University of **Reading**

Microsoft Access 2013™
An Intermediate Guide (Level 2)

Contents

Introduction

This document is a further guide to Microsoft Access 2010. For an introduction to Access see *Microsoft Access 2013 - An Essential Guide*.

1. Open the **Start** menu and choose **All Programs** then **Microsoft Office 2013** and **Access 2013**
2. Click on **Open Other Files** (or simply press **<Ctrl o>**)
3. Click on **Computer** then on **[Browse]**

4. Select **My Computer** then *double click* on **Data (D:)** and *again* on the **Training** folder to open it
5. Click on **example2013.accdb** from the list which appears and press **<Enter>**

*Note: For those using these notes on a computer not run by IT Services, the example file can be downloaded from the link provided at step **5** above. Users are welcome to take a copy of the example file if they want to practice. Note that the data does not refer to real people.*

Speeding up Table Creation

In the *Essential Guide*, you were shown how to create a new table using *Design View*. Here, let's see the advantages and disadvantages of the other methods of table creation.

Using a Table Template

Microsoft Access has a wide range of sample databases (both for business and personal applications) which can be invoked from a *Template*. When you first load up Access, you are asked whether you want to use one of these templates to create your database for you. Some of these are very good but you do lose control of your database. You can, however, make use of them then tailor the database to suit your own requirements.

Using Datasheet View

New tables can be created in *Datasheet View*; this gives you a skeleton table, with the fields labelled Field1, Field2 etc. As you type data into the fields, Access automatically sets up each field's data type and properties for you. Try setting up a new table:

1. Move to the **CREATE** tab and click on **[Table]** on the far left
2. Click on the *arrow* to the right of where it says *Click to Add* and choose the *Data Type* (here, **Short Text**)
3. Rename the field `Surname` - press **<Enter>**
4. Repeat steps **2** and **3** for the other fields `FirstName` (*Short Text),* `Gender` *(Yes/No),* `Birthday` *(Date & Time)* and `Weight` *(Number)*

You can also set up some of the properties before typing in any information (though you can also do this later, in *Design View*).

5. Click in the third column (*FirstName* field) and reset the **[Field Size]** to `20` – press **<Enter>**
6. Click on the **[Name & Caption]** button and set a *Caption* of `First Name`
7. Repeat step **5** for the *Surname* field

Sadly, you can't set up the remaining fields exactly as you might want them – you will do this later in *Design View*

8. Now type in the first record (press **<Tab>** to move across the fields):
   <Tab> `Dixon` **<Tab>** `Paul` **<Tab>** `Male` **<Tab>** `3 May` **<Tab>** `75` **<Tab>**

Access automatically assigns data types and properties to the fields (in a similar way to Excel). You could now go on and type in more records but, when using *Datasheet View* to create a table, it's always a good idea first to check the table design has been set up as you want it.

9. Click on the **[View]** button to move to *Design View* – save the table as `Table1` - press **<Enter>**
10. Move down through the fields - note how each has been set up

Although everything works, there are several improvements which could be made. In particular, the text fields are set to store 255 characters and the weight is stored as a long integer (for numbers >32767). Also, Access has automatically set up an ID field, which you may not want.

11. Starting with the *ID* field, click on the **[Primary Key]** button and then **[Delete Rows]** – answer **[Yes]**

12. Drag through *Surname* and *FirstName* fields then click on **[Primary Key]**– a key can be set on 2 fields
13. Move down to the *Gender* field and set the *Format* property to `"Male";"Female"`
14. Set a *Default Value* of `–1` (for *Male*) and, on the *Lookup* tab, change the *Display Control* to a **Combo Box**
15. Set the *Row Source Type* to a **Value List** and the *Row Source* to `0, Female, –1, Male`
16. Set the *Column Count* to `2` and the *Column Widths* to `0, 10`
17. For the *Birthday* field and change the *Format* to `d mmmm` (to display just the day and month)
18. Finally, for the *Weight* field, change the *Field Size* property to **Byte**
19. Click on the **[View]** button for *Datasheet View* - press **<Enter>** for **[Yes]** to save the changes to the design

Getting a non-standard format for the *Gender* field wasn't easy. Remember that a *Yes/No* field is actually stored as **0** for *Female* and **-1** for *Male*!

20. Close the table by clicking on its **[Close Window]** button then **<Delete>** it as you won't be needing it

Input Masks

An *Input Mask* can be set on a field whereby only certain characters are permitted in a particular part of the field. For example a userid here at the University must start with 3 letters (indicating faculty, department and status) followed by 2 numbers (year of entry) followed by either 3 more letters or 2 and a number (for the user's initials). Input masks can also be used to add extra characters automatically, for example a currency symbol, or to translate a lower case letter to upper case (or vice-versa). To learn more about input masks

1. *Right click* on the **students** table and choose **Design View**
2. Move down to the *Surname* field and click in the *Input Mask* property
3. Press **<F1>** for *Help* then scroll down to see the effect of the special characters

A **>** sign translates any following letter into UPPER CASE; **<** makes following letters lower case. Characters are specified by one of several codes: **L** stands for a required letter; **0** stands for a required number; **A** stands for a required letter *or* number. Optional letters are denoted by **l**; numbers by **9**; letters or numbers by **a**. A **** indicates that the following character should be displayed as it is. For example, a British Post Code could be entered using an input mask of **>LA09\ 0LL**, a 4-digit phone extension by **\x0000**.

Set an input mask on the *Surname* field to translate any data entered into a *Capitalised* name.

4. For the *Surname* field, set up an *Input Mask* of `>A<aaaaaaaaaaaaaaaaaaaaaaaa`
5. Click on **[View]** to move to *Datasheet View* - save the changes to the table design
6. Test out the input mask by re-entering the first name (`Brachen`) using lower case - it should automatically be capitalised (try entering the name with CAPS LOCK on too, if you like)
7. Close the **students** table by clicking on the table's **[Close Window]** button

Importing Tables

In the *Essential Guide*, you created a table for the Halls of Residence and then imported extra data into it. Here, you are going to repeat the procedure, but this time by creating the new table directly from the external data file:

1. Move to the **EXTERNAL DATA** tab and, in the *Import* group, click on **[Text File]**
2. Leave the default setting of *Import the source data into a new table in the current database*
3. Click on **[Browse]** and change the current directory to **Training** (on **User (D:)**)
4. Select the file **halls2013.txt** then press **<Enter>** to **[Open]** it then click on **[OK]**

(Again, the file can be downloaded from the web by clicking on the hyperlink in step **4**).

The Import Wizard now starts up - to create a new table there are some extra steps:

5. The data is *tab-delimited*, so just press **<Enter>** or click on **[Next >]** for *Delimited*
6. The *First Row Contains Field Names* - click on the box then press **<Enter>** for **[Next >]**

You now have the opportunity to modify the *Field Name* and *Data Type* of each field, and can set up an *Index* if you want. You can also skip a field if you don't want to include it in your table.

7. Set an *Index* of **Yes (No Duplicates)** on the (first) *Name* field

To move to another field, simply click on the column.

8. For the *Rooms* field, change the *Data Type* to **Integer** using the *list arrow* provided
9. For the *Meals* field, change the *Data Type* to **Yes/No** - press **<Enter>** for **[Next >]**
10. *Choose your own primary key* using the *Name* field - press **<Enter>** for **[Next >]**
11. *Import to Table* `Halls2013` - press **<Enter>** for **[Finish]**
12. Press **<Enter>** or click on **[Close]** to end the Import Wizard
13. *Double click* on the new table in the *Objects* list to open it - note that the *Meals* field has values of **-1** (Yes) and **0** (No), which needs to be changed
14. Move to the **HOME** tab then click on the **[View]** button to move to *Design View*
15. Move down to the *Meals* field and reset the **Format** *Field Property* to **Yes/No**
16. Click on **[View]** to move back to *Datasheet View*, saving the changes to the design of the table
17. Next, move to the **CREATE** tab and click on **[Form]** – a new form appears
18. Close the form by clicking on its **[Close Window]** button – save the form as `Halls2013`
19. Finally, close the *Halls2013* table by similarly clicking on its **[Close Window]** button

Tables (queries, forms, reports etc) can also be transferred directly from one database to another - or you can link two or more databases together. The instructions below import copies of three new tables, including all the data required for the exercises which follow.

1. Move to the **EXTERNAL DATA** tab and, in the *Import* group, click on **[Access]**
2. **[Browse]** for the file **extra.accdb** (in the **Training** folder) then press **<Enter>** to **[Open]** it
3. Click on **[OK]** to *Import tables, queries, forms, reports, macros, and modules into the current database*
4. Finally, click on **[Select All]** then on **[OK]** to import them – press **<Enter>** for **[Close]**

Relationships

Relationships:

Having set up various tables in your database, you need a way to tell Access how the information in the tables relates to each other. You saw how to join two tables together in a query in the *Essential Guide*. You can do a similar thing for the whole database by defining relationships between your tables. This will then automatically draw the join lines when you have more than one table in a query. Further, you can create forms and reports to display information from several tables at the same time.

1. Move to the **DATABASE TOOLS** tab then click on the **[Relationships]** button
2. Next, click on the **[Show Table]** button
3. *Double click* on the **Halls2013**, **Options, students** and **Tutors** tables to **[Add]** them to *Relationships*
4. Press **<Esc>** or click on the window's **[Close]** button to **[Close]** the *Show Table* window
5. Drag down the bottom border to enlarge each table so that you can see all its fields
6. Using *drag and drop*, create a join line linking the *Name* field in the **Halls2013** table to the *Hall* field in the **students** table

7. The *Edit Relationships* window appears - click on **[Create]** to confirm the type of join
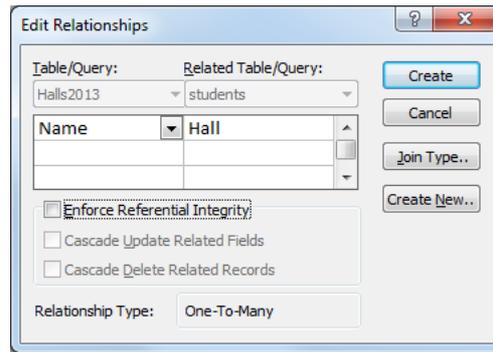
Note: In this window you can modify the *Join Type* (either to select only records where the join field is equal, or to include all records from one of the tables) and can *Enforce Referential Integrity* (eg a student's tutor must be in the Tutors table). Once *Referential Integrity* is turned on you can *Cascade Update/Delete Related Records*. This automatically changes data in a linked table (eg if a tutor leaves and a new member of staff takes his/her place) or deletes records from a database (eg if a customer dies or no longer wishes to use your services).

8. Set up a join line from the **students** table to the **Options** table, linking via the *Option* field
9. Turn on *Enforce Referential Integrity* then click on **[Create]**
10. Repeat step **8** linking the *LastName* in the **Tutors** table to the *Tutor* field in **students**
11. Turn on *Enforce Referential Integrity* and *Cascade Update Related Fields* for this link – click on **[Create]**
12. Drag the tables around so the join links don't cross – eg move the **Options** table below **Halls2013**
13. Close *Relationships* by clicking on the window's **[Close]** button - press **<Enter>** or click on **[Yes]** to save the new design

Once relationships have been set up, various additional features automatically emerge. For example, if you set up a form for one of the new tables then a subform giving a list of appropriate students is added. Try this next for the Halls:

1. *Click* on the **Halls2013** table in the *Objects* list to select it (there's no need to open it)
2. Move to the **CREATE** tab then click on the **[Form]** button in the *Forms* group

Note how, for each hall, a list of students in that hall appears. You can use **<Page Up / Down>** or the record indicator at the bottom to move between halls.

3. **[Close]** the form by clicking on the window's **[Close]** button - save it as **Halls2013**
4. Repeat steps **1** to **3** to create new forms for the **Options** and **Tutors** tables

You can also see related information when viewing a table:

5. *Double click* on the **Halls2013** table in the *Objects* list to open it
6. Click on the **+** sign on the far left of a record to see a list of students in that hall
7. Finally, click on the **-** sign to close the list then **[Close]** the *Halls2013* table

A second additional benefit of relationships is that the links are automatically shown whenever you use more than one table in a query. As an example, regenerate the query for the students' addresses (used for mailing labels in the *Essential Guide*):

1. Move to the **CREATE** tab then click on the **[Query Design]** button
2. **[Add]** the **Halls2013** and **students** tables - press **<Esc>** to **[Close]** the *Show Table* window

Note that the join line is automatically drawn between the two tables.

3. *Double click* on the **FirstName**, **Surname** and **Hall** fields in the **students** table to fill the *Field* in the first three columns
4. *Double click* on **Address1**, **Address2** and **Postcode** in the **Halls2013** table to fill *Field* in columns 4 to 6

5. Click on the **[Run]** button to run the query

You will find that only 236 records (out of the 390) are being displayed - almost half are missing! The reason for this is that there is an inconsistency between the two tables on the linked field. You will see next how to identify such problems.

6. Press **<Ctrl s>** for **[Save]**, saving the query as `Addresses` (don't close it) - press **<Enter>** for **[OK]**

Finding Unmatched Records

There are two ways to identify inconsistencies between data in two or more tables - you can either modify the join line or use a special Query Wizard.

First, try modifying the join line:

1. Click on the **[View]** button to move to *Design View*
2. *Right click* on the *join line* and select **Join Properties** (or use single left click to select it, then *double click* to show the properties)
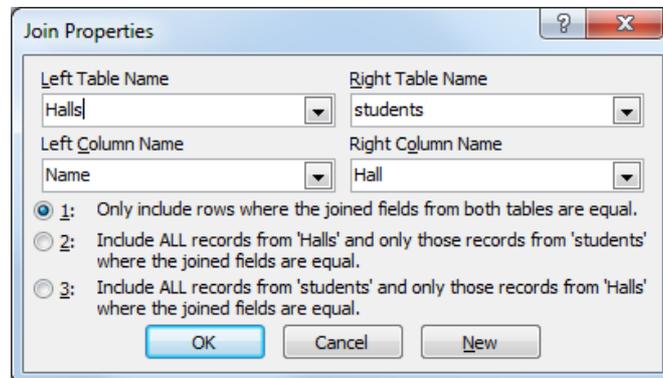
You will see that the current join only selects records from both tables where the fields are equal

3. Change the property to show *ALL* the records in the **students** table (here, option **3**) - press **<Enter>** for **[OK]**
4. Add the **Name** field from the **Halls2013** table to the *Query Design* by *double clicking* on it
5. Click on **[Run]** to run the amended query

You now have all 390 records. Note which have empty fields - those for students living in Wessex, Windsor or Private accommodation. If you remember, you had to type in the Wessex and Windsor records yourself on the Essential course and would have to do so again to complete the table here.

6. Close the query by clicking on the window's **[Close]** button - don't save the changes to the *Query Design* (you only modified it to identify the problem) - click on **[No]**

The Find Unmatched Query Wizard

The alternative way to find unmatched records is to use the special wizard:

1. Move to the **CREATE** tab then click on the **[Query Wizard]** button
2. Choose **Find Unmatched Query Wizard** then press **<Enter>** for **[OK]**

Note: There is also a *Find Duplicates Query Wizard* to identify duplicate records.

3. Choose **students** as the table containing the records you want - press **<Enter>** for **[Next>]**
4. Choose **Halls2013** as the table containing the related records - press **<Enter>** for **[Next>]**
5. Match the fields in the tables by selecting **Hall** in the **students** table and **Name** in the **Halls2013** table (Access has already done this for you) - click on **[<=>]** then on **[Next>]**

6. Move across the **Surname** and **Hall** fields to the query results by *click*ing on them - press **<Enter>** for **[Next>]**

7. Press **<Enter>** for **[Finish]** to end the wizard and run the query

The unmatched records are now displayed - again this shows that students living in Wessex, Windsor or Private accommodation are not properly matched. To view the design of the query:

8. *Right click* on the query's tab and choose **Design View** to move to *Query Design*

Note the notation **Is Null** on the *Criteria* line - this is what you use to identify an empty field.

9. Close the query by clicking on the window's **[Close]** button

Action Queries

In the *Essential Guide* you were introduced to queries. There are however two main sorts of queries - select queries and action queries. What you have seen so far have all been select queries (they select records from tables based on some criteria); action queries, on the other hand, are used to perform one of the following tasks:

- Copy records into a new table - a *Make Table* query
- Delete records from a table - a *Delete* query
- Append records to an existing table - an *Append* query
- Update the values in one or more fields in a table - an *Update* query

A third type of query, a *Crosstab* query, can be used to summarise the data in one or more tables. Let's look at each of these in turn.

Make-Table Queries

A good example of a *Make Table* query on the **students** database would be to archive the records for those students graduating at the end of the year. First you create a select query which identifies them; then you turn it into an action query:

1. Move to the **CREATE** tab then click on the **[Query Design]** button

2.   **[Add]** the **students** table - press **<Esc>** to **[Close]** the *Show Table* window

3. *Double click* on * to set the first *Field* to **students.***

4. *Double click* on **EntryYear** to set the second *Field*

5. For this field, turn off *Show* then for the *Criteria:* type **2012**

Tip: To set this up as a parameter (ie for any year) set the criteria to **[Which Year]**

6. Click on the **[View]** button - you should have 128 records selected (always check your results first)

7. Move back to *Query Design* by clicking on the **[View]** button

8. On the QUERY TOOLS **DESIGN** tab click on the **[Make Table]** button

9. When asked, set a new *Table Name* of **OldStudents** - press **<Enter>** for **[OK]**

10. Click on **[Run]** to view the results

A message now appears, indicating that you can't include a calculated field in this query.

Microsoft Access

⚠ Calculated columns are not allowed in SELECT INTO statements.

OK

This is really annoying as there isn't an easy way of omitting the (calculated) email field. It's much better not to have such fields in a table but to use a query instead. To sort out this problem:

11. Remove **students.*** from the query by selecting the column and pressing **<Delete>**

12. You now have to add all the fields (*except* * and **email**) individually by *double clicking* on them

13. Click on the **[Run]** button - press **<Enter>** for **[Yes]** to verify you want the records in the new table

14. Press **<Ctrl s>** to **[Save]** the query as `MakeTable` (but don't close it)

Note that the new table has been added to the Tables in the *Objects* list.

Delete Queries

The same query can be used as the basis of a *Delete Query* - now that the old students have been copied into a new table, their records can be removed from the table of current students:

1. On the QUERY TOOLS **DESIGN** tab, click on the **[Delete]** button in the *Query Type* group

2. Click on the **[Run]** button - choose **[Yes]** to permanently delete the records

3. Move to the **FILE** tab and choose **Save Object As...**

4. Confirm this by clicking on **[Save As]** and rename the query `DeleteRecords`

5. Close the query by clicking on the window's **[Close]** button

6. *Double click* on the **students** table in the *Objects* list - you should find only 262 records remain

7. Close the table by clicking on the window's **[Close]** button

Warning: A Delete Query can be a very dangerous thing - it's very easy to accidentally delete the wrong records as it runs as soon as it is opened. It is advisable to save it as a Select Query and then, once you are sure the correct records are being selected, turn it into a temporary Delete Query just before you run it.

Append Queries

As an example of an Append Query, let's put the old students back into the **students** table - normally you would append the **OldStudents** table to an accumulative table of **PastStudents**:

1. Move to the **CREATE** tab then click on the **[Query Design]** button

2. **[Add]** the **OldStudents** table - press **<Esc>** to **[Close]** the *Show Table* window

3. *Double click* on * to set the first *Field* to **OldStudents.***

4. In the *Query Type* group click on the **[Append]** button

5. Set the Append To *Table Name:* to **students** - press **<Enter>** or click on **[OK]**

6. Click on **[Run]** then press **<Enter>** for **[Yes]** to complete the query

7. Close the query, using the window's **[Close]** button, saving it as **AppendRecords**

If you like, check the **students** table again has 390 records.

Update Queries

Update queries are often used in businesses, for example to raise wages or prices by a given percentage or to reflect a change in tax rates. Here, let's make use of the **OldStudents** table to update a text field - you're going to add the word *Hall* to each student's hall of residence (where appropriate).

1. Move to the **CREATE** tab then click on the **[Query Design]** button

2. **[Add]** the **OldStudents** table - press **<Esc>** to **[Close]** the *Show Table* window

3. *Double click* on *Hall* to set the first *Field:* to **Hall**

4. In the *Query Type* group, click on **[Update]**

5. Set the new *Update To:* row to `[Hall] & " Hall"` - don't forget the space in `" Hall"`

Note: The square brackets here denote the current field.

6. In the *Criteria:* row type `Not Private`

7. In the *Or:* row type `Not Dunsden`

You can also use the notation <> to signify not equal - students not living in a hall do not need the extra word added. Before you run the update, it's always good idea to check you have set the criteria correctly:

8. Click on the **[View]** button and note the results

As you can see, the query is not correct – it includes all the students! If you think about the logic of the criteria, a student living in Private accommodation would satisfy the criterion *Not Dunsden*, while another in Dunsden would similarly be covered by *Not Private*. In this case you need an AND logical test, not an OR:

9. Click on the **[View]** button again to return to *Design View*

10. Change the *Criteria:* to read `NOT "Private" AND NOT "Dunsden"`

11. Click on **[View]** to check the criteria is now correct (and again to return to *Design View*)

12. Now click on **[Run]** - press **<Enter>** for **[Yes]** to update 83 of the 128 records

13. Close the query, saving it as `UpdateRecords`

14. *Double click* on the **OldStudents** table in the *Objects* list to open it

You will find that the **OldStudents** table has been updated, but not always successfully. This is because the *Hall* field has a *Field Size* of only 15 characters. You should have increased this to 20 to accommodate the extra letters. Fortunately, it doesn't matter here as you are only learning, but you need to be aware of potential problems such as this as updates may not be easily reversible.

15. Close the **OldStudents** table by clicking on the window's **[Close]** button

Another way of updating data is provided through the join options set up in *Relationships*. In the earlier section on this you set up *Cascade Update Related Fields* on the link between a student's *Tutor* and the *LastName* field in the Tutors table. Try out this next exercise to see the effect:

1. *Double click* on the **Tutors** table in the *Objects* list to open it

2. Change the *LastName* of one of the tutors to **your_own_name** (or type **xxxxx** if your name is already a tutor)

3. Close the Tutors table by clicking on the window's **[Close]** button

4. Now open the **students** table

You should find that several students have *your name* showing as their tutor instead of the original name - the related records have been automatically updated.

5. End by closing the *students* table - click on the window's **[Close]** button

Crosstab Queries

Crosstab queries are used to summarise data in tables. As an example, let's count up each tutor's number of male and female students:

1. Move to the **CREATE** tab then click on the **[Query Wizard]** button

2. Choose the **Crosstab Query Wizard** - press **<Enter>** for **[OK]**

3. Base your query on the **OldStudents** table - click on **[Next >]**

4. Move **Tutor** from the *Available* to the *Selected Fields* by clicking on **[>]** to set up the *row heading* - click on **[Next >]**

5. Click on **Title** to set up the *column heading* - click on **[Next >]**

6. Summarize each row using **Count** from the list of *Functions* - click on **[Next >]**

Note that you could also find the maximum/minimum values, the sum or the average of any of the available fields.

7. Press **<Enter>** to **[Finish]** the query, accepting the default query name
8. Close the query by clicking on the window's **[Close]** button

Form Design

In this next section you are going to learn more about the design of forms and, in particular, how to use some of the controls provided.

1. *Double click* on the **Options** form in the *Objects* list to **[Open]** it

Several improvements could be made to the form produced by *AutoForm*. Some of the boxes (eg *option*) are too large; some fields (eg *tutor* and *day*) could be filled in from a list; some fields (eg *term* and *assessed*) could appear as check boxes. In order to have these you must change the form design manually.

2. *Right click* on the form background (or the form's tab) and choose **Design View**
3. Try altering the width of the **option** *Text Box* (the box on the right) – click to select it then move the mouse cursor to the far right border, hold down the mouse button, and drag the border to the left

You'll find that you are changing the size of all the boxes – by default, Access links all the controls in a pre-defined tabular format. To unlink them:

4. First, press **<Ctrl z>** to **[Undo]** the resizing
5. Next click on the *table* indicator (just above the option label)
6. Move to the FORM DESIGN TOOLS **ARRANGE** tab and click on the **[Remove Layout]** button
7. Now, click on the form background (to release the selection) then on the **option** *Text Box* again
8. Move the mouse over the right middle *handle* and drag this left to shrink the box to one unit wide
9. You could repeat step **8** to resize some of the other boxes, if you wanted to

List and Combo Boxes

Combo Box: List Box:

Next you are going to replace the existing *Tutor* box with a special type of list box, called a combo box. Whereas a list box displays all the possible values on several rows, a combo box has a *list arrow* attached to a single row.

1. Click on the **tutor** *Text Box* (on the right) to select it then press **<Delete>** to get rid of it
2. Move to the FORM DESIGN TOOLS **DESIGN** tab then click on the **[Combo Box]** tool in the *Controls* group
3. Move the mouse onto the form to the location of the original box and click once

A *Combo Box Wizard* will start automatically.

4. Press **<Enter>** or click on **[Next >]** for *I want the combo box to look up the values in a table or query.*
5. Select the **Tutors** table - press **<Enter>** or click on **[Next >]**
6. Set **LastName** as the *Selected Field* by clicking on **[>]** - click on **[Next >]** to move on
7. Set the *Sort order* to **LastName** - click on **[Next >]**
8. Adjust the width of the column if necessary (*double click* on the column heading right border) - press **<Enter>** or click on **[Next >]**
9. *Store the value* in the **tutor** field using the *list arrow* - press **<Enter>** or click on **[Next >]**
10. Type `tutor` as the label to appear on the form - press **<Enter>** or click on **[Finish]**

10

Don't worry about lining up the boxes properly - you will do that later.

Combo (and List) Box lists can either be looked up in a table (as above) or typed in manually. For the days of the week:

11. Click on the **day** *Text Box* (on the right) to select it then press **<Delete>** to get rid of it

12. Again, click on the **[Combo Box]** tool in the *Controls* group on the *Ribbon*

13. Move the mouse onto the form to the location of the original box and click once

14. Select *I will type in the values that I want.* then press **<Enter>** or click on **[Next >]**

You now have to type the values you want into the column provided:

15. Click in the first cell and type `Monday` then press **<Tab>** or **<down arrow>** to move to the second row

16. Continue typing `Tuesday`, `Wednesday`, `Thursday`, `Friday` into the rows (*double click* on the column border to fit) then press **<Enter>** or click on **[Next >]**

17. *Store the value* in the **day** field using the *list arrow* - press **<Enter>** or click on **[Next >]**

18. Type `day` as the label you want to appear on the form - press **<Enter>** or click on **[Finish]**

Check Boxes, Toggle Buttons and Option Buttons

Check Box: ✔ Toggle Button: ▢ Option Button: ◉ Property Sheet: ▤

Access provides you with three very similar objects which can be placed on a form where you want to be able to select from a very limited number of alternative values, namely *check boxes*, *toggle buttons* and *option buttons*. All three perform in much the same way but their appearance differs. For a *Yes/No* data type, for example, you can have a single button or box which can be turned *on* (for **Yes**) or *off* (for **No**). Here, replace the existing *Assessed* box by a check box:

1. Click on the **assessed** *Text Box* (on the right) to select it then press **<Delete>** to get rid of it

2. Click on the **[Check Box]** tool in the *Controls* group on the *Ribbon*

3. Move the mouse to the position of the original box and click once

Sadly, there is no wizard to help you create the check box - you have to do the work yourself:

4. Click on the **[Property Sheet]** button in the *Tools* group on the far right of the *Ribbon*

You have yet to meet *Properties*, which at first sight seem very complicated but which in fact aren't that bad. Access allows you to set up all sorts of things here and there isn't time to cover everything in detail, so try changing just a couple of settings:

5. Click on the *Data* tab to view some of the properties

6. Change the *Control Source* to **assessed** by picking from the list provided by the *list arrow* - this sets up the field in which the data is stored

7. Set a *Default Value* of `Yes`

8. Click on the *All* tab to view all the properties

9. Scroll down to get an idea of what else can be set then click on the pane's **[Close]** button

To reposition and rename the default label:

10. Click on the label (**Check 44**) to select it

11. Move the mouse to its top left handle

12. Hold down the mouse button and drag the label to line up with the other labels on the left

13. Click inside the box then **<Delete>** the existing name and type in `assessed:` instead

14. Press **<Enter>** when you have finished typing

Option Groups

Option Group: ⌐XYZ⌐

When you have more than two alternatives, you cannot use a single button or box but instead have to create an *Option Group*. Try this for the *Term* field:

1. Click on the **term** *Text Box* (on the right) to select it then press **<Delete>** to get rid of it
2. Click on the **[Option Group]** tool in the *Controls* group on the *Ribbon*
3. Move the mouse onto the form into the space at the top to the right of *option/tutor* and click once

A Wizard is provided to help you. First you need to supply labels for the various options:

4. Type `Autumn` as the first *Label Name*, press **<Tab>** or **<down arrow>** and type `Spring` (**<Tab>**) then `Summer` - press **<Enter>** or click on **[Next>]**
5. Set up the default value, if you want (eg **Autumn**) - press **<Enter>** or click on **[Next>]**
6. There's no need to change the values here - press **<Enter>** or click on **[Next>]**
7. *Store the values in* the **term** field using the *list arrow* - press **<Enter>** or click on **[Next>]**
8. Choose which sort of box/button you require (eg **Toggle Buttons**) - click on **[Next>]**
9. Type `term` as the caption for the option group - press **<Enter>** or click on **[Finish]**

You can now move the component parts of the option button around, if you want. For example, you could line the label up with the other labels on the left hand side of the form, or you could have the toggle buttons across the form in a row rather than a column. You may also want to realign all the objects and make them evenly spaced:

10. Click on the **Autumn** *toggle button* and drag it to the space to the right of the *assessed* check box
11. Repeat step **10** to place **Spring** and **Summer** to the right of *Autumn*
12. Hold down **<Shift>** and click on the **Spring** and **Autumn** buttons – all three should now be selected
13. Move to the FORMAT DESIGN TOOLS **ARRANGE** tab and, click on **[Align]** in the *Size & Ordering* group and choose **Top**
14. Next, click on the **[Size/Space]** button in the *Size & Ordering* group and choose **Equal Horizontal** – your buttons should now be properly aligned and spaced
15. Click on the border which surrounded the group and resize it to the new position using the handles
16. Finally, click on the **term** *Label* and, using the handle, drag it to its original position between the *time* and *assessed* labels

Another way to select the controls on a form is to drag through them:

17. Position the mouse cursor to the left of the *Table.students* sub-form then hold down the mouse button and drag the rectangle which appears so that it also touches the *assessed* control
18. Let go of the mouse (both controls are selected) then use **<down_arrow>** to move the controls down
19. Repeat steps **17** and **18** to select the *term* toggle buttons and move them to the left
20. Now, drag the mouse down the left-hand ruler to select all the controls except the sub-form
21. With all the controls selected, click on **[Align]** and choose **To Grid**
22. Next, click on **[Size/Shape]** and choose **Equal Vertical**
23. Click in the background to release the selection then drag through the *Label* controls (the ones on the left) to select just them and then click on **[Align]** and choose **Right**
24. Click on the **[View]** button to see the redesigned form
25. Press **<Tab>** to move through the form and watch what happens

Note that it tabs into the subform. You'll see how to stop this in the next section.

Tab Order

You will find that the order of data entry has changed as you **<Tab>** through the fields. Whenever you replace an existing box with a new one, the new one is added to the end of the list. You can set up the *Tab Order* for a particular box (it's one of its *Properties*) or you can set it up for the whole form:

1. *Right click* on the form background and choose **Design View**
2. *Right click* anywhere in the *Detail* background and select **Tab Order...** (or click on the **[Tab Order]** button)

You can now set up the order to whatever you want by dragging the fields up and down the list. More simply, if you want the order to move from the top of the form to the bottom, simply:

3. Click on **Auto Order** to automatically reset it then click on **[OK]** to close the *Tab Order* window

To stop tab moving into the subform:

4. Click on the subform (*Child21*) then on the **[Property Sheet]** button
5. Near the bottom of the pane, set **Tab Stop** to **No** then close the pane
6. Click on the **[View]** button and **<Tab>** through your data again - it should now work properly
7. Close the form using its **[Close]** button - save the changes to the design

Setting Controls in Tables

In the above example, changes to the controls were made on a form, but you can also do so in a table:

1. *Right click* on **Options** in the *Tables* list and choose **Design View**
2. Move down to the **tutor** field then click on the *Lookup* tab in the *Field Properties*
3. Change the *Display Control* to a **Combo Box**
4. Change the *Row Source* to the **Tutors** table
5. Repeat steps **2** and **3** on the **day** field, setting the *Row Source Type* to a **Value list**
6. For the *Row Source* type in `Mon, Tues, Wed, Thur, Fri`
7. Press **<Ctrl s>** to save the changes to the design of the table then click on the **[View]** button to move to *Datasheet View* - note that you now have combo boxes for the *tutor* and *day* fields
8. Next, move to the **CREATE** tab and click on **[Form]**
9. Note how combo boxes appear automatically on the form then **[Close]** it - there's no need to save it
10. End by closing the *Options* table

Though the combo boxes do work in the table itself, it's always better to use a form for data entry.

Switchboards

Image: **Unbound Object:** **Bound Object:**

There's a special type of form, called a *Switchboard*, which you can set up such that anybody can use your database even if they know nothing about Access. A switchboard is essentially a blank form covered by buttons which open forms, run queries or produce reports. All the user has to do is simply click on the buttons provided.

1. Move to the **CREATE** tab and click on the **[Form Design]** button

You are now presented with a blank form, which you will have to design from scratch yourself.

2. Drag the *Detail* borders out to almost fill the whole screen
3. *Right click* anywhere on the *Detail* and select a **Fill/Back Color**

4. Click on **[Label]** in the *Controls* group then click on the form where you would like a title to appear
5. Type in a title for your form (eg `Department Student Records`) then press **<Enter>**
6. Change the **[Font]**, **[Font Size]** and **[Font/Fill Colour]** to whatever you require
7. Finally, *right click* on the title and choose **Size** then **To Fit**

If you would like a picture as part of the background:

8. Click on the **[Image]** control on the FORM DESIGN TOOLS **DESIGN** tab

Note: An *Image* control is normally used for adding a picture to a form. An *Object Frame* is mainly used for adding other objects, such an Excel spreadsheet or Word document, but it can be used for a picture. *Unbound Objects* are not linked to any data held in the tables of the database. If you want to include a picture on a form which is held in a table (eg a student's photograph) then you use a *Bound Object Frame*.

9. Move the mouse into the *Detail* where you would like the picture to appear then hold down the mouse button and draw out a rectangle to the size required
10. You are now asked to *Insert a Picture* - choose your own, if you have a suitable file, or use one from the *Sample Pictures* folder (in *My Documents*) – choose it then press **<Enter>** for **[OK]**
11. Resize the picture, if necessary, using the handles provided
12. Move the picture to exactly where you would like it on the form either using the *arrow keys* or by holding down the mouse button inside the frame and dragging it to its new position

Command Buttons

Command Button: ⬚XXXX

To add command buttons to the switchboard:

1. Click on the **[Button]** button in the *Controls* group on the FORM DESIGN TOOLS **DESIGN** tab
2. Move the mouse cursor to where you would like the button to appear on the *Switchboard* and click once - a Wizard starts up to help you set up the necessary instructions:
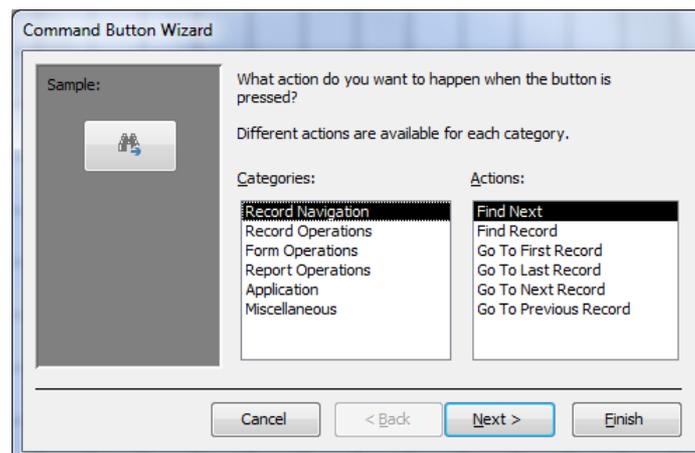
Try creating some buttons to open your forms:

3. In *Categories:* choose **Form Operations** and in *Actions:* select **Open Form** - press **<Enter>** for **[Next >]**
4. Select **students** from the available forms - press **<Enter>** for **[Next >]**
5. Press **<Enter>** for **[Next >]** to *Open the form and show all the records.*
6. Choose *Text:* for your button but modify it to read `Students` - press **<Enter>** for **[Next >]**

7. Name the button `OpenStudentForm` - press **<Enter>** for **[Finish]**
8. Repeat steps **1** to **7** but this time for opening the **Options** form

Next, add a command button to run a query:

9. Repeat steps **1** and **2**
10. In *Categories:* choose **Miscellaneous** and in *Actions:* select **Run Query** - press **<Enter>** for **[Next >]**
11. Select **Addresses** from the available queries - press **<Enter>** for **[Next >]**
12. Choose *Text:* for your button but modify it to read `Addresses` - press **<Enter>** for **[Next >]**
13. Name the button `RunAddressesQuery` - press **<Enter>** for **[Finish]**

You also need a button to close the *Switchboard* and **Quit** Access:

14. Repeat steps **1** and **2**, positioning the button in the bottom right area of the form
15. In *Categories:* choose **Application** and in *Actions:* select **Quit Application** - press **<Enter>** for **[Next >]**
16. Keep your button as a *Picture* (the **Stop** sign is fine) - press **<Enter>** for **[Next >]**
17. Name the button `ExitDatabase` - press **<Enter>** for **[Finish]**

Finally, try using the Switchboard:

18. *Right click* outside the *background* area, and choose **Form View** (or use **[View]** on the **Home** tab)
19. Try out the various buttons (except **Stop**) to see what they do

You will soon realise that you need to add corresponding command buttons to **Close** your forms (instead of having to click on the window's **[Close]** button).

20. Click on your **Students** button then on **[View]** to switch to *Design View*
21. Open up the *Form Footer* by dragging down the bottom line – you may want to colour the background here
22. Click on the **[Button]** button then click in the *Footer* where you would like the control to appear
23. In *Categories:* choose **Form Operations** and in *Actions:* select **Close Form** - press **<Enter>** for **[Next >]**
24. Amend the *Text:* to read **Close** - press **<Enter>** for **[Next >]**
25. Name the new button `CloseStudentsForm` - press **<Enter>** for **[Finish]**
26. Repeat step **22** but this time choose **Record Operations** and note what's available
27. Under *Actions:* select **Print Record** - press **<Enter>** for **[Next >]**
28. Keep the *Text:* as `Print Record` - press **<Enter>** for **[Next >]**
29. Name the button `PrintForm` - press **<Enter>** for **[Finish]**
30. Click on the **[View]** button to see the amended layout then try out your new **[Close]** button - save the changes to the design of the form when asked
31. Press **<Ctrl s>** to save your changes – call the form `Switchboard`

Text and Combo Box Buttons

As an alternative to command buttons on the *Switchboard*, you can provide boxes (or combo boxes) for users to fill in (or select from). Once the user has provided this information, it can be passed to a query which runs automatically. Try this next:

1. *Right click* in the background of the *Switchboard* and choose **Design View**
2. Next, click on the **[Text Box]** button in the *Controls* group then on the *Switchboard* where you want the box to appear

A *Text Box* and *Label* appears – note that the former is *Unbound*.

3. Click on the *Label* on the left and replace the current text with `Student Name`
4. Now move to the **Create** tab and click on **[Query Design]**

5. **[Add]** the **students** table then press **<Esc>** to **[Close]** the *Show Table* dialog box

6. *Double click* on the * to set the first field in the query to **students.***

7. *Double click* on **Surname** to set the second field in the query to **Surname** and turn off **Show**

8. Move down to the **Criteria:** in the second column then click on **[Builder]** in the *Query Setup* group

9. *Double click* on **example2013.accdb** then on **Forms** then **Loaded Forms** and select **Switchboard**

10. Finally, *double click* on **Text6** to set up the criteria **Forms![Switchboard]![Text6]** – then click on **[OK]**

Note: there should only be the one *Text* box but it may not be called *Text6* on your switchboard.

11. **[Close]** the query, saving it as `LookupStudent`

12. Select the new query in the *Objects* list then move to the **CREATE** tab and click on **[Form Wizard]**

13. Display all the fields and choose a **Justified** layout

14. **[Close]** the form, saving it as `LookupStudent`

You will need a macro to open this form – as you'll see later. Next, try creating a combo box:

15. Move to the **DESIGN** tab and click on the **[Combo Box]** button in the *Controls* group

16. Now click on the *Switchboard* where you want the box to appear – the *Wizard* starts up

17. Run through the wizard, as earlier in the course, picking up the values from the **Halls2013** table and using the **Name** field (in *Ascending* order) – as a final label for the button type `Which Hall?`

18. Now create a new query, as in steps **4** to **10** above, based on the **Halls2013** table with **Name** as the second field and set the *Criteria:* to **Forms![Switchboard]![Combo8]** (again, it might not be *Combo8*)

19. Repeat steps **11** to **14** (, saving the query and form as `LookupHall`

Tip: Another useful control on a *Switchboard* is a *Tab Control*. This provides you with a set of tabs, which you can use to group particular controls together (eg a different tab for first, second and final year students).

Macros

A macro holds a series of instructions (commands) such that all the instructions can be carried out simply by running the one macro. Once a macro has been defined it can be assigned to a button on a form so that the user just clicks on that button to carry out the instructions held in the macro. Macros are not covered in detail in this course but, to demonstrate what they are and how they work, you are going to create a couple of simple examples.

The command buttons you just created on the *Switchboard* could have been made by writing your own macros. Indeed, if you want slightly more sophisticated buttons, you will need to use a macro anyway. Let's create a new macro to open the **Tutors** form:

1. Move to the **CREATE** tab and click on the **[Macro]** button on the right – the following screen appears:
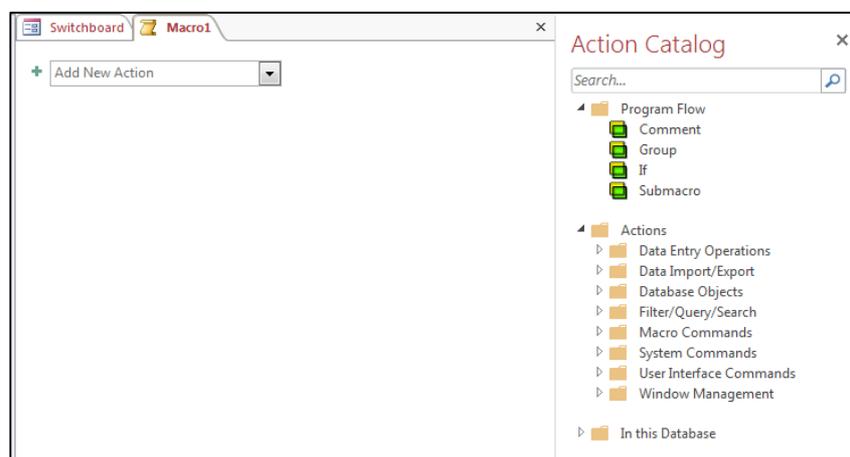
2. Click on the **[Add New Action]** button to see the list of available actions

3. Chose **MessageBox** from the list

4. Type a *Message* saying `You are about to look at the Tutor's details`

5. Set the *Type* to **Warning!** and add a *Title* of `BEWARE`

6. Click on the **[Add New Action]** button again and choose **OpenForm**

7. Set the *Form Name* to **Tutors**

8. Set the *Data Mode* to **Read Only** - this prevents anyone accidentally changing the data

9. Close the macro by clicking on the window's **[Close]** button - save it as **OpenTutorsForm**

Now you need to add the macro to your Switchboard:

10. Click on the **[Button]** button on the FORM DESIGN TOOLS **DESIGN** tab then click on the *Switchboard* where you would like the button to appear

11. Under *Categories:* choose **Miscellaneous** and under *Actions:* select **Run Macro** - press **<Enter>** for **[Next >]**

12. Select **OpenTutorsForm** as the macro to be run - press **<Enter>** for **[Next >]**

13. Choose *Text:* for your button but modify it to read `Tutors` - press **<Enter>** for **[Next >]**

14. Name the button `OpenTutorsForm` - press **<Enter>** for **[Finish]**

15. Click on the **[View]** button and try out the new button - note that you can't change the data

16. Add a **Close** button, as before, then **[Close]** the *Tutors* form - save the changes to the design

Next, set up macros to open the *LookupStudent* and *LookupHall* forms

1. Move to the **CREATE** tab and click on the **[Macro]** button

2. Click on **[Add New Action]** then choose **Open Form** and set the *Form Name* to **LookupStudent**

3. Set the *Data Mode* to **Read Only** then **[Close]** the macro - save it as `OpenLookupStudent`

4. Repeat steps **1** to **3** for the **LookupHall** form, saving the macro as `OpenLookupHall`

To activate the macros:

5. *Right click* on the switchboard background and choose **Design View**

6. *Right click* on the *Unbound* **Name of Student** text box and choose **Properties**

7. Click on the *Event* tab and set **After Update** to **OpenLookupStudent** using the arrow provided

8. Next click on the *Unbound* **Which Hall?** combo box and set **On Change** to **OpenLookupHall**

9. **[Close]** the *Property Sheet* task pane then press **<Ctrl s>** to **[Save]** the changes to the *Switchboard*

10. Click on the **[View]** button to move to *Form View* and try out the new controls

11. Type `Smith` for the student name and press **<Enter>** then try out the hall combo box

Note: you'll need to add **[Close]** buttons to the forms to make them easier to use.

Autoexec

To finish, you are going to create a special macro called *Autoexec* which is run automatically whenever the database is opened:

1. Move to the **CREATE** tab and click on **[Macro]** for a new macro

2. Click on the **[Add New Action]** button and choose **OpenForm**

3. Set the *Form Name* to **Switchboard**

4. Click on the **[Add New Action]** button again and set the action to **Maximize Window**

5. Close the *Macro Window* by clicking on the window's **[Close]** button

6. Press **<Enter>** for **[Yes]** to save the macro; call it `Autoexec`

Now test out the macro:

7. Move to the **FILE** tab and choose **Close Database**
8. Now click on **Recent** and select it from the list of *Recent Files*

You should find that the Switchboard is automatically displayed. If you wanted to hide the *Navigation Pane* and tabs on the *Ribbon*, you can do so via **Options** on the **FILE** tab. Go to **Current Database** and scroll down to *Navigation* (turn off **DisplayNavigation Pane**) and *Ribbon and Toolbar Options* (here, turn off **Allow Full Menus**). Note that a cut-down version of the **HOME** tab will still be displayed.

9. Finally, click on the **[Stop]** button on the *Switchboard* to close the database and **Exit** Access

Macro Security Options

Sometimes when you open a database with macros, a warning message appears.Though it is not recommended (by Microsoft) you can disable this security setting so that the macros run automatically for any database you open. This should not be a problem here at the University (or at home for your own databases). To change the security settings:

1. Move to the **FILE** tab then click on **Options** at the foot of the list
2. Next, choose **Trust Center** on the left then click on **[Trust Center Settings]** on the right
3. Choose **Macro Settings** on the left then **Enable all Macros (not recommended ...)**
4. Click on **[OK]** *twice* to close the dialog boxes