CSC 311L: Database Management System Lab

North South University

LAB INSTRUCTOR: ***Nazmul Alam Diptu***

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GENERAL OVERVIEW

The lab course aims to make students able to apply their knowledge in developing and using relational databases. The labs cover efficient use of SQL for complicated tasks and teach a database language. The main topics of the laboratory applications are: SQL Queries (both simple & advanced), use of triggers, stored procedures and functions for efficient and more secure implementations of database applications. Upon completion of the course, the students learn how to design and develop database applications using one of the major DBMSs.

This labs are not just for students who require extra help; they are an integral part of the course.

To be successful, you will need to devote significant time outside of Labs to studying, practicing skills and solving assignment problems.

ACADEMIC MISCONDUCT

Cheating and Plagiarism will **not be tolerated at any stage**. These are a serious violation of academic ethical standards and are unfair to other students.

It is expected that all work handed in by a student will be original work that has been done by the individual (or group where applicable).

LAB TOPIC OUTLINE

The **tentative** Lab topics are listed below. Not all topics will be covered in the same degree of detail and the sequence may differ somewhat from the list. We will also have a look on basci HTML+CSS,JS, PHP (would be usfull in project work).

LAB WEEK	TOPIC(S)
Week: ONE	
Part A	▶ Create database tables ▶ Describe the data types that can be used when specifying column definition

	▶ Table naming rules & Fields Datatypes
Part B	▶ Insert rows into the created table ▶ Create Department Table ▶ Execute a basic SELECT statement
Week: TWO	
Part A	▶ Basic SELECT Statement ▶ Selecting All Columns, Specific Columns ▶ Arithmetic Expressions, Using Arithmetic Operators, Parenthesis ▶ Defining a Column Alias
Part B	▶ Eliminating Duplicate Rows ▶ Displaying Table Structure ▶ Concatenation Operator
	Project: Brief on Project
Week: THREE	Restricting and Sorting Data
Part A	▶ Limiting the Rows Selected ▶ Restricting with Character Strings and Dates ▶ Comparison Conditions ▶ Other Comparison Conditions,
Part B	▶ Using the LIKE Condition ▶ Using the NULL Conditions ▶ Logical Conditions
Week: FOUR	Displaying Data from Multiple Tables
Part A	▶ Obtaining Data from Multiple Tables ▶ Generating a Cartesian Product ▶ Retrieving Records with Equijoins ▶ Joining a Table to Itself ▶ Creating Joins with the ON Clause
Part B	▶ Creating Three-Way Joins with the ON Clause ▶ `LEFT OUTER JOIN` ▶ `RIGHT OUTER JOIN` ▶ `FULL OUTER JOIN` ▶ Additional Conditions
	Project: Proposal submission deadline
Week: FIVE	Aggregating Data Using Group Functions
Part A	▶ Types of Group Functions ▶ Using the AVG and SUM Functions ▶ Using the MIN and MAX Functions ▶ Using the `COUNT` Function ▶ Using the GROUP BY Clause
Part B	▶ Using the GROUP BY Clause on Multiple Columns ▶ Illegal Queries Using Group Functions ▶ Excluding Group Results: The HAVING Clause ▶ Nesting Group Functions

	Project: Requirements Analysis, Features & Relationships Submission Deadline
Week: SIX	Subqueries
Part A	▶ Using a Subquery to Solve a Problem ▶ Subquery Syntax ▶ Single-Row Subqueries ▶ Executing Single-Row Subqueries ▶ Using Group Functions in a Subquery
Part B	▶ Single-row operator with multiple-row subquery ▶ Multiple-Row Subqueries ▶ Using the ANY Operator ▶ Using the ALL Operator
	Mid Exam
Week: Seven	Manipulating Data
Part A	▶ Copying Rows from Another Table ▶ Updating Rows in a Table ▶ Updating Rows Based on Another Table ▶ Example of Merging Rows
Part B	▶ The ALTER TABLE Statement ▶ Adding a Column ▶ Modifying a Column ▶ Dropping a Column ▶ Changing the Name of an Object ▶ Truncating a Table ▶ Add PRIMARY KEY/ FOREIGN KEY constraints ▶ CREATE VIEW
	Project: Submission of ER Diagram & Relations Submission Deadline
Week: Eight	Controlling User Access
Part A	▶ Creating Users ▶ Granting System Privileges ▶ What is a role? ▶ Creating and Granting Privileges to a Role ▶ Changing Password ▶ Granting Object Privileges ▶ Using WITH GRANT OPTION and PUBLIC key
	Project: Query Processing/ Frontend demonstration
Week: Nine	
Part A & Session-2	**Triggers**
	Project: Work on Project
Week: Ten	**Stored Procedures, Database Normalization**
	Project: Work on Project
Week: Eleven	**Final Exam**
Week Twelve	**Project: Presentation & Submission**

Students are assumed to be reading the relevant textbook section while material is being covered in theory lecture. We will also have one/two extra class to cover project related topics.

Thank You.