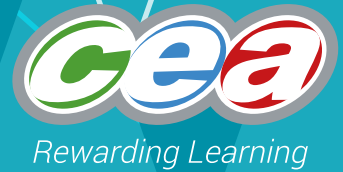# FACTFILE:
GCSE
DIGITAL TECHNOLOGY
Unit 2
DIGITAL AUTHORING CONCEPTS

Database Development

Learning Outcomes

Students should be able to:

- develop a database solution to a given problem by applying appropriate relationships, such as one-to-one and one-to-many, within the database structure;
- create complex reports using features such as grouping, sorting, headers and footers, and calculations;
- use mail merging to select and sequence recipients;
- create macros to automate tasks in a database solution;
- describe how relational databases reduce data redundancy and increase data integrity.

Content

- Database relationships
- Reports
- Mail merging using a database
- Macros
- Data redundancy and data integrity

Database relationships

Data in a database is stored in tables. When there are 2 or more tables, a relationship can be created to link the tables together.


The relationships tool allows the user to add each of the tables in the database.

In the graphic below you can see that CustomerID occurs in both tables so it can be used to create a relationship. This can be done by dragging the CustomerID field from the Customer table and dropping it on top of the CustomerID in the Payments table.
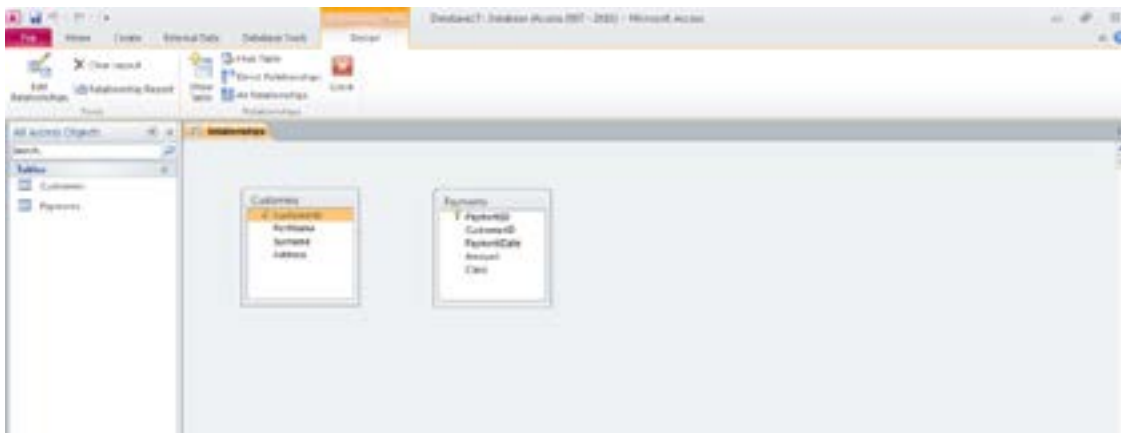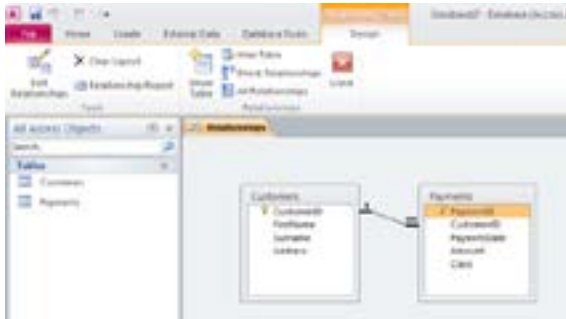

This will open an Edit Relationships window.
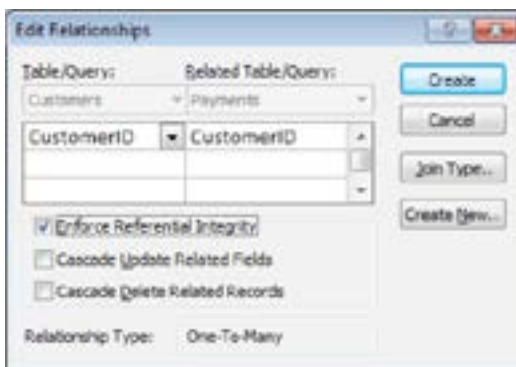
By ticking the Enforce Referential Integrity box, the user can ensure that a CustomerID must exist in the Customer table before it can be entered in the Payments table.
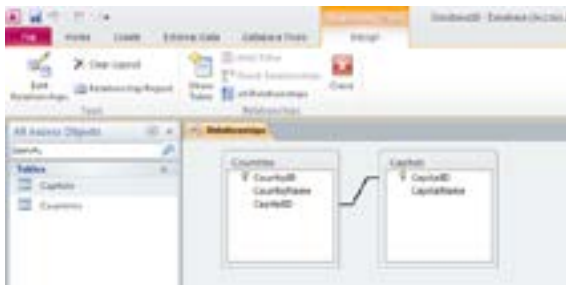
One-to-many relationships

Each customer can make many payments; therefore the relationship is described as one-to-many.

One-to-one relationships

The relationship below is described as one-to-one because each country can only have one capital city.
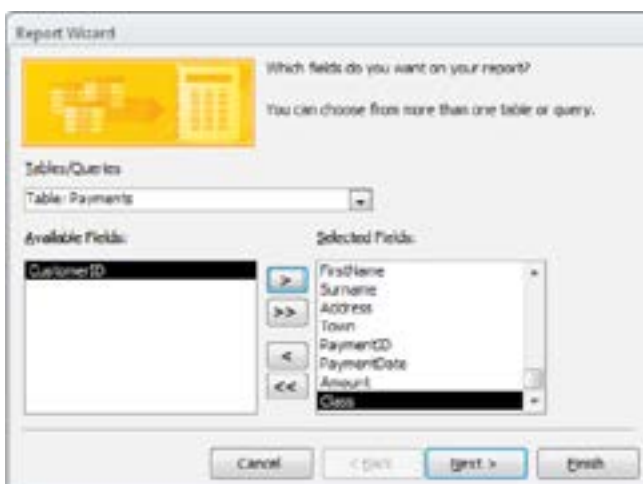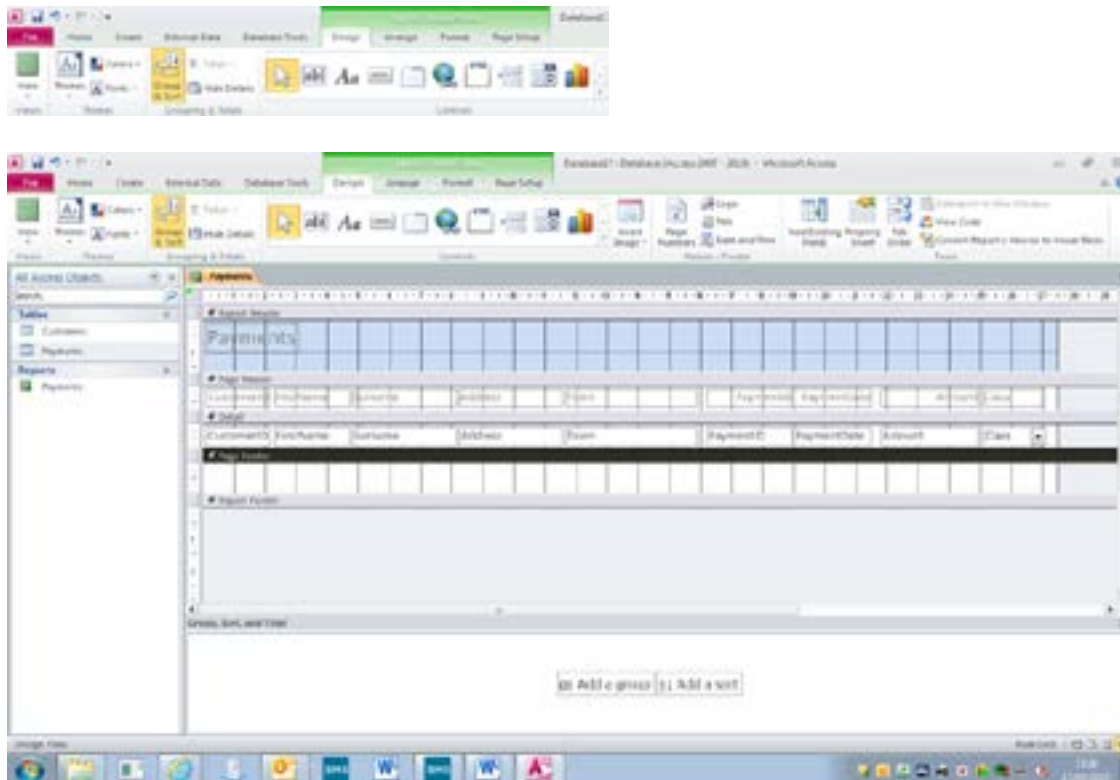

Reports

Reports can be created in a database to show information in a meaningful and readable format.
To create a report, select the Report Wizard from the Create tab.

This will open the Report Wizard dialogue box. Users can add the fields that they wish to include in the report.
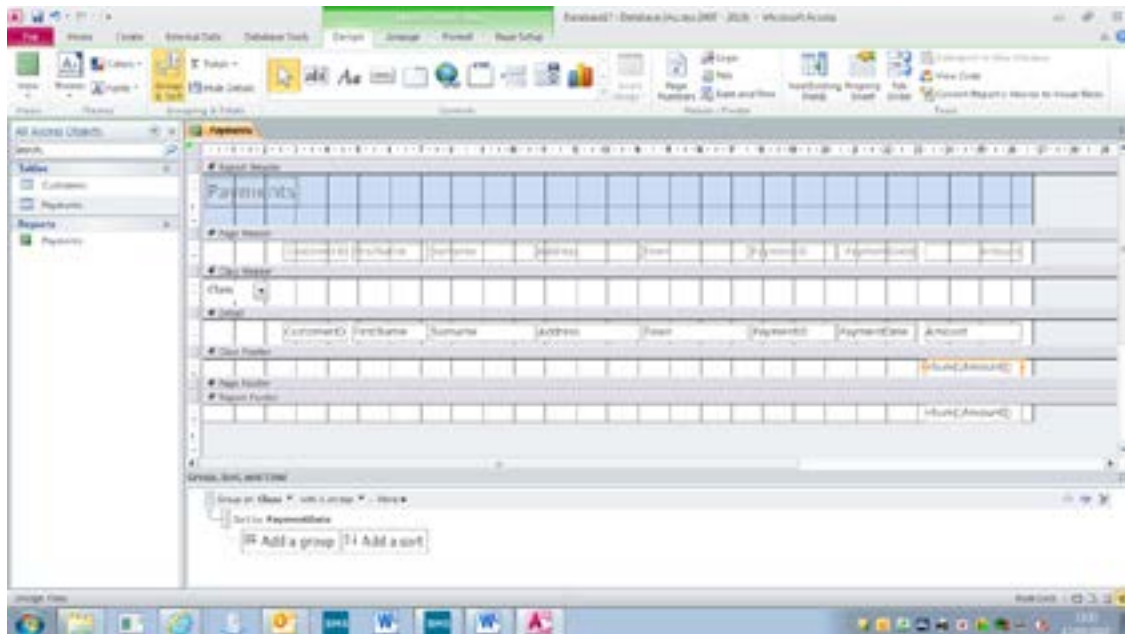
The data in reports can be grouped and sorted to a complex level by using the Group & Sort options.
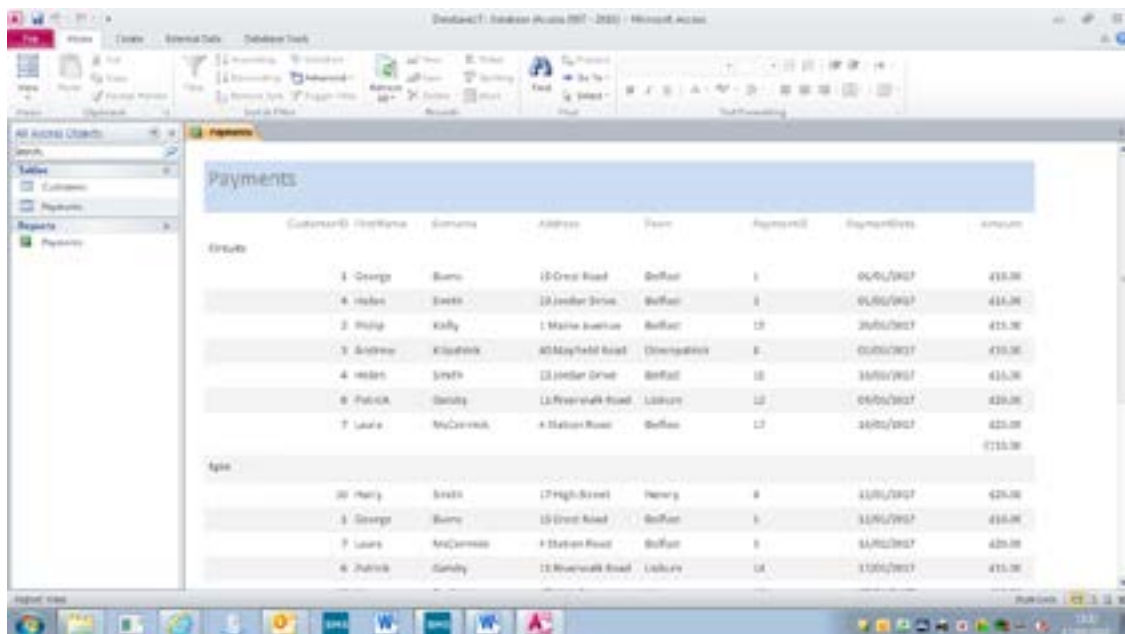

By adding grouping or sorting the results, the report can be organised to be easily read or interpreted.
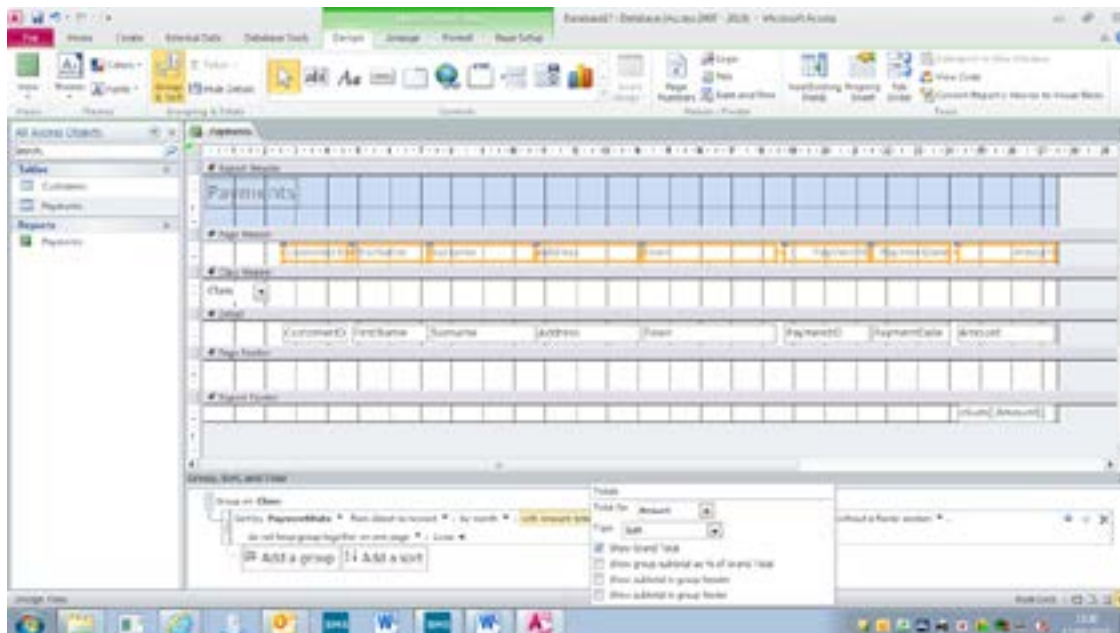
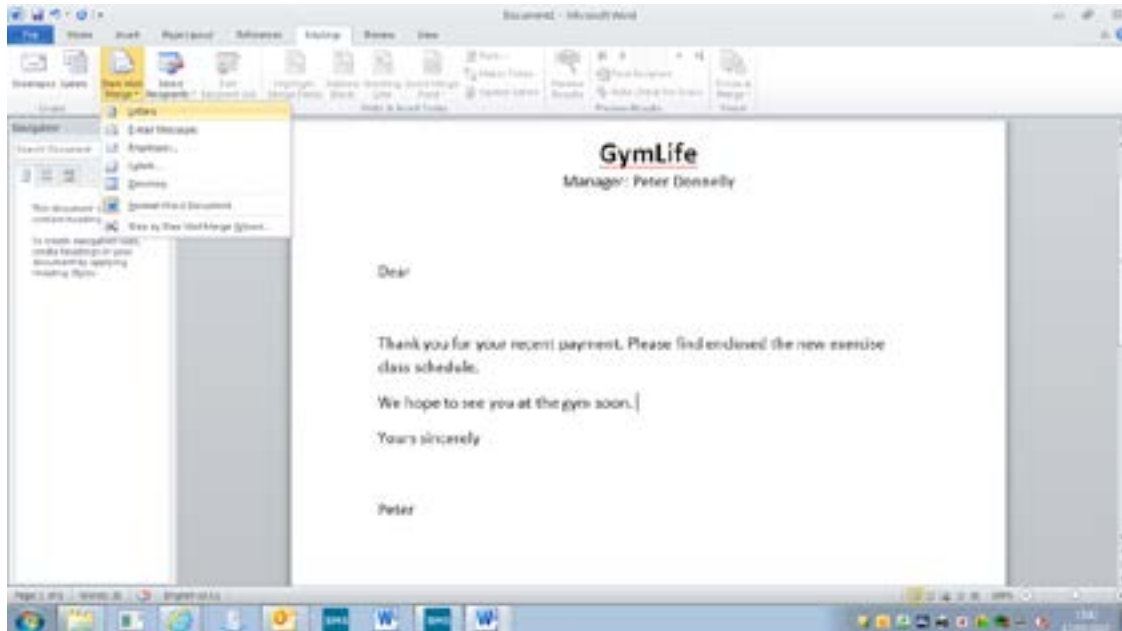The sorting settings allow the user to add Totals to the footer.

This will produce a report as shown below. Note the totals for each type of class are now showing.
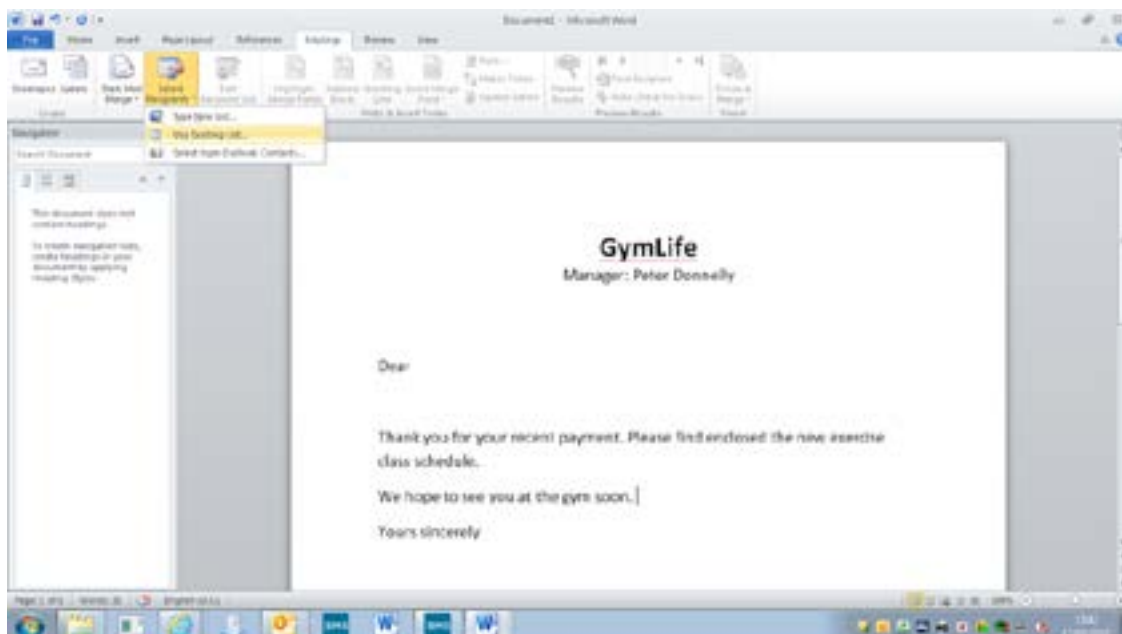
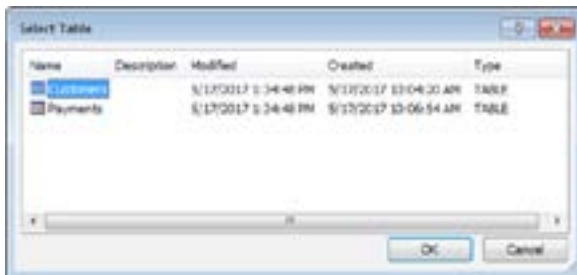## Mail merging using a database

Users can create a document and link it to a database to produce personalised letters.
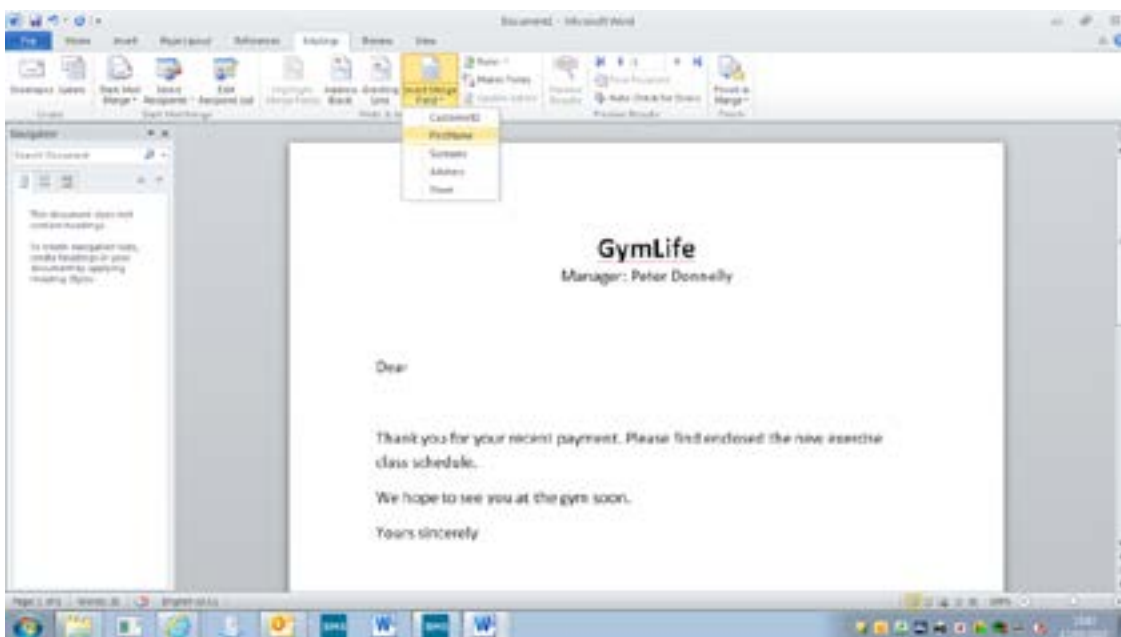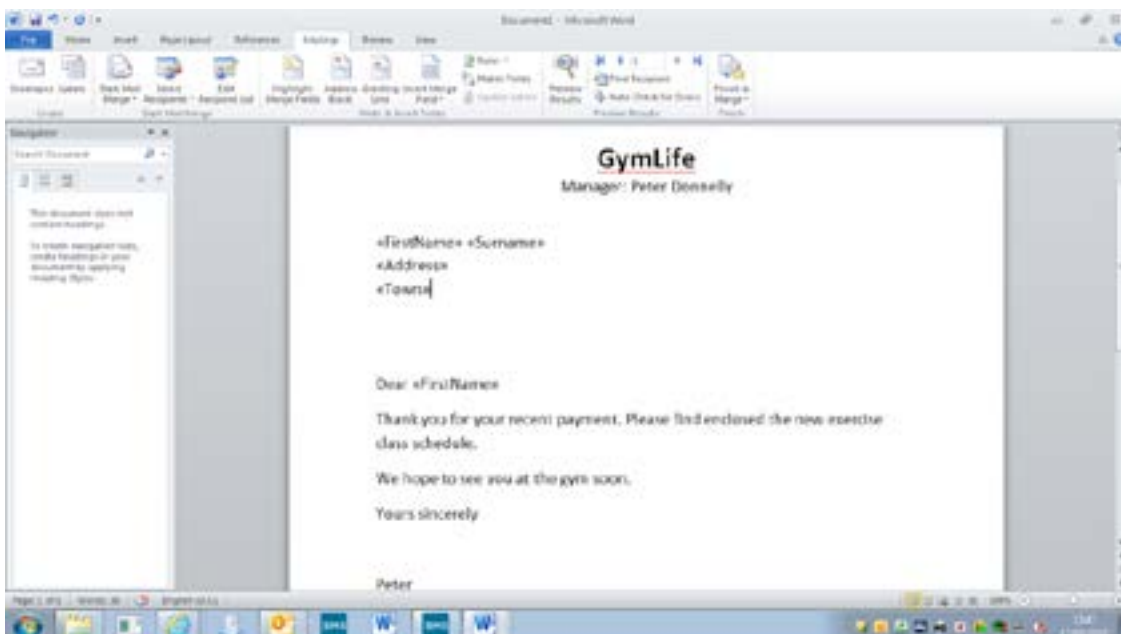

Select the Use Existing List option.

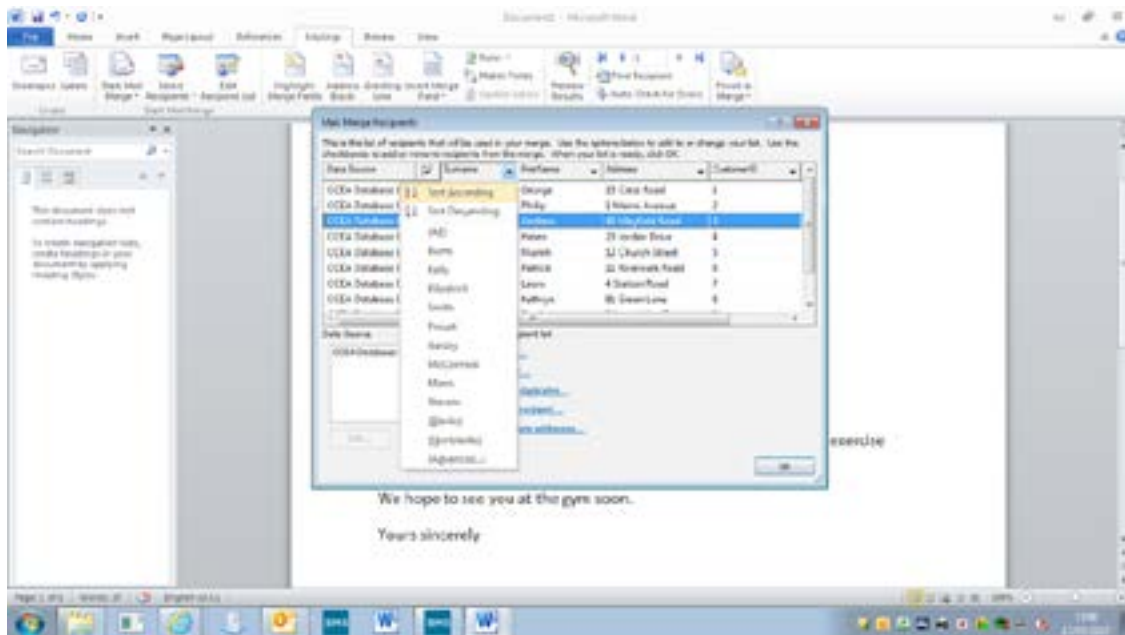The tables and queries available in the database are shown for the user to select.

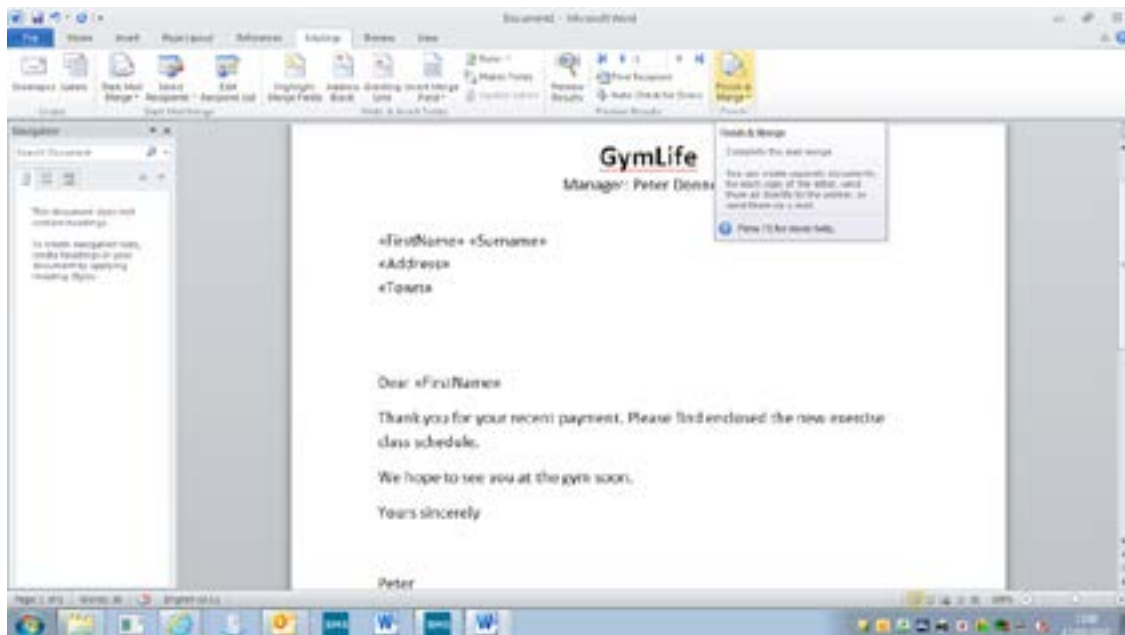Each field in the selected table can be inserted in the document.

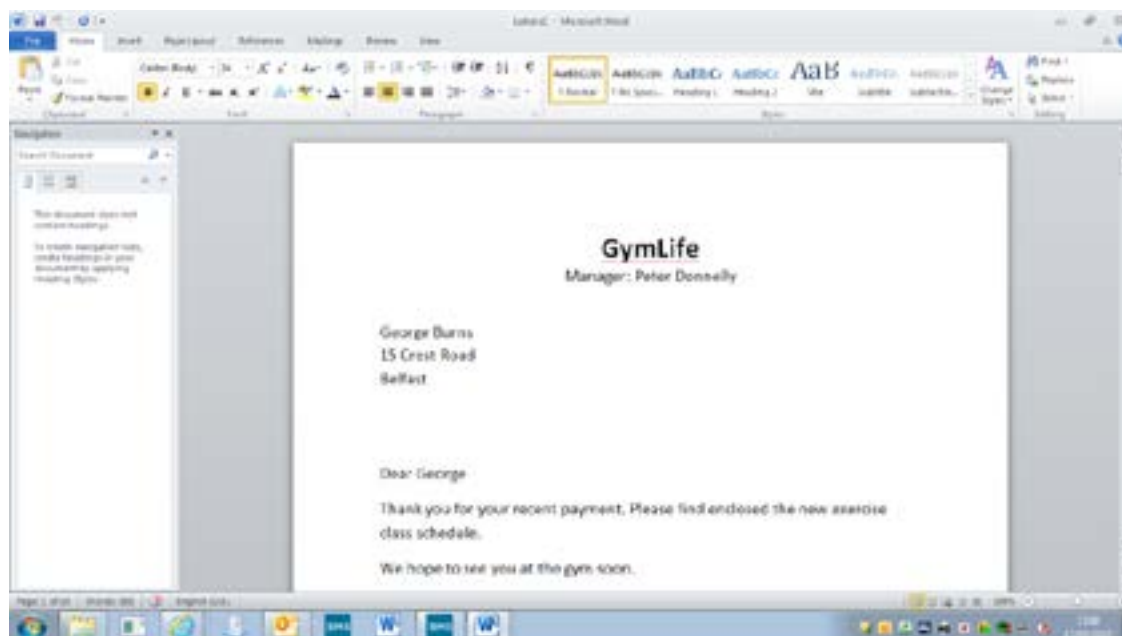The merge fields are shown to allow the user to rearrange this as needed.

To sequence the recipients, the user can select Edit Recipients and sort or filter by each field.

The user can merge all the data with the letter by selecting Finish & Merge.

Each finished letter contains the relevant data from the database,
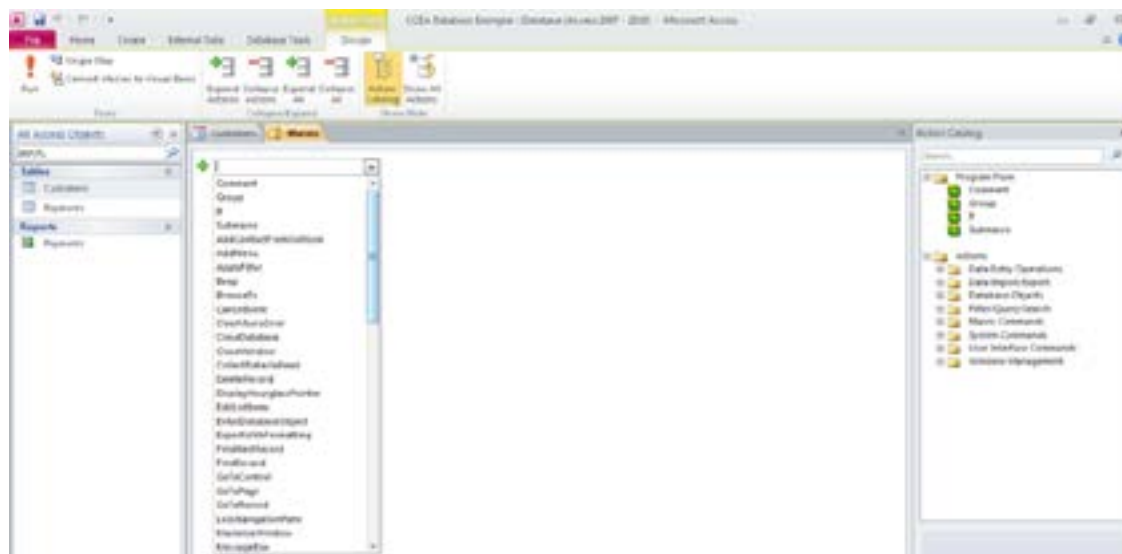

Macros

A macro is a small program which can be written to automate a task. These are usually associated with a button and can be run by an end user without them needing to know how the macro was created, for example, a macro could be created to open a form or related table.

There is a built-in action catalogue within the software to help create the macros.

Data redundancy and data integrity

Data redundancy is when there is unnecessary duplication of data within a database. This may happen if there are records within a database which repeat the same data.

The problem with data redundancy is that if a change needs to be made in some data which exists in more than one record, then every instance of that data needs to be updated. Additionally, redundant data wastes space and in large databases, could slow the processing time needed for running queries. Redundant data can be reduced by eliminating data which is repeated and putting it in a separate table. When data in different tables is related, changes can be made in one location.

As more data is added to a database, the likelihood of an error or inconsistency increases. Users need to be able to rely on the accuracy of data in order to make use of it. The accuracy and correctness of data is called data integrity. As data redundancy is reduced, data integrity is increased.