**CE153 – Introduction to Databases**

**Lab 1a - Getting Started with MySQL**

**Objectives**

Students should have a basic understanding of using MySQL. After completing this activity sheet students must be able to start, and connect to, a local MySQL server. They must also understand and use simple SQL commands to create, modify and query tables in a database.

**Background**

A MySQL system is divided into two parts.

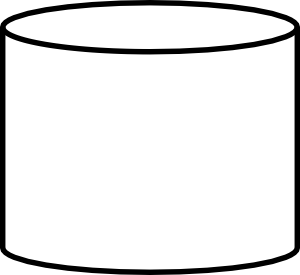
* A server, MySQL Server (mysqld), which is the main program that does most of the work in a MySQL installation.

(The MySQL server (mysqld) may be running on one machine, but accessing a database held as files on another machine. For instance, if you run the MySQL server on a machine in a CSEE lab, it may access a database held as files on your home drive.)

* Some clients (mysql), which is an interactive program that enables you to connect to a MySQL server, run queries, and view the results.

(mysql may also be used in batch mode: you place your queries in a file beforehand, then tell mysql to execute the contents of the file. But we start with interactive use.)

You are probably working on a CSEE lab machine, with files on drive C:, and your home directory on drive M:



M: drive, somewhere else

C: drive

local machine, in lab

mysqld

server

mysql

client

all your files and folders

files that hold

your databases

**Opening the Command Prompt**

You can get close to the programs that you are running by using a "command line interface", such as the Windows command prompt. That is how you need to interact with MySQL in CE153. It is a text based interface to the Windows operating system. It may be unfamiliar at first, but it’s really very easy to use.

If you are not familar with it, look at <https://orb.essex.ac.uk/ce/ce153/restricted/command%20line/using%20the%20command%20line.htm>

There are many ways to get to the Command Prompt under Windows 10, but one simple way is to right-click on the start button (very bottom left), and then click on “command prompt”

**Create a working directory**

It is recommended that you create a directory structure for this course in your M: drive. We suggest creating a directory M:\CE153, and then relevant subdirectories for each lab (e.g. ‘Lab 1’, ‘Lab 2’, etc). You can do that with

m:

mkdir \CE153

cd \CE153

mkdir Lab1

and so on. This first changes to your M: drive, and creates and changes to a new directory. You should keep all your work in these folders for future reference.

**Before you Begin**

For the first time only you will need to execute a batch script that will install the files that are your MySQL database into your M: drive. Simply type the following at the command prompt:

c:\mysql\copy.bat

**Starting the MySQL Server**

Each time you wish to start the MySQL server, type the following at a new Command Prompt:

mysqld --standalone

This command starts a MySQL server on the local machine. If you are presented with an error indicating “mysqld is not recognised as an internal or external command...”, you are running on a machine that does not know where to find MySQL, so you need to tell it explicitly. Try typing in these commands:

c:

cd \mysql\bin

mysqld –standalone

This first changes to the drive of the local machine, and then changes the directory (hence ‘cd’) to the MySQL binary (application) directory. If any other error is displayed you should ask a GTA for assistance.

**Starting the MySQL Client**

Each time you wish to start the MySQL client, make sure you have started a server instance (see Step Starting the MySQL Server above), and then type the following at a new Command Prompt:

mysql –u root

*(If this produces an error indicating “mysql is not recognised as an internal or external command...” you should as before follow the instructions above to change the current directory to c:\mysql\bin. If you get an error indicating “cannot connect” to server, you should check you started the MySQL server.)*

This command attempts to connect to the MySQL server on the local computer, and log on using the account ‘root’. Note the difference between mysqld and mysql, the former is the server (or daemon) and the latter is the client. Once the client has connected you will have the MySQL client prompt, which looks similar to the Windows Command Prompt, but the function of which is entirely different.

mysql>

**Getting used to SQL and MySQL**

To get used to using SQL and the MySQL system, look at the online tutorial materials listed at

<https://orb.essex.ac.uk/ce/ce153/restricted/SQL-online/SQL-online.html>

If you are uncertain how to get started, you should

* Start with SQLZoo at <http://sqlzoo.net/> and do the first 10 sections “Tutorials: Learn SQL in stages”
* Then do the quick-start tutorial at <http://www.analysisandsolutions.com/code/mysql-tutorial.htm#creating> . This is about constructing putting data into databases more than about querying them. In the past it has been a good lead-in to the next worksheets. (Though it mentions version 5.0, this does not matter here. )
* And to practice querying a database, look at MySQL TryIt <http://www.mysqltutorial.org/tryit/> which allows you to try a series of examples to query data from the sample database online.

After that (or if you want to find your own path), you can look at

* the general introduction to SQL at W3Schools at <http://www.w3schools.com/sql/default.asp> At the end, it would be wise at the end to try the “SQL Quiz Test” . (Skip questions you’re not sure of)
* the MySQL Tutorial at <http://www.mysqltutorial.org/> which both offers you a set-up that you can load into a local MySQL system, so it can takes you through the basic operations of SQL one at a time, explaining what they do and going into a fair amount of detail about each command.
* As background/ reference, there is a tutorial about SQL under MySQL in particular at <http://dev.mysql.com/doc/refman/5.7/en/tutorial.html> (The details of how to connect in the labs are slightly different. Ignore the section about using Apache).

or any of the other references listed

**Running SQL with batch scripts**

One often wants to run the same SQL commands many times, perhaps with some small variation, for instance when setting up and loading a MySQL database. A good way to do that is to create and run a batch file of commands to MySQL.

To see how to do this, look at the information about batch files on the module website at

<https://orb.essex.ac.uk/ce/ce153/restricted/labs/about%20batch%20script.html>

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