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

|  |
| --- |
| 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, 'Albus', 'Dumbledore', 1000000, '14-04-11 09.00.00', 'Account'),  (010, 'Parvati', 'Patel', 70000, '14-06-11 09.00.00', 'Account'),  (011, 'Cedric', 'Diggory', 125000, '14-06-11 09.00.00', 'Account'),  (012, 'Sirius', 'Black', 250000, '14-02-20 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'); |

# 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 | 2014-02-20 09:00:00 | HR |  | 2 | Ronald | Weasley | 80000 | 2014-06-11 09:00:00 | Admin |  | 3 | Hermoine | Granger | 300000 | 2014-02-20 09:00:00 | HR |  | 4 | Harry | Potter | 500000 | 2014-02-20 09:00:00 | Admin |  | 5 | Severus | Snape | 500000 | 2014-06-11 09:00:00 | Admin |  | 6 | Luna | Lovegood | 200000 | 2014-06-11 09:00:00 | Account |  | 7 | Draco | Malfoy | 75000 | 2014-01-20 09:00:00 | Account |  | 8 | Minerva | Mcgonagall | 90000 | 2014-04-11 09:00:00 | Admin |  | 9 | Albus | Dumbledore | 1000000 | 2014-04-11 09:00:00 | Account |  | 10 | Parvati | Patel | 70000 | 2014-06-11 09:00:00 | Account |  | 11 | Cedric | Diggory | 125000 | 2014-06-11 09:00:00 | Account |  | 12 | Sirius | Black | 250000 | 2014-02-20 09:00:00 | 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 |  | ALBUS |  | PARVATI |  | CEDRIC |  | SIRIUS | |

## GROUPing them together

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

|  |
| --- |
| SELECT COUNT(EMPLOYEE\_ID), DEPARTMENT FROM Employee GROUP BY DEPARTMENT |

**OUTPUT:**

|  |
| --- |
| | COUNT(EMPLOYEE\_ID) | DEPARTMENT |  | ------------------ | ---------- |  | 6 | Account |  | 4 | Admin |  | 2 | HR | |

## Using WHERE somewhere

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

|  |
| --- |
| SELECT EMPLOYEE\_ID, FIRST\_NAME, LAST\_NAME, SALARY FROM Employee WHERE SALARY>=90000 AND SALARY<=200000 |

**OUTPUT:**

|  |
| --- |
| | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY |  | ----------- | ---------- | ---------- | ------ |  | 1 | Neville | Longbottom | 100000 |  | 6 | Luna | Lovegood | 200000 |  | 8 | Minerva | Mcgonagall | 90000 |  | 11 | Cedric | Diggory | 125000 | |

## JOINing the tables

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

|  |
| --- |
| SELECT EMPLOYEE\_ID, FIRST\_NAME, LAST\_NAME, DEPARTMENT, SALARY FROM Employee e JOIN Title emp\_title ON e.EMPLOYEE\_ID=emp\_title.EMPLOYEE\_REF\_ID WHERE emp\_title.EMPLOYEE\_TITLE='Manager'; |

**OUTPUT:**

|  |
| --- |
| | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | DEPARTMENT |  | ----------- | ---------- | ---------- | ---------- |  | 1 | Neville | Longbottom | HR |  | 5 | Severus | Snape | Admin |  | 10 | Parvati | Patel | Account |  | 12 | Sirius | Black | Account | |

## COPYing

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

|  |
| --- |
| CREATE TABLE Employee\_Clone AS SELECT \* FROM Employee; |

**OUTPUT:**

|  |
| --- |
| SELECT \* FROM Employee\_Clone;  | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY | JOINING\_DATE | DEPARTMENT |  | ----------- | ---------- | ---------- | ------- | ------------------- | ---------- |  | 1 | Neville | Longbottom | 100000 | 2014-02-20 09:00:00 | HR |  | 2 | Ronald | Weasley | 80000 | 2014-06-11 09:00:00 | Admin |  | 3 | Hermoine | Granger | 300000 | 2014-02-20 09:00:00 | HR |  | 4 | Harry | Potter | 500000 | 2014-02-20 09:00:00 | Admin |  | 5 | Severus | Snape | 500000 | 2014-06-11 09:00:00 | Admin |  | 6 | Luna | Lovegood | 200000 | 2014-06-11 09:00:00 | Account |  | 7 | Draco | Malfoy | 75000 | 2014-01-20 09:00:00 | Account |  | 8 | Minerva | Mcgonagall | 90000 | 2014-04-11 09:00:00 | Admin |  | 9 | Albus | Dumbledore | 1000000 | 2014-04-11 09:00:00 | Account |  | 10 | Parvati | Patel | 70000 | 2014-06-11 09:00:00 | Account |  | 11 | Cedric | Diggory | 125000 | 2014-06-11 09:00:00 | Account |  | 12 | Sirius | Black | 250000 | 2014-02-20 09:00:00 | Account | |

## Aliasing

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

|  |
| --- |
| SELECT DEPARTMENT, AVG(SALARY) AS Average\_Salary FROM Employee GROUP BY DEPARTMENT; |

**OUTPUT:**

|  |
| --- |
| | DEPARTMENT | Average\_Salary |  | ---------- | -------------- |  | Account | 286666.6667 |  | Admin | 292500.0000 |  | HR | 200000.0000 | |

## Some other stuff

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

|  |
| --- |
| SELECT MAX(SALARY) AS Second, DEPARTMENT FROM Employee WHERE SALARY NOT IN (SELECT MAX(SALARY) FROM Employee) |

**OUTPUT:**

|  |
| --- |
|  |

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

**QUERY:**

|  |
| --- |
| SELECT \* FROM Employee UNION ALL SELECT \* FROM Employee; |

**OUTPUT:**

|  |
| --- |
| | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY | JOINING\_DATE | DEPARTMENT |  | ----------- | ---------- | ---------- | ------- | ------------------- | ---------- |  | 1 | Neville | Longbottom | 100000 | 2014-02-20 09:00:00 | HR |  | 2 | Ronald | Weasley | 80000 | 2014-06-11 09:00:00 | Admin |  | 3 | Hermoine | Granger | 300000 | 2014-02-20 09:00:00 | HR |  | 4 | Harry | Potter | 500000 | 2014-02-20 09:00:00 | Admin |  | 5 | Severus | Snape | 500000 | 2014-06-11 09:00:00 | Admin |  | 6 | Luna | Lovegood | 200000 | 2014-06-11 09:00:00 | Account |  | 7 | Draco | Malfoy | 75000 | 2014-01-20 09:00:00 | Account |  | 8 | Minerva | Mcgonagall | 90000 | 2014-04-11 09:00:00 | Admin |  | 9 | Albus | Dumbledore | 1000000 | 2014-04-11 09:00:00 | Account |  | 10 | Parvati | Patel | 70000 | 2014-06-11 09:00:00 | Account |  | 11 | Cedric | Diggory | 125000 | 2014-06-11 09:00:00 | Account |  | 12 | Sirius | Black | 250000 | 2014-02-20 09:00:00 | Account |  | 1 | Neville | Longbottom | 100000 | 2014-02-20 09:00:00 | HR |  | 2 | Ronald | Weasley | 80000 | 2014-06-11 09:00:00 | Admin |  | 3 | Hermoine | Granger | 300000 | 2014-02-20 09:00:00 | HR |  | 4 | Harry | Potter | 500000 | 2014-02-20 09:00:00 | Admin |  | 5 | Severus | Snape | 500000 | 2014-06-11 09:00:00 | Admin |  | 6 | Luna | Lovegood | 200000 | 2014-06-11 09:00:00 | Account |  | 7 | Draco | Malfoy | 75000 | 2014-01-20 09:00:00 | Account |  | 8 | Minerva | Mcgonagall | 90000 | 2014-04-11 09:00:00 | Admin |  | 9 | Albus | Dumbledore | 1000000 | 2014-04-11 09:00:00 | Account |  | 10 | Parvati | Patel | 70000 | 2014-06-11 09:00:00 | Account |  | 11 | Cedric | Diggory | 125000 | 2014-06-11 09:00:00 | Account |  | 12 | Sirius | Black | 250000 | 2014-02-20 09:00:00 | Account | |

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

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

**OUTPUT:**

|  |
| --- |
| | DEPARTMENT | Number |  | ---------- | ------ |  | Admin | 4 |  | HR | 2 | |

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

|  |
| --- |
| SELECT \* FROM Employee ORDER BY EMPLOYEE\_ID DESC LIMIT 5 |

**OUTPUT:**

|  |
| --- |
| | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY | JOINING\_DATE | DEPARTMENT |  | ----------- | ---------- | ---------- | ------- | ------------------- | ---------- |  | 12 | Sirius | Black | 250000 | 2014-02-20 09:00:00 | Account |  | 11 | Cedric | Diggory | 125000 | 2014-06-11 09:00:00 | Account |  | 10 | Parvati | Patel | 70000 | 2014-06-11 09:00:00 | Account |  | 9 | Albus | Dumbledore | 1000000 | 2014-04-11 09:00:00 | Account |  | 8 | Minerva | Mcgonagall | 90000 | 2014-04-11 09:00:00 | Admin | |