National University of Sciences and Technology (NUST)
School of Electrical Engineering and Computer Science

Department of Computing

Laboratory Manual 09:

Outer Join Queries

CS-220: Database Systems

Fall 2017

Class: BS(CS)-6B

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Timings:1415-1700

Introduction

- SQL DDL (Data Definition Language) commands are used to create and modify the databases. Data Manipulation Language (DML) commands are used to query the databases.

Objectives

After performing this lab students should be able to:

1. Create tables in SQL using DDL commands.
2. Perform DML operations on created tables.

Tools/Software Requirement

- MySQL Community Server 5.6
- MySQL Workbench 6.1

Description

Outer joins Queries

When two tables are joined with an inner join, data will only be returned if matching data exists in both tables. An outer join is like saying "and also include the rows from one table if there are no matching rows in the other one." With an outer join the columns from the table where data is "missing" are returned as NULL values.

Outer joins come in two basic flavours, called Left and Right. Left outer joins mean that the data must be contained in the table defined to the left side of the equivalence, but not necessarily the right hand side. Right outer joins, of course, work the other way around. For example.

Given the following **database schema**:

Student (snum: integer, sname: char(30), major: char(25), level: char(2), age: integer)

Faculty (fid: integer, fname: char(30), deptid: integer)

Class (cname: char(40), meets_at: char(20), room: char(10), fid: integer | fid REFS Faculty.fid)

Enrolled (snum: integer, cname: char(40) | snum REFS student.snum, cname REFS class.name)

Find the names of faculty members and their departments, classes and room number which they teaching. Also include faculty members even they are not teaching.

```
select F.fname, F.deptid C.cname, C.room
from faculty F
left outer join Class C on F.fid = C.fid
```

Lab Task

Write SQL expressions for each of the following queries and execute them:

1. Find the names of all juniors (Level = JR) who are either enrolled or not in a class taught by 'Ivana Teach'.

2. Find the names of faculty members that either teach to class 'database systems' or not.

3. Find the name of the courses that is either taught by a faculty member or not.

4. Find the names of classes that is either taught by 'Richard Jackson' or not and their times when a class meet there.

5. Retrieve the snum and sname of students who have taken classes from both 'Ivana Teach' or 'Linda Davis'.

6. Find room number where a faculty member either takes a class or not.

7. Find the department IDs where students have been enrolled or not.

8. Find the room number where either Robert Brown teaches or not.

Deliverables

1. Complete your lab tasks in SQL workbench and submit a word file in with queries along with the screenshots of the results to all the questions attempted. Upload it on LMS. The marking will be based on viva/lab task submitted.