COMP810 Data Warehousing and Big Data

Lab – Week 1 (Data Warehousing)   Due: ---

Task 1. Log in to the ORACLE database and Run scripts to create some sample tables.

Step 1. Log into the AUT Oracle database.
Step 2. Run the HR.sql script to create SQL tables required in this lab (read the 'Connecting to Oracle Database.pdf' file). Ask the TA for help if you get errors.

■ **OUTLINE :** The sample HR (Human Resources) database contains 7 tables, see Figure 1.
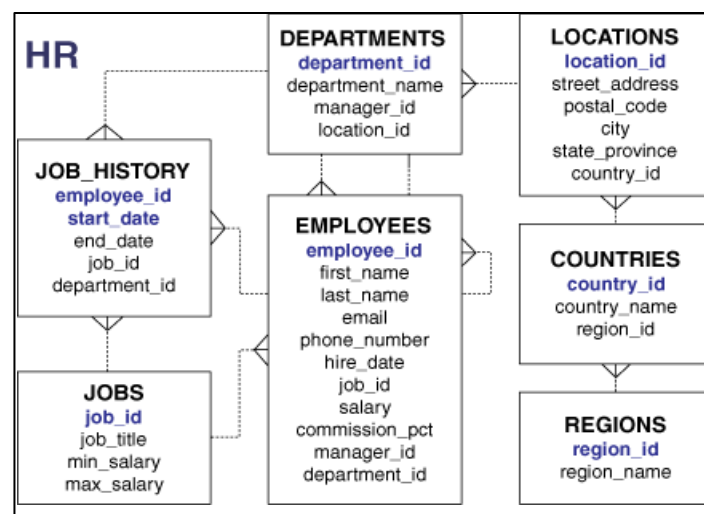

Figure 1: HR table schema

Task 2. Writing Basic SQL Statements

Objectives:
- To execute a basic SQL Select statement.
- To run SQL queries with "concatenation" option.
- To create reports with customized column titles.
- Limiting output results using the "where" clause.

Exercise 1 - Exploring the data and structure of tables.

1.1 Explore the data and tables structure of the HR schema using SQL SELECT statement and the DESCRIBE command.

For example, the SQL statement, to retrieve all the data (all rows) from employees table is:

*SELECT * FROM employees;*

and the SQL command to display the structure (i.e. attribute or column names, datatypes) of the *employees* table is:

DESCRIBE employees; OR *DESC employees;*

Exercise 2. **Create SQL Tables**

1. Write a SQL statement to create a table named 'jobsbis' with columns job_id (unique), job_title, min_salary and max_salary. Column job_id cannot be NULL and max_salary **cannot exceed $25,000**. Display the table attributes so you can verify the outcome is the intended.

   SOLUTION. For this very first exercise, we will give you the solution:

   ```
   CREATE TABLE jobsbis (
   JOB_ID varchar(10) NOT NULL,
   JOB_TITLE varchar(35),
   MIN_SALARY decimal(6,0),
   MAX_SALARY decimal(6,0)
   Check(MAX_SALARY <= 25000)
   );

   Desc jobsbis;
   ```

2. What's the problem if we created a table named 'jobs' with same attributes as above?

3. Same is in 1. Now the default value for min_salary is $5,000 and max_salary is NULL.

4. Write a SQL statement to create a simple table named 'mycountries' with the following columns" country_id (character, length = 3, unique, not null) ,country_name (character, length = 40) and region_id (numeric, no decimal places, length = 10).

Exercise 3. **Create SQL queries to complete the following reports:**

1. Display all data from the **LOCATIONS** table.
2. Describe the **LOCATIONS** table's internal structure i.e. attributes names and datatypes AND display all data from the **LOCATIONS** table.

3. Show the internal structure of the **EMPLOYEES** table. Create a report to display employee number, employee full name (first and last names), job title and the department number for each employee. Rename the columns headings to: **Emp#**, **Full Name**, **Job Title** and **Department ID**, respectively.

4. Write a query to display a unique list of job titles (i.e. without duplicates) from the **EMPLOYEES** table.

   Continued…

5. Create a report to display the following output (see the required format shown in the sample output below):

   a. employee last and first names concatenated and displayed as "Full Name", and

   b. employee emails and phone numbers concatenated. Display as "Contact Details".

```
Full Name            Contact Details
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Steven King          Phone: 515.123.4567 Email: SKING
Neena Kochhar        Phone: 515.123.4568 Email: NKOCHHAR
Lex De Haan          Phone: 515.123.4569 Email: LDEHAAN
```

6. Modify the SQL SELECT statement from previous exercise 4 to display employees in Department 30 only.

7. Write a query to display a unique list of job titles (i.e. without duplicates) from the **EMPLOYEES** table.

IMPORTANT: You can save your SQL script (*e.g.* Lab1.sql) at your preferred location, *e.g.* H:\ drive.

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End of Lab Week 1 Data Warehousing