AUT UNIVERSITY | COMPUTER + MATHEMATICAL SCIENCES

COMP810 – Data Warehousing and Big Data

Lab 1

Section 1. Writing Basic SQL Statements

After completing this section, you should be able to do the following:

- Execute a basic SQL Select statement
- Run SQL queries with "concatenation" option
- Create reports with customized column titles
- Limiting output results using "where" clause

In order to create some tables and data in your schema, you will need to execute the script files:

1. HR_Db.sql
2. Hotel_Db.sql
3. Demobld.sql

Copy the script files mentioned above from Blackboard- Course Notes\Labs\Week1\ to a folder on your home directory or H:\ drive.

Start SQL Developer, log in, load the files from your home directory and execute them.

Task 1

Explore the data and tables structure of the HR schema (given on the next page) using ***SQL Select*** statement and the ***describe*** command. Construct SQL statements to answer the following queries. Save your work in a file (week1.sql) in a folder on your home drive.

1. Select all data from the **LOCATIONS** table to display its internal structure i.e. attributes names and datatypes.

2. 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.

3. Write a query to display a unique list job titles from the **EMPLOYEES** table.

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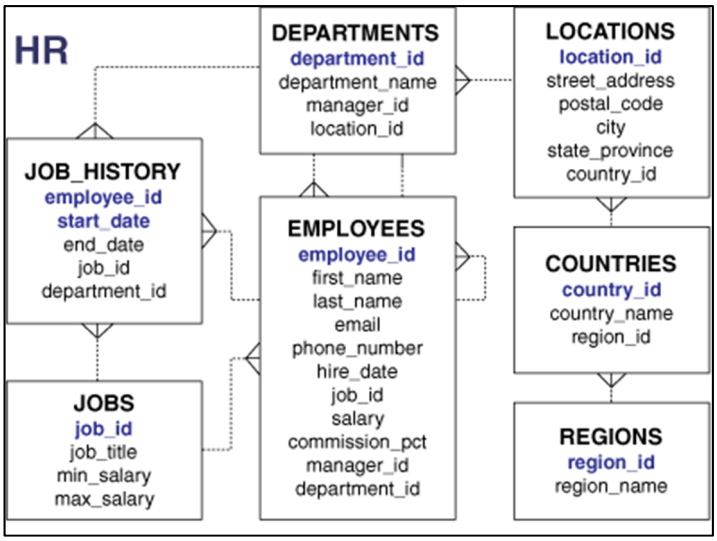
4. Create a report to display employees full name "concatenated", with their emails and phone numbers according to the format below.

```
Full Name          Contact Details
------------------ ----------------------------------------
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
```



HR Schema

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Task 2

Use the Hotel Database Schema to construct an SQL statement to answer the following queries.

Continue to save your work in the file week1.sql on your home drive.

Hotel	(hotelno, hotelName, city)
Room	(roomNo, hotelNo, type, price)
Booking	(hotelNo, guestNo, dateFrom, dateTo, roomNo)
Guest	(guestNo, guestName, GuestAddress, guestCity)

Where

Hotel contains hotel details and hotelNo is the primary key;

Room contain room details for each hotel and (roomNo, hotelNo) forms the primary key;

Booking contains details of bookings and (hotelNo, guestNo, dateFrom) forms the primary key;

Guest contains guest details and guestNo is primary key.

1. Create a report to display a list of all hotels with details of hotel name and location.
2. Create a report lists full details of all guests.
3. Create a report to display the room number and price of all “Standard” rooms.
4. Create a report to display name and address details for all guests who live in London.
5. Create a report to list all bookings for which no dateTo has been specified.

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Section 2. Restricting and Sorting Data

After completing this section, you should be able to do the following:

- Limit the rows that are retrieved by a query
- Sort the rows that are retrieved by a query
- Use ampersand substitution in SQL*Plus to restrict and sort output at run time

Task 1: Use the HR database to create the following queries. Continue to save your work in the file week1.sql on your home drive.

1- Generate a report to display staff full names and job titles of employees who earn $10,000 or more.

2- Modify the previous report to display full names, job titles and salary for any employee whose salary is not in the range of $5,000 to $12,000.

3- Create a report to display the full name, job Title, and start working date for the following staff members:

- Miss Hutton, Alyssa
- Mr Austin, David

4- Create a report to display address, postal code and city for all offices that are located in Italy and Japan.

5- Create a report to show staff full names in addition to contact details (email, phone numbers) for all employees who were hired in January 1996. Display the names in alphabetical order by last name. Format the report according to the example below. (Hint: to identify the date format for your session use the following query ***select sysdate from dual***).

```
Full Name           Contact Details
------------------- ---------------------------------------
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- Examine Oracle online documentation to explain the keywords ***sysdate*** and ***dual*** that you used in the previous question.

7- Modify the report you created in question 5 to display all the employees who were hired after December 1999, display the results in descending order by hire date.

8- List all staff members who're their first name starts with the letter (S) and ends with the letter (n)?

9- List the employees who hold the following job titles (AC_MGR, AD_VP, FI_MGR, HR_REP, PR_REP)?

10- Modify the previous report to list the employees who do not hold the following job titles (AC_MGR, AD_VP, FI_MGR, HR_REP, PR_REP)?

11- The HR department wants to run reports based on a specific manager. Create a dynamic report that prompts the user for a manager ID and generates the employee ID, last name, salary, and department for that manager's employees.

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Task 2: Hotel Database database schema is printed below for reference. Continue to save your work in the file week1.sql on your home drive.

Hotel	(hotelno, hotelName, city)
Room	(roomNo, hotelNo, type, price)
Booking	(hotelNo, guestNo, dateFrom, dateTo, roomNo)
Guest	(guestNo, guestName, GuestAddress, guestCity)

Where

Hotel contains hotel details and hotelNo is the primary key;

Room contain room details for each hotel and (roomNo, hotelNo) forms the primary key;

Booking contains details of bookings and (hotelNo, guestNo, dateFrom) forms the primary key;

Guest contains guest details and guestNo is primary key.

1- List full details for all rooms with a price above $40 in ascending order by room type and price

2- List the names and full addresses of all guests who live in AUT accommodation at "8 Mount St."

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Section 3. Retrieving Data from Multiple Tables

After completing this section, you should be able to do the following:

- Write SELECT statements to access data from more than one table using equijoins and non-equijoins
- Join a table to itself by using a self-join
- View data that generally does not meet a join condition by using outer joins
- Use of subqueries

Task 1: Use the HOTEL database to create the following queries. Continue to save your work in the file week1.sql on your home drive.

1- Generate a report to display room details (price and type) in addition to the hotel name for each room. Format the report as following:

HOTELNAME	TYPE	PRICE
Grosvenor Hotel	S	72
Grosvenor Hotel	S	10
Grosvenor Hotel	D	40
Grosvenor Hotel	D	40

2- Generate a report to display guest names along with their booking details (hotel name, date from and date to). Format the report as following:

GUESTNAME	HOTELNAME	DATEFROM	DATETO
John Smith	Waipuna Hotel	03/06/04	05/06/04
John Smith	Grosvenor Hotel	26/12/03	29/12/03
Pat Cahi	Taupo Resort Hotel	06/06/04	10/06/04
Pritam Joseph	Grosvenor Hotel	20/08/04	22/08/04

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Task 2: Use the HR database to create the following queries. Continue to save your work in the file week1.sql on your home drive.

1- Generate a report to display staff full names, jobs and department names. Rename the column headings to "Full Name", "Job Title", and "Department Name" as shown below. Order the report alphabetically by last name.

Full Name	Job Title	Department Name
Ellen Abel	SA_REP	Sales
Sundar Ande	SA_REP	Sales
Mozhe Atkinson	ST_CLERK	Shipping
David Austin	IT_PROG	IT
Hermann Baer	PR_REP	Public Relations
Shelli Baida	PU_CLERK	Purchasing
Amit Banda	SA_REP	Sales

2- Generate a report to display staff full names, email (email ID@MEGACORP.COM), department name, and office address (city and country). Sort the output by last name. Rename the columns accordingly and format the report as following.

Full Name	Email	Department Name	Full Address
Ellen Abel	EABEL@MEGACORP.COM	Sales	Oxford, United Kingdom
Sundar Ande	SANDE@MEGACORP.COM	Sales	Oxford, United Kingdom
Mozhe Atkinson	MATKINSO@MEGACORP.COM	Shipping	South San Francisco, United States of America

3- Modify the previous question to generate a dynamic report that display the staff details for a specific country only. The report must ask the end user to enter a country name. Run the report for Germany and New Zealand. Explain this report output and highlight possible format improvement(s).

4- Generate a report to display staff full name, job title, department name, start date and end date for each employee position given in the job history table. Sort the report by employee id and then by start date. Rename the columns accordingly and format the report as following.

Note: some employees may have worked in a different department from their current one. The query MUST display the department name and job title for that employee during the time period in the job history table.

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Full Name	Job Title	Department Name	Start Date	End Date
Neena Kochhar	Public Accountant	Accounting	21/09/89	27/10/93
Neena Kochhar	Accounting Manager	Accounting	28/10/93	15/03/97
Lex De Haan	Programmer	IT	13/01/93	24/07/98
Den Raphaely	Stock Clerk	Shipping	24/03/98	31/12/99
Payam Kaufling	Stock Clerk	Shipping	01/01/99	31/12/99
Jonathon Taylor	Sales Representative	Sales	24/03/98	31/12/98
Jonathon Taylor	Sales Manager	Sales	01/01/99	31/12/99
Jennifer Whalen	Administration Assistant	Executive	17/09/87	17/06/93
Jennifer Whalen	Public Accountant	Executive	01/07/94	31/12/98
Michael Hartstein	Marketing Representative	Marketing	17/02/96	19/12/99

(Hint: your results should match the output above).

5- Generate a report to display staff full names, and department names. The report must also include all departments that currently **DO NOT** have any staff assigned to it.

6- Generate a report to display the employee name and employee number along with their manager's name and manager number. Label the columns Employee, Emp#, Manager, and Mgr#, respectively. Format the report according to the following.

Employee Name	Employee #	Manager Name	Manager #
Michael Hartstein	201	Steven King	100
Eleni Zlotkey	149	Steven King	100
Gerald Cambrault	148	Steven King	100
Alberto Errazuriz	147	Steven King	100

7- The staff member "Steven King" does not have a manager. He is the CEO. Modify question 6 to include "Steven King" in the report.

8- Generate a report to display staff full name, job title and salary of all employees who earn more than the average salary.