PURDUE UNIVERSITY

PURDUE POLYTECHNIC INSTITUTE
Department of Computer and Information Technology

CNIT 27200: Lab #3

25 pts

Due Date

- **Part A** is due within the Lab session 10 pts.
- **Part B** is due **the evening before your next lab by 11:59 p.m.** 15 pts. It must be submitted via Blackboard.

Objectives

- Learn to load a database and perform SQL queries

Before beginning the assignment read (or re-read):

- Standards (in the Course standards folder in Blackboard Learn)
- Normalization help file (in the Resources folder in Blackboard Learn)

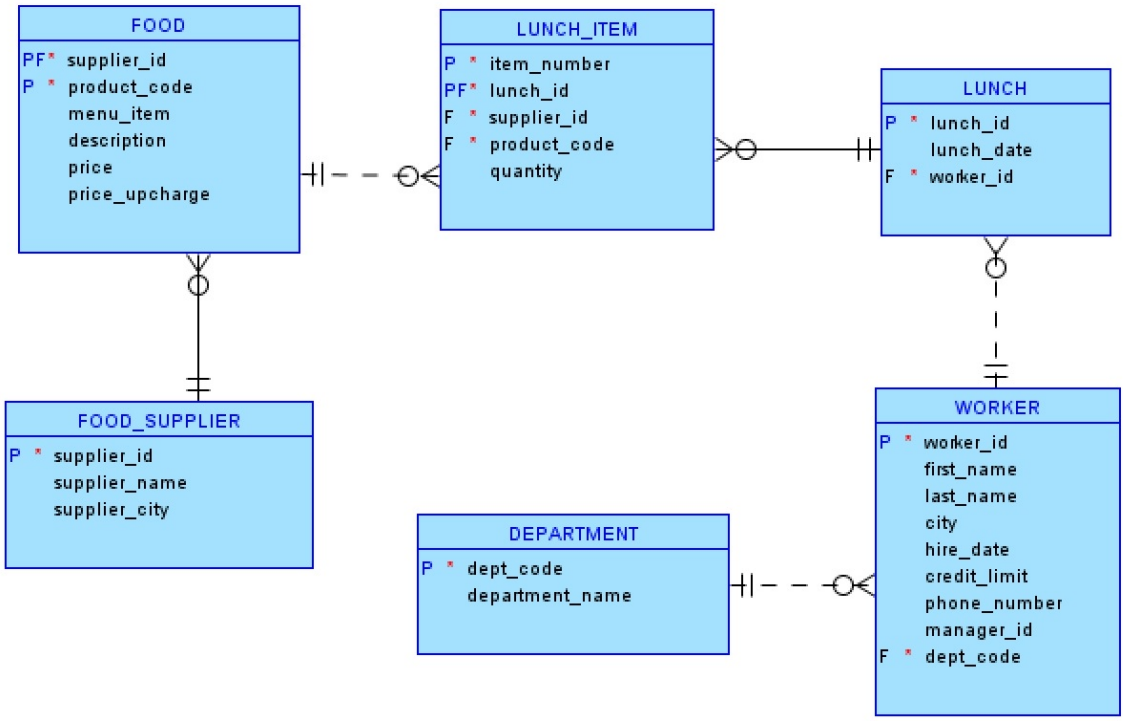
PART A: Loading database and SQL queries (10 points)

1) If you haven't already, **change your password**. **Note: Do not use special characters in your password.** You can change your Oracle password through SQL Developer by executing an SQL DDL command that changes the instance metadata relative to your password. Execute the following statement in the SQL input window:

   alter user <username> identified by <newpassword>

3) When the instructor asks you to, download and run the 'CreateLunchDB_s20.sql' script.

This will load tables and data structured like the following data model: (NOTE: It will create your OWN tables in the CIT database within your login account. The script **deletes previous tables**, and reloads data each time it is executed.)



Important Note: Oracle is DATA Case Sensitive. Notice that character data was entered with the initial letter in caps. Since Oracle is case sensitive on data, you will need to search data accordingly: 'Xxxx'.

4) Your answer template should follow a standard format, to be compiled in a .sql file. This is for saving your FINAL SQL statements and the output. Fill in the header information and insert the question number to separate the responses – we will be using comments to store all our non-statement content such as question numbers, results, etc.

   You can comment in SQL by beginning the line with a --

   Alternatively, for multi-line comments, surround the block by /* and */.

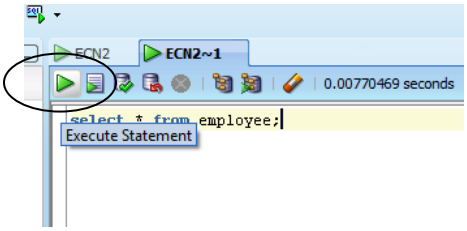
   The following is a template:

```
/* <Begin Comment>
Your Name
CNIT 27200 Spring 2020
Lab Time:
Duration:
*****************************************************
Question 1
<End comment> */
Select * from ...

/* Results:
     <paste table output>

   Explanation: In this query...
*/
/*
*****************************************************
Question 2 */
etc.
```

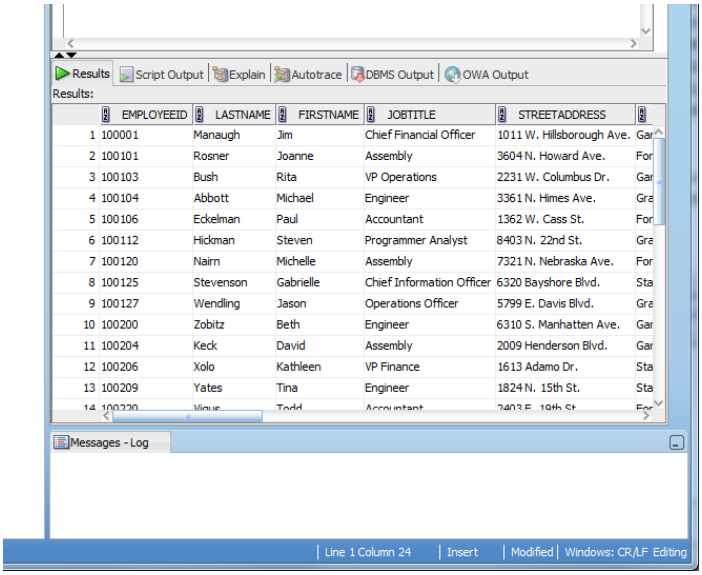
5) Answer the questions listed below, test each SQL statement and verify that it is working correctly, and finally run the SQL Output option at the end. Save to your final SQL file and then add the formatting above to include the SQL statements into your answer template for submission.

Here is one example of how to get to a correct answer submission document:

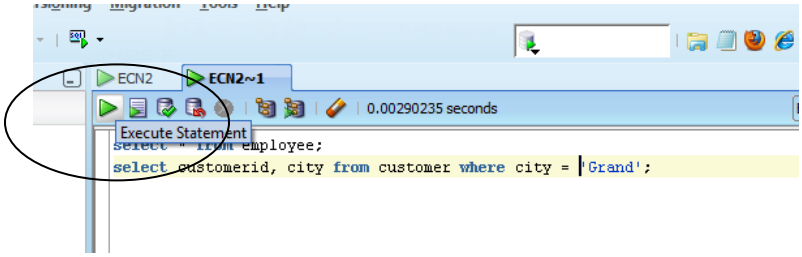
Step 1. Execute your first SQL statement in SQL Developer:



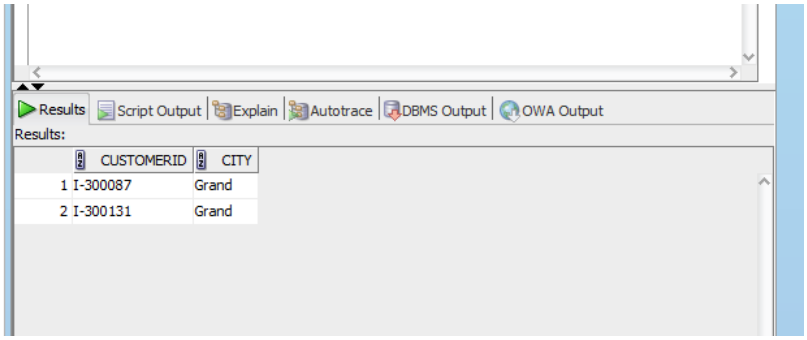
Step 2. Once you execute the statement, you will see the results in the Results tab below like this:



Step 3. If the results are correct, you can start working on the next sql statement by testing it in the worksheet:

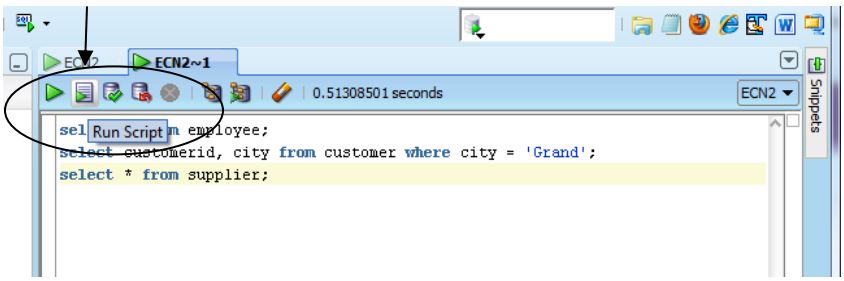


Step 4. Again, verify in the results tab below that the result set is what you are looking for:

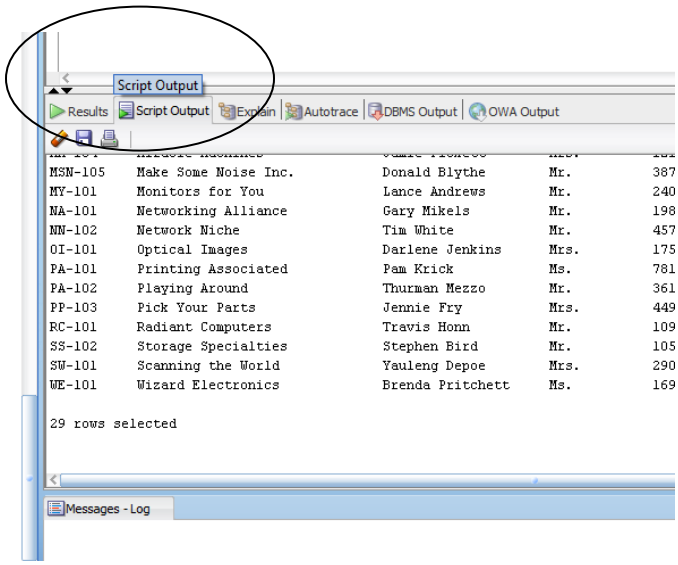


Step 5. Repeat these steps until you have completed all the questions on the assignment. You will have a list of SQL statements in the worksheet window when done. If you are concerned about losing those SQL statements due to any number of issues (or just bad luck), you may want to save them in a separate notepad document as you go. A little backup never hurts. You can also use F8 to pull up your SQL History. It is a log of your actions in SQL Developer.

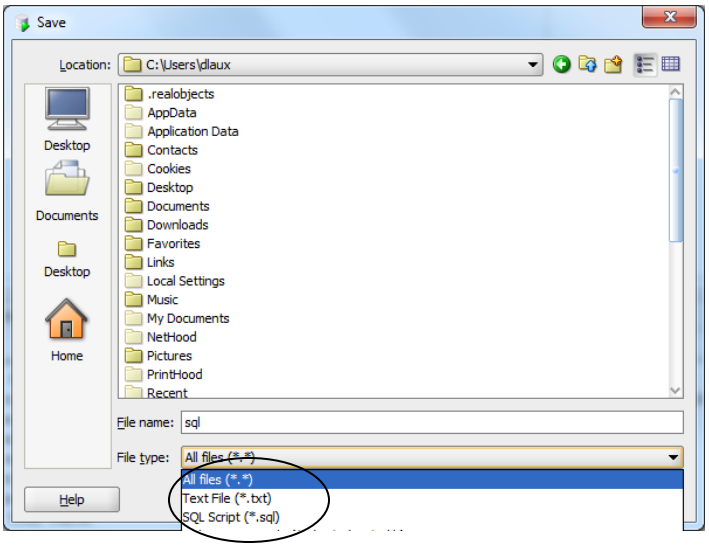
Step 6. Now, you are going to execute these statements in a script output for submission. So, with the SQL statements listed in the Worksheet window, press the Run Script (F5) button (to the right of the execute button):



Step 7. The Script Output will appear below in the Script Output tab:



Step 8. At this point, you can copy the script output, and paste it as a comment in your FINAL SQL file. Save as a .sql file.



Step 9. In the .sql file, add the formatting explained above for your answer, like so:

Worksheet | Query Builder

```
/*
Your Name
CNIT 27200 Spring 2020
Lab Time:
Duration:
*****************************************************
Question 1
*/
select * from worker
where dept_code = 'Acc';
-- Results:
/*
WOR FIRST_NAME LAST_NAME            CITY                           DEP HIRE_DATE CREDIT_LIMIT PHON MAN
--- ---------- -------------------- ------------------------------ --- --------- ------------ ---- ---
209 Trevor     Vought               Oak Brook                      Acc 01-NOV-05           30 1752 201
226 Roy        Gonzalez                                            Acc 19-DEC-12           18 4455 209
228 Angie      Cross                Naperville                     Acc 19-JUN-17           24 4465 209

3 rows selected.

Explanation: In this query...

*****************************************************
*/
/*

Question 2
*/
select * from food_supplier;
/*
...
*/
```

PART A SQL Questions:

Question 1. List all columns stored for all food suppliers.

Freebie Answer:

```
select * from FOOD_SUPPLIER;

-- Results
/*
SUP SUPPLIER_NAME                  SUPPLIER_CITY
--- ------------------------------ ------------------------------
Ard Arnoldo Deli                   Oak Brook
Hsd Halsted Street Deli            Naperville
Crm Corner Market                  Naperville
Foi Fontinas Italian               Chicago
Fas Fiona and Samson               Orland Park
Jd6 Justin's Deli at 601           Oak Brook
Jmd Jebston Montrose Deli          Chicago
Rby Rosemont Bakery                Schaumburg
Lss Lucias Sub Shop                Aurora
Har Harman Bakery                  Naperville
Dpz Downtowner Pizza               Chicago

SUP SUPPLIER_NAME                  SUPPLIER_CITY
--- ------------------------------ ------------------------------
Gls Great Lakes Station            Skokie
Gio Gio and Sons                   Chicago
Blu Blue Sky Deli                  Skokie
Lak Lakeshore Bakery               Chicago

15 rows selected.
*/
```

Question 2. What is the first name, last name, and hire date of each worker? *(Use WORKER table) Run* **DESCRIBE WORKER** first to see the columns available in the table.

Question 3A. List the worker ID, last name, department, and city for workers that live in the city of **Evanston** and work in the Finance (**Fin**) department. *(Use WORKER table)*

Question 3B. Use the same query as 3A but adjust the filter to include workers that live in the city of **Evanston** and work in either the Finance (**Fin**) or Technology (**Tch**) department. (*Use WORKER table*)

Question 4. List supplier names that contain the words **Deli** or **Bakery**. (Use the FOOD_SUPPLIER table; review the use of LIKE)

Question 5. List the worker ID, last name, hire_date, and credit limit of workers with a hire date from January 1, 2015 to December 31, 2019. (Do this statement 2 ways: once using comparison operators and once using BETWEEN; use the Oracle default date format: DD-MON-YYYY)

Question 6A. **(1)** List the department codes from all rows in the WORKER table.

(2) List all the department codes in the DEPARTMENT table.

Is this the same number in both tables? If 'no', explain why not.

Question 6B. List only one instance of each department code in the WORKER table (use the command to remove duplicates – it is in the slides). Review the query from 6A with all department codes in the WORKER table again. Are they the same number? Why or why not? Explain.

Question 7A. The Technology (**Tch**), Legal (**Leg**), Auditing (**Aud**), and Sales (**Sal**) departments want to raise credit limit of its workers by **5%** and would like to see a list of the current credit limit in one column and a list of the new credit limits with a **5%** increase in another column for comparison.

- List the worker names (concatenated first and last), department code, the current credit limit, and the new credit limit for just these departments.
- Label the concatenated name column as NAME, the current credit limit as OLD_CREDIT and the new credit limit as NEW_CREDIT.
- *Use the WORKER table; Review the use of IN and concatenation in the SQL Basics slides*

Question 7B. Rerun 7A, but this time we want all departments EXCEPT those listed in 7A. *Review the use of NOT IN.*

Question 7C. Rerun 7A, but this time remove the WHERE clause. Notice that there are some workers without departments. Why were they not included in 7B? Explain.

Final Step before leaving the lab:

Download and run the 'LoadEagles20.sql' script.

This could take several minutes to finish. When the script completes, it displays a list of how many rows are in each table. **You only have to do this once under your ECN Oracle login for the lab account**.

Important Note: The character data in the tables has been entered in a format 'Xxxx'

PART B: Loading database and SQL queries (15 points)

SPECIFIC LEARNING OBJECTIVES:

Be able to access data from a single table using a SQL query to:

- Access all data from a table
- Access specific columns from a table
- Limit rows in the result using the **WHERE** clause
- Concatenate strings
- Specify column aliases where appropriate
- Create computed columns
- Use **BETWEEN, LIKE, IN, DISTINCT**
- Create compound and complex conditions
- Use **NULL**
- Sort the output with the **ORDER BY** clause

Submitting the Lab File:

Check the formatting of your studentnameLab3.sql file. If the outputs are wrapping around, reduce the margins and use font size when necessary. To line up the output columns, change the font of the whole document to Courier New. Please use a simple text editor instead of MS Word due to formatting. **As a reminder, this is an individual assignment, not collaborative or cooperative with other students.**

We will use the EAGLE Database for Part B:

Step 1. *Skip this step if you did it successfully in Part A…*

Download and run the 'LoadEagles20.sql' script.

This will take several minutes to finish. When the script completes, it displays a list of how many rows are in each table. You only have to do this once under your ECN Oracle login for the lab account.

Important Note: The character data in the tables has been entered in format 'Xxxx'.

Step 2. Write SQL queries to retrieve the requested information from your Eagle database. Use the Answer Template from Part A, to record the SQL queries and outputs. Be sure to fill in your name and other information at the top of the template.

Questions are worth a total of 15 pts (all questions are worth 1.5pts each).

Use answer template from Part A.

Question 1. **(A)** Start by running DESC SHIPMENT

(B) Using the columns listed in the SHIPMENT table, list the shipments that are from the state of Hawaii (**HI**). Include the Shipment ID, Order ID, City, and Postal Code in the results. *5 rows selected*.

(In your explanation, define why you would use the DESCRIBE command)

Question 2. **(A)** List all of the different in-service dates from the MACHINE table. (Use the command that will not list the same date more than once.) *7 rows selected*.

(B) Same as above, but add in the Make of the machine to the SQL statement. *8 rows selected*

(In your explanation, explain why you get more rows when adding the Make of the machine. Why do some inservice dates show up more than once now?)

Question 3A. First run this command to help with text wrapping:

SET LINESIZE 200;

Then list the Supplier ID, company name, city, state, and email for each supplier that resides in the city of **Denver** and the state of Colorado (**CO** is the state abbreviation). *2 rows selected.*

Question 3B. Run the same sql statement again, only this time select the same criteria with suppliers that live in the city of **Denver** OR **Boulder** in the state of Colorado (**CO**). *3 rows selected.*

(Explain the difference between using AND and OR in the WHERE clause.)

Question 4. Create a query that will list the cost of a part per unit of measure:

1. List the supplier ID, catalog number, unit cost, unit of measure, and the cost per piece (the "cost per piece" is the unit cost divided by the unit of measure).
2. Limit the results to only units of measure between 40 and 50 AND a cost per piece that is less than or equal to 10.
3. Label the calculated cost per piece column as **COST_PER_PIECE**
4. Sort by the unit cost
5. *18 Rows selected*
6. **(Explain how the WHERE clause was constructed)**

Question 5. List the Employee ID, Full Name (FirstName and LastName concatenated as Employee_Name), Home Phone and Hire Date of all employees that were hired in the year 2010 and are still working for Eagle. Hint: An employee is still working for Eagle if the Release Date field is **NULL**. *6 rows selected*.
(Explain how to concatenate multiple columns correctly)

Question 6. List the Supplier ID, Contact Name, Email, City, State for all suppliers who are NOT from the state of Virginia (**VA**), New Jersey (**NJ**), Colorado (**CO**), or California (**CA**). Sort the output by City. 27 *rows selected.*
(Explain the use of NOT IN and the benefit of using it)

Question 7. List the email address, company name, contact name, and state of suppliers that have **Tech** anywhere in their company name or any suppliers from the state of Virginia (**VA**). If needed, set the linesize to 200 to avoid line wrapping (SET LINESIZE 200). *7 rows selected*.
(Explain how to use LIKE)

Question 8. List the Part Number, Category ID, Weight, Stock Level, and Reorder Level of all parts requiring reorder and have a **SFTW** or **HOME** category ID assigned. HINT: A part requires reordering when the Stock Level is less than the Reorder Level. *5 rows selected.*
(Explain how the WHERE clause was constructed)

Question 9. List the Order ID, Unit Price, Order Quantity, Quantity Total, and Discount for each part with a unit price greater than 2000. HINT: The *Quantity Total* is the product of Unit Price and Order Quantity (i.e. Unit Price multiplied by Order Quantity). Label the calculated column as **TOTAL**. Sort the list by the calculated **TOTAL** column. *12 rows selected.*

(Explain use of calculated fields in the Select clause)