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

|  |
| --- |
| 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');  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:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*    | 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 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/) |

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

|  |
| --- |
| select UPPER(first\_name) from Employee |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | UPPER(first\_name) |  | ----------------- |  | NEVILLE |  | RONALD |  | HERMOINE |  | HARRY |  | SEVERUS |  | LUNA |  | DRACO |  | MINERVA |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

## 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 "number of Employees" FROM Employee GROUP BY (DEPARTMENT) order by COUNT(employee\_id) desc; |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | DEPARTMENT | number of Employees |  | ---------- | ------------------- |  | Admin | 4 |  | HR | 2 |  | Account | 2 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

## 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:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | name |  | ------------------ |  | Neville Longbottom |  | Luna Lovegood |  | Minerva Mcgonagall |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

## JOINing the tables

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

|  |
| --- |
| * SELECT \* * FROM Employee AS E, Title AS T * WHERE E.EMPLOYEE\_ID = T.EMPLOYEE\_REF\_ID * AND T.EMPLOYEE\_TITLE = "Manager" |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY | JOINING\_DATE | DEPARTMENT | EMPLOYEE\_REF\_ID | EMPLOYEE\_TITLE | AFFECTED\_FROM |  | ----------- | ---------- | ---------- | ------ | ------------------- | ---------- | --------------- | -------------- | ------------------- |  | 1 | Neville | Longbottom | 100000 | 2014-02-20 09:00:00 | HR | 1 | Manager | 2016-02-20 00:00:00 |  | 5 | Severus | Snape | 500000 | 2014-06-11 09:00:00 | Admin | 5 | Manager | 2016-06-11 00:00:00 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

## COPYing

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

|  |
| --- |
| * CREATE TABLE new\_table LIKE Employee; * INSERT INTO new\_table select \* from Employee; * select \* from new\_table |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | 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 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

## 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:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | DEPARTMENT | AverageSalary |  | ---------- | ------------- |  | Account | 137500.0000 |  | Admin | 292500.0000 |  | HR | 200000.0000 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

## Some other stuff

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

|  |
| --- |
| * SELECT \* FROM Employee * WHERE Salary= (SELECT DISTINCT(Salary) * FROM Employee ORDER BY Salary LIMIT 3,1); |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY | JOINING\_DATE | DEPARTMENT |  | ----------- | ---------- | ---------- | ------ | ------------------- | ---------- |  | 1 | Neville | Longbottom | 100000 | 2014-02-20 09:00:00 | HR |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

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

**QUERY:**

|  |
| --- |
| CREATE TABLE new\_table LIKE Employee;  INSERT INTO new\_table select \* from Employee where EMPLOYEE\_ID = 001;  update new\_table SET EMPLOYEE\_ID = 100 where DEPARTMENT='HR';  INSERT INTO new\_table select \* from Employee;  select \* from new\_table |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | 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 |  | 100 | Neville | Longbottom | 100000 | 2014-02-20 09:00:00 | HR |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

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

|  |
| --- |
| * SELECT \* from ( * SELECT DEPARTMENT, COUNT(employee\_id) as "number of Employees" FROM Employee GROUP BY (DEPARTMENT) * ) as testtable * where "number of Employees"<5; |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | DEPARTMENT | number of Employees |  | ---------- | ------------------- |  | Account | 2 |  | Admin | 4 |  | HR | 2 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |

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

|  |
| --- |
| SELECT \* FROM Employee WHERE EMPLOYEE\_ID > (SELECT MAX(EMPLOYEE\_ID) - 5 FROM (Employee)) |

**OUTPUT:**

|  |
| --- |
| \*\*Schema (MySQL v5.7)\*\*  | EMPLOYEE\_ID | FIRST\_NAME | LAST\_NAME | SALARY | JOINING\_DATE | DEPARTMENT |  | ----------- | ---------- | ---------- | ------ | ------------------- | ---------- |  | 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 |  ---  [View on DB Fiddle](https://www.db-fiddle.com/f/fB5hiBTaScoFjNxLmPJzqk/0) |