COMP810 Data Warehousing and Big Data

Lab – Week 4 (Data Warehousing)   Due: ---

On successful completion of this paper students will be able to:

(a)   Write SELECT statements to access data from more than one table using equijoins,
(b)   view data that generally does not meet a join condition by using outer joins, and
(c)   Self-Join Tables by using self-join.

Task 1. SQL Joins

Task 1.1. Use the HOTEL database to create the following queries. Save your queries in a file on your home drive.

1.   Generate a report to list the price and type of all rooms at the Grosvenor Hotel:

2.   Generate a report to display the details of all guests who have made booking. Your output should display the following information: Guestname, Hotel name, booking from-date and booking end date:

```
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
```

Task 1.2. Use the HR database to create the following queries. Save your queries in a file 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" respectively. Order the report alphabetically by the last name. OUTPUT:

Full Name	Job Title	Department Name
1 Ellen Abel	SA_REP	Sales
2 Sundar Ande	SA_REP	Sales
3 Mozhe Atkinson	ST_CLERK	Shipping
4 David Austin	IT_PROG	IT
5 Hermann Baer	PR_REP	Public Relations
6 Shelli Baida	PU_CLERK	Purchasing

2.   Generate a report, as shown below, to display the full names (i.e. a combination of first and last names), email address (generated by concatenating email id with **@MEGACORP.COM**), department name and office address (concatenation of city and country columns, named as "Full Address") of all employees. Sort the output by the last name. Rename the columns as specified in Task 1.1 (See required output in next page). **Continued…**

OUTPUT:

	Full Name	Email	Department Name	Full Address
1	Ellen Abel	EABEL@MEGACORP.COM	Sales	Oxford, United Kingdom
2	Sundar Ande	SANDE@MEGACORP.COM	Sales	Oxford, United Kingdom
3	Mozhe Atkinson	MATKINSO@MEGACORP.COM	Shipping	South San Francisco, United States of America
4	David Austin	DAUSTIN@MEGACORP.COM	IT	Southlake, United States of America
5	Hermann Baer	HBAER@MEGACORP.COM	Public Relations	Munich, Germany
6	Shelli Baida	SBAIDA@MEGACORP.COM	Purchasing	Seattle, United States of America
7	Amit Banda	ABANDA@MEGACORP.COM	Sales	Oxford, United Kingdom
8	Elizabeth Bates	EBATES@MEGACORP.COM	Sales	Oxford, United Kingdom
9	Sarah Bell	SBELL@MEGACORP.COM	Shipping	South San Francisco, United States of America
10	David Bernstein	DBERNSTE@MEGACORP.COM	Sales	Oxford, United Kingdom
11	Laura Bissot	LBISSOT@MEGACORP.COM	Shipping	South San Francisco, United States of America
12	Harrison Bloom	HBLOOM@MEGACORP.COM	Sales	Oxford, United Kingdom
13	Alexis Bull	ABULL@MEGACORP.COM	Shipping	South San Francisco, United States of America
14	Anthony Cabrio	ACABRIO@MEGACORP.COM	Shipping	South San Francisco, United States of America
15	Nanette Cambrault	NCAMBRAU@MEGACORP.COM	Sales	Oxford, United Kingdom
16	Gerald Cambrault	GCAMBRAU@MEGACORP.COM	Sales	Oxford, United Kingdom
17	John Chen	JCHEN@MEGACORP.COM	Finance	Seattle, United States of America
18	Kelly Chung	KCHUNG@MEGACORP.COM	Shipping	South San Francisco, United States of America

3. Modify the previous question to generate a dynamic report that displays the employee details (as listed in (2) above) for a specific country (i.e. the user should be prompted to enter a country name). Run the report by entering different countries (for example, United Kingdom). Explain the report output and identify potential format improvements. (*Hint: use substitution variable &*)

4. report to display the full names and department names of all employees. The report must also include **all departments including those that do not have any employees** currently assigned to them.

5. Generate a report to display the employee's name and employee's number of all employees along with their respective manager's name and manager number. Label the columns Employee Name, Employee #, Manager Name, and Manager #, respectively. Format the report as below:

```
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
```

6. Explain why the previous report generated the details of only 106 employees? (Note that there are currently 107 employees in the employees table)

7. Modify Question 6 to display all 107 staff members.

Task 2. SQL functions / aggregate functions   ** In this Task, we will use the HR database

1. Use SQL character functions to generate a report for staff names and full email address (email_ID@megacorp.com). The output should be formatted as following:

```
Full Name               Email
------------------      ------------------------
ABEL,  Ellen            eabel@megacorp.com
ANDE,  Sundar           sande@megacorp.com
ATKINSON,  Mozhe        matkinso@megacorp.com


Last Name    First Name
```

2. Generate a report to display employees' last names, basic salary with local currency as a prefix (e.g. NZD), commission percentage, and commission value (Salary * Commission %). If there is no commission value, the report should display "No Commission" message. The output should be alphabetically sorted with respect to last names. OUTPUT:

```
LAST_NAME    Salary      Commission % Commission
-----------  ----------  ------------ -------------------
Abel         NZD 11,000           .3                 3300
Ande         NZD  6,400           .1                  640
Atkinson     NZD  2,800            0        No Commission
Austin       NZD  4,800            0        No Commission
```

3. Generate a report to display full name, length (number of characters) of full name, hire day and hire date for all staff members who earn a commission and do not hold the job title "SA_MAN". Rename the columns accordingly and format the report as following:

```
Full Name             Name Length       Hire Day   Hire Date
--------------------  ----------------   ---------  ------------------
Peter Tucker          11 Char.           Thursday   January    30th 1997
David Bernstein       14 Char.           Monday     March      24th 1997
Peter Hall            9 Char.            Wednesday  August     20th 1997
Christopher Olsen     16 Char.           Monday     March      30th 1998
```

4. Generate a dynamic report (Hint: Use substitution variable) to search for specific first name value and display the employee's full name, job title, and full email address (email_ID@megacorp.com). The report should accept the end user input for first name value in any format (Uppercase, Lowercase, Mix-case). Rename the columns accordingly and format the report as follows:

```
Full Name      Job Title  Email
------------   ---------- ---------------------
Pat Fay        MK_REP     pfay@megacorp.com
```

5. Generate a report to display the minimum, maximum, average, and standard deviation for the salary attribute. Rename the column names accordingly. Also round both average and standard deviation columns to two decimal places.

6. Generate a report to display a unique list of job titles from the employees table along with the number of employees for each job title. Sort the output by the number of employees in each job from highest to lowest. Format the report as following:

```
Job Title  Number of Staff
---------  ---------------
SA_REP                  30
ST_CLERK                20
SH_CLERK                20
FI_ACCOUNT               5
```

7. Modify the report in question 5 to display the minimum, maximum, average, and standard deviation of salary for all employees in department 80. Round both average and standard deviation columns to two decimal places.

Continued…

8. Generate a report to calculate the average salary in each department. The average salary must be rounded to 2 digits numbers according to the format shown in the sample output below. Sort the output by the average salary values in descending order. OUTPUT:

Department No	Department Name	Average Salary
90	Executive	19333.33
110	Accounting	10150
70	Public Relations	10000
20	Marketing	9500

9. Modify the previous report to display the average salary in each department but only for departments who have an average salary of more than 6000.

10. Generate a report to display staff full name, job title, department name, start date, end date and the number of months in that position. Rename the columns accordingly and format the report as following:

```
Full Name                Job Title                 Department Name        Start Date End Date # Months in Position
------------------------ ------------------------- ---------------------- ---------- -------- --------------------
Neena Kochhar            Public Accountant         Accounting             21/09/89   27/10/93                   49
Neena Kochhar            Accounting Manager        Accounting             28/10/93   15/03/97                   41
Lex De Haan              Programmer                IT                     13/01/93   24/07/98                   66
Den Raphaely            Stock Clerk               Shipping               24/03/98   31/12/99                   21
Payam Kaufling           Stock Clerk               Shipping               01/01/99   31/12/99                   12
Jonathon Taylor          Sales Representative      Sales                  24/03/98   31/12/98                    9
Jonathon Taylor          Sales Manager             Sales                  01/01/99   31/12/99                   12
Jennifer Whalen          Administration Assistant  Executive              17/09/87   17/06/93                   69
Jennifer Whalen          Public Accountant         Executive              01/07/94   31/12/98                   54
Michael Hartstein        Marketing Representative  Marketing              17/02/96   19/12/99                   46
```

END OF LAB WEEK 4 DW