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>

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| --- |
| **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

|  |
| --- |
| INSERT INTO Employee  (EMPLOYEE\_ID, FIRST\_NAME, LAST\_NAME, SALARY, JOINING\_DATE, DEPARTMENT) VALUES  (001, 'Neville', 'Longbottom', 100000, '2014-02-20', 'HR'),  (002, 'Ronald', 'Weasley', 80000, '2014-06-11', 'Admin'),  (003, 'Hermoine', 'Granger', 300000, '2014-02-20', 'HR'),  (004, 'Harry', 'Potter', 500000, '2014-02-20', 'Admin'),  (005, 'Severus', 'Snape', 500000, '2014-06-11', 'Admin'),  (006, 'Luna', 'Lovegood', 200000, '2014-06-11', 'Account'),  (007, 'Draco', 'Malfoy', 75000, '2014-01-20', 'Account'),  (008, 'Minerva', 'Mcgonagall', 90000, '2014-04-11', 'Admin'),  (009, 'Bornita', 'Das', 1000000, '2011-07-04', 'Admin'),  (010, 'Sriprana', 'Bhattacharjee', 900000, '2009-04-19', 'Account'),  (011, 'Farhana', 'Akhter', 1900000,'2001-09-21', 'Admin'),  (012, 'Reshmi', 'Das', 900000, '2010-05-12', 'Account'),  (013, 'Ruchira', 'Das', 90000, '2005-05-05', 'Account');  INSERT INTO Bonus  (EMPLOYEE\_REF\_ID, BONUS\_AMOUNT, BONUS\_DATE) VALUES  (001, 5000, '2016-02-20'),  (002, 3000, '2016-06-11'),  (003, 4000, '2016-02-20'),  (001, 4500, '2016-02-20'),  (002, 3500, '2016-06-11');  INSERT INTO Title  (EMPLOYEE\_REF\_ID, EMPLOYEE\_TITLE, AFFECTED\_FROM) VALUES  (001, 'Manager', '2016-02-20'),  (002, 'Executive', '2016-06-11'),  (008, 'Executive', '2016-06-11'),  (005, 'Manager', '2016-06-11'),  (004, 'Assistant Manager', '2016-06-11'),  (007, 'Executive', '2016-06-11'),  (006, 'Lead', '2016-06-11'),  (003, 'Lead', '2016-06-11'),  (009, 'Manager', '2015-02-20'); |

# Tasks

## SELECTing data

* Display the entire table containing the details of all the Employees  
    
  **QUERY:**

|  |
| --- |
| SELECT \* FROM EMPLOYEE |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **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 | Bornita | Das | 1000000 | 2011-07-04T09:00:00Z | Admin | | 10 | Sriprana | Bhattacharjee | 900000 | 2009-04-19T09:00:00Z | Account | | 11 | Farhana | Akhter | 1900000 | 2001-09-21T09:00:00Z | Admin | | 12 | Reshmi | Das | 900000 | 2010-05-12T09:00:00Z | Account | | 13 | Ruchira | Das | 90000 | 2005-05-05T09:00:00Z | Account | |

* Write a query to fetch “FIRST\_NAME” from the Employees table in the UPPER CASE  
    
  **QUERY:**

|  |
| --- |
| SELECT UPPER(FIRST\_NAME) FROM EMPLOYEE |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **NAME** | | NEVILLE | | RONALD | | HERMOINE | | HARRY | | SEVERUS | | LUNA | | DRACO | | MINERVA | | BORNITA | | SRIPRANA | | FARHANA | | RESHMI | | RUCHIRA | |

## GROUPing them together

* Write a query to fetch the number of Employees for each department in the descending order  
    
  **QUERY:**

|  |
| --- |
| SELECT COUNT(\*) EMP\_COUNT\_BY\_DEPT, DEPARTMENT FROM EMPLOYEE GROUP BY DEPARTMENT ORDER BY EMP\_COUNT\_BY\_DEPT DESC |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **EMP\_COUNT\_BY\_DEPT** | **DEPARTMENT** | | 6 | Admin | | 5 | Account | | 2 | HR | |

## Using WHERE somewhere

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

|  |
| --- |
| SELECT CONCAT(FIRST\_NAME,' ',LAST\_NAME) AS NAME FROM EMPLOYEE  WHERE SALARY >=90000 AND SALARY <=200000 |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **NAME** | **SALARY** | | Neville Longbottom | 100000 | | Luna Lovegood | 200000 | | Minerva Mcgonagall | 90000 | | Ruchira Das | 90000 | |

## JOINing the tables

* Write a query to print details of Employees who are also “Managers”  
    
  **QUERY:**

|  |
| --- |
| SELECT \* FROM EMPLOYEE E JOIN TITLE T ON E.EMPLOYEE\_ID = T.EMPLOYEE\_REF\_ID  WHERE T.EMPLOYEE\_TITLE = 'Manager' |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **EMPLOYEE\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **SALARY** | **JOINING\_DATE** | **DEPARTMENT** | **EMPLOYEE\_REF\_ID** | **EMPLOYEE\_TITLE** | **AFFECTED\_FROM** | | 1 | Neville | Longbottom | 100000 | 2014-02-20T09:00:00Z | HR | 1 | Manager | 2016-02-20T00:00:00Z | | 5 | Severus | Snape | 500000 | 2014-06-11T09:00:00Z | Admin | 5 | Manager | 2016-06-11T00:00:00Z | | 9 | Bornita | Das | 1000000 | 2011-07-04T09:00:00Z | Admin | 9 | Manager | 2015-02-20T00:00:00Z | |

## COPYing

* Write an SQL query to clone a new table from another table  
    
  **QUERY:**

|  |
| --- |
| SELECT \* INTO EMPLOYEE\_CLONE FROM EMPLOYEE  CREATE TABLE EMPLOYEE\_CLONE (  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\_CLONE  SELECT \* FROM EMPLOYEE; |

**OUTPUT:**

|  |
| --- |
|  |

## 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 | 433000 | | Admin | 678333.3333 | | HR | 200000 | |

## Some other stuff

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

|  |
| --- |
| SELECT \* FROM (SELECT ROW\_NUMBER() OVER(ORDER BY SALARY DESC) as RANK, SALARY  FROM EMPLOYEE) AS A WHERE A.RANK = 2 |

**OUTPUT:**

|  |  |  |
| --- | --- | --- |
| |  |  | | --- | --- | | 2 | 1000000 | |

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

**QUERY:**

|  |
| --- |
| SELECT \* FROM (SELECT \* FROM BONUS A  UNION ALL  SELECT \* FROM BONUS B ) TBL  ORDER BY EMPLOYEE\_REF\_ID,BONUS\_AMOUNT,BONUS\_DATE |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **EMPLOYEE\_REF\_ID** | **BONUS\_AMOUNT** | **BONUS\_DATE** | | 1 | 4500 | 2016-02-20T00:00:00Z | | 1 | 4500 | 2016-02-20T00:00:00Z | | 1 | 5000 | 2016-02-20T00:00:00Z | | 1 | 5000 | 2016-02-20T00:00:00Z | | 2 | 3000 | 2016-06-11T00:00:00Z | | 2 | 3000 | 2016-06-11T00:00:00Z | | 2 | 3500 | 2016-06-11T00:00:00Z | | 2 | 3500 | 2016-06-11T00:00:00Z | | 3 | 4000 | 2016-02-20T00:00:00Z | | 3 | 4000 | 2016-02-20T00:00:00Z | |

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

|  |
| --- |
| SELECT COUNT(\*) AS TOTAL, DEPARTMENT FROM EMPLOYEE GROUP BY DEPARTMENT HAVING TOTAL < 5 |

**OUTPUT:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **TOTAL** | **DEPARTMENT** | | 2 | HR | |

* Write an SQL query to fetch the last five records from a table  
    
  **QUERY:**

|  |
| --- |
| SELECT TOP(5) EMPLOYEE\_ID, FIRST\_NAME, LAST\_NAME, SALARY, JOINING\_DATE, DEPARTMENT FROM (  SELECT ROW\_NUMBER() OVER(ORDER BY (select 0)) as RANK, \*  FROM EMPLOYEE)  AS TBL ORDER BY RANK DESC |

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **EMPLOYEE\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **SALARY** | **JOINING\_DATE** | **DEPARTMENT** | | 13 | Ruchira | Das | 90000 | 2005-05-05T00:00:00Z | Account | | 12 | Reshmi | Das | 900000 | 2010-05-12T00:00:00Z | Account | | 11 | Farhana | Akhter | 1900000 | 2001-09-21T00:00:00Z | Admin | | 10 | Sriprana | Bhattacharjee | 900000 | 2009-04-19T00:00:00Z | Account | | 9 | Bornita | Das | 1000000 | 2011-07-04T00:00:00Z | Admin | |