Assignment 1

Student Name: Votana SREY MSc MIS Student	Class: MIS512 Data Science and Open-Source Tools Professor: Assem Talasbek

1. Write a SQL query that returns all departments, including those without employees, and include the requested columns: Return employee_id, first name, last name, department ID, department name.

```
SELECT
  Z.EMPLOYEE_ID,
  Z.FIRST_NAME,
  Z.LAST_NAME,
  Z.DEPARTMENT_ID,
  B.DEPARTMENT_NAME
FROM EMPLOYEES Z
LEFT JOIN DEPARTMENTS B
    ON Z.DEPARTMENT_ID = B.DEPARTMENT_ID;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	DEPARTMENT_ID	DEPARTMENT_NAME
100	Steven	King	90	Executive
101	Neena	Yang	90	Executive
102	Lex	Garcia	90	Executive
103	Alexander	James	60	IT
104	Bruce	Miller	60	IT
105	David	Williams	60	IT
106	Valli	Jackson	60	IT
107	Diana	Nguyen	60	IT
108	Nancy	Gruenberg	100	Finance
109	Daniel	Faviet	100	Finance
110	John	Chen	100	Finance
111	Ismael	Sciarra	100	Finance
112	Jose Manuel	Urman	100	Finance
113	Luis	Popp	100	Finance

2. Write a SQL query that returns the full name (first and last name) and salary of all employees working in the department 'Executive' in the city of Seattle:

```
SELECT
  CONCAT(CONCAT(Z.FIRST_NAME, ' '),Z.LAST_NAME) EMPLOYEE_NAME,
  Z.SALARY,
  C.CITY,
  B.DEPARTMENT_NAME
FROM EMPLOYEES Z
LEFT JOIN DEPARTMENTS B
    ON Z.DEPARTMENT_ID = B.DEPARTMENT_ID
LEFT JOIN LOCATIONS C
    ON B.LOCATION_ID = C.LOCATION_ID
WHERE C.CITY = 'Seattle' AND B.DEPARTMENT_NAME = 'Executive'
```

EMPLOYEE_NAME	SALARY	CITY	DEPARTMENT_NAME
Steven King	24000	Seattle	Executive
Neena Yang	17000	Seattle	Executive
Lex Garcia	17000	Seattle	Executive

3. Write a SQL query to find full name (first and last name), job title, start and end date of last jobs of employees who receive commissions.

```
SELECT
  Z.EMPLOYEE_ID,
  Z.FIRST_NAME || ' ' || Z.LAST_NAME AS EMPLOYEE_NAME,
  J.JOB_TITLE,
  Z.COMMISSION_PCT,
  MAX(B.START_DATE) AS START_DATE,
  MAX(B.END_DATE) AS END_DATE
FROM EMPLOYEES Z
LEFT JOIN JOBS J
    ON Z.JOB_ID = J.JOB_ID
LEFT JOIN JOB_HISTORY B
    ON Z.EMPLOYEE_ID = B.EMPLOYEE_ID
WHERE Z.COMMISSION_PCT IS NOT NULL
    AND (B.START_DATE IS NOT NULL OR B.END_DATE IS NOT NULL)
GROUP BY Z.EMPLOYEE_ID, Z.FIRST_NAME || ' ' || Z.LAST_NAME, J.JOB_TITLE, Z.COMMISSION_PCT
```

EMPLOYEE_ID	EMPLOYEE_NAME	JOB_TITLE	COMMISSION_PCT	START_DATE	END_DATE
176	Jonathon Taylor	Sales Representative	.2	01/01/2017	12/31/2017

4. Write a SQL query that returns the full name of the employee and the name of the country and city where he/she is currently employed:

```
SELECT
  A.FIRST_NAME || ' ' || A.LAST_NAME EMPLOYEE_NAME,
  D.COUNTRY_NAME,
  C.CITY
FROM EMPLOYEES A
LEFT JOIN DEPARTMENTS B
    ON A.DEPARTMENT_ID = B.DEPARTMENT_ID
LEFT JOIN LOCATIONS C
    ON B.LOCATION_ID = C.LOCATION_ID
LEFT JOIN COUNTRIES D
    ON C.COUNTRY_ID = D.COUNTRY_ID
```

EMPLOYEE_NAME	COUNTRY_NAME	CITY
Steven King	United States of America	Seattle
Neena Yang	United States of America	Seattle
Lex Garcia	United States of America	Seattle
Alexander James	United States of America	Southlake
Bruce Miller	United States of America	Southlake
David Williams	United States of America	Southlake
Valli Jackson	United States of America	Southlake
Diana Nguyen	United States of America	Southlake

5. Write a SQL query to find the managers who receive more than avg salary. Select the department name, full name (first and last name) of the manager and their city, salary

```
WITH MANAGER_TABLE AS(
    SELECT DISTINCT
        AA.EMPLOYEE_ID MANAGER_ID,
        AA.FIRST_NAME || ' ' || AA.LAST_NAME MANAGER_NAME,
        AA.SALARY,
        AA.DEPARTMENT_ID
    FROM EMPLOYEES AA, EMPLOYEES BB
    WHERE AA.EMPLOYEE_ID = BB.MANAGER_ID
), MASTER_TABLE AS (
    SELECT DISTINCT
      A.MANAGER_ID,
      A.MANAGER_NAME,
      C.CITY,
      B.DEPARTMENT_NAME,
      A.SALARY
    FROM MANAGER_TABLE A
    LEFT JOIN DEPARTMENTS B
      ON A.DEPARTMENT_ID = B.DEPARTMENT_ID
    LEFT JOIN LOCATIONS C
      ON B.LOCATION_ID = C.LOCATION_ID
), FINAL_TABLE AS (
    SELECT DISTINCT DEPARTMENT_NAME, MANAGER_NAME, CITY, SALARY FROM MASTER_TABLE AA
    WHERE AA.SALARY > (SELECT AVG(SALARY) AVG_SALARY FROM EMPLOYEES)
)
SELECT * FROM FINAL_TABLE
```

DEPARTMENT_NAME	MANAGER_NAME	CITY	SALARY
IT	Alexander James	Southlake	9000
Shipping	Adam Fripp	South San Francisco	8200
Executive	Steven King	Seattle	24000
Executive	Lex Garcia	Seattle	17000
Shipping	Shanta Vollman	South San Francisco	6500
Sales	Gerald Cambrault	Oxford	11000
Shipping	Matthew Weiss	South San Francisco	8000
Shipping	Payam Kaufling	South San Francisco	7900
Sales	John Singh	Oxford	14000
Sales	Alberto Errazuriz	Oxford	12000

6. Write a SQL query to find the employees who earn more than $12000. Return employee name, surname, experience year, job ID

```
WITH EM_TABLE AS (
    SELECT
        AA.EMPLOYEE_ID,
        AA.FIRST_NAME,
        AA.LAST_NAME,
        AA.JOB_ID
    FROM EMPLOYEES AA
    WHERE AA.SALARY > 12000
), EX_TABLE AS (
    SELECT
        BB.EMPLOYEE_ID,
        BB.JOB_ID,
        MONTHS_BETWEEN(BB.END_DATE, BB.START_DATE) / 12 AS EXPERIENCE
    FROM JOB_HISTORY BB
)

SELECT DISTINCT AA.FIRST_NAME, AA.LAST_NAME, BB.JOB_ID, FLOOR(BB.EXPERIENCE) EXPERIENCE
FROM EM_TABLE AA LEFT JOIN EX_TABLE BB
    ON AA.EMPLOYEE_ID = BB.EMPLOYEE_ID
WHERE EXPERIENCE IS NOT NULL
```

FIRST_NAME	LAST_NAME	JOB_ID	EXPERIENCE
Neena	Yang	AC_MGR	3
Neena	Yang	AC_ACCOUNT	4
Lex	Garcia	IT_PROG	5
Michael	Martinez	MK_REP	3

7. Write a SQL that selects the average salary of all employees with the job title 'Accountant'

```
SELECT
    BB.JOB_TITLE,
    AVG(AA.SALARY) AS AVG_SALARY
FROM EMPLOYEES AA
LEFT JOIN JOBS BB
    ON AA.JOB_ID = BB.JOB_ID
WHERE LOWER(BB.JOB_TITLE) = 'accountant'
GROUP BY BB.JOB_TITLE
```

JOB_TITLE	AVG_SALARY
Accountant	7920

8. Write a SQL that selects the department name and the full name (concatenated first name and last name) of the manager for departments where the last name of the manager ends with 'n'.

```
WITH MANAGER_TABLE AS (
    SELECT DISTINCT
        BB.EMPLOYEE_ID AS MANAGER_ID,
        BB.FIRST_NAME || ' ' || BB.LAST_NAME AS MANAGER_NAME,
        BB.DEPARTMENT_ID
    FROM EMPLOYEES AA
    JOIN EMPLOYEES BB ON AA.MANAGER_ID = BB.EMPLOYEE_ID
), MASTER_TABLE AS (
    SELECT DISTINCT
        A.MANAGER_ID,
        A.MANAGER_NAME,
        B.DEPARTMENT_NAME
    FROM MANAGER_TABLE A
    RIGHT JOIN DEPARTMENTS B
        ON A.DEPARTMENT_ID = B.DEPARTMENT_ID
)
SELECT DEPARTMENT_NAME, MANAGER_NAME FROM MASTER_TABLE
WHERE LOWER(MANAGER_NAME) LIKE '%n'
```

DEPARTMENT_NAME	NAME_OF_MANAGER
Administration	Jennifer Whalen
Marketing	Michael Hartstein

9. Write a SQL query that selects the department name, average salary, minimum salary, maximum salary, and count of employees with a non-null commission percentage for each department

```
SELECT
    AA.DEPARTMENT_ID,
    BB.DEPARTMENT_NAME,
    AVG(AA.SALARY) AS AVG_SALARY,
    MIN(AA.SALARY) AS MIN_SALARY,
    MAX(AA.SALARY) AS MAX_SALARY,
    COUNT(CASE WHEN AA.COMMISSION_PCT IS NOT NULL THEN 1 END) AS COUNT_COMMISSION_PCT
FROM EMPLOYEES AA
INNER JOIN DEPARTMENTS BB
    ON AA.DEPARTMENT_ID = BB.DEPARTMENT_ID
GROUP BY AA.DEPARTMENT_ID, BB.DEPARTMENT_NAME
```

DEPARTMENT_ID	DEPARTMENT_NAME	AVG_SALARY	MIN_SALARY	MAX_SALARY	COUNT_COMMISSION_PCT
60	IT	5760	4200	9000	0
80	Sales	8955.882352941176470588235294117647058882	6100	14000	34
110	Accounting	10154	8300	12008	0
30	Purchasing	4150	2500	11000	0
50	Shipping	3475.555555555555555555555555555555555556	2100	8200	0
70	Public Relations	10000	10000	10000	0
90	Executive	19333.333333333333333333333333333333333333	17000	24000	0
100	Finance	8601.333333333333333333333333333333333333	6900	12008	0
10	Administration	4400	4400	4400	0
20	Marketing	9500	6000	13000	0
40	Human Resources	6500	6500	6500	0

10. Write a SQL query that selects the job title, department name, full name (concatenated first name and last name) of the employee, and start date of each job history entry where the start date falls within the specified date range (from December 1st, 1997 to December 12th, 2020).

```
SELECT
    E.EMPLOYEE_ID,
    J.JOB_TITLE,
    D.DEPARTMENT_NAME,
    E.FIRST_NAME || ' ' || E.LAST_NAME AS FULL_NAME,
    JH.START_DATE
FROM JOB_HISTORY JH
JOIN EMPLOYEES E ON JH.EMPLOYEE_ID = E.EMPLOYEE_ID
JOIN JOBS J ON JH.JOB_ID = J.JOB_ID
JOIN DEPARTMENTS D ON JH.DEPARTMENT_ID = D.DEPARTMENT_ID
WHERE JH.START_DATE BETWEEN TO_DATE('1997-12-01', 'YYYY-MM-DD') AND TO_DATE('2020-12-12', 'YYYY-MM-DD');
```

JOB_TITLE	DEPARTMENT_NAME	EMPLOYEE_NAME	START_DATE
Public Accountant	Accounting	Neena Kochhar	05/12/2012
Accounting Manager	Accounting	Neena Kochhar	06/18/2016
Programmer	IT	Lex De Haan	09/04/2015
Stock Clerk	Shipping	Den Raphaely	11/12/2020
Sales Representative	Sales	Jonathon Taylor	11/12/2020
Public Accountant	Executive	Jennifer Whalen	02/19/2017
Administration Assistant	Executive	Jennifer Whalen	05/08/2010
Marketing Representative	Marketing	Michael Hartstein	10/08/2018

rows returned in 0.01 seconds Download