

## COMP283 Practical 1, Week 2. Thursday 8th February 2018

### Intro to MySQL Workbench and Simple MySQL Database Manipulation

Log in with your CS Dept credentials. Start a web browser and navigate to

`https://intranet.csc.liv.ac.uk/~phil/Teaching/COMP283/prac1/`

This should show a list of files in that directory. Right click and then save the “prac1.sql” file to your filestore (put it somewhere where you can find it easily). This is a “dump” of a MySQL database that we will use today. You will need this file shortly.

Click the start button at the bottom left hand corner of the screen.

Search for the MySQL Workbench program and start it up.

When its window opens, at the top left where it says “MySQL Connections”, click the “+” symbol to add a new connection (by default you won’t have any defined connections when you start MySQL Workbench for the first time).

In the “setup new connection” box that appears:

Give the connection a meaningful name (meaningful to you).

Make sure the Connection method says “Standard (TCP/IP)”

Make sure that the Parameters tab is chosen.

In Hostname you have to put the name of the mysql server. In CS it is `mysql.csc.liv.ac.uk` and so you need to put that in the Hostname field. Leave the port (3306) as it is.

In the Username field you need to enter your CS username (which, in CS, is also the name of your database user, but if, in future, you are working with your own personal MySQL server could be anything you want).

You don’t need to worry about password at the moment. This will be requested from you if the database you’re trying to open has a password (note that this is NOT your departmental account password, unless you’ve setup your database to have this as its password).

In the default schema box you can enter the name of your database. Again, in CS this is the same as your departmental username.

Click OK.

You’ll notice that you now have a connection tile displayed under the bit where you clicked the “+” symbol. This is how you now gain access to your database.

Click the tile. A window will pop up to request the database password. If it has one, enter it here. If it does not, just click OK.

The main window for MySQL Workbench should now open. The Navigator panel on the upper of the left hand side has a schema section at the bottom . This is where you can select the appropriate aspect of your database that you want to explore.

Choose the Server menu “Data Import” option. In the new tab that gets created, select “Import from self-contained file”. Click the “...” to open a file browser and navigate to the location of the file you just downloaded. Select that file and click open. In the section “Default Schema to be imported to” choose your database. Click “Start Import”. Wait a little while...

Once the import has finished, close the Data Import tab. To alert MySQL Workbench to the fact that your database now has some content, you’ll need to refresh the schemas - click the “recycle” icon.

Underneath where the name of your database appears, open the triangle to the left of the "Tables" item to show a list of the tables in your database. Scroll to the salaries table and then right click and choose "Select Rows - Limit 1000". (Note that this is doing a SELECT on this table of your database to show you some content and thanks to the LIMIT is restricting this to the first 1000 items).

Right click on salaries table in the list of tables.

Choose "alter table"

select the "salary" column from the Column Name list.

salary is currently an INT(11) and we are going to change it to a float.

Click on the Datatype for the salary column. (it's highlighted). From the dropdown menu choose "FLOAT".

Now click the Apply button.

A window pops up titled "Apply SQL Script to Database". This lets you see the sql statements that will perform the task you selected in the UI. Click Apply in this window.

It will take a little while (there are 40k+ items in the salaries table). If all goes well you'll see a message "SQL script was successfully applied to the database". Now click Finish.

In the Navigator, right click on the "salaries" table and choose "Select Rows - Limit 1000". You should be able to see the first several rows of the salaries table data. Note the salary column looks more or less the same as it did before.

Scroll down until you can see employee 80,000 and in particular, their salary from 2002-07-01.

Modify this by selecting the item in the salary column and then clicking at the right-hand end of it. Add .25 to the item to make this employee's salary 50059.25 Click the Apply button.

Note the "Apply SQL Script to Database" window that pops up again, with the sql statements to make our (small) change.

Click the Apply button again. Hopefully you get confirmation that this modification was successful.

Have a look at the salary for this employee. What has happened and why? Speak to the demonstrator (Xia) or Phil and tell them what you think has happened.

Now change the salary column data type to "Decimal".

Once the SQL statement has completed, and while you can see the column names and data types, have a look at the datatype for the salary column. It is "DECIMAL(10,0)". What does this mean?

Right-click the salaries table in the navigator panel and choose to select the first 1000 rows. Have a look at the salary for employee 80,000 for 2002-07-01. What is it?

Alter the salaries table again and this time, change DECIMAL(10,0) to DECIMAL(10,2).

Apply the changes.

Go back to view the table data for employee 80,000. Change their salary again to add .25 to the end. For their salary from 2001-07-01, add .99 to the end.

Apply those changes. Look at their data to confirm the changes have occurred.

The salaries currently specified are yearly salaries. We are going to change this to reflect an hourly rate. We assume that there are 240 working days a year and each day has 7 working hours (i.e. 1,680 working hours). Therefore we need to update everyone's salary to be 1/1,680 of it's current value.

Look closely at the area above the area where the data from the table is displayed. It is an Sql query window (and probably displays the statement "SELECT \* FROM *yourdbname.salaries*;" command that was used to show you the table data)

In this section of the window you can type sql commands.  
Type the following sql script:

```
UPDATE salaries SET salary = salary / 1680;
```

Click the lightning icon to execute the sql script. What happens?

You'll need to use Edit menu / preferences / Sql Queries to switch off the "Safe Updates" feature.  
You'll also need to reconnect to the database (Database menu / connect to database) and use the various tools to select the salaries table and view the data. Re-type the SQL script.

Choose the "Server" Menu and then "Data Export". A new tab is created in the window that has options for export.

Click to select your schema (aka database) and tick the box to the left of it.  
Choose to "Export to a self-contained File" and navigate to an appropriate place in your filestore. Give the export a meaningful name and then click "Start Export".

If all goes well you'll see a message in the log that indicates that your database export (aka "dump") was successful.

You can close the tab that was created when we choose the data export option.

You can now quit MySQL Workbench. Navigate to the place in your filestore where you saved the exported database file and check that it is there. Try opening it with NotePad or something similar to see what the contents look like.

That's it for today.