

Excel

Summarising Data using PivotTables



How to Use this User Guide

This handbook accompanies the taught sessions for the course. Each section contains a brief overview of a topic for your reference and then one or more exercises.

Exercises are arranged as follows:

- A title and brief overview of the tasks to be carried out;
- A numbered set of tasks, together with a brief description of each;
- A numbered set of detailed steps that will achieve each task.

Some exercises, particularly those within the same section, assume that you have completed earlier exercises. Your teacher will direct you to the location of files that are needed for the exercises. If you have any problems with the text or the exercises, please ask the teacher or one of the demonstrators for help.

A number of conventions are used to help you to be clear about what you need to do in each step of a task.

- In general, the word **press** indicates you need to press a key on the keyboard. **Click**, **choose** or **select** refer to using the mouse and clicking on items on the screen.
- Names of keys on the keyboard, for example the Enter (or Return) key are shown like this <ENTER>.
- Multiple key names linked by a + (for example, <CTRL+Z>) indicate that the first key should be held down while the remaining keys are pressed; all keys can then be released together.
- Words and commands typed in by the user are shown **like this**.
- Labels and titles on the screen are shown **like this**.
- Drop-down menu options are indicated by the name of the options separated by a vertical bar, for example **Home** tab |**Copy**. In this example you need to select the option **Copy** from the **Home** tab on the **Ribbon**. To do this, choose the **Home** tab from the **Ribbon**; move the cursor to **Copy** button; when **Copy** is highlighted, click the mouse button again.
- A button to be clicked will look like this **OK**
- The names of software packages are identified **like this**, and the names of files to be used **like this**.

Software Used

Excel 2013

Windows 7

Files Used

Sales.xlsx
Staff Finance.xlsx
OUCSWorks.accdb
Transactions2.xlsx

Revision Information

Version	Date	Author	Changes made
1.0	15 June 2011	Ian Miller	New Course & Office 2010
2.0	03 June 2014	Tanya Smith	Removal of Calculated Item and changes to exercises
2.2	16 December 2014	Traci Huggins	Changes to instructions and formatting exercises and diagrams
3.0	20 July 2015	Traci Huggins	Updated for Office 2013

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1 Introduction

Welcome to the *Excel: Analysing your data with Pivot Tables* course.

This booklet accompanies the course delivered by Oxford University IT Services, IT Learning Programme. Although the exercises are clearly explained so that you can work through them yourselves, you will find that it will help if you also attend the taught session where you can get advice from the teachers, demonstrators and even each other!

If at any time you are not clear about any aspect of the course, please make sure you ask your teacher or demonstrator for some help. If you are away from the class, you can get help by email from your teacher or from help@it.ox.ac.uk.

1.1. What you should already know

We expect you to have a level of experience in *Excel* that would be gained from attending the *Excel: Functions and Cell Referencing* course.

You should be able to open and navigate around a workbook using the mouse and scrollbars, use the help function, add data to cells, and select and amend such data. You should also be able to save a worksheet.

The computer network in IT Services (Banbury Road) may differ slightly to that which you are used to in your College or Department; if you are confused by the differences; ask for help from the teacher or demonstrators.

By the way, did we say that you can ask for help from the teachers or demonstrators ☺ !

1.2. What you will learn

At the end of this session you will have learned how to create pivot tables from different list of data. You will learn to create pivot charts from tables.

You will learn how to create calculated fields and calculated items. You will also learn to create calculated items by position and use the new Excel 2010 feature Slicers.

These notes deal with *Excel 2013*. Having worked through these notes, you should also be able to adapt to earlier versions (for example, *Excel 2010*), and also to later releases, since most of the basic principles hold true regardless of the version of the software.

1.3. What is *Excel*?

Excel 2013 is part of the *Microsoft Office 2013* package. Spreadsheets allow you to present and analyse data in a wide variety of ways and *Microsoft Excel* is perhaps the world's most popular spreadsheet application.

1.4. Where can I get a copy?

If you have a copy of *Microsoft Office 2013*, then you already have a copy of *Excel 2013*. If you are unable to find it on your computer, it may not have been installed and you should talk to your IT support contact (or the IT Help desk).

If you are a member of staff, you can obtain a copy of *Microsoft Office 2013* from the IT Services on-line shop. Students can obtain a Microsoft Student Licence, but this must be bought through a Microsoft Authorised Education Reseller; the IT Services on-line shop can direct you to a suitable reseller.

2 Pivot Tables

2.1. What is a Pivot Table?

PivotTable allow you to summarise large amounts of data and perform calculations quickly and in a meaningful way. They allow you to create an interactive view of your data set. This is called a *PivotTable report*. With a PivotTable report, you can summarize and perform various calculations on large amounts of data, categorize your data into groups and organize your data into a format that is easy to chart. But the real power of a PivotTable report is that you can interactively drag and drop fields within your report, dynamically changing your perspective and recalculating totals to fit your current view.

Use a PivotTable when you need to

- Find relationships and groupings within your data.
- Find a list of unique values for one field in your data.
- Find data trends using various time periods.
- Anticipate frequent requests for changes to your data analysis.
- Create subtotals that frequently include new additions.
- Organize your data so it is easy to chart.

A PivotTable can be created with any spreadsheet which appears as a list of consecutive rows and columns of data, otherwise known as tabular data, see Figure 1. In a spreadsheet column headings are often used to provide **field** names and each row contains information relating to the column headings which creates a **record**.

Field: Also known as a column. This contains a set of data values of the same data type. In Figure 1, each field contains data of the same type. **Name** – text, **Week** – date, **Spending** – text and **Amount** – currency.

Record: Contains the information about an entity, for example person, place or thing in each row of data. In Figure 1, row 6 is the record relating to Janine Brown and tells us that on the **Week** 28/01/2004, her **Spending** was on Food for the **Amount** of £17.00.

	A	B	C	D	E	F
1						
2		Student Spending				
3						
4		Name	Week	Spending	Amount	
5		Rob Roy	21/01/2004	Rent	£18.00	
6		Janine Brown	28/01/2004	Food	£17.00	
7		Pamela Wright	04/02/2004	Rent	£14.00	
8		Rob Roy	11/02/2004	Food	£12.00	
9		Rob Roy	21/01/2004	Rent	£19.00	
10		Pamela Wright	28/01/2004	Car	£12.00	
11		Rob Roy	04/02/2004	Food	£19.00	
12		Janine Brown	11/02/2004	Rent	£15.00	
13		Pamela Wright	21/01/2004	Rent	£19.00	
14		Rob Roy	28/01/2004	Car	£20.00	
15		Rob Roy	04/02/2004	Rent	£16.00	
16		Janine Brown	11/02/2004	Food	£12.00	
17		Janine Brown	21/01/2004	Rent	£16.00	
18		Rob Roy	28/01/2004	Food	£17.00	
19		Rob Roy	04/02/2004	Rent	£14.00	
20		Pamela Wright	11/02/2004	Car	£19.00	
21		Rob Roy	21/01/2004	Food	£17.00	
22		Janine Brown	28/01/2004	Rent	£20.00	
23		Pamela Wright	04/02/2004	Food	£18.00	
24		Rob Roy	11/02/2004	Rent	£14.00	
25		Rob Roy	21/01/2004	Food	£12.00	
26		Pamela Wright	28/01/2004	Rent	£18.00	
27		Pamela Wright	04/02/2004	Car	£17.00	
28		Pamela Wright	11/02/2004	Food	£12.00	
29						

Figure 1 Data used to create a PivotTable

2.2. Ranges versus a table in Excel 2013

PivotTables can be created using either a range, named range or a table. In *Excel 2013* it is considered best practice to use a table to create your pivot table.

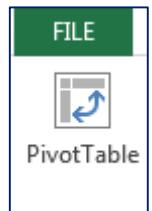
Tables were introduced in *Excel 2007* and are a new way of working with tabular data. They are particularly useful when working with data which expands and contracts over time, also known as 'dynamic data'.

By converting your range of data to a table you will ensure that when rows of data are added at the bottom it will still include this as part of the data set. In contrast, ranges and named ranges only expand or contract when rows are inserted or deleted and not when data is added to the end, hence why tables are considered the preferred option.

2.3. Creating a Pivot Table

To create a PivotTable firstly you must ensure you are selecting **a cell** within the range / table of data.

To create the PivotTable select a cell within your data and select **Insert | Tables | PivotTable** on the **Ribbon**.



The Create PivotTable dialog box will then appear.

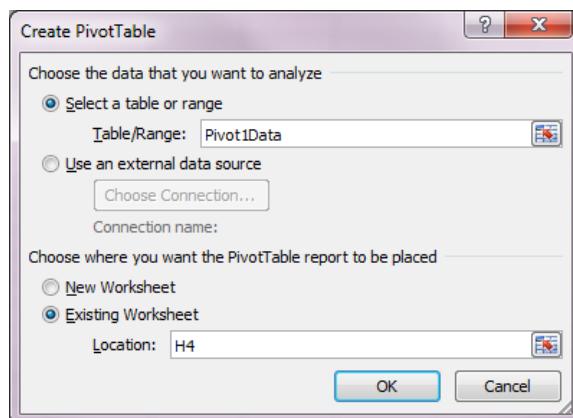


Figure 2: PivotTable dialog box

In the **Select a table or range, Table/Range** text field, this should default to the correct range or table name, alternatively you can type the range or table name here.

In the section **Choose where you want the PivotTable report to be placed**, you can choose to add a PivotTable in a **New Worksheet** or in the **Existing Worksheet**. In Figure 3 above the cell **H4** has been selected in the **Existing Worksheet**. Click **OK** to continue.

2.4. PivotTable screen

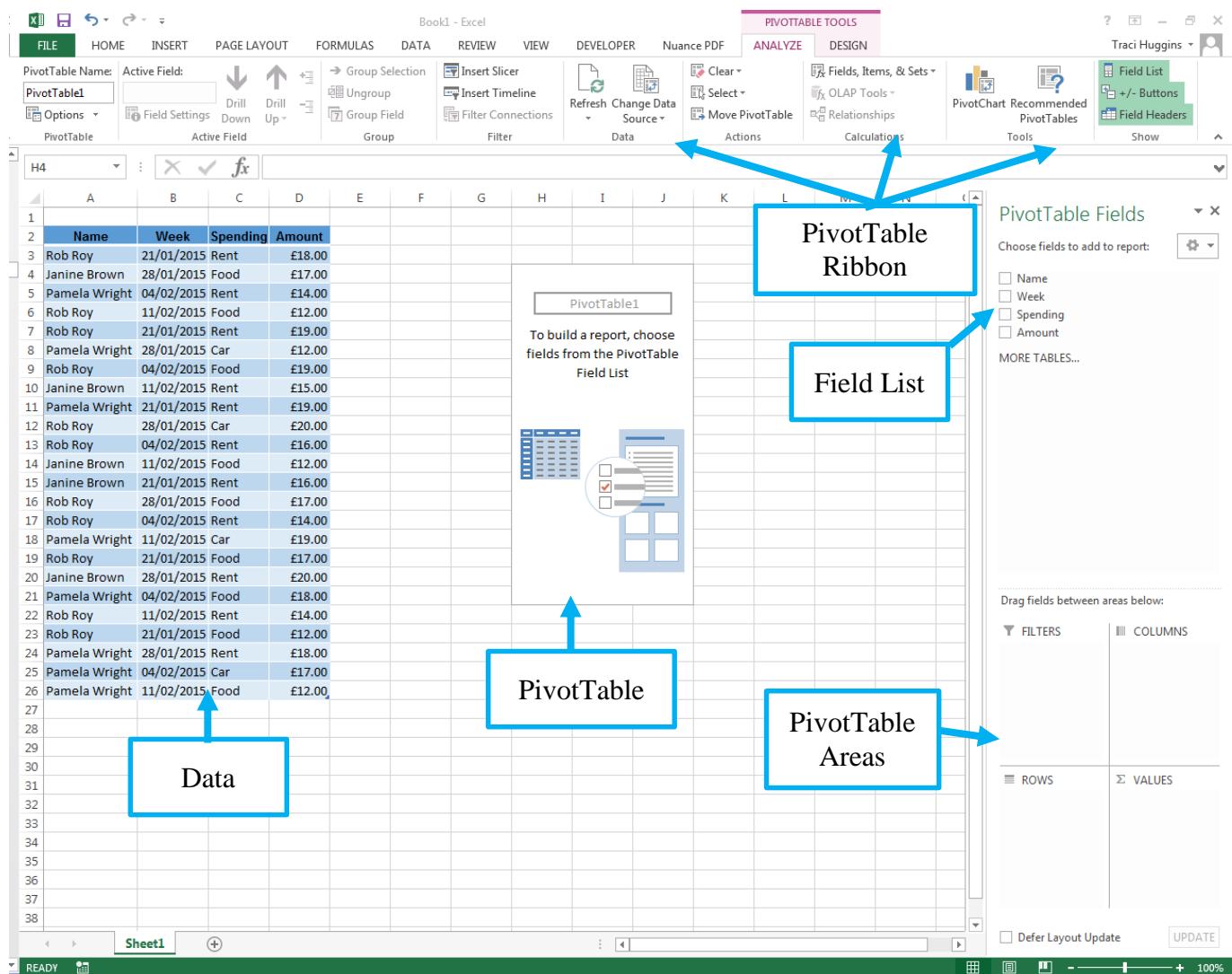


Figure 3: PivotTableScreen

2.5. Adding fields to your PivotTable

The fields in the **PivotTableField List** appear as checkboxes in the task pane dialog box (see diagram 4 above). To add fields to the PivotTable simply drag the field name to the appropriate PivotTable area of the PivotTable task pane. The PivotTable has four areas

Report Filter: Allows you to view a subset of data and focus on a specific area such as a particular period of time or just spending on Rent

Row Labels: The unique values within the field selected appear as row items in the pivot table.

Column Labels: The unique values in the field selected appear as column items in the PivotTable

Values: The field is summarised in the PivotTable by using a function. When you drag a field checkbox to the **Values** area, Excel will automatically apply the SUM function to fields which contains numeric data and the COUNT function to fields which contains non-numeric values.

You can drag as many fields as you want to any of these locations, you do not have to use all the fields.

If you drag a field to the wrong location, just drag it off the table diagram to remove it or uncheck the checkbox in the field list.

The order in which you list the fields in the data area will affect how the data is sorted. It will sort by the first item followed by the second item and so on.

2.5.1. Change the calculation in the value field

To change the calculation in the **Values** area select the arrow to the right of the field name in the PivotTable field list **Values** area and select **Field Settings**. See Figure

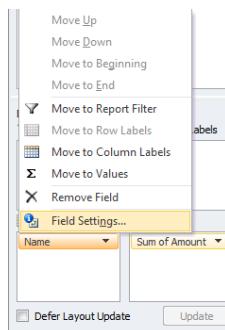


Figure 4: Change Field Settings

The **Value Field Settings** dialog box will appear, the **Summarize Values By** should be selected. See Figure

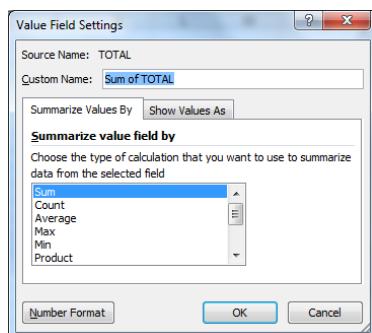


Figure 5: Value Field Settings dialog box

Select a relevant calculation from the list provided.

2.5.2. Show values as a %

From the **Value Field Settings** dialog box there is an additional tab, **Show Values As**. This will allow you to show your values as a % of various totals. See Figure

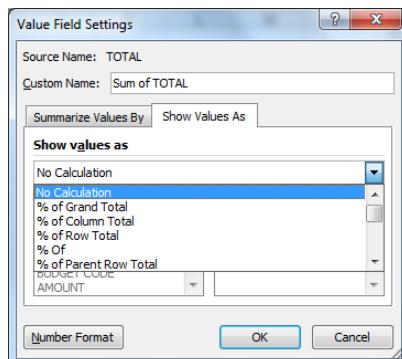


Figure 6: Show values as dialog box

2.6. Format values in a PivotTable

When you create a PivotTable you may need to re-format your data for easier viewing. Normally when formatting data you would select the data and use the **Format Cells** option however in a PivotTable this will not update the formatting when the PivotTable is refreshed.

To format PivotTable data, select any cell within a column of your PivotTable and right click, then select **Number Format...** see Figure 7 and select a relevant category, see Figure 8 and click on **OK**

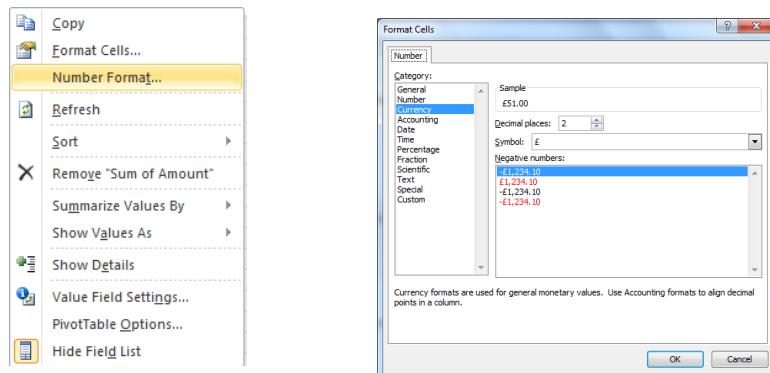


Figure 7: Number Format

Figure 8: Format Cells

This will format all the values in the column of data and the formatting will remain when the PivotTable is refreshed in the future.

2.7. Change the name of row and column headings

Pivot tables create default row and column headings known as **Row Labels** or **Column Labels**. See Figure 9

Sum of Amount	Column Labels	Food	Rent	Grand Total
Row Labels	Car			
Janine Brown		£29.00	£51.00	£80.00
21/01/2004			£16.00	£16.00
28/01/2004		£17.00	£20.00	£37.00
11/02/2004		£12.00	£15.00	£27.00
Pamela Wright		£48.00	£30.00	£129.00
21/01/2004			£19.00	£19.00
28/01/2004		£12.00	£18.00	£30.00
04/02/2004		£17.00	£14.00	£49.00
11/02/2004		£19.00	£12.00	£31.00
Rob Roy		£20.00	£77.00	£178.00
21/01/2004			£37.00	£66.00
28/01/2004		£20.00	£17.00	£37.00
04/02/2004		£19.00	£30.00	£49.00
11/02/2004		£12.00	£14.00	£26.00
Grand Total		£68.00	£136.00	£183.00
				£387.00

Figure 9: Default row and column labels

You can edit these labels by clicking into the cell label and type over the existing text. In the example below the labels have been changed to **Spending** and **Week**. See Figure 10

Sum of Amount Week	Spending Car	Food	Rent	Grand Total
Janine Brown		£29.00	£51.00	£80.00
21/01/2004			£16.00	£16.00
28/01/2004		£17.00	£20.00	£37.00
11/02/2004		£12.00	£15.00	£27.00
Pamela Wright		£48.00	£30.00	£129.00
21/01/2004			£19.00	£19.00
28/01/2004		£12.00	£18.00	£30.00
04/02/2004		£17.00	£18.00	£49.00
11/02/2004		£19.00	£12.00	£31.00
Rob Roy		£20.00	£77.00	£178.00
21/01/2004			£29.00	£66.00
28/01/2004		£20.00	£17.00	£37.00
04/02/2004		£19.00	£30.00	£49.00
11/02/2004		£12.00	£14.00	£26.00
Grand Total		£68.00	£136.00	£183.00
				£387.00

Figure 10: Named row and column labels

2.8. Expand and collapse PivotTable data

You may notice in the example in Figure that the PivotTable contains small ‘-’ signs beside the **Name** and **Spending** fields. Currently all of the data is visible. This can look cluttered so you can change what is visible by expanding and collapsing data within your PivotTable.

2.8.1. Expand or collapse values within a field

To collapse data below an individual value in a field, point and click your mouse at the ‘-’ sign and the data below will collapse. A ‘+’ sign will then become visible.

To expand the data, point and click on the ‘+’ sign. See Figure

Sum of Amount Row Labels	Column Labels	Rent	Food	Car	Grand Total
Janine Brown		£51.00	£29.00		£80.00
Pamela Wright		£51.00	£30.00	£48.00	£129.00
21/01/2004			£19.00		£19.00
28/01/2004			£18.00	£12.00	£30.00
04/02/2004			£14.00	£18.00	£49.00
11/02/2004			£12.00	£19.00	£31.00
Rob Roy		£81.00	£77.00	£20.00	£178.00
21/01/2004			£37.00	£29.00	£66.00
28/01/2004				£17.00	£37.00
04/02/2004			£30.00	£19.00	£49.00
11/02/2004			£14.00	£12.00	£26.00
Grand Total		£183.00	£136.00	£68.00	£387.00

Figure 11: Expand or collapse values

2.8.2. Expand or collapse an entire field of data

To expand or collapse an entire field of data, select the field you want to expand or collapse within the pivot table, then select **PivotTable Tools | Options | Active Field** and select expand, which has a green plus sign or collapse, which has a red minus sign. See Figure

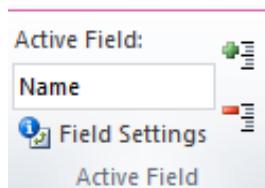


Figure 12: Expand or collapse data - Ribbon menu

2.8.3. Expand or collapse data with the right click menu

Alternatively if you point at a field or value in your PivotTable and **right click** then select **Expand/Collapse** and the below menu will appear, with options to expand entire fields or just values. See Figure

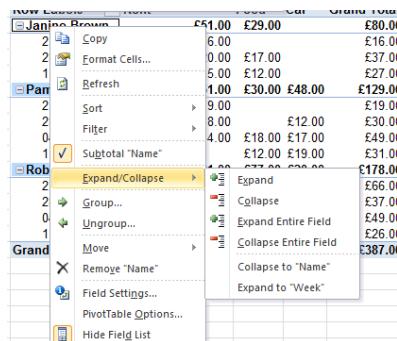


Figure 13: Expand or collapse data - right click menu

2.9. Filter, Sort and Group PivotTable data

2.9.1. Filter data

Data within a PivotTable can be filtered to display specific information. You may want to display information relating to a particular company and summarise what has been purchased by that company.

When you insert **Row** and **Column Labels** into a PivotTable the unique values within these fields can be filtered.

Above your **Row** and/or **Column Labels**, next to your row and column label headings, you will see a drop down arrow in the heading. If you select this, a drop down list will appear which will contain the unique values within this field and ticks next to each item, see Figure . You can select/de-select items individually or select/de-select all items in the list, using the **Select (All)** option.

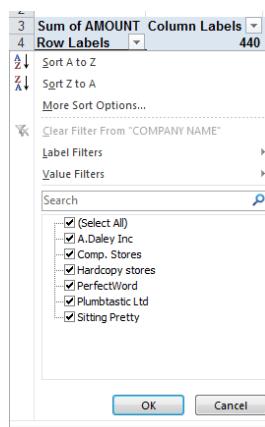


Figure 14: Filter data

Make your selection from the list and select **OK**

When data is filtered in a PivotTable, a filter icon will also appear next to the field name in the **PivotTable Field List**. See Figure

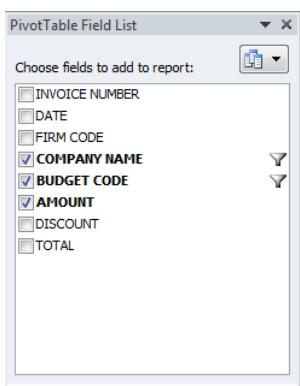


Figure 15: PivotTable Field List

2.9.2. Clear filters from individual fields

To clear filters you can either point and click on the filter icon next to the column/row heading in the PivotTable or click on the filter icon in the **PivotTable Field List** and a filter menu will appear with an option to **Clear Filter From "COMPANY NAME"**. This will however clear the filters from the selected field only and will not clear all the filters. See Figure

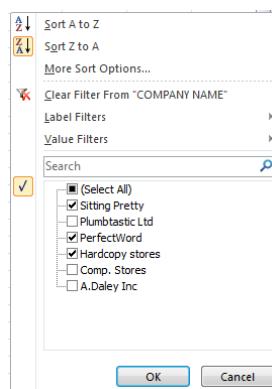
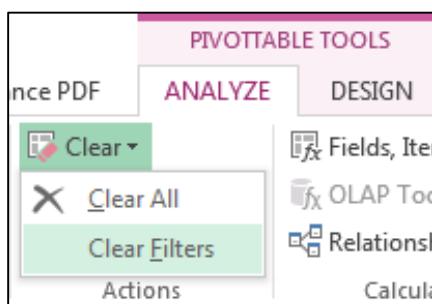


Figure 16: Clear filters from a field

2.9.3. Clear all filters

To clear all filters from your pivot table, click into your PivotTable to activate it and select PivotTable Tools | Analyze | Actions group on the Ribbon and select Clear, Clear Filters.



Error! Reference source not found.: **Clear all filters**

2.9.4. Sort data

Column and row label values can be sorted either using the filter button in the column or row heading and at the top of the filter menu the  or  will be available.

Alternatively if you click into the field you would like to sort, then click on the **PivotTable Tools | Analyze | Sort & Filter** on the **Ribbon** sort options are available from here too. See Figure 1

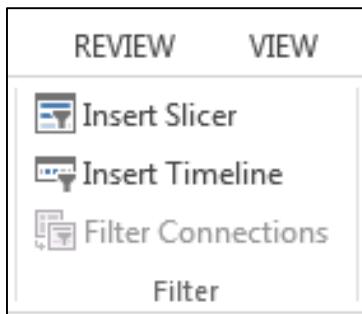


Figure 18: Sort & Filter from ribbon

2.9.5. Drill down

When data is summarized in a PivotTable and totals are displayed you can see the individual entries relating to the total by “drilling down”.

Point and double click the total that you want to view individual records for. A new worksheet will appear with records relating to that total.

This worksheet will then need to be manually deleted to remove it.

2.9.6. Group data

Grouping PivotTable items is a handy feature that enables you to group specific items in a field. A group field provides a higher level of summary detail than that provided by the original source data. For example, companies can be grouped into regional areas, numbers grouped into ranges and dates grouped into months or quarters.

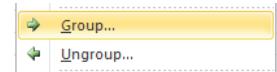
Rows and columns of data in a PivotTable can easily be grouped and it is also possible to group non-adjacent field items in a row or column.

To group data within a field, select either adjacent or non-adjacent data by holding the **<Ctrl>** key and clicking on non adjacent data or holding the **<Shift>** key down to select adjacent data. Select **PivotTable Tools | Analyze | Group | Group Selection**. See Figure .



Figure 19: Group Selection from ribbon

Alternatively select the right click and select **Group**



For **text** Excel will add in a default group name, for example ‘Group1’ and you can add a descriptive label.

For **dates** Excel will automatically ask you to select the groupings you require. If your data covers more than one year then you should remember to include **Years** in your grouping, or it will group for example Jan 2010, Jan 2011 in one group. See Figure

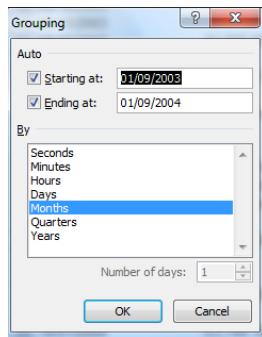


Figure 20: Grouping dates dialog box

For **numeric values** Excel will ask you to select a start value, end value and an increase by value. See Figure

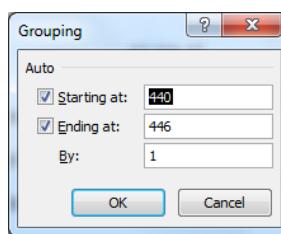


Figure 21: Grouping numeric values dialog box

To **ungroup** data either select **PivotTable Tools | Options | Group | Ungroup**. See Figure Or right click point at grouped data and right click, then select **Ungroup**



2.10. Using Report Filter

2.10.1. Add a Report Filter

So far we have added rows, columns and values to a pivot table. However there is one area of the PivotTable field list screen we still need to look at. This is the **Report Filter** section.

Report Filters allow you to

- Display a different set of values in a report based on a report filter item
- Display each set of values in a report based on a report filter item on a separate worksheet

To add a field to the **Report Filter** area, select it from the field list and drag and drop it to the **Report Filter** area.

The filter appears at the top left of the pivot table. Figure shows the report filter is '**COMPANY NAME (ALL)**' which means all Company Names are visible.

COMPANY NAME (All)			
Sum of TOTAL	Column Labels	440	441
Row Labels		2541.3	44
01/09/2003			
11/09/2003			

Figure 22: Report filter

2.10.2. Filter by individual or multiple items

To filter the data, select the drop down arrow and the default report filter will appear, which allows you to select individual items as per Figure . To select multiple items via a filter select the **Select Multiple Items** tick box and your filter will add check boxes by each field item as per Figure

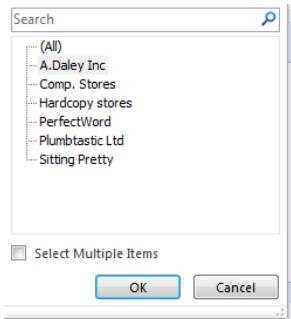


Figure 23: Individual item report filter

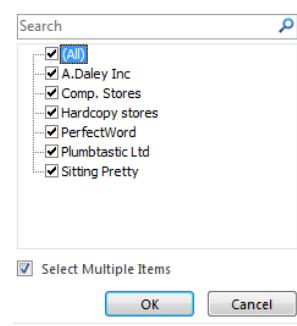


Figure 24: Multiple items report filter

2.10.3. Create multiple pages using Report Filters

Report filters also allow you to create individual spreadsheets for each of your report filters. For example if you want to create an individual report for each companies sales it would be quite time consuming to select each company from the drop down report filter and then print each page. Instead this can be achieved with a few clicks of the mouse.

Once you have a report filter added to your PivotTable, click into your pivot and then select **PivotTable Tools | Analyze | Options** from your ribbon. In the **PivotTable** area on the ribbon, click on the arrow to the right of **Options** and select **Show Report Filter Pages** (Figure). The **Show Report Filter Pages** dialogue box will now appear (Figure). Select the name of the report filter you want your report pages to contain and select **OK**

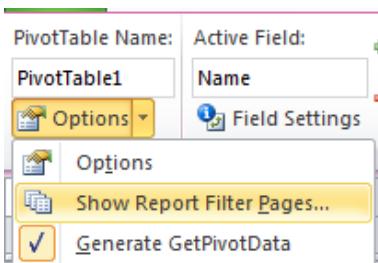


Figure 25: Show Report Filter Pages

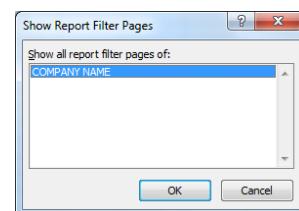


Figure 26: Show Report Filter Pages dialog box

2.11. Creating a Pivot Chart from a Pivot Table

A chart can easily be created from your PivotTable data. When you create a chart from a PivotTable it is worth remembering that the chart will always match the data shown in the PivotTable.

A pivot chart can be created on the same worksheet or a separate chart sheet. To create a chart from a PivotTable filter your data to display the data you require in your chart.

Click within your PivotTable and select **PivotTable Tools | Analyze | Tools | Pivot Chart**, see Figure . The **Insert Chart** dialog box will appear, see Figure

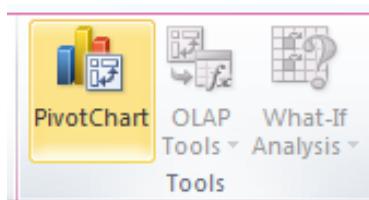


Figure 27: Insert a Pivot Chart

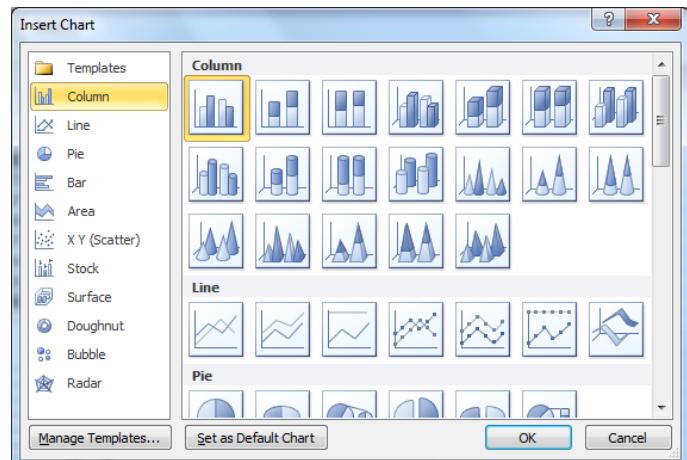


Figure 28: Insert Chart dialog box

Choose an appropriate chart type select **OK** and the chart will appear on your PivotTable data work sheet. See Figure

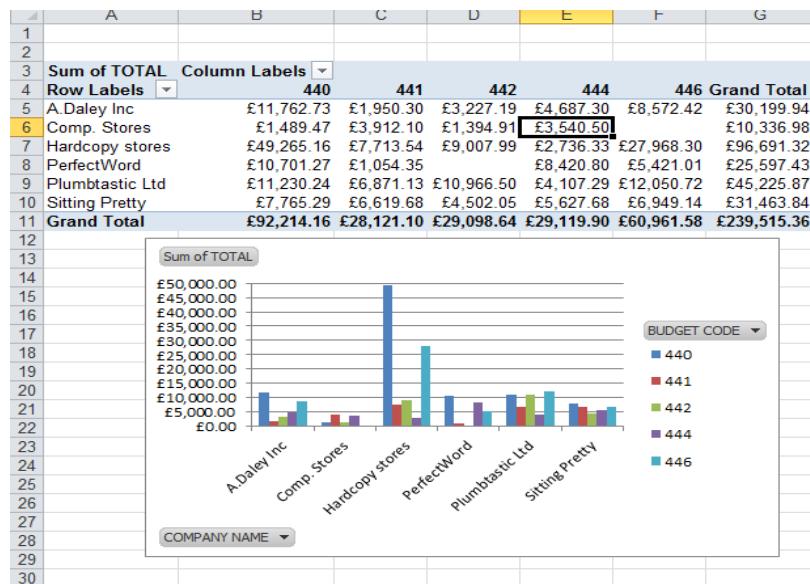


Figure 29: PivotTable chart and table data

To move the chart to a different worksheet select the chart then select **PivotChart Tools, Design, Location, Move Chart**. Select **New Worksheet** from the **Move Chart** dialog box.

On the chart there dropdown arrows next to field names, these will filter your chart data or you can filter the data in your PivotTable and the chart will immediately update.

2.12. Calculated Fields

When you create a PivotTable the fields are taken from those in your range or table of data. Once your PivotTable is created you may decide that a new field is required and this can be created using a calculation. It is called a **calculated field**.

When a **calculated field** is created it will insert a new data field into the PivotTable. This data field does not exist in the source data but obtains its value from a formula. The new formula can include existing fields, numbers and other arithmetical operators.

For example, if the PivotTable's underlying data consists of only three fields, "Week date", "Sales" and "Expenses" you will only be able to use those three fields and place them in either the report filter, row, column or value fields. You may want to calculate the "Profit" (Sales – Expenses) in your pivot table. A calculated field allows you to do this by creating a customised field which acts as a combination of one or more fields already existing in the pivot table.

To create a calculated field for profit, the below PivotTable has been created using the week date field as the row field and the sales and expenses as the value field. The PivotTable in Figure has then been grouped by months on the week date.

2	3 Row Labels	Sum of Sales	Sum of Expenses
4	Jan	£7,591	£175
5	Feb	£13,366	£346
6	Mar	£13,711	£309
7	Apr	£11,866	£360
8	May	£11,446	£303
9	Jun	£9,434	£338
10	Jul	£11,064	£483
11	Aug	£13,774	£276
12	Sep	£12,607	£441
13	Oct	£12,371	£383
14	Nov	£8,589	£294
15	Dec	£11,706	£535
16	Grand Total	£137,525	£4,243
17			

Figure 30: Example PivotTable prior to adding a calculated field

To create a **calculated field** click into the PivotTable and select **PivotTable Tools | Analyze | Calculated Field** from the **Ribbon**. See Figure

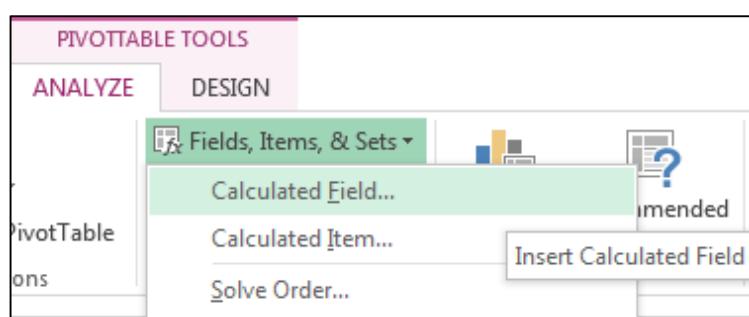


Figure 31: Insert a calculated field from the ribbon

The Insert Calculated Field dialog box will appear. See Figure

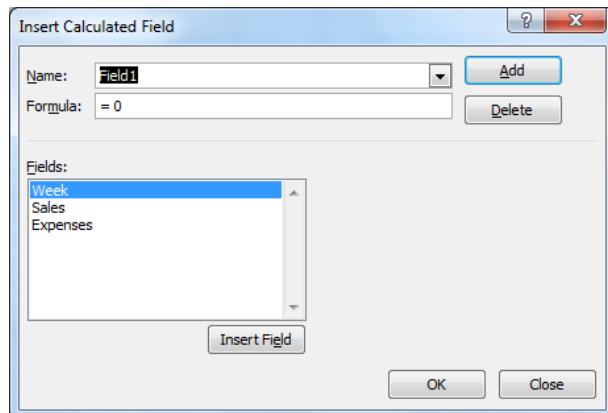


Figure 32: Insert Calculated Field dialog box

In the **Insert Calculated Field | Name** text box insert the new field name. In this example it will be '**Profit**'

In the **Insert Calculated Field | Formula** text box a formula is required which must start with an '=' sign.

The fields which are available to use in the formula are in the **Field** box below **Formula**. To add a field to the formula, select the field name and either click on **Insert Field** or double click the field name and it will be inserted into the **Formula** text box. Then click **OK**

The completed formula for this example is **=Sales-Expenses**. See Figure

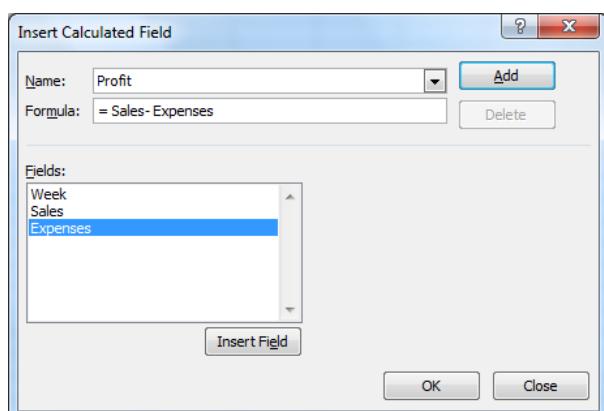


Figure 33:Completed Insert Calculated Field dialog box

The calculated field will appear as a new column in your PivotTable. See Figure

	Row Labels	Sum of Sales	Sum of Expenses	Sum of Profit
4	Jan	£7,591	£175	£7,416
5	Feb	£13,366	£346	£13,020
6	Mar	£13,711	£309	£13,402
7	Apr	£11,866	£360	£11,506
8	May	£11,446	£303	£11,143
9	Jun	£9,434	£338	£9,096
10	Jul	£11,064	£483	£10,581
11	Aug	£13,774	£276	£13,498
12	Sep	£12,607	£441	£12,166
13	Oct	£12,371	£383	£11,988
14	Nov	£8,589	£294	£8,295
15	Dec	£11,706	£535	£11,171
16	Grand Total	£137,525	£4,243	£133,282

Figure 34: Calculated Item in a Pivot Table

2.13. Working with linked data

In the previous examples the PivotTables were created from an existing spreadsheet, populated with data. It is also possible to create and link a PivotTable or pivot chart to an external data source, for example a database file.

When data in the external source changes these are reflected in the *spreadsheet* PivotTable when the data is subsequently refreshed.

To create a PivotTable from an external data source you will require a blank worksheet open. Select **Insert | PivotTable** and the Create PivotTable dialog box will appear. See figure 36 below;

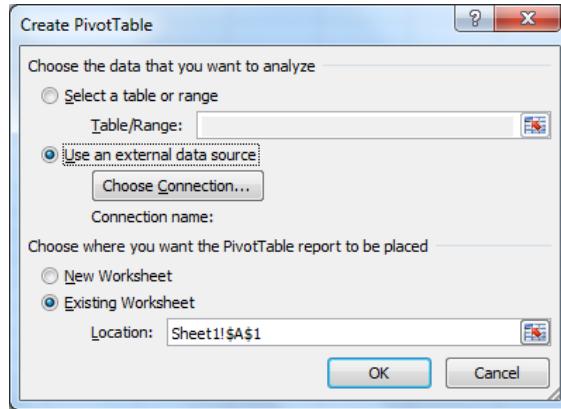


Figure 35: Create PivotTable of external data

In the **Create PivotTable** window select **Use an external data source**. Choose **Existing Worksheet** to place the new PivotTable in you new worksheet, cell A1 and click on **Choose Connection...**, see Figure .

In the **Existing Connections** window, Figure , click the **Browse for More...** button.

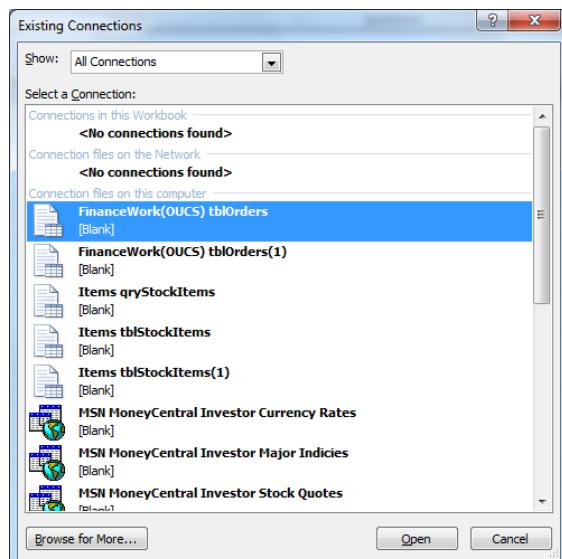


Figure 36: Existing Connections dialog box

The **Select Data Source** dialog box will appear. Navigate to the external database file and select **Open**. See Figure 37

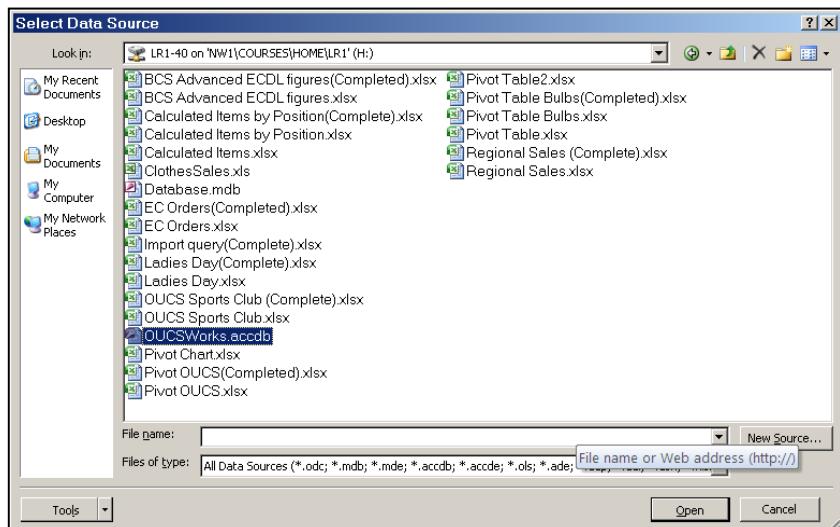


Figure 37: Select Data Source dialog box

The **Select Table** dialog will appear. This is where you select either a table or a query from the list and select **OK** see Figure 38

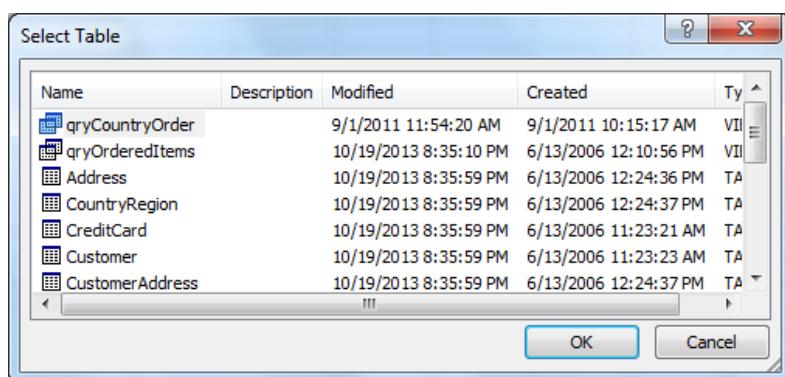


Figure 38: Select Table dialog box

The spreadsheet will now link to the external data source and will display a blank PivotTable, ready for fields to be inserted and a PivotTable created.

When the source data changes it needs to be refreshed manually. To refresh the source data when it changes, select **PivotTable Tools | Analyze | Refresh** on the ribbon to update the data in your PivotTable.

2.14. Creating and using Slicers

Filtering your PivotTable data in Excel 2013 (and earlier versions) was pretty cumbersome. First you would need to click on the drop down arrow or filter icon, expand any items as necessary, check/uncheck items until you get what you want then click **OK**.

New to Excel 2010 was a really useful feature called **Slicers** that make filtering data much easier. Slicers allow you to filter your PivotTable in a similar way to using filter fields in a PivotTable. The difference is that Slicers offer a user friendly interface that allows you to easily see the current filter state.

Slicers look like controls rather than cells so they are more intuitive and easier to use. They can be added to singular or multiple PivotTables.

In the PivotTable in Figure below, it shows the Names and Dates of Spending on either Rent, Car or Food. If this data was then filtered it may not be immediately obvious what the data has been filtered on, Slicers can help solve this.

	Sum of Amount	Spending			
Row Labels	Rent		Food	Car	Grand Total
5	Janine Brown		£51	£29	£80
6	21/01/2004		£16		£16
7	28/01/2004		£20	£17	£37
8	11/02/2004		£15	£12	£27
9	Pamela Wright		£51	£30	£129
10	21/01/2004		£19		£19
11	28/01/2004		£18	£12	£30
12	04/02/2004		£14	£18	£49
13	11/02/2004		£12	£19	£31
14	Rob Roy		£81	£77	£178
15	21/01/2004		£37	£29	£66
16	28/01/2004		£17	£20	£37
17	04/02/2004		£30	£19	£49
18	11/02/2004		£14	£12	£26
19	Grand Total		£183	£136	£68
					£387

Figure 39: PivotTable example for Slicers

2.14.1. Create Slicers linked to a single Pivot Table

To add a Slicer to the Figure 39 PivotTable, click in the PivotTable to select it.

Select **PivotTable Tools | Options | Insert Slicer** see Figure 40

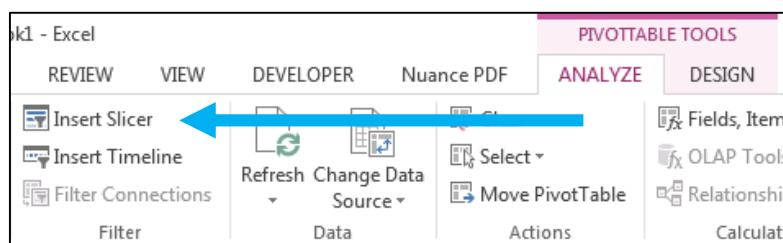


Figure 40: Insert Slicer from Ribbon

The **Insert Slicers** dialog box will appear. Select the field names (dimensions) you want to filter data on.

In figure 41, Name and Spending have been selected, then click on **OK**

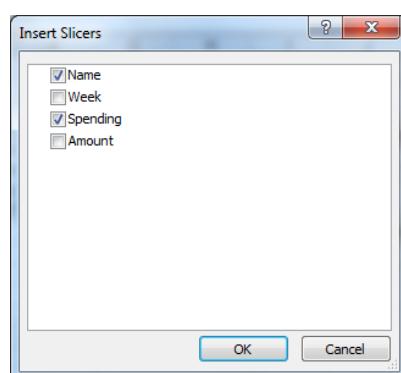


Figure 41: Insert Slicers dialog box

The slicer windows will now appear. See

Figure and there will also be a new ribbon available to you, the **Slicer Tools | Options** window.

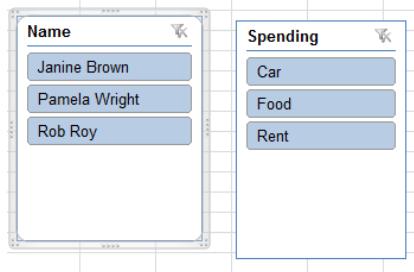


Figure 42: Slicer windows

2.14.2. Mover and resize Slicers

You can now move and re-size your Slicers. Click into a slicer and a four headed arrow will appear. Drag the top left corner of your slicer to suitable place on your spreadsheet and resize as required.

With the slicer selected click on **Slicer Tools | Options | Buttons** and use the up arrow in **Columns** to view all your slicer items in one window, see Figure

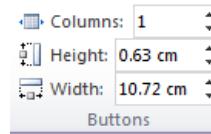


Figure 43: Change number of columns in a Slicer

The Name slicer from

Figure would then look like Figure

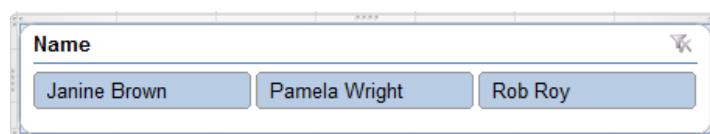


Figure 44: Edited columns in a Slicer

2.14.3. Format Slicers

With your slicer selected, click on **Slicer Tools | Options | Slicer Styles** on the **Ribbon** then select a style.



Each Slicer can have a different style applied. In Figure below the Name Slicer is red and the Week Slicer is green.

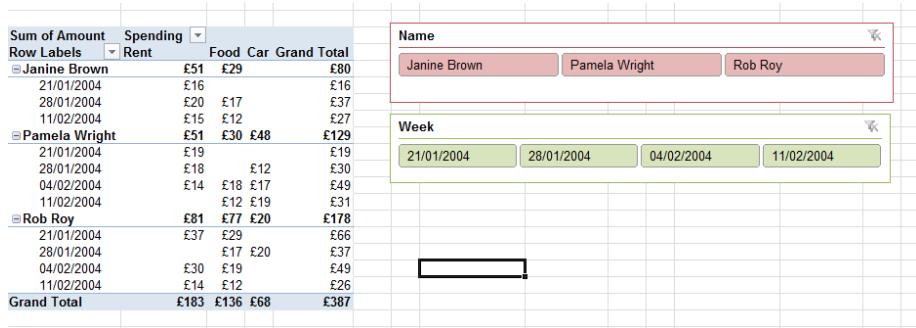


Figure 45: Format Slicers

2.14.4. Apply a Slicer filter

To apply a Slicer filter, point and click on an item in your Slicer. To select multiple fields hold the **<Ctrl>** key down whilst selecting other fields. Selected items will remain in colour and non selected items will turn white. See Figure

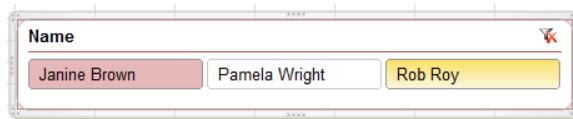


Figure 46: Selecting items in a Slicer

2.14.5. Clear Slicer filters

To clear the Slicer filter, click the **Clear Filter** icon at the top of the Slicer, see below.

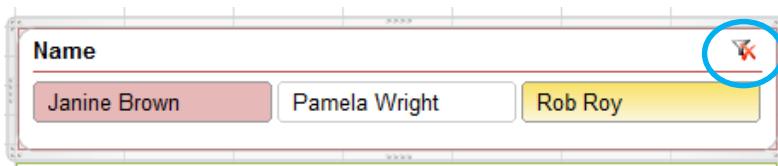


Figure 47: Clear Slicer filters

2.14.6. Create Slicers linked to multiple Pivot Tables

Slicers can be linked to more than one PivotTable, if located in the same worksheet. For example you could create one PivotTable summarising the sales and expenses per employee and an additional PivotTable showing the profit per employee. See Figure

Row Labels	Sum of Sales	Sum of Expenses
Janine Brow	£12,637.00	£80.00
21/01/2013	£3,684.00	£16.00
28/01/2013	£3,798.00	£37.00
04/02/2013	£3,578.00	£0.00
11/02/2013	£1,577.00	£27.00
Pamela Wrig	£10,760.00	£129.00
21/01/2013	£3,886.00	£19.00
28/01/2013	£1,701.00	£30.00
04/02/2013	£2,331.00	£49.00
11/02/2013	£2,842.00	£31.00
Rob Roy	£15,690.00	£178.00
21/01/2013	£3,907.00	£66.00
28/01/2013	£3,981.00	£37.00
04/02/2013	£3,398.00	£49.00
11/02/2013	£4,404.00	£26.00
Grand Total	£39,087.00	£387.00

Row Labels	Sum of Profit
Janine Brown	£12,557.00
Pamela Wright	£10,631.00
Rob Roy	£15,512.00
Grand Total	£38,700.00

Figure 48: Two PivotTables in one worksheet

It is good practice to name your PivotTables, this will also make attaching your slicers to the correct pivot tables easier later on.

To name your PivotTable select **PivotTable Tools | Analyze | PivotTable** and under **PivotTableName**: type an identifiable name for your PivotTable (the first PivotTable in Figure has a name of **SalesAndExpenses**, see Figure)

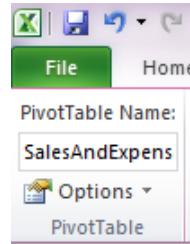


Figure 49: Name a PivotTable

To link slicers insert your first PivotTable and insert your slicers, see section 2.14.1 for instructions. Now insert the additional pivot tables that you would like to link your slicers to. The slicers will initially only be connected to the first PivotTable you inserted. To connect the slicers to additional PivotTables, select your first slicer. Select **Slicer Tools | Slicer | PivotTable Connections** as per Figure

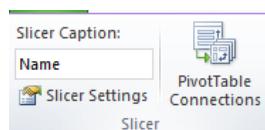


Figure 50: PivotTable Connections

To link the selected slicer to the other pivot tables insert a tick next to PivotTable names you want to link and click on **OK** see Figure

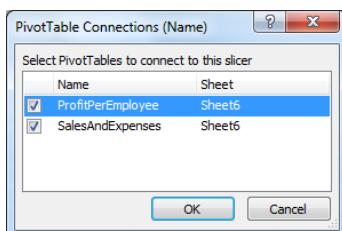


Figure 51: Link slicers to PivotTable

Now select each slicer in turn and link each PivotTable using the **Slicer Tools | Slicer | PivotTable Connections**

Using the PivotTables in Figure , the final worksheet will look similar to Figure

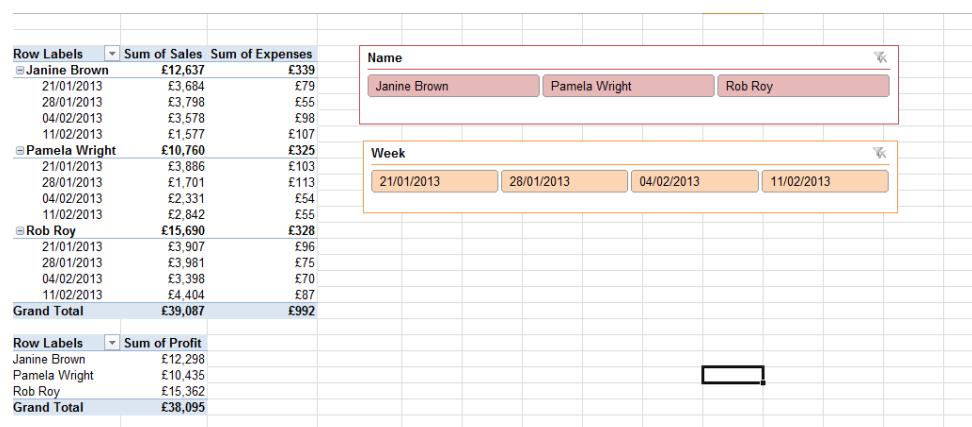


Figure 52: Multiple slicers linked with multiple PivotTables

3 Exercises

Exercise 1. Create and format a PivotTable on the existing worksheet

- Insert a PivotTable – see Section 2.3
- Navigate the PivotTable screen – see Section 2.4
- Add fields to your PivotTable – see Section 2.5
- Format values in a PivotTable – see Section 2.6

The file you will be working on is called **Staff Finance.xlsx**. There are currently two worksheets in this workbook. For this exercise the worksheet named **Data Spending** will be used and contains the fields **Name, Week, Spending and Amount**. Each record will provide you with the amount each employee has spent, when it was spent and what spending category it relates to.

Task 1

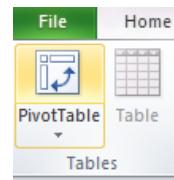
Insert a PivotTable into your existing worksheet, cell **H4**, using the **Data Spending** worksheet and name the PivotTable- **Pivot1Data**

Step 1

Using your file **Staff Finance.xlsx**

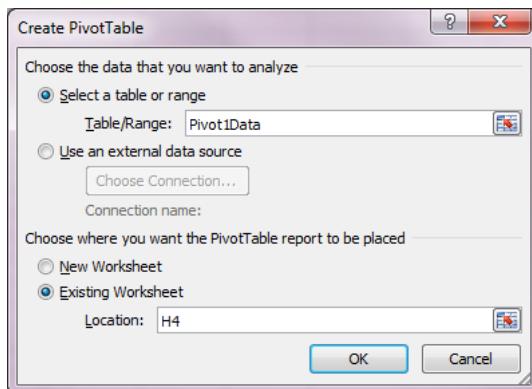
Click anywhere inside the table (Pivot1Data) in the **Data Spending** worksheet. You can see this is a table by selecting a cell within the data and the **Table Tools | Design** button will have appeared on the **Ribbon**.

Select **Insert | Tables PivotTable** from the **Ribbon**.

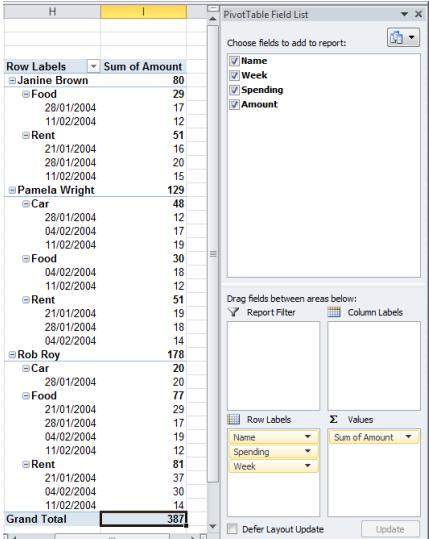
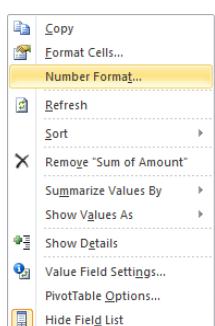


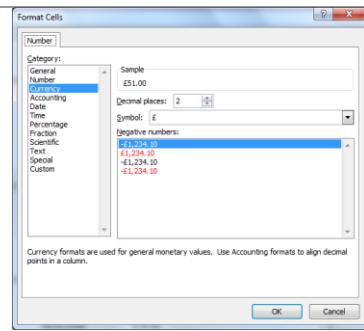
Step 2

The **Create PivotTable** dialog box will now appear.



In the **Table/Range** text field make sure the cell reference is **Pivot1Data** (Excel will name this tabl/range for you, you do not need to type this name in).

	<p>Select Existing Worksheet from the Choose where you want the PivotTable report to be placed section and enter H4 in the Location text box and click OK</p>
<p>Task 2</p> <p>Add the Name, Spending and Week fields as rows in your PivotTable and show the Sum of Amount as your values</p>	<p>Step 1</p> <p>Add fields Name and Spending and Week as Row Labels (in that order) and Amount as the values. To add fields to the PivotTable simply drag the field name to the appropriate PivotTable area of the PivotTable task pane.</p> <p>Note: If you do not add the fields in the above order the table will sort according to the order you add your fields. You can move your fields up and down the list under Row Labels by dragging and dropping. Try this and see the difference in your view.</p> <p>The completed PivotTable task pane and PivotTable should look the same as below.</p> 
<p>Task 3</p> <p>Format the amount field to currency, 2 decimal places</p>	<p>Step 1</p> <p>Select any cell within the column named Sum of Amount, point your mouse at the cell you have selected and right click, then select Number Format.</p>  <p>Select Currency from the list and format to 2 decimal places and click on OK</p>



This will format all the values in the column of data. The formatting will remain when the PivotTable is refreshed in the future.

Your PivotTable should now look like below

Row Labels	Sum of Amount
Janine Brown	£80.00
Food	£29.00
28/01/2004	£17.00
11/02/2004	£12.00
Rent	£51.00
21/01/2004	£16.00
28/01/2004	£20.00
11/02/2004	£15.00
Pamela Wright	£129.00
Food	£48.00
28/01/2004	£12.00
04/02/2004	£17.00
11/02/2004	£19.00
Rent	£30.00
21/01/2004	£19.00
28/01/2004	£18.00
04/02/2004	£14.00
Rob Roy	£178.00
Food	£20.00
28/01/2004	£20.00
Rent	£77.00
21/01/2004	£29.00
28/01/2004	£17.00
04/02/2004	£19.00
11/02/2004	£12.00
Grand Total	£81.00
	£387.00

Task 4

Save your file and leave the file open for further work in **Exercise 2**

Exercise 2. Expand/collapse data and change row to column data

- *Expand and collapse PivotTable data – see Section 2.8*
- *Rows versus column data – Section 2.5*
- *Change row and column labels – see Section 2.7*

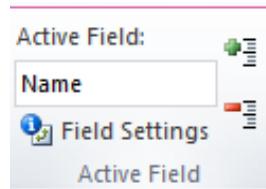
Task 1

Collapse your week and spending data to show a summary by **Name** and **Sum of Amount** only

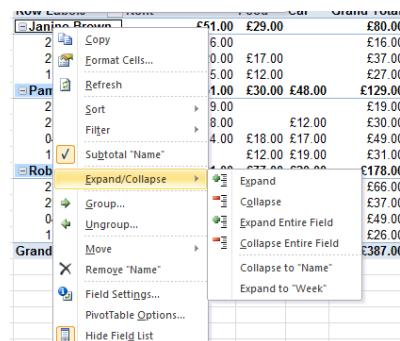
Step 1

Using your file **Staff Finance.xlsx** from Exercise 1 or if you did not complete this task use the file **Staff Finance Ex1 completed.xls**

To summarise your data to display the Name and the Total Amount, select a Name in your PivotTable then select from the ribbon **PivotTable Tools | Analyze | Active Field** and select expand, which has a green plus sign or collapse, which has a red minus sign. See below.



Alternatively if you point at the Name field and **right click** then select **Expand/Collapse** and the below menu will appear, with options to expand entire fields or just the values.



Your view should now look like below.

Row Labels	Sum of Amount
Janine Brown	£80.00
Pamela Wright	£129.00
Rob Roy	£178.00
Grand Total	£387.00

Task 2

Expand your data to revert back to showing all of the data in your PivotTable.

Step 2

Using one of the above techniques expand your PivotTable to show all your data.

Your PivotTable should now display all of the data for **Name, Spending and Week**

Task 3

Experiment with different ways or expanding and collapsing your data.

Using the different methods available to you, collapse the dates under **Spending** to achieve the below view where the **Week** field has been collapsed and the **Name** and **Spending** fields are visible

Which way did you find easier, using the right click method or selecting the + or - signs on the pivot table?

Row Labels	Sum of Amount
Janine Brown	£80.00
Food	£29.00
Rent	£51.00
Pamela Wright	£129.00
Car	£48.00
Food	£30.00
Rent	£51.00
Rob Roy	£178.00
Car	£20.00
Food	£77.00
Rent	£81.00
Grand Total	£387.00

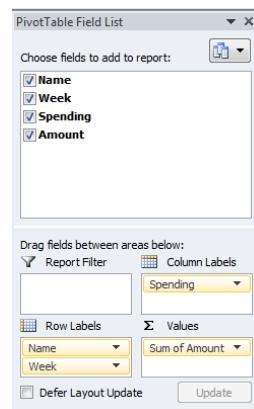
Task 4

Insert a field as Column Labels

Step 1

Move the **Spending** field to a **Column Label** by selecting it in the **Row Labels** area within the **PivotTableField list** and dragging and dropping it to the **Column Labels** area.

See below for **PivotTableField List** view and for the newly updated PivotTable. Your **Spending** categories (**Car, Food, Rent**) should now appear as column headings



Row Labels	Column Labels	Food	Rent	Grand Total
Janine Brown		£29.00	£51.00	£80.00
21/01/2004			£16.00	£16.00
28/01/2004		£17.00	£20.00	£37.00
11/02/2004		£12.00	£15.00	£27.00
Pamela Wright	£48.00	£30.00	£51.00	£129.00
21/01/2004			£19.00	£19.00
28/01/2004		£12.00	£18.00	£30.00
04/02/2004		£17.00	£18.00	£49.00
11/02/2004		£19.00	£12.00	£31.00
Rob Roy	£20.00	£77.00	£81.00	£178.00
21/01/2004		£29.00	£37.00	£66.00
28/01/2004		£20.00	£17.00	£37.00
04/02/2004		£19.00	£30.00	£49.00
11/02/2004		£12.00	£14.00	£26.00
Grand Total		£68.00	£136.00	£183.00
				£387.00

Task 5

Change label names

Step 2

Change the **Row Labels** name to **Week** and the **Column Labels** name to **Spending**. Your PivotTable will now look like below.

Sum of Amount	Spending			
Week	Rent	Food	Car	Grand Total
Janine Brown	£51.00	£29.00		£80.00
21/01/2004	£16.00			£16.00
28/01/2004	£20.00	£17.00		£37.00
11/02/2004	£15.00	£12.00		£27.00
Pamela Wright	£51.00	£30.00	£48.00	£129.00
21/01/2004	£19.00			£19.00
28/01/2004	£18.00		£12.00	£30.00
04/02/2004	£14.00	£18.00	£17.00	£49.00
11/02/2004	£12.00	£19.00		£31.00
Rob Roy	£81.00	£77.00	£20.00	£178.00
21/01/2004	£37.00	£29.00		£66.00
28/01/2004		£17.00	£20.00	£37.00
04/02/2004	£30.00	£19.00		£49.00
11/02/2004	£14.00	£12.00		£26.00
Grand Total	£183.00	£136.00	£68.00	£387.00

Task 6

Save your work and close your file.

Exercise 3. Filter, Sort and Drill down data

- Filter pivot data - See Section 2.9.1 to 2.9.3
- Sort pivot data – See Section 2.9.4
- Drill down your PivotTable data – See Section 2.9.5

The file you will be working on for this exercise is called **Sales.xlsx**. This contains a table which provides information for sales to each Company, their Invoice Number, Date of Sale, Firm Code, Company Name, Budget Code, Amount, Discount and the Total (Amount – Discount).

Task 1

Create a PivotTable with **Company Name** as **Row labels**, **Budget Code** as **Column labels** and **Total**, formatted to currency in **Values**. Format the values to currency.

Step 1

Open the file **Sales.xlsx**

Create a PivotTable on a **new worksheet** in the file **Sales** by selecting **Insert, Tables | PivotTable** and selecting **New Worksheet** from the **Create PivotTable** dialog box

Step 2

You require a **Row Label** of **Company Name**, **Column Label** of **Budget Code** and the **Total** as the **Values**

Step 3

Format your values as currency, 2 decimal places. A quick method is to point at the values, right click and select **Number Format**

The PivotTable should now look similar to below

Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
Row Labels		440	441	442	444	446	
A.Daley Inc	£11,762.73	£1,950.30	£3,227.19	£4,687.30	£8,572.42	£30,199.94	
Comp. Stores	£1,489.47	£3,912.10	£1,394.91	£3,540.50		£10,336.98	
Hardcopy stores	£49,265.16	£7,713.54	£9,007.99	£2,736.33	£27,968.30	£96,691.32	
PerfectWord	£10,701.27	£1,054.35		£8,420.80	£5,421.01	£25,597.43	
Plumbtastic Ltd	£11,230.24	£6,871.13	£10,966.50	£4,107.29	£12,050.72	£45,225.87	
Sitting Pretty	£7,765.29	£6,619.68	£4,502.05	£5,627.68	£6,949.14	£31,463.84	
Grand Total	£92,214.16	£28,121.10	£29,098.64	£29,119.90	£60,961.58	£239,515.36	

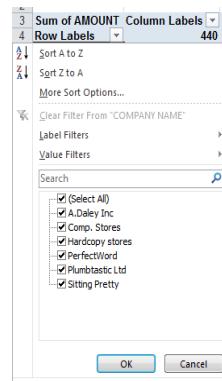
Rename your worksheet '**Pivot Sales**'. Point at the worksheet name on the bottom of the screen, which is likely to be '**Sheet 1**' and double click it. This will highlight the text and you can overtype with the text '**Pivot Sales**'

Task 2

Filter your data to display **Companies**, '**Perfect World**' and '**Hardcopy stores**' and '**Sitting Pretty**' for **Budget Codes 440 and 444**.

Step 1

Point and click on the dropdown arrow with the heading '**Row labels**' select (**Select All**) to deselect the list entries and then select '**Perfect World**' and '**Hardcopy stores**' and '**Sitting Pretty**' and select **OK**



Step 2

Use the same process to select the **Budget Codes** 440 and 444 by pointing and clicking on the arrow with a heading of 'Column Labels'

The PivotTable should now look like below

Sum of TOTAL	Column Labels	440	444	Grand Total
Row Labels				
Hardcopy stores	£49,265.16	£2,736.33	£52,001.49	
PerfectWord	£10,701.27	£8,420.80	£19,122.07	
Sitting Pretty	£7,765.29	£5,627.68	£13,392.97	
Grand Total	£67,731.72	£16,784.81	£84,516.53	

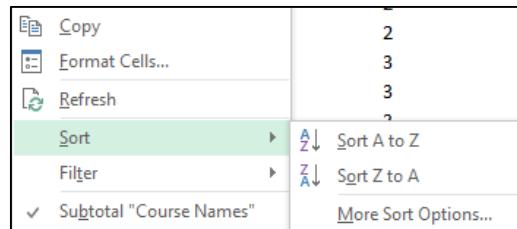
Task 3

Sort the **Companies** descending Z to A

Step 1

Select the drop down arrow next to the **Company Name** Row Labels heading and at the top of the filter menu select the  option.

Alternatively if you right click on the **Company Name** field, choose **Sort** and then choose **Z to A**.

**Step 2**

Choose a method to sort your **Company Names** descending.

Your pivot should now look like below

Sum of TOTAL	Column Labels	440	444	Grand Total
Row Labels				
Sitting Pretty	£7,765.29	£5,627.68	£13,392.97	
PerfectWord	£10,701.27	£8,420.80	£19,122.07	
Hardcopy stores	£49,265.16	£2,736.33	£52,001.49	
Grand Total	£67,731.72	£16,784.81	£84,516.53	

Task 4

Drill down to find each record for **Hardcopy Stores** purchases of code **440**.

Step 1

Click into the cell containing the sales for Hardcopy Stores for code 440 and double click on this total.

A new work sheet will appear which will consist of 24 records and the first few records appear below.

Name the new worksheet '**Invoices Hardcopy**'

A	B	C	D	E	F	G	H	
1	INVOICE NUMBER	DATE	FIRM CODE	COMPANY NAME	BUDGET CODE	AMOUNT	DISCOUNT	TOTAL
2	1236	22/08/2015	3	Hardcopy stores	440	3126	93.78	3032.22
3	1323	16/10/2014	3	Hardcopy stores	440	2269	34.035	2234.965
4	1322	29/07/2015	3	Hardcopy stores	440	2327	34.905	2292.095
5	1321	16/03/2015	3	Hardcopy stores	440	646	0	646
6	1320	15/03/2015	3	Hardcopy stores	440	3721	111.63	3609.37
7	1319	01/01/2015	3	Hardcopy stores	440	130	0	130
8	1310	28/06/2015	3	Hardcopy stores	440	785	0	785
9	1309	14/04/2015	3	Hardcopy stores	440	1218	12.18	1205.82
10	1308	02/04/2015	3	Hardcopy stores	440	1172	11.78	1166.22

Task 5

Save your work leave file open for **Exercise 4**

Exercise 4. Group data by text

- Group your PivotTable data by text - See Section 2.9.6

Task 1

Locate your PivotTable and clear all filters

Step 1

Using the file **Sales.xlsx** or if you did not complete this task use the file **SalesEx3 completed.xls**



Step 2

Locate the worksheet with the PivotTable in, possibly 'Sheet1' or 'Pivot Sales'. Click into your PivotTable and select **PivotTable Tools Options, Actions** group from the Ribbon and select **Clear | Clear Filters**

Task 2

Create the following group names for the companies.

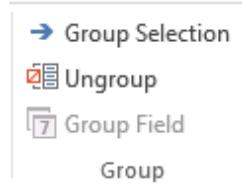
Daley & Plumtastic

Comp Stores and Perfect World

Hardcopy stores and Sitting Pretty.

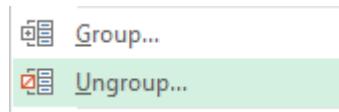
Step 1

All data should now be visible in your PivotTable. If not, ensure you have cleared your filters as per step 1 above. To group data within a field, select either adjacent or non-adjacent data by holding the **<Ctrl>** key and clicking on non-adjacent data or holding the **<Shift>** key down to select adjacent data. Select **A. Daley Inc** and holding down the Ctrl key select **Plumtastic Ltd**.



You can then either select **PivotTable Tools | Analyze | Group | Group Selection**.

Or alternatively right click and select **Group**



Step 2

You will see that it has a default name of **Group1**. This is not very descriptive, so rename this **Daley & Plumtastic** by clicking into the text **Group1** and typing **Daley & Plumtastic** in its place. Your PivotTable should now look like below

Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
Row Labels							
⊕ Daley and Plumtastic							
A. Daley Inc	£11,762.73	£1,950.30	£3,227.19	£4,687.30	£8,572.42	£30,199.94	
Plumtastic Ltd	£11,230.24	£6,871.13	£10,966.50	£4,107.29	£12,050.72	£45,225.87	
⊕ Comp. Stores	£1,489.47	£3,912.10	£1,394.91	£3,540.50			£10,336.98
⊕ Hardcopy stores	£49,265.16	£7,713.54	£9,007.99	£2,736.33	£27,968.30	£96,691.32	
⊕ PerfectWord	£10,701.27	£1,054.35		£8,420.80	£5,421.01	£25,597.43	
⊕ Sitting Pretty	£7,765.29	£6,619.68	£4,502.05	£5,627.68	£6,949.14	£31,463.84	
Grand Total	£92,214.16	£28,121.10	£29,098.64	£29,119.90	£60,961.58	£239,515.36	

Step 3

Create a second group for **Comp Stores** and **Perfect World** and a third for **Hardcopy stores** and **Sitting Pretty**. Collapse the field by selecting a group name and selecting **PivotTable Tools | Analyze | Active Field | Collapse**, so your PivotTable should look similar to below.

Change the Column Labels to display the name Budget Code as shown below.

Sum of TOTAL	Budget Code	440	441	442	444	446	Grand Total
Row Labels							
⊕ Daley & Plumtastic	£22,992.97	£8,821.43	£14,193.69	£8,794.59	£20,623.13	£75,425.81	
⊕ Comp & Perfect World	£12,190.74	£4,966.45	£1,394.91	£11,961.30	£5,421.01	£35,934.41	
⊕ Hardware & Sitting Pretty	£57,030.45	£14,333.22	£13,510.04	£8,364.01	£34,917.44	£128,155.15	
Grand Total	£92,214.16	£28,121.10	£29,098.64	£29,119.90	£60,961.58	£239,515.36	

Task 3

Save your work

Exercise 5. Grouping data by date

- Group your PivotTable data by date - See Section 2.9.6

Task 1

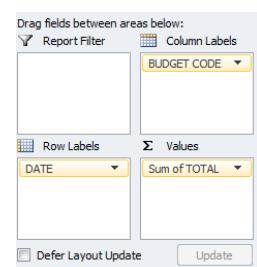
Change the PivotTable to show Date in the Row Labels and group the dates by months and years.

Step 1

Using the file **Sales Date Grouping.xlsx**

Remove **Company Name** and **Company Name2** (which is the name given to the new group which was created in the previous exercise) from your PivotTable Row Labels and replace with **Date**

You can either drag the **Company Name** and **Company Name2** away from the Row Labels or remove the tick from these fields in the field list. Drag and drop the **Date** to the Row Labels section from the field list.



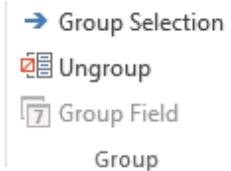
Your PivotTable field list should look as above.

The first few lines of your PivotTable should now look like below

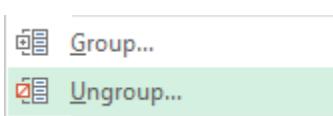
	3 Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
4 Row Labels			440	441	442	444	446	
5	04/10/2014							2028.115 2028.115
6	05/10/2014							2550.165 2550.165
7	06/10/2014				2251.71			2251.71
8	08/10/2014			3672.42		3540.5		7212.92 7212.92
9	09/10/2014		1683.99					1683.99 1683.99
10	12/10/2014			3663.69				3663.69 3663.69
11	16/10/2014		2234.965					2234.965 2234.965
12	17/10/2014				2160.105			2160.105 2160.105
13	18/10/2014		4326.3					4326.3 4326.3

Step 2

Click in any cell in the **Date** field of the PivotTable and either select **PivotTable Tools | Analyze | Group | Group Selection**.



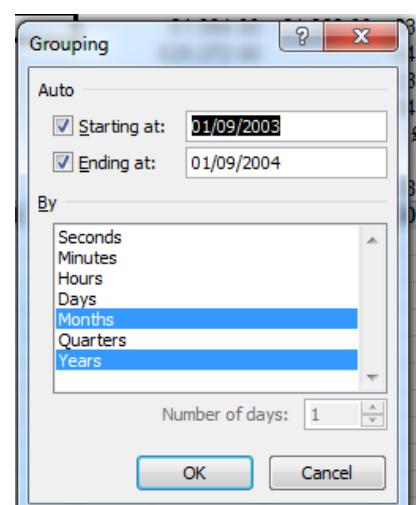
Or alternatively right-click the date and select **Group**



Step 3

In the Grouping dialog box select **Months** and **Years** as shown below then click **OK**

The grouped data should look the same as below



Step 4

Using the same process change your groupings to **Quarters** and **Years**.

Your grouped data should now look as below.

Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
Row Labels							
2014	Qtr4	16446.785	10642.17	5085.555	10387.905	6146.365	48708.78
2015	Qtr1	28883.155	1849.32	7550.53	9113.82	16595.01	63991.835
	Qtr2	24152.01	7321.45	8606.24	2594.49	20816.25	63490.44
	Qtr3	22732.21	8308.155	7856.31	7023.68	15325.6	61245.955
	Qtr4					2078.35	2078.35
	Grand Total	92214.16	28121.095	29098.635	29119.895	60961.575	239515.36

Task 2

Save your work.

Exercise 6. Grouping data by numeric value

- Group your PivotTable data by numeric value - See Section 2.9.6

Task 1

Change the PivotTable to show **Invoice Number** in the Row Labels and group the numeric values in your PivotTable by increments of 30.

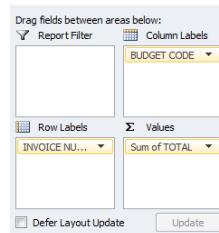
Step 1

Use the file **Sales.xlsx** or if you did not complete this task use the file **SalesEx5 completed.xls**

Continue to work on the PivotTable on the PivotSales worksheet. You require a Row Label of **Invoice Number**, Column Label of **Budget Code** and the **Total** as the Values

If you would rather start from a blank PivotTable, select **PivotTable Tools | Analyze | Actions | Clear | Clear All** from the **Ribbon**.

Your PivotTable field list should look as follows

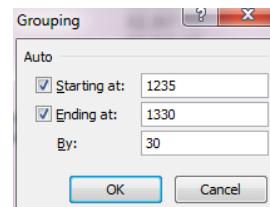


The first few lines of your PivotTable should now look like below

	3 Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
4 Row Labels								
5 1235			£2,984.69					£2,984.69
6 1236			£3,032.22					£3,032.22
7 1237			£3,123.40					£3,123.40
8 1238			£2,357.11					£2,357.11
9 1239			£1,141.47					£1,141.47
10 1240			£4,034.65					£4,034.65
11 1241			£2,642.76					£2,642.76
12 1242			£1,683.99					£1,683.99

Step 2

Group the Invoice Numbers by increments of 30. You will see that Excel automatically selects the first and last number in your Invoice number list for your start and end numbers. Amend the **by** from 1 to 30.



Your PivotTable should now look like below.

	3 Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
4 Row Labels								
5 1235-1264			£40,782.47	£1,950.30	£3,227.19	£17,017.29	£19,922.21	£82,899.46
6 1265-1294			£11,638.14	£21,066.60	£20,413.89	£5,700.61	£17,913.89	£76,733.12
7 1295-1324			£33,178.02	£5,104.20	£5,457.56	£2,736.33	£20,277.85	£66,753.95
8 1325-1354			£6,615.53			£3,665.67	£2,847.64	£13,128.84
9 Grand Total			£92,214.16	£28,121.10	£29,098.64	£29,119.90	£60,961.58	£239,515.36

Task 2: Save your work and close the file.

Exercise 7. Using the Report Filter field and multiple page reports

- Add and filter data using the Report Filter field - See Section 2.10.1
- Create multiple page reports using the Report Filter - See Section 2.10.3

Task 1

Add fields to the Report Filter

Step 1

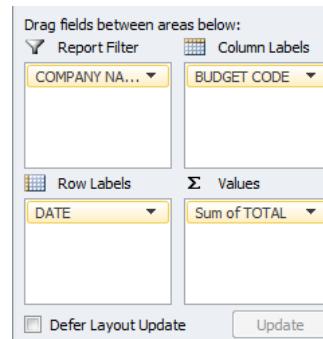
Using the file **Sales.xlsx** or if you did not complete this task use the file **SalesEx6 completed.xls**

Create a new PivotTable by opening **Sales** and clicking into the table. Select **Insert, PivotTable** to a **New Worksheet**

Step 2

Add **Company Name** to Report Filter, **Budget Code** to Column Labels, **Date** to Row Labels and **Total** to Values.

Your PivotTable field list should look as follows



Your PivotTable will now look as below.

1	COMPANY NAME (All)	440	441	442	444	446 Grand Total
2						
3	Sum of TOTAL	Column Labels				
4	Row Labels	440	441	442	444	446 Grand Total
5	04/10/2014					2028.115 2028.115
6	05/10/2014					2550.165 2550.165
7	06/10/2014		2251.71			2251.71
8	08/10/2014		3672.42		3540.5	7212.92
9	09/10/2014	1683.99				1683.99
10	12/10/2014		3663.69			3663.69
11	16/10/2014	2234.965				2234.965
12	17/10/2014				2160.105	2160.105
13	18/10/2014	1326.2				1326.2

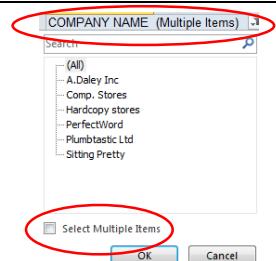
Task 2

Filter your data using the Report Filter button on **A Daley Inc and Perfect World**

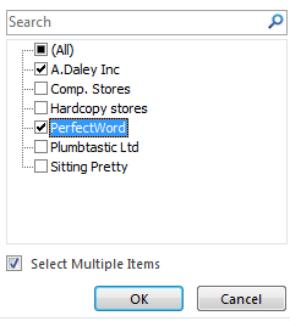
Step 1

Filter on the Company Name to show only the data for **A Daley Inc and Perfect World**

Click on the drop down arrow next to Company Name (ALL). Tick the **Select Multiple Items** above top left corner of the PivotTable located at the bottom of the list.

**Step 2**

This will add tick boxes by each Company Name. Clear the tick from (All) and then tick **A Daley Inc and PerfectWorld**



Your PivotTable should now look as follows. You will notice that in the Company Name filter it now shows (Multiple Items). If you select the filter button you will see which companies have been selected.

1	COMPANY NAME (Multiple Items)	440	441	442	444	446	Grand Total
3	Sum of TOTAL	Column Labels					
4	Row Labels	440	441	442	444	446	Grand Total
5	04/10/2014					2028.115	2028.115
6	18/10/2014	4326.3					4326.3
7	23/10/2014		1054.35				1054.35
8	02/12/2014			4687.3			4687.3
9	04/12/2014	3123.4					3123.4
10	10/01/2015	3744.095					3744.095
11	24/01/2015	2984.69					2984.69
12	09/02/2015		4133.45				4133.45
13	27/02/2015			2144.345			2144.345
14	26/03/2015			2639.8			2639.8
15	29/03/2015	3227.19					3227.19
16	29/05/2015	1375.11					1375.11
17	15/06/2015	233					233
18	28/06/2015			3904.5			3904.5
19	09/07/2015			3276.66			3276.66
20	02/08/2015	1950.3					1950.3
21	15/08/2015	4034.65					4034.65
22	28/08/2015	2642.755					2642.755
23	11/09/2015		4287.35				4287.35
24	Grand Total	22464	3004.65	3227.19	13108.1	13993.42	55797.36

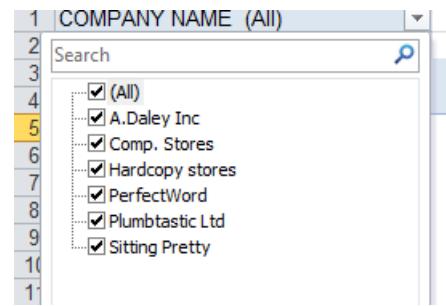
Task 3

Create multiple report pages for all Company Names

Step 1

First you will need to clear the filters so that all Company Name data is available. If you don't clear the filters the reports will be created for those you have selected in the filter.

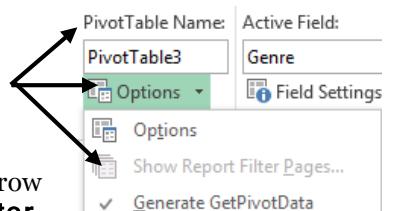
To do this make sure that you put a tick beside the All Box. Notice that all the boxes next to the company names are now ticked, as shown;

**Step 2**

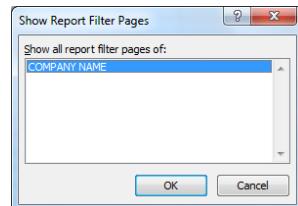
Now create the individual reports for each company.

Click into your pivot and then select **PivotTable Tools | Analyze | Options** from your ribbon.

In the **PivotTable** area on the ribbon, click on the arrow to the right of **Options** and select **Show Report Filter Pages**



The **Show Report Filter Pages** dialog box will now appear. Select **Company Name** and select **OK**



You should now have individual worksheets with the company names on in your file as shown on the image below

**Task 4**

Save your work

Exercise 8. Using Report Filters - See Section 2.10.2

Task 1

Create a new PivotTable with **Name** as the Report Filter

Step 1

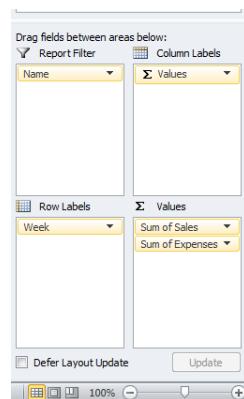
Using the file **Staff Finance.xlsx** or if you did not complete Exercise 2 when this file was last used please open the file **Staff Finance Ex2 completed.xls**

Step 2

Create a new PivotTable in the same sheet by opening the **Staff Sales** sheet and clicking into the table. Select **Insert, PivotTable**.

Add **Name** to Report Filter, **Week** to Row Labels and **Sales and Expenses** to Values.

Your PivotTable field list should look as follows. The **Values** in **Column labels** will be automatically generated



Your PivotTable should now look like below. Format your **Sales** and **Expenses** values to **currency**.

Name	(All)	Sum of Sales	Sum of Expenses
Row Labels			
21/01/2004	£11,477.00	£278.00	
28/01/2004	£9,480.00	£243.00	
04/02/2004	£9,307.00	£222.00	
11/02/2004	£8,823.00	£249.00	
Grand Total	£39,087.00	£992.00	

Task 2

Filter your data using the Report Filter, to locate the sales and expenses for Janine and then filter on both Janine and Rob.

Step 1

Filter on **Name** to show the **Sales and Expenses** for Janine Brown. Your result will be similar to below

Name	Janine Brown	Sum of Sales	Sum of Expenses
Row Labels			
21/01/2004	£3,684.00	£79.00	
28/01/2004	£3,798.00	£55.00	
04/02/2004	£3,578.00	£98.00	
11/02/2004	£1,577.00	£107.00	
Grand Total	£12,637.00	£339.00	

See what happens if you then filter on both Janine Brown and Rob Roy as multiple items? Can you see which **Sales** and **Expenses** relate to who by looking at the report filter heading?

Your result should be similar to below

Name	(Multiple Items)	Sum of Sales	Sum of Expenses
Row Labels			
21/01/2004	£7,591.00	£175.00	
28/01/2004	£7,779.00	£130.00	
04/02/2004	£6,976.00	£168.00	
11/02/2004	£5,981.00	£194.00	
Grand Total	£28,327.00	£667.00	

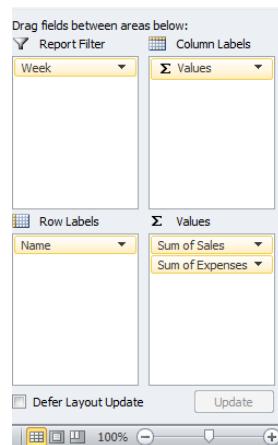
We will look at a more efficient way of displaying filter detail using **Slicers** later on.

Task 3

Change your report filter to Week and locate the sales and expenses for the week of 21/01/2004

Step 1

Remove the filter previously applied to the Name field and drag **Week** to the Report Filter and **Name** to the Row Labels. Your PivotTable Fields List will look like below.



Use the report filter to locate the **Sales and Expenses** for the **Week 21/01/2015**. Your PivotTable will be like below

Week	21/01/2015	
Row Labels	Sum of Sales	Sum of Expenses
Janine Brown	£3,684.00	79
Pamela Wright	£3,886.00	103
Rob Roy	£3,907.00	96
Grand Total	£11,477.00	278

Task 4

Save your work and close the file.

Exercise 9. Creating a Pivot Chart

- *Creating a pivot chart – See Section 2.11*

Task 1

Create a pivot chart from the PivotTable in the file **Sales.xlsx**, worksheet **Pivot Sales**.

Step 1

Using the file **Sales.xlsx** or if you did not complete the previous exercises, please open **SalesEx7.xls**.

Open the worksheet ‘**Pivot Sales**’. The current PivotTable will be as below.

Sum of TOTAL	Column Labels	440	441	442	444	446	Grand Total
Row Labels							
1235-1264		£40,782.47	£1,950.30	£3,227.19	£17,017.29	£19,922.21	£82,899.46
1265-1294		£11,638.14	£21,066.60	£20,413.89	£5,700.61	£17,913.89	£76,733.12
1295-1324		£33,178.02	£5,104.20	£5,457.56	£2,736.33	£20,277.85	£66,753.95
1325-1354		£6,615.53			£3,665.67	£2,847.64	£13,128.84
Grand Total		£92,214.16	£28,121.10	£29,098.64	£29,119.90	£60,961.58	£239,515.36

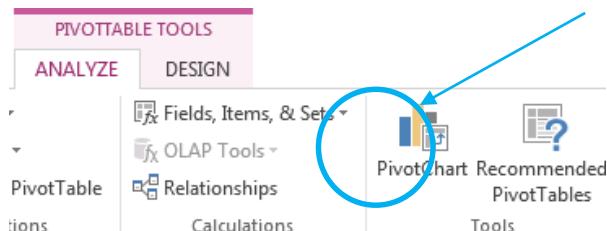
Step 2

Change the current PivotTable to show **Date** in the Row labels and insert **Company Name** to the Report Filter field and remove the **Invoice Number** from the Row Labels. Group your Date by **Quarters** and **Month**, filter the Row Labels to show only **Qtr1** and **Qtr2**. Your PivotTable should now look like below.

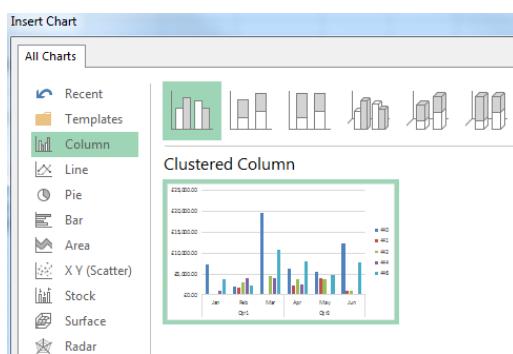
COMPANY NAME (All)	Column Labels	440	441	442	444	446	Grand Total
Row Labels							
Qtr1							
Jan		£7,206.79		£1,071.18	£3,710.25	£11,988.22	
Feb		£1,974.06	£1,849.32	£2,928.43	£4,133.45	£3,542.23	£14,427.49
Mar		£19,702.31		£4,622.10	£3,909.19	£9,342.54	£37,576.14
Qtr2							
Apr		£6,288.90	£2,324.60	£3,726.74	£2,594.49	£8,120.60	£23,055.33
May		£5,434.46	£4,049.85	£3,885.50		£4,797.35	£18,167.16
Jun		£12,428.65	£947.00	£994.00		£7,898.30	£22,267.95
Grand Total		£53,035.17	£9,170.77	£16,156.77	£11,708.31	£37,411.26	£127,482.28

Step 3

Click within your PivotTable and select **PivotTable Tools | Analyze | Pivot Chart**.



The **Insert Chart** dialog box will appear.

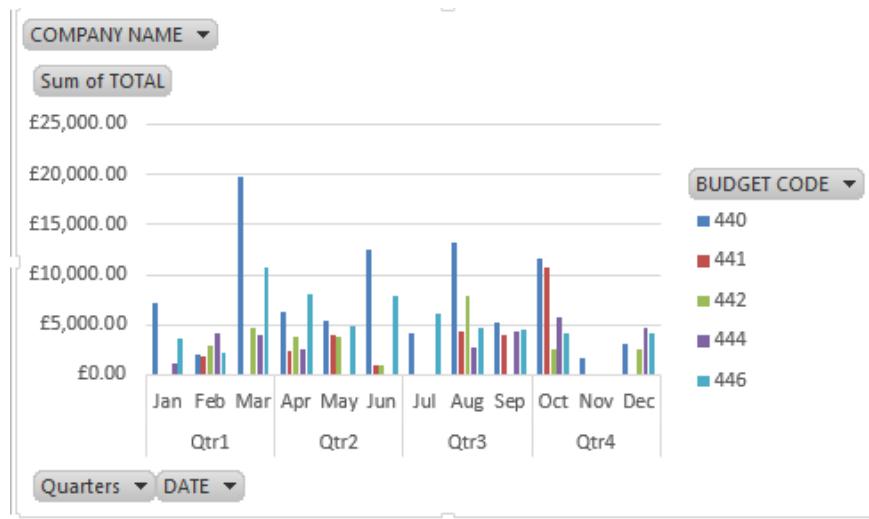


Step 4

Choose the desired chart type, e.g. **Clustered Column** and click **OK**

The completed chart will appear as an embedded chart in the **PivotTable** worksheet.

Note that the **Date** field in the **PivotTable** worksheet is currently grouped by **Quarters**



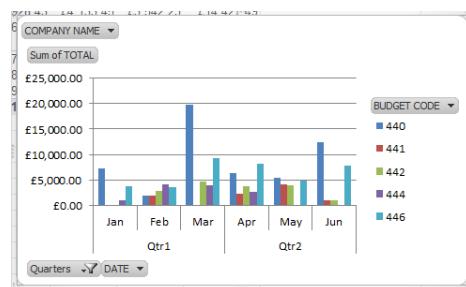
Task 3

Use the Pivot Chart, row and column (Axis) field drop-down boxes to show the results for **Qtr 1** and **Qtr 2** only. Filter now on Company Name to show the sales for **Perfect World**

Step 1

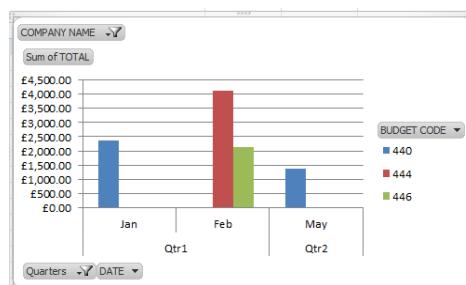
Select the **Quarters** drop down box located on the chart.

Clear (**Select All**) and select **Qtr 1** and **Qtr 2**. Select **OK**. Your pivot chart will look like below.

**Step 2**

Using the **Company Name** Report filter, either from the PivotTable for on the Pivot Chart show the sales for just **Perfect World**

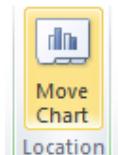
Your chart will now look like below

**Task 4**

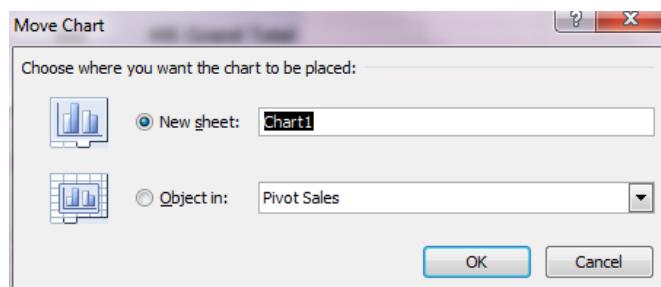
Move the chart to its own worksheet.

Step 1

To move the chart to a different worksheet select the chart then select **PivotChart Tools | Design | Location | Move Chart**.

**Step 2**

Select **New sheet** from the **Move Chart** dialog box. Change the name from Chart1 to **Perfect World Sales**. Select **OK**

**Task 3**

Save your work and close the file

Exercise 10. Add a calculated field

- Add a calculated field to show the amount of profit per member of staff – See Section 2.12

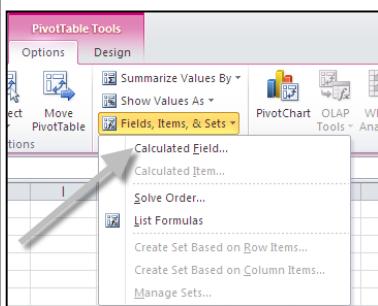
Task 1

Create a PivotTable and use a calculated field to show the amount of profit per member of staff based on the sales minus expenses.

Step 1

Open the file **Staff Finance.xlsx** or if you did not complete **Exercise 8**, when this file was last used, please open the file **Staff Finance Ex8 completed.xls**

Use the data sheet called Staff Sales and create a PivotTable

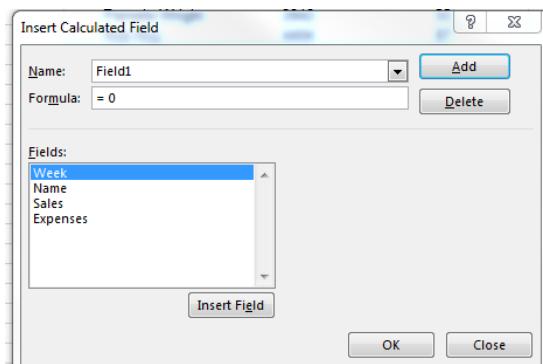


Step 2

Click anywhere within your PivotTable.

From the **PivotTable Tools** tab of the **Ribbon**, select **Anaylze | Calculations | Fields, Items, & Sets | Calculated Field**

The Insert Calculated Field dialog box will appear



Step 3

In the **Name:** field remove **Field1** and type **Profit**

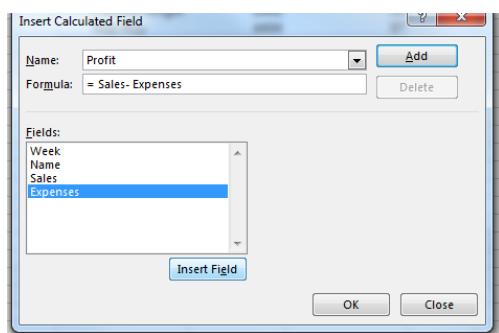
Remove **0** from the **Formula:** field, leaving the **(=)** sign.

In the **Fields** section select **Sales** and then click the **Insert Field** button.

In the **Formula:** field add a minus sign **(-)** after **Sales**

In the **Fields** section, double click **Expenses**.

The completed formula should be the same as below



Click **OK** to add the calculated field to the PivotTable.

The Calculated field will appear as a new column in your PivotTable.

Now change the numbers in your PivotTable to display as currency, as shown below.

Week	(All)			
Row Labels	Sum of Sales	Sum of Expenses	Sum of Profit	
Janine Brown	£12,637.00	£339.00	£12,298	
Pamela Wright	£10,760.00	£325.00	£10,435	
Rob Roy	£15,690.00	£328.00	£15,362	
Grand Total	£39,087.00	£992.00	£38,095	

Task 2

Save and close your file.

Exercise 11. Add a calculated field – additional exercise

- Add a calculated field to show the percentage of discount – See Section 2.12

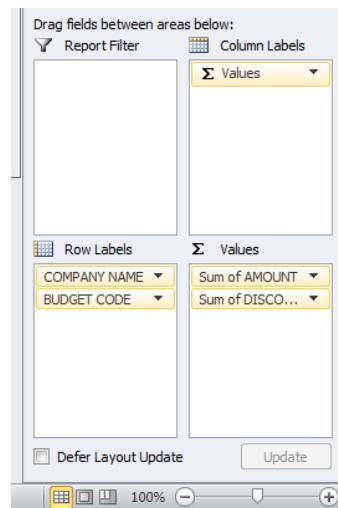
Task 2

Create a PivotTable to show each company with the budget codes they have purchased, the amount purchased and discount applied for their sales.

Step 1

Open the file **Sales.xlsx** or if you did not complete **Exercise 9**, when this file was last used, please open the file **SalesEx10 completed.xls**

Create a PivotTable on a new sheet using the table of data in the **Sales** worksheet. It should show **Company Name** and **Budget Code** as the Row Labels, **Amount** and **Discount** as Values. Your field list will look like below. The column label will be created automatically.



The PivotTable will look like below.

Row Labels	Sum of AMOUNT	Sum of DISCOUNT
■ A.Daley Inc	31258	1058.065
440	12178	415.27
441	1970	19.7
442	3327	99.81
444	4934	246.7
446	8849	276.585
■ Comp. Stores	10678	341.02
440	1501	11.53
441	4118	205.9
442	1409	14.09
444	3650	109.5
■ Hardcopy stores	99286	2594.685
440	50258	992.84
441	8040	326.46
442	9176	168.015
444	2778	41.67
446	29034	1065.7
■ PerfectWord	26503	905.575
440	11019	317.73
441	1065	10.65
444	8864	443.2
446	5555	133.995
■ Plumbtastic Ltd	46671	1445.13
440	11592	361.76
441	7019	147.87

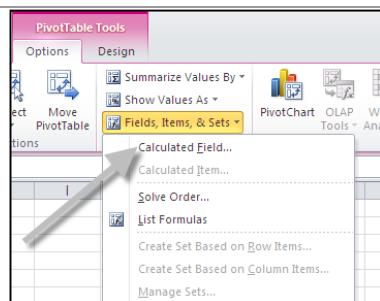
Task 3

Create a calculated field to show the percentage of discount per Budget Code and Company.

Step 2

Click anywhere within your PivotTable.

From the **PivotTable Tools** tab of the **Ribbon**, select **Analyze | Calculations | Fields, Items, & Sets | Calculated Field**



Step 3

In the **Name:** field remove **Field1** and type **% Discount**

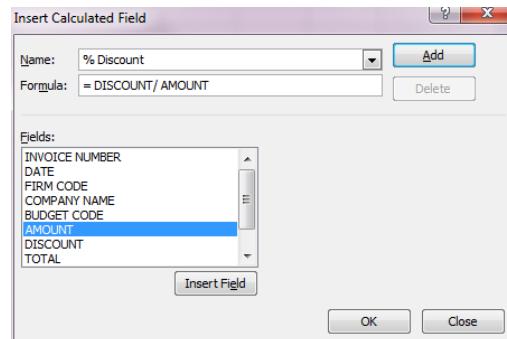
Remove **0** from the **Formula:** field, leaving the **(=)** sign.

In the **Fields** section select **Discount** and then click the **Insert Field** button.

In the **Formula:** field add a division sign **(/)** after **Discount**

In the **Fields** section select **Amount** and then click the **Insert Field** button.

The completed formula should be the same as below.



Click the **OK** button to add the calculated field to the PivotTable.

A new column will appear that contains the **% Discount**. The completed PivotTable is below.

Row Labels	Sum of AMOUNT	Sum of DISCOUNT	Sum of % Discount
A.Daley Inc	31258	1058.065	0.033849415
440	12178	415.27	0.034100016
441	1970	19.7	0.01
442	3327	99.81	0.03
444	4934	246.7	0.05
446	8849	276.585	0.031256074
Comp. Stores	10678	341.02	0.031936692
440	1501	11.53	0.007681546
441	4118	205.9	0.05
442	1409	14.09	0.01
444	3650	109.5	0.03
Hardcopy stores	99286	2594.685	0.026133443
440	50258	992.84	0.019754865
441	8040	326.46	0.040604478
442	9176	168.015	0.018310266
444	2778	41.67	0.015
446	29034	1065.7	0.036705242
PerfectWord	26503	905.575	0.034168773
440	11019	317.73	0.02883474
441	1065	10.65	0.01
444	8864	443.2	0.05
446	5555	133.995	0.024121512
Plumbtastic Ltd	46671	1445.13	0.030964196
440	11592	361.76	0.031207729
441	7019	147.87	0.021067104
442	11390	423.5	0.037181738
444	4151	43.715	0.010531197
446	12519	468.285	0.037405943
Sitting Pretty	32508	1044.165	0.032120247
440	8088	322.71	0.039899852
441	6711	91.325	0.0136068255
442	4739	236.95	0.05
444	5761	133.32	0.023141816
446	7209	259.86	0.036046608
Grand Total	246904	7388.64	0.029925153

Step 4

Format the newly created calculated item to **percentage** using the Number Format option. The PivotTable will then look as below.

Row Labels	Sum of AMOUNT	Sum of DISCOUNT	Sum of % Discount
A.Daley Inc	31258	1058.065	3.38%
440	12178	415.27	3.41%
441	1970	19.7	1.00%
442	3327	99.81	3.00%
444	4934	246.7	5.00%
446	8849	276.585	3.13%
Comp. Stores	10678	341.02	3.19%
440	1501	11.53	0.77%
441	4118	205.9	5.00%
442	1409	14.09	1.00%
444	3650	109.5	3.00%
Hardcopy stores	99286	2594.685	2.61%
440	50258	992.84	1.98%
441	8040	326.46	4.06%
442	9176	168.015	1.83%
444	2778	41.67	1.50%
446	29034	1065.7	3.67%
PerfectWord	26503	905.575	3.42%
440	11019	317.73	2.88%
441	1065	10.65	1.00%
444	8864	443.2	5.00%
446	5555	133.995	2.41%
Plumbtastic Ltd	46671	1445.13	3.10%
440	11592	361.76	3.12%
441	7019	147.87	2.11%
442	11390	423.5	3.72%
444	4151	43.715	1.05%
446	12519	468.285	3.74%
Sitting Pretty	32508	1044.165	3.21%
440	8088	322.71	3.99%
441	6711	91.325	1.36%
442	4739	236.95	5.00%
444	5761	133.32	2.31%
446	7209	259.86	3.60%
Grand Total	246904	7388.64	2.99%

Task 4

Save and close the file

Exercise 12. Create an additional field in a PivotTable to show % of totals using the ribbon options

See Section 2.5.2

Task 1

Using the Sales spreadsheet show the % of the grand total discount for each company and budget code using **Show Values As**

Step 1

Open the file **Sales.xlsx** or if **Exercise 10** was not completed then use the file **Sales Ex11 completed.xlsx**

Step 2

Add the field Discount to the Values area of your PivotTable, to do this drag the field Discount to the values so it shows as Discount2. You will now have Discount in the Values section 3 times. The newly inserted Discount field is likely to be named **Sum of DISCOUNT2**

Click on the down arrow to the right of the newly added column **Sum of DISCOUNT2** from the **Values** section of the PivotTable Fields and select **Show Values As**

Then select the % of Column Total. Your PivotTable will look as below.

Row Labels	Sum of AMOUNT	Sum of DISCOUNT	Sum of % Discount	Sum of DISCOUNT2
A.Daley Inc	31258	1058.65	3.39%	14.32%
440	12178	415.27	3.41%	5.62%
441	1970	19.7	1.00%	0.27%
442	3327	99.61	3.00%	1.35%
444	4934	246.7	5.00%	3.34%
446	8849	276.65	3.13%	3.74%
Comp. Stores	10678	341.02	3.19%	4.62%
1	1501	11.53	0.77%	0.16%
2	4118	205.9	5.00%	2.79%
3	1409	14.09	1.00%	0.19%
4	3650	109.5	3.00%	1.48%
5	99286	2594.685	2.61%	35.12%
6	50258	992.84	1.98%	13.44%
7	8040	326.46	4.06%	4.42%
8	9176	168.015	1.83%	2.27%
9	2778	41.67	1.50%	0.56%
0	29034	1065.7	3.67%	14.42%
1	26503	905.575	3.42%	12.26%
2	11019	317.73	2.88%	4.30%
3	1065	10.65	1.00%	0.14%
4	8864	443.2	5.00%	6.00%
5	5555	133.995	2.41%	1.81%
6	46671	1445.13	3.10%	19.56%
7	11592	361.76	3.12%	4.90%
8	7019	147.87	2.11%	2.00%
9	11390	423.5	3.72%	5.73%
0	4151	43.715	1.05%	0.59%
1	12619	468.285	3.74%	6.34%
2	32508	1044.165	3.21%	14.13%
3	8088	322.71	3.99%	4.37%
4	6711	91.325	1.36%	1.24%
5	4739	236.95	5.00%	3.21%
6	5761	133.32	2.31%	1.80%
7	7209	259.86	3.60%	3.52%
8	Grand Total	246904	7388.64	2.99%
				100.00%

Exercise 13 Create an additional field in a PivotTable to show % of totals using the PivotTableField List option

See Section 2.5.2

Task 1

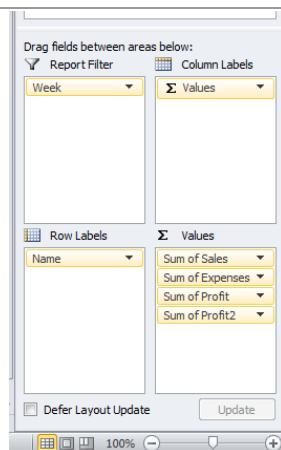
Show the % of Profit generated per member of staff

Step 1

Open the file **Staff Finance.xlsx** or if you did not complete the Exercise 10 then open the file **Staff Finance Ex10 completed.xlsx**

On Sheet1, click anywhere in the PivotTable.

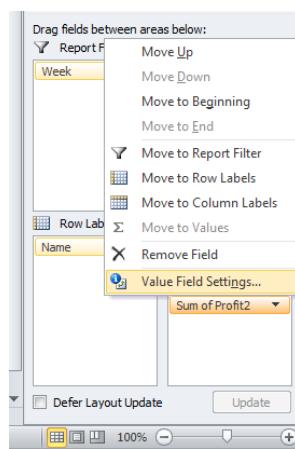
From the **PivotTable Field List** window drag **Profit** to the **(Values)** part of the PivotTable task pane. You may notice that the field has been named **Sum of Profit2**. See below



Step 2

In the PivotTable field list click on the drop down arrow to the right of the field **Sum of Profit2** and select **Value Field Settings**.

From the menu select **Value Field Settings**.

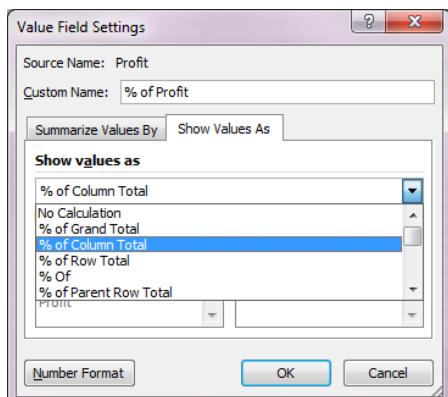


Step 3

In the **Value Field Settings** dialog box change the **Custom name** to **% of Profit**, see below

Select the **Show Values As** tab.

From the **Show Values As** drop down list select **% of Column Total**. Click **OK**



Your PivotTable should now look like the one below

	A	B	C	D	E
1					
2	Week	(All)			
3					
4	Row Labels	Sum of Sales	Sum of Expenses	Sum of Profit	% of Profit
5	Janine Brown	£12,637.00	£339.00	£12,298	32.28%
6	Pamela Wright	£10,760.00	£325.00	£10,435	27.39%
7	Rob Roy	£15,690.00	£328.00	£15,362	40.33%
8	Grand Total	£39,087.00	£992.00	£38,095	100.00%
9					
10					
11					
12					

Task 2

Save your work and close the file

Exercise 14. Create a PivotTable from a MS Access query.

- Create a PivotTable from a MS Access database – See Section 2.13

Task 1

Create a PivotTable from a MS Access database query to show Products by Category.

The PivotTable will also show the number of orders by product and the total orders placed for each product.

Step 1

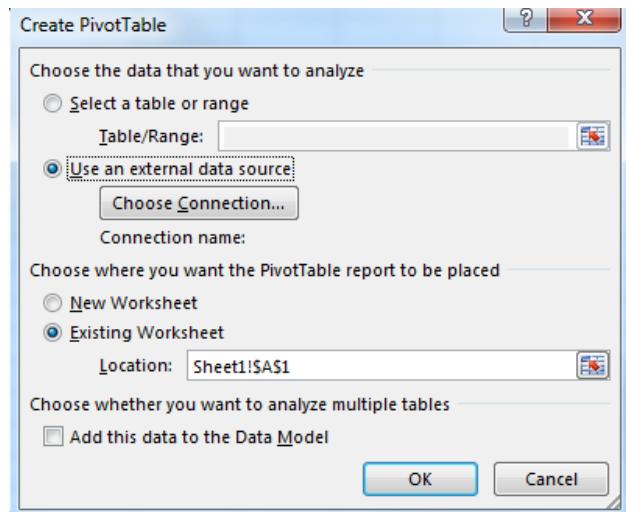
Create a **new workbook** and name it **Import Query.xlsx**

Select **PivotTable** from the **Insert** tab

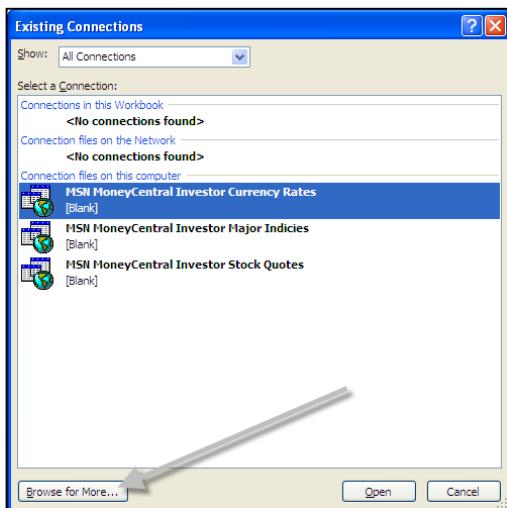
In the **Create PivotTable** window select **Use an external data source**, see below

Choose **Existing Worksheet** to place the new PivotTable and cell **B3** for the location

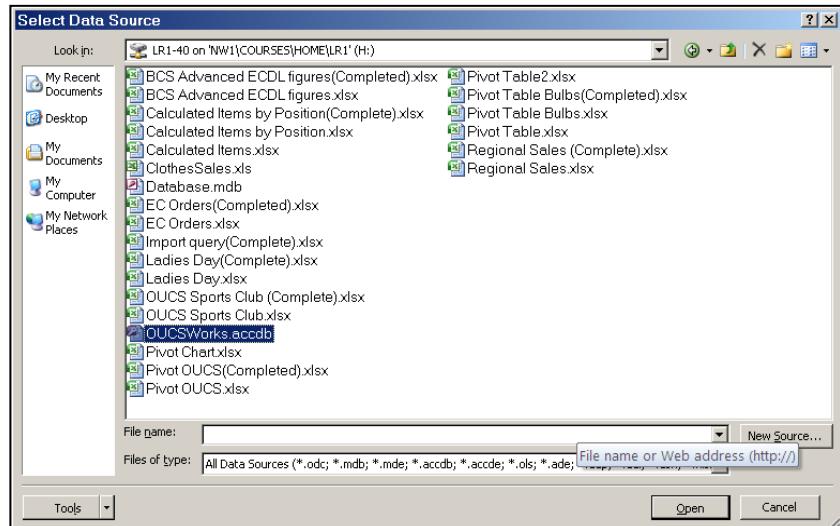
Click the **Choose Connection** button

**Step 2**

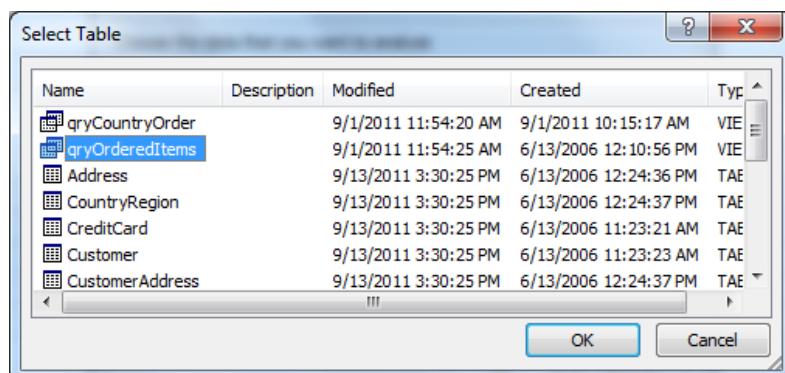
In the **Existing Connections** window click the **Browse for More** button, see below.



Navigate to the H:\ drive and select **OUCSWorks.accdb**, see
Click the **Open** button



Step 3
From the **Select Table** window select **qryOrderedItems**, see below
Click **OK**



Click **OK** again when back in the Create PivotTable window to add the PivotTable fields to the worksheet.

Step 4

Create a PivotTable using the available fields to show a Report Filter of **Country** and **Product Category** and **Product name** as Row labels with the **Quantity Ordered** and the **Total Cost** as Values. Your PivotTable should then look the same as that shown below

Note that the some of the data **Product Category** fields have been collapsed in this figure.

When the source data changes select **PivotTable Tools | Analyze | Refresh** on the ribbon to update the PivotTable.

	A	B	C	D	E
1	Country	(All)			
2					
3	ProductCategory	ProductName	Qty Ordered	Total Cost	
4	Accessories				
5		Bike Wash - Dissolver	2428	£11,381.06	
6		Cable Lock	1111	£16,624.00	
7		Hitch Rack - 4-Bike	2852	£201,085.20	
8		Hydration Pack - 70 oz.	2035	£66,253.05	
9		Minipump	1155	£13,828.68	
10		Patch Kit/8 Patches	674	£925.53	
11		Sport-100 Helmet, Black	4516	£90,500.08	
12		Sport-100 Helmet, Blue	4702	£94,030.12	
13		Sport-100 Helmet, Red	4131	£82,718.58	
14		Water Bottle - 30 oz.	2588	£7,605.01	
15	Accessories Total		26192	£584,951.31	
16			76612	£68,559,479.59	
17			65643	£1,831,738.04	
18			50239	£12,126,216.36	
19	Grand Total		218686	£83,102,385.30	
20					
21					

Task 2

Extra Task – altering the data in the original database table

Step 1

Open the Database using Access and edit some values.

Re-visit your PivotTable to see if the values you have entered into the database have updated automatically.

If they have not updated then you must click on the refresh button and check your data one final time.

Task 3

Save your work and close the file.

Exercise 15. Creating and using slicers.

- Create a slicer to filter data in a single PivotTable – See Section 2.14.1
- Move, resize and format slicers – See Section 2.14.2
- Filter your data using slicers - See Section 2.14.3

Task 1

Create a PivotTable.

Step 1

Open the file **Staff Finance.xlsx** or if you did not complete Exercise 13 then open the file **Staff Finance Ex13 completed.xlsx** from the H:\ drive

Open the worksheet '**Data Spending**' and using the table of Staff Spending create a new PivotTable on a new worksheet. Show **Name** in the Row labels, **Spending** in Column labels and **Amount** in the Values box. Your PivotTable will look like below. Name your worksheet '**Slicers**'.

Name	Sum of Amount			Spending
	Car	Food	Rent	
Janine Brown		29	51	80
Pamela Wright	48	30	51	129
Rob Roy	20	77	81	178
Grand Total	68	136	183	387

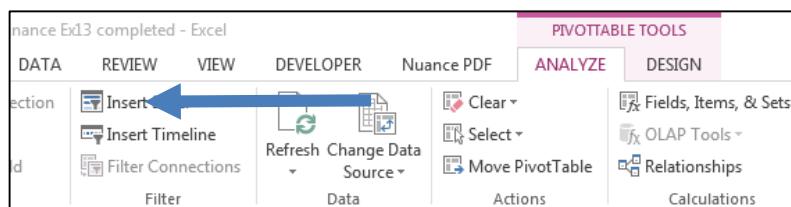
Task 2

In this task you will create a slicer to filter data in a single PivotTable.

Step 1

Select the **Slicers** worksheet. Click anywhere in the PivotTable to select it.

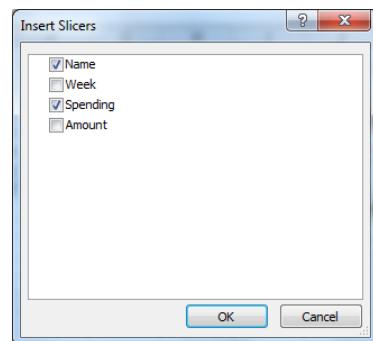
Select **PivotTable Tools | Analyze | Insert Slicer** see below



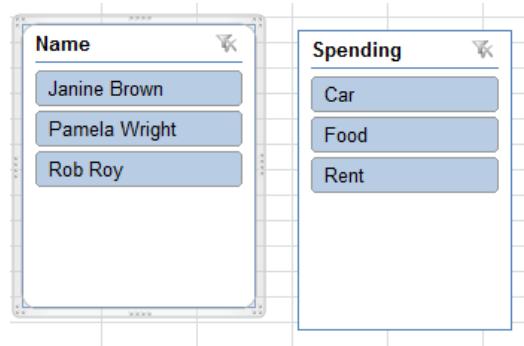
Step 2

The **Insert Slicers** dialog box will appear where you can select the field names (dimensions) you want to the Slicers to filter out.

Select **Name** and **Spending** and click **OK** See below



Slicer windows will appear as below

**Task 3**

Move, resize and format your slicers.

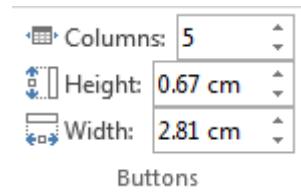
Step 1

Move and re-size your Slicers.

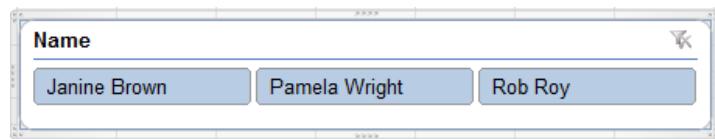
Click into the **Name** slicer, a four headed arrow will appear. Drag the top left corner of your Name slicer to cell G3 then resize it to approximately fit in cells G3 to M7.

Change the number of columns in the slicer

With the Name slicer selected click on **Slicer Tools | Options | Buttons** then use the up arrow in **Columns** to increase the number of columns to 3 to allow you to view all your slicer items in one window.

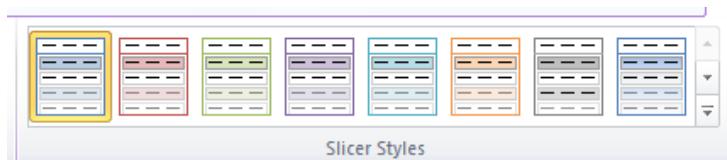


Your Name slicer should now look like below



Step 2

Format your slicer, with your Name slicer selected, click on **Slicer Tools | Options | Slicer Styles**



Select a style, I picked purple.

Move, resize and apply a style to the Spending slicer to fit underneath the Name slicer.

Your worksheet should now look like below. I have formatted **Name** to purple and **Spending** to green

	Sum of Amount	Spending		
Name	Car	Food	Rent	Grand Total
Janine Brown	29	51		80
Pamela Wright	48	30	51	129
Rob Roy	20	77	81	178
Grand Total	68	136	183	387

Name

Janine Brown
Pamela Wright
Rob Roy

Spending

Car
Food
Rent

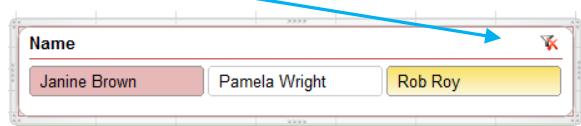
Task 4

Filter your PivotTable using your slicers

Step 1

Filter your PivotTable by selecting a field, to select multiple fields select other fields holding the **<Ctrl>** key down.

To clear the Slicer and display all records filter click the **Clear Filter** icon at the top of the Slicer.

**Step 2**

View all expenses for **Janine Brown** and **Pamela Wright**.

Clear the filters and view spending on **Car**. Here you will see that Janine Brown does not appear in the PivotTable result and her button is also shaded out in the slicer. Your PivotTable and slicers will look like below.

	Sum of Amount	Column Labels	
Row Labels	Car	Grand Total	
Pamela Wright	48	48	
Rob Roy	20	20	
Grand Total	68	68	

Name

Pamela Wright
Rob Roy
Janine Brown

Spending

Car
Food
Rent

Task 5

Save your file.

Exercise 16. Insert multiple pivot tables to a worksheet and connect multiple slicers

- Add multiple PivotTables to one worksheet - See Section 2.14.6
- Connect multiple slicers to multiple PivotTables - See Section 2.14.6
- Filter multiple PivotTables using multiple slicers - See Section 2.14.6

Task 1

Insert multiple PivotTables in one worksheet

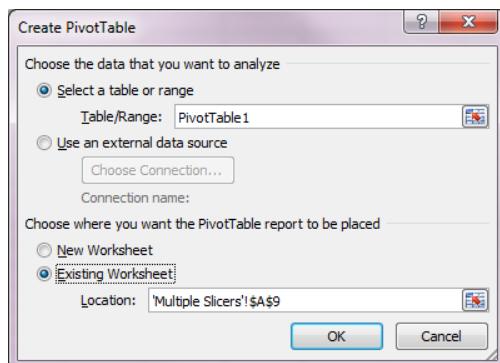
Step 1
Using **Staff Finance.xlsx** or if Exercise 15 was not completed then use the file **Staff Finance Ex15 completed.xlsx** from the H:\ drive

Open the **Data Spending** worksheet and insert a new PivotTable into a new worksheet with **Name** as the Row labels and **Amount** as the Values. The first pivot will be as below. Name the new worksheet '**Multiple Slicers**'

Row Labels	Sum of Amount
Janine Brown	80
Pamela Wright	129
Rob Roy	178
Grand Total	387

Step 2

Move back to your **Data Spending** worksheet and insert a second pivot this time specifying the location as an **Existing Worksheet with the Location 'Multiple Slicers'!\$A\$9**. (You can do this by clicking on the worksheet and then the cell reference). See below



The second pivot should look like below. Add **Week** as the Row labels and **Amount** as the Values

Row Labels	Sum of Amount
21/01/2004	101
28/01/2004	104
04/02/2004	98
11/02/2004	84
Grand Total	387

Step 3

Add a 3rd pivot to the same worksheet this time with **Spending** as the Row labels and **Amount** as the Values and insert it to cell A16 as below.

Row Labels	Sum of Amount
Car	68
Food	136
Rent	183
Grand Total	387

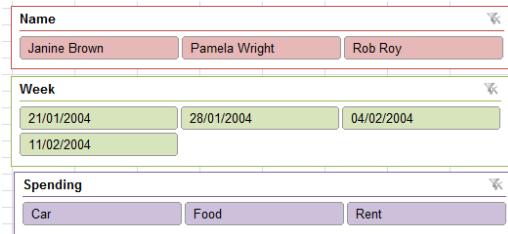
Task 2

Add multiple slicers

Step 1

Select the first PivotTable and add slicers to your worksheet for **Name**, **Week** and **Spending**.

Move, resize and format your 3 slicers to a suitable view, example below. (I have formatted **Name** to red, **Week** to green and **Spending** to purple).

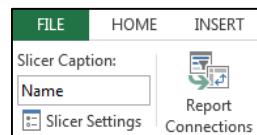
**Task 3**

Link the slicers to multiple pivot tables.

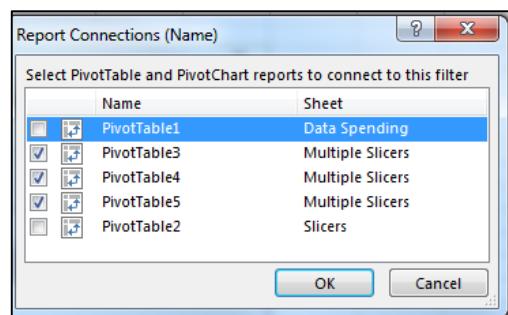
Step 1

Currently your slicers are only connected to the first PivotTable showing **Name** and **Amount**. Click on fields in each slicer and see how only the first PivotTable changes. The slicers need to be connected to all 3 pivot tables.

Select your first slicer. Select **Slicer Tools | Options | Slicer | Report Connections** see below



Link the slicer to the other two pivot tables in **Multiple Slicers** by inserting a tick next to **PivotTable3**, **PivotTable4** and **PivotTable5** click on **OK**.

**Step 2**

Select each of the other two slicers in turn and repeat Step 1 above to connect all three slicers to all three PivotTables.

Task 4

Filter using your slicers to show **Janine Brown** payments for **Rent**

Step 1

Filter to see when **Janine Brown** paid her **Rent**, all three pivots should now change.

Practice using the slicers to filter various options.

Task 5

Save and close your file.

Exercise 17. Consolidation Task.

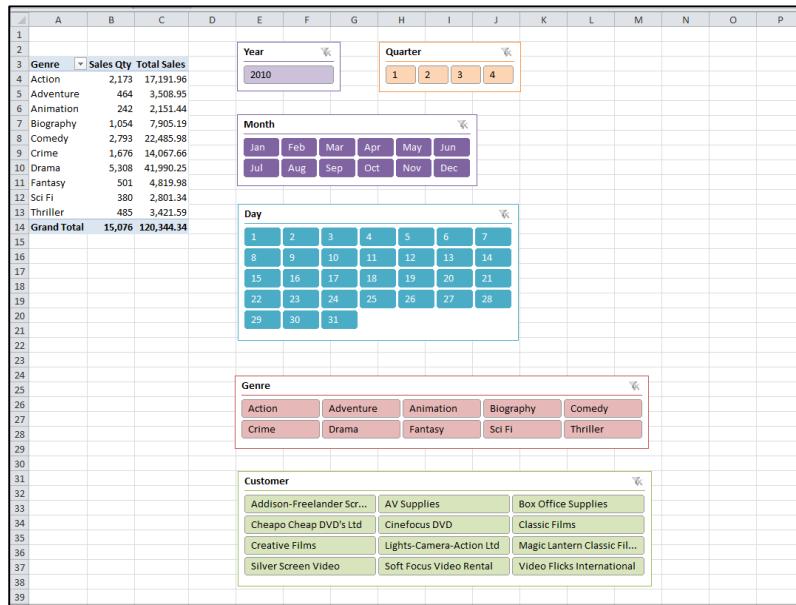
- Create a date-driven interface
- Create a custom Pivot Table Style

Task 1

Create a PivotTable using the file Transactions.

Step 1

A date-driven interface is one of the most impressive and useful implementations of Excel's slicer features.



Before you can add a date-driven interface to a PivotTable you must make sure that you have the correctly underlying data in your table for Year, Month, Day and Quarter – this has already been created for you in the file Transactions.

Open the file **Transactions.xls** from the H:\ drive

Step 2

Firstly create a PivotTable to display the following fields;

Row Labels: Genre

Values: Sales Qty and Total Sales

Task 2

Create slicers

Step 1

Insert Slicers for the following; **Year, Quarter, Month and Day**.

Select **PivotTable Tools | Analyse | Insert Slicer** see below



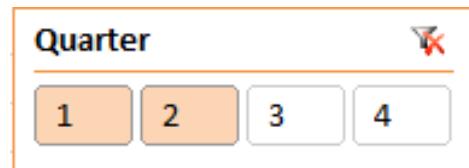
Notice that a year has been included even though the data only has a single year of 2010. When you are creating slicers to create a date-driven interface, it is good practice to always include a Year slicer because you can never be sure that more data will not be added to the underlying data table.

For example if 2011 sales data were added to the table, selecting Jan would show sales for both Jan 2010 and Jan 2011 if the year slicer was not included.

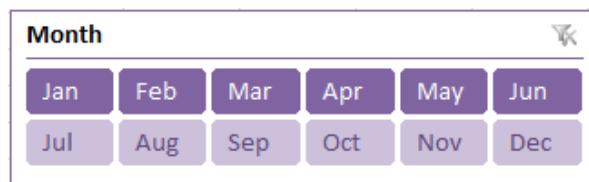
Step 2

Use the slicers to show sales for the first two quarters of 2010 in the Action, Animation and Comedy genres.

Click the 1 button in the Quarter slicer and then hold down the **<CTRL>** key and click the 2 button.



Notice that the months Jan-Jun are now selected in the Month slicer;

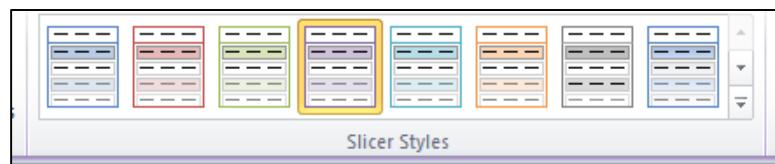


Click the Action button in the Genre slicer and then hold down the **<Shift key>** key and click the Animation and Comedy buttons.

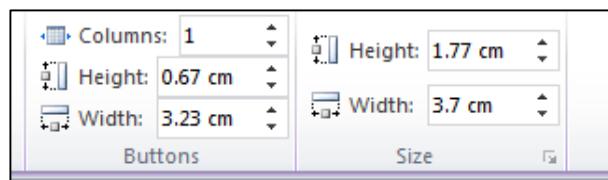
Sales are now shown for the first two quarters of 2010 in the Action, Comedy and Animation genres.

Step 3

Use the **Slicer Tools Option** to format your slicers to display in different colours.



Use the **Slicer tools** to also change the display of your slicers by changing the column number and the height and width so that all the slicers fit nicely onto the spreadsheet.



Task 3

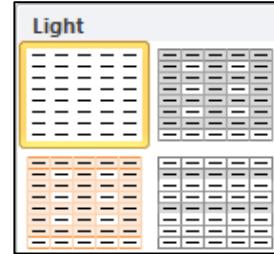
Creating a custom PivotTable Style.

Step 1

In this section you are going to learn how to create a custom Pivot Table style you need to open the file Transactions-2

Click into the PivotTable to activate it

Click on **PivotTable Tools | Design | PivotTable Styles | Light | None**

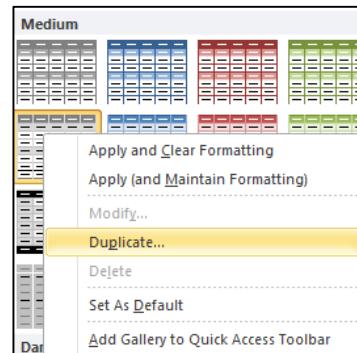


Notice that this style is different from the default style. The default PivotTable style is Light 16.

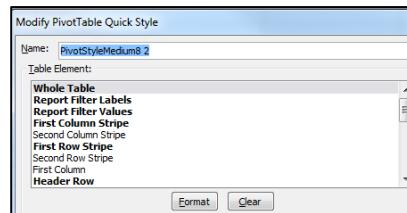
Create a custom PivotTable style called Corporate by duplicating the Medium8 built in style. You will find that modifying a duplicate of an existing style is easier than crating a style from scratch.

Right click on **PivotTable | Design | PivotTable Styles | Medium | Pivot Style Medium 8**. As you hover your mouse over the different styles you will see all the styles are named by Excel.

Click **Duplicate** from the shortcut menu



Notice that some of the Table Elements are shown in bold face. These are the elements that have had formatting applied to them:



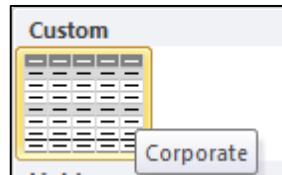
Type the name **Corporate** into the Name text box



Click **OK**

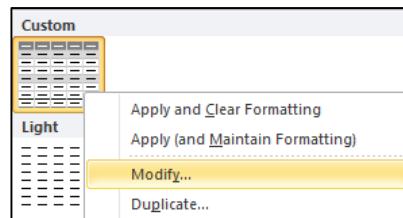
Now apply the new Corporate style to the PivotTable

Click **PivotTable Tools | Design | PivotTable Styles | Custom | Corporate**



Modify the Corporate style so that it shows the Grand Total column is both Bold and Italic

Right click on **Corporate style** and click **Modify**



Select **Grand Total Column** from the **Table Element list**.

Click on **Format**, Select the **Font tab** then Select the **Font Style: Bold Italic**



Click **OK** then click **OK** again, The Grand Total column is now shown in bold and italic;

Row Labels	Action	Adventure	Animation	Grand Total
West,Chuck	861.84	44.77	677.02	1583.63
Spears,Julie	1032.11	284.58	109.37	1426.06
Armstrong,Dan	1199.7	195.56	218.1	1613.36
Grand Total	3093.65	524.91	1004.49	4623.05

Now experiment with the Custom PivotTable Styles and make some other changes to the new Corporate style you have created.



4 Other Courses

Courses offering spreadsheets and related topics are described below. In all cases, please refer to the IT Learning Programme catalogue (via www.it.ox.ac.uk/courses/) for further details.

4.1. The ITLP Portfolio

These course materials are available through the ITLP Portfolio, at <http://portfolio.it.ox.ac.uk>.

Each course pack includes the course handbook in pdf form and a zip folder of the exercise files that you need to complete the exercises. Archive versions of the course book may also be useful if you use an earlier version of the software.

The ITLP Portfolio helps you find articles, videos, resources and web links for further IT study. For some resources, you will be asked for your Oxford (SSO) username and password.

4.2. Courses in Statistical Analysis

- **SPSS: An introduction**
- **R: An introduction**
- **Vivo: Introductory workshop**
- **Stata: An introduction to data access and management**

Some prerequisite knowledge is required. See the IT Learning Programme catalogue for details <http://courses.it.ox.ac.uk>).

4.3. Course Clinic / Office Fundamentals

We encourage everyone to work at their own pace. This may mean that you don't manage to finish all of the exercises for this session. If this is the case, and you would like to complete the exercises while someone is on hand to help you, come along to one of the Office Fundamental sessions or if you need help with a particular piece of software book onto the Course Clinic where you can have 1-1 support, both of these run during term time.

More details are available from the IT Learning Programme course catalogue (via www.it.ox.ac.uk/courses/).

4.4. IT Services Help Centre

In the IT Services Help Centre, you can use the facilities to work through the exercises in this booklet, or use any of the applications that are available. The Help Centre is also a good place to get advice about any aspect of using computer software or hardware.

For Help Centre opening times, visit www.it.ox.ac.uk/help/gettinghelp/ and follow links to the General Helpdesk, or contact them by email on help@it.ox.ac.uk.

Summarising data using PivotTables

Traci Huggins



IT Learning Programme

Today's arrangements

Your teacher is: Traci Huggins

Your demonstrator is:

We finish at:

This is a hands-on session so get stuck in and have fun - don't be afraid to experiment!

Your comfort is important

The toilets are along the corridor outside the lecture rooms

The rest area is where you registered

The swivel seats are adjustable

You can adjust the monitors for height, tilt and brightness



The course handbook

Contains notes on each topic + slides

Tasks for you to practice during today's course
Work at your own pace

Follow-up work

Continue with exercises after the session
Office Fundamentals drop-in sessions

Course Outline

- What are Pivot Tables
- Create a Pivot Table
- Formatting
- Expand/Collapse data
- Filter, Sort, Group
- Clear Filters
- Report Filters
- Using Slicers
- Pivot Charts
- Calculated Fields
- Linked Data (Access)
- Multiple Pivot Tables and Slicers

Excel 2010: A Quick Tour/Refresher

The Ribbon/Toolbar: where the menus are

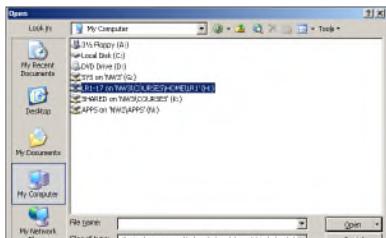


The File Tab: called 'Backstage view' – where you go for printing and creating new files

	A	B	C	D
1				
2				
3				
4				
5				
6				

The Grid/Data Sheet: where your data goes, in columns and rows

Opening a file



Introduction to Pivot Tables

What is a Pivot Table?

	2003	2004					Totals
			Quarter 1	Quarter 2	Quarter 3	Quarter 4	
Clothing	\$50 355.85						
Bikes	650 122.54	\$80 779.08	\$32 12	\$4 904 467.22	\$755 898.49	\$10 729 050.37	
Touring Bikes	5246.14	\$2 778 927.83	\$11.13	\$1 277 498.72	\$206 727.05	\$3 844 801.05	
Road Bikes	494.67	\$3 125 961.44	\$28 703.13	\$1 560 122.51	\$237 135.57	\$6 993 455.88	
Road-750	54.56	\$485 451.01	\$197 636.34	\$250 015.37	\$37 799.30	\$779 205.57	
Road-350-39	5544 281.75	\$737 282.42	\$284 604.46	\$397 773.95	\$54 904.01	\$1 381 564.17	
Road-350-49	\$489 194.13	\$1 092 035.58	\$428 643.48	\$590 037.59	\$83 348.51	\$1 580 319.71	

Use a Pivot Table when you need to;

- Find relationships and groupings within your data
- Find data trends using various time periods
- Create subtotals that frequently include new additions
- Organise your data so it is easy to chart

How to create a Pivot Table ...

You first need to select a cell in your table of data, then click on Insert, PivotTable

You then need to decide whether you want you PivotTable in the existing worksheet or in a New Worksheet

1. John Barnes 28/02/2015 Find £11.00
2. James Barnes 28/02/2015 Find £11.00
3. Pamela Wright 04/02/2015 Find £14.00
4. Roy Roy 11/02/2015 Find £12.00
5. Roy Roy 21/02/2015 Find £15.00
6. Pamela Wright 28/02/2015 Car £12.00

Pivot Table Screen

PivotTable Ribbon

Field List

Data

PivotTable

PivotTable Areas

Pivot Table Structure.....

The diagram illustrates the structure of a Pivot Table. It is divided into four main areas: Row Area (A1 to A16), Filter Area (B1 to B16), Values Area (B1 to B16), and Column Area (C1 to F1). The Row Area contains the row labels. The Filter Area contains the filter dropdowns. The Values Area contains the numerical data. The Column Area contains the column labels.

A	B	C	D	E	F
1	Region	(All)			
2					
3					
4					
5	Sales Amount	Segment	Bikes	Clothing	Components
6	Market	Accessories			
7	Australia	23,974	1,351,873	43,232	203,791
8	Canada	119,303	11,714,700	383,022	2,246,255
9	Central	46,551	6,782,978	155,874	947,448
10	France	48,842	3,597,879	129,508	871,125
11	Germany	35,681	1,602,487	75,593	337,787
12	Northeast	51,246	5,690,285	163,442	1,051,702
13	Northwest	53,308	10,484,495	201,052	1,784,207
14	Southwest	45,736	6,737,554	165,689	959,337
15	United Kingdom	110,080	15,430,281	364,099	2,693,568
16		43,180	3,435,134	120,225	712,588

Formatting a Pivot Table

- Formatting values in a Pivot Table
- Change the name of row and column headings
- Expand and collapse Pivot Table data
- Filter, Sort and Group Pivot Table data
- Clear filters

Exercises



Chapter 2 - 2.10

Your files are on H:\

Exercises start at Chapter 3, page 22

Please ask for help if needed!

We will restart at:

Practical Session 1

Exercise:	Page:	Description:
1	22	Create and Format a PivotTable
2	25	Expand and Collapse data/change row & column data
3	28	Filter, Sort and Drill down data
4	30	Group data by Text
5	32	Grouping data by Date
6	34	Grouping data by Numeric Value

Report Filters

By using the Report Filter Pages – you can create multiple reports depending on the filters you choose to add to your Pivot Table ...

The dialog box shows the following table:

Region	North	South
Sum of Net Sales	Product	Product
Sales Person	Product	Product
Grand Total	£46,320	£46,434
	£47,700	£52,050
	£51,315	£53,129
	£51,315	£53,129
	£50,664	£52,966
	£52,019	£53,749
	£53,749	£54,643
Grand Total	£196,390	£194,987
	£197,720	

Creating and using Slicers

The screenshot shows a Pivot Table with Slicers and a Timeline.

Slicers:

- Region: North, South
- Week: 21/01/2004, 28/01/2004, 04/02/2004, 11/02/2004
- Week: 21/01/2004, 28/01/2004, 04/02/2004, 11/02/2004

Timeline:

- Insert Slicer
- Insert Timeline
- Filter Connections
- Filter

Creating a Pivot Chart

Calculated Fields

Working with linked data

Multiple Pivot Tables and Slicers ...

Other Excel Courses

[Excel: Organising and Displaying Data](#)
[Excel: Advanced Data Analyse](#)
[Intro to Statistics](#)
[Office Fundamentals](#)
[Course Clinic](#)

<http://portfolio.it.ox.ac.uk/>

Practical Session 2

Exercise:	Page:	Description:
7	35	Using the Report Filter Field and Multiple Page Reports
8	38	Using Report Filters
9	40	Creating a Pivot Chart
10	43	Add a Calculated Field
11	45	Add a Calculated Field – additional exercise
12	48	Creating additional fields to show % of Totals
13	49	Additional Fields showing % of Totals using Field List Option
14	51	Create a PivotTable from a MS Access Query
15	54	Creating and Using Slicers
16	57	Inserting Multiple PivotTables and Multiple Slicers



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