Week 02: SQL Practice Tasks

Online IDE for practice: http://www.sqlfiddle.com/
Practice document:
https://github.com/NYU-DataScienceBootCamp/Week-2-SQL/blob/main/SQL_Practice.pdf

NOTE: Make sure you answer the queries in the boxes given and paste screenshots in the output box.

The solution queries will be posted on June 24th before the session

Input Data

Use the database which was discussed during the session and feel free to change the attributes of the tables. Make sure that the following conditions are satisfied:

- There are three “tables”. One for storing Employee Details, One for Bonus, and One for Employee Title.
- There are at least 12 employees in the table which stores Employee Details.

NOTE: Make sure that you paste your input data in the box given below

```
/*    Comment with more than one line
*/

CREATE TABLE Employee (
      EMPLOYEE_ID INT NOT NULL PRIMARY KEY AUTO_INCREMENT,
      FIRST_NAME CHAR(25),
      LAST_NAME CHAR(25),
      SALARY INT(15),
      JOINING_DATE DATETIME,
      DEPARTMENT CHAR(25)
);

INSERT INTO Employee
      (EMPLOYEE_ID, FIRST_NAME, LAST_NAME, SALARY, JOINING_DATE,
DEPARTMENT) VALUES
            (001, 'Neville', 'Longbottom', 100000, '14-02-20 09.00.00',
'HR'),
            (002, 'Ronald', 'Weasley', 80000, '14-06-11 09.00.00',
```

```
'Admin'),
            (003, 'Hermoine', 'Granger', 300000, '14-02-20 09.00.00',
'HR'),
            (004, 'Harry', 'Potter', 500000, '14-02-20 09.00.00', 'Admin'),
            (005, 'Severus', 'Snape', 500000, '14-06-11 09.00.00',
'Admin'),
            (006, 'Luna', 'Lovegood', 200000, '14-06-11 09.00.00',
'Account'),
            (007, 'Draco', 'Malfoy', 75000, '14-01-20 09.00.00',
'Account'),
            (008, 'Minerva', 'Mcgonagall', 90000, '14-04-11 09.00.00',
'Admin'),
            (009, 'John', 'Doe', 120000, '14-04-11 09.00.00', 'Admin'),
            (010, 'Steve', 'Jobs', 999999, '14-06-11 09.00.00', 'Account'),
            (011, 'John', 'Wick', 50000, '14-02-20 09.00.00', 'Admin'),
            (012, 'Christian', 'Wolff', 80000, '14-01-20 09.00.00',
'Account');

CREATE TABLE Bonus (
      EMPLOYEE_REF_ID INT,
      BONUS_AMOUNT INT(10),
      BONUS_DATE DATETIME,
      FOREIGN KEY (EMPLOYEE_REF_ID)
            REFERENCES Employee(EMPLOYEE_ID)
        ON DELETE CASCADE
);

INSERT INTO Bonus
      (EMPLOYEE_REF_ID, BONUS_AMOUNT, BONUS_DATE) VALUES
            (001, 5000, '16-02-20'),
            (002, 3000, '16-06-11'),
            (003, 4000, '16-02-20'),
            (001, 4500, '16-02-20'),
            (002, 3500, '16-06-11');
CREATE TABLE Title (
      EMPLOYEE_REF_ID INT,
      EMPLOYEE_TITLE CHAR(25),
      AFFECTED_FROM DATETIME,
      FOREIGN KEY (EMPLOYEE_REF_ID)
            REFERENCES Employee(EMPLOYEE_ID)
        ON DELETE CASCADE
);
```

```
INSERT INTO Title
      (EMPLOYEE_REF_ID, EMPLOYEE_TITLE, AFFECTED_FROM) VALUES
 (001, 'Manager', '2016-02-20 00:00:00'),
 (002, 'Executive', '2016-06-11 00:00:00'),
 (008, 'Executive', '2016-06-11 00:00:00'),
 (005, 'Manager', '2016-06-11 00:00:00'),
 (004, 'Assistant Manager', '2016-06-11 00:00:00'),
 (007, 'Executive', '2016-06-11 00:00:00'),
 (006, 'Lead', '2016-06-11 00:00:00'),
 (003, 'Lead', '2016-06-11 00:00:00'),
 (009, 'Manager', '2016-02-20 00:00:00'),
 (010, 'Executive', '2016-06-11 00:00:00'),
 (011, 'Lead', '2016-06-11 00:00:00'),
 (012, 'Executive', '2016-06-11 00:00:00');
```

Tasks

SELECTing data

- Display the entire table containing the details of all the Employees

QUERY:

```
SELECT *
FROM employee;
```

OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
1	Neville	Longbottom	100000	2014-02-20T09:00:00Z	HR
2	Ronald	Weasley	80000	2014-06-11T09:00:00Z	Admin
3	Hermoine	Granger	300000	2014-02-20T09:00:00Z	HR
4	Harry	Potter	500000	2014-02-20T09:00:00Z	Admin
5	Severus	Snape	500000	2014-06-11T09:00:00Z	Admin
6	Luna	Lovegood	200000	2014-06-11T09:00:00Z	Account
7	Draco	Malfoy	75000	2014-01-20T09:00:00Z	Account
8	Minerva	Mcgonagall	90000	2014-04-11T09:00:00Z	Admin
9	John	Doe	120000	2014-04-11T09:00:00Z	Admin
10	Steve	Jobs	999999	2014-06-11T09:00:00Z	Account
11	John	Wick	50000	2014-02-20T09:00:00Z	Admin
12	Christian	Wolff	80000	2014-01-20T09:00:00Z	Account

- Write a query to fetch “FIRST_NAME” from the Employees table in the UPPER CASE

QUERY:

```
SELECT UPPER(first_name)
FROM employee;
```

OUTPUT:

UPPER(first_name)
NEVILLE
RONALD
HERMOINE

HARRY
SEVERUS
LUNA
DRACO
MINERVA
JOHN
STEVE
JOHN
CHRISTIAN

GROUPing them together

- Write a query to fetch the number of Employees for each department in the descending order

QUERY:

```
SELECT department, COUNT(employee_id) AS num
FROM employee
GROUP BY department
ORDER BY num DESC;
```

OUTPUT:

department	num
Admin	6
Account	4
HR	2

Using WHERE somewhere

- Write a query to fetch the names of the Employees with salaries >= 90000 and <= 200000

QUERY:

```
SELECT first_name, last_name, salary
FROM employee
WHERE salary >= 90000
AND salary <= 200000;
```

OUTPUT:

first_name	last_name	salary
Neville	Longbottom	100000
Luna	Lovegood	200000
Minerva	Mcgonagall	90000
John	Doe	120000

JOINing the tables

- Write a query to print details of Employees who are also “Managers”

QUERY:

```
SELECT *, title.employee_title
FROM employee
INNER JOIN title
ON employee.employee_id = title.employee_ref_id
AND title.employee_title = 'Manager';
```

OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT	EMPLOYEE_REF_ID	EMPLOYEE_TITLE	AFFECTED_FROM	employee_title
1	Neville	Longbottom	100000	2014-02-20T09:00:00Z	HR	1	Manager	2016-02-20T00:00:00Z	Manager
5	Severus	Snape	500000	2014-06-11T09:00:00Z	Admin	5	Manager	2016-06-11T00:00:00Z	Manager
9	John	Doe	120000	2014-04-11T09:00:00Z	Admin	9	Manager	2016-02-20T00:00:00Z	Manager

COPYing

- Write an SQL query to clone a new table from another table

QUERY:

```
CREATE TABLE temp SELECT * FROM bonus;
SELECT * FROM temp;
```

OUTPUT:

EMPLOYEE_REF_ID	BONUS_AMOUNT	BONUS_DATE
1	5000	2016-02-20T00:00:00Z
2	3000	2016-06-11T00:00:00Z
3	4000	2016-02-20T00:00:00Z
1	4500	2016-02-20T00:00:00Z
2	3500	2016-06-11T00:00:00Z

Aliasing

- Find the average salary of employees in each department and name the AVG(SALARY) column as “AverageSalary”

QUERY:

```
SELECT department, AVG(salary) AS AverageSalary
FROM employee
GROUP BY department;
```

OUTPUT:

department	AverageSalary
Account	338749.75
Admin	223333.3333
HR	200000

Some other stuff

- Write an SQL query to show the second-highest salary from a table

  QUERY:

```
SELECT first_name, last_name, MAX(salary)
FROM employee
WHERE salary < (SELECT MAX(salary) FROM employee);
```

  OUTPUT:

first_name	last_name	MAX(salary)
Neville	Longbottom	500000

- Write an SQL query to show one row twice in results from a table

  QUERY:

```
SELECT *
FROM employee
UNION ALL
SELECT *
FROM employee
ORDER BY 1;
```

  OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
1	Neville	Longbottom	100000	2014-02-20 T09:00:00Z	HR
1	Neville	Longbottom	100000	2014-02-20 T09:00:00Z	HR
2	Ronald	Weasley	80000	2014-06-11T 09:00:00Z	Admin
2	Ronald	Weasley	80000	2014-06-11T 09:00:00Z	Admin
3	Hermoine	Granger	300000	2014-02-20 T09:00:00Z	HR
3	Hermoine	Granger	300000	2014-02-20 T09:00:00Z	HR
4	Harry	Potter	500000	2014-02-20 T09:00:00Z	Admin
4	Harry	Potter	500000	2014-02-20 T09:00:00Z	Admin
5	Severus	Snape	500000	2014-06-11T 09:00:00Z	Admin

5	Severus	Snape	500000	2014-06-11T09:00:00Z	Admin
6	Luna	Lovegood	200000	2014-06-11T09:00:00Z	Account
6	Luna	Lovegood	200000	2014-06-11T09:00:00Z	Account
7	Draco	Malfoy	75000	2014-01-20T09:00:00Z	Account
7	Draco	Malfoy	75000	2014-01-20T09:00:00Z	Account
8	Minerva	Mcgonagall	90000	2014-04-11T09:00:00Z	Admin
8	Minerva	Mcgonagall	90000	2014-04-11T09:00:00Z	Admin
9	John	Doe	120000	2014-04-11T09:00:00Z	Admin
9	John	Doe	120000	2014-04-11T09:00:00Z	Admin
10	Steve	Jobs	999999	2014-06-11T09:00:00Z	Account

10	Steve	Jobs	999999	2014-06-11T 09:00:00Z	Account
11	John	Wick	50000	2014-02-20 T09:00:00Z	Admin
11	John	Wick	50000	2014-02-20 T09:00:00Z	Admin
12	Christian	Wolff	80000	2014-01-20 T09:00:00Z	Account
12	Christian	Wolff	80000	2014-01-20 T09:00:00Z	Account

- Write an SQL query to fetch the departments that have less than five people in it

QUERY:

```
SELECT department, COUNT(*) AS num_employee
FROM employee
GROUP BY department
HAVING COUNT(*) < 5;
```

OUTPUT:

department	num_employee
Account	4
HR	2

- Write an SQL query to fetch the last five records from a table

QUERY:

```sql
SELECT *
FROM employee
ORDER BY employee_id DESC
LIMIT 5;
```

OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
12	Christian	Wolff	80000	2014-01-20T09:00:00Z	Account
11	John	Wick	50000	2014-02-20T09:00:00Z	Admin
10	Steve	Jobs	999999	2014-06-11T09:00:00Z	Account
9	John	Doe	120000	2014-04-11T09:00:00Z	Admin
8	Minerva	Mcgonagall	90000	2014-04-11T09:00:00Z	Admin
