Installing MySQL Workbench

The community edition (OSS) version of Workbench is a piece of software that you can download at no cost, but you will have to register before you do so. Workbench also requires that you first install the .NET 4 Framework Client Profile (or the full .NET Framework 4), because Workbench needs this software to work successfully. If you already have the full .NET Framework 4 installed on your machine, you don't need the client profile.

To download the .NET 5 Framework client profile, it is recommended that you download the required items in this order:

1. The .NET Framework Client Profile. If neither this Client Profile nor the full .NET Framework 4 is installed on your machine, go to http://www.microsoft.com/en-us/download/details.aspx?id=17113 and download the setup file. The system requirements for this software are listed on the Web page. When downloaded, double click or run the .exe file and follow the on screen instructions.

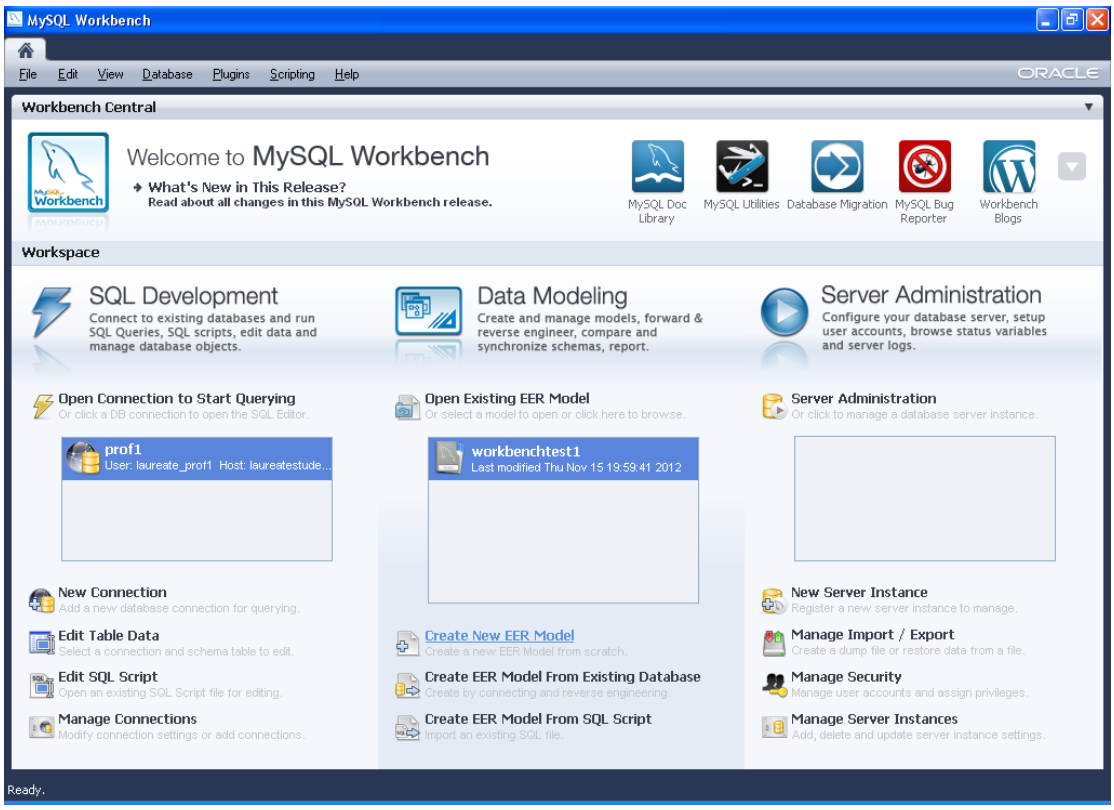
2. There is a MySQL Workbench manual in pdf format that can be downloaded from http://dev.mysql.com/doc/index-gui.html . The *SQL Development* and *Data Modeling* sections should be of use, but as students do not have server administration privileges on the Laureate MySQL Server, that section of the manual will not apply. The tutorial which follows below will be more directly relevant to UoL students.

3. Download MySQL Workbench from http://www.mysql.com/products/workbench/ (a zipped version should be easy to handle). Then look at the manual you downloaded in Step 2. The table of contents will point you to installation instructions for the platform on which you are working (usually Windows).

4. Open MySQL Workbench and work your way through the tutorial below. Your instructor will give you details of the name of the MySQL database allocated to your group. He or she will also give you a username and password for the database, as well as the server name (laureatestudentserver.com). You will need this information to connect successfully to the Laureate MySQL Server and complete the tutorial.

MySQL Workbench Tutorial

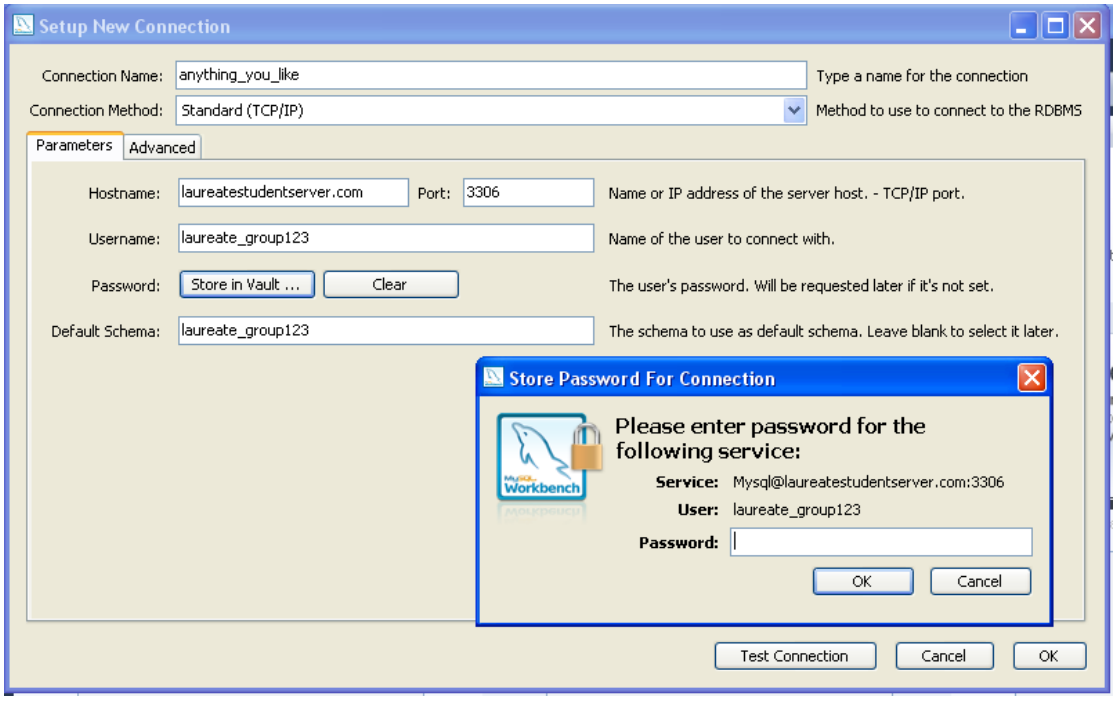
MySQL Workbench will open in the Home screen (shown below). To return to this screen at any time, click on the little house icon in the upper left-hand corner.



On the Laureate MySQL server, students will not have server administration privileges. They will just be able to work on a single database which has been created for them (initially it will be empty). You can therefore ignore the right hand column on the Home screen, and any reference in the Workbench official documentation to creating a server instance.

Setting Up a Saved Connection

Let us start by setting up a connection to the database that has been allocated to you. Click on the **New Connection** link in the left hand column. You will then see the screen below, the fields of which are initially empty. In this example some sample values have been typed into the fields. The username may, for convenience, have been given the same name as the database, but this does not have to be the case.



Here is an explanation of the fields.

- **Connection Name:** This is supplied by you and can be anything you like. Choose something meaningful.
- **Connection Method:** *Standard* is the default. Accept this value.
- **Hostname:** Type *laureatestudentserver.com*
- **Port**: *3306* is the default value. Accept this.
- **Username:** This will have been supplied to you by your Instructor. It will always begin with *laureate_*
- **Password:** If you are on a secure (not shared) computer, click on the **Store in Vault** button and the **Store Password For Connection** dialogue box will pop up. Type in the password given to you by your Instructor and click **OK.** From now onwards you will be able to connect to your database without typing a password.
- **Default Schema:** Type the name of the database given to you by your Instructor.
- **Test Connection:** Click this button to check that the details can connect you successfully to your database on the Laureate MySQL server.
- **OK:** Then click **OK** to save the Connection details. The name of the Connection will appear in the left hand column of your Home screen. It can then be used later when you need to connect to your database. Then it will be referred to as a stored connection.

Creating a Database Table

Back on the Home screen, we shall assume that you will want to create a database table and add some records. In MySQL Workbench's terminology you need to create a new Model first. Click on the **Create New EER Model** link in the middle column of the Home screen.

The default schema may be called **mydb**. Right mouse click on this name and select **Edit Schema**. Change the name to that of your database. We suggest you change the **Collation** value to one of the **utf** values.

Double click on the words **Add Table**. Enter an appropriate name in the **Table Name** field in the table editor.

Double click on the space below **Column Name**. Enter the name of the first field in your table. This will typically be the primary key, a field whose value will be unique and will not be duplicated within this table. A reference number would be a suitable entry.

Then double click on the space below **Datatype** and select a type from the drop down menu. **INT** would be good for most integers (plus or minus 2 billion), **DECIMAL** for floating point numbers up to 38 digits, and **VARCHAR** for strings. Place an integer in the brackets after VARCHAR to indicate a maximum number of characters.

The checkboxes to the right of **Datatype** are labelled as follows:

- PK: primary key (in only one field, unless you have serious database knowledge)
- NN: not null (the field cannot be left blank)
- UQ: unique (field is part of a unique key - leave blank unless you have serious database knowledge)
- BIN: binary
- UN: unsigned
- AI: auto increment
- ZF: zero fill (fill any leading spaces with zeros)

Repeat this process for all the fields in your table. For most purposes, you will just need to use the following: PK for one field in the table, and NN for all fields that must have a value entered.

Go to the third icon on the main toolbar, and the tooltip will say **Save Model to Current File**. Click on this icon. Save your model as a **.mwb** file in a convenient place on your local machine. This model will be listed in the middle column of the Home screen.

You are now ready to upload this table to your database on the Laureate MySQL Server. This is referred to by MySQL Workbench as synchronizing your model with the live database server.

From the main menu select **Database** and then **Forward Engineer**. The *Forward Engineer to Database* wizard will appear.

Select the name of the **Stored Connection** which you saved earlier. Click **Next**.

Leave the *Options* blank and click **Next** again.

In the **Select Objects to Forward Engineer** screen, the top option marked **Export MySQL Table Objects** should already be selected. Click **Next**.

The next screen is **Review the SQL Script to be Executed**. MySQL Workbench will use Structured Query Language (SQL) to effectively upload your table to the database. For the most part, if you have followed these instructions, you can assume this code will be OK. As a rough check, it is worth looking out for the following:

- **CREATE SCHEMA IF NOT EXISTS `xxxx`**: Here 'xxxx' should be the name of your database. As it exists already, nothing will happen. If it did not exist, you would not have the necessary permissions to create it.

- **CREATE TABLE IF NOT EXISTS `xxxx`.`yyyy`**: Here 'xxxx' should be your database name and 'yyyy' should be your table name.

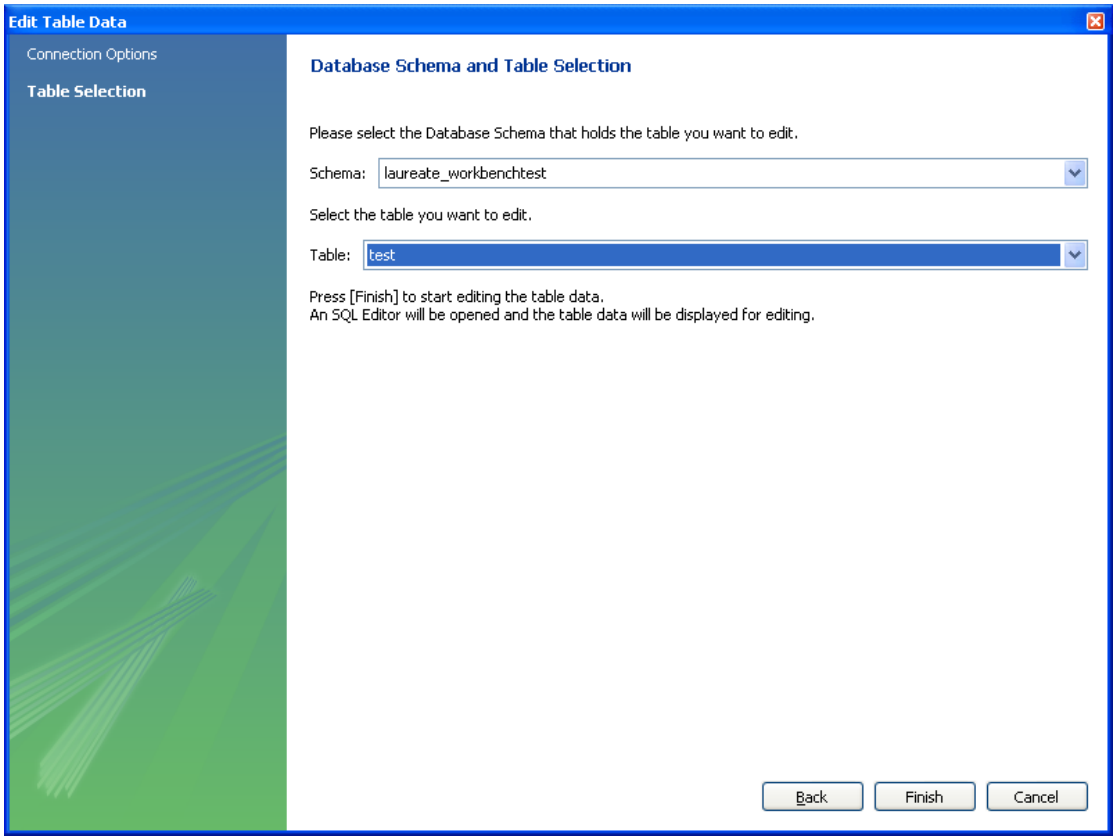
Click **Next** and MySQL Workbench will try to execute the SQL statements after connecting to the Laureate MySQL Server. If the message log says this was successful, click **Close**.

Adding Data to the Database

To add records to your table, click on the **Edit Table Data** link in the left hand column of the Home screen. This will open a wizard.

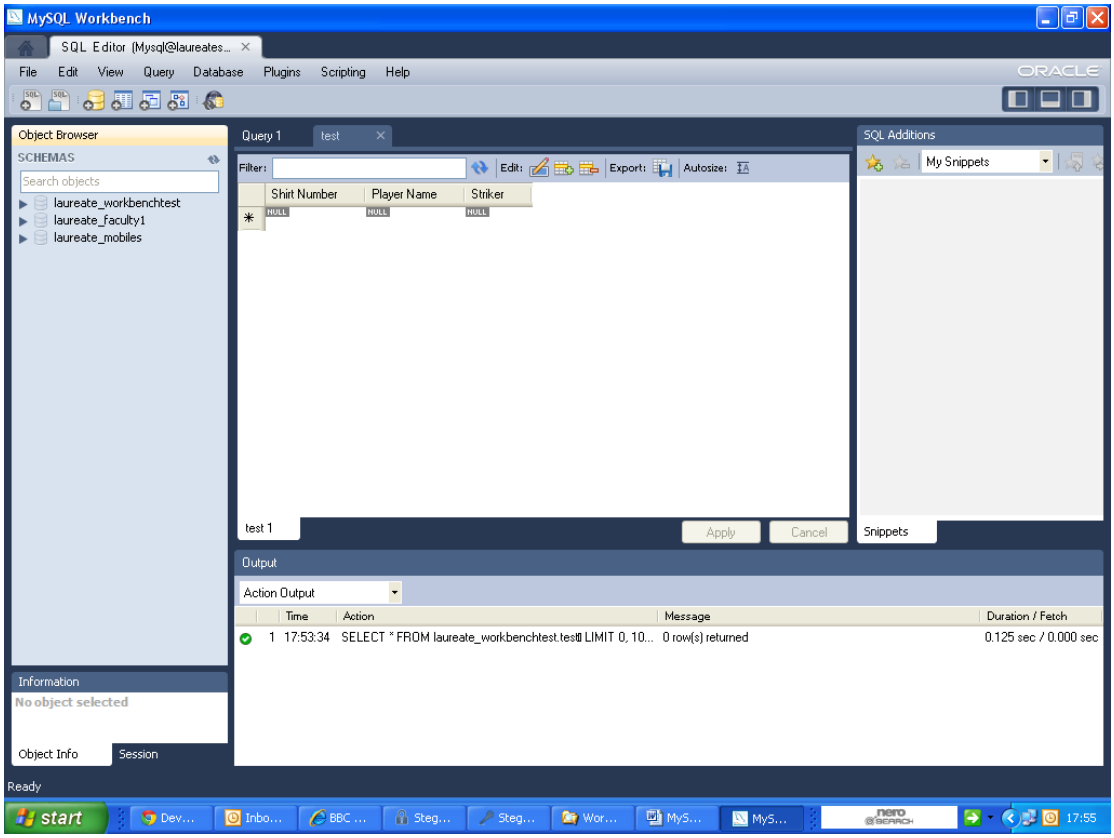
From the menu select the **Stored Connection** you want to use to connect to the Laureate MySQL Server. Click **Next**.

Select the **Schema** (database) you want to use from the menu (see below).



From the **Table** menu on the same screen, select the table you wish to edit. Click **Finish**.

Workbench's **SQL Editor** will open displaying a grid with the names of your database fields as column headings (see below).



Double click or click in table cells (depending on the context) underneath the column headings in order to enter data values into the table.

When you are finished, click the **Apply** button.

You will then be asked to **Review the SQL Script**. Click **Apply**.

The version of the database on the Laureate MySQL Server should now have been updated using the **Stored Connection** you specified earlier.

As a quick check to make sure that the data has really been entered into your database on the Laureate MySQL Server, you can do the following.

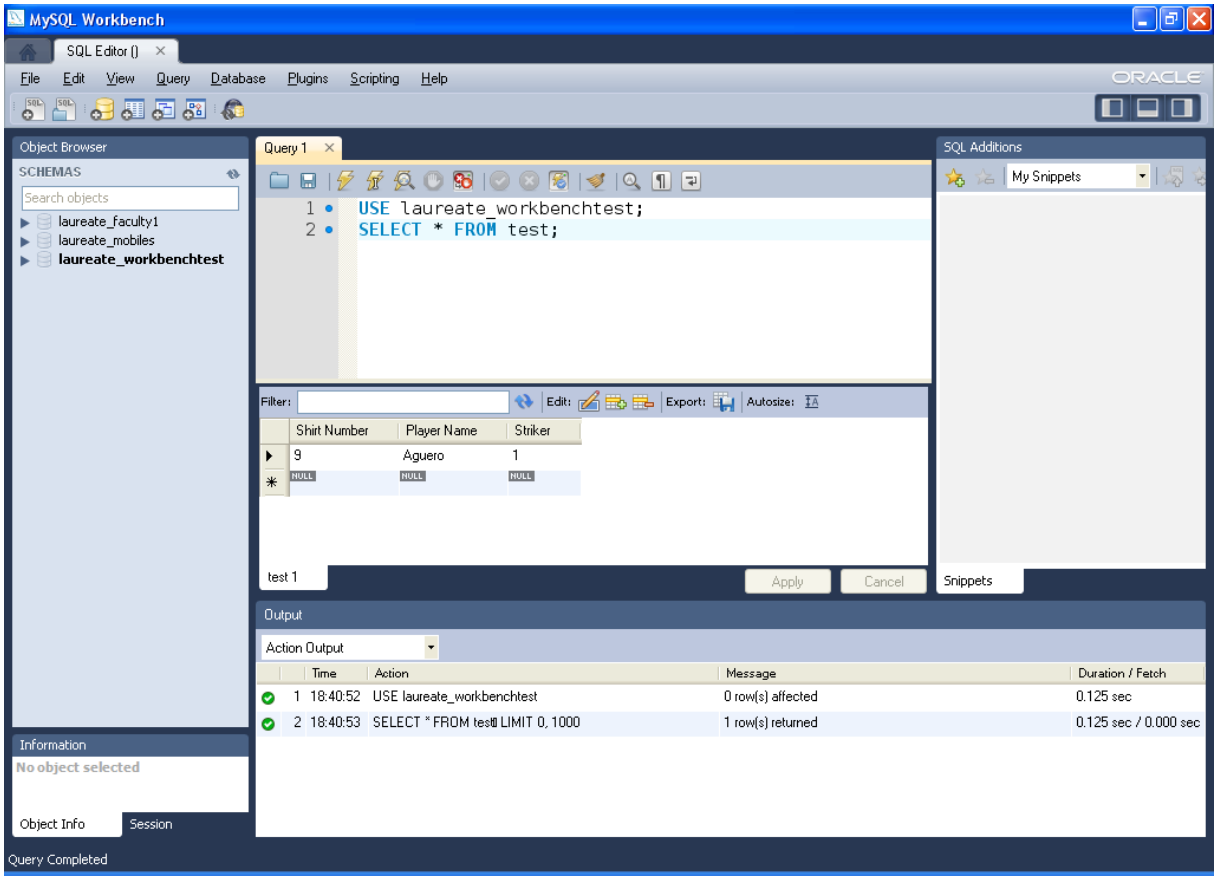
In the **Home** screen, click on the link **Open Connection to Start Querying** in the first column. In the next screen, click **OK** to accept the **Stored Connection** that is displayed.

The SQL Editor will now open. The central panel will probably have a tab labelled **Query1**. In that panel, type the following:

```
USE laureate_xxxx;
SELECT * FROM yyyy;
```

Where ‘xxxx’ will be replaced by the second part of your database name and ’yyyy’ will be replaced by your table name.

The panel you have been typing in has a toolbar. The third icon is a lightning symbol used to execute the SQL you have just typed. Click on this icon.



The above screenshot shows an example of the output when the SQL script has been executed successfully. In this example, only one record was inserted into the table. The **Striker** field is of type Boolean (true or false), values which are here represented by the numbers 1 and 0 respectively. If entering Boolean data, use these numbers rather than words.