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| **Instructor** |  | **Due Date** |  |

**PROJECT ONE ( Review on SQL Introductory Concepts )**

**Objective** To review some introductory SQL concepts.

***PROJECT DESCRIPTION***

This project has you create a database table using SQL and then populating the table with various database records.

***Information about This Project***

This particular project revolves around some essential concepts and topics associated with the Structured Query Language.

***Steps To Complete This Project***

**STEP 1** **Review and Solve the Following Exercises**

Review and solve each of these exercises. Enter your responses in the space provided.

1. What condition do you use to display rows based on a range of values? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. The character pattern - matching operation may involve which two symbols? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Group functions return one result per row. True / False. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Which function converts mixed case or upper character strings to lowercase? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Which among the following are group functions? [ Circle all that apply. ]

a. MAX b. ROUND c. STDDEV d. MOD e. CONCAT f. SUM g. MIN

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What is the default sorting order for rows? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. You can sort by a column that is not in the SELECT list.

True / False.

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8. You cannot specify a column position as the sort expression.

True / False.

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9. Which statement do you use to modify existing rows in a table? Is a commit necessary?

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**PROJECT ONE ( Review on SQL Introductory Concepts )**

10. What happens if you do not specify the WHERE clause in a DELETE statement? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Consider a SELECT statement that consists of three query blocks: the outer query and two inner queries. If both the inner queries return single values, what do you call such a SQL statement? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. You can use subqueries only in the WHERE clause but not in the HAVING clause.

True / False

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13. Observe the following SELECT statement. What happens when there is no employee named Buehler, and what happens when there are ten Buehlers?

**SELECT last\_name, job\_id FROM employees**

**WHERE job\_id =**

**(SELECT job\_id FROM employees WHERE last\_name = 'Buehler');**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. The subqueries are processed first by the Oracle server, after which the WHERE or HAVING clause uses the results.

True / False.

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15. Under what circumstances would a MERGE statement be used?

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**PROJECT TWO ( Using the Oracle SQL Developer Scheduler Option )**

**Objective** To review some features and options using the SQL Developer.

***PROJECT DESCRIPTION***

This project has you using SQL for job scheduling.

***Information about This Project***

This particular project revolves around some essential options associated with the SQL Developer.

***Steps To Complete This Project***

**STEP 1** **Open the Oracle SQL Developer**

Open the SQL Developer and connect to your database server.

[ Note: visit [SQLDeveloper Job Scheduler Code Generation - YouTube](https://www.youtube.com/watch?v=detNIFuhOGo) for

further instruction ]

**STEP 2** **Select the Scheduler - Part 1**

Under your Connection, locate the **Scheduler** option as shown below.

A screenshot of a computer program

Description automatically generated

**PROJECT TWO ( Using the Oracle SQL Developer Scheduler Option )**

Navigate to Schedules and right - click on the [ Schedules ] Folder and choose

[ Create New Schedule] .

A window will appear as follows:

A screenshot of a schedule

Description automatically generated

(a) In the properties tab, enter a name and a description of a job that is to be transacted.

(b) Under the When frame, choose Repeating, or Queue or File Watcher.

A screenshot of a computer

Description automatically generated

If the repeating interval is chosen, then a window will appear as follows:

**PROJECT TWO ( Using the Oracle SQL Developer Scheduler Option )**

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Choose the option for every week starting with October 1st, and at time 2:00am.

(a) Choose the Start Date and the End date accordingly using the calendar control.

A screenshot of a schedule

Description automatically generated

(b) Click on Apply.

(c) Finally, choose the SQL Tab that when open, it will reveal the SQL script for scheduling the job.

**(d) In the lab template used for submittal, place snapshots of the final window showing the properties for the job, and the corresponding SQL script.**

**(e) Were you successful??? Show evidence of success or failure!**

**STEP 2** **Select the Scheduler - Part 2**

Under your Connection, locate the **Job** option, right click and choose new job wizard. A window will appear as shown below.

**PROJECT TWO ( Using the Oracle SQL Developer Scheduler Option )**

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(a) Go through the wizard and fill in appropriate text boxes. Take snapshots of each phase of creation. For the PL/SQL Block under the Job Details section (you also choose Script under Type of Job), enter the following script.

|  |
| --- |
| **-- example of a procedure**  **CREATE OR REPLACE PROCEDURE find\_Lname**  **(i\_employee\_id IN NUMBER,**  **o\_first\_name OUT VARCHAR2,**  **o\_last\_name OUT VARCHAR2,**  **o\_salary OUT NUMBER)**  **AS**  **BEGIN**  **SELECT first\_name, last\_name, salary**  **INTO o\_first\_name, o\_last\_name, o\_salary**  **FROM employees**  **WHERE employee\_id=i\_employee\_id;**  **EXCEPTION**  **WHEN OTHERS**  **THEN**  **DBMS\_OUTPUT.PUT\_LINE('Error in finding employee\_id' || i\_employee\_id);**  **END find\_Lname;** |

**PROJECT TWO ( Using the Oracle SQL Developer Scheduler Option )**

(b) When it comes to Notification, make sure you choose in the window Recipients (might have to create another connection name) and Sender (your connection name).

(c) Example of the Window showing Notification choice.

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Take snapshots (reminder of each of the steps for job creation).

When you reach the Summary step, don’t forget to observe the PL/SQL code (that you will copy and also paste in your Lab Submittal Form).

You will need to have the **employees** table loaded into your workspace.

[ The code for the **employees** table should be in the same folder as this assignment. ]

Once you have completed all the steps, click on the Finish button!

Were you successful? Take a snapshot of what you observe after clicking on the Finish button. Paste the snapshot in your lab submittal document.

**PROJECT THREE ( Creating and Executing a Procedure )**

**STEP 1** **The Stored Procedure**

The SQL Script **below** is what was entered into the Job Scheduler Wizard and should still be in the workspace.

|  |
| --- |
| **-- example of a procedure**  **CREATE OR REPLACE PROCEDURE find\_Lname**  **(i\_employee\_id IN NUMBER,**  **o\_first\_name OUT VARCHAR2,**  **o\_last\_name OUT VARCHAR2,**  **o\_salary OUT NUMBER)**  **AS**  **BEGIN**  **SELECT first\_name, last\_name, salary**  **INTO o\_first\_name, o\_last\_name, o\_salary**  **FROM employees**  **WHERE employee\_id=i\_employee\_id;**  **EXCEPTION**  **WHEN OTHERS**  **THEN**  **DBMS\_OUTPUT.PUT\_LINE('Error in finding employee\_id' || i\_employee\_id);**  **END find\_Lname;** |

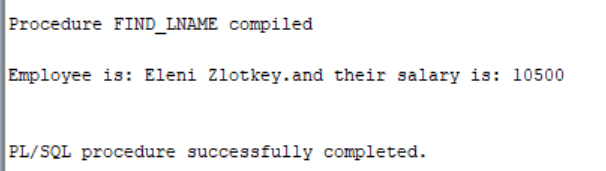
**STEP 2** **Run the Procedure**

Now in the SQL Developer, test your schedule by running the job stored procedure using the following code in your SQL Workspace:

|  |
| --- |
| **-- run procedure script as anonymous block**  **SET SERVEROUTPUT ON**  **SET VERIFY OFF**  **DECLARE**  **v\_local\_first\_name employees.first\_name%TYPE;**  **v\_local\_last\_name employees.last\_name%TYPE;**  **v\_local\_salary employees.salary%TYPE;**  **BEGIN**  **find\_Lname**  **(&employee\_id, v\_local\_first\_name, v\_local\_last\_name, v\_local\_salary);**  **DBMS\_OUTPUT.PUT\_LINE**  **('Employee is: '||v\_local\_first\_name||' '||v\_local\_last\_name||'.'**  **|| 'and their salary is: ' || v\_local\_salary);**  **END;** |

**PROJECT THREE ( Creating and Executing a Procedure )**

If successful, the following window should appear after entering an employee number:



Take a snapshot of the observed output and paste it into the Lab Submittal Sheet.

**STEP 3** **Modify the Procedure**

Modify the procedure to include one or more fields from the **employees** table.

Modify the executable for the procedure to include those additional fields.

If you modify the script, place the script either in the job Scheduler (use the wizard again), or place the script into the SQL Workspace and execute the script.

Don’t forget to modify the script to **run** the modified procedure script so that you observe the added fields.

Take a snapshot of the resulting output and paste it to your lab submittal sheet.

**PROJECT FOUR ( Diagnosing Performance Issues - Queries for**

**Monitoring the OLAP Option )**

**Objective** To review some performance issues using the SQL Developer.

***PROJECT DESCRIPTION***

This project has you examining some performance diagnostics.

***Information about This Project***

This particular project revolves around some essential options associated with the SQL Developer.

***Steps To Complete This Project***

**STEP 1** **Open the Oracle SQL Developer**

Open the SQL Developer and connect to your database server.

**STEP 2** **Determine the Analytical Workspaces**

What are the analytical workspaces in the database? Find out by running the following script and pasting the results in your submittal document.

**SELECT owner, aw\_name, aw\_version FROM DBA\_AWS;**

**STEP 3** **Determine Tablespace Byte Sizes**

To find out the size in bytes of the tablespace extents for a particular analytic workspace, use the following SQL statements, replacing GLOBAL with the name of your analytic workspace.

**SELECT extnum, SUM(dbms\_lob.getlength(awlob)) bytes**

**FROM global.aw$global**

**GROUP BY extnum;**

**STEP 4** **Determine When the Analytical Workspaces were Created**

When were analytical workspaces created? Run the following code and paste the query results in your submittal document.

**SELECT owner, object\_name, created, status FROM dba\_objects**

**WHERE object\_name LIKE 'AW$%' AND object\_name!='AW$'**

**GROUP BY owner, object\_name, created, status**

**ORDER BY owner, object\_name;**

**PROJECT FOUR ( Diagnosing Performance Issues - Queries for**

**Monitoring the OLAP Option )**

**STEP 5**  **Examine OLAP Components**

Is there the OLAP Option installed in the database? To verify that the OLAP components have been installed, run the following code and paste the results below in your submittal document.

**SELECT comp\_name, version, status FROM DBA\_REGISTRY**

**WHERE comp\_name LIKE '%OLAP%';**

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**PROJECT FIVE ( Questions on Lab Topics )**

**(1)** If one receives an error message after going through a job scheduler, such as the one seen immediately below, what troubleshooting steps should be taken?

A screenshot of a computer

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**(2)** What type of DBMS jobs are typically employed in a Fortune 1000 company?

**(3)** Given the following transactions, suggest a frequency for a schedule of execution.

Bank Deposit

Bank Withdrawal

Inventory Update

Quarterly Sales report

**(4)** The following window is shown when a Credential (under the Schedular Folder) is to be created (along with an example of the SQL Script created from the Window entries):

**PROJECT FIVE ( Questions on Lab Topics )**

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| A screenshot of a computer  Description automatically generated | A screenshot of a computer program  Description automatically generated |

Why is it necessary to create a Credential?

**(5)** Another feature under the Scheduler Tab is Programs. Right click on the Programs to create a program. The window that appears will offer Program details, Properties, and the SQL script. Fill in Program Details, perhaps add a simple script in the textarea of the PL/SQL drop down menu. Take a snapshot of what you have added, AND THEN before you press Apply, take a snapshot of the SQL script that is generated and place the snapshots into the Lab Submittal Sheet.

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