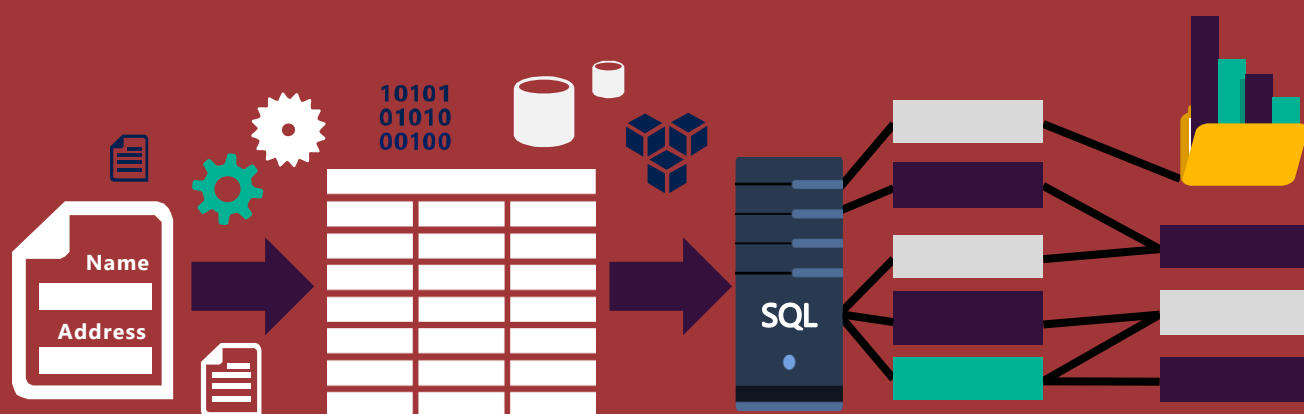




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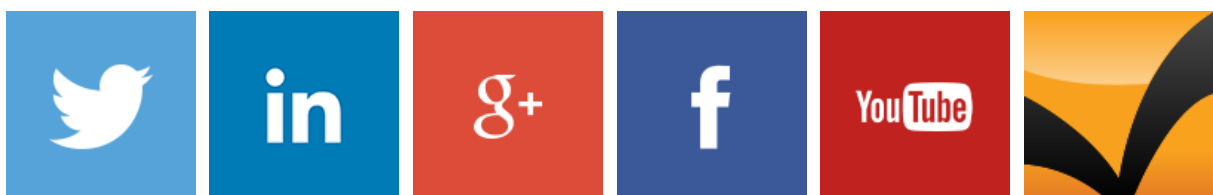
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Unit 1: Creating a relational database

In this unit you will learn how to:

- Set relationships between tables
- Create relationship types
- Set referential integrity between tables

Set relationships between tables

Why create relationships between tables?

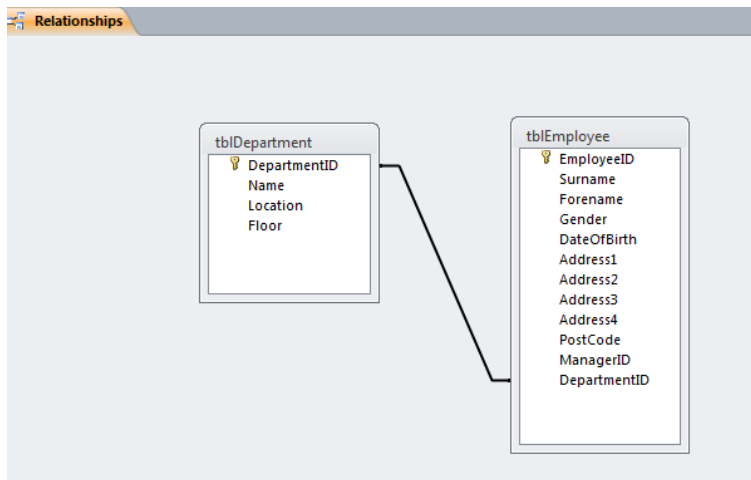
Access is a relational database. It allows multiple tables to be linked with each other via common fields. The links can be made from the relationship diagram (Database Tools, Relationships) and the linking fields must have the same data type.

Quite often the Primary Key from one table is linked to the same field in another table (termed a foreign key).

But why do we have to have multiple tables in the first place?

The main reason for creating databases with several tables is to avoid duplication of data and allow changes to be made most efficiently.

In this example suppose there are 300 employees and 10 departments. Without the department table the name, location and floor would have to be input 300 times. With the 2 tables only the DepartmentID needs to be entered.



And in the future if a department location and floor changes there is no need to edit each employee record.

Relationship types

One to Many

When a primary key field is linked to a foreign field in a second table a one to many relationship is created. For example

One employee has many orders.

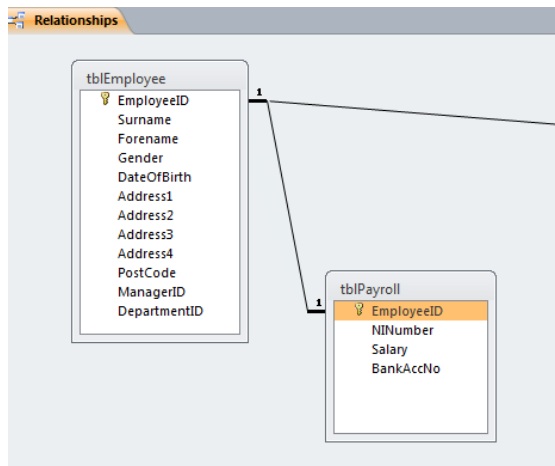
One order has many order detail records.

One customer has many orders.

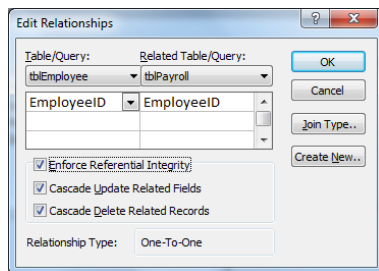
One to One

When a primary key field in one table is linked to a primary key field in another then a One to One relationship is created. For example

Employee records linked to payroll records.



The reason herefor creatign a one to one relationship is to keep the payroll data separate from the main employee data. It would make sence to have both cascade update ans delete on for these tables.



Many to Many

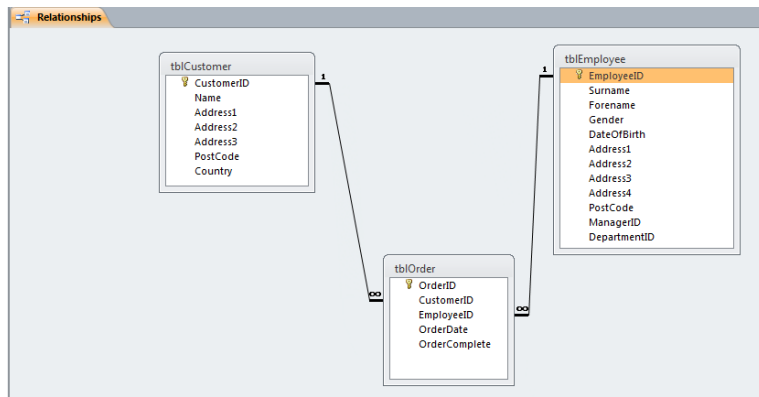
A further type of relationship that occurs in a relational database is called many to many.

For example,

Many customers can buy from one sales employee and many sales employee can sell to one customer.

So there is a many to many relationship between tblCustomers and tblEmployee.

However, there are no common fields between these tables so they can't be linked directly. What is needed is a third table called a conjunction table (or mapping table).



The table **tblOrder** is the conjunction table that links between two tables in a many to many relationship.

Queries or reports can then be set up to show customers for each employee:

| Surname | Name |
|----------|----------------|
| Darcine | Heckatt |
| Darcine | MLK |
| Goodwin | James Lewis |
| Goodwin | MLK |
| Grey | James Lewis |
| Grey | VMH Industries |
| Hamsen | Cartoum |
| Hamsen | Heckatt |
| Hamsen | James Lewis |
| Hamsen | VMH Industries |
| Hamsen | WH Smythsons |
| Thewliss | Heckatt |
| Thewliss | WH Smythsons |

or employees for each customer:

| Name | Surname |
|----------------|----------|
| Cartoum | Hamsen |
| Heckatt | Darcine |
| Heckatt | Hamsen |
| Heckatt | Thewliss |
| James Lewis | Goodwin |
| James Lewis | Grey |
| James Lewis | Hamsen |
| MLK | Darcine |
| MLK | Goodwin |
| VMH Industries | Grey |
| VMH Industries | Hamsen |
| WH Smythsons | Hamsen |
| WH Smythsons | Thewliss |

To make this data easier to read a query property called unique values is set to yes. (no duplicate records).

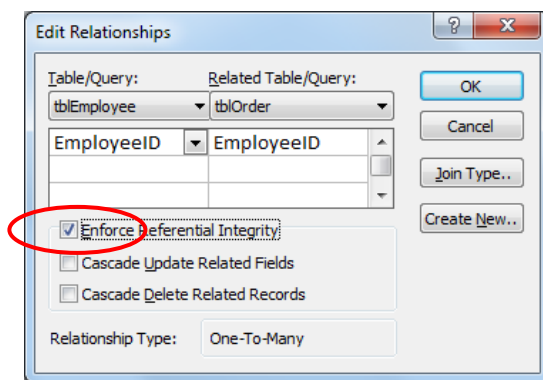
Join Type

As well as there are different types of relationship there are also different types of join.

The default join type is called an inner join where queries produce only data that is matched by both tables. For example, when querying customers and orders a query shows customers that have orders and not customers that haven't.

Join Type is covered in more detail in the next unit.

Referential integrity between tables



Once a relationship is created between 2 tables there further options become available for controlling how data is entered or removed from the tables.

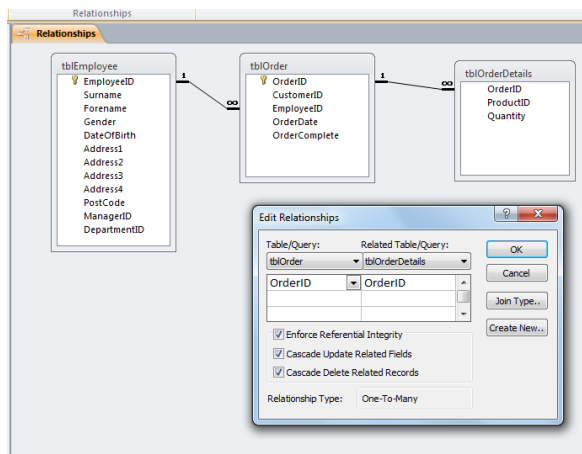
Enforce Referential Integrity – Ticking this option prevents data being entered into the secondary table (tblEmployee) if it the EmployeeID doesn't exist in the primary table (tblOrder).

In addition a record from the Primary table cannot be deleted if there are records in the secondary table with that EmployeeID.

Cascade Update - Ticking this option changes an EmployeeID in the secondary table if the EmployeeID field is changed in the secondary table.

Cascade Delete – Ticking this option deletes all related records if a record in the primary table is deleted.

It would be preferable to include both cascade update and cascade delete when linking tblOrders to tblOrderDetails.



Supposing an order is cancelled then deleting the order record will in turn remove related records for that order held in the secondary table (tblOrderDetails).

Unit 2: Working with Related Tables

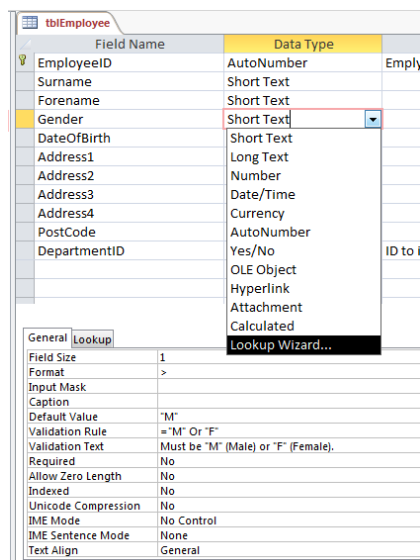
In this unit you will learn how to:

- Use the Lookup Wizard to create a lookup field list
- Use Design view to modify lookup field properties.

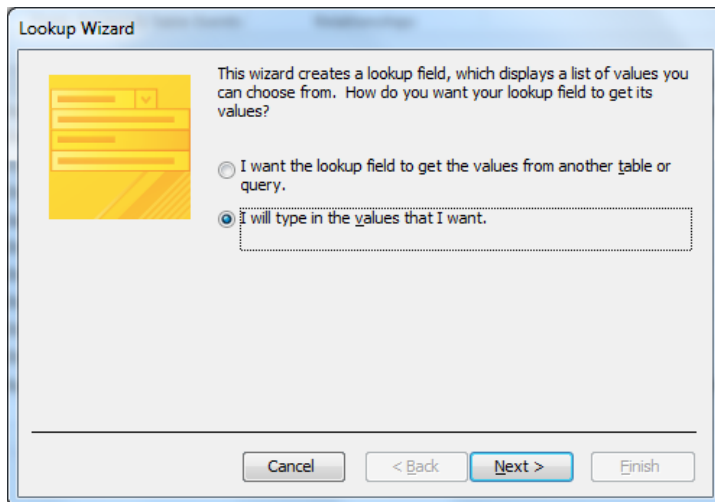
The Lookup Wizard

Lookup fields are very useful for data entry. They help to avoid invalid data being entered into tables and forms. They can be set to lookup into a different table and can even display several columns of data. The field that stores the data is called the bound column.

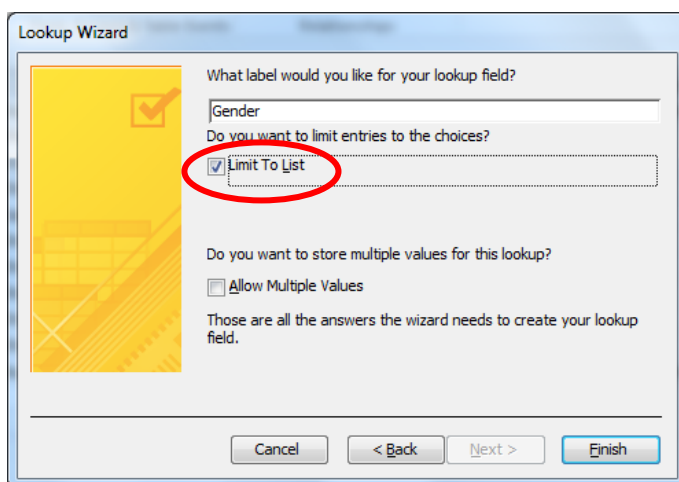
For example, from the Orderingdb database open tblEmployee in design view. We can change the Gender field to a Lookup by right clicking on its Data Type and choosing **Lookup Wizard**.



Access offers 2 choices; to look up from a different table or to create a lookup by typing in the values. For the Gender field choose the second option.



You can then type M and F as the values to choose from and click Next.



Select Limit to List if you want to prevent other values being typed (such as Male or Female)

Click Finish and you will see the lookup field in Datasheet view.

| Forename | Gen | DateOfBirt |
|----------|-----|------------|
| Knut | M | 31/10/1974 |
| Bepe | f | 12/10/1945 |
| Tam | M | 12/12/1965 |
| Jenny | M | 15/04/1955 |
| Margaret | M | 02/01/1968 |
| Sosa | F | 12/07/1958 |
| Ben | M | 12/02/1965 |
| Henri | M | 1993 |
| Jean | F | 1974 |
| Francine | F | 31/10/1970 |
| Charles | M | 31/10/1935 |

If you want to add other entries, then in Design view select the Gender field and click the Lookup tab at the bottom of the screen.

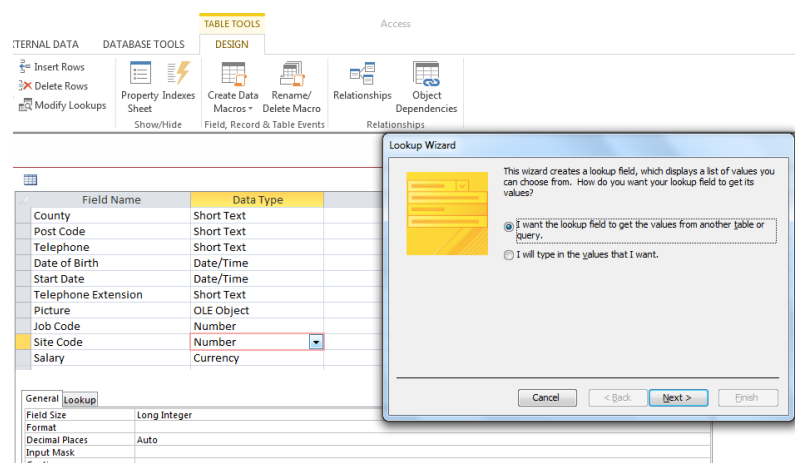
Select the Row Source property and enter a new value:

| General | Lookup |
|-----------------|-------------|
| Display Control | Combo Box |
| Row Source Type | Value List |
| Row Source | "M";"F";"U" |
| Bound Column | 1 |
| Column Count | 1 |
| Column Heads | No |
| Column Widths | 2.54 cm |

Lookups into another table

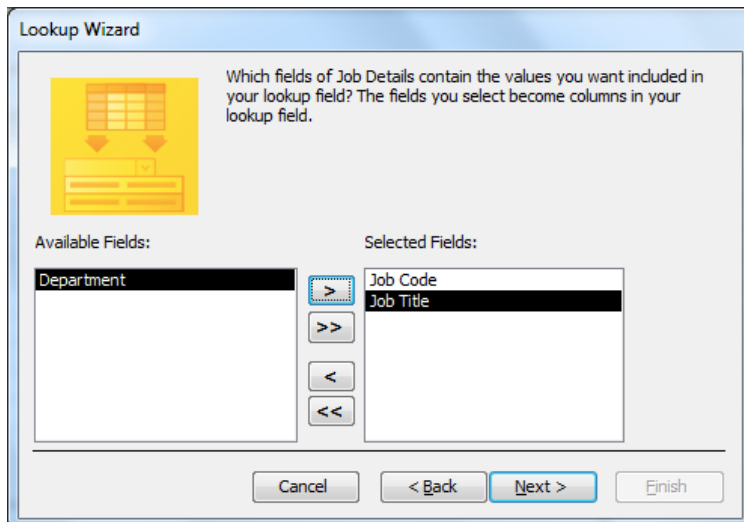
Lookup fields can just as easily be made to lookup data from another table or query. The data must have the same data type but can be a different field name.

For example, in the Practice Linking database, Personal Details table you can create a lookup for the Job Code field. Provided there are no relationships you can use the Lookup Wizard.



Choose the first option 'I want the lookup field to get values from another table'.

On the next screen choose the Job Details table then choose the fields to display in the lookup.



Choose Job Code and Job Title.

On the next screen remove the tick for hiding the key field.

Click Finish to create the lookup.

After saving the table design you can view the lookup field in Datasheet view

| Telephone | Picture | Job Code | Site Code | Salary | Click |
|-----------|---------|----------|------------------|------------|-------|
| 103 | | 1 | 1 | £22,000.00 | |
| 205 | Picture | 1 | Receptionist | £24,000.00 | |
| 308 | | 2 | Clerical Officer | £16,000.00 | |
| 202 | | 3 | Director | £45,000.00 | |
| 303 | | 4 | Administration | £14,000.00 | |
| 206 | | 5 | Sales Manager | £17,000.00 | |
| 203 | | 6 | Salesperson | £25,000.00 | |
| 503 | Picture | 7 | Sales Support | £14,000.00 | |
| 201 | | 8 | Engineer | £10,500.00 | |
| 507 | | 9 | Programmer | £20,500.00 | |
| 403 | | 10 | Help Desk Con | £14,000.00 | |
| 309 | Picture | 11 | Training Consu | £23,000.00 | |
| 311 | Picture | 12 | Trainer | £20,500.00 | |
| 605 | | 13 | Training Manag | £17,000.00 | |
| 414 | Picture | 14 | Project Manag | £14,000.00 | |
| 505 | | 15 | Software Supp | £12,500.00 | |

Changes such as the column widths or the number of columns in the lookup can then be made in Table design view.

Using Design view to modify Lookup field properties

Lookup field properties can be altered from table design view. They can also be created from scratch without the need for the Lookup Wizard. This is especially convenient when the lookup field is already linked to another table in the database.

In this example a lookup to the Site Code is created in the Personal Details table.

From Table design view select the Site Code field then click on the **Lookup** tab.

| | |
|-----------|----------|
| Job Code | Number |
| Site Code | Number |
| Salary | Currency |

| | |
|------------------------|------------------|
| General | Lookup |
| Display Control | Combo Box |
| Row Source Type | Table/Query |
| Row Source | Location Details |
| Bound Column | 1 |
| Column Count | 2 |
| Column Heads | No |
| Column Widths | 2cm;4cm |
| List Rows | 16 |
| List Width | 6cm |
| Limit To List | No |
| Allow Multiple Values | No |
| Allow Value List Edits | No |
| List Items Edit Form | |
| Show Only Row Source V | No |

Change the following properties:

Row Source: Location Details

Column Count: 2

Column Widths: 2cm;4cm

List Width: 6cm

The Site Code field now displays as follows:

| | | |
|-----------|------------------------|--------------|
| Site Code | Salary | Click to Add |
| 1 | £22,000.00 | |
| 1 | London Training Centre | |
| 2 | Head Office | |
| 3 | North Office | |
| 4 | South Office | |
| 5 | Midlands Office | |
| 6 | West Office | |
| 5 | £14,000.00 | |
| 2 | £10,500.00 | |
| 5 | £20,500.00 | |

If you ever want to hide a column such as the Site Code change its column width to 0cm. Remember the field is only hidden and not deleted so the Column Count is still 2 and the Bound Column (or the field storing the data for the lookup) still remains 1.

Note that when you use the Lookup Wizard to lookup from another table then a relationship is automatically created. If you create a lookup by changing lookup properties a relationship is not created.

Unit 3: Defining data entry rules

In this unit you will learn how to:

- Use the Input Mask wizard
- Setting field properties
- Setting a Validation rule

When data is entered into a table it often helps to add some control over what is typed in.

Input masks are used to add additional characters or change the case of text. Validation rules can be included to restrict the range of data entered. There are further field properties that can be set to ensure a field is not left blank or that data is automatically entered if left blank.

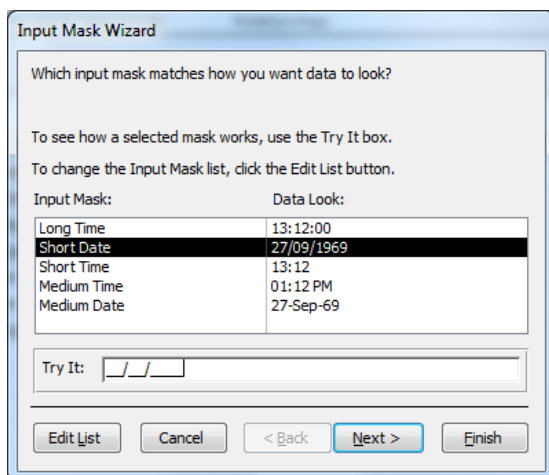
These data entry rules are set up from table design view.

Use the Input Mask wizard

When typing dates, it helps to have an input mask that types in the / symbols for you. When typing telephone numbers, it might help to automatically add spaces or brackets.

For example, for the Date of Birth field select the Input Mask property then click on

...



Choose Short Date. The Try It box shows how the Input mask will display.

Remove 2 zeros from the year then press Finish.

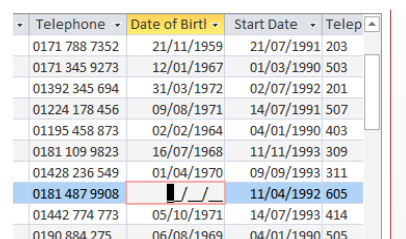
The Input Mask property then displays as

00/00/00;0;_

In the second part of the code 0 means the extra characters are stored in the database. (1 means the / characters are display but not stored).

The third part is the character used as the place holder. By default Access uses the underscore _.

After saving the input mask this is how it appears in Datasheet view after saving the table and tabbing to the Date of Birth field.



| Telephone | Date of Birth | Start Date | Telep |
|---------------|---------------|------------|-------|
| 0171 788 7352 | 21/11/1959 | 21/07/1991 | 203 |
| 0171 345 9273 | 12/01/1967 | 01/03/1990 | 503 |
| 01392 345 694 | 31/03/1972 | 02/07/1992 | 201 |
| 01224 178 456 | 09/08/1971 | 14/07/1991 | 507 |
| 01195 458 873 | 02/02/1964 | 04/01/1990 | 403 |
| 0181 109 9823 | 16/07/1968 | 11/11/1993 | 309 |
| 01428 236 549 | 01/04/1970 | 09/09/1993 | 311 |
| 0181 487 9908 | 11/04/1992 | 11/04/1992 | 605 |
| 01442 774 773 | 05/10/1971 | 14/07/1993 | 414 |
| 0190 884 275 | 06/08/1969 | 04/01/1990 | 505 |

Input Mask Codes

Here is a list of codes that are used when setting input masks.

| Character | Explanation |
|-----------|--|
| 0 | Can enter a digit (0 to 9). |
| 9 | Can enter a digit (0 to 9). |
| # | Can enter a digit, space, plus or minus sign. If skipped, Access enters a blank space. |
| L | Must enter a letter. |

| Character | Explanation |
|----------------|--|
| ? | Can enter a letter. |
| A | Must enter a letter or a digit. |
| a | Can enter a letter or a digit. |
| & | Must enter either a character or a space. |
| C | Can enter characters or spaces. |
| .,:;- / | Decimal and thousands placeholders, date and time separators. |
| > | Coverts all characters that follow to uppercase. |
| < | Converts all characters that follow to lowercase. |
| \ | Characters immediately following will be displayed literally. |
| "" | Characters enclosed in double quotation marks will be displayed literally. |

Examples of Input Mask

This table shows a few examples of input masks.

| Input mask | Example | Notes |
|---|-----------------------------------|--|
| (000) 000-0000 | (206) 555-0199 | |
| (999) 000-0000 | (206) 555-0199 or () 555-0199 | Extension is optional |
| > | E4 9RU | All letters upper case |
| >L<???????????? | Maria | Proper case |
| ISBN 0- &&&&&&&&-0 | ISBN 1-55615-507-7 | |
| >LL00000-0000 | DB51392-0493 | Start with 2 capital letters and 8 numbers |
| 00/00/00 | 25/12/15 | |
| 00\->L<LL\-00 | 25-Dec-15 | |
| \P000 | P123 | 3 numbers starting with P |
| | | |

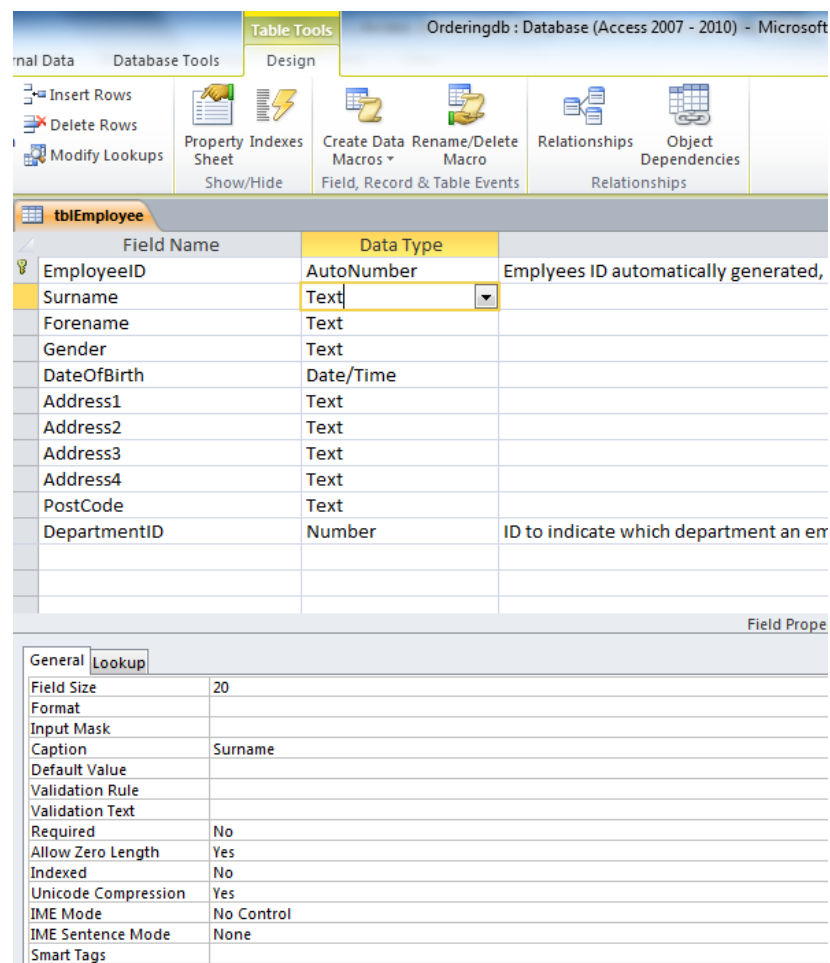
Setting field properties

In Design view there are several properties that can be applied to each field. They vary depending on the data type. For example, for the Surname in the tblEmployee table you can set the following:

Required

Required: Yes

Allow Zero Length: No



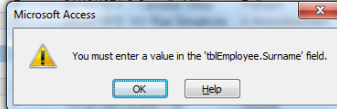
The screenshot shows the Microsoft Access Design view for the 'tblEmployee' table. The 'Surname' field is selected, and its properties are displayed in the 'Field Properties' task pane. The 'Required' property is set to 'Yes' and 'Allow Zero Length' is set to 'No'.

| Field Name | Data Type | Comments |
|--------------|------------|--|
| EmployeeID | AutoNumber | Employees ID automatically generated, |
| Surname | Text | |
| Forename | Text | |
| Gender | Text | |
| DateOfBirth | Date/Time | |
| Address1 | Text | |
| Address2 | Text | |
| Address3 | Text | |
| Address4 | Text | |
| PostCode | Text | |
| DepartmentID | Number | ID to indicate which department an employee belongs to |

| Field Properties | |
|---------------------|------------|
| Field Size | 20 |
| Format | |
| Input Mask | |
| Caption | Surname |
| Default Value | |
| Validation Rule | |
| Validation Text | |
| Required | No |
| Allow Zero Length | Yes |
| Indexed | No |
| Unicode Compression | Yes |
| IME Mode | No Control |
| IME Sentence Mode | None |
| Smart Tags | |

Setting these properties makes Surname a mandatory field. It cannot be left blank.

| Employee | Surname | Forename | Gen | DateOfBirth | Address1 | Address2 | Address3 |
|----------|------------|----------|-----|-------------|--------------------|------------------|---------------|
| 001 | Hamsen | Knut | M | 31/10/1974 | 5 rue Victor Hugo | 3 Arrondissement | Paris |
| 002 | Hamsen | Bepe | f | 12/10/1945 | 144 rue Des Arbres | Lesoyare | Parinterme |
| 003 | Thewliss | Tam | M | 12/12/1965 | 10 Dart Street | Yartney | Kent |
| 004 | Chen | Jenny | M | 15/04/1955 | 24 Maison Citron | Ramaretre | St. Sebastien |
| 005 | De Navarre | Margaret | M | 02/01/1968 | Chateau Lismarine | St Quentin | Portemace |
| 006 | Andabe | Sosa | F | 12/07/1958 | 72 Old Mill House | Fleur Crecy | Exeter |
| 007 | Grey | Ben | M | 12/02/1965 | 23 Bridge Lodge | Southwark | London |
| 008 | Darcine | Henri | M | 30/06/1993 | 8 Les Invalides | 4 Arrondissement | Paris |
| 009 | Walton | Jean | | | | | Straintree |
| 010 | Cartouche | Francine | | | | | Paris |
| 011 | Goodwin | Charles | | | | | berts |
| 012 | Jules | | | | | | Paris |
| 015 | Lockett | Lucy | | | | | London |
| 016 | Simone | Paulo | | | | | London |
| 017 | Jackson | Maria | | | | | London |
| 018 | Thackeray | Charles | M | 20/02/1975 | 5 Oregon Street | Southwark | London |
| 019 | Friedland | Prieter | M | 12/06/1965 | Kon-Tiki Close | West Kensington | Witting |
| 020 | Heuertahl | Thor | M | 03/04/1962 | 12 Maison Nima | Barlarsaa | Vannara |



Field Size

Another property that can be set is Field Size. For Short Text fields the maximum field size is 255 character. In the tblDepartment table set Floor to a field size of 2. This prevents a number greater than 99 being entered.

If you need to type more than 255 characters, for example paragraphs of notes or comments then change the data type to Long Text.

Format

As with the input mask property, the Format property can be set to display additional characters or change text to upper case.

Here are some examples of how a Format setting changes the appearance of data.

| Data | Format Setting | Result |
|------------------|-----------------|--------------|
| Number fields | | |
| 1 | 000 | 001 |
| 1 | \E000 | E001 |
| Text fields | | |
| London | > | LONDON |
| | @;Unkonwn | Unknown |
| 12345678 | @@@-@@- @@@@ | 123-45-6789 |
| Date/Time fields | | |
| 01/01/2016 | ddd dd/mm/yy | Fri 01/01/16 |
| | Short Time | 15:00 |
| | Medium Time | 03:00 PM |
| | | |

Unit 4: Use advanced query features

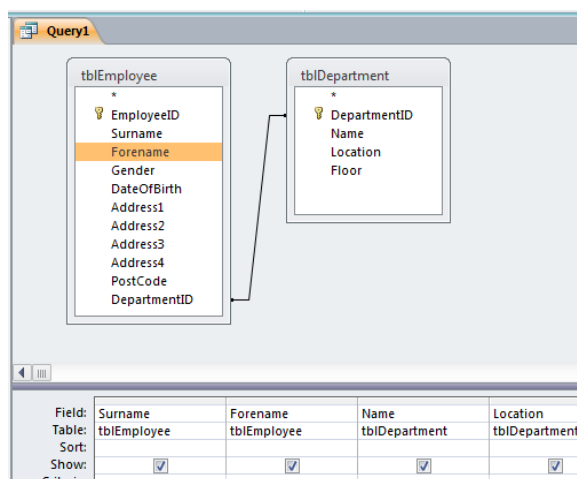
In this unit you will learn how to:

- Join tables in queries
- Create a calculated field
- Create action queries to add, delete, update and make tables.

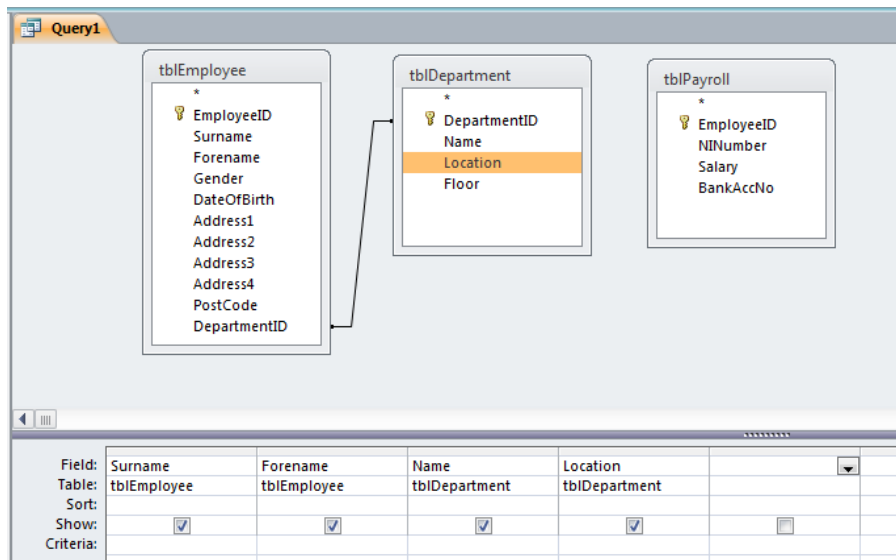
Join tables in queries

Joining tables in design view

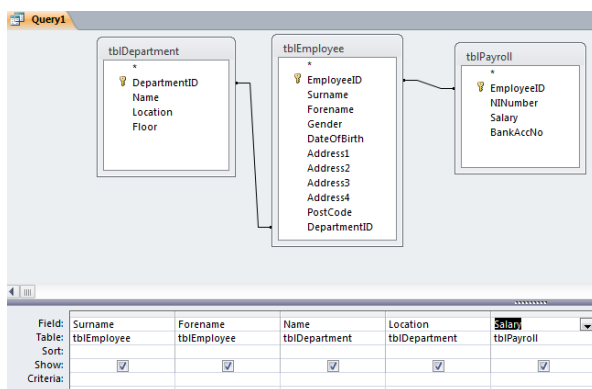
When creating a query by Query Design Access will automatically try to create links between fields with the same name. For example, using the OrderingPracitceLinking database create a query for the tables tblEmployee and tblDepartment.



Suppose you want to include the employee salary then add tblPayroll. This time there is no automatic link so create a link manually from EmployeeID to EmployeeID.

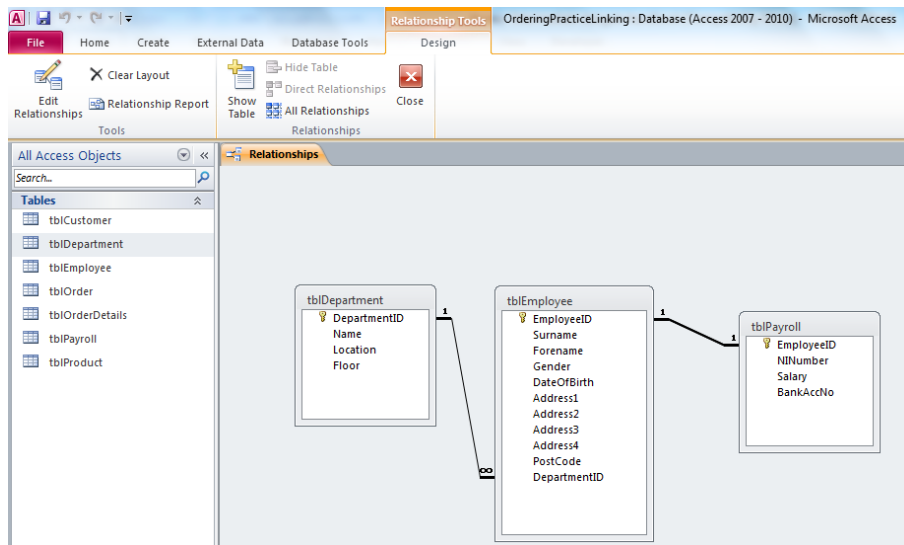


Now add a link line by joining EmployeeID and include the Salary in the query.

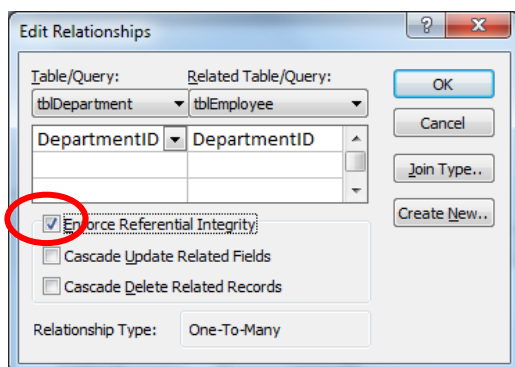


Using the Query Wizard

When creating queries on multiple tables with the Query wizard links between tables are not automatically created. The tables would need to be added and linked in the Relationships diagram.



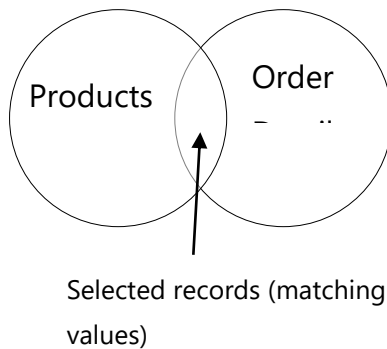
Adding tables to the relationships diagram allows 1 to many and 1 to 1 relationships to be created with Enforced Referential Integrity set.



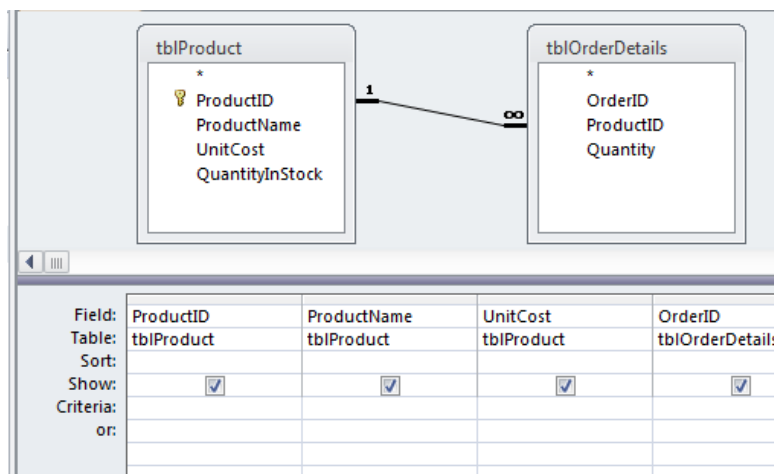
This option prevents department id's being added to tblEmployee that don't exist in tblDepartment (or delectated from if they exist in tblEmployee).

Once tables are added and linked in the relationship diagram then queries and reports can be created with the query wizard and report wizard.

Inner Joins



An inner join is a join that selects only selects records from two tables that have matching values. It is sometime called a equi-join and it is the default join type in Access.

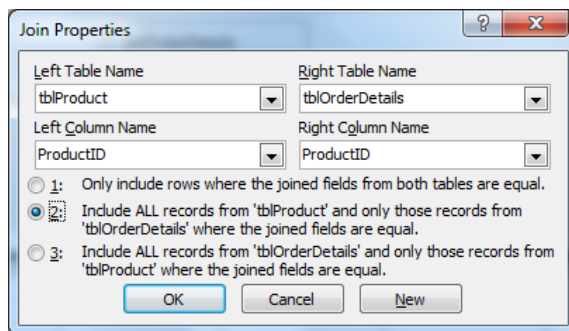


For example, an inner join shows only the products that match with those in order details table (tblOrderDetails).

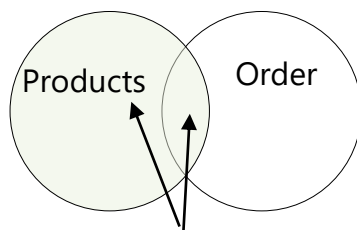
Outer Joins

An outer join displays all records from one table and only those records where values match from the other table. For example, all products and matching records in tblOrderDetails.

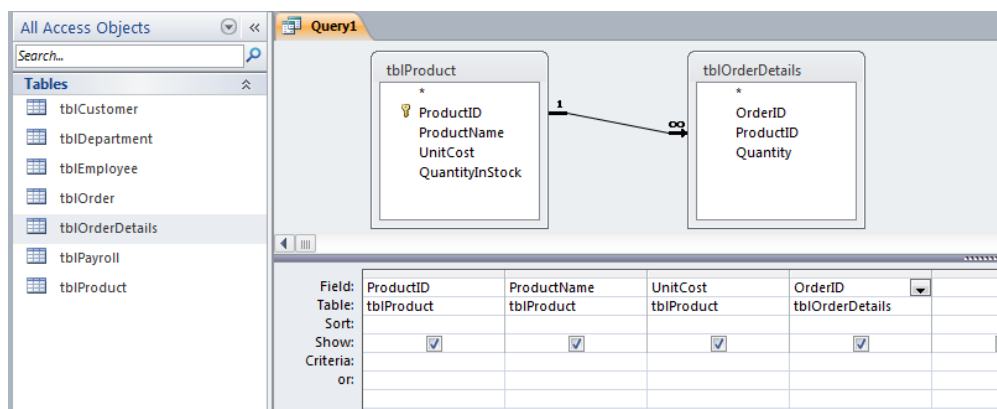
To create an outer join double click on the join line and select 'Include ALL records from tblProducts...'



This is sometime called a left outer join because the primary table (or 1 table in a 1 to many relationship) is conventionally placed on the left in the query.



Selected records (All Products
and matching values)



Note that with the outer join query two extra product id's 011 and 013 are displayed. These products do not have order Ids.

| ProductID | ProductName | UnitCost | OrderID |
|-----------|------------------------|----------|---------|
| 009 | Tie | £22.95 | 010 |
| 009 | Tie | £22.95 | 017 |
| 009 | Tie | £22.95 | 007 |
| 009 | Tie | £22.95 | 025 |
| 010 | Radio | £65.95 | 009 |
| 010 | Radio | £65.95 | 021 |
| 010 | Radio | £65.95 | 024 |
| 010 | Radio | £65.95 | 026 |
| 010 | Radio | £65.95 | 028 |
| 010 | Radio | £65.95 | 029 |
| 011 | Blank CD's (10) | £5.95 | |
| 012 | Socks | £4.99 | 007 |
| 012 | Socks | £4.99 | 025 |
| 013 | Pencil Sharpeners (10) | £1.95 | |
| 014 | Paper Ream | £4.98 | 022 |
| 014 | Paper Ream | £4.98 | 023 |
| 015 | MP3 Player | £125.95 | 020 |
| 015 | MP3 Player | £125.95 | 021 |
| 015 | MP3 Player | £125.95 | 029 |
| 016 | Pencils (25) | £1.99 | 022 |
| 016 | Pencils (25) | £1.99 | 023 |
| 016 | Pencils (25) | £1.99 | 030 |
| 017 | Fishing Vest | £69.99 | 026 |
| 018 | Thermos Flask | £8.95 | 021 |
| 018 | Thermos Flask | £8.95 | 024 |

To display only these products, add *Is Null* as a Criteria for the OrderId field

A right outer join is the third join type option. ALL records from tblOrderDetails and only those that match from tblProducts.

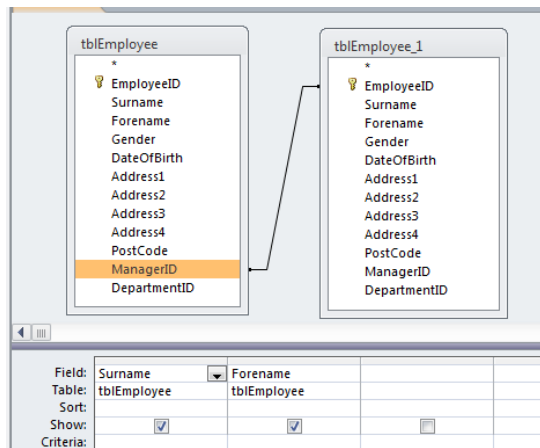
This would show any records in tblOrderDetails where the product ids have been left blank.

Self-Join Queries

A self-join is a join that relates data within a table itself. As with other joins the fields that are inter related must have the same data type.

For example, suppose an Employee table contains both an EmployeeID and a ManagerID You then wish to create a query showing the Employee names with their Manager's name.

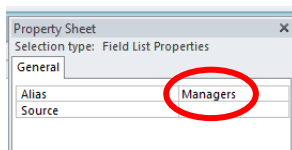
First create a query bases on tblEmployee adding the Surname and Forename fields.



Now add tblEmployee again create a self-join between ManagerID and EmployeeID.

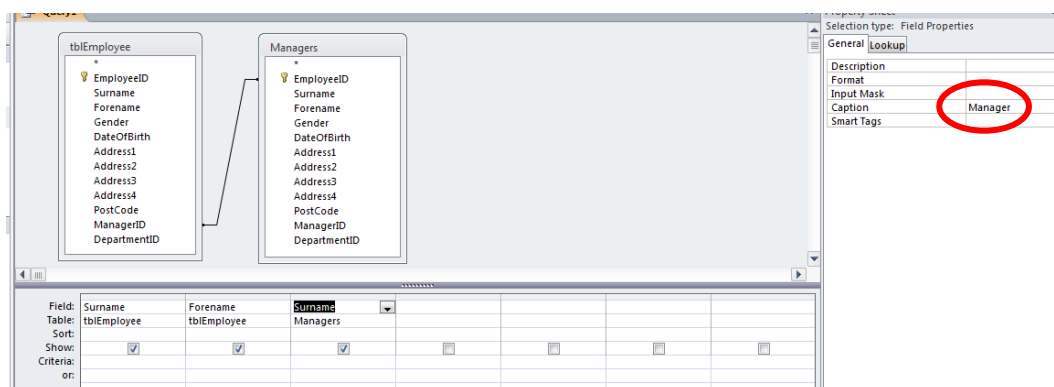
It makes it clearer to change the name of the second table from Employee_1.

To do that right click the tblEmployee_1 field list and choose Properties. Type Managers for the Alias property.



Now add the query grid the Surname field from the Managers field list.

Finally change the caption property of the Managers Surname field to Manager.

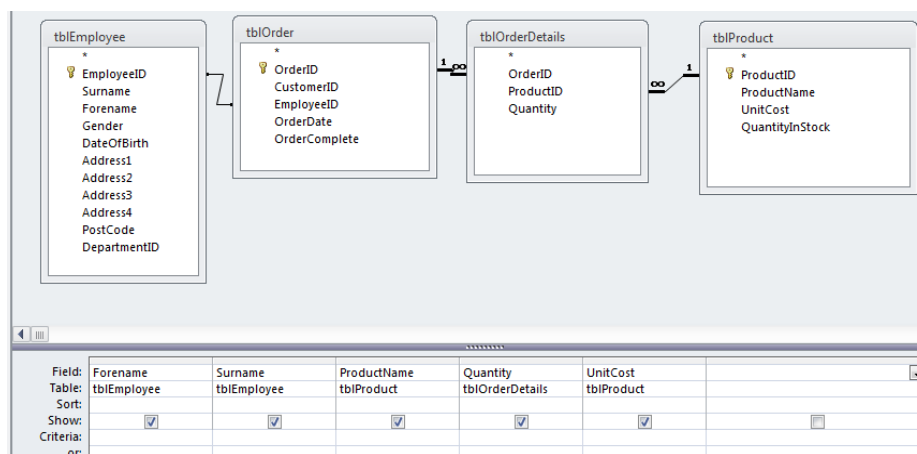


The result of this query shows employees together with their manager's name.

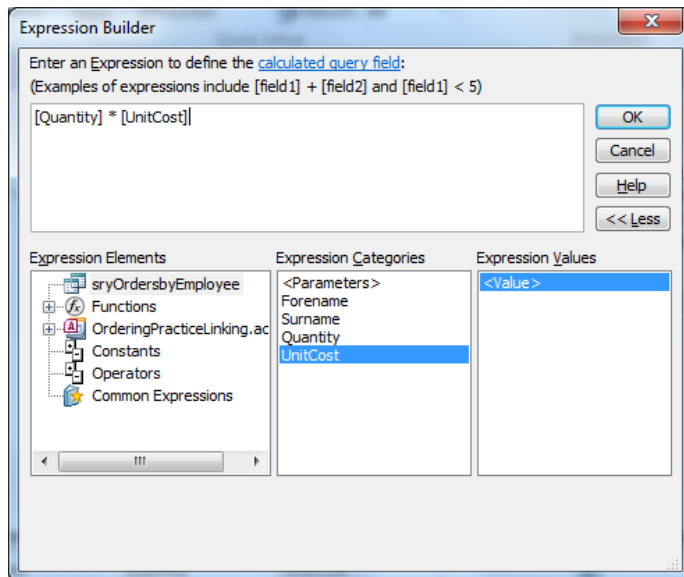
| Surname | Forenam | Manager |
|------------|----------|-----------|
| Hamsen | Knut | Thewliss |
| Grey | Ben | Thewliss |
| Lockett | Lucy | Thewliss |
| Al-Sayeg | Imani | Thewliss |
| Hamsen | Bepe | Cartouche |
| Darcine | Henri | Cartouche |
| Simone | Paulo | Cartouche |
| Reckitt | Sandy | Cartouche |
| Thewliss | Tam | Lockett |
| Walton | Jean | Lockett |
| Jackson | Maria | Lockett |
| Jones | David | Lockett |
| Chen | Jenny | Jackson |
| Cartouche | Francine | Jackson |
| Thackeray | Charles | Jackson |
| De Navarre | Margaret | Heyerdahl |
| Goodwin | Charles | Heyerdahl |
| Friedland | Pieter | Heyerdahl |
| Andabe | Sosa | Al-Sayeg |
| Marente | Jules | Al-Sayeg |
| Heyerdahl | Thor | Al-Sayeg |

Create calculated fields

Calculations can be performed within a query by typing the expression at the top of a blank column. For example, suppose you wish to calculate the total cost of orders made by each salesperson. Start by creating a query and save it as qryOrdersbyEmployee including the fields shown below.



At the top of the black column right click and choose Build...



Double click on fields to select them and add a name for the calculated field as follows:

TotalCost:[Quantity]*[UnitCost].

Combining fields (concatenation)

A second example of a calculated field is to create the FullName rather than showing the employee names as separate columns. The calculated field combines or concatenates the two fields into one by using the & symbol. As before use the expression builder to avoid spelling errors:

FullName:Forename & " " & [Surname]

The space " " is added to separate the two names.

Now delete the Forename and Surname and view the query.

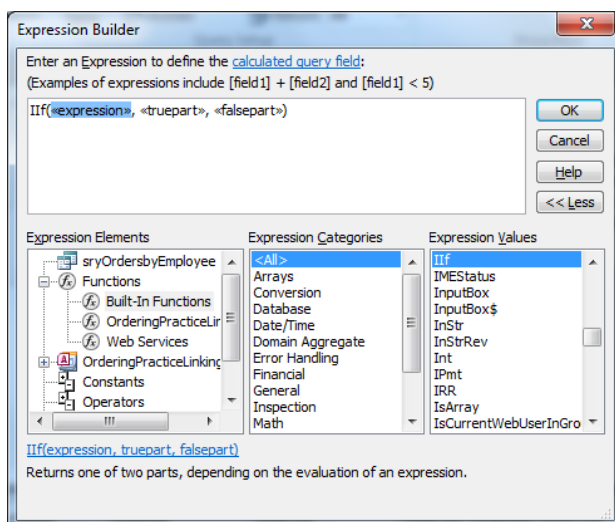
| Fullname | ProductName | Quantity | UnitCost | TotalCost |
|-----------------|-------------------|----------|----------|-----------|
| Henri Darcine | Socks | 250 | £4.99 | £1,247.50 |
| Henri Darcine | Shirt | 50 | £42.95 | £2,147.50 |
| Henri Darcine | Erasers (25) | 100 | £2.99 | £299.00 |
| Henri Darcine | Printer Cartridge | 50 | £4.99 | £249.50 |
| Henri Darcine | Cufflinks | 125 | £45.99 | £5,748.75 |
| Henri Darcine | Radio | 10 | £65.95 | £659.50 |
| Knut Hamsen | Shirt | 60 | £42.95 | £2,577.00 |
| Knut Hamsen | Tie | 40 | £22.95 | £918.00 |
| Ben Grey | Cufflinks | 100 | £45.99 | £4,599.00 |
| Tam Thewliss | Tie | 45 | £22.95 | £1,032.75 |
| Henri Darcine | Tie | 50 | £22.95 | £1,147.50 |
| Ben Grey | Alarm Clock | 50 | £12.99 | £649.50 |
| Ben Grey | Vacuum Cleaner | 10 | £111.50 | £1,115.00 |
| Ben Grey | Alarm Clock | 10 | £12.99 | £129.90 |
| Ben Grey | Toaster | 15 | £45.99 | £689.85 |
| Tam Thewliss | Alarm Clock | 50 | £12.99 | £649.50 |
| Tam Thewliss | Erasers (25) | 50 | £2.99 | £149.50 |
| Tam Thewliss | MP3 Player | 10 | £125.95 | £1,259.50 |
| Charles Goodwin | Cufflinks | 10 | £45.99 | £459.90 |
| Charles Goodwin | Radio | 100 | £65.95 | £6,595.00 |
| Charles Goodwin | Thermos Flask | 50 | £8.95 | £447.50 |
| Charles Goodwin | MP3 Player | 5 | £125.95 | £629.75 |
| Charles Goodwin | Toaster | 50 | £45.99 | £2,299.50 |
| Bepe Hamsen | Binders | 100 | £3.99 | £399.00 |
| Bepe Hamsen | Erasers (25) | 500 | £2.99 | £1,495.00 |

This query can then be saved for later use to create a report of sales by each employee.

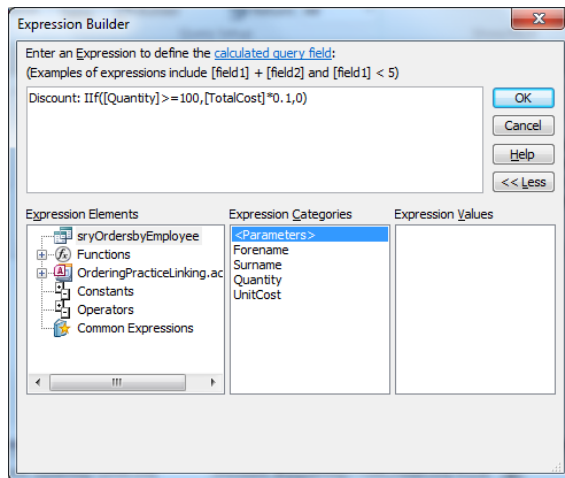
Using Functions in calculations

Functions can be included in query calculation. They can be selected with the expression builder and included into a calculated field. For example, suppose a discount is to be given for quantities above a certain amount.

To perform the discount calculation, use an **IIF** from Functions, built in Function (the extra I stands for Immediate).



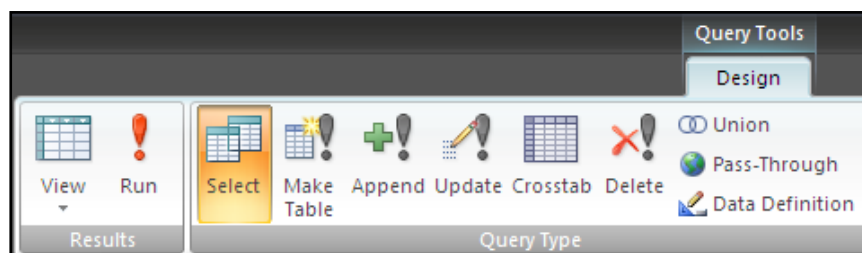
After selecting the IIF function select the qryOrdersbyEmployee from the left column and complete the calculation as follows, naming the expression Discount.



Finally select Properties and format the calculation as Currency.

| Fullname | ProductName | Quantity | UnitCost | TotalCost | Discount |
|---------------|-------------------|----------|----------|-----------|----------|
| Henri Darcine | Socks | 250 | £4.99 | £1,247.50 | £124.75 |
| Henri Darcine | Shirt | 50 | £42.95 | £2,147.50 | £0.00 |
| Henri Darcine | Erasers (25) | 100 | £2.99 | £299.00 | £29.90 |
| Henri Darcine | Printer Cartridge | 50 | £4.99 | £249.50 | £0.00 |
| Henri Darcine | Cufflinks | 125 | £45.99 | £5,748.75 | £574.88 |
| Henri Darcine | Radio | 10 | £65.95 | £659.50 | £0.00 |
| Knut Hamsen | Shirt | 60 | £42.95 | £2,577.00 | £0.00 |
| Knut Hamsen | Tie | 40 | £22.95 | £918.00 | £0.00 |
| Ben Grey | Cufflinks | 100 | £45.99 | £4,599.00 | £459.90 |
| Tam Thewliss | Tie | 45 | £22.95 | £1,032.75 | £0.00 |
| Henri Darcine | Tie | 50 | £22.95 | £1,147.50 | £0.00 |
| Ben Grey | Alarm Clock | 50 | £12.99 | £649.50 | £0.00 |
| Ben Grey | Vacuum Cleaner | 10 | £111.50 | £1,115.00 | £0.00 |

Create action queries



The most common type of query is called a Select query. It is the default type used when a query is created. Select queries display results but don't directly change tables.

There are other types of queries called **Action Queries** that perform actions directly in tables. There are four types of Action queries:

| | |
|------------------|--|
| Append query | This type of query is used to append data from one table to another. |
| Delete query | This type of query is used to delete records from tables based on specified criterion. |
| Update query | This type of query is used to update data in different tables at the same time. |
| Make-table query | This type of query is used to create a table from the result of a query. |

Another difference between Action and Select queries is that you must click on the Run (!) button rather than the Datasheet view. If you click only on Datasheet view you see the data *before* the Action query is performed.

Example of action queries

Suppose you want to transfer completed orders from one table to another. This can be done as follows using an Append and Delete query.

Creating an Append Query

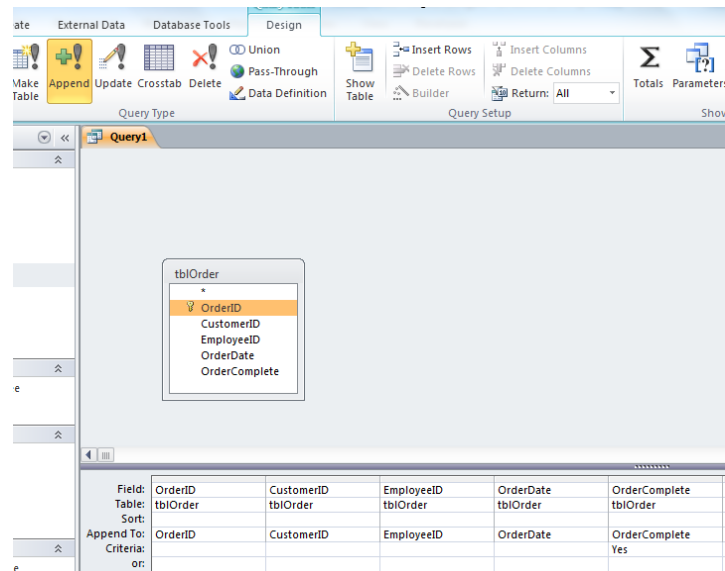
First create a blank copy of the table tblOrders called tblOrdersCompleted.

Change the OrderID field data type to Number. This allows the value of the OrderID to be retained.

1. Select Create, Query Design
2. Select tblOrders as the table to append from
3. Click Append Query
4. Choose tblOrdersCompleted as the table to append to.

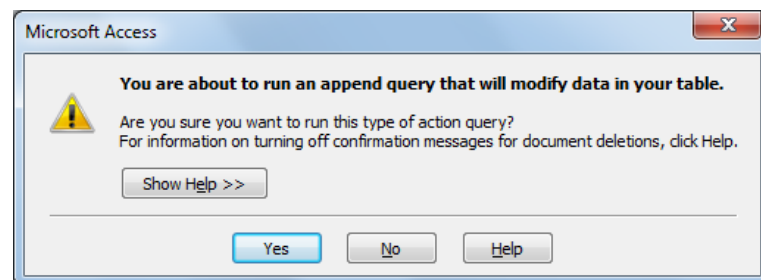
5. Add all fields to the query grid.
6. Now typing Yes (or TRUE) into the OrderComplete criterion will tell the query to only append completed records.

Tip: To select all fields in the field list double click the title of the list.

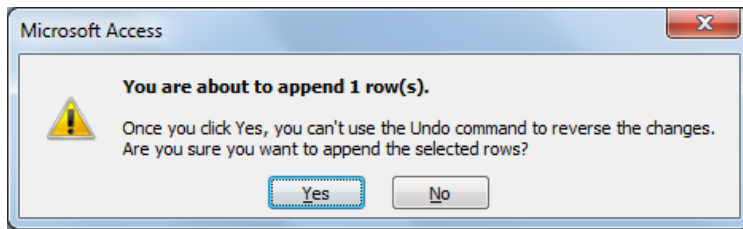


Now to run this Append query press the **Run (!)** button.

A message appears alerting you that a table will be modified.



After selecting Yes a second message informs you how many records will be appended.



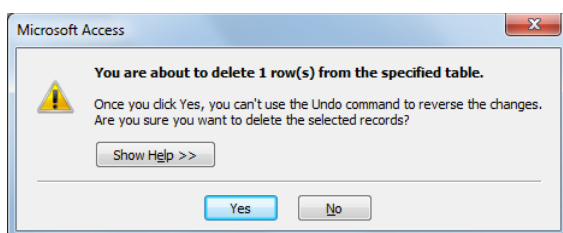
Creating a Delete query

The append query in the previous example copied the completed orders to a different table but didn't actually move them. A delete action query can be set up to remove the completed order records.

Follow these steps to create the delete query:

1. Select Create, Query Design
2. Select tblOrders as the table to delete from
3. Click Delete Query
4. Add all fields to the query grid.
5. Now typing Yes (or TRUE) into the OrderComplete criterion will tell the query to only delete completed records.

When you press the run button Access prompts twice to alert you that data is about to be deleted.



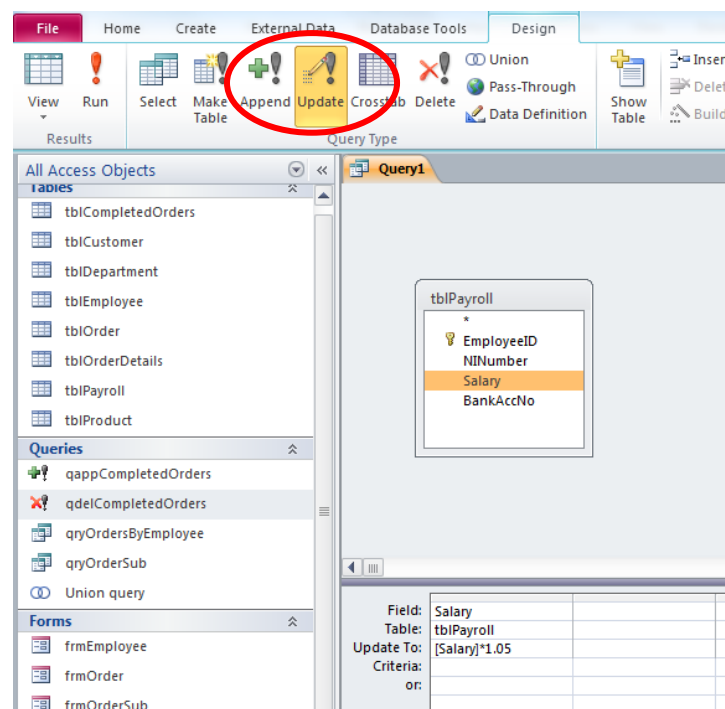
Creating an Update query

Another type of action query is an Update query. An Update query is used to directly change data held within a table.

For example, suppose you have a table containing salaries and you wish to increase all values by a given percentage. First create a query (in the Orderingdb) and choose the table tblPayroll.

Click the Update query type and in the Update To option type:

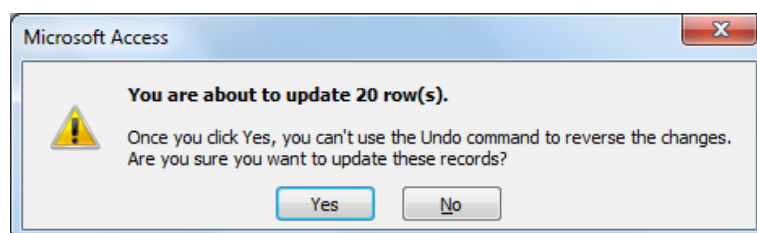
[Salary]*1.05



To see the original values before running the update query click **View**.

To update and increase all salaries by 5% click **Run**.

Next you will be prompted to confirm that you want to update the salaries of all 20 records.



Open tblPayroll to see that the salaries have changed. Take care not to press run a second time!

An alternative and perhaps safer method is to create a new field in the tblPayroll called NewSalary. First insert the NewSalary field in tblPayroll table.

Exercise

1. Insert a new field called NewSalary at the end of the tblPayroll table.
2. Create an update query to update the NewSalary field with the 5% salary increase.
3. Run you query to view the new salary values.
4. Save the query as qryCreateNewSalaries.

| EmployeeID | NINumber | Salary | BankAccNo | NewSalary |
|------------|-----------|-------------|-----------|-------------|
| 1 | JB125678Z | £63,000.00 | 345346346 | £66,150.00 |
| 2 | HJ092376P | £33,000.00 | 567457567 | £34,650.00 |
| 3 | TY763476L | £250,000.00 | 547457546 | £262,500.00 |
| 4 | DF121212P | £25,000.00 | 436346346 | £26,250.00 |
| 5 | FR151515U | £15,000.00 | 789345678 | £15,750.00 |
| 6 | YH230938J | £34,000.00 | 978346856 | £35,700.00 |
| 7 | PO129306J | £55,000.00 | 346784367 | £57,750.00 |
| 8 | UI046574K | £22,000.00 | 342354436 | £23,100.00 |
| 9 | IH74309L | £33,000.00 | 894367856 | £34,650.00 |
| 10 | OI239576M | £240,000.00 | 234578985 | £252,000.00 |
| 11 | PO234234C | £12,000.00 | 978345686 | £12,600.00 |
| 12 | DZ450012G | £18,000.00 | 345231412 | £18,900.00 |
| 15 | TY293957M | £127,000.00 | 345678743 | £133,350.00 |
| 16 | WE545445V | £33,000.00 | 785874428 | £34,650.00 |
| 17 | FG435677H | £186,000.00 | 546484564 | £195,300.00 |
| 18 | TT346523P | £25,000.00 | 897423654 | £26,250.00 |
| 19 | PL373839H | £36,000.00 | 354354354 | £37,800.00 |
| 20 | KJ484509P | £152,000.00 | 656525435 | £159,600.00 |
| 21 | IM239856P | £185,000.00 | 546987968 | £194,250.00 |
| 22 | KL998872R | £89,000.00 | 874525641 | £93,450.00 |

Repeat the above exercise but this time use a MakeTable query to create a new table called tblPayRollNew. (Hint: create a select query first and then a calculated field called NewSalary).

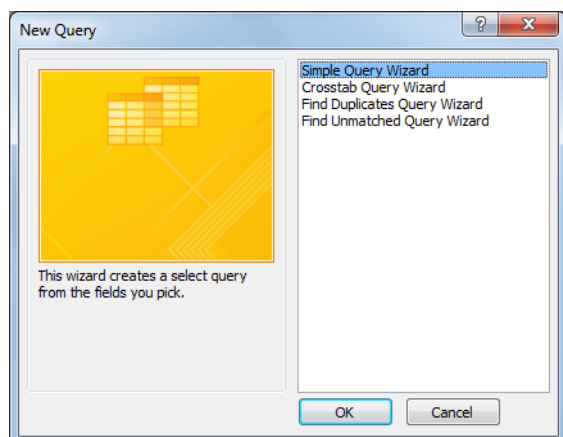
Unit 5: Create advanced queries

In this unit you will learn how to:

- Find duplicate records
- Find unmatched records in different table
- Create cross-tab queries
- Use parameter queries to view results based on criteria entered while running a query
- Create indexes to speed up sorting and filtering data in tables

Find duplicate records

The Query wizard offers additional queries for perform specific operations.



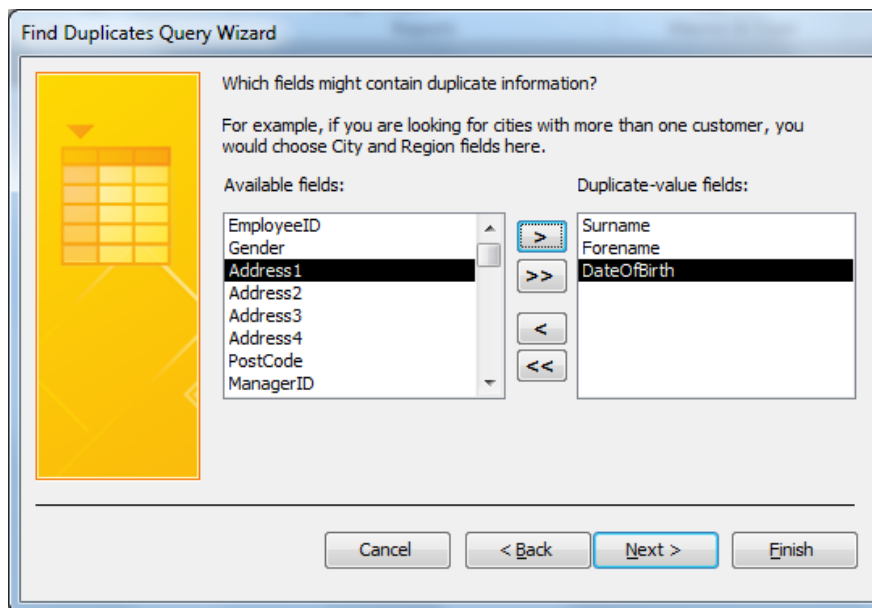
The find duplicates wizard can be useful for displays duplicate records and allowing you to choose which to remove from a table.

For example, suppose you wish to find duplicate records accidentally entered into the tblEmployee table. (For example copy and paste employee 004 and 007 as new duplicate records). They have the same details but different employee ids.

Select Create, Query Wizard

Choose Find Duplicate Query Wizard and select tblEmployee

Click Next and then select the fields that contain duplicate values.
Select Forename, Surname and DateofBirth



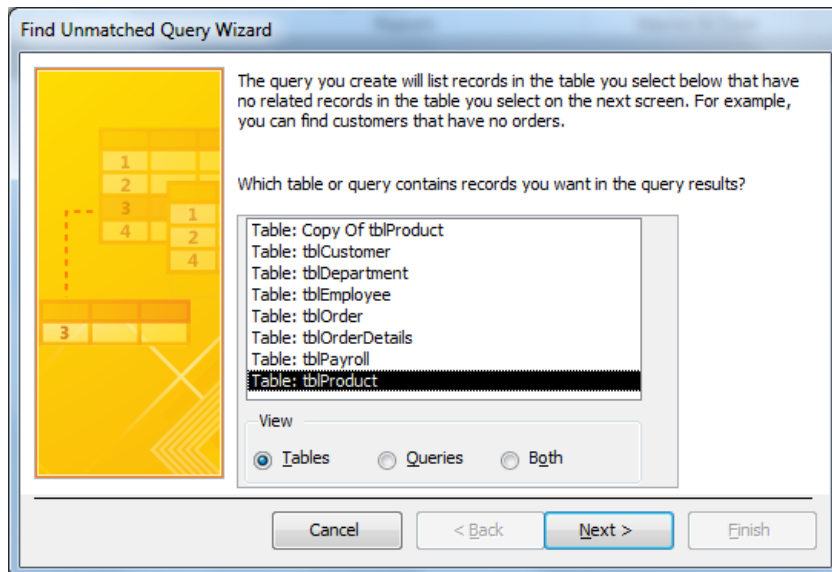
Click Next and choose to view all fields in the result.
Click Finish to see the duplicate records.

| Surname | Forename | DateOfBirth | Employee | Ger | Address1 | Address2 | Address3 | Address4 | PostCode | ManagerID | DepartmentID |
|---------|----------|-------------|----------|---------|------------------|-----------|---------------|----------|----------|-----------|--------------|
| Chen | Jenny | 15-Apr-55 | 025 | M | 24 Maison Citron | Ramaretre | St. Sebastien | Loire | 20048 | 17 | 002 |
| Chen | Jenny | 15-Apr-55 | 004 | M | 24 Maison Citron | Ramaretre | St. Sebastien | Loire | 20048 | 17 | 002 |
| Grey | Ben | 12-Feb-65 | 024 | M | 23 Bridge Lodge | Southwark | London | | GU3 6YH | 3 | 009 |
| Grey | Ben | 12-Feb-65 | 007 | M | 23 Bridge Lodge | Southwark | London | | GU3 6YH | 3 | 009 |
| * | | | | (New) M | | | | | | | |

From the resulting query you can see the duplicate records and choose which one to delete. The records deleted from this query will delete them from tblEmployee table.

Find unmatched records in different tables

The unmatched query wizard finds records from one table that no longer exist in another.



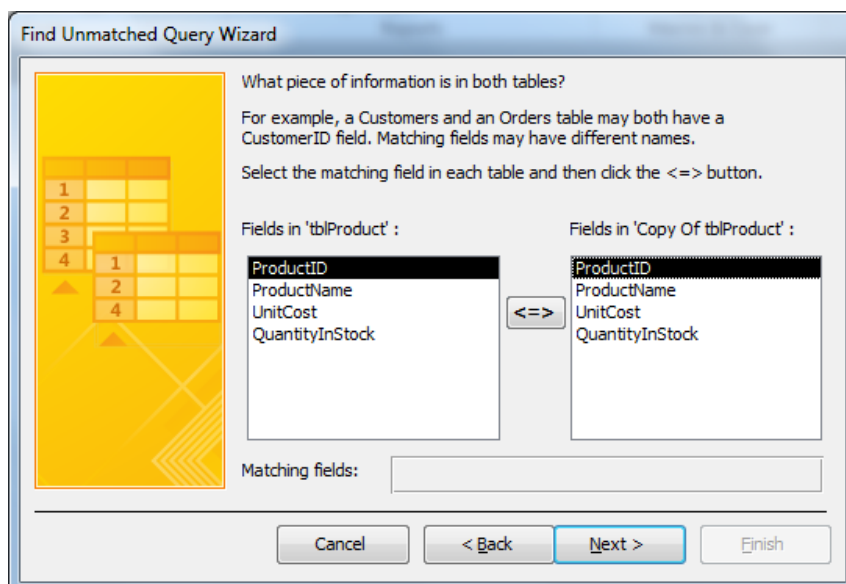
Suppose you create a copy tblProducts and delete two products that are no longer available (011 and 013).

After selecting Create, Query wizard, Find Unmatched query wizard

Select the original table that contains those products (tblProducts).

On the next screen select the new table (Copy of tblProducts).

On the next screen select the ProductID as the common field between the two tables and press the < > button.



Click Finish to see the unmatched records.

| tblProduct Without Matching Copy Of tblProduct | | | |
|--|------------------------|----------|-----------------|
| ProductID | ProductName | UnitCost | QuantityInStock |
| 011 | Blank CD's (10) | £5.95 | 16789 |
| 013 | Pencil Sharpeners (10) | £1.95 | 3565 |
| * | (New) | | |

The unmatched query wizard also can be used to show records in the copied table that are not in the original tblProduct table. To do that reverse the order of the tables selected.

Create cross-tab queries

Cross-tab queries have similarities with PivotTables. They can be used summarize either tables or queries by arranging the data into row and column headings. A numerical value can then be either summed, averaged or counted for each row/column category.

Which table or query contains the fields you want for the crosstab query results?

To include fields from more than one table, create a query containing all the fields you need and then use this query to make the crosstab query.

Query: qryOrdersByEmployee
Query: qryOrdersByEmployee_Crosstab
Query: qryOrderSub

View
☐ Tables ☒ Queries ☐ Both

Sample:

| | Header1 | Header2 | Header3 |
|-------|---------|---------|---------|
| TOTAL | | | |
| | | | |
| | | | |
| | | | |

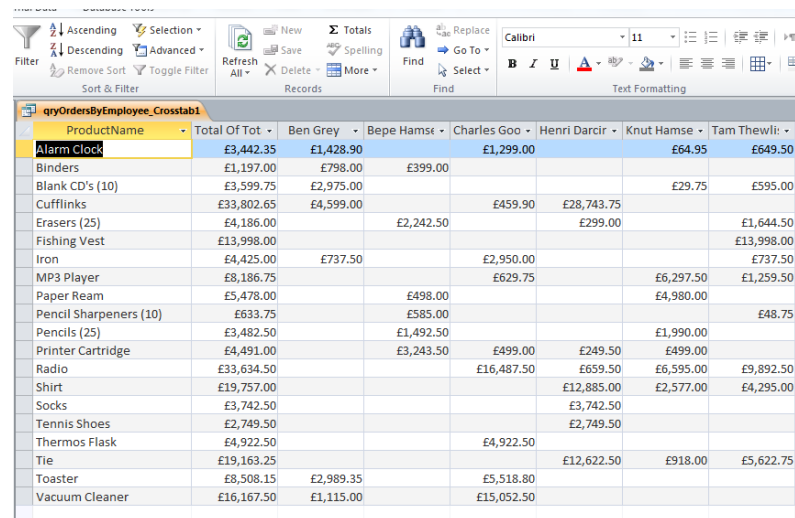
Cancel < Back Next > Finish

For example for qryOrdersbyEmployee choose the following:

Row heading: ProductName

Column Heading: Fullname

TotalCost: Sum

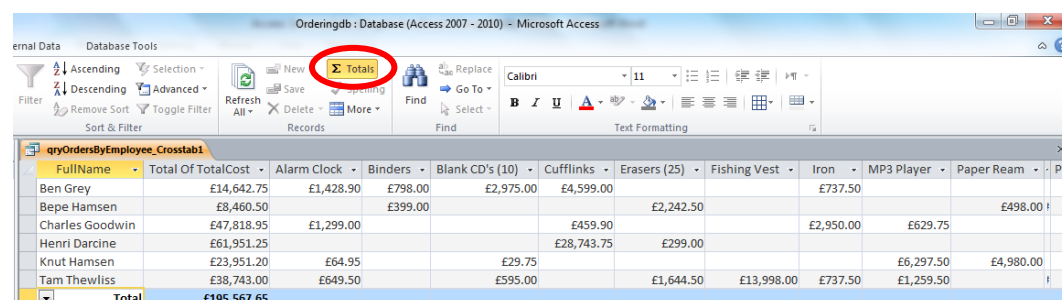


| ProductName | Total Of Tot | Ben Grey | Bepe Hamse | Charles Goo | Henri Darcir | Knut Hamse | Tam Thewli |
|------------------------|--------------|-----------|------------|-------------|--------------|------------|------------|
| Alarm Clock | £3,442.35 | £1,428.90 | | £1,299.00 | | £64.95 | £649.50 |
| Binders | £1,197.00 | £798.00 | £399.00 | | | | |
| Blank CD's (10) | £3,599.75 | £2,975.00 | | | | £29.75 | £595.00 |
| Cufflinks | £33,802.65 | £4,599.00 | | £459.90 | £28,743.75 | | |
| Erasers (25) | £4,186.00 | | £2,242.50 | | £299.00 | | £1,644.50 |
| Fishing Vest | £13,998.00 | | | | | | £13,998.00 |
| Iron | £4,425.00 | £737.50 | | £2,950.00 | | | £737.50 |
| MP3 Player | £8,186.75 | | | £629.75 | | £6,297.50 | £1,259.50 |
| Paper Ream | £5,478.00 | | £498.00 | | | £4,980.00 | |
| Pencil Sharpeners (10) | £633.75 | | £585.00 | | | | £48.75 |
| Pencils (25) | £3,482.50 | | £1,492.50 | | | £1,990.00 | |
| Printer Cartridge | £4,491.00 | | £3,243.50 | £499.00 | £249.50 | £499.00 | |
| Radio | £33,634.50 | | | £16,487.50 | £659.50 | £6,595.00 | £9,892.50 |
| Shirt | £19,757.00 | | | | £12,885.00 | £2,577.00 | £4,295.00 |
| Socks | £3,742.50 | | | | £3,742.50 | | |
| Tennis Shoes | £2,749.50 | | | | £2,749.50 | | |
| Thermos Flask | £4,922.50 | | | £4,922.50 | | | |
| Tie | £19,163.25 | | | | £12,622.50 | £918.00 | £5,622.75 |
| Toaster | £8,508.15 | £2,989.35 | | £5,518.80 | | | |
| Vacuum Cleaner | £16,167.50 | £1,115.00 | | £15,052.50 | | | |

Included in the cross-tab table is an overall total of the row headings, in this case each Product.

Swap row and column headings and a total for each employee will be calculated.

Use the Totals button to see the overall total for the table.



| FullName | Total Of TotalCost | Alarm Clock | Binders | Blank CD's (10) | Cufflinks | Erasers (25) | Fishing Vest | Iron | MP3 Player | Paper Ream | Per |
|-----------------|--------------------|-------------|---------|-----------------|-----------|--------------|--------------|-----------|------------|------------|-----|
| Ben Grey | £14,642.75 | £1,428.90 | £798.00 | £2,975.00 | £4,599.00 | | | £737.50 | | | |
| Bepe Hamsen | £8,460.50 | | £399.00 | | | £2,242.50 | | | | £498.00 | |
| Charles Goodwin | £47,818.95 | £1,299.00 | | | £459.90 | | | £2,950.00 | £629.75 | | |
| Henri Darcine | £61,951.25 | | | | | £299.00 | | | | | |
| Knut Hamsen | £23,951.20 | £64.95 | | £29.75 | | | | | £6,297.50 | £4,980.00 | |
| Tam Thewli | £38,743.00 | £649.50 | | £595.00 | | £1,644.50 | £13,998.00 | £737.50 | £1,259.50 | | |
| Total | £195,567.65 | | | | | | | | | | |

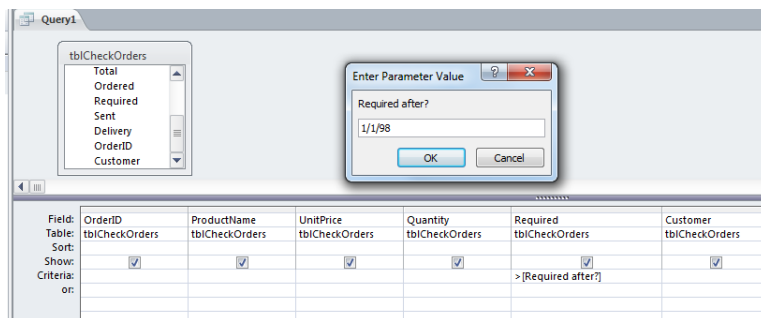
Use parameter queries

A parameter query displays results based on criteria specified when you run the query.

For example, in the CheckOrders database a parameter query can be set up to ask for a Required Date to be entered.

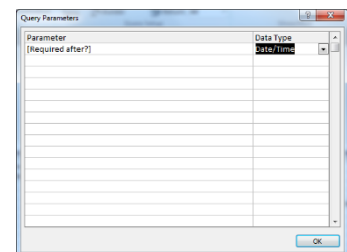
Set up the query design as below entering the criteria for Required as

[Required after?]



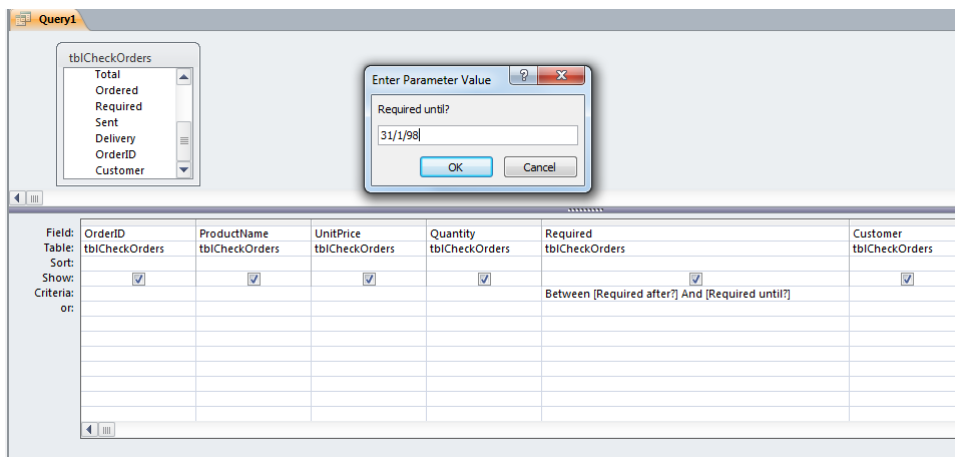
Tip: Click on Parameters to check and validate the date entered. This allows dates in other formats to be entered (eg 31-dec-97, 31.12.97).

Multiple criteria



More than one Parameter can be added. For example

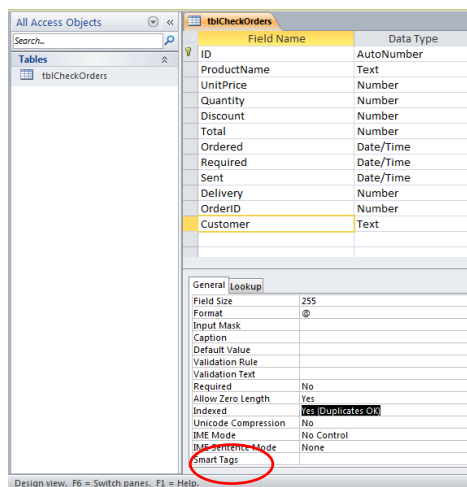
Between [Required after?] And [Required until?]



Using indexes to speed up sorting and filtering data in tables

With large database tables you can speed up filtering and sorting by adding an Index for the field you are sorting by.

An Index is a file that is not visible but acts as an aid with searching for values in field. Indexes are created in table design view. For example, use set up an index for the Customer field in tblCheckOrders (CheckOrders database).



Choose the option Yes (Duplicates OK).

Unit 6: Creating advanced form design

In this unit you will learn how to:

- Adding graphics to a form
- Add calculations to a form
- Aligning controls
- Changing the tab order
- Adding a combo box

Use controls to add graphics to a form

Control Type

Adding graphics Use the graphics control to add an image or logo to a form.

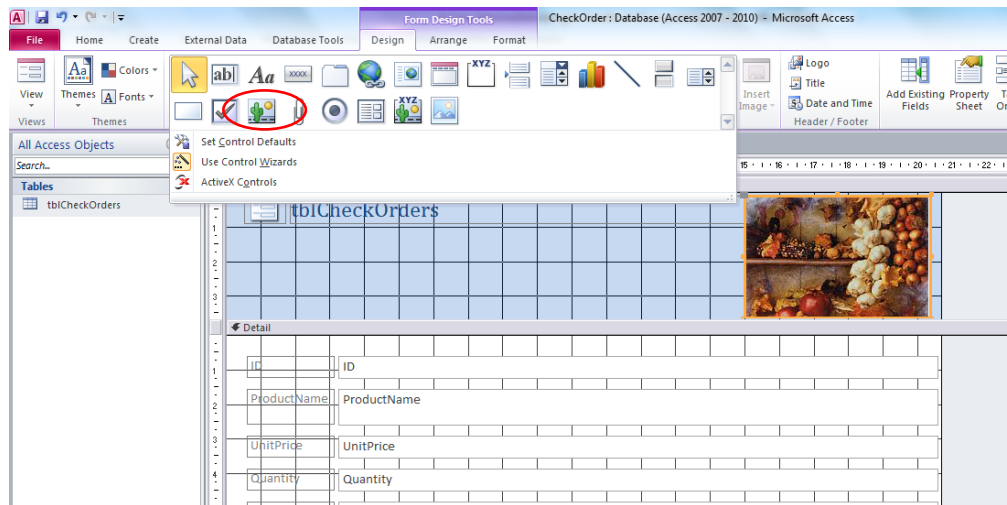
Unbound Controls These controls are not linked to any field in a table or a query. They are used to enhance the appearance of a form or to display information that isn't linked to any field in a table or a query. Graphics are unbound controls because they aren't linked to any table or query.

Bound Controls These controls are linked to a field in a table or a query. They are used to display a field value, to accept a value in a field in a table or a query, or to modify the value of a field in a table or a query.

Calculated Controls These are used to display a calculated value based on one or more fields in a table or a query.

Image controls & unbound object frame controls

Click the Unbound object frame control to add an image to the form header. Click Browse and choose the Outlander logo.



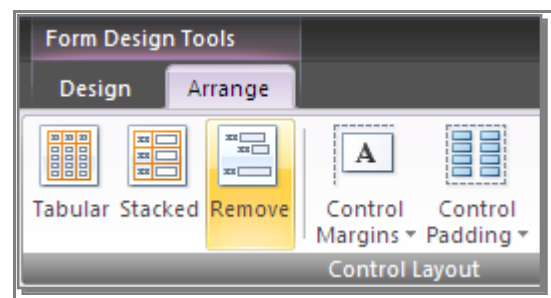
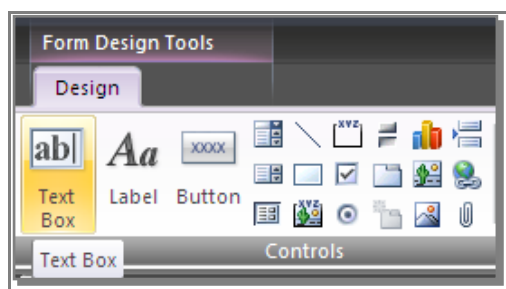
Adding calculations in a form

Use the ab Text box control to create a calculated field.

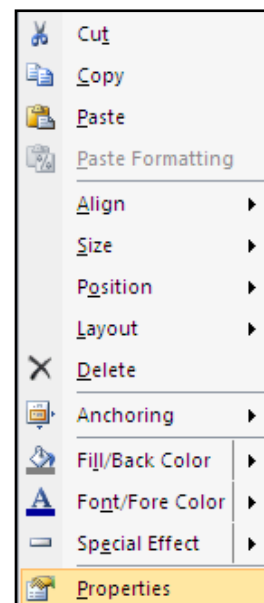
Type Amount as the label

=[Quantity]*[Unit_price] in the text box.

Creating a calculated control in a form, use the Arrange tab to align boxes.

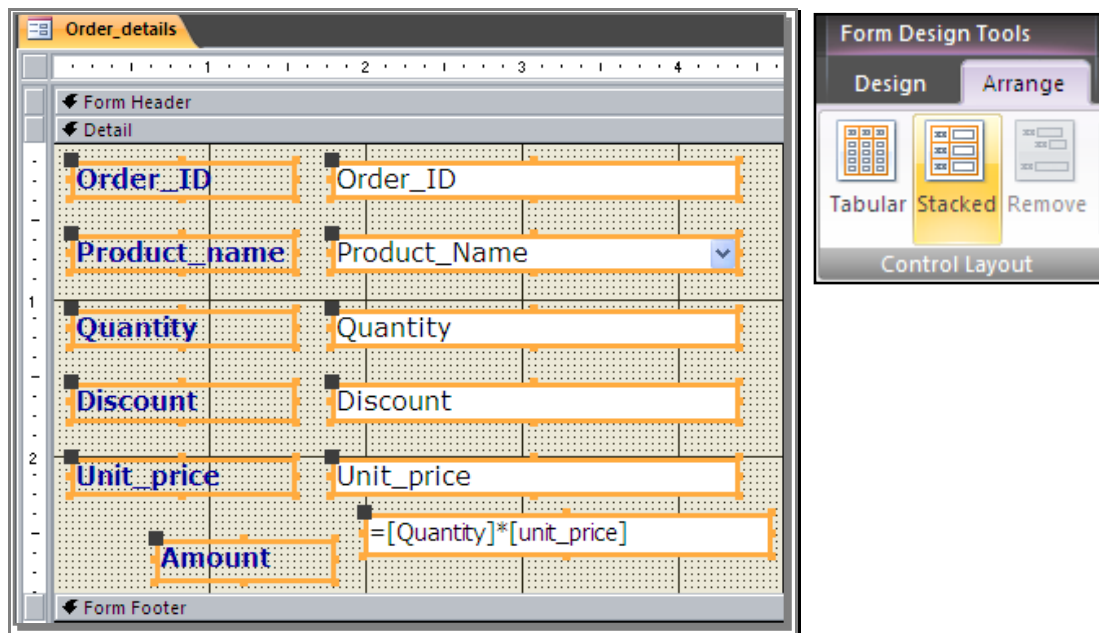


Right-click on field box and tab



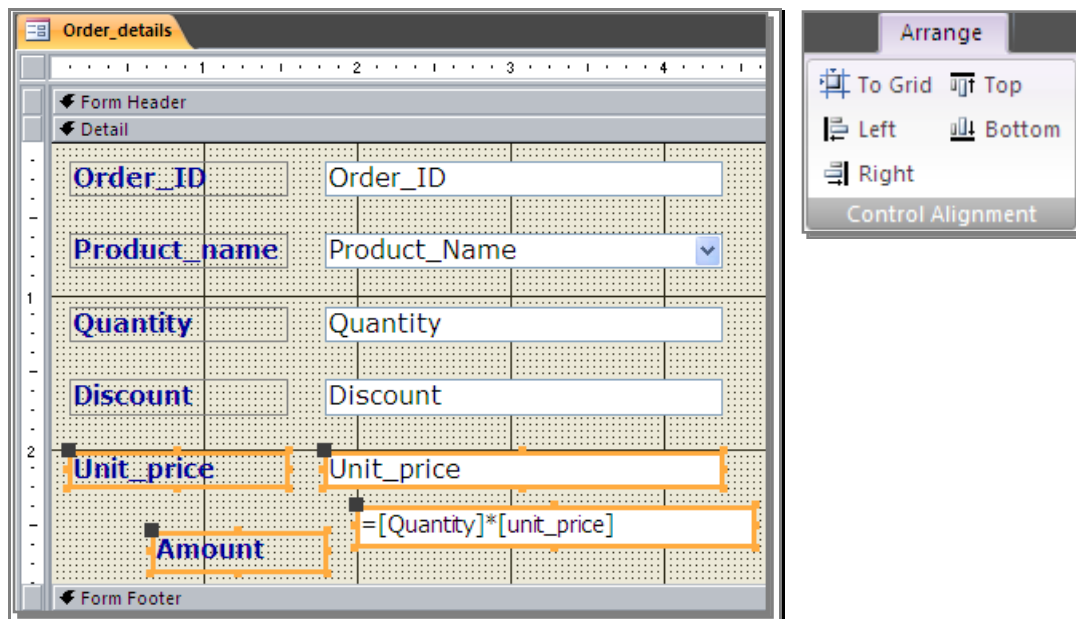
Aligning controls in a form

Select all the controls (CTRL + A), choose **Stacked**.

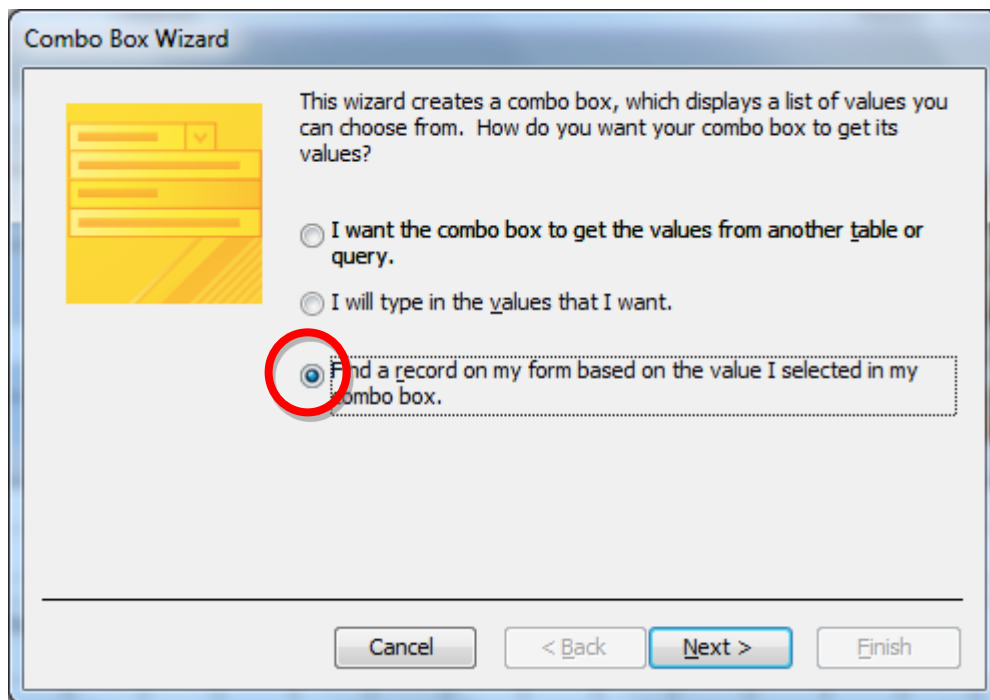


OR

Select controls individually (SHIFT + Click), choose appropriate alignment.



Adding a combo box to search records



The combo box control offers a third option to search for data within a field. For example, use this option to create search box for the OrderID.

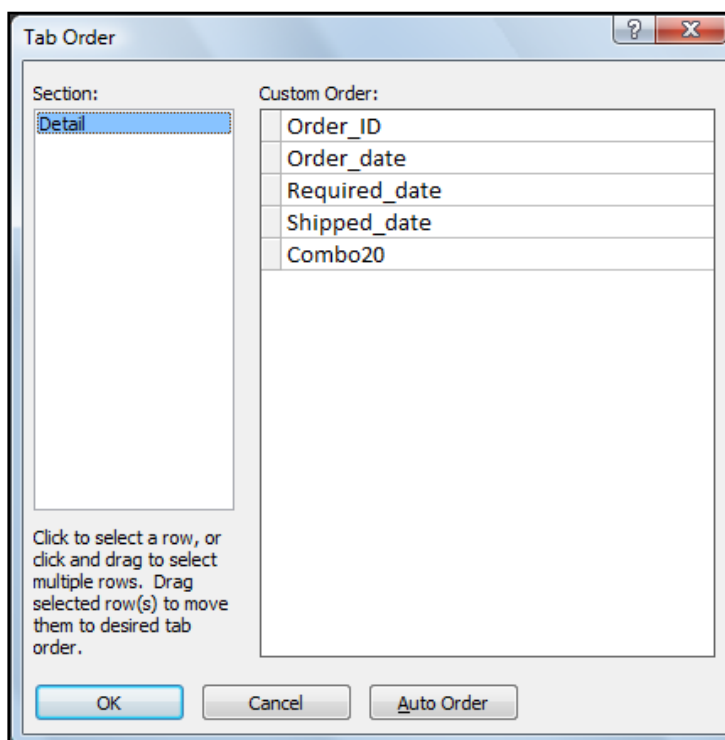
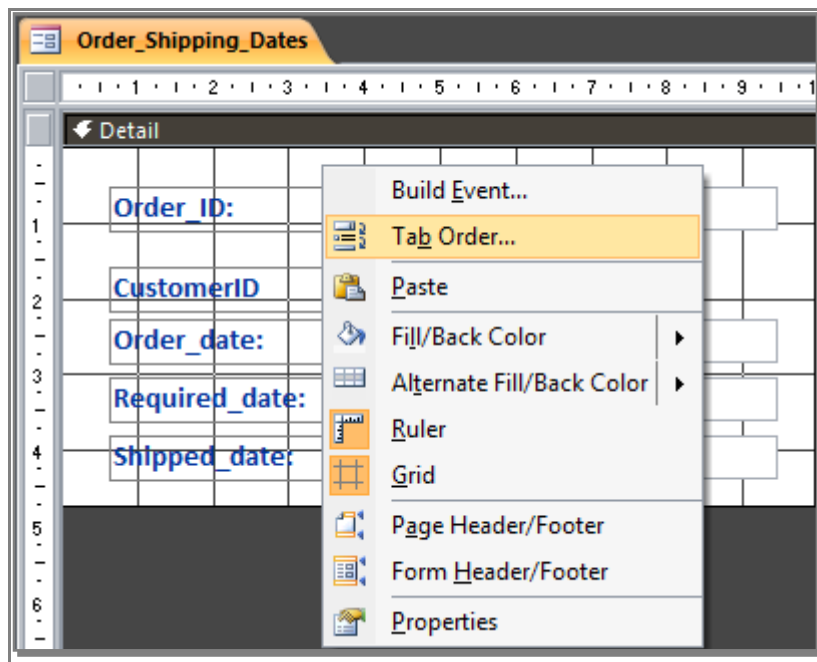
tblCheckOrders

Find OrderID 10248

| | | | |
|-------------|------------------------|----------|------------|
| ID | 1 | Ordered | 27/03/1996 |
| ProductName | Mozzarella di Giovanni | Required | 24/04/1996 |
| UnitPrice | 34.80 | Sent | 08/04/1996 |
| Quantity | 5 | Delivery | 7.50 |
| Discount | 0% | OrderID | 10248 |
| Total | 174.00 | Customer | VINET |

Tab order

This is the order in which controls receive focus as the user presses the tab key



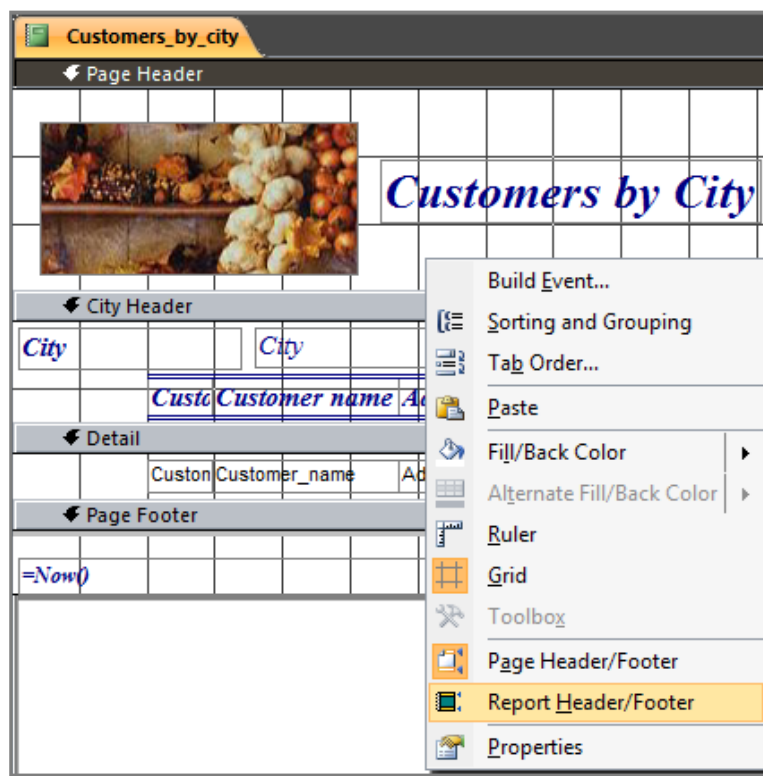
Unit 7: Use advanced report features

In this unit you will learn how to:

- Customize headers and footers
- Set properties to group data
- Use functions and calculated fields in reports
- Embed a sub-report in a main report

Creating customised headers and footers

Report Header



Report Footer

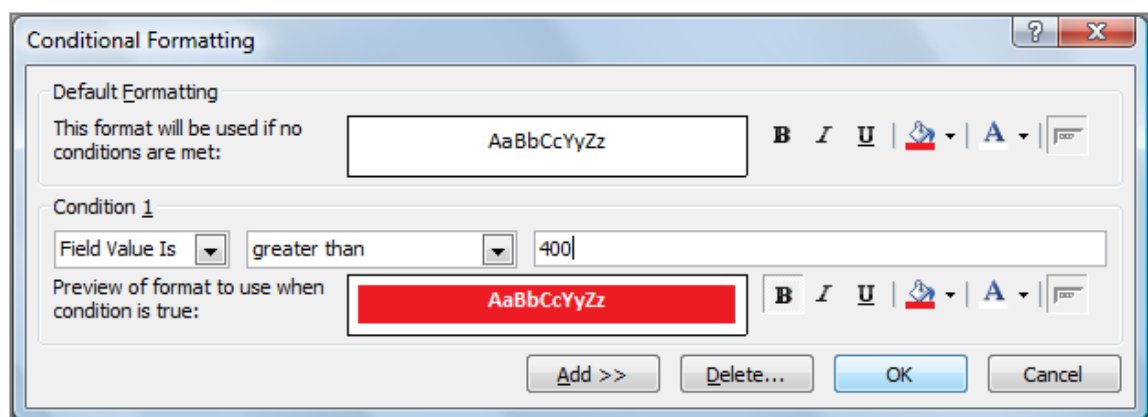
| Report Footer | | | | | | | | | |
|---------------|--|---------------|--|--|--|--|--|--|----------------|
| | | <i>Amount</i> | | | | | | | =Sum([Amount]) |
| | | | | | | | | | |



Conditional Formatting

Attention can be drawn to specific data in a report by using conditional formatting. This feature only applies formatting to the value of a field if a specified criterion is met.

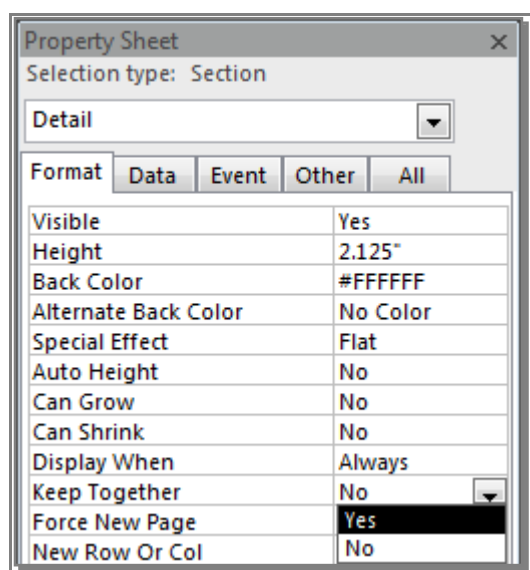
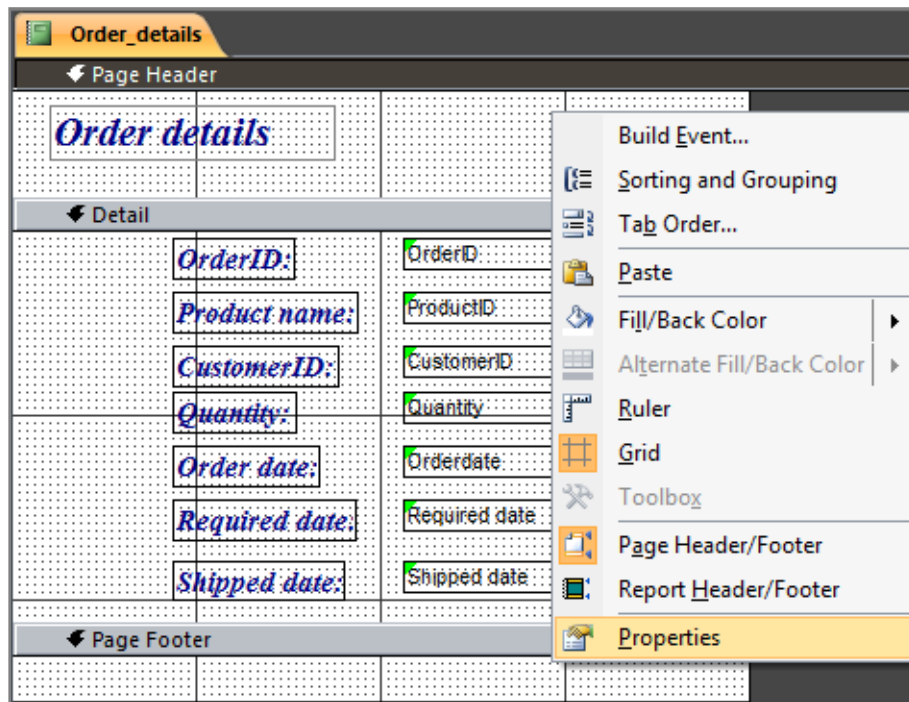
| | | |
|-----------------------------------|----|------------|
| <i>Chinese Star Anise (Whole)</i> | 19 | \$125.00 |
| <i>Chives</i> | 20 | \$300.00 |
| <i>Cilantro Flakes</i> | 12 | \$400.00 |
| <i>Cilantro Flakes</i> | 16 | \$800.00 |
| <i>Cilantro Flakes</i> | 22 | \$400.00 |
| <i>Amount</i> | | \$7,115.00 |



Set properties to group data

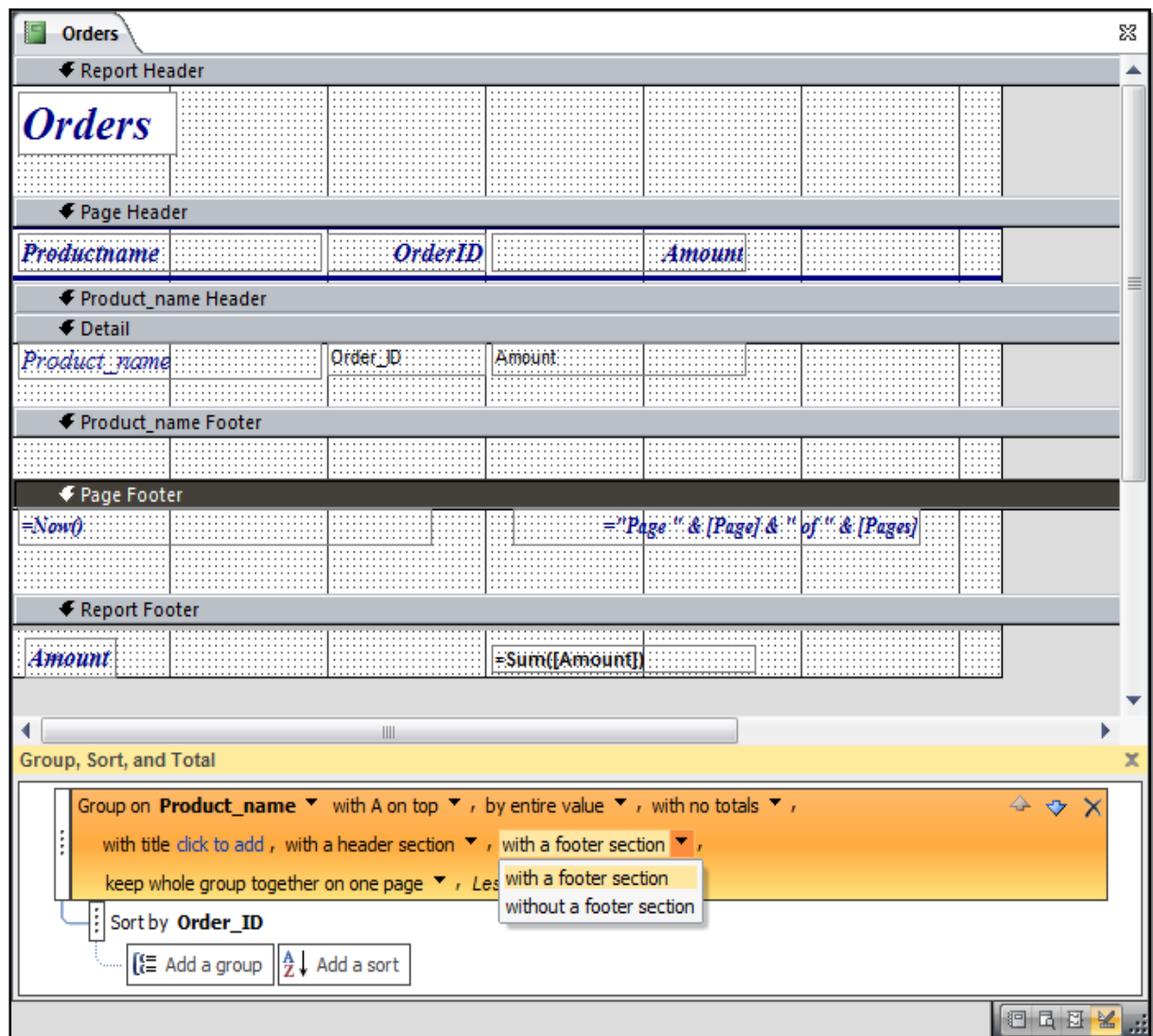
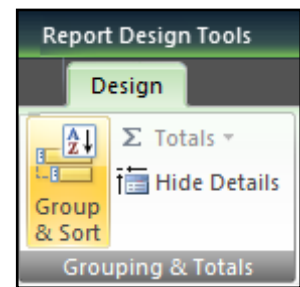
Keep together property

This can be used to ensure that a complete section of a report is always printed on the same page.



Group Footers

When reports are grouped based on a given field you can use the group footer section to add information particular to that group, such as the group total for example.



Forcing a new page

The screenshot shows the Microsoft Access interface with the 'Order_details' table in Design View. The table is divided into three sections: Page Header, Detail, and Page Footer. The 'Detail' section is currently selected. A context menu is open over the 'Detail' section, showing options like Cut, Copy, Paste, and Properties. The 'Properties' option is highlighted. Below the table, the 'Property Sheet' is open, showing the 'Detail' section selected. The 'Format' tab is active, and the 'Force New Page' property is set to 'None'. The dropdown menu for 'Force New Page' is open, showing options: None, Before Section, After Section, and Before & After. The 'After Section' option is highlighted.

| Property Sheet | |
|-------------------------|----------|
| Selection type: Section | |
| Detail | |
| Format | Data |
| Visible | Yes |
| Height | 2.125" |
| Back Color | #FFFFFF |
| Alternate Back Color | No Color |
| Special Effect | Flat |
| Auto Height | No |
| Can Grow | No |
| Can Shrink | No |
| Display When | Always |
| Keep Together | No |
| Force New Page | None |
| New Row Or Col | None |

Hide duplicate property

Report Design Tools

Design

Add Existing Fields Property Sheet

Tools

Orders

Report Header

Orders

Page Header

Productname OrderID Amount

Product_name Header

Detail

Product_name Order_ID Amount

Product_name Footer

Page Footer

=Now()

Report Footer

Amount =Sum([A

Property Sheet

Selection type: Text Box

Productname

Format Data Event Other All

Gridline Width Bottom 1 pt

Gridline Width Left 1 pt

Gridline Width Right 1 pt

Top Margin 0"

Bottom Margin 0"

Left Margin 0"

Right Margin 0"

Top Padding 0.0208"

Bottom Padding 0.0208"

Left Padding 0.0208"

Right Padding 0.0208"

Hide Duplicates Yes

Can Grow Yes

Can Shrink No

Display When Always

Reading Order Context

Scroll Bar Align System

Numeral Shapes System

Use functions and calculated fields in reports

DateDiff function

DateDiff("interval", [date1],[date2])

For interval – **y** for difference between years.

m for difference between months.

d for difference between days.

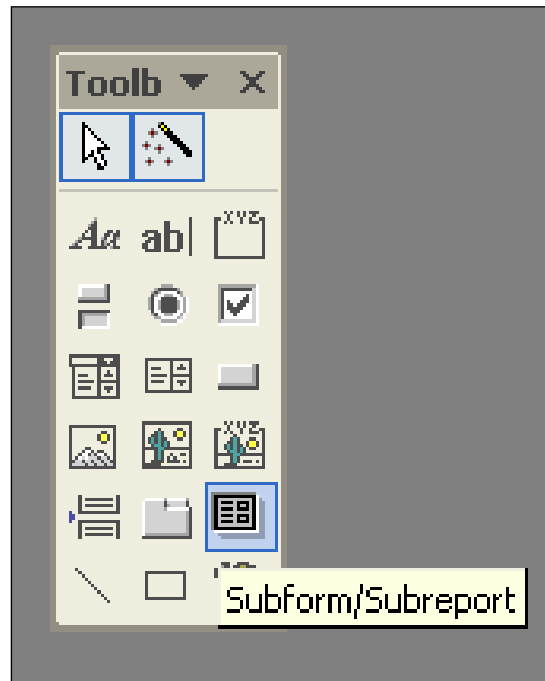
IIF function

IIf(condition, value if true, value if false)

Working with SubReports

You can use a SubReport to display data from two reports.

Embedding a SubReport



Use existing Tables and Queries

Use an existing report or form

| | |
|-------------------|--------|
| Customers_by_city | Report |
| Order_details | Report |
| Orders | Report |
| Products | Report |
| Order_details | Form |

Show Products for each record in Suppliers using Supplier ID

None

Example Report

Create the following report using the Orderingdb database. Use the Report wizard and base the report on all fields from qryOrdersByEmployee.

qryOrdersByEmployee

Employee Sales

| FullName | ProductName | Quantity | UnitCost | TotalCost |
|-------------|------------------------|----------|----------|------------|
| Ben Grey | | | | |
| | Blank CD's (10) | 500 | £5.95 | £2,975.00 |
| | Binders | 100 | £3.99 | £399.00 |
| | Cufflinks | 100 | £45.99 | £4,599.00 |
| | Alarm Clock | 50 | £12.99 | £649.50 |
| | Vacuum Cleaner | 10 | £111.50 | £1,115.00 |
| | Alarm Clock | 10 | £12.99 | £129.90 |
| | Toaster | 15 | £45.99 | £689.85 |
| | Iron | 25 | £29.50 | £737.50 |
| | Binders | 100 | £3.99 | £399.00 |
| | Toaster | 50 | £45.99 | £2,299.50 |
| | Alarm Clock | 50 | £12.99 | £649.50 |
| | Total Sold By Employee | | | £14,642.75 |
| Bepe Hamsen | | | | |
| | Paper Ream | 100 | £4.98 | £498.00 |
| | Erasers (25) | 500 | £2.99 | £1,495.00 |

The report is grouped by FullName and there is a summary total for the TotalCost field.

From the report properties record source add a parameter that asks to enter an employee Fullname when the report is opened. (Pressing enter should show all employees). Use:

Like [Enter employee fullname]& ""

Calculate a bonus award of £1000 if the Total sales for an employee is greater than £40,000.

Hint: Use the Ab tool and create a calculated field and including the IIFfunction.

| FullName | ProductName | Quantity | UnitCost | TotalCost |
|-----------------|------------------------|----------|----------|------------|
| Charles Goodwin | | | | |
| | Vacuum Cleaner | 10 | £111.50 | £1,115.00 |
| | Iron | 50 | £29.50 | £1,475.00 |
| | Radio | 100 | £65.95 | £6,595.00 |
| | Thermos Rask | 50 | £8.95 | £447.50 |
| | Toaster | 50 | £45.99 | £2,299.50 |
| | Cufflinks | 10 | £45.99 | £459.90 |
| | Vacuum Cleaner | 25 | £111.50 | £2,787.50 |
| | Printer Cartridge | 100 | £4.99 | £499.00 |
| | Radio | 50 | £65.95 | £3,297.50 |
| | Toaster | 20 | £45.99 | £919.80 |
| | Alarm Clock | 100 | £12.99 | £1,299.00 |
| | Radio | 100 | £65.95 | £6,595.00 |
| | Thermos Rask | 500 | £8.95 | £4,475.00 |
| | MP3 Player | 5 | £125.95 | £629.75 |
| | Toaster | 50 | £45.99 | £2,299.50 |
| | Vacuum Cleaner | 100 | £111.50 | £11,150.00 |
| | Iron | 50 | £29.50 | £1,475.00 |
| | Total Sold By Employee | | | £47,818.95 |
| | Bonus awarded | | | £1,000.00 |
| Henri Darcine | | | | |

Unit 8: Importing, Exporting and Linking Objects

In this unit you will learn how to:

- Importing from Excel
- Importing Objects from Access
- Exporting Objects to Access
- Linking Access Tables

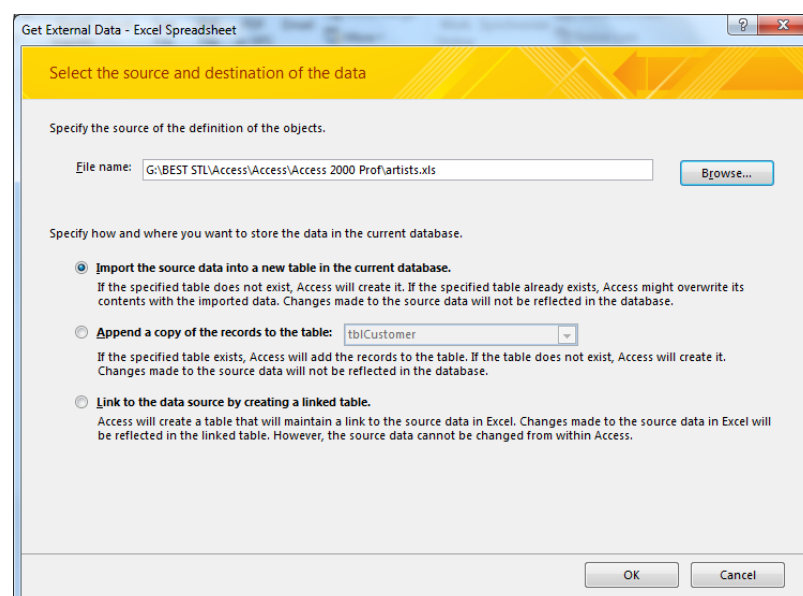
Importing from Excel

Instead of creating tables from scratch you may want to import already existing data in Excel into your Access database.

To import all of the data from a worksheet ensure the first row of the data contains unique column headings.

Then in your database select External Data.

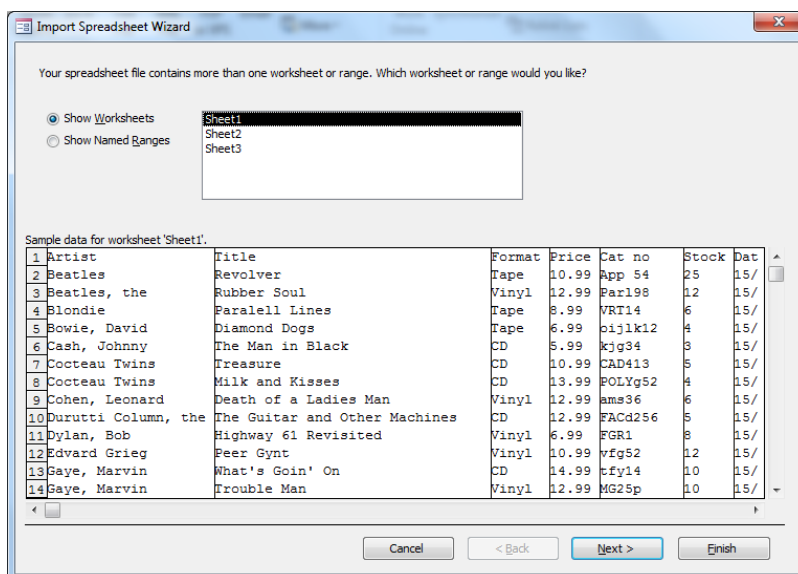
In the Import & Link group of the ribbon choose Excel.



Click the Browse button and select the Excel workbook to import.

On the next screen choose the sheet that contains the data.

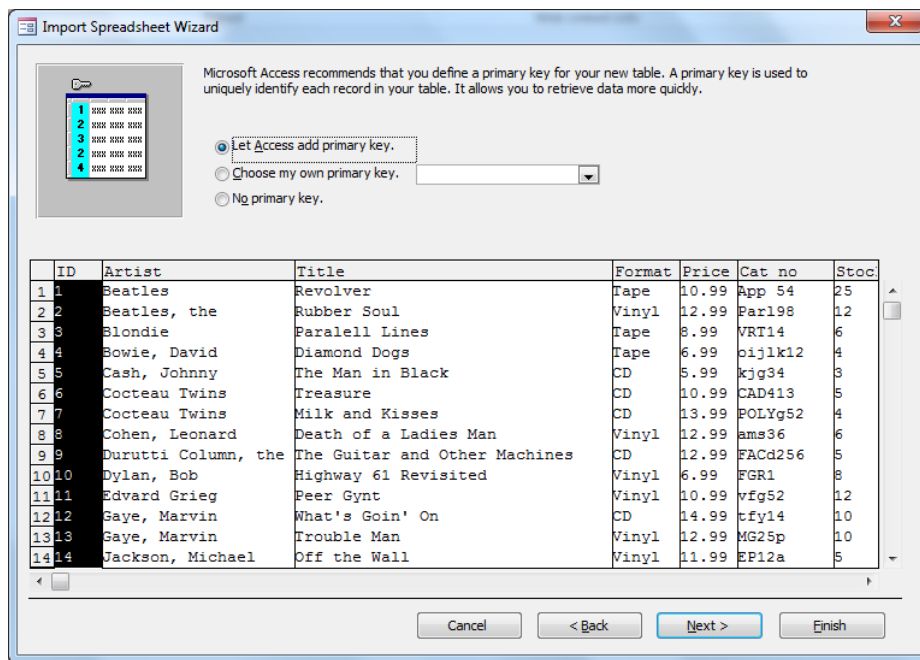
Note that if you want to import a selection of records than all the Excel data create a Named Range first in Excel for the records required.



On the next screen ensure First Row contains Field Headings is selected

On the next screen you have the option to format columns or even not include a column in the imported table.

The next screen allows you to choose a Primary Key, let Access create one or choose not to have one for the imported table.



Finally name the imported table (Artists)

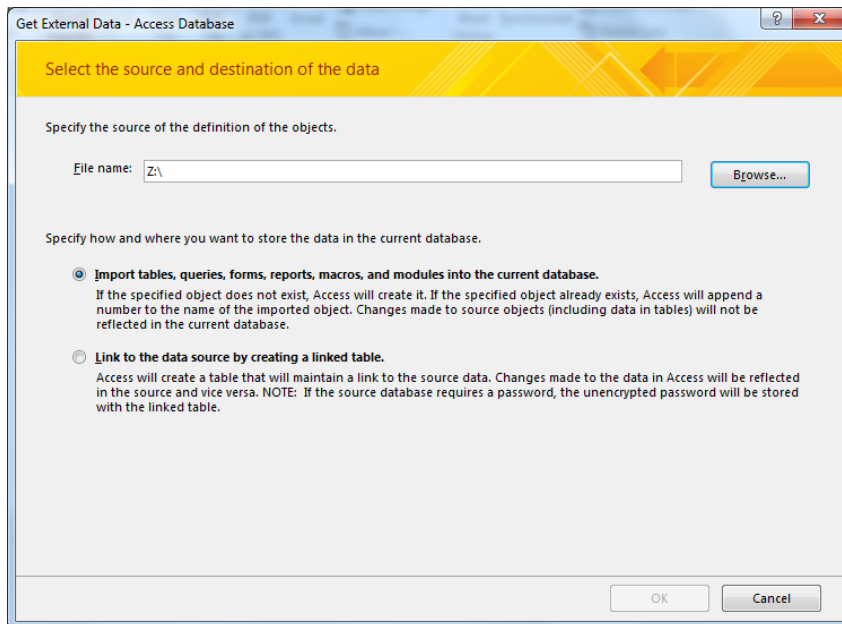
You now have a new table withing the database.

Importing objects from Access

When creating a database, you can import objects (tables, forms, reports, queries) from an already existing database.

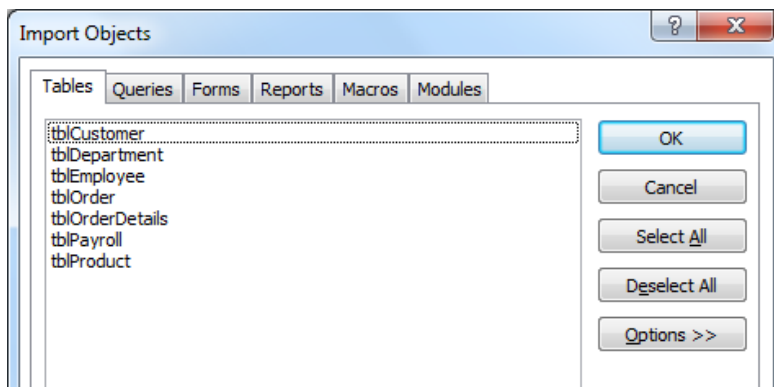
As with importing from Excel start by clicking the **External Data** tab.

Now click **Access** from the Import & Link group.



Choose the first option then click Browse to select the Access database from which you want to import objects.

Press OK then you can choose the tables to import.

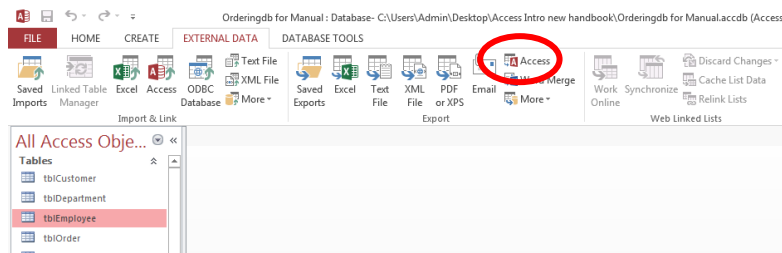


If you want to import other objects click and select them from the other tabs before pressing OK.

Use the Ctrl key for multiple selection.

Now click OK and all the objects selected will now be imported into the current database.

Exporting objects to Access



You may wish to export a table or another object to either an Access database or to Excel.

To do this:

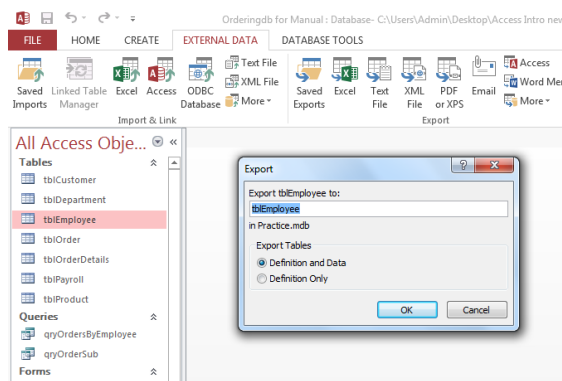
Select the table (or other object) from the Navigation pane.

Choose **External Data**, then choose **Access** from the Export group.

Click Browse then select the Access file to export into

Press Save.

On the next screen choose whether to export the whole table or just the table definition.



Click OK and then the Close button.

Repeat the process to export other object.

To Export to Excel do the same but choose **External Data, Excel** from the Export group.

Linking Access Tables

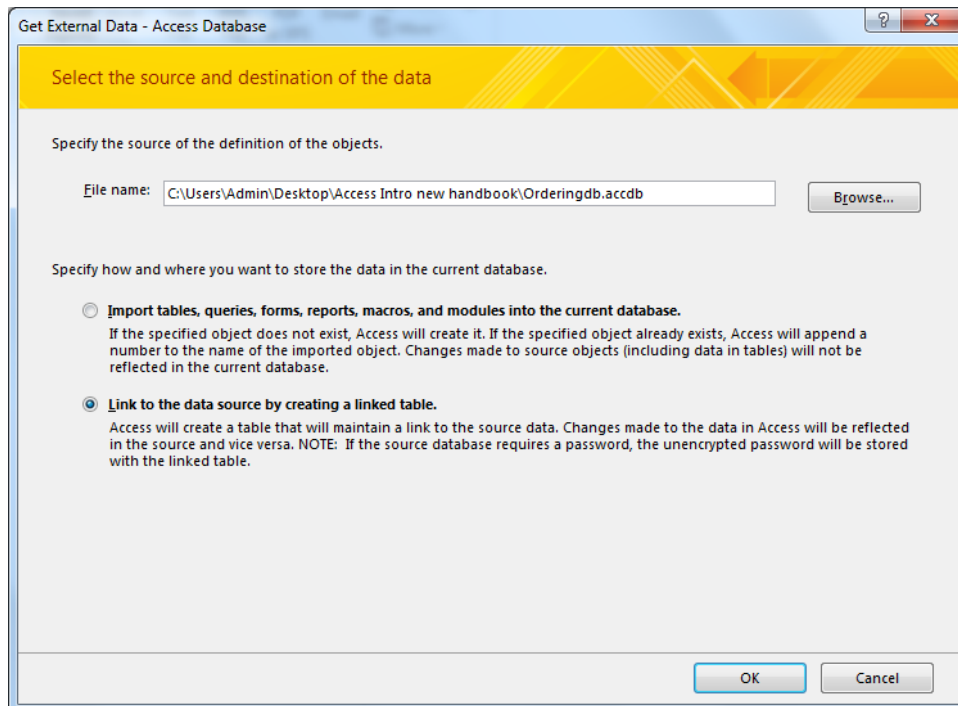
As well as importing and exporting object Access allows you to link to a table in another database (or to a sheet of an Excel workbook). This can be advantageous

when many users wish to use the same data but to create their own reports, queries and forms.

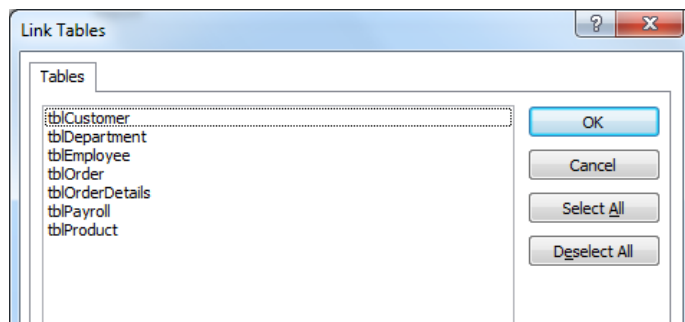
To link to a table of another daatabase select the External Data tab

Choose Acces from the Import & Link group

Select the second option – Link to data source by creatinf a linked tabel.

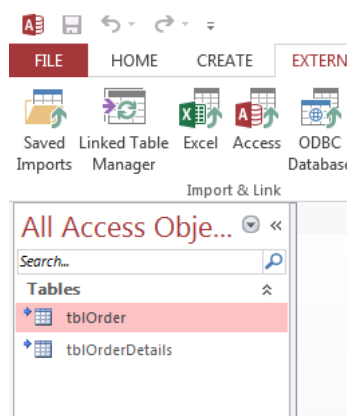


Click Browse to choose the database to link to, then OK.



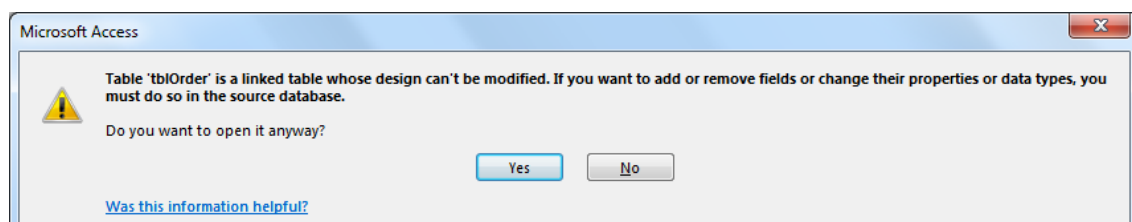
Now choose the table or tables to link to and press OK.

Note that linked tables display a small blue arrow next to the table icon in the Navigation pane.



When you open a linked table the data displayed is coming from the other database. Any data added or deleted will be added or deleted in the table of the source database.

However you cannot make changes to the table design.



Changes to the table design must be made by opening the source table.

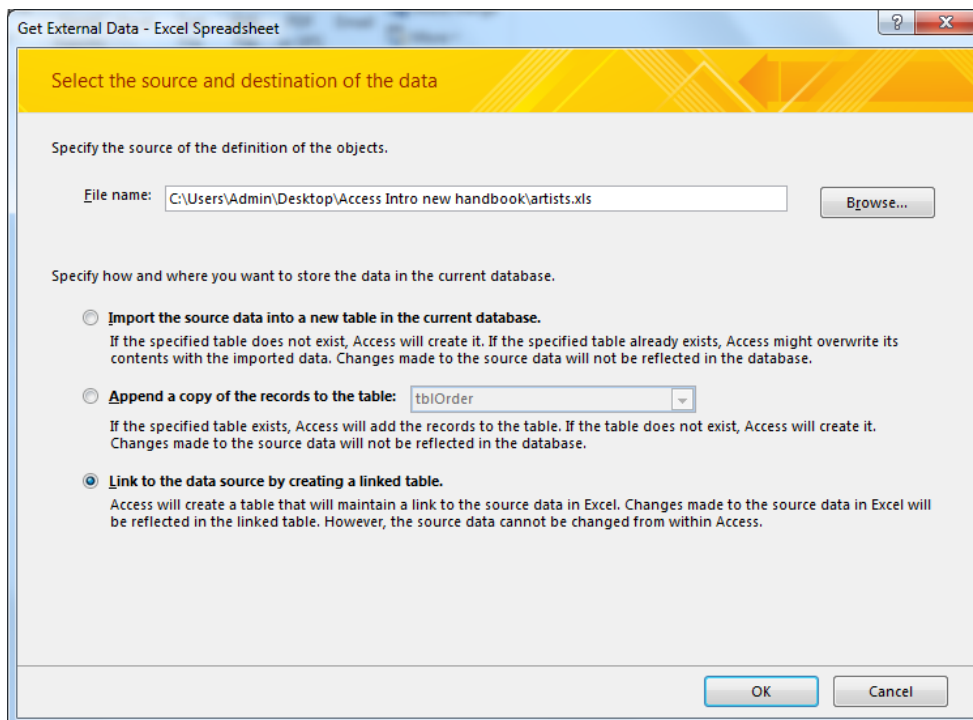
Linking to Excel

In a similar way you can link to a worksheet in an Excel workbook.

Choose **External Data**

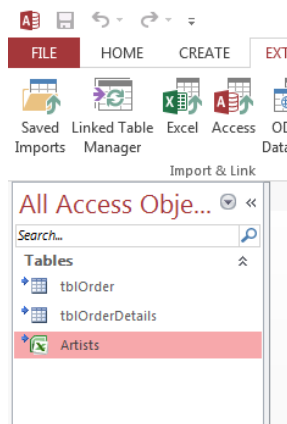
Click **Excel** from the Import & Link group

Choose **Link to data source by creating a linked table.**



Hint: Click Append data to an existing table if you want to copy and append data instead of linking it.

Browse and select the Excel file and choose the worksheet to link to.



Unlike with linking to an Access table, when linking to Excel changes cannot be made to data.

You must open the source Excel worksheet to make changes to data or to its design.

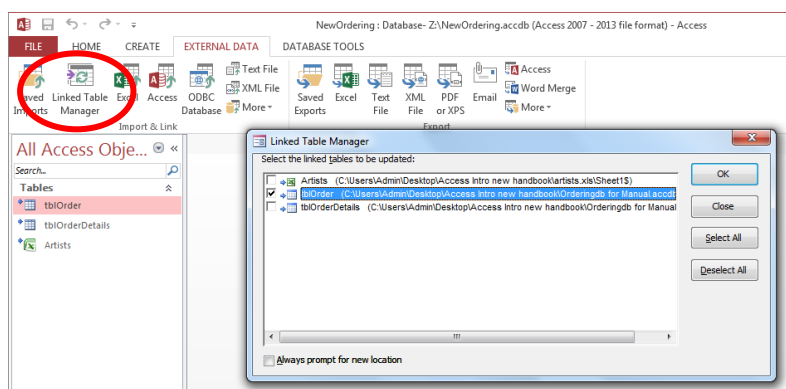
Linked Table Manager

Changes to data are will normally update automatically.

Use the Linked Table Manager if locations to tables have been changed and to view all the linked tables at once.

Select External Data

Linked Table Manager.



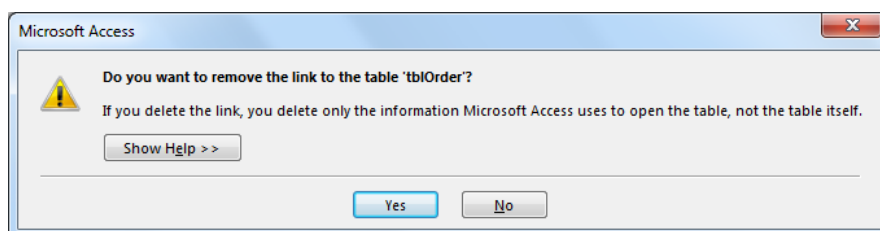
Click OK to update a link location of a selected table.

Breaking a link

If you no longer need to link to a table then:

Right click the linked table in the Navigation pane

Select **Delete**



The dialog confirms that the link is being deleted and not the actual data in the source table.

Quick Reference: Access Shortcuts

| Command | Keystroke |
|--|-------------------------|
| Add new record | Ctrl + |
| Builder | Ctrl-F2 |
| Check/uncheck box or option button | spacebar |
| Close | Ctrl-W |
| Copy | Ctrl-C |
| Cut | Ctrl-X |
| Cut current line and copy to Clipboard | Ctrl-Y |
| Cycle through sections | F6/Shift-F6 |
| Cycle through tab of each object's type (toggle) | Ctrl-Tab/Shift-Ctrl-Tab |
| Database window | F11 |
| Delete current record | Ctrl - |
| Edit/Navigation mode (toggle) | F2 |

| Command | Keystroke |
|--|--------------------|
| Exit subform and move to next/previous field in next record | Ctrl-Tab/Shift-Tab |
| Extend selection to next/previous record | Shift-Down/Up |
| File/Save As | F12 |
| Find | Ctrl-F |
| Find Next | Shift-F4 |
| Find Previous | Shift-F3 |
| GoTo | Ctrl-G |
| Insert current date | Ctrl ; |
| Insert current time | Ctrl : |
| Insert default value | Ctrl-Alt-spacebar |
| Insert new line | Ctrl-Enter |
| Insert value from same field in previous record | Ctrl ' |
| Menu bar | F10 |
| Move to beginning/end of multiple-line field | Ctrl-Home/End |
| Move to current field in first/last record (Navigation mode) | Ctrl-Up/Down |
| Move to first field in first record (Navigation mode) | Ctrl-Home |
| Move to first/last field in current record (Navigation mode) | Home/End |
| Move to last field in last record (Navigation mode) | Ctrl-End |
| Move to left edge of page | Home or Ctrl-Left |
| Move to page number/record number box | F5 |
| Move to right edge of page | End or Ctrl-Right |
| Next window | Ctrl-F6 |
| Open combo box | F4 |
| Open in Design view | Ctrl-Enter |

| Command | Keystroke |
|--|------------------|
| Paste | Ctrl-V |
| Print | Ctrl-P |
| Property sheet | Alt-Enter |
| Refresh combo box | F9 |
| Replace | Ctrl-H |
| Requery underlying tables in subform | Shift-F9 |
| Save current record | Shift-Enter |
| Screen left/right | Ctrl-PgUp/PgDn |
| Select/unselect column (Navigation mode) | Ctrl-spacebar |
| Switch to Form view | F5 |
| Turn on Move mode | Ctrl-F8 |
| Undo | Ctrl-Z |
| Undo previous extension | Shift-F8 |
| Zoom box | Shift-F2 |

E&OE

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