CS1Q IM Practical 2 (Lab): Converting ER Diagrams to Relations

Aims

- To provide you with an opportunity to convert an ER representation of a database into an actual relational implementation.
- To introduce you to the use of the relational data model and tables.
- To introduce you to the use of My SQL Workbench.
- To enable you to begin construction of a fully functioning database system.

What You Should Do During the Lab

The overall goal of this lab is: *Using the ER Diagram you constructed last week, create a relational database on the MySQL database server, using the MySQL Workbench.*

You should follow these steps:

1 Make sure your ER Diagram is complete. You should not proceed until your tutor has told you to do so. You can use the model solution on Moodle if you prefer.

2 Using the process presented in IM Lectures 4 and 5 and 6, convert your diagram into a set of relations. Work on the relations and schema on paper first.

3 Only once you have your schema written out on paper, can you start to input them as **tables** into MySQL Workbench. Choose carefully the appropriate datatypes for each attribute.
NB: that you may assume that tutorials are unique identified by tutorial ids, which are two alphanumeric characters, e.g. "WA".

4 Make sure you follow the rules for adding foreign keys (FKs) depending what the relationship is in your ER Model (1-1, 1-N and N-M).

5 In the "reverse engineer schema" view – make sure the foreign key relationships between the tables are represented in your database.

This week you need only define the set of tables you need for the base relations and start relating them. Do not worry about populating and querying the database just yet.
You may however want to enter some sample data into your relations to test them, especially for entity and referential integrity.

MySQL Workbench

If you haven't opened it before, then click on *New Connection* (or +) *to* set up a new database connection. Then:
- give the connection a name (e.g. *sipadan*)
- you MUST specify the hostname as *sipadan.dcs.gla.ac.uk*
- enter your username (your SoCS login, i.e. your GUID, in lowercase)
- the Default Schema MUST the same as your username
- (test and) open a connection. Your password is last 8 digits of the barcode number on your student ID card.

If you have opened this connection before then just select that connection.

A new tab with an *SQL Editor* pane should then open (although this can take a while sometimes). On the left you'll see a list of basic actions and a list of existing schemas. Select your own schema as the default, by right-clicking on it in the schema list (and then selecting the *Set as Default Schema* menu item).

Assessment

You should have your database checked by your tutor during the lab. This is to provide you (and us) with a "health check" on the progress of your work.

The database you have created will not be assessed.....yet. You will enhance your system by populating it with data and performing queries on the data in the week 5 Lab. Your tutor will examine the resulting product in the week 6 lab when the HCI lectures have started.

This database, and your knowledge of it will be worth 12 marks towards your IM assessment (out of 30) when you are assessed in week 6.

Please use the time during and after the lab to work on making sure your database is working and that you understand what you have done. While you will not be expected to produce a database in your final exam, you will be expected to explain all the features and functionalities of the relational model, ER diagrams, and tables and relations that underpin the database.