Practical 1 – Part 2

Working with tables

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Learning objectives

1. Create SQL statements to,
    a. Drop a table.
    b. Insert values to tables.
    c. Retrieve data from rows and columns from a single table.
    d. Update values of a table row.
    e. Delete rows of a table.
2. Be familiar with the online MySQL documentation

1. Setting up

Connect to MySQL server (Follow the instructions in Practical1-part1)

Open a file in Vim (> vim Prac01Part2Commands) or any text editor you wish to use to type and save your commands. Create your command in the created text file from this point onward.

2. Use of comments

Use a comment line before starting each task below using any suitable comment styles below:

```
# This is a mysql comment
-- This is also a mysql comment
/* This is a mysql comment too
*/
```

3. Use a database, list its tables and drop tables.

1. Look at the available databases in the MySQL server using a suitable SQL command.
2. We are going to use 'dswork' database. Type the correct command to use the 'dswork' database.
3. Use the `SHOW TABLES` command to see all the tables of the 'dswork' database.
   You will see tables, 'Student' , 'Unit' , 'Enrolment','TestStudent' , ' TestUnit' and 'TestEnrolment'.

4. Delete (drop) 'TestStudent' , 'TestUnit' and 'TestEnrolment' tables. Use the following command to drop the 'TestStudent' table.

```
mysql > DROP TABLE TestStudent;
```

   Similarly, delete 'TestUnit' and 'TestEnrolment' tables.
   Check what are the remaining tables of your working database.

5. Use SHOW COLUMNS command to see the structure of each table. (Refer the Prac01-part1 for the command.)

4. Adding tuples

The tables you have created earlier are currently empty. You will now add data to these tables. After every step you should use the appropriate SELECT statement to check the changes to the table.

1. Add student James Bond (with student number 12345007 and phone 0408007007) to the 'Student' table.

   Note1: use of quotes

   - You should use single quotes around the numbers as the columns are of character type, as per the table's schema. Be careful to use the proper single quote ', instead of smart quote such as ‘or the angled quote `. Using the wrong sort of quote can cause errors that are difficult to understand.

Add a few more tuples (at least five) to 'Student' table including one for you.

```
mysql> SELECT * FROM Student;
```

View all the data in 'Student' table with a "SELECT *" query:

2. Add a unit with following values to the 'Unit' table:

   Name: 'Database Systems'
   Index: 'ISYS1001'
   Dept: 'COMPUTING'

Add a few more tuples to 'Unit' table including the units you are currently enrolled in. You don't need to enter the correct unit codes if you don't want to look them up.

3. James Bond has enrolled in the unit Database Systems this year. Add an entry to the 'Enrollment' table to reflect this change. He has no mark or grade for the unit yet, so you will have to use NULL for the fields whose value is unknown.

   Add a few more tuples (at least eight) to 'Enrolment' table including some of your own enrolments – feel free to give yourself good grades. The correct way to do this is given in the lecture slides.

   View all the data in Enrolment table with a "SELECT *" query.

   The 'Enrolment' table should have one line (called a "tuple") for every student-unit pair.

5. Retrieving data from some columns

1. Retrieve only the first name and the telephone number of students from the 'Student' table.
2. Find only the unit name and the department of all units.
3. Retrieve codes of all the units students have enrolled into.
4. **Additional task:** You may see duplicate units in 'Enrolment' table. **DISTINCT** keyword can be combined with SELECT statement to avoid duplicates. Revise your previous command to retrieve only unique unit codes from the 'Enrolment' table.

6. Retrieving tuples using a condition

1. Retrieve units offered by 'COMPUTING' department.

   (Hint: You have to use a SELECT statement with WHERE clause)

2. Retrieve student number, mark for the unit and grade for the unit for where the mark for the unit is greater than 60. (Hint: Use ‘Enrolment’ table)
3. **Additional task:** Retrieve student number, mark for the unit and grade for the unit, where the mark for the unit is between 66 and 85 (including 65 and 85 both).

7. Updating data

1. Update the unit code of the database systems unit to ‘ISYS2014’ in Units table.

   Reflection : Now the unit code of Database Systems is changed. Does this change reflect in the unit code of ‘Enrolment’ table? Does this cause any problems for the ‘Enrolment’ table?

8. Deleting tuples

1. Delete James Bond's entry from the ‘Student’ table (using a condition on sno in the where clause) and check the result with a "SELECT *" query.

   Reflection: Does this cause any problems for the ‘Enrolment‘ table? Should it?

2. Delete the Database Systems unit from the ‘Unit’ table (using a condition on unitindex).

   Reflection: Note any effects on the ‘Enrolment’ table.

9. On-line Documentation

The on-line documentation for the MySQL database system can be viewed at the URL: http://dev.mysql.com/doc/. This would be the first place to seek additional information about a command or ways to do a particular task.

Explore the documentation and find information about some of the commands you have used today. Look at datatypes such as INT, DECIMAL, CHAR.

Make sure you have saved all the commands you have created in this lab sheet in `DBS/Prac01/Prac01Part2Commands` file. We will be using the same commands in next week as well.

10. Submitting your work

Zip your Prac01 folder (it would contain two files with commands) and upload it to Blackboard. You will not get marks for the submission but this helps us to know you have completed your work or not.

Check whether you have achieved learning objectives:

I am confident that

I can write simple SQL statements to,	
• add data to a table (INSERT)	✓
• retrieve all data from a table (SELECT)	
• retrieve some columns of data from a table (SELECT)	
• retrieve rows of data fulfilling some conditions (SELECT, WHERE)	
• update data in a table (UPDATE)	
• deleting all data or selected data in a table (DELETE).	
Use online MySQL documentation to know more about a topic/command	
Use correct syntax and add comments to my SQL statements	

Please refer lecture slides, reading materials, and online resources and attempt again, if all the objectives were not achieved. Ask your tutor and get help if you need any clarification.

It's always a good practise to try to finish the practical of a particular week, before attempting the next practical worksheet as your work will be building upon the previous week's tasks.