

Department of Computer Science and Engineering

Course Code: CSE 370	Credits: 3.0
Course Name: Database Systems	

Lab 02

SQL Alter, Update, Delete & Basic Select Queries

I. Topic Overview:

In this lab, the students will explore several SQL queries to get acquainted with some key SQL features for the purpose of modifying table & its data in a MySQL database as well as retrieve information as per the requirement. They will also try to find out answers to some query-related problems to understand how these queries work.

II. Lesson Fit:

This whole lab is extensively based on the tools & concepts discussed in the first week of course activity.

III. Learning Outcome:

After this lecture, the students will be able to:

- a. add, modify and delete table attributes (columns)
- b. modify or delete data in a table
- c. retrieve data from the tables as per needs

IV. Anticipated Challenges and Possible Solutions

- a. Student may find it difficult to get the desired results in mini server if they copy & paste the queries shown in the activity list section of this lab sheet to the console of the mini server.

Solutions:

Students should type the SQL queries by themselves on the mini server console. It will ensure unsupported Unicode characters not to be appeared on the console. Besides, typing queries will enhance students' ability to notice various subtleties that the queries possess.

- b. Students might face difficulties in making small corrections to their mistaken SQL queries as mini server's console is not handy enough to edit previous errors & rerun queries.

Solutions:

This difficulty can be avoided by using notepad or similar tools (not MS WORD or word pad) for making draft & storing them temporarily. To run any query, one can copy the query from notepad to the console of the mini server. If any small error is encountered after running a query, one can easily get rid of those errors by modifying the draft copies stored in the notepad.

V. Acceptance and Evaluation

Students will show progress as they execute each query successfully in the command window. As this is a practice-and-learn-type lab, students won't be evaluated in this lab.

VI. Activity Detail

- a. **Hour: 1**

Discussion:

Give a brief overview of the following queries as well as explain their syntaxes with some examples stated in the activity list section. The SQL queries to be covered are - ALTER, UPDATE, DELETE, DROP & simple SELECT.

- b. **Hour: 2**

Problem Task: Students will complete all Tasks in activity list. They will ask the instructor in case of any issues.

c. **Hour: 3**

Discussion: Instructor will discuss all the tasks again to ensure that students have understood and executed all instructions accurately

Home Task: Complete all remaining tasks in case students couldn't finish within 3 hours.

Lab 02 Activity List

- All commands are shown in the red boxes.
- In the green box write the appropriate query/answer.
- All new queries should be typed in command window after `mysql>`
- Start by connecting to server using: `mysql -u root -p [password: root]`
- For more MySQL queries, go to www.w3schools.com/sql or google it!

We will create a database for our CSE370 Lab grading. The database name is CSE370_Lab. The table name is Lab_Grades. **Create the database, use the database, create the table and insert all data below** as shown in Lab # 1 part B. Use `Select* from Lab_Grades` to view the data and changes.

Std_ID	Name	Major	section	Days_present	Project_marks	CGPA	Submission_date
s001	Abir	CS	1	10	18.5	3.91	2018-09-15
s019	Naima	CSE	2	12	20	3.7	2018-08-14
s002	Nafis	CSE	1	12	20	3.86	2018-08-15
s003	Tasneem	CS	1	8	18	3.57	2018-09-18
s004	Nahid	ECE	2	7	16.5	3.25	2018-08-20
s005	Arafat	CS	2	11	20	4.0	2018-09-13
s006	Tasneem	CSE	1	12	17.5	3.7	2018-08-15
s007	Muhtadi	ECE	1	10	19	3.67	2018-09-16
S008	Farhana	CSE	2	6	15	2.67	2018-08-16

Task 1: Modifying Columns of a Table:

Add column `project_title` in the table

Alter table **Lab_Grades** add **Project_title** char(10);

The data type for `Project_title` should be `varchar(50)`

Alter table **Lab_Grades** modify column **Project_title** `varchar(50);`

Now let's delete the column `Project_title`

Alter table **Lab_Grades** drop column **Project_title**;

- How will you change the name of a column from submission_date to sub_date? **[Google it!]**

Task 2: Updating Wrong Data:

Oops! Arafat's major is actually CSE, so update the value in the table

Update **Lab_Grades** set **Major** = 'CSE' where name= 'Arafat';

Nahid's name is misspelled and also his project marks should be updated to 16.

Update **Lab_Grades** set **Name**= 'Naheed', **Project_marks** =16 where **Std_ID** = 's004' ;

- What will happen if the where clause is not included in the update query, e.g . if you typed Update Lab_Grades set Major = 'CSE';? **[Don't try it now, just write the answer]**

Task 3: Deleting Data:

Naima dropped out of the course. So, delete her data from the table.

Delete from **Lab_Grades** where **Name**= 'Naima';

- What would have happened if there was another student named Naima?

Delete the data of everyone who was less than 8 days present.

Delete from **Lab_Grades** where **Days_present** < 8 ;

Task 4: Deleting Table or Database [DO NOT TRY NOW]:

So now if you want to delete a table or database you need the following commands

Drop table **table_name**;

Drop database **dbname**;

Task 5: Retrieving Data from Table:

- What is [select * from Lab_grades;] command used for?

Let's say you want to retrieve only the student id, name and project marks.

Select **Std_ID, Name, Project_marks** from **Lab_Grades**;

Retrieve the name and total marks of students out of 25 (project + attendance)

Select **Name, Project_marks+Days_present*5/12 as Total_marks** from **Lab_Grades**;

- The "as" keyword in the above query is known as an alias. Check out what happens if you remove the "as Total_marks" portion from the above command. State the difference below.

- Try the command below, and state what the Upper() and Lower() functions mean.

Select Upper(**Name**), Lower(**Name**) from **Lab_Grades**;

- Try the two commands below. What is the difference and why is the distinct keyword used?

Select **Major** from **Lab_Grades**;

Select distinct **Major** from **Lab_Grades**;

Now you want to view all the details sorted by name. You can use the order by keyword

Select * from **Lab_Grades** order by **Name**;

- Was it sorted in ascending or descending order? How can you sort in the opposite order?[Hint: check next command]

Sort all details according to name and then by submission date. There are two students named Tasneem, observe what happens.

Select * from **Lab_Grades** order by **Name** desc, **Submission_date** asc;

Now, you want to view the name and project marks for only CSE students.

Select **Name,Project_marks** from **Lab_Grades** where **Major='CSE'** ;

- Retrieve the names, days present and marks of students whose project marks is greater than 17

Retrieve the name and marks of students whose marks is between 17 and 19

Select **Name,Project_marks** from **Lab_Grades** where **Project_marks** between 17 and 19 ;

Retrieve the details of students who are majoring in either CS or CSE

Select * from **Lab_Grades** where **Major** in ('CSE', 'CS');

- What is the use of the "in" keyword in the above query? You can write the same command using an "or" and "=" operators in the where clause. Try to figure it out!

Retrieve the details of the students who submitted their project in August and whose marks is greater than 18

Select * from **Lab_Grades** where **Project_marks**>18 and **Submission_date** between '2018-08-01' and '2018-08-31';

- How can you find the students whose Submission_date is not in August?

Retrieve the details of students whose name start with 'a'

Select * from **Lab_Grades** where **Name** like 'a%';

Retrieve the details of students whose name contains at least 2 a's

Select * from **Lab_Grades** where **Name** like '%a%a%';

- Try the following command and explain what happens : Select * from **Lab_Grades** where **Name** like 'a___'; *[There are 3 underscores]*

Task 6: Basic Select Quiz

Go to https://sqlzoo.net/wiki/SELECT_Quiz and answer the Quiz to test your knowledge of basic select queries.