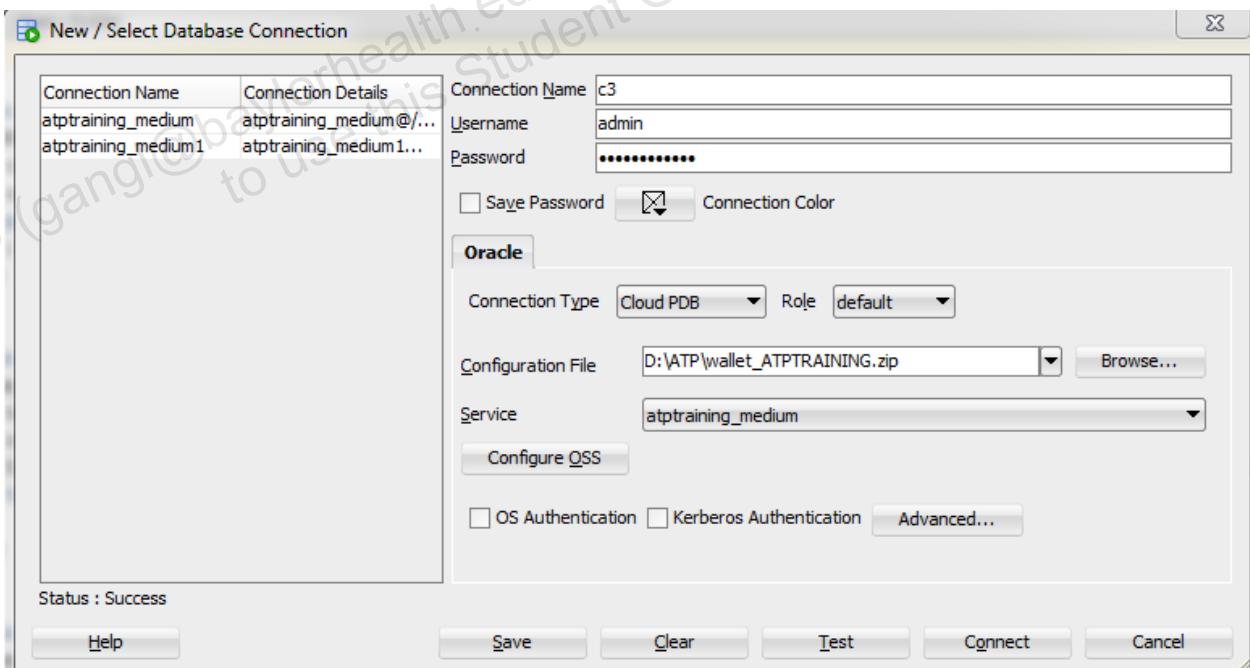
Password: **The password you specified during instance creation**

Connection Type: **Cloud PDB**

Configuration File: **Full path for the Client Credentials wallet file** you downloaded earlier

Keystore Password: Required if the SQL Developer version is less than 18.2

Service: **atptraining_medium** (Select the name corresponding to your instance)



- Test your connection by clicking **Test**. If it succeeds, save your connection information by clicking **Save**.
- Connect to your database by clicking **Connect**.

Note: You will encounter a connection error if you are connected to any VPN or working in a restricted network that blocks the connection from your local system to the ATP instance.

3. Create the **atpc_user** user by logging in to SQL Developer as the **ADMIN** user. Grant the **dwrole** role to **atpc_user**. Granting this role is mandatory for this practice.
 - a. Use the newly created connection **c3** and connect to your ATP instance.
 - b. Execute the following command to create the **atpc_user** user:

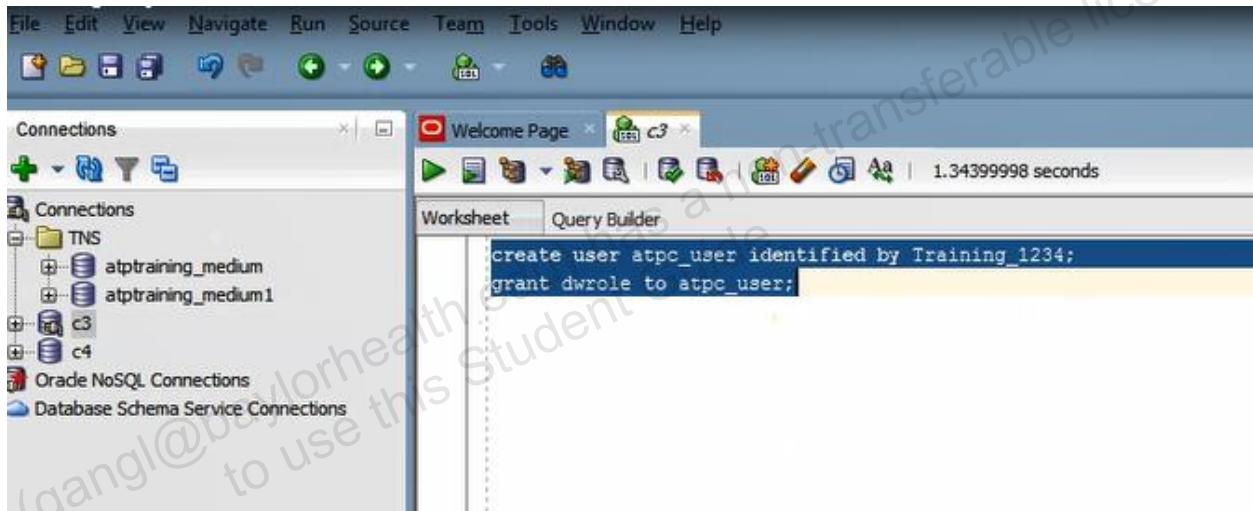
```
create user atpc_user identified by "<password>";
```

Note: The password should be at least 12 characters long, must contain one uppercase letter, and have at least one digit. If the password contains a special character, it need to be enclosed in quotes.

- c. Execute the following command to grant the **dwrole** role:

```
grant dwrole to atpc_user;
```

You can enter both these commands in the SQL Developer worksheet and click the **Run Script** option to execute the commands.



4. Create a new SQL Developer connection for the new user **atpc_user** similar to the one created for the **admin** user. Name this connection **c4**. You will use the connections created in this practice throughout the course practice sessions.

- a. Fill in the connection details as follows. Test and save the connection.

Connection Name: **c4**

Username: **atpc_user**

Password: *Password for the above user*

Connection Type: **Cloud PDB**

Configuration File: *Full path for the Client Credentials wallet file you downloaded earlier*

Service: **atptraining_medium** (*Select the name corresponding to your instance*)

Important: Remember the database username, password, and SQL Developer connections. They will be used throughout the practices.

Practice 6-3: Downloading, Extracting, and Staging Lab Files

Overview

In this practice, you download, extract, and stage lab files required for this course.

Tasks

1. Download the zip file named **labs.zip** onto your local system. This file is available for download along with the course material, that is, the Student Guide and the Activity Guide.
 - a. Download **labs.zip** on to your local system.
 - b. Create a folder named **ADB** in **D drive**. The location should be **D:\ADB**.
 - c. Copy **labs.zip** to **D:\ADB** and extract the zip file.
 - d. The resulting directory structure and file content should be as follows:
 - 1) **D:\ADB\Labfiles** with two **.sql** files and a subfolder named **Module3**
 - 2) **D:\ADB\Labfiles\Module3** with team **.dat** files

These are the lab files that will be used for the upcoming practices.

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Practices for Lesson 7: Data Loading and Querying External Data with Autonomous Database

Practices for Lesson 7: Overview

Overview

In these practices, you load data from different sources into Autonomous Database (ADB).

Assumptions

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.
- You are not connected to any VPN or working in a restricted network that blocks the connection from your local system to the ADB instance.
- Beginning with SQL Developer 18.1, the data import wizard supports loading of files in the Object Store straight into your ADB.

Practice 7-1: Loading a Local File into Autonomous Database

Overview

In this practice, you load data from a local file on your machine into ADB.

Tasks

1. Download and save the **channels.csv** lab file on your local machine. This file is available for download along with the Student Guide. It is recommended that you use this file to ensure you do not have any formatting issues.

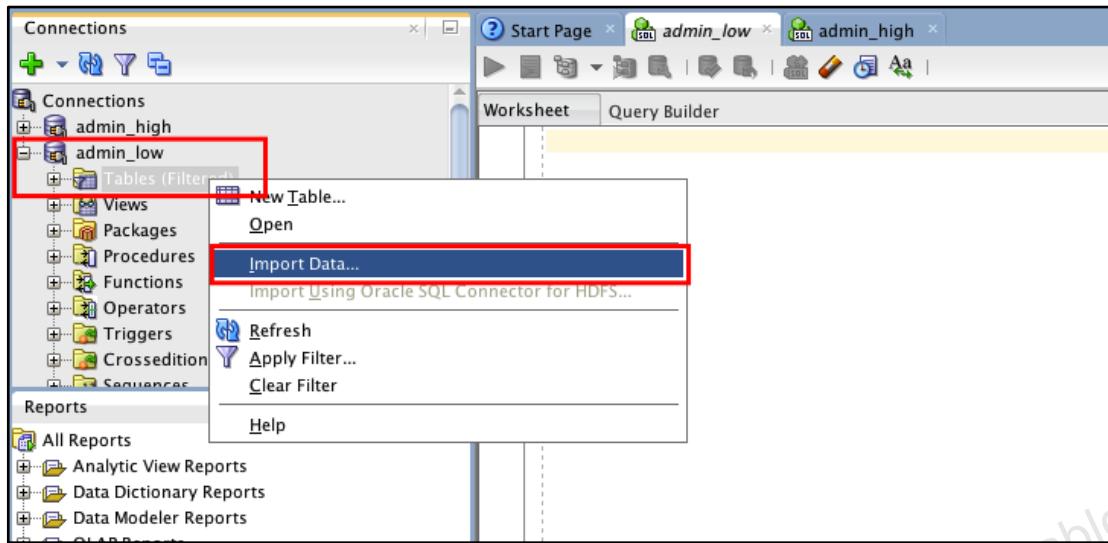
As an alternate option, you can create a new CSV (Comma-Separated Values) file on your local machine, and copy and paste the following data into the file. Finally, ensure you save the file as a CSV file with the name **channels.csv** on **your local machine**.

Note: You can save this file in any location on your local machine.

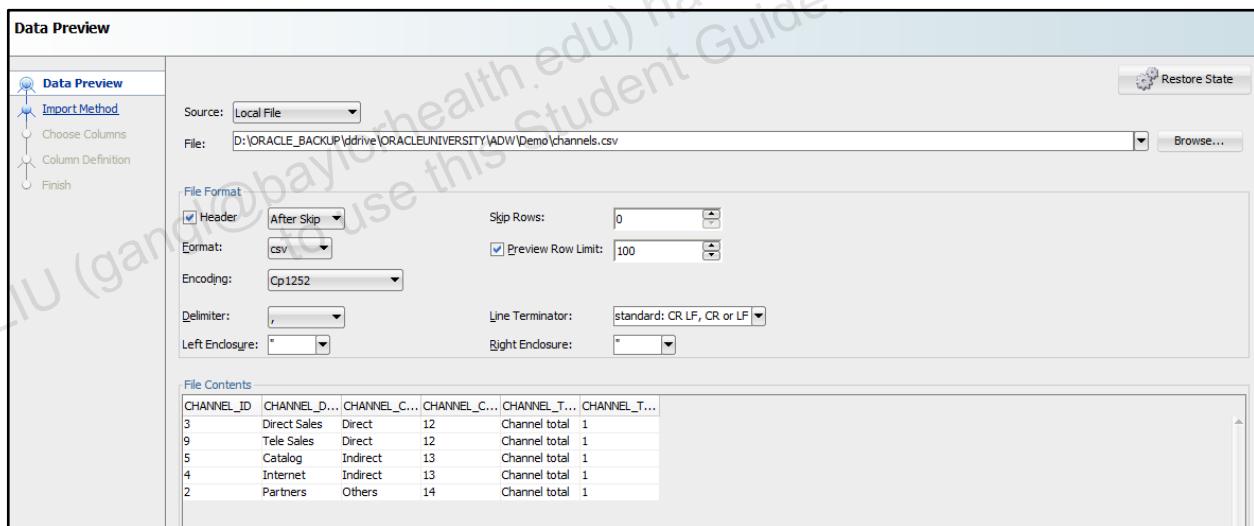
CHANNEL_ID	CHANNEL_DESC	CHANNEL_CLASS	CHANNEL_CLASS_ID	CHANNEL_TOTAL	CHANNEL_TOTAL_ID
3	Direct Sales	Direct	12	Channel total	1
9	Tele Sales	Direct	12	Channel total	1
5	Catalog	Indirect	13	Channel total	1
4	Internet	Indirect	13	Channel total	1
2	Partners	Others	14	Channel total	1

2. Go to SQL Developer and expand your **admin_low** connection for the ADW instance.

3. Right-click **Tables** and then click **Import Data**.



4. This will open the data import wizard. Click **Browse** and locate the **channels.csv** file you created.
5. When you select the file, you will see the file contents in the import wizard.



6. Click **Next**. In the next screen, enter CHANNELS as the table name you will create and load into.

Import Method

Specify the method for importing data. For insert method, data is imported directly into the table. Insert method insert script creates a script and sends it to a worksheet.

Import Method: **Insert** Send Create Script to SQL Worksheet

Table Name: **CHANNELS** Import Row Limit: **100**

File Contents

CHANNEL_ID	CHANNEL_D...	CHANNEL_C...	CHANNEL_C...	CHANNEL_T...	CHANNEL_T...
3	Direct Sales	Direct	12	Channel total	1
9	Tele Sales	Direct	12	Channel total	1
5	Catalog	Indirect	13	Channel total	1
4	Internet	Indirect	13	Channel total	1
2	Partners	Others	14	Channel total	1

7. Click **Next**. The next screen allows you to select the columns you want for this table. For this practice, leave the columns as is, which means the table will have all columns available.

Choose Columns

Select the columns to import from the data set and arrange them in the order you want.

Available Columns

Selected Columns

CHANNEL_ID	CHANNEL_D...	CHANNEL_C...	CHANNEL_C...	CHANNEL_T...	CHANNEL_T...
3	Direct Sales	Direct	12	Channel total	1
9	Tele Sales	Direct	12	Channel total	1
5	Catalog	Indirect	13	Channel total	1

8. Click **Next**. The next screen allows you to look at the data types for each column. You can change the data types if you need to. For this practice, leave the data types as default.

Column Definition

For each column on left, define the column details of the database table that will be created to import this data into.

Source Data Columns

- CHANNEL_ID
- CHANNEL_DESC
- CHANNEL_CLASS
- CHANNEL_CLASS_ID
- CHANNEL_TOTAL
- CHANNEL_TOTAL_ID

Target Table Columns

Name	CHANNEL_ID
Data Type	NUMBER
Size/Precision	3
Scale	0
<input checked="" type="checkbox"/> Nullable?	Default
Comment	

Data

3
9
5
4
2

9. Click **Next**. The next page will display a summary for the import operation.

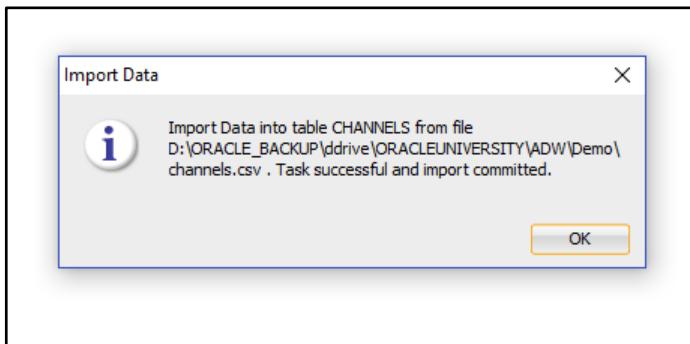
Finish

Import Summary

- Destination Connection: admin_low
- Source File: D:\ORACLE_BACKUP\ddrive\ORACLEUNIVERSITY\ADW\Demo\channels.csv
- Selected Fields
- Fields Not Selected
- Import Method: Insert

Save State

10. Click **Finish** to complete the import wizard and start the data load. When the data load finishes, you will see a message saying the import was completed.



11. Your source file is now loaded into ADB. You can run a query on the table to see your data.

The screenshot shows the SQL Developer interface. In the "Worksheet" tab, the query `select * from channels;` is entered. In the "Query Result" tab, the output is displayed as a table:

CHANNEL_ID	CHANNEL_DESC	CHANNEL_CLASS	CHANNEL_CLASS_ID	CHANNEL_TOTAL	CHANNEL_TOTAL_ID
1	3 Direct Sales	Direct		12 Channel total	1
2	9 Tele Sales	Direct		12 Channel total	1
3	5 Catalog	Indirect		13 Channel total	1
4	4 Internet	Indirect		13 Channel total	1
5	2 Partners	Others		14 Channel total	1

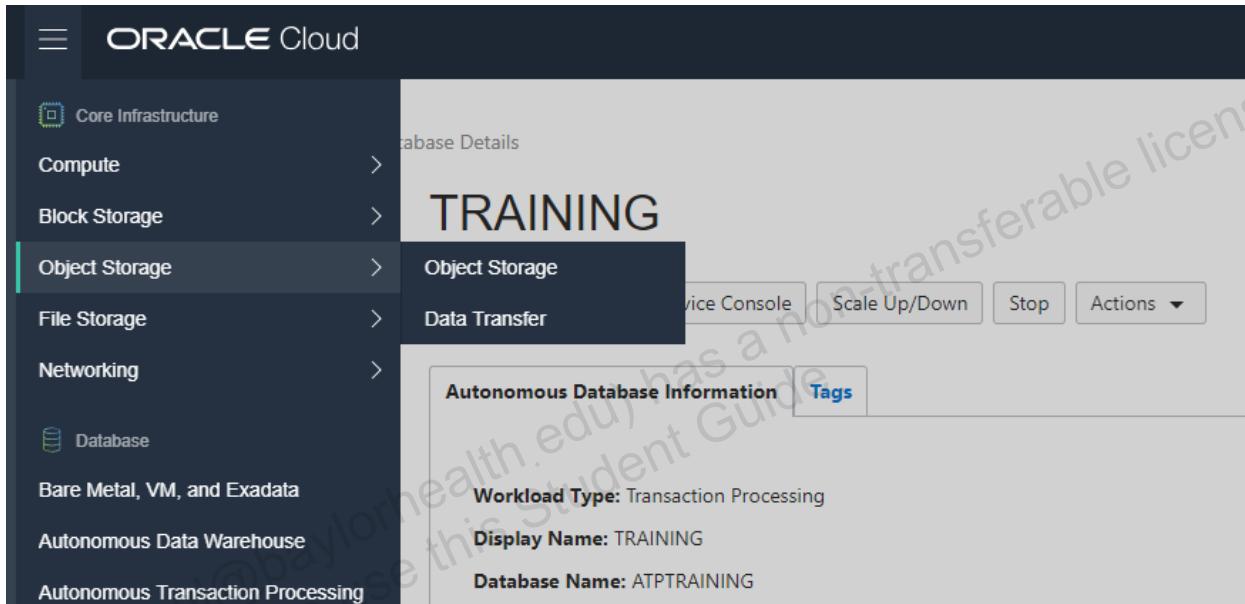
Practice 7-2: Uploading Data Files to Your Object Store

Overview

In this practice, you connect to the ADB instance and upload various data sets into Object Store.

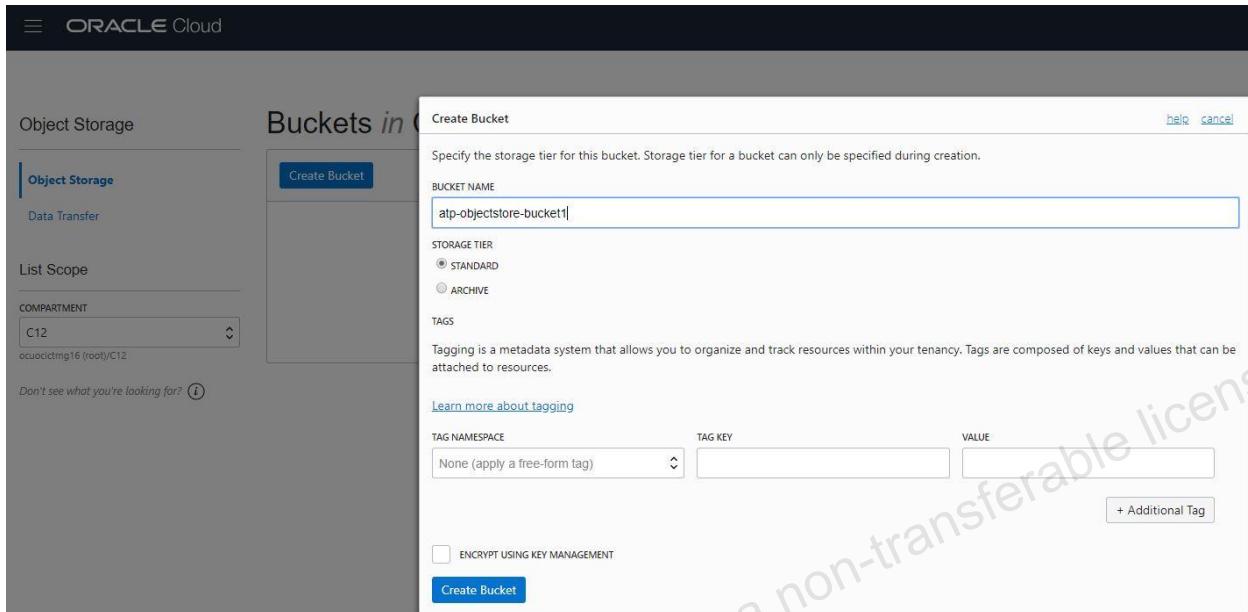
Tasks

1. Log in to your assigned Oracle Cloud account as described in the previous practices.
2. Click the **Menu** option and select **Object Storage**.



3. In the Object Storage menu, when you click the **Object Storage** option, you will be presented with a button with which you can create a bucket in your compartment.

4. Click **Create Bucket**, provide a meaningful name to your bucket (remember this name as you will load data into this), keep the storage type as **STANDARD**, and click **Create Bucket**.



5. After the bucket is created, open the bucket by clicking the bucket name and start adding objects into the bucket. To do so, click **Upload Object**.

Object Storage » Bucket Details

atp-objectstore-bucket1

[Change Compartment](#) [Update Visibility](#) [Delete](#) [Apply Tags\(s\)](#)

Bucket Information		Tags
Namespace:	ocuocictmg16	
Storage Tier:	Standard	
ETag:	6b9750e-3f07-41a0-a099-127848b93aef	
Approximate Count:	0 objects (i)	
Encryption Key:	None Assign	
<small>Developer tools are available for advanced object operations.</small>		

Resources

- Objects** (selected)
- Metrics
- Pre-Authenticated Requests
- Work Requests

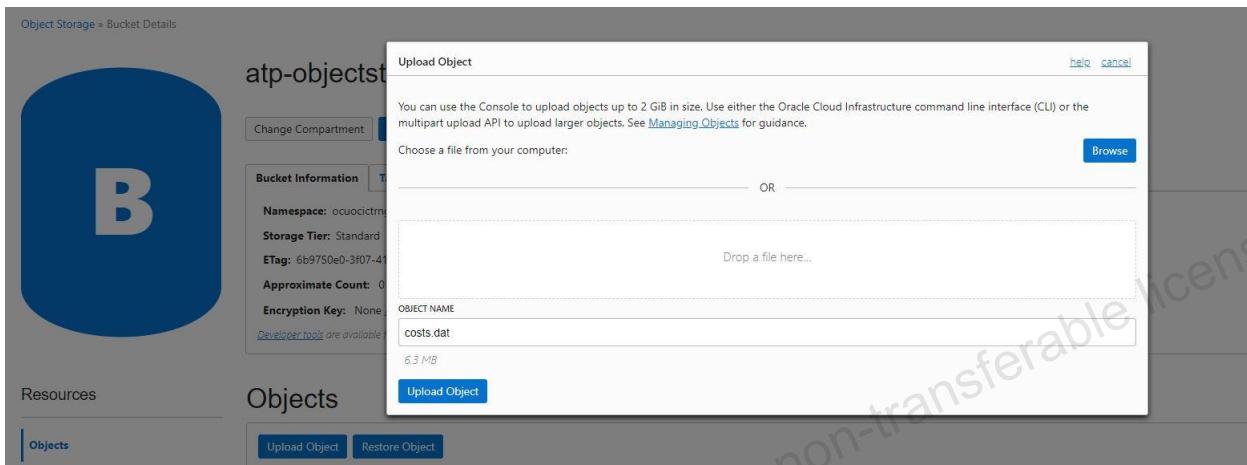
Objects

[Upload Object](#) [Restore Object](#)

No Objects were found.

6. Click **Browse**, select a **.dat** file, and click **Upload Object** to upload the file one after the other. Alternatively, you can also drag a **.dat** files one after the other from **D : \ADB\Labfiles\Module3** on to the **Drop a file here** pane of the Upload Object window and upload them. You should upload all the 10 files.

Important: You must ensure the files are uploaded one after the other. Do not try to drag and drop all the files at once.



7. This completes the task of uploading external data files onto Object Storage.

Practice 7-3: Creating an Object Store Auth Token

Overview

In this practice, you generate an **Auth Token**, and this token will be used while creating the credentials to access Object Storage objects.

Tasks

1. Click **User Settings** on the top menu where the username is being displayed.

The screenshot shows the Oracle Cloud User Settings interface. At the top right, the user profile is shown with the name "lab.user12" and the tenancy "tenancy: ocuocictmg16". Below the profile, there are links for "Change Password", "User Settings", and "Sign Out". On the left, a sidebar titled "Autonomous Database" shows a "List Scope" dropdown set to "COMPARTMENT C12" and a "Create Autonomous Database" button. The main content area is titled "Autonomous Databases in C12 Compartment" and lists one database: "TRAINING" (Available, CPU Core Count 1, Storage (TB) 1, Workload Type Transaction Processing, Created Tue, 12 Mar 2019 16:38:43 GMT).

Click **Auth Tokens** under the **Resources** section on the left hand side, and then click **Generate Token**.

The screenshot shows the Oracle Cloud User Details interface for the user "lab.user12". The top navigation bar includes "User Information" and "Tags" tabs, with "User Information" selected. Under "User Information", details are provided: OCID (OCID: o...), Created (Fri, 26 Jan 2018 21:09:33 GMT), Multi-factor authentication (Disabled), Email (empty), Status (Active), and Federated (No). Below this, the "Capabilities" section lists Local password (Yes), API keys (Yes), and Auth tokens (Yes). The "SMTP credentials" and "Customer secret keys" fields are also listed as Yes. On the left sidebar, under "Resources", the "Auth Tokens (0)" section is highlighted. The main content area is titled "Auth Tokens" and contains a message: "There are no auth tokens for this User." A "Generate Token" button is visible at the bottom of this section.

2. Provide your own meaningful description for the token and click **Generate Token** again. This will generate a token, which can be copied by clicking the **Copy** option. This completes the task of token generation. Make a note of the token as it will be used in the next practice to create the credentials.

Generate Token

GENERATED TOKEN

9Acg>ACh.E.;wtQo+sn_

Copy this token for your records. It will not be shown again.

[Copy](#)

[Close](#)

[help](#) [close](#)

Practice 7-4: Creating Object Store Credentials in Your Autonomous Transaction Processing Schema

Overview

In this practice, you create the `atpc_user` user schema. You store the Auth Token created in the previous practice along with the username, as a credential under `atpc_user` schema. At the time of creating this credential, we will provide a credential name. This name is used to access the `.dat` files stored inside the object storage.

Tasks

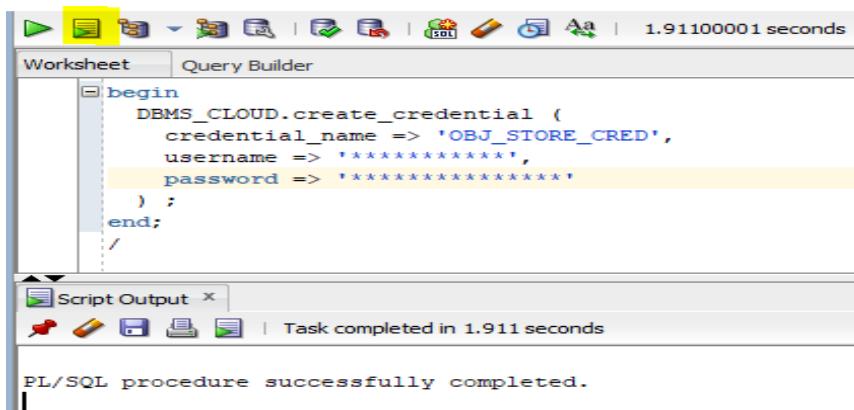
1. Connect to the `atpc_user` user using SQL Developer connection **c4**.
2. In a SQL Developer worksheet, use the `create_credential` procedure of the `DBMS_CLOUD` package to store the object store credentials in your `atpc_user` schema.
Ensure you substitute your assigned Oracle Cloud account username and your own **Auth Token** for the password parameter value. This is the same Auth Token you created in the previous practice.
 - a. After substituting your parameter values, execute the following command in SQL Developer by clicking the **Run Script** option:

```
begin
    DBMS_CLOUD.create_credential (
        credential_name => 'OBJ_STORE_CRED',
        username => '<your Oracle Cloud Account username>',
        password => '<your Auth Token>'
    );
end;
/

```

Ensure there is no space before or after the username and password values within the quotes.

- b. Ensure the command was executed successfully.



Practice 7-5: Copying Data from Object Store to Autonomous Transaction Processing Database Tables

Overview

In this practice, you load data from external sources through Object Storage into the Autonomous Transaction Processing database.

Important: Ensure you edit the `load-data-script.sql` script to update your account details before executing it.

In this script, change the region name, tenant name, and bucket name with your respective names. We recommend keeping file names and table names untouched for this practice.

Tasks

1. Connect to the `atpc_user` user using SQL Developer connection **c4**.
2. Go to the **File** menu, select **Open**, and navigate to `D:\ADB\Labfiles\`, where the lab files were extracted.
3. Select the `create-table-script.sql` script and click **Open** in the file navigation window.
4. After the script is loaded into the SQL worksheet window in SQL Developer, select **c4** from the connection drop-down list and click **Run Script**. The script execution should complete successfully before you proceed to the next step.

```

CREATE TABLE atpc_user.sales (
    prod_id          NUMBER      NOT NULL,
    cust_id          NUMBER      NOT NULL,
    time_id          DATE        NOT NULL,
    channel_id       NUMBER      NOT NULL,
    promo_id         NUMBER      NOT NULL,
    quantity_sold   NUMBER(10,2) NOT NULL,
    amount_sold     NUMBER(10,2) NOT NULL);

CREATE TABLE atpc_user.salestemp (
    prod_id          NUMBER      NOT NULL
);

```

5. Open the `load-data-script.sql` script in the SQL Developer worksheet. Use the **find** and **replace** function to replace the following values with details corresponding to your assigned Oracle Cloud account.

<REGION NAME>: *The regions to which your cloud domain/tenant belongs*

<TENANT NAME>: *The domain/tenant assigned to you*

<BUCKET NAME>: *The name of the bucket you created in the earlier practice. In this example, we created the bucket “atp-objectstore-bucket1”.*

You can find the **region** and **tenant** name at the top of the webpage on the Oracle Cloud Infrastructure home page when you log into your cloud account:

The screenshot shows the Oracle Cloud Infrastructure Autonomous Database interface. At the top right, there is a user profile section with a dropdown menu set to 'us-ashburn-1'. Below this, a banner displays 'Autonomous Databases in C12 Compartment'. A table lists one database: 'TRAINING' (Status: Available, Database Name: ATPTRAINING, CPU Core Count: 1, Storage (TB): 1, Workload Type: Transaction Processing, Created: Tue, 12 Mar 2019 16:38:43 GMT). The URL in the browser bar also includes 'us-ashburn-1'.

Sample of how the code looks **before** you replace your account details:

```
begin
  dbms_cloud.copy_data(
    table_name =>'CHANNELS',
    credential_name =>'OBJ_STORE_CRED',
    file_uri_list =>'https://swiftobjectstorage.<REGION
NAME>.oraclecloud.com/v1/<TENANT NAME>/<BUCKET NAME>/chan_v3.dat',
    format => json_object('ignoremissingcolumns' value 'true', 'removequotes' value
'true')
  );
end;
/
```

Sample of how the code looks **after** you replace your account details:

```
begin
  dbms_cloud.copy_data(
    table_name =>'CHANNELS',
    credential_name =>'OBJ_STORE_CRED',
    file_uri_list =>'https://swiftobjectstorage.us-ashburn-1.oraclecloud.com/v1/
ocuocictrng16/atp-objectstore-bucket1/chan_v3.dat',
    format => json_object('ignoremissingcolumns' value 'true', 'removequotes' value
'true')
  );
end;
/
```

- After the **load-data-script.sql** script is updated, select **c4** from the connection drop-down list and click **Run Script**. The script execution should complete successfully before you proceed to the next step.

Note: You might encounter these command errors:

- ORA-27276** error. Ensure you create the credential under the same user where you are executing the script. Check whether you have mentioned a different credential name.
- ORA-20000** error: You need to make sure that **file_uri_list** is properly mentioned with the region name, tenant name, and bucket name.

This completes the task of loading data into an ATP instance.

Practices for Lesson 8: Managing Users in Autonomous Database

Practices for Lesson 8: Overview

Overview

In these practices, you will create a user in Oracle Machine Learning and then create a notebook and run a query. Notebook is a browser-based application that provides a web interface to run SQL queries and scripts, which can be grouped together within a notebook. Notebooks can be used to build single reports, collections of reports, and dashboards.

Assumptions:

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.

Practice 8-1: Managing User Accounts in Oracle Machine Learning

Overview

In this practice, you will be creating a user in Oracle Machine Learning and running a query from the user.

Tasks

1. Creating OML Users

- Go to the Cloud Console and open the Instances screen.
- Find your database, click the **action menu**, and select **Service Console**.

Autonomous Databases *in C12 Compartment*

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
ORCL ADW	Available	ORCLADW	3	1	Data Warehouse	Tue, 12 Mar 2019 04:25:50 GMT

Displaying 1 Autonomous Database

View Details Service Console Copy OCID

- If prompted, log in to the service with your admin password.
- Go to the **Administration tab** and click **Manage Oracle ML Users** to go to the OML user management page. This page will allow you to manage OML users.

Download Client Credentials (Wallet)

Set Resource Management Rules

Set Administrator Password

Manage Oracle ML Users

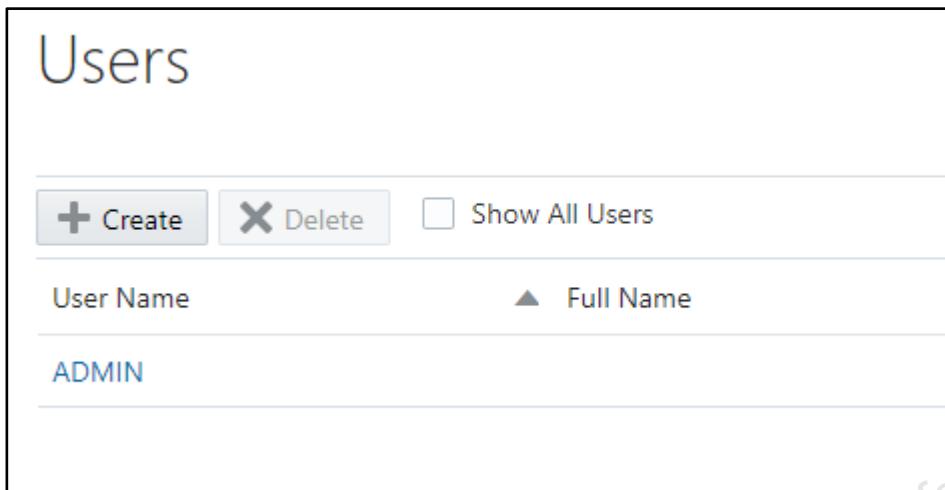
Download Oracle Instant Client

Send Feedback to Oracle

- This will open a new tab within your browser for the Machine Learning User Administration page. If prompted, log in using **admin** as the username and use the password you specified when provisioning your ADB instance and click **Sign In**.

Note: You need not go to the Administration tab every time to access the Machine Learning User Administration page. You can bookmark the URL and access it directly later.

- f. Click **Create** to create a new OML user. Note that this will create a new database user. This newly created user will be able to use the OML notebook application. Note that you can also enter an email address to send an email confirmation to your user.



- g. Enter the required information for this user, and name the user **omluser1**.
h. Click the **Create** button, in the top-right corner of the page, to create the user.

Create User

Create Cancel

The screenshot shows the 'Create User' form. It has fields for 'Username' (omluser1), 'First Name', 'Last Name', 'Email Address' (redacted), 'Password' (redacted), and 'Confirm Password' (redacted). A note below the fields says: 'Generate password and email account details to user. User will be required to reset the password on first sign in.'

- i. After you click **Create** you will see that the user is listed in the **Users** section.

The screenshot shows the 'Users' section after a user has been created. The table lists users with columns for 'User Name', 'Role', 'Email', 'Created On', and 'Status'. The user 'ADMIN' is listed with 'System Administrator' role, 'Created On' as 11/25/18 4:42 PM, and 'Status' as Open. The user 'OMLUSER1' is listed with 'Developer' role, 'Created On' as 3/12/19 5:31 AM, and 'Status' as Open. Above the table, a message says 'User Created'.

User Name	Role	Email	Created On	Status
ADMIN	System Administrator	[REDACTED]	11/25/18 4:42 PM	Open
OMLUSER1	Developer	[REDACTED]	3/12/19 5:31 AM	Open

Note: If you supplied a valid **email address**, a welcome email should arrive within a few minutes to your Inbox.

2. Exploring the OML Home Page

- Click the **Home icon** on the top right of Oracle Machine Learning User Administration page to go to the OML home page.

The screenshot shows the Oracle Machine Learning User Administration interface. At the top, there's a navigation bar with the Oracle logo and the title 'Machine Learning User Administration'. Below it, a blue header bar says 'User Created' and has a red square icon. The main area is titled 'Users' and contains a table with two rows of user information:

User Name	Full Name	Role	Email	Created On	Status
ADMIN		System Administrator		11/25/18 4:42 PM	Open
OMLUSER1		Developer		3/12/19 5:31 AM	Open

- Use your new user account **omluser1** to sign in.

Once you have successfully signed-in to OML, the application home page will be displayed.

The screenshot shows the Oracle Machine Learning application home page. At the top, there's a navigation bar with the Oracle logo and the title 'Machine Learning'. Below it, a grey header bar says 'OMLUSER1 Project [OMLUSER1 Workspace]' and has a dropdown for 'OMLUSER1'. The main area is titled 'Quick Actions' and contains five icons with descriptions:

- Run SQL Statement**: Enter and run SQL statements
- Run SQL Script**: Enter and run SQL scripts
- Notebooks**: The place for data discovery and analytics
- Jobs**: Schedule notebooks to run at certain times
- Examples**: Check out some examples

On the left, there's a 'Recent Activities' panel with the message 'Nothing to Display'. On the right, there are 'Learning Resources' and 'Recent Notebook' panels, both of which also say 'Nothing to Display'.

Note: The grey menu bar at the top of the screen provides links to the main OML menus for the application (left corner) and the workspace/project and user maintenance on the right-hand side.

- On the home page the main focus is the “**Quick Actions**” panel.

The main icons in this panel provide shortcuts to the main OML pages for running queries and managing your saved queries.

Note: All your work is automatically saved – i.e. there is no “**Save**” button when you are writing scripts and/or queries.

3. Running a SQL Statement

- On the home page, click the “**Run SQL Statement**” link in the Quick Actions panel to open a new SQL query scratchpad.

The following screen should appear:

The screenshot shows the SQL Query Scratchpad interface. At the top, there's a toolbar with icons for Back, Forward, Refresh, Save, and a dropdown for 'default'. The main area is titled 'SQL Query Scratchpad' and has a status bar at the bottom right that says 'READY'.

Note: The white panel below the main title (SQL Query Scratchpad – *this name is automatically generated*) is an area known as “**paragraph**.” Within a scratchpad you can have multiple paragraphs. Each paragraph can contain one SQL statement or a SQL script.

- b. In the **SQL paragraph** area, copy and paste the following code:

```

SELECT
    p.prod_category_desc,
    t.calendar_year as year,
    t.calendar_month_desc as Month,
    TRUNC(SUM(amount_sold)) as revenue,
    TRUNC(AVG(SUM(amount_sold)) over (PARTITION BY
t.calendar_year ORDER BY p.prod_category_desc,
t.calendar_month_desc ROWS 2 PRECEDING)) as avg_3M_revenue,
    TRUNC(AVG(SUM(amount_sold)) over (ORDER BY
p.prod_category_desc, t.calendar_month_desc ROWS 5
PRECEDING)) as avg_6M_revenue,
    TRUNC(AVG(SUM(amount_sold)) over (ORDER BY
p.prod_category_desc, t.calendar_month_desc ROWS 11
PRECEDING)) as avg_12M_revenue
FROM sh.sales s, sh.times t, sh.products p
WHERE s.time_id = t.time_id
AND s.prod_id = p.prod_id
AND prod_category_desc = 'Electronics'
GROUP BY p.prod_category_desc, t.calendar_year,
calendar_month_desc
ORDER BY p.prod_category_desc, t.calendar_year,
calendar_month_desc;

```

- c. Your screen should now look like this:



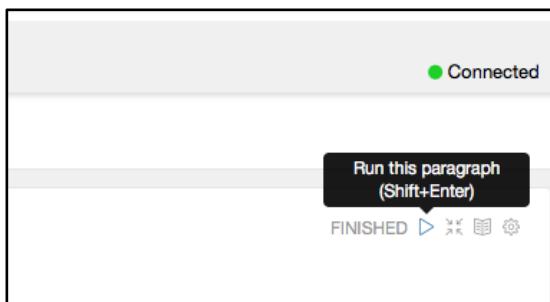
The screenshot shows the Oracle SQL Developer interface with the SQL Query Scratchpad tab selected. The window title is "SQL Query Scratchpad". The status bar at the top right indicates "Connected". The main area contains the previously copied SQL code. The code is highlighted with a red selection bar on the left side. The status bar at the bottom right shows "READY".

```

SELECT
    p.prod_category_desc,
    t.calendar_year as year,
    t.calendar_month_desc as Month,
    TRUNC(SUM(amount_sold)) as revenue,
    TRUNC(AVG(SUM(amount_sold)) over (PARTITION BY
t.calendar_year ORDER BY p.prod_category_desc,
t.calendar_month_desc ROWS 2 PRECEDING)) as avg_3M_revenue,
    TRUNC(AVG(SUM(amount_sold)) over (ORDER BY
p.prod_category_desc, t.calendar_month_desc ROWS 5
PRECEDING)) as avg_6M_revenue,
    TRUNC(AVG(SUM(amount_sold)) over (ORDER BY
p.prod_category_desc, t.calendar_month_desc ROWS 11
PRECEDING)) as avg_12M_revenue
FROM sh.sales s, sh.times t, sh.products p
WHERE s.time_id = t.time_id
AND s.prod_id = p.prod_id
AND prod_category_desc = 'Electronics'
GROUP BY p.prod_category_desc, t.calendar_year,
calendar_month_desc
ORDER BY p.prod_category_desc, t.calendar_year,
calendar_month_desc;

```

- d. Click the “Run this paragraph” icon shown below to execute the SQL statement and display the results in a tabular format.



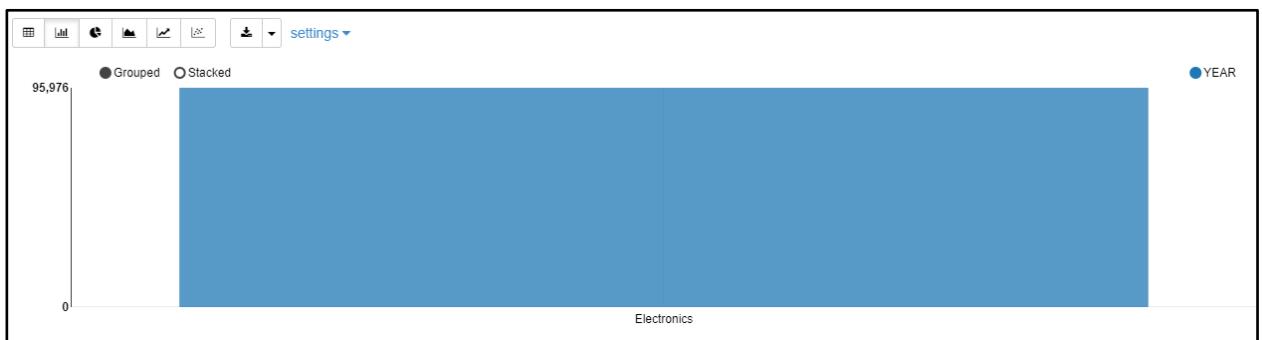
PROD_CATEGORY_DESC	YEAR	MONTH	REVENUE	AVG_3M_REVENUE	AVG_6M_REVENUE	AVG_12M_REVENUE
Electronics	1,998	1998-01	151,647	151,647	151,647	151,647
Electronics	1,998	1998-02	183,034	167,341	167,341	167,341
Electronics	1,998	1998-03	131,373	155,351	155,351	155,351
Electronics	1,998	1998-04	168,357	160,922	158,603	158,603
Electronics	1,998	1998-05	133,325	144,352	153,547	153,547

4. Changing the report type

- a. Using the **report menu bar** you can change the table to a graph and/or export the result set to a CSV or TSV file.



- b. Click the **bar graph** icon to change the output to a bar graph.



- c. Click the “**Settings**” link to unfold the settings panel for the graph.



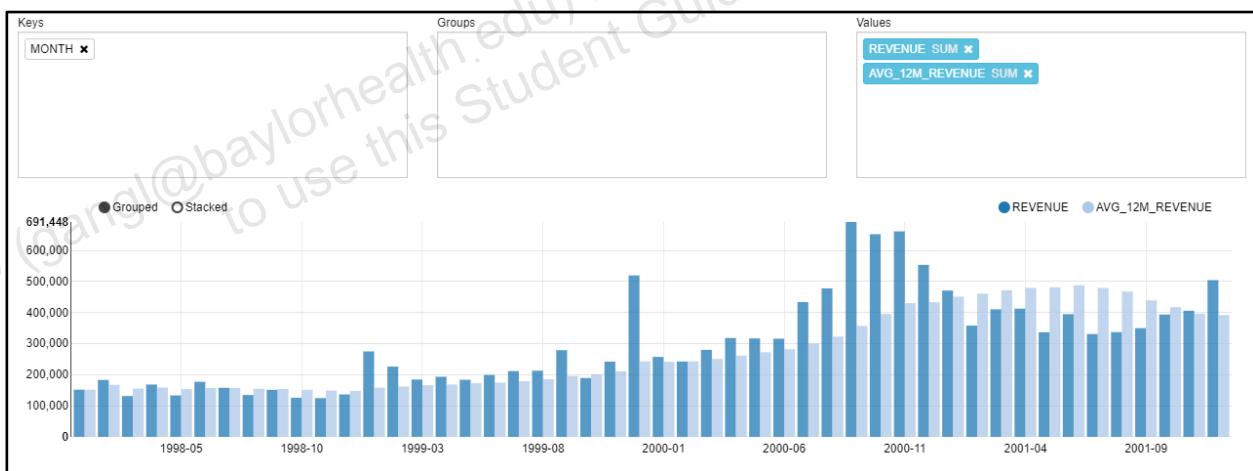
Note: To add a column to the **Keys**, **Groups**, or **Values** panels, drag and drop the column name into the required panel. To remove a column from the **Keys**, **Groups**, or **Values** panels, click the “x” next to the column name displayed in the relevant panel.

5. Changing the layout of the graph

- a. With the graph settings panel visible:

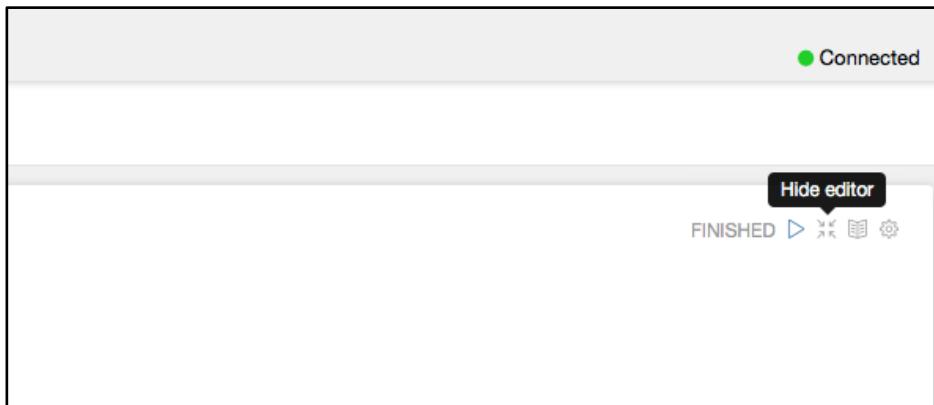
Remove all columns from both the Keys and Values panels.

- b. Drag and drop MONTH into the Keys panel.
- c. Drag and drop REVENUE into the Values panel.
- d. Drag and drop AVG_12M_REVENUE into the Values panel.
- e. The report should now look like the one shown below.

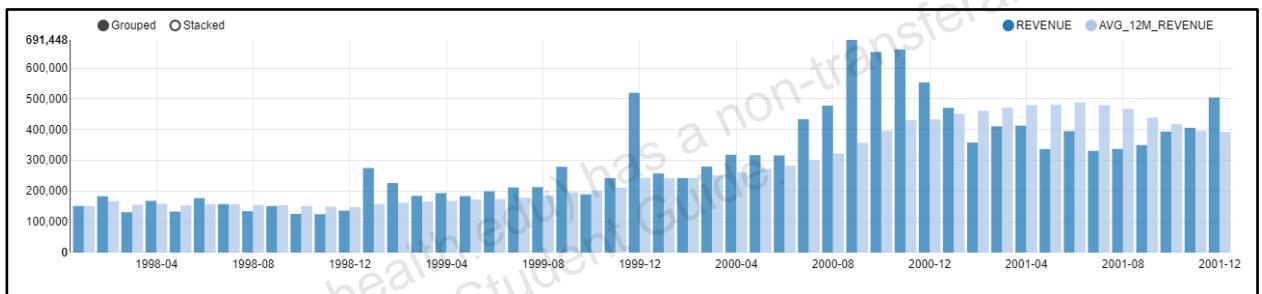


6. Tidying up the report

- Click the “**Settings**” link to hide the layout controls.
- Click the “**Hide editor**” button, which is to the right of the “**Run this paragraph**” button.



- Now only the output is visible.



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Practices for Lesson 9: Using Oracle Machine Learning with Autonomous Database

Practices for Lesson 9: Overview

Overview

In these practices, you create a project and a workspace in Oracle Machine Learning.

Note: The initial workspace and the default project are created by the Oracle Machine Learning service automatically when you log in to Oracle Machine Learning for the first time. The term default applies to the last project that you work on, and it is stored in the browser cache. If you clear the cache, there would be no default project selected. Then, you must select a project to work with notebooks.

Assumptions

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.

Practice 9-1: Creating Projects and Workspaces in Oracle Machine Learning

Overview

In this practice, you create a project and a workspace in Oracle Machine Learning.

A project is a container for your notebooks, and a workspace is a container for your projects. You can own multiple projects in a workspace.

Tasks

1. Log in to your assigned Oracle Cloud account as described in the previous practices.
2. Navigate to the **Autonomous Databases** page and click your service instance name (in this example, the name of the instance is **TRAINING**).

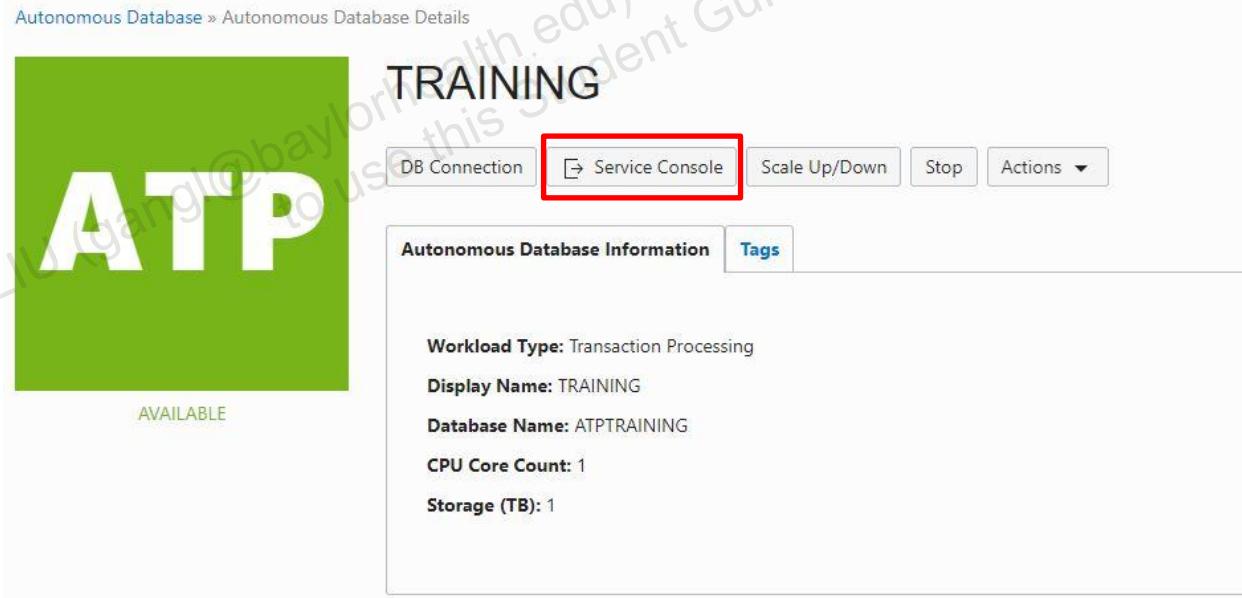
Autonomous Databases *in C12 Compartment*



Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created	Actions
TRAINING	Available	ATPTRAINING	1	1	Transaction Processing	Tue, 12 Mar 2019 16:38:43 GMT	⋮

Displaying 1 Autonomous Databases < Page 1 >

3. On the instance information page, click **Service Console**.



Autonomous Database » Autonomous Database Details

TRAINING

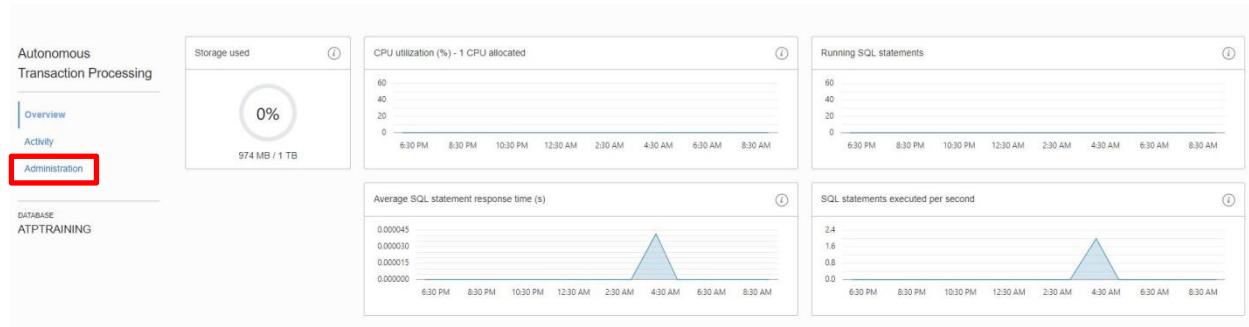
DB Connection Service Console Scale Up/Down Stop Actions ▾

Autonomous Database Information Tags

Workload Type: Transaction Processing
Display Name: TRAINING
Database Name: ATPTRAINING
CPU Core Count: 1
Storage (TB): 1

4. This will open a new browser tab for the service console. If prompted, sign in to the service console as the **admin** user.

5. On the left hand menu, click **Administration**.



6. Click **Manage Oracle ML Users**.



7. This will open a new browser tab for the Machine Learning User Administration page, as shown below. If prompted, sign in as **admin** user.

User Name	Full Name	Role	Email	Created On	Status
ADMIN		System Administrator		11/25/18 4:42 PM	Open

8. Click **+ Create** and create the **MLADMIN** user, as shown below. Only enter mandatory (*) fields and click **Create**. For your convenience during the practice session, you can choose to use the same password you used for the admin account.

This completes the task of OML user account creation. The following screenshot confirms you now have two OML user accounts.

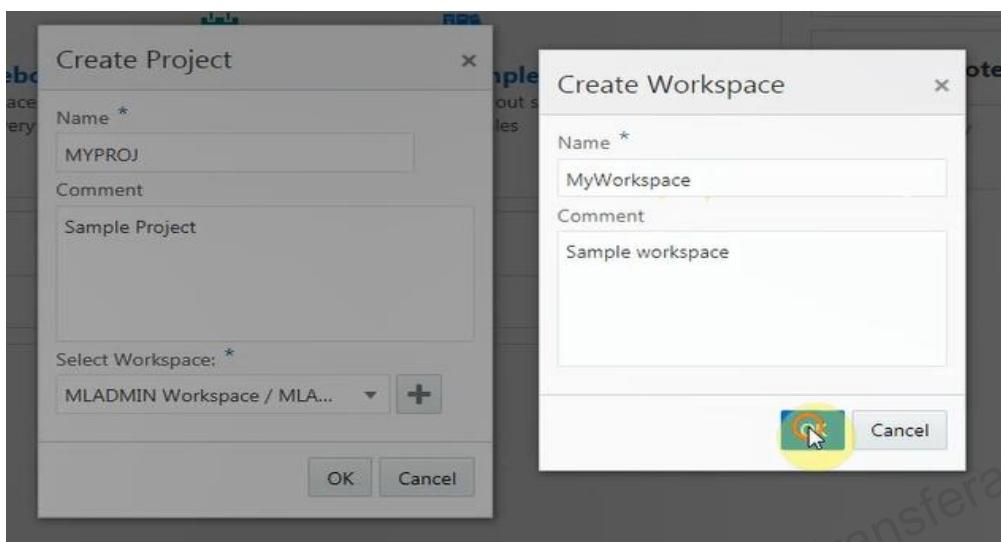
User Name	Full Name	Role	Email	Created On	Status
ADMIN		System Administrator		11/25/18 4:42 PM	Open
MLADMIN		Developer		3/13/19 9:41 AM	Open

9. Create projects and workspaces in Oracle Machine Learning.

- a. Click **Oracle Machine Learning Home**  on the top right corner of the User Administration page. You will be prompted to enter a username and password (in this example, it will be **MLADMIN** and its password).

- b. After you are logged in, you can see the default project and workspace displayed on the top right side of the window. In this example, **MLADMIN Project** is the project and **MLADMIN Workspace** is the workspace because you logged in using the **MLADMIN** account. To create a new project, click **New Project**.

- c. In the **Create Project** window, enter the **Name** and **Comment** for the project and click **+**. In the **Create Workspace** window, enter the **Name** and **Comment** for the workspace and click **OK**. Back on the **Create Project** window, click **OK** again.



- d. Still logged in as the **MLADMIN** user, you are now in the newly created project and workspace.

MLADMIN [MyWorkspace]

MLADMIN

Quick Actions

- Run SQL Statement
- Run SQL Script
- Notebooks
- Jobs
- Examples

Learning Resources

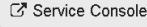
Recent Notebook

Practice 9-2: Creating and Running Notebooks in Oracle Machine Learning

Overview

In this practice, you create a notebook and run it in Oracle Machine Learning.

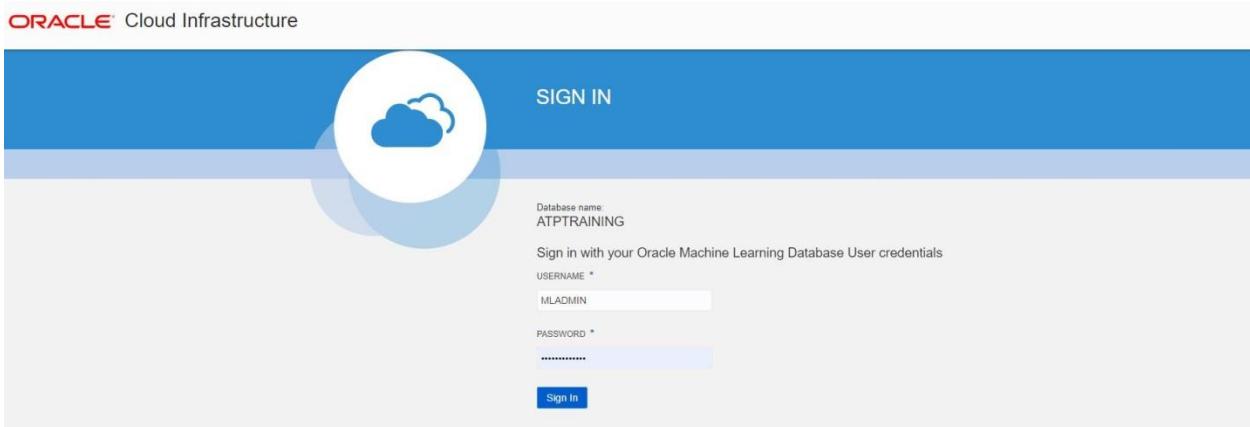
Tasks

1. Log in to your Oracle Cloud account.
 - a. Navigate to the **Autonomous Databases** page where your instance is listed.
 - b. Click your instance name.
 - c. Click the **Service Console** option: 
 - d. Log in as the **admin** user. Here, you are signing in to the Oracle Autonomous Transaction Processing console.
 - e. On the left hand menu, click **Administration**.
 - f. Click **Manage Oracle ML Users**.
 - g. Log in as the **admin** user. Here, you are signing in to the Oracle Machine Learning console.
 - h. Click **Home** on the right hand top corner, highlighted in the following screenshot:



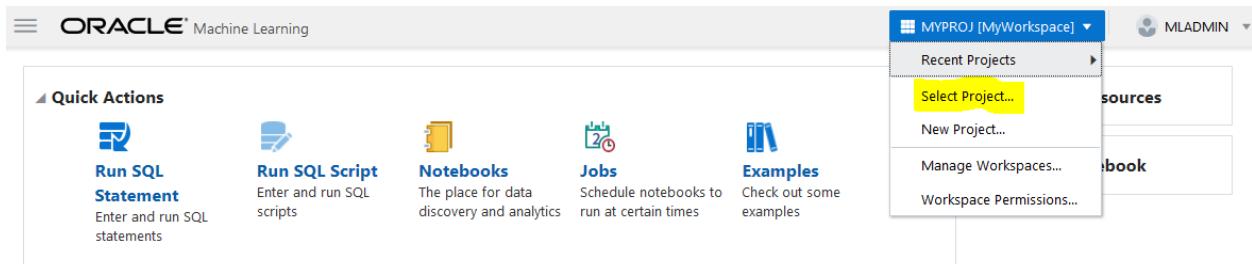
The screenshot shows the Oracle Machine Learning User Administration interface. The title bar reads "ORACLE Machine Learning User Administration". Below the title bar, there is a navigation bar with a red "X" icon, a home icon, and a search icon. The main area has a blue header bar with the text "User Created" and "Users". Below the header, there is a toolbar with buttons for "+ Create", "Delete", and "Show All Users". A table lists two users: "ADMIN" and "MLADMIN". The columns in the table are "User Name", "Full Name", "Role", "Email", "Created On", and "Status". The "ADMIN" user is listed under "User Name" as "ADMIN", "Full Name" as "", "Role" as "System Administrator", "Email" as "", "Created On" as "11/25/18 4:42 PM", and "Status" as "Open". The "MLADMIN" user is listed under "User Name" as "MLADMIN", "Full Name" as "", "Role" as "Developer", "Email" as "", "Created On" as "3/13/19 9:41 AM", and "Status" as "Open". There is also a "Search..." input field and a magnifying glass icon.

- i. Log in as the **MLADMIN** user. This time, you are signing in to the Oracle Machine Learning console as the **MLADMIN** user.

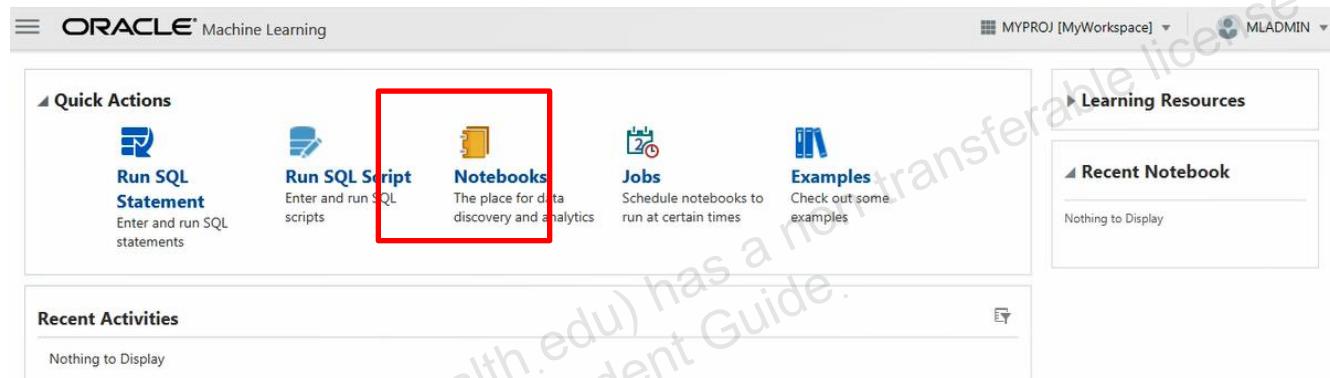


The screenshot shows the Oracle Machine Learning Cloud Infrastructure sign-in page. The title bar reads "ORACLE Cloud Infrastructure". The page features a large blue header with a white cloud icon and the word "SIGN IN". Below the header, there is a message: "Database name: ATPTRAINING" and "Sign in with your Oracle Machine Learning Database User credentials". There are two input fields: "USERNAME" with the value "MLADMIN" and "PASSWORD" with a masked value. Below the password field is a "Sign In" button.

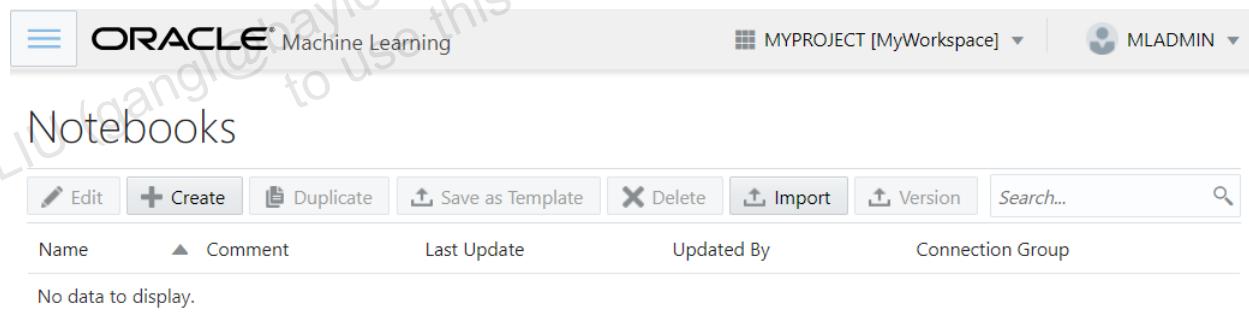
- j. Ensure you are in the **MYPROJ [MyWorkspace]** project and workspace, which was created in the previous project. If not, change the project using the **Select Project** menu option from the project/workspace drop-down list, highlighted in the following screenshot:



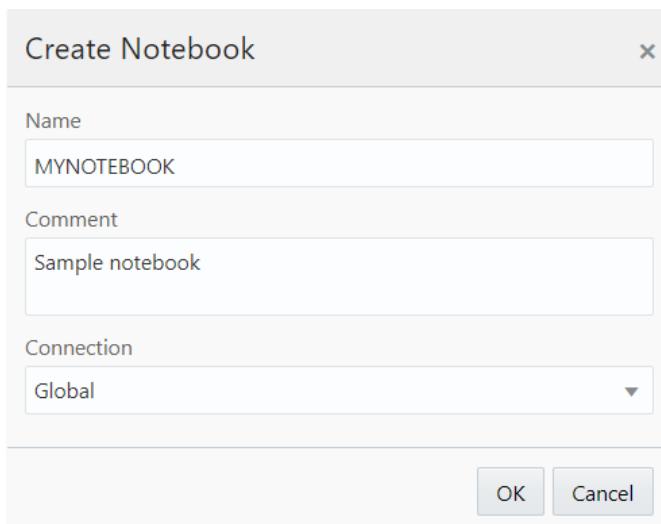
2. On the Oracle Machine Learning home page, click **Notebooks**.



3. In the **Notebooks** action item, click **Create**.



4. In the **Create Notebook** window, enter **Name**, **Comment**, and **Global** as a connection string. After you click the **OK** button, you will get your notebook ready, as in the following screenshot. In this case, MYNOTEBOOK is the notebook name.



5. In the newly created notebook, you can enter SQL commands and run them.
- In the notebook editor type, use the following SQL statements to fetch data from an Oracle Database:

```
%sql  
select * from tab;
```

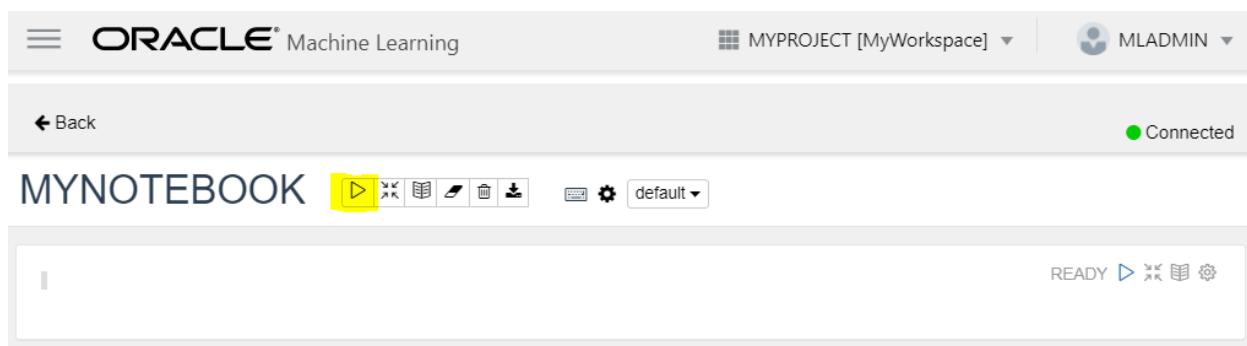
We are using the table name `tab` in this example as we do not have any tables yet in this database. Ensure you have `%sql` as the first line of the editor. Click **Run** next to the **READY** sign when you are ready.

The screenshot shows the 'MYNOTEBOOK' notebook editor. The code area contains the SQL command. To the right, the status bar shows 'READY' with a yellow play icon, indicating it's ready to run.

- You can run a notebook by clicking the **Run** icon next to the **READY** sign. This is a single paragraph run. Alternatively, you can press **Shift+Enter**.

The screenshot shows the Oracle Machine Learning interface. A navigation bar at the top includes 'ORACLE® Machine Learning', 'MYPROJECT [MyWorkspace]', 'MLADMIN', and 'Connected'. Below it, a 'Back' link and the 'MYNOTEBOOK' notebook editor are shown. The status bar indicates 'Connected'.

For a multiscript or multiparagraph run, which is also called an all paragraph run, click **Run** next to the notebook name.



7. In order to perform data analysis and data visualization, you must first fetch data in a notebook from the data source. There are three ways in which you can fetch data into notebooks:
- Run SQL Statement
 - Run SQL Script
 - Create Notebooks

You can see these three options on the Oracle Machine Learning home page, as shown in the following screenshot:



In the next practice, you perform more tasks with SQL statements and SQL scripts.

Practice 9-3: Creating SQL Scripts in Oracle Machine Learning

Overview

In this practice, you create a SQL script in Oracle Machine Learning.

Tasks

1. Log in to your Oracle Cloud account.
 - a. Navigate to the **Autonomous Databases** page where your instance is listed.
 - b. Click your instance name.
 - c. Click the **Service Console**  option.
 - d. Log in as the **admin** user. Here, you are signing in to the Oracle Autonomous Transaction Processing console.
 - e. On the left hand menu, click **Administration**.
 - f. Click **Manage Oracle ML Users**.
 - g. Log in as the **admin** user. Here, you are signing in to the Oracle Machine Learning console.
 - h. Click **Home**  on the right hand top corner.
 - i. If you had signed out, you will be prompted to log in. Log in as the **MLADMIN** user.
 - j. Ensure you are in the **MYPROJ [MyWorkspace]** project and workspace, which was created in the previous project. If not, change the project using the **Select Project** menu option from the project/workspace drop-down list.
 - k. If you are continuing from the previous practice, just click the **Application Navigation** menu (highlighted in the following screenshot) and click **Home**.



2. Click **Run SQL Script**.

The screenshot shows the Oracle Machine Learning interface. In the top left, there's a navigation bar with three horizontal bars, the text 'ORACLE Machine Learning', and a user icon labeled 'MLADMIN'. To the right of the user icon are dropdown menus for 'MYPROJ [MyWorkspace]' and 'MLADMIN'. Below the navigation bar is a 'Quick Actions' section with four items: 'Run SQL Statement' (with a blue square icon), 'Run SQL Script' (with a blue square icon), 'Notebooks' (with a yellow square icon), and 'Jobs' (with a blue square icon). The 'Run SQL Script' item is highlighted with a red box. To the right of the quick actions is a 'Learning Resources' section with a 'Recent Notebook' sub-section. The 'Recent Notebook' section contains the message 'Nothing to Display'.

3. You will find the **%script** tag in the beginning of the scratch pad. Do not delete it. Let this be the first line. Copy and paste the following SQL script into the scratch pad:

```
Create table small_table
(
    name varchar(200),
    id1 integer,
    id2 varchar(200),
    id3 varchar(200),
    id4 varchar(200),
    TEXT varchar(200)
);

begin
    for i in 1..100 loop
        insert into small_table
        values('Name_____'||i,i,'ID2_'||i,'ID3_'||i,'ID4_'||i,'TEXT_'||i);
    end loop;
    commit;
end;
```

4. Click **Run** next to the SQL Script Scratchpad and click **OK** in the confirmation window. The script executes and you will see the successful execution message.

SQL Script Scratchpad

```
%script
Create table small_table
(
name varchar(200),
id1 integer,
id2 varchar(200),
id3 varchar(200),
id4 varchar(200),
TEXT varchar(200)
);

begin
for i in 1..100 loop
insert into small_table values('Name____'||i,i,'ID2_'||i,'ID3_'||i,'ID4_'||i,'TEXT_'||i);
end loop;
commit;
end;
```

Table SMALL_TABLE created.
PL/SQL procedure successfully completed.

5. SQL scripts can be saved on your system as a **.json** file by clicking the **Export the notebook** option.

SQL Script Scratchpad

```
%script
Create table small_table
(
name varchar(200),
id1 integer,
id2 varchar(200),
id3 varchar(200),
id4 varchar(200),
TEXT varchar(200)
);

begin
for i in 1..100 loop
insert into small_table values('Name____'||i,i,'ID2_'||i,'ID3_'||i,'ID4_'||i,'TEXT_'||i);
end loop;
commit;
end;
```

Table SMALL_TABLE created.
PL/SQL procedure successfully completed.

6. SQL scripts that are stored as **.json** files can also be imported by clicking **Import** in the **Notebooks** home page. This is called **Import SQL Script**.

Name	Comment	Last Update	Updated By	Connection Group
SQL Script Scratchpad	Scratch pad notebook to run SQL scripts.	8/13/18 7:33 PM	MLADMIN	Global

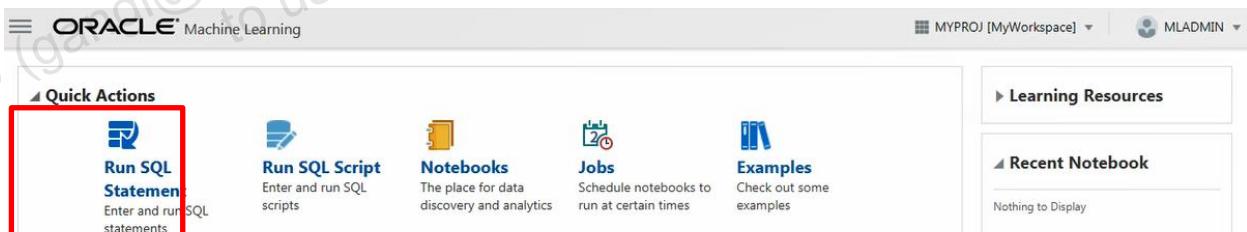
Practice 9-4: Running SQL Statements in Oracle Machine Learning

Overview

In this practice, you run SQL statements in Oracle Machine Learning.

Tasks

1. Log in to your Oracle Cloud account.
 - a. Navigate to the **Autonomous Databases** page where your instance is listed.
 - b. Click your instance name.
 - c. Click the **Service Console**  option.
 - d. Log in as the **admin** user. Here, you are signing in to the Oracle Autonomous Transaction Processing console.
 - e. On the left hand menu, click **Administration**.
 - f. Click **Manage Oracle ML Users**.
 - g. Log in as the **admin** user. Here, you are signing in to the Oracle Machine Learning console.
 - h. Click **Home**  on the right hand top corner.
 - i. Log in as the **MLADMIN** user. This time, you are signing in to the Oracle Machine Learning console as the **MLADMIN** user.
2. Perform these tasks to run SQL statements.
 - a. On the Oracle Machine Learning home page, click **Run SQL Statement**.



The screenshot shows the Oracle Machine Learning interface. At the top, there's a navigation bar with the Oracle logo, the text 'Machine Learning', and a dropdown for 'MYPROJ [MyWorkspace]'. On the far right, it says 'MLADMIN'. Below the navigation bar is a 'Quick Actions' section with several buttons:

- Run SQL Statement**: A button with a blue square icon containing a white 'SQL' symbol. It has a red box drawn around it. Below the icon is the text 'Enter and run SQL statements'.
- Run SQL Script**: A button with a blue square icon containing a white 'SQL' symbol. Below it says 'Enter and run SQL scripts'.
- Notebooks**: A button with a yellow square icon containing a white 'book' symbol. Below it says 'The place for data discovery and analytics'.
- Jobs**: A button with a green square icon containing a white 'job' symbol. Below it says 'Schedule notebooks to run at certain times'.
- Examples**: A button with a blue square icon containing a white 'book' symbol. Below it says 'Check out some examples'.

- b. If there are SQL statements from a previous run, click **Clear notebook** and click **OK** to clear the scratchpad.
- c. In the SQL Query Scratchpad, type `%sql` as the first line and press **Enter**.
- d. Enter the SQL statement in the SQL Query Scratchpad and press **Shift + Enter**:

```
%sql
select * from small_table;
```

The result is displayed as follows:

SQL Query Scratchpad

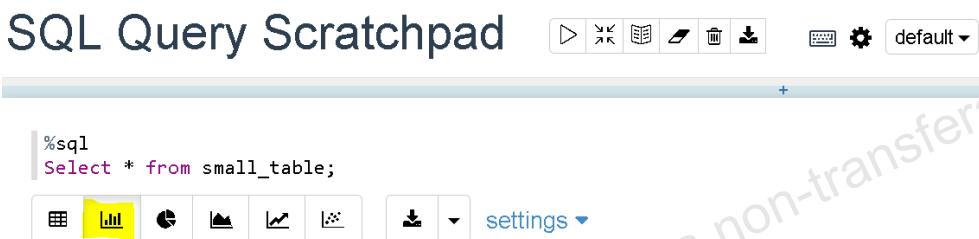
```
%sql
Select * from small_table;
```

FINISHED

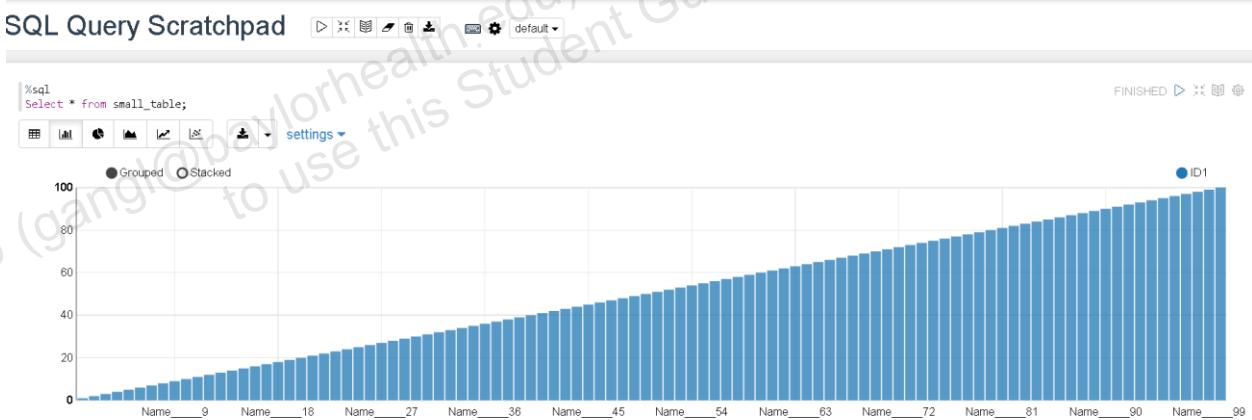
NAME	ID1	ID2	ID3	ID4	TEXT
Name____1	1	ID2_1	ID3_1	ID4_1	TEXT_1
Name____2	2	ID2_2	ID3_2	ID4_2	TEXT_2
Name____3	3	ID2_3	ID3_3	ID4_3	TEXT_3

3. Perform these tasks to visualize data using Oracle Machine Learning.

- a. Continue from the previous step and click one of the chart options.



- b. A corresponding chart is displayed.



This way, you can use the **Run SQL Statement** option to run SQL statements and visualize data. This completes the task of running a SQL statement.

Practice 9-5: Scheduling Jobs in Oracle Machine Learning

Overview

In this practice, you schedule a job to run in Oracle Machine Learning.

Tasks

1. Log in as the **MLADMIN** user into the Oracle Machine Learning console as shown in the previous practices. Create a notebook using the following SQL statements. Refer to Practice 4-2 for instructions on how to create a notebook.

```
%sql
select * from small_table;
```

This is how the notebook will look. After you are done, click the **Application Navigation** menu and click **Home** to go back to the home page.

The screenshot shows the Oracle Machine Learning interface. At the top, there's a navigation bar with the Oracle logo, the project name 'MLADMIN Project [MLADMIN Workspace]', and a user icon. Below the bar, a breadcrumb trail shows 'Back' and the current page 'NewBook'. A toolbar with various icons is visible above the notebook area. The main area contains a code editor with the following content:

```
%sql
select * from small_table;
```

The status bar at the bottom right indicates 'READY'.

2. To create a job, click **Jobs**.

The screenshot shows the Oracle Machine Learning home page. In the 'Quick Actions' section, there are several buttons: 'Run SQL Statement', 'Run SQL Script', 'Notebooks', 'Jobs' (which is highlighted with a red box), and 'Examples'. The 'Jobs' button is described as 'Schedule notebooks to run at certain times'. On the right side, there are sections for 'Learning Resources', 'Recent Notebook' (which says 'Nothing to Display'), and 'Recent Activities' (which also says 'Nothing to Display').

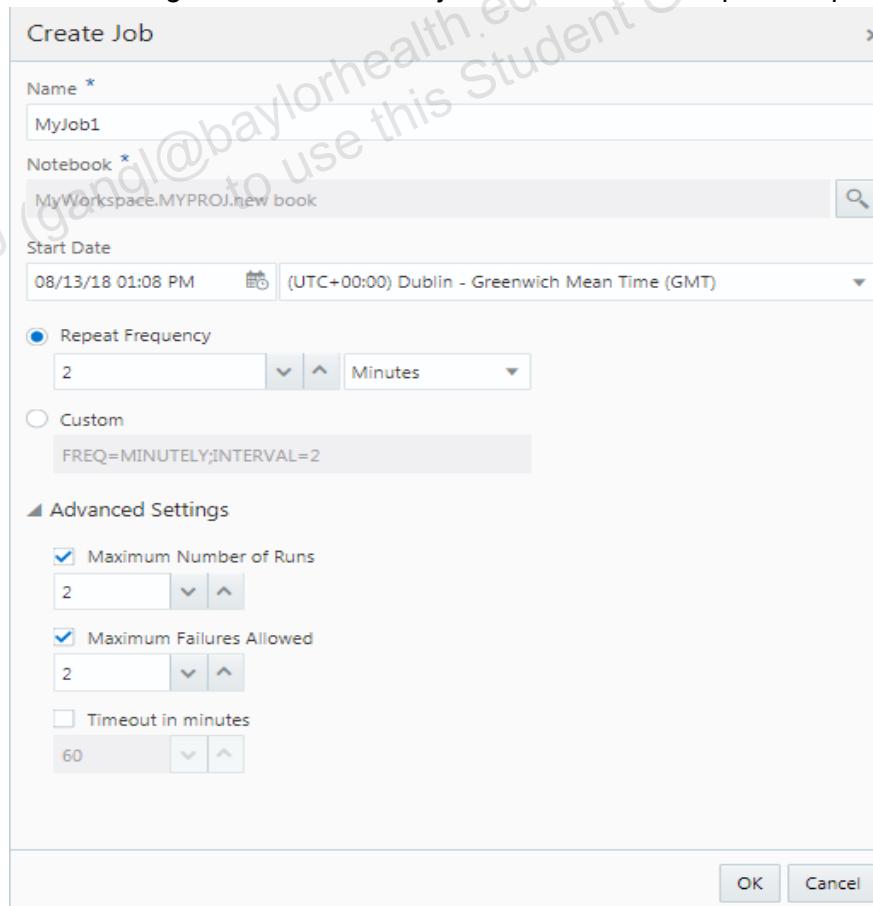
3. Click **Create**, as shown in the following screenshot:

The screenshot shows the Oracle Machine Learning interface. At the top, there is a navigation bar with the Oracle logo and the text "Machine Learning". Below the navigation bar, the word "Jobs" is displayed in a large, bold, blue font. Underneath "Jobs", there is a toolbar with several buttons: "Edit", "+ Create" (which is highlighted with a red box), "Duplicate", "Stop", and "Delete".

4. Enter the following details in the **Create Job** window:

- Name: **MyJob1**
- Notebook: Click the search icon, expand your workspace (**MyWorkspace**), select your notebook, and click **OK**. In this example, we are scheduling a notebook called *new book*.
- Enter the Start Date and Time. Select the current date and time.
- Enter the Repeat Frequency as every **2 minutes**.
- Click **Advanced Settings** and enter value 2 for **Maximum Number of Runs** and **Maximum Failures Allowed**.
- Finally, click **OK**.

The following screenshot is for a job schedule with a repeat frequency of 2 minutes.



5. After the job is created, its status can be tracked. The status changes from Scheduled to Running and Success periodically.

Jobs

Name	Notebook	Owner	Last Start Date	Next Run Date	Status	Schedule
new book	MLADMIN.MyWorkspace.MYPROJ.ne...	MLADMIN	8/13/18 5:40 PM	8/13/18 5:40 PM	COMPLETED	Every 2 minutes

6. Click the job name. Select a row, that is a time frame, and click **View** to get the run details and output along with the time stamp.

new book

Date	Status
8/13/18 5:38 PM	SUCCESS
8/13/18 5:40 PM	SUCCESS

7. To stop a job, go back to the **Jobs** page. Select your job (that is, select the row listing your job), click **Stop**, and click **OK**.

Jobs

Name	Notebook	Owner	Last Start Date	Next Run Date	Status	Schedule
MyJob1	MLADMIN.MLA...	MLADMIN	8/14/18 6:33 PM	8/14/18 6:33 PM	COMPLETED	Every 2 minutes

8. To delete a job, go to the **Jobs** page, select your job (that is select the row listing your job), click **Delete**, and click **OK**.

Jobs

Name	Notebook	Owner	Last Start Date	Next Run Date	Status	Schedule
MyJob1	MLADMIN.MLA...	MLADMIN	8/14/18 6:33 PM	8/14/18 6:33 PM	COMPLETED	Every 2 minutes

This completes the task of creating and working with a project and workspace in Oracle Machine Learning.

Practices for Lesson 10: Monitoring and Managing Autonomous Database

Practices for Lesson 10: Overview

Overview

In this practice, you will learn to monitor the performance of an Autonomous Database instance.

Assumptions

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.

Practice 10-1: Monitoring the Performance of Autonomous Database

Overview

In this practice, you will learn various performance monitoring options available in Autonomous Database.

Tasks

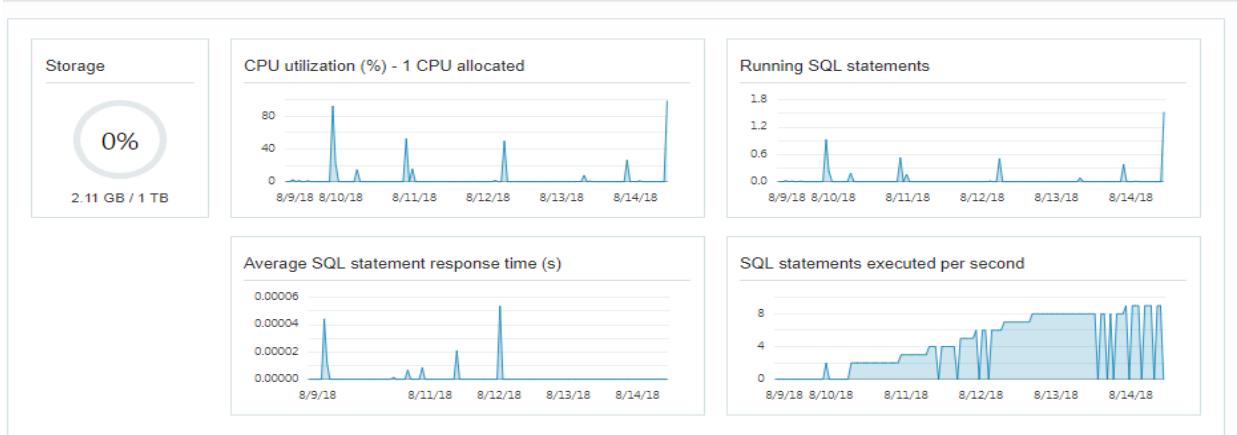
1. Log in using your Oracle Cloud account and navigate to the **Autonomous Database** home page where the instances are listed.

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
TRAINING	Available	ATP TRAINING	1	1	Transaction Processing	Tue, 12 Mar 2019 16:38:43 GMT

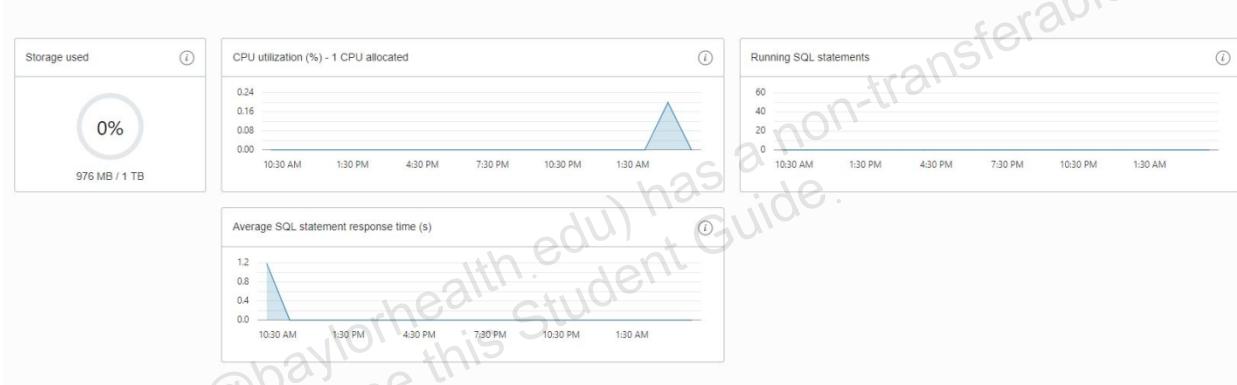
2. Click Service Console.

3. Log in by using the **ADMIN** credentials.

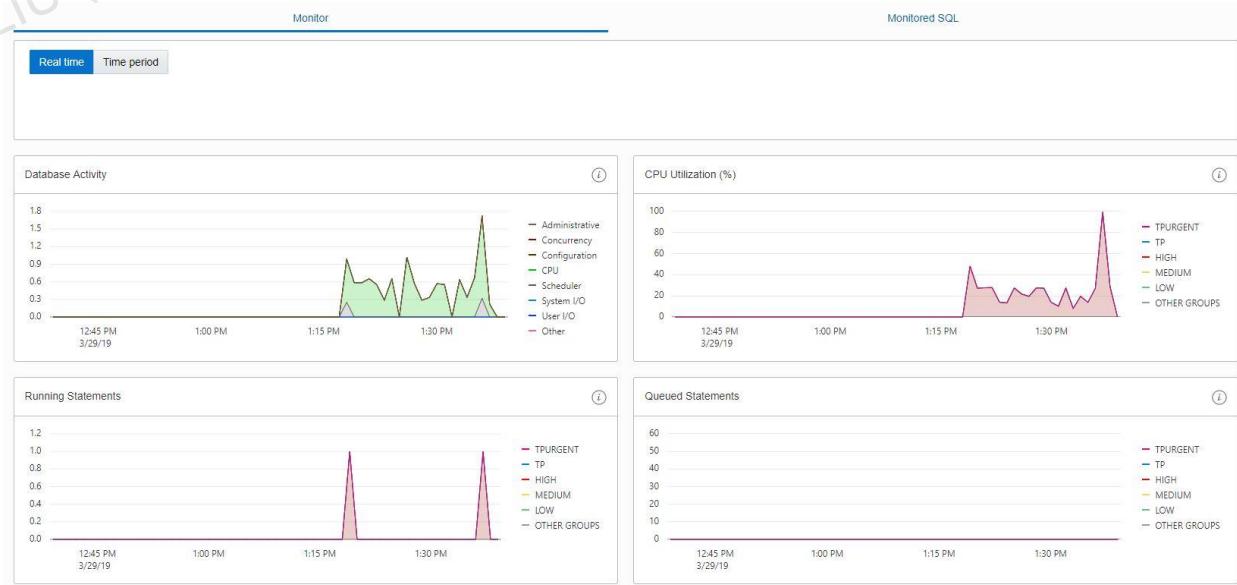
4. You are now on the ATP Service Console Overview page.



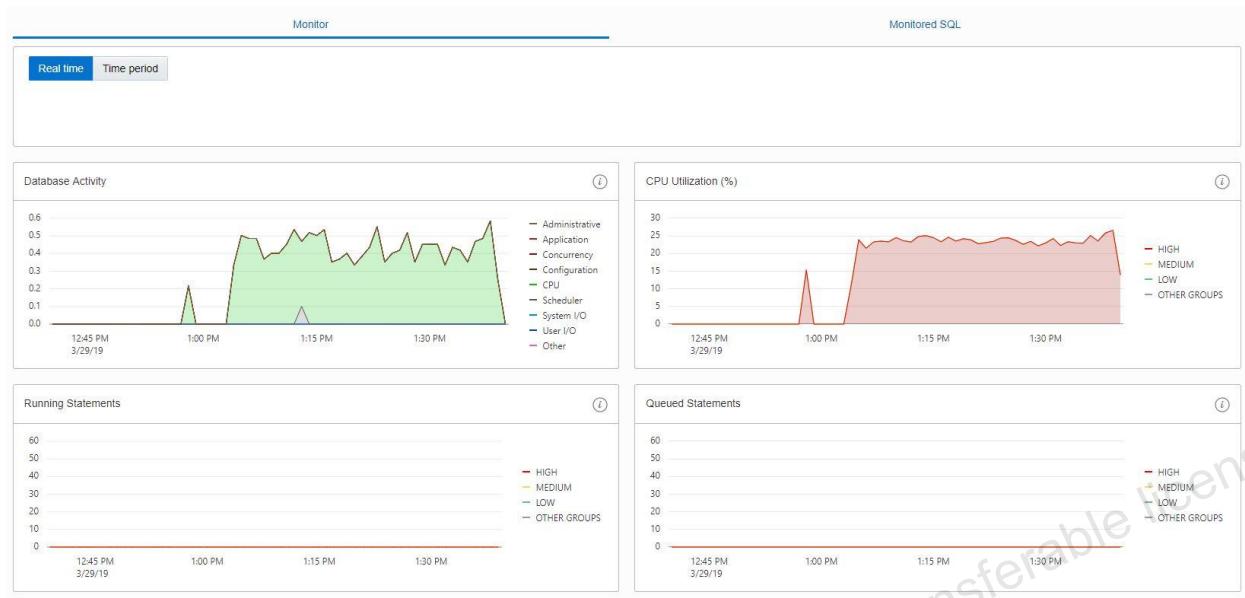
Service Console page for ADW



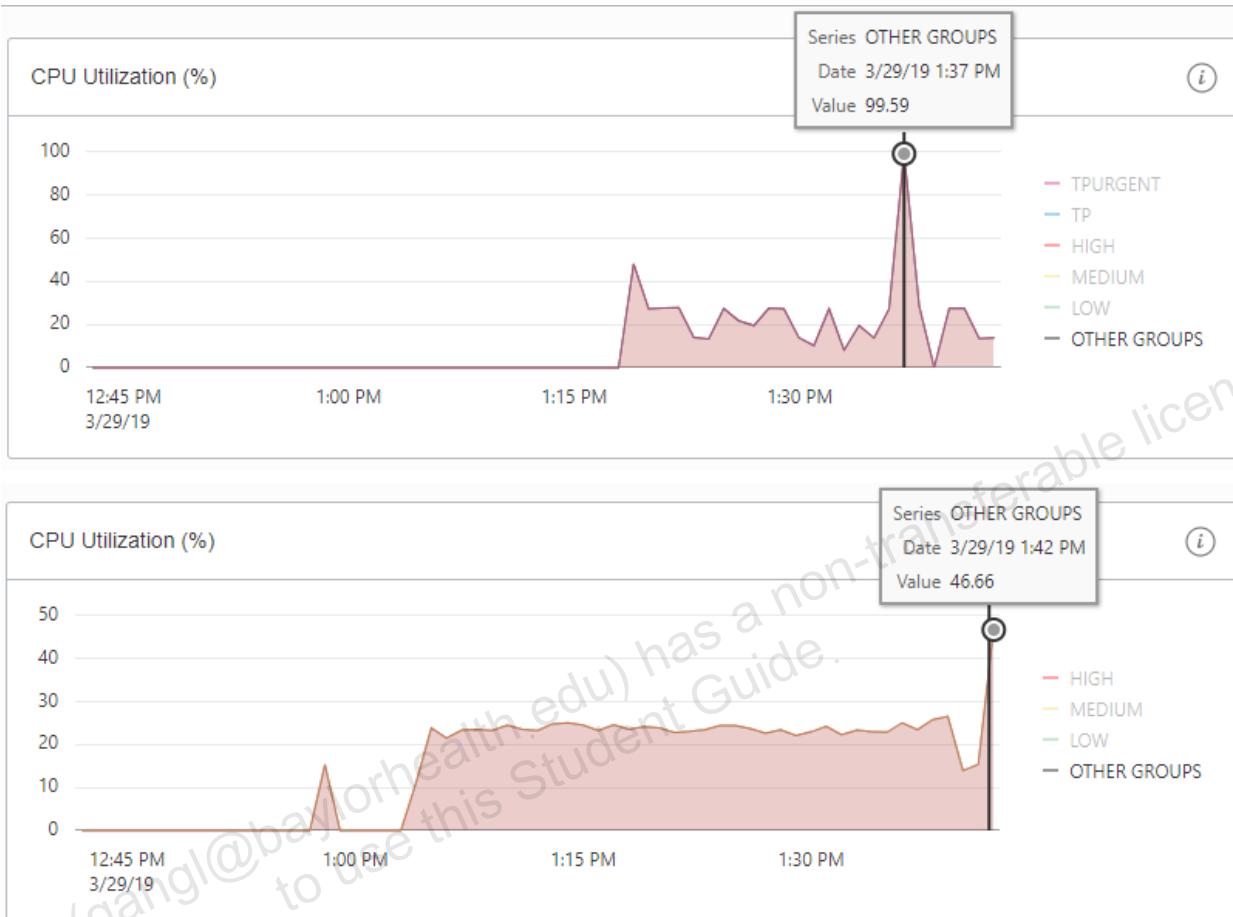
5. From the menu at the left, select **Activity**. By default, you can see the **Real time** information displayed for ATP.



Real time information displayed for ATP.

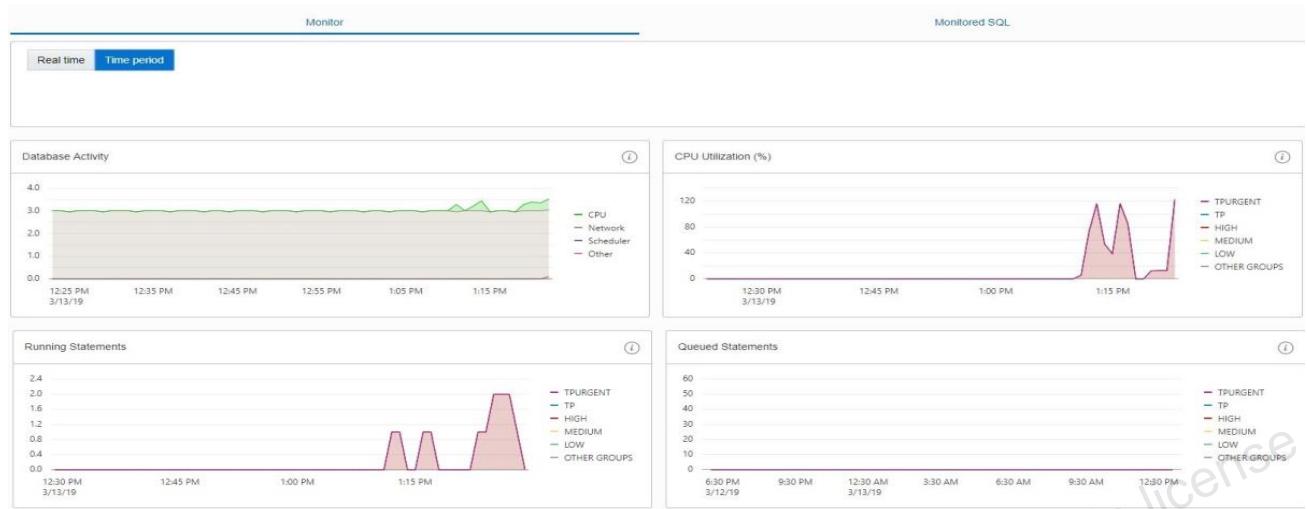


6. Review the components on this page. Under the **CPU utilization** section, **move your cursor to various time points on the graph**. This will provide the respective CPU utilization percentage for ATP and ADW as shown below.

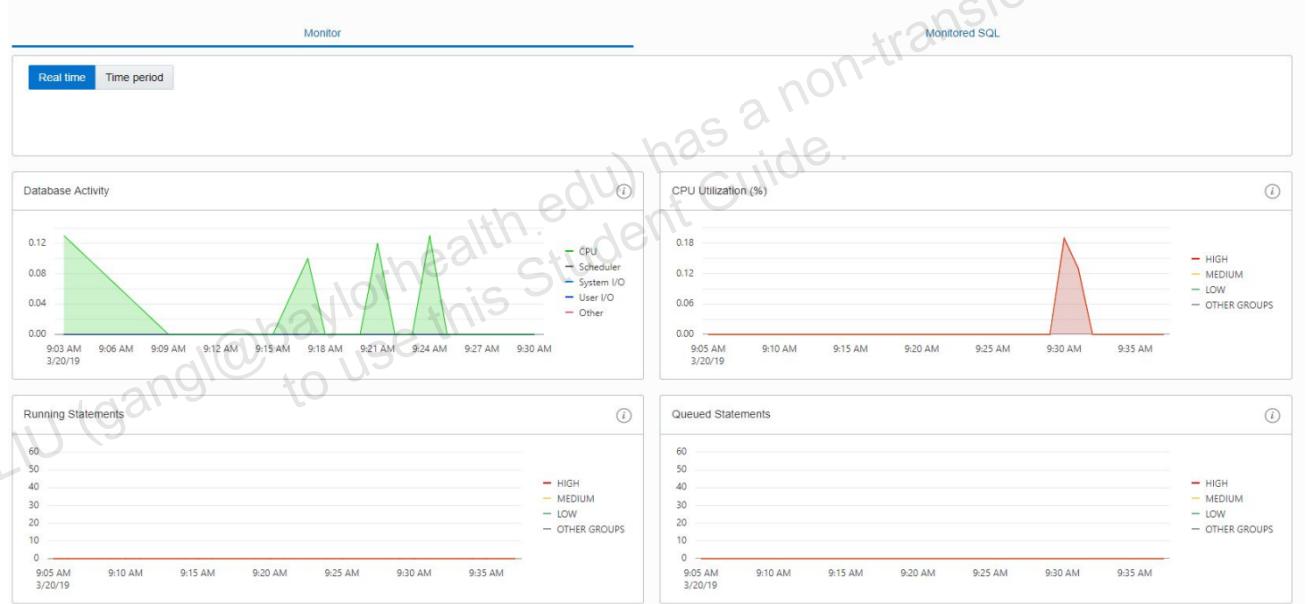


7. The other component on this page is **Running SQL statements**, which shows the average number of running SQL Statements historically. **Move your cursor to various points on the graph** to watch the running SQL statement details.
8. In the same component, you can monitor the Average SQL statement response time and SQL statements executed per second.

- Click the **TimePeriod** option to get historical details for ATP.



Real time details for ADW.



- Use your cursor as described in the previous steps on these graphs to get more details.
- Click the **Monitored SQL** tab to get details of the SQL text and their duration of run, along with the start time and end time. You might not see any data here because no SQL statements were monitored as part of this practice.

This completes the task of monitoring performance.

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Practices for Lesson 11: Backing Up and Restoring an Autonomous Database

Practices for Lesson 11: Overview

Overview

In this practice, you will restore an Autonomous Database instance from an automatic backup.

Assumptions

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.

Practice 11-1: Restoring an Autonomous Database from an Automatic Backup

Overview

In this practice, you will restore an Autonomous Database instance from an automatic backup.

Tasks

- Log in by using your Oracle Cloud account and navigate to the **Autonomous Database** home page where the instances are listed, and locate your instance. In this we are using the ATP instance we created in the earlier practice.

The screenshot shows the Oracle Cloud Autonomous Database home page. On the left, there is a sidebar with 'Autonomous Database' and 'List Scope' set to 'C12'. Below that are 'Filters' for 'STATE' (Any state) and 'WORKLOAD TYPE' (ATP). The main area is titled 'Autonomous Databases in C12 Compartment' and contains a table with one row:

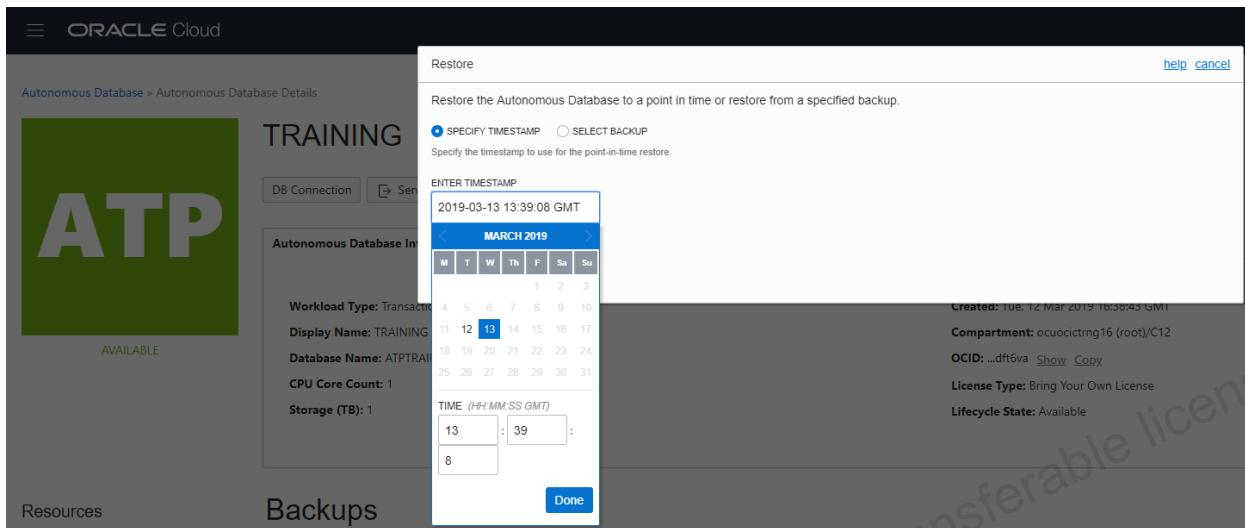
Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
TRAINING	Available	ATPTRAINING	1	1	Transaction Processing	Tue, 12 Mar 2019 16:38:43 GMT

At the bottom right of the table, it says 'Displaying 1 Autonomous Databases < Page 1 >'.

- Click your instance. Click **Actions** and then the **Restore** button in the top menu.

The screenshot shows the 'Autonomous Database Details' page for the 'TRAINING' instance. At the top, there is a large green square with 'ATP' in white and 'AVAILABLE' below it. Below the square, there are tabs for 'Autonomous Database Information' and 'Tags'. The 'Autonomous Database Information' tab is selected. On the right, there is a 'Actions' dropdown menu with several options: 'Restore' (highlighted with a red box), 'Create Clone', 'Admin Password', 'Apply Tag(s)', and 'Terminate'. To the right of the actions, there is some detailed information: 'Created: Tue, 12 Mar 2019 16:38:43 GMT', 'Compartment: ocuocictrng16 (root)/C12', 'OCID: ...dft6va Show Copy', 'License Type: Bring Your Own License', and 'Lifecycle State: Available'.

- The Restore dialog box is displayed using which you can restore to the specified timestamp. Using the date and time field **select the date and time** to restore the database instance to a desired point in time and click **Done**.

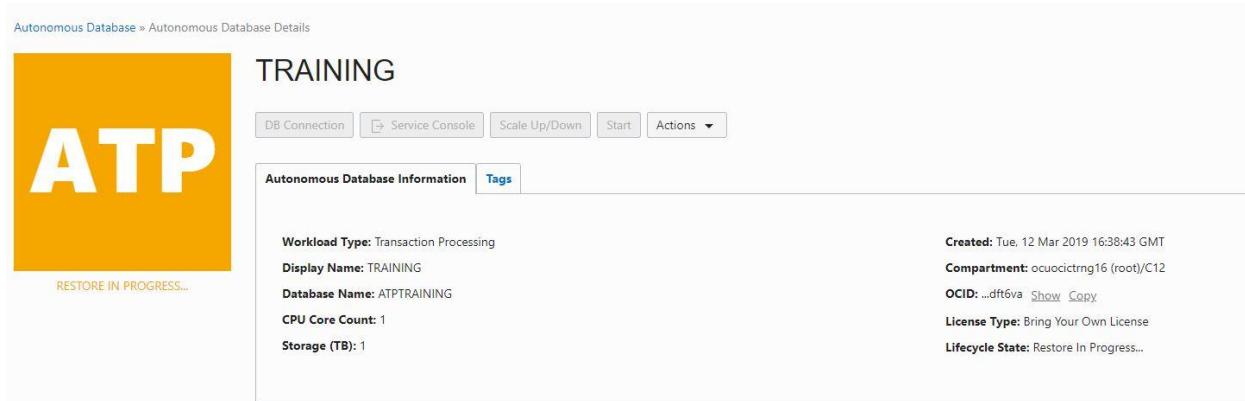


- When you are ready, click **Restore**.

Tip: If you choose to carry out a restore operation, consider inserting a new value into one of the tables in the `atpc_user` user schema and commit the update. Once done, restore the database instance back to 10 minutes. The restore operation might take around 30 to 60 minutes to complete, so plan your work accordingly.



- During the restoration process the **Lifecycle State** field will read **Restore in Progress**.



Note: The ATP banner highlighted below is not green during the restoration process.

- It is recommended not to interrupt the process in any way. Give it sufficient time and check the status by refreshing the browser window. After the restore is complete, the ATP banner will turn back to green and **Lifecycle State** will read **Available**.

The screenshot shows the 'Autonomous Database Details' page for an instance named 'TRAINING'. At the top left is a large green banner with the letters 'ATP' in white. Below the banner, the word 'AVAILABLE' is displayed. The page includes navigation buttons like 'DB Connection', 'Service Console', 'Scale Up/Down', 'Stop', and 'Actions'. A tab bar at the top right has 'Autonomous Database Information' and 'Tags' selected. In the main content area, details about the database are listed: Workload Type (Transaction Processing), Display Name (TRAINING), Database Name (ATPTRAINING), CPU Core Count (1), Storage (TB) (1), and various metadata fields like Created (Tue, 12 Mar 2019 16:38:43 GMT), Compartment (ocuocitmg16 (root)/C12), OCID (...dft6va), License Type (Bring Your Own License), and Lifecycle State (Available). The 'Lifecycle State' field is highlighted with a red border.

- For any reason if the restore operation fails, you will be prompted to *raise a service request* as shown below with the details in the **Lifecycle State** field.



This completes the task of restoring an ADB instance.

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Practices for Lesson 12: Starting, Stopping, Scaling, and Terminating an Autonomous Database Instance

Practices for Lesson 12: Overview

Overview

In these practices, you will perform administrative tasks related to an Oracle Autonomous Database instance.

Assumptions

- As part of your course environment, SQL Developer is installed on your local system.
- All previous practices are completed successfully.

Practice 12-1: Start and Stop an Autonomous Database Instance

Overview

In this practice, you will stop and start an Autonomous Database (ADB) instance.

Tasks

1. Log in to your Oracle Cloud account and navigate to the ADB home page.
2. Find your instance. In this example, we are using ATP **TRAINING** instance. Click the name of your instance to go to the instance details page.

The screenshot shows the 'Autonomous Databases in C12 Compartiment' page. On the left, there's a sidebar with 'List Scope' set to 'C12' and 'Filters' for 'STATE' (Any state) and 'WORKLOAD TYPE' (ATP). The main area displays a table with one row for the 'TRAINING' instance. The table columns are Name, State, Database Name, CPU Core Count, Storage (TB), Workload Type, and Created. The 'TRAINING' row shows 'Available' as the state, 'ATPTRAINING' as the database name, '1' as the CPU Core Count, '1' as the Storage (TB), 'Transaction Processing' as the Workload Type, and 'Tue, 12 Mar 2019 16:38:43 GMT' as the Created date. A red box highlights the 'Available' status.

3. On the instance details page, click **Stop** to stop the instance.

The screenshot shows the 'Autonomous Database Details' page for the 'TRAINING' instance. At the top, there's a large green button with 'ATP' in white. Below it, the instance name 'TRAINING' is displayed. To the right of the instance name, there are several buttons: 'DB Connection', 'Service Console', 'Scale Up/Down', 'Stop' (which is highlighted with a red box), and 'Actions'. Underneath these buttons, there are two tabs: 'Autonomous Database Information' (selected) and 'Tags'. The 'Autonomous Database Information' section contains details like 'Workload Type: Transaction Processing', 'Display Name: TRAINING', 'Database Name: ATPTRAINING', 'CPU Core Count: 1', and 'Storage (TB): 1'. To the right of these details, there are additional parameters: 'Created: Tue, 12 Mar 2019 16:38:43 GMT', 'Compartment: ocuocitrmg16 (root)/C12', 'OCID: ...dft6va', 'License Type: Bring Your Own License', and 'Lifecycle State: Available'. A red box highlights the 'Stop' button in the top navigation bar.

4. You will be asked to confirm. Click **Stop** again.

The screenshot shows a confirmation dialog box. At the top, it says 'Confirm' and has a 'cancel' link. Below that, the question 'Are you sure you want to stop the Autonomous Database?' is displayed. At the bottom, there is a blue 'Stop' button.

5. The Lifecycle Status will be **Stopping** as shown below:

The screenshot shows the 'Autonomous Database Details' page for an instance named 'TRAINING'. On the left, there is a large yellow box with the letters 'ATP' in white. Below this box, the word 'STOPPING...' is displayed in a small black font. At the top right, there are several buttons: 'DB Connection', 'Service Console', 'Scale Up/Down', 'Start', and 'Actions'. Under the 'Actions' button, a dropdown menu is open, showing options like 'Stop', 'Start', and 'Scale Up/Down'. Below the buttons, there are two tabs: 'Autonomous Database Information' (selected) and 'Tags'. The 'Autonomous Database Information' tab displays various details about the database, including its workload type (Transaction Processing), display name (TRAINING), database name (ATPTRAINING), CPU core count (1), storage (1 TB), and creation date (Tue, 12 Mar 2019 16:38:43 GMT). To the right of these details, there are sections for compartment, OCID, license type, and lifecycle state. The 'Lifecycle State' section is highlighted with a red box and shows the value 'Stopping...'. Other lifecycle states shown in the dropdown menu are 'Starting...', 'Running', and 'Stopped'.

6. After the instance has stopped, the Lifecycle Status will be **Stopped**.

The screenshot shows the same 'Autonomous Database Details' page for the 'TRAINING' instance. The yellow 'ATP' box now has 'STOPPED' written in white at the bottom. The 'Lifecycle State' section is highlighted with a red box and shows the value 'Stopped'. The rest of the page content remains the same, including the tabs, detailed information, and the dropdown menu for actions.

Note: If for some reason the stop operation fails, the Lifecycle Status will show an error message as follows:

The screenshot shows the same 'Autonomous Database Details' page. The yellow 'ATP' box has 'STOPPING...' written in white. A red box highlights an error message in the 'Lifecycle' section: 'Stopping... - The Autonomous Transaction Processing operation failed due to an unknown error. Refer to JobId e3ad01df-e479-445c-b8e4-5552ef0a8b99 and WorkRequestId 0f886418-b17a-4f00-8c16-5db39f1edb6f when opening a Service Request at My Oracle Support.' The 'Lifecycle State' section is also highlighted with a red box and shows 'Stopping...'.

7. To start the instance, click **Start**. Again click **Start** to confirm.

A confirmation dialog box is shown. It contains the word 'Confirm' on the left and a 'cancel' link on the right. Below this, a question asks 'Are you sure you want to start the Autonomous Database?'. At the bottom left is a blue 'Start' button. This dialog is part of a larger process where the user needs to click 'Start' twice to confirm the action.

8. Your instance is **Starting** as shown in the following:

The screenshot shows the 'Autonomous Database Details' page for an instance named 'TRAINING'. A large yellow box on the left displays the letters 'ATP' in white, with the word 'STARTING...' at the bottom. The main panel contains the following information:

Workload Type:	Transaction Processing	Created:	Tue, 12 Mar 2019 16:38:43 GMT
Display Name:	TRAINING	Compartment:	ocuocictng16 (root)/C12
Database Name:	ATPTRAINING	OCID:	...dft6va Show Copy
CPU Core Count:	1	License Type:	Bring Your Own License
Storage (TB):	1	Lifecycle State:	Starting...

9. Once the instance has started, the Lifecycle Status will be **Available** as shown in the following:

The screenshot shows the 'Autonomous Database Details' page for the same instance 'TRAINING'. The large green box on the left now displays the letters 'ATP' in white, with the word 'AVAILABLE' at the bottom. The main panel contains the following information:

Workload Type:	Transaction Processing	Created:	Tue, 12 Mar 2019 16:38:43 GMT
Display Name:	TRAINING	Compartment:	ocuocictng16 (root)/C12
Database Name:	ATPTRAINING	OCID:	...dft6va Show Copy
CPU Core Count:	1	License Type:	Bring Your Own License
Storage (TB):	1	Lifecycle State:	Available

This completes the task of stopping and starting an ADB instance.

Practice 12-2: Scale Up CPU and Storage Resources

Overview

In this practice, you will add CPU and storage resources to an ADB instance.

Tasks

1. Log in to your Oracle Cloud account and navigate to the ADB home page.
2. Find your ADB instance; in this example we are using the ATP **TRAINING** instance. Click the name of your instance to go to the instance details page.
3. Click **Scale Up/Down**.

Autonomous Database > Autonomous Database Details

TRAINING

ATP

AVAILABLE

DB Connection Service Console **Scale Up/Down** Stop Actions ▾

Autonomous Database Information Tags

Workload Type: Transaction Processing
Display Name: TRAINING
Database Name: ATPTRAINING
CPU Core Count: 1
Storage (TB): 1

Created: Tue, 12 Mar 2019 16:38:43 GMT
Compartment: ocuocitng16 (root)/C12
OCID: ...dft6va [Show](#) [Copy](#)
License Type: Bring Your Own License
Lifecycle State: Available

4. Increase **CPU** to **2** and **Storage** to **2 TB** and click **Update**.

Scale Up/Down [help](#) [cancel](#)

CPU CORE COUNT: 2

The number of CPU cores to enable. Available cores are subject to your tenancy's service limits.

STORAGE (TB): 2

The amount of storage to allocate.

Update

5. This process will take some time. (You can see the progress.) Provide sufficient time for the process to complete.

Autonomous Database > Autonomous Database Details

TRAINING

ATP

SCALING IN PROGRESS...

DB Connection Service Console Scale Up/Down Start Actions ▾

Autonomous Database Information Tags

Workload Type: Transaction Processing
Display Name: TRAINING
Database Name: ATPTRAINING
CPU Core Count: 1
Storage (TB): 1

Created: Tue, 12 Mar 2019 16:38:43 GMT
Compartment: ocuocitng16 (root)/C12
OCID: ...dft6va [Show](#) [Copy](#)
License Type: Bring Your Own License
Lifecycle State: Scaling In Progress...

6. When the process is complete, you can see the increase in CPU and storage resources from the instance details page as shown in the following:

The screenshot shows the 'Autonomous Database Details' page for the 'TRAINING' instance. The top navigation bar includes 'DB Connection', 'Service Console', 'Scale Up/Down', 'Stop', and 'Actions'. Below the navigation is a tabs section with 'Autonomous Database Information' and 'Tags'. The main content area displays the following details:

Workload Type: Transaction Processing	Created: Tue, 12 Mar 2019 16:38:43 GMT
Display Name: TRAINING	Compartment: ocuocictng16 (root)/C12
Database Name: ATPTRAINING	OCID: ...dft6va Show Copy
CPU Core Count: 2	License Type: Bring Your Own License
Storage (TB): 2	Lifecycle State: Available

A large green button on the left side of the page has the word 'ATP' in white, with 'AVAILABLE' written below it.

This completes the task of scaling up an ADB instance.

Practice 12-3: Scale Down CPU and Storage Resources

Overview

In this practice, you will remove CPU and storage resources for an ADB instance.

Tasks

1. Log in to your Oracle Cloud account and navigate to the ADB home page.
2. Find your ADB instance; in this example we are using the ATP **TRAINING** instance. Click the name of your instance to go to the instance details page.
3. Click **Scale Up/Down**.

Autonomous Database » Autonomous Database Details

TRAINING

DB Connection Service Console Scale Up/Down Stop Actions ▾

Autonomous Database Information Tags

Workload Type: Transaction Processing
Display Name: TRAINING
Database Name: ATPTRAINING
CPU Core Count: 2
Storage (TB): 2

Created: Tue, 12 Mar 2019 16:38:43 GMT
Compartment: ocucictrng16 (root)/C12
OCID: ...dft6va [Show](#) [Copy](#)
License Type: Bring Your Own License
Lifecycle State: Available

4. Decrease CPU to 1 and Storage to 1 TB, and click **Update**.

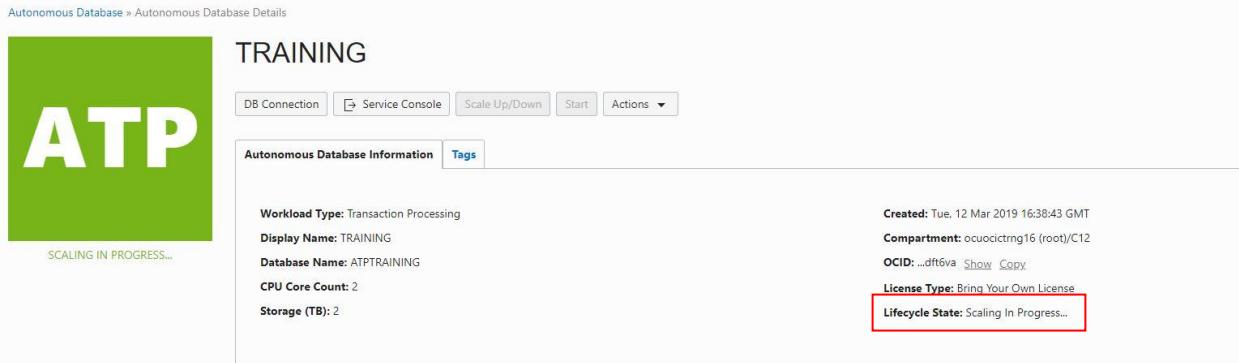
Scale Up/Down help cancel

CPU CORE COUNT The number of CPU cores to enable. Available cores are subject to your tenancy's service limits.

STORAGE (TB) The amount of storage to allocate.

Update

5. This process will take some time. (You can see the progress.) Provide sufficient time for the process to complete.



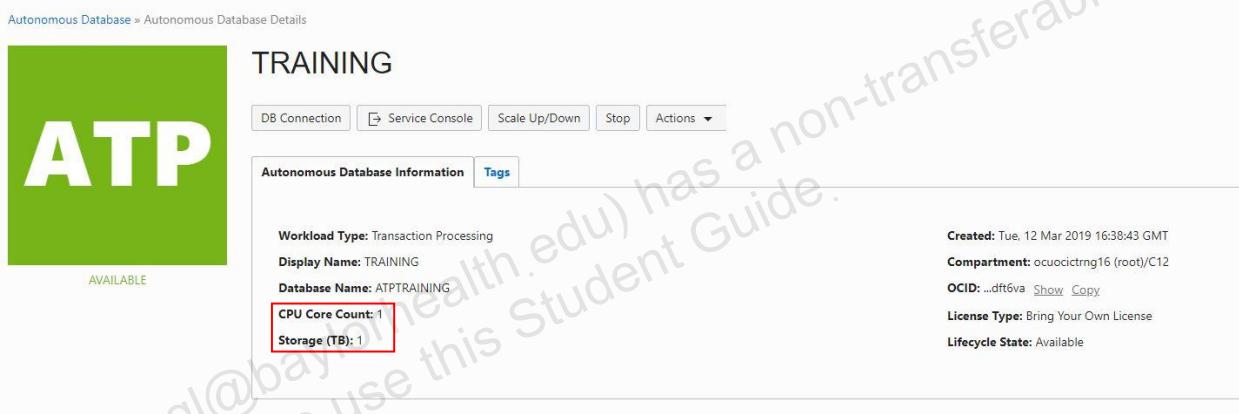
The screenshot shows the 'Autonomous Database Details' page for an instance named 'TRAINING'. The main visual is a large green box with the letters 'ATP' in white. Below it, the text 'SCALING IN PROGRESS...' is visible. At the top right, there are several buttons: 'DB Connection', 'Service Console', 'Scale Up/Down', 'Start', and 'Actions'. The 'Actions' button has a dropdown arrow. Below these buttons, there are two tabs: 'Autonomous Database Information' (which is selected) and 'Tags'. Under the 'Autonomous Database Information' tab, the following details are listed:

- Workload Type:** Transaction Processing
- Display Name:** TRAINING
- Database Name:** ATPTRAINING
- CPU Core Count:** 2
- Storage (TB):** 2

On the right side of the page, there are additional details:

- Created:** Tue, 12 Mar 2019 16:38:43 GMT
- Compartment:** ocuocitrg16 (root)/C12
- OCID:** ...dft6va [Show](#) [Copy](#)
- License Type:** Bring Your Own License
- Lifecycle State:** Scaling In Progress...

6. Once the process is complete, you can see that the CPU and storage resources are back to 1 as shown in the following:



The screenshot shows the same 'Autonomous Database Details' page for the 'TRAINING' instance. The main visual now shows a large green box with the letters 'ATP' in white, and below it, the word 'AVAILABLE' is visible. The rest of the interface is identical to the previous screenshot, including the buttons at the top, the tabs, and the detailed information on the left and right sides.

This completes the task of scaling down an ADB instance.

Practice 12-4: Terminating an Autonomous Database Instance

Overview

In this practice, you will terminate an ADB instance.

Tasks

1. Log in to your Oracle Cloud account and navigate to the ADB home page.
2. Find your ADB instance; in this example we are using the ATP **TRAINING** instance. Click the name of your instance to go to the instance details page.

The screenshot shows the Oracle Cloud Autonomous Databases interface. On the left, there's a sidebar with 'List Scope' set to 'COMPARTMENT' and 'C12' selected. Below it are 'Filters' for 'STATE' (Any state) and 'WORKLOAD TYPE' (ATP). The main area is titled 'Autonomous Databases in C12 Compartment' and contains a table with one row:

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
TRAINING	Available	ATPTRAINING	1	1	Transaction Processing	Tue, 12 Mar 2019 16:38:43 GMT

At the bottom right of the table, it says 'Displaying 1 Autonomous Databases < Page 1 >'.

3. On the database instance details page, click **Actions** and then click **Terminate** to terminate the instance.
4. A warning dialog box appears as shown below. You will be asked to *type in your database name*, to confirm your action to terminate the instance. If you want to proceed with terminating your instance, review the message, enter your instance name, and click **Terminate Database**.

Note: Display Name and Database Name are different. In this example:

- Display Name: **TRAINING**
- Database Name: **ATPTRAINING**

The screenshot shows the Autonomous Database Details page for the 'TRAINING' instance. The instance status is 'AVAILABLE'. On the right, a modal dialog box is open with the title 'Terminate Autonomous Database'. It contains a message: 'Are you sure you want to terminate the Autonomous Database named "ATPTRAINING"? Terminating the Autonomous Database permanently deletes it and removes all automatic backups. You cannot recover a terminated Autonomous Database.' Below the message is a text input field with 'ATPTRAINING' typed into it. At the bottom of the dialog is a red 'Terminate Database' button. The background of the page shows the instance details: Workload Type: Transaction Processing, Display Name: TRAINING, Database Name: ATPTRAINING, CPU Core Count: 1, Storage (TB): 1. To the right of the dialog, there are links for 'Compartiment: ocucictrng16 (root)/C12', 'OCID: ...dft6va Show Copy', 'License Type: Bring Your Own License', and 'Lifecycle State: Available'.

5. After you initiate the termination process, the Lifecycle Status will read **Terminating** as shown in the following:

6. After your instance is terminated, the page will look as follows.

7. If you navigate to the ADB home page your instance will be listed with the Terminated status for some time before it gets removed.

This completes the task of terminating an ADB instance.

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Practices for Lesson 13: Oracle Cloud Infrastructure Security

Practices for Lesson 13

There are no practices for this lesson.

Practices for Lesson 14: Managing an Autonomous Database Using Command Utilities and APIs

Practices for Lesson 14: Overview

Overview

In these practices, you will configure, and use the Oracle Cloud Infrastructure Command Line utility (OCI CLI).

For this practice your environment consists of:

- A Landing Pad VM running Linux Operating System referred to as the **Linux VM** assigned to you as part of the course environment.
- An Oracle Cloud Infrastructure (OCI) account assigned to you using which you will create Autonomous Database Cloud service instances with the following workloads:
 - Autonomous Data Warehouse
 - Autonomous Transaction Processing

Important: All instructions in this practice, unless specified otherwise, assume you are working on the **Linux VM** assigned to you.

Practice 14-1: Configure OCI CLI

Overview

In this practice you will configure OCI CLI. The command-line utility is already installed for you on the Linux VM; however you need to configure it before using.

Tasks

- As part of the OCI CLI setup configuration in the next step and for running OCI CLI commands in this practice you will need to provide the following information:
 - User OCID
 - Tenancy OCID
 - Compartment OCID

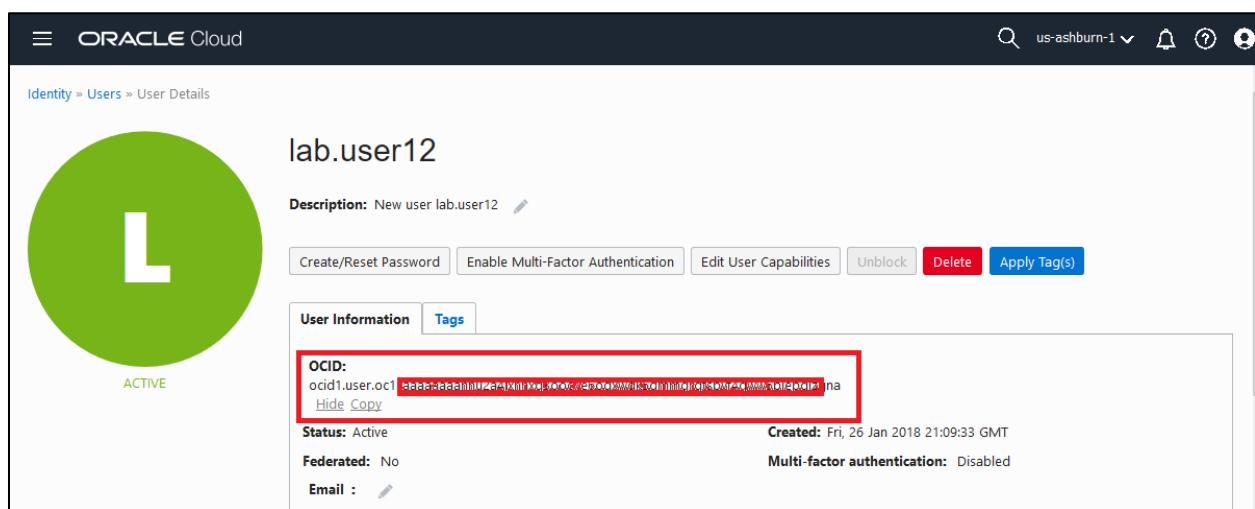
Follow these instructions to gather this information, make a note of them, and have them handy.

User OCID:

- Log in to the OCI Web console using the account details assigned to you.
- Click the **Profile** icon located at the right hand top corner, highlighted below.
- Next, click the user name highlighted below. This will be your assigned cloud account user name, in this example it is **lab.user12**. This takes you to the User Details page.



- On the **User Details** page, click the **Show** link next to the **OCID** field, and then click the **Copy** link to copy the OCID value. The required field is highlighted below. Make a note of this User OCID.



Tenancy OCID:

- a) Again click the **Profile** and then click the **Tenancy** link, highlighted below. This takes you to the **Tenancy Information** page. In this example the Tenancy is **ocuocictrng16**.

The screenshot shows the Oracle Cloud User Details page. At the top right, there is a 'Profile' section with a user icon and the name 'lab.user12'. Below this, a red box highlights the 'Tenancy: ocuocictrng16' field. The main content area shows a large green profile picture with a white 'T' and the text 'lab.user12'.

- b) On the **Tenancy Information** page, click the **Show** link next to the **OCID** field, and then click the **Copy** link to copy the OCID value. The required field is highlighted below. Make a note of this Tenancy OCID.

The screenshot shows the Oracle Cloud Tenancy Information page. It features a large green 'T' logo on the left. The main content area has tabs for 'Tenancy Information' and 'Tags', with 'Tenancy Information' selected. A red box highlights the 'OCID' field, which contains the value 'ocid1.tenancy.oc1...'. Below this, there are fields for 'Home Region: us-ashburn-1' and 'Name: ocuocictrng16'. At the bottom left, there is a 'Hide Copy' button.

Compartment OCID:

- a) Click **OCI Menu**, scroll down the menu options and click **Identity**, and then click **Compartments**. This takes you to the Compartments page.
- b) On the **Compartments** page, click the name of the compartment assigned to you. In this example the highlighted compartment in **C12**. This takes you to the Compartment Information page.

The screenshot shows the Oracle Cloud Compartments page. At the top, there is a 'Create Compartment' button. The main table lists three compartments:

Name	Status	OCID	Authorized	Subcompartments	Created
ocuocictrng16 (root)	Active	...ygmuya	No	2	-
C12	Active	...kv7fmq	Yes	0	Fri, 26 Jan 2018 19:38:39 GMT
ManagedCompartmentForPaaS	Active	...3zjmzg	Yes	0	Mon, 11 Dec 2017 07:24:08 GMT

A red box highlights the 'C12' compartment. At the bottom right, there is a message 'Showing 3 Item(s) < Page 1 >'.

- c) On the **Compartment Information** page, click the **Show** link next to the **OCID field**, and then click the **Copy** link to copy the OCID value. The required field is highlighted below. Make a note of this Compartment OCID.

The screenshot shows the Oracle Cloud Identity interface. In the top navigation bar, 'ORACLE Cloud' is visible along with a search icon and user information 'us-ashburn-1'. Below the navigation, the path 'Identity > Compartments > Compartment Details' is shown. A large green circle with a white 'C' and the word 'ACTIVE' is on the left. The compartment name 'C12' is displayed above a section titled 'Compartment_12'. Below this are buttons for 'Rename Compartment', 'Edit Description', 'Add Tag(s)', and 'Delete'. A tab bar at the bottom has 'Compartment Information' selected, and 'Tags' is also present. Under 'Compartment Information', it says 'Parent Compartment: ocuocictmra16 (root)' and 'OCID: ocid1.compartment.oc1...'. A red box highlights the 'OCID' field. Below it, 'Authorized: Yes' and 'Created: Fri, 26 Jan 2018 19:38:39 GMT' are listed.

At this point you have the required OCIDs to proceed with this practice.

2. Log in to the **Linux VM** using a graphical user interface (GUI) connection utility as the **oracle** user, open a terminal window, and execute these commands. This first login step ensures the **oracle** user's profile comes into effect and the necessary environment variables are in place.

```
[oracle@edvmr1p0 ~]$ su - oracle
Password: *****
Last login: Wed Mar 27 13:34:59 UTC 2019 from 10.191.209.83
[oracle@edvmr1p0 ~]$
```

3. Run the **oci setup config** command as shown below to configure OCI CLI. When prompted, supply the following information:
 - Accept the default location for the config file (**/home/oracle/.oci/config**).
 - Specify **y** when prompted to overwrite the existing **/home/oracle/.oci/config** file. This is the default config file that gets created at the time of installing OCI CLI utility.
 - Specify the **User OCID** that you have noted in the previous step.
 - Specify the **Tenancy OCID** that you have noted in the previous step.
 - Specify the region in which you want to create Autonomous Database service instances; in this example we specify **us-phoenix-1**. Your selected region is at the top of the OCI Web console on the right hand side.
 - Specify **y** when prompted to generate a new RSA key pair.
 - Accept the default values for the directory where the key is located and the name of the key file.
 - Do not specify a key passphrase.

```
[oracle@edvmr1p0 ~]$ oci setup config
This command provides a walkthrough of creating a valid CLI
config file.

The following links explain where to find the information
required by this
script:

User OCID and Tenancy OCID:
https://docs.cloud.oracle.com/Content/API/Concepts/apisigningkey.htm#Other

Region:
https://docs.cloud.oracle.com/Content/General/Concepts/regions.htm

General config documentation:
https://docs.cloud.oracle.com/Content/API/Concepts/sdkconfig.htm

Enter a location for your config [/home/oracle/.oci/config]: <enter>
File: /home/oracle/.oci/config already exists. Do you want to
overwrite? [y/N]: Y
Enter a user OCID:
ocid1.user.oc1..aaaaaaaa7tpw4a5564prtnha6oucd2wqns7kcozeonlu6uhn
dimx6w33macwq
Enter a tenancy OCID:
ocid1.tenancy.oc1..aaaaaaaaab72ycc67ujcscsdckbfizd4bqddd2o4y6d25k
gk46txrjt6phsdcyq
Enter a region (e.g. ca-toronto-1, eu-frankfurt-1, uk-london-1,
us-ashburn-1, us-gov-ashburn-1, us-gov-chicago-1, us-gov-
phoenix-1, us-langley-1, us-luke-1, us-phoenix-1): us-phoenix-1
Do you want to generate a new RSA key pair? (If you decline you
will be asked to supply the path to an existing key.) [Y/n]: Y
Enter a directory for your keys to be created
[/home/oracle/.oci]: <enter>
Enter a name for your key [oci_api_key]: <enter>
Public key written to: /home/oracle/.oci/oci_api_key_public.pem
Enter a passphrase for your private key (empty for no
passphrase):
Private key written to: /home/oracle/.oci/oci_api_key.pem
Fingerprint: d9:b2:24:e8:fa:30:d9:ce:22:65:4f:79:11:60:df:26
Config written to /home/oracle/.oci/config
```

If you haven't already uploaded your public key through the console,

follow the instructions on the page linked below in the section 'How to

upload the public key':

```
https://docs.cloud.oracle.com/Content/API/Concepts/apisigningkey.htm#How2
```

```
[oracle@edvmrlp0 ~]$
```

Make a note of the location where your RSA Public and Private Key files are located.

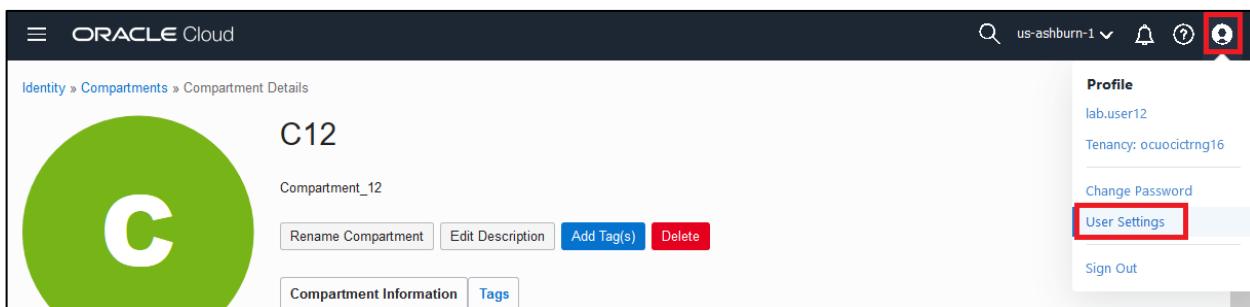
Note: You will need to reconfigure OCI CLI if there is a change in any of these parameters:

- User OCID
- Tenancy OCID
- Compartment OCID
- Region
- RSA Public and Private Key

4. To complete configuration, you must register the key that you will use to authenticate OCI CLI requests. View the public key that was generated in the previous step.

```
[oracle@edvmrlp0 ~]$ cat .oci/oci_api_key_public.pem
-----BEGIN PUBLIC KEY-----
MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA04KqjZUclppGo9klpEgJ
asjdncakjsdcnajsndandcjnasdcnasdjncajsndckjansdckjansdjkc
nacasdjncakjdsnckjandskjandskjnasdkjncakjsdnakjnsdkjanjnas
JS2Y1fy2wm2DfIjX7TeV6qkYuXGriUsuhndxihdvcqx/fsDcoYYzZ8kV068ObBaD
IVYfEGjbX7Lz2cvncW0LgWpj6eEQSztStA6t/lwoBls6vSffPb7haU+2F/1kW1Si
R8BwXYCrFQdwujOBKssnDm6MRnfqqN318JZISv2xbYs/8W5RIaYGECZZDO4RM3j+
9wIDAQAB
-----END PUBLIC KEY-----
[oracle@edvmrlp0 ~]$
```

5. Back in the OCI Web console, select the **Profile** icon located at the right hand top corner, highlighted below, and click the **User Settings** menu option.



6. In the API Keys section, click Add Public Key.

The screenshot shows the Oracle Cloud Identity interface. The user 'lab.user12' is selected. In the 'User Information' tab, there is a 'User Details' section with fields like OCID, Created, Status, and Federated. Below it is a 'Capabilities' section with checkboxes for Local password, API keys, and Auth tokens. In the 'Resources' sidebar, 'API Keys (0)' is selected, and the main content area shows a table for 'API Keys' with a single row labeled 'There are no API Keys for this User.' A prominent red box highlights the 'Add Public Key' button at the bottom of this table.

7. In the Add Public Key dialog, paste the value of the public key, which you got from the `oci_api_key_public.pem` file in the previous step. Then, click Add.

This screenshot shows the 'Add Public Key' dialog box. It has a note that says 'Note: Public Keys must be in the PEM format.' Below that is a 'PUBLIC KEY' field containing a large block of PEM-formatted public key data. This data is also enclosed in a red box. At the bottom of the dialog is a blue 'Add' button, which is also highlighted with a red box.

8. Verify that the **fingerprint** for the newly added key matches the key fingerprint in the OCI CLI configuration file.

lab.user12

Description: New user lab.user12

User Information Tags

OCID: ...dizgna Status: Active
Created: Fri, 26 Jan 2018 21:09:33 GMT Federated: No
Multi-factor authentication: Disabled
Email:

Capabilities

Local password: Yes SMTP credentials: Yes
API keys: Yes Customer secret keys: Yes
Auth tokens: Yes

Resources API Keys Displaying 1 API Keys

Add Public Key

PK	Fingerprint: d9:b2:24:e8:fa:30:d9:ce:22:65:4f:79:11:60:df:26
----	--------------------------------------------------------------

Time Created: Wed, 27 Mar 2019 14:01:32 GMT

[oracle@edvmr1p0 ~]\$ grep fingerprint .oci/config
fingerprint=d9:b2:24:e8:fa:30:d9:ce:22:65:4f:79:11:60:df:26
[oracle@edvmr1p0 ~]\$

9. Test that the OCI CLI works by running the following command.

In the output, take note of the compartment OCID for the compartment that contains your OCI resources and compare it with the Compartment OCID you had noted previously.

In the following example the compartment name is C12 and the OCID is
ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld2lc52a7rc5egszguj4so3kv7fmq

Ignore any other compartments listed in the output.

```
[oracle@edvmr1p0 ~]$ oci iam compartment list --access-level
ACCESSIBLE --all
{
  "data": [
    {
      "compartment-id":
        "ocid1.tenancy.oc1..aaaaaaaaaxz5ig42vwuhzc2kpqrochfzaka5m32pjg3q
        kbor4dujqhygmyua",
      "defined-tags": {},
      "description": "Compartment_12",
      "freeform-tags": {}
    }
  ]
}
```

```
        "id":  
"ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld2lc52a7  
rc5egszguj4so3kv7fmq",  
        "inactive-status": null,  
        "is-accessible": true,  
        "lifecycle-state": "ACTIVE",  
        "name": "C12",  
        "time-created": "2018-01-26T19:38:39.169000+00:00"  
    },  
    {  
        "compartment-id":  
"ocid1.tenancy.oc1..aaaaaaaaaxz5ig42vwuhzc2kpqrochfzaka5m32pjg3q  
kbor4dujqhygmyua",  
        "defined-tags": {},  
        "description": "idcs-  
bac676f0a2c643a281868616b45986da|21482426|Oracle India Private  
Limited - Internal",  
        "freeform-tags": {},  
        "id":  
"ocid1.compartment.oc1..aaaaaaaaafj6ylqlmlojszfv4sxxzblqjugco6lou  
kgc7egq2i6pvrq3zjmzq",  
        "inactive-status": null,  
        "is-accessible": true,  
        "lifecycle-state": "ACTIVE",  
        "name": "ManagedCompartmetForPaaS",  
        "time-created": "2017-12-11T07:24:08.973000+00:00"  
    }  
]  
}  
[oracle@edvmr1p0 ~]$
```

This completes the task of configuring the OCI CLI utility on the Linux VM.

Practice 14-2: Administering Using OCI CLI

Overview

In this practice you will use the OCI Command Line Interface (OCI CLI) to:

- Display help information for various OCI CLI commands.
- Display information about various Oracle Cloud Infrastructure objects.
- Administer Autonomous Database Service instance by:
 - Creating and deleting a database instance
 - Scaling the number of enabled CPU cores and storage capacity
 - Stopping and later restarting a database instance

Assumptions

This practice requires the OCI CLI configured on the **Linux VM**, which you performed in the previous practice.

Tasks

1. Log in to the **Linux VM** using a graphical user interface (GUI) connection utility as the **oracle** user, open a terminal window, and execute these commands. This first login step ensures the **oracle** user's profile comes into effect and the necessary environment variables are in place.

```
[oracle@edvmr1p0 ~]$ su - oracle
Password: *****
Last login: Wed Mar 27 13:34:59 UTC 2019 from 10.191.209.83
[oracle@edvmr1p0 ~]$
```

2. You can display basic help information by running `oci` commands with the help option (`-h`). Run `oci -h` and examine the top-level help information.

```
[oracle@edvmr1p0 ~]$ oci -h
Usage: oci [OPTIONS] COMMAND [ARGS]...

...
Commands:
  announce           Announcements Service
  audit              Audit
  bv                 Block Volume Service
  ce                 Container Engine for Kubernetes
  compute            Compute Service
  compute-management Compute Management Service
  db                 Database Service
  dns                DNS
  email              Email Delivery
  fs                 File Storage Service
  health-checks     Health Checks
  iam                Identity and Access Management Service
  kms                Key Management Service
  lb                 Load Balancing
  network            Networking Service
  os                 Object Storage Service
  search             Search Service
  setup              Setup commands for CLI
  streaming          Streaming Service API
  waas               Web Application Acceleration and Security
Services
[oracle@edvmr1p0 ~]$
```

3. You can display further help information for different commands and subcommands. For example, `oci -h` identifies `db` as one of the top-level commands. So, to examine the help for the `db` command you could use `oci db -h`.

```
[oracle@edvmr1p0 ~]$ oci db -h
DB(1)                               OCI CLI Command Reference          DB(1)

NAME
  db - 

DESCRIPTION
  The CLI for the Database Service.

AVAILABLE COMMANDS
  o autonomous-data-warehouse
    o create
    o delete
    o generate-wallet
    o get
    o list
  ...

...
```

Press **Ctrl + Z** and enter to exit the command.

4. The help system continues throughout the command hierarchy. For example:

```
[oracle@edvmr1p0 ~]$ oci db system list -h
DB_SYSTEM_LIST(1)    OCI CLI Command Reference    DB_SYSTEM_LIST(1)

NAME
db_system_list -

DESCRIPTION
Gets a list of the DB systems in the specified compartment. You can specify a backupId to list only the DB systems that support creating a database using this backup in this compartment.

USAGE
oci db system list [OPTIONS]

OPTIONS
--compartment-id, -c [text]
The compartment OCID <https://docs.us-phoenix-1.oraclecloud.com/Content/General/Concepts/identifiers.htm>.
[required]
...
```

Press **Ctrl + Z** and enter to exit the command.

So far you have seen how you can use the OCI CLI help feature. In the remainder of the practice you will perform a series of administrative operations.

5. Use OCI CLI to create an Autonomous Database instance with a Data Warehouse workload type in your assigned compartment. Use the following command to create a new instance. In the command output, take note of the OCID for the new database.

Note: The text highlighted in red is the information you need to provide as part of this command; containing your desired values and account information. Substitute your Compartment OCID for the **-c** attribute. Also substitute your initials in place of “MY” for database name and display name “**MYADW1**.”

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database create -c
ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld21c52a7rc5egszguj4so3kv7fmq --db-name MYADW1 --cpu-core-count 1 --data-storage-size-in-tbs 1 --admin-password WW1lelcome## --db-workload DW --display-name MYADW1 --license-model LICENSE_INCLUDED
{
  "data": {
    "compartment-id":
      "ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld21c52a7rc5egszguj4so3kv7fmq",
```

```

"connection-strings": null,
"cpu-core-count": 1,
"data-storage-size-in-tbs": 1,
"db-name": "MYADW1",
"db-version": null,
"db-workload": "DW",
"defined-tags": {},
"display-name": "MYADW1",
"freeform-tags": {},
"id":
"ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqf
eioygsxhommiukh4bx7vqgwhjivizq",
"license-model": "LICENSE_INCLUDED",
"lifecycle-details": null,
"lifecycle-state": "PROVISIONING",
"service-console-url": null,
"time-created": "2019-03-27T14:38:58.419000+00:00"
},
"etag": "26db7cf4"
}
[oracle@edvmr1p0 ~]$
```

Once the provisioning starts, make a note of the **database OCID**, which will be used in the subsequent steps.

Following is an analysis of this create Autonomous Database OCI CLI command:

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database create -c
ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld2lc52a7r
c5egszguj4so3kv7fmq --db-name MYADW1 --cpu-core-count 1 --data-
storage-size-in-tbs 1 --admin-password WW11elcome## --db-
workload DW --display-name MYADW1 --license-model
LICENSE_INCLUDED
```

In this example, the syntax is applied as follows:

- **db**: The database name. The name must begin with an alphabetic character and can contain a maximum of 14 alphanumeric characters. Special characters are not permitted. The database name must be unique in the tenancy. This value is mandatory.
- **autonomous-database**:
- **create**:
- **-c**:
- **--db-name**:
- **--cpu-core-count**: The number of CPU Cores to be made available to the database. This value is mandatory.

- **--data-storage-size-in-tbs**: The size, in terabytes, of the data volume that will be created and attached to the database. This storage can later be scaled up if needed. This value is mandatory.
- **--admin-password**: The password must be between 12 and 30 characters long, and must contain at least 1 uppercase, 1 lowercase, and 1 numeric character. It cannot contain the double quote symbol ("") or the username "admin", regardless of casing. This value is mandatory.
- **--db-workload**: The autonomous database workload type. Possible inputs [OLTP | DW]
- **--display-name**: The user-friendly name for the Autonomous Database
- **--license-model**: The Oracle license model that applies to the Oracle Autonomous Database. The default is BRING_YOUR_OWN_LICENSE. Possible inputs [LICENSE_INCLUDED | BRING_YOUR_OWN_LICENSE]

Important: If you want to create an **Autonomous Transaction Processing** service instance all you need to do is specify workload type as **OLTP** in the above syntax. All the OCI CLI commands in this practice will work for both ADW and ATP instances in the same way. You can try this by changing the database OCID in the upcoming tasks of this practice.

You can refer to the below link for more details:

https://docs.cloud.oracle.com/iaas/tools/oci-cli/latest/oci_cli_docs/cmdref/db/autonomous-database/create.html

6. If you are following the database creation on the OCI Web console, you will see it provisioning as shown in the following example. Ensure you have selected the following in OCI Web Console:

- Your **Compartment**
- **Region** in which you are creating the new instance
- State field set to **Any state**
- Workload Type set to **All**

Name	State	Database Name	CPU Core Count	Storage (TB)	Workload Type	Created
MYADW1	Provisioning...	MYADW1	1	1	Data Warehouse	Wed, 27 Mar 2019 14:38:58 GMT

7. Use the OCI CLI to monitor the provisioning. When it is completed, the database lifecycle state is AVAILABLE. Substitute your **database OCID** in the command.

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database get --  
autonomous-database-id  
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe  
ioygsxhommiukh4bx7vqgwhjivizq  
  
{  
  "data": {  
    "compartment-id":  
      "ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld21c52a7  
      rc5egszguj4so3kv7fmq",  
    "connection-strings": {  
      "all-connection-strings": null,  
      "high": "adb.us-phoenix-  
      1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl  
      oud.com",  
      "low": "adb.us-phoenix-  
      1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo  
      ud.com",  
      "medium": "adb.us-phoenix-  
      1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle  
      cloud.com"  
    },  
    "cpu-core-count": 1,  
    "data-storage-size-in-tbs": 1,  
    "db-name": "MYADW1",  
    "db-version": "18.4.0.0",  
    "db-workload": "DW",  
    "defined-tags": {},  
    "display-name": "MYADW1",  
    "freeform-tags": {},  
    "id":  
      "ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqf  
      eioygsxhommiukh4bx7vqgwhjivizq",  
    "license-model": "LICENSE_INCLUDED",  
    "lifecycle-details": null,  
    "lifecycle-state": "AVAILABLE",  
    "service-console-url": "https://adb.us-phoenix-  
      1.oraclecloud.com/console/index.html?tenant_name=OCID1.TENANCY.O  
      C1..AAAAAAAIXZ5IG42VWUHZC2KPQROCHFZAKA5M32PJQ3QKBOR4DUJQHYGMYUA  
      &database_name=MYADW1&service_type=ADW",  
    "time-created": "2019-03-27T14:38:58.419000+00:00"  
  },  
  "etag": "d1ce36fa"  
}  
[oracle@edvmr1p0 ~]$
```

8. Examine the newly created database. You can use the Web console to view its attributes.
9. Display information about Autonomous Database instances in your compartment. This should return information about your newly created instance and any other instances that exist in the compartment.

Use the command in the following example but ensure that you substitute your compartment OCID.

If you like, start an OCI Web console session and compare the OCI CLI output with the contents of the Web console.

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database list -c
ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld21c52a7r
c5egszguj4so3kv7fmq

{
  "data": [
    {
      "compartment-id":
"ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld21c52a7
rc5egszguj4so3kv7fmq",
      "connection-strings": {
        "all-connection-strings": {
          "HIGH": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl
oud.com",
          "LOW": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo
ud.com",
          "MEDIUM": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle
cloud.com"
        },
        "high": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl
oud.com",
        "low": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo
ud.com",
        "medium": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle
cloud.com"
      },
      "cpu-core-count": 1,
      "data-storage-size-in-tbs": 1,
      "db-name": "MYADW1",
      "db-version": "18.4.0.0",
      "db-workload": "DW",
    }
  ]
}
```

```

    "defined-tags": {},
    "display-name": "MYADW1",
    "freeform-tags": {},
    "id": "ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiyoysxhommiukh4bx7vqgwhjivizq",
    "license-model": "LICENSE_INCLUDED",
    "lifecycle-details": null,
    "lifecycle-state": "AVAILABLE",
    "service-console-url": "https://adb.us-phoenix-1.oraclecloud.com/console/index.html?tenant_name=OCID1.TENANCY.OC1..AAAAAAAIXZ5IG42VWUHZC2KPQROCHFZAKA5M32PJQ3QKBOR4DUJQHYGMYUA&database_name=MYADW1&service_type=ADW",
    "time-created": "2019-03-27T14:38:58.419000+00:00"
}
]
}
[oracle@edvmr1p0 ~]$

```

10. Confirm the current CPU core count for your newly created Autonomous Database instance.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiyoysxhommiukh4bx7vqgwhjivizq |grep cpu-core-count

"cpu-core-count": 1,
[oracle@edvmr1p0 ~]$

```

11. Confirm the storage capacity for your newly created Autonomous Database instance.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiyoysxhommiukh4bx7vqgwhjivizq |grep data-storage-size-in-tbs

"data-storage-size-in-tbs": 1,
[oracle@edvmr1p0 ~]$

```

12. Use the command below to check the current CPU core count, storage capacity, and the state of your instance.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiyoysxhommiukh4bx7vqgwhjivizq |grep -e cpu-core-count -edata-storage-size-in-tbs -e lifecycle-state

```

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database update --  
autonomous-database-id  
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe  
ioygsxhommiukh4bx7vqgwhjivizq --cpu-core-count 2 --data-storage-  
size-in-tbs 2
```

13. Use the command in the following example to scale up the number of enabled CPU cores and storage capacity. In this example we are increasing both these by 1.

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database update --  
autonomous-database-id  
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe  
ioygsxhommiukh4bx7vqgwhjivizq --cpu-core-count 2 --data-storage-  
size-in-tbs 2
```

{

 "data": {

 "compartment-id": "ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld2lc52a7rc5egszguj4so3kv7fmq",

 "connection-strings": {

 "all-connection-strings": {

 "HIGH": "adb.us-phoenix-1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecloud.com",

 "LOW": "adb.us-phoenix-1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oraclecloud.com",

 " MEDIUM": "adb.us-phoenix-1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oraclecloud.com"

 },

 "high": "adb.us-phoenix-1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecloud.com",

 "low": "adb.us-phoenix-1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oraclecloud.com",

 "medium": "adb.us-phoenix-1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oraclecloud.com"

 },

 "cpu-core-count": 1,

 "data-storage-size-in-tbs": 1,

 "db-name": "MYADW1",

 "db-version": "18.4.0.0",

 "db-workload": "DW",

```

    "defined-tags": {},
    "display-name": "MYADW1",
    "freeform-tags": {},
    "id":
"ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiogygsxhommiukh4bx7vqgwhjivizq",
    "license-model": "LICENSE_INCLUDED",
    "lifecycle-details": null,
    "lifecycle-state": "SCALE_IN_PROGRESS",
    "service-console-url": "https://adb.us-phoenix-1.oraclecloud.com/console/index.html?tenant_name=OCID1.TENANCY.OC1..AAAAAAAIXZ5IG42VWUHZC2KPQROCHFZAKA5M32PJQ3QKBOR4DUJQHYGMYUA&database_name=MYADW1&service_type=ADW",
    "time-created": "2019-03-27T14:38:58.419000+00:00"
},
"etag": "ca03c949"
}
[oracle@edvmr1p0 ~]$
```

14. Periodically repeat the following command to check the CPU core count, storage capacity and the state of your instance. Notice that initially the service state changes to **SCALE_IN_PROGRESS**. When the rescaling operation completes the service status returns to **AVAILABLE** and the CPU core count and the storage capacity reflects the change that you made in the previous step.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiogygsxhommiukh4bx7vqgwhjivizq |grep -e cpu-core-count -edata-
storage-size-in-tbs -e lifecycle-state

"cpu-core-count": 1,
"data-storage-size-in-tbs": 1,
"lifecycle-state": "SCALE_IN_PROGRESS",
[oracle@edvmr1p0 ~]$ ...
[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfeiogygsxhommiukh4bx7vqgwhjivizq |grep -e cpu-core-count -edata-
storage-size-in-tbs -e lifecycle-state

"cpu-core-count": 2,
"data-storage-size-in-tbs": 2,
"lifecycle-state": "AVAILABLE",
[oracle@edvmr1p0 ~]$
```

15. Next, you will use the OCI CLI to stop and restart your instance. Use the following command to view the current state of your instance.

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database get --  
autonomous-database-id  
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe  
ioygsxhommiukh4bx7vqgwhjivizq | grep -e lifecycle-state  
  
"lifecycle-state": "AVAILABLE",  
[oracle@edvmr1p0 ~]$
```

16. Stop your Autonomous Database instance.

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database stop --  
autonomous-database-id  
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe  
ioygsxhommiukh4bx7vqgwhjivizq  
  
{  
  "data": {  
    "compartment-id":  
"ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnk4bejm2px4qyld2lc52a7  
rc5egszguj4so3kv7fmq",  
    "connection-strings": {  
      "all-connection-strings": {  
        "HIGH": "adb.us-phoenix-  
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl  
oud.com",  
        "LOW": "adb.us-phoenix-  
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo  
ud.com",  
        "MEDIUM": "adb.us-phoenix-  
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle  
cloud.com"  
      },  
      "high": "adb.us-phoenix-  
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl  
oud.com",  
      "low": "adb.us-phoenix-  
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo  
ud.com",  
      "medium": "adb.us-phoenix-  
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle  
cloud.com"  
    },  
    "cpu-core-count": 2,  
    "data-storage-size-in-tbs": 2,  
    "db-name": "MYADW1",  
    "db-version": "18.4.0.0",  
  }  
}
```

```

"db-workload": "DW",
"defined-tags": {},
"display-name": "MYADW1",
"freeform-tags": {},
"id":
"ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq",
"license-model": "LICENSE_INCLUDED",
"lifecycle-details": null,
"lifecycle-state": "STOPPING",
"service-console-url": "https://adb.us-phoenix-
1.oraclecloud.com/console/index.html?tenant_name=OCID1.TENANCY.O
C1..AAAAAAAIXZ5IG42VWUHZC2KPQROCHFZAKA5M32PJQ3QKBOR4DUJQHYGMYUA
&database_name=MYADW1&service_type=ADW",
"time-created": "2019-03-27T14:38:58.419000+00:00"
},
"etag": "74e14489"
}

[oracle@edvmr1p0 ~]$
```

17. Periodically check the status of your instance until you confirm that it is stopped.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq |grep -e lifecycle-state

"lifecycle-state": "STOPPING",

[oracle@edvmr1p0 ~]$
[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq |grep -e lifecycle-state

"lifecycle-state": "STOPPED",
[oracle@edvmr1p0 ~]$
```

18. Restart your instance.

```
[oracle@edvmrlp0 ~]$ oci db autonomous-database start --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq

{
  "data": {
    "compartment-id":
"ocid1.compartment.oc1..aaaaaaaaayiljvq3lmnvk4bejm2px4qyld2lc52a7
rc5egszguj4so3kv7fmq",
    "connection-strings": {
      "all-connection-strings": {
        "HIGH": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl
oud.com",
        "LOW": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo
ud.com",
        "MEDIUM": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle
cloud.com"
      },
      "high": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_high.adwc.oraclecl
oud.com",
      "low": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_low.adwc.oracleclo
ud.com",
      "medium": "adb.us-phoenix-
1.oraclecloud.com:1522/kjddgtm3rt8twhj_myadw1_medium.adwc.oracle
cloud.com"
    },
    "cpu-core-count": 2,
    "data-storage-size-in-tbs": 2,
    "db-name": "MYADW1",
    "db-version": "18.4.0.0",
    "db-workload": "DW",
    "defined-tags": {},
    "display-name": "MYADW1",
    "freeform-tags": {},
    "id":
"ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqf
eioygsxhommiukh4bx7vqgwhjivizq",
    "license-model": "LICENSE_INCLUDED",
    "lifecycle-details": null,
  }
}
```

```

    "lifecycle-state": "STARTING",
    "service-console-url": "https://adb.us-phoenix-
1.oraclecloud.com/console/index.html?tenant_name=OCID1.TENANCY.O
C1..AAAAAAAIXZ5IG42VWUHZC2KPQROCHFZAKA5M32PJQ3QKBOR4DUJQHYGMYUA
&database_name=MYADW1&service_type=ADW",
    "time-created": "2019-03-27T14:38:58.419000+00:00"
},
"etag": "5a85a051"
}

[oracle@edvmr1p0 ~]$
```

19. Periodically check the node status until you confirm that it is available again.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq |grep -e lifecycle-state

    "lifecycle-state": "STARTING",

[oracle@edvmr1p0 ~]$

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq |grep -e lifecycle-state

    "lifecycle-state": "AVAILABLE",
[oracle@edvmr1p0 ~]$
```

20. When you are ready, use the following command to delete your newly created Autonomous Database instance. Specify **Y** when prompted to confirm.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database delete --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq

Are you sure you want to delete this resource? [y/N]: y
[oracle@edvmr1p0 ~]$
```

21. After you issue the delete command, the lifecycle state of the database resource immediately changes to TERMINATING.

```

[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq |grep -e lifecycle-state
```

```
"lifecycle-state": "TERMINATING",
[oracle@edvmr1p0 ~]$
```

22. When the deletion completes, the lifecycle state of the database resource changes to TERMINATED.

```
[oracle@edvmr1p0 ~]$ oci db autonomous-database get --
autonomous-database-id
ocid1.autonomousdatabase.oc1.phx.abyhqljse35rm4rm7zyaoxosmdeqqfe
ioygsxhommiukh4bx7vqgwhjivizq |grep -e lifecycle-state

"lifecycle-state": "TERMINATED",
[oracle@edvmr1p0 ~]$
```

23. Exit all of your Web browser and terminal sessions.

Reminder: All the OCI CLI commands in this practice will work for both ADW and ATP instances in the same way. You can try this by changing the database OCID.

Practices for Lesson 15: Migrating Oracle Databases to Autonomous Database: Overview

Practices for Lesson 15

There are no practices for this lesson.

Practices for Lesson 16: Oracle Autonomous Database: Use Cases

Practices for Lesson 16

There are no practices for this lesson.