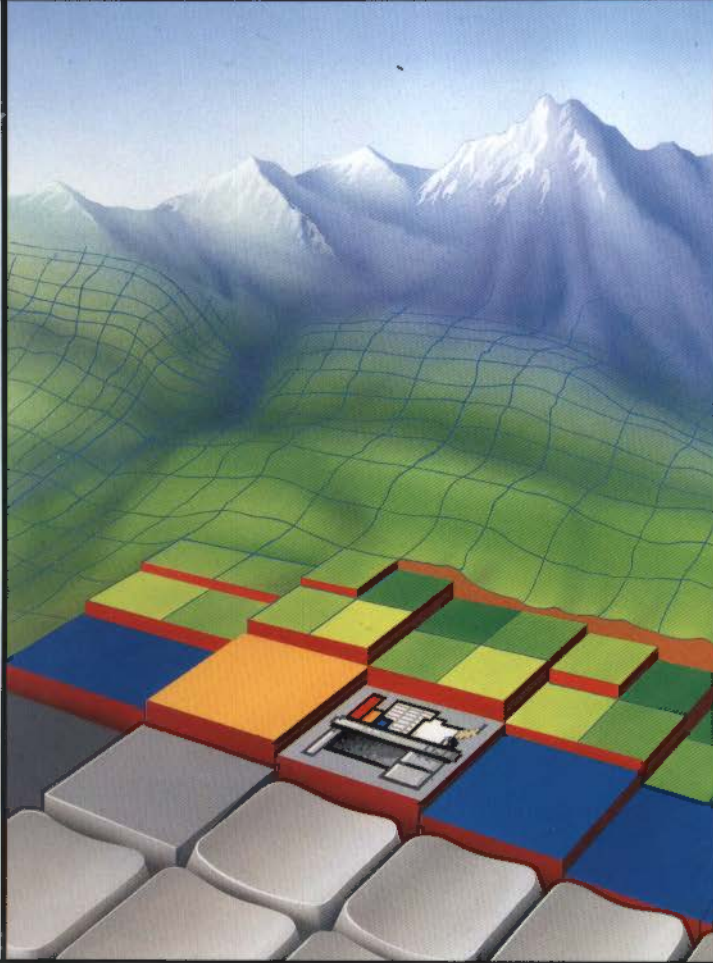


Advance

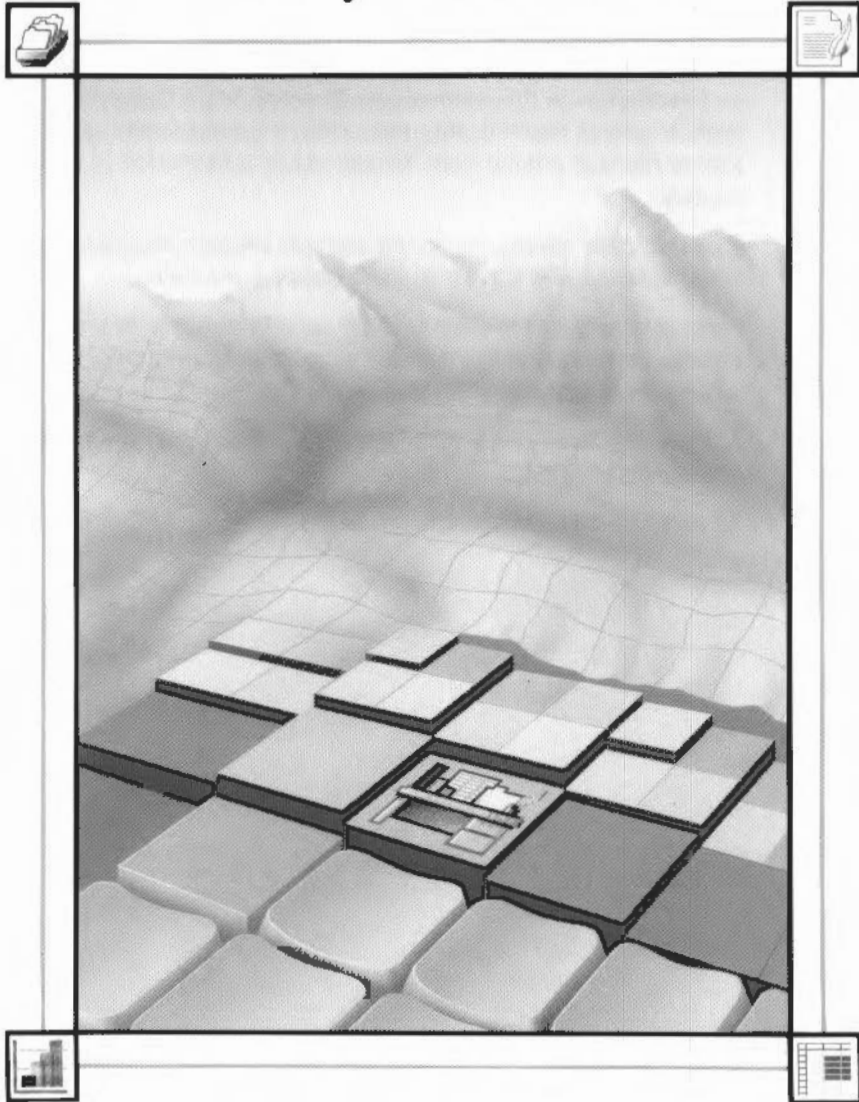
Project Guide



Acorn 

Advance

Project Guide



Acorn 

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Published by Acorn Computers Limited

ISBN 1 85250 133 2

Part number 0484,063

Issue 1, January 1993

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About this Guide

About the Acorn Advance Climate Project

The Acorn Advance integrated software suite, and the Acorn Advance Climate Project have been designed with the requirements of schools very much in mind. The four Advance tools – Word Processor, Spreadsheet, Database and Graph work together to provide an integrated IT resource for use across the curriculum.

The three projects in this guide cover the following areas of the curriculum:

- Geography
- Mathematics
- English
- Technology
- Science.

There are no hard dividing lines between the three projects; teachers may want to go on to the next project with the same group, or mix aspects of different projects to suit their own needs.

Chapter 1, *Introduction to the Advance weather database*, explains the content of the weather database, and provides details on how to use it. The weather database provided with the projects may be replaced by data collected by pupils as part of their studies.

Chapter 2, *Project 1: Investigating seasonal variations in climate in the UK*, is suitable for children between the ages of 7 and 11, giving them opportunities to use IT to relate to science in everyday life. The project enables pupils to explore essential elements of science and to communicate their findings.

Chapter 3, *Project 2: Investigating regional variations in climate in the UK*, is suitable for children between the ages of 11 and 14. It provides a more comprehensive means of exploring science and technology together, using graphs and maps in the analysis of data.

Chapter 4, *Project 3: Comparing local climate to the UK average*, is suitable for children aged 14 and over. This project gives pupils the opportunity to use IT to develop further their skills in statistical analysis and interpretation of data.



1

Introduction to the Advance weather database

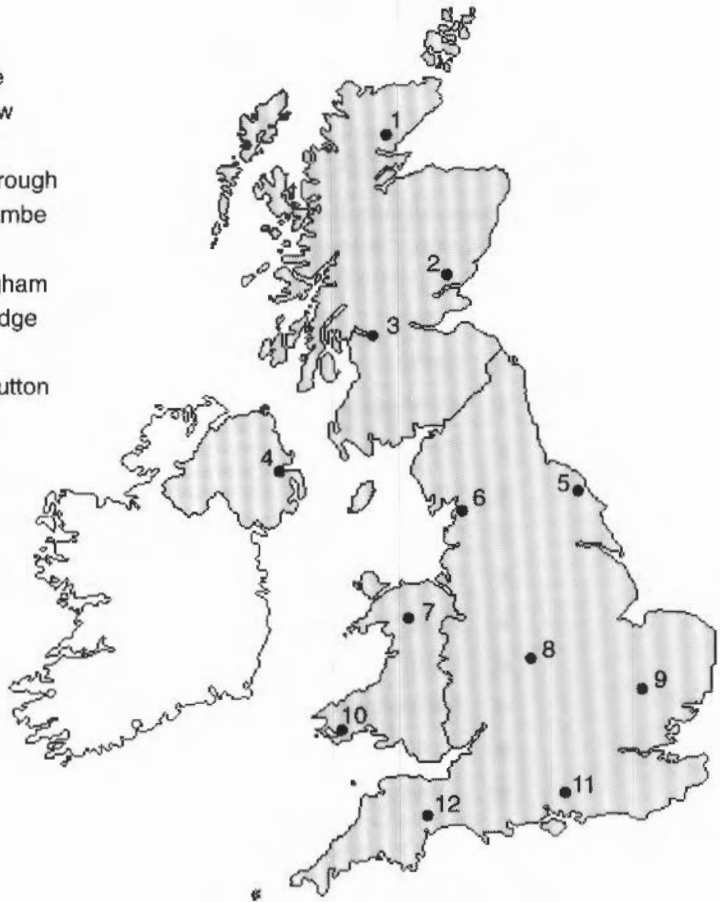
The data supplied with the Advance Climate Project was extracted from the Meteorological Office's Monthly Weather Reports for 1990.

These reports list the observations of weather stations located all over the United Kingdom. Twelve of these official weather stations were chosen, to be representative of different regions of the UK:

- Bala (Wales North)
- Belfast (Northern Ireland)
- Birmingham (Midland Counties)
- Cambridge (East Anglia)
- Dundee (Scotland East)
- Exeter (England South West)
- Glasgow (Scotland West)
- Lairg (Scotland North)
- Long Sutton (England South East and Central Southern)
- Morecambe (England North West and Isle of Man)
- Scarborough (England East and North East)
- Tenby (Wales South).

This map shows the location of these weather stations.

- 1 Lairg
- 2 Dundee
- 3 Glasgow
- 4 Belfast
- 5 Scarborough
- 6 Morecambe
- 7 Bala
- 8 Birmingham
- 9 Cambridge
- 10 Tenby
- 11 Long Sutton
- 12 Exeter



The Climate Project data is stored in an Advance Database file called `WeatherDB`. This file is supplied on Advance Data disc B.

There are twelve records associated with each weather station; one for each month of the year. This gives a total of 144 records within the database.

Each project involves examining the data contained in the `WeatherDB` database file, and extracting the data which is relevant to the project.

Cambridge is used as the local weather station in the Climate Project. This is just an example; you should use the data for the station nearest to your home, or if you prefer, your own data. (*Appendix A: Collecting your own climate data* gives you some ideas about collecting your own climate data.)

Getting started

Before you start, you need to load Advance into your computer. Display the directory containing the !Advance icon on the screen, and then double-click on the Advance icon. This loads Advance onto the icon bar ready for use.

when Advance is running, its icon is displayed on the icon bar



If you have not previously installed Advance on your computer, you should refer to the chapter *Installing and running Advance* on page 7 of the *Advance User Guide* now.

Loading the weather database

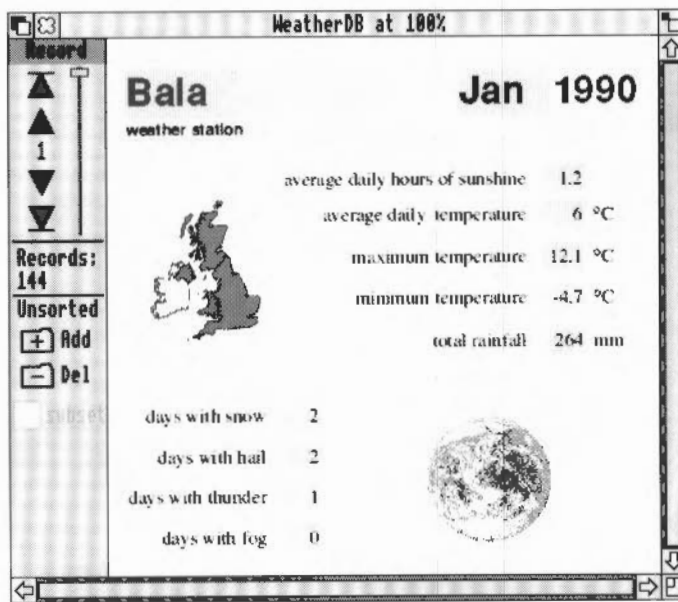
To load the Advance weather database, WeatherDB:

- 1 Insert a copy of Advance Data disc B into the floppy disc drive.
- 2 Click on the floppy drive icon on the icon bar.
- 3 Double-click on the Project directory, and then double-click on the WeatherDB icon.

If you are using a single floppy disc machine, your computer will then ask you to insert Advance Program Disc I. Insert Program Disc I and click on **OK**. You'll then be asked to insert Data disc B. Insert Data disc B and click on **OK**.

The weather database should now be loaded.

The first record in the database is displayed on the screen:



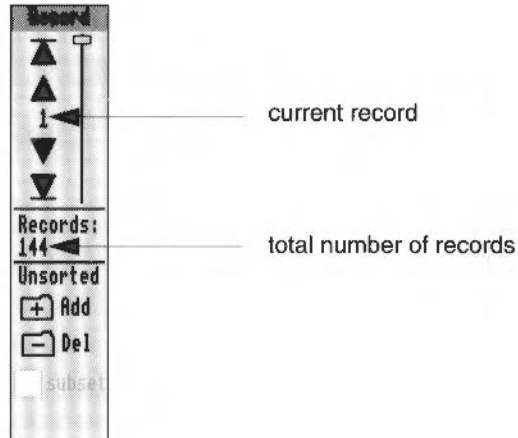
The records are already sorted into alphabetical order by weather station name.

Under each station, the records are sorted into calendar order. So, the record you can see is the one which comes first in the alphabet, and has the name of the first month of the year. In this case it is the January record for Bala (unless data you've entered comes before this).

Moving between records in an Advance Database file

To see other records, you can page through the records using the Record toolbox.

The Record toolbox on the left of the window shows you how many records there are in the database, and the number of the record currently displayed.

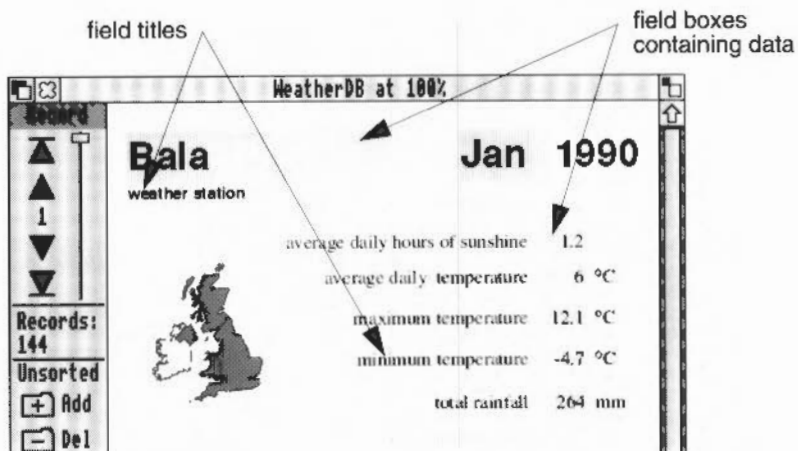


The Record toolbox has the following buttons which allow you to move between records:

- ▲ The **First Record** button takes you to the first record.
- ▲ The **Previous Record** button takes you to the previous record.
- ▼ The **Next Record** button takes you to the next record.
- ▼ The **Last Record** button takes you to the last record.

Looking at the layout of the weather records

You'll see as you move through the records, that each record in a database has exactly the same layout and field titles, but that the content of each record is different; it is only the information held in the field boxes which changes.



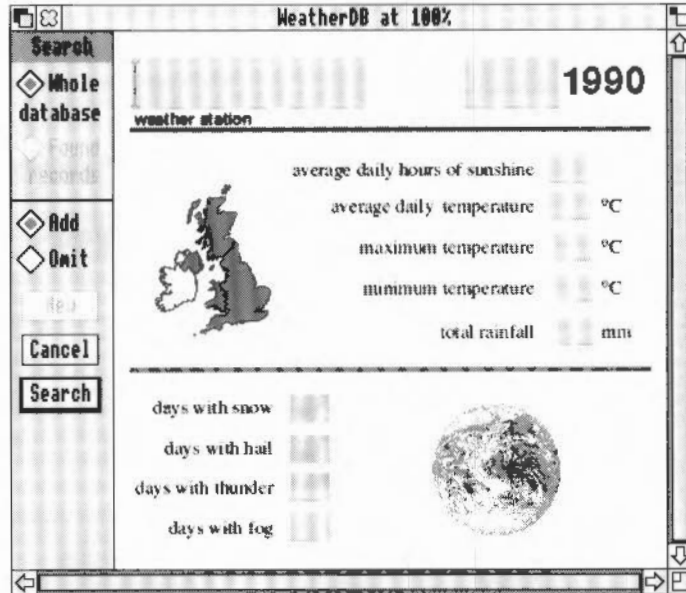
Most of the fields in the Advance weather database have a visible field title. There is one field which does not; the field which contains the name of the month.

Searching for specific weather records

In Projects 1 and 2, you'll search for a specific set of records, and then save these records as a subset of the database. (A subset is any group of records which is just a part of the whole database.)

When you open a Database file, you automatically have access to the whole database. To see just a section of the database, you need to tell Advance which records you wish to see. You do this by **searching** for those records.

To enter the Search window choose **Utilities/Search** (move to the **Utilities** submenu and click Select on **Search**) or press F4. The Search window then appears:

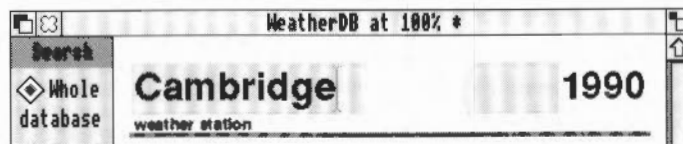


The Search window contains a blank Weather record. In a blank record all the field names which were displayed on each completed record are present, but there are empty field boxes where the data was.

The blank fields in the window are where you type in the data you wish to search for. You use the toolbox to the left to instruct Search to look for records, and to specify what to do with found records.

For example, to search the whole database for every record that has got 'Cambridge' in the Weather station field box:

- 1 Place the caret in the Weather station field box and type in Cambridge.

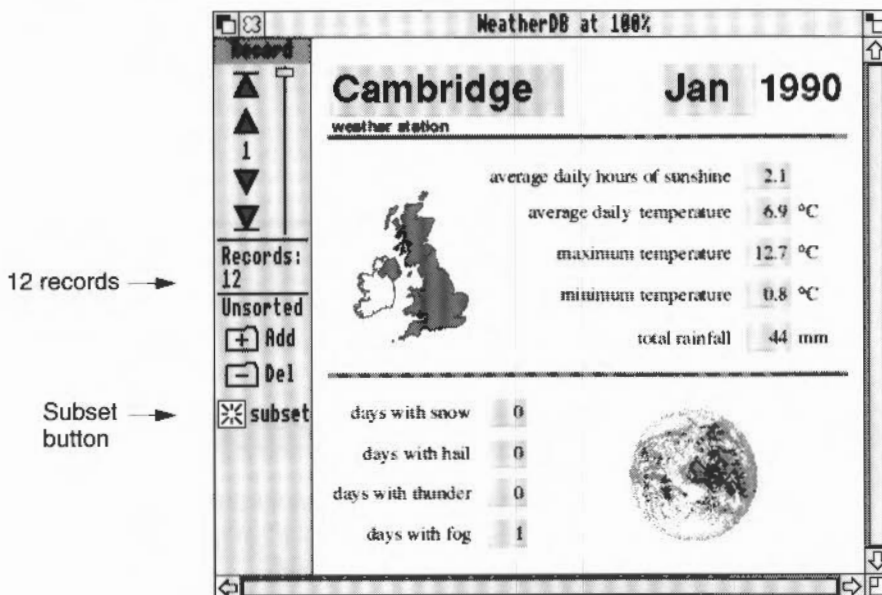


- 2 Click on the **Search** button.

When you click on Search, Advance searches the whole database for records with Cambridge in the Weather station field.

When the search is finished, the Search window disappears and you're returned to the One Record window.

Instead of the 144 records that were previously available, twelve records are now contained in this window, and the first record of this set (January 1990) is automatically displayed on the screen:



The twelve records that are displayed in the One Record window are the records that contained fields matching your search. The **Subset** button at the bottom of the toolbox is switched on, indicating that the One Record window is displaying a subset, and not the whole database.

You can now use the Record toolbox to see each of the Cambridge records in turn.

What if you make a mistake?

If you make a mistake when entering search data, you can use the delete key as normal to help put it right.

If you've made a mistake, but have also clicked on **Search**, Advance will try to find matching data. If no records match search data, a warning is displayed on the screen. When you click on **OK**, you're returned to the whole database in the One Record window.

To try again, simply choose **Utilities/Search**, enter your search data and click on **Search** as before.

Restarting a search

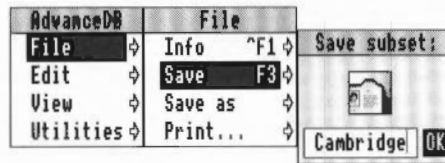
If you want to search the whole database again to create a new subset, then you need to return to the Search window, click on **New**, type in your new search data, and click on **Search**.

Leaving the Search window

If you're in the Search window and you want to return to the One Record window **without** searching for any data, you can click on the **Cancel** button.

Saving a database subset

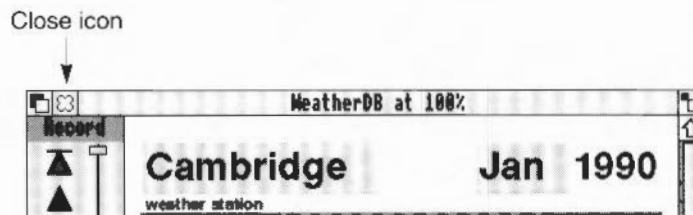
Once you've created a subset of records, it is best to save it as a separate database file. You do this by choosing **File/Save**, or by pressing F3. Use the Delete key to rub out the default name `Subset` and type an appropriate name into the dialogue box. Then drag the icon to your work directory.



Your subset is saved in a separate database which you can open from the desktop.

Quitting the main database

When you've finished working with the whole database, you close the database by clicking Select on the Close icon:



Any changes you've made to the structure of your database are saved automatically while you work, so you are not asked whether you want to save your changes.

Extracting data from a Database file

You can export data from Advance Database files to use in other applications, including the Advance Spreadsheet and Word Processor.

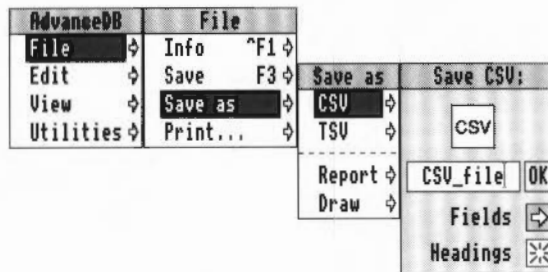
To export data from the Database, you need to save the data in a file format which can be understood by the Spreadsheet or Word Processor.

You can save data in two different file formats from the Database: CSV (Comma Separated Value) and TSV (Tab Separated Value) file formats. There is more information on exporting data in the *Acorn Advance User Guide* under *Appendix A: Moving data between Advance tools* on page 299.

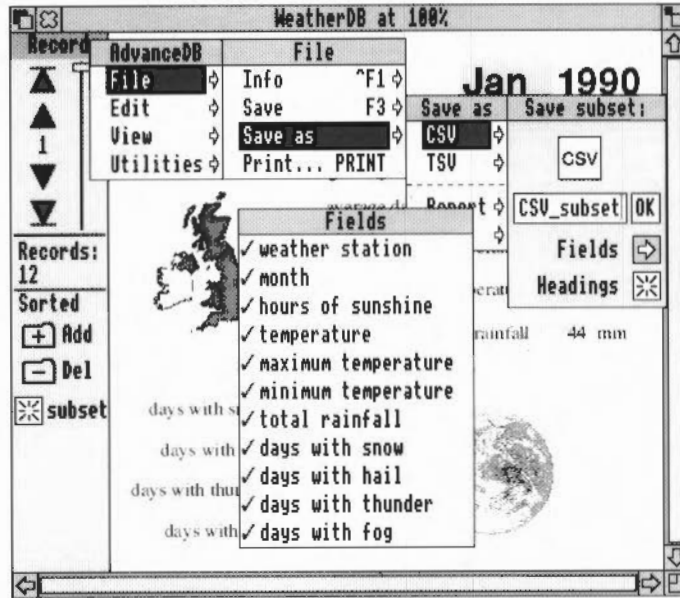
Saving data as a CSV file

Each project uses CSV file format for transferring data. To save data in CSV file format:

- 1 Open your database file by double-clicking on its icon.
- 2 Go into the **File/Save as/CSV** menu.



- 3 Move the pointer over the **Fields** box, and when the pointer changes into a small menu icon, click Select. This displays the Fields menu listing all the field names in your database file.
- 4 Drag this list over to the left of your screen so that it does not obscure the **Save CSV** dialogue box.



Initially all the field names in the Fields dialog box are selected.

- 5 Remove the tick against those fields which contain data you do not wish to transfer by clicking Adjust on each unwanted field name.
- 6 Move the pointer back into the **Save subset** dialog box, give your file a suitable name, and then drag the CSV icon into your Advance directory display to save it.

This is really all the background information you need to get you started on each project. Remember, if you need more help on using any of the Advance tools, you should refer to the *Advance User Guide*.

2

Project 1: Investigating seasonal variations in climate in the UK

In this project, you'll use Advance to examine climate data for a single area in the British Isles. You can either use the data supplied with Advance or data you've collected for your own area.

The examples in this project use data for Cambridge, which is supplied on Advance Data disc B.

In the project, you'll examine the data for your chosen area, and show how temperature, rainfall, and hours of sunshine fluctuate with the seasons. You'll then produce a report based on your findings.

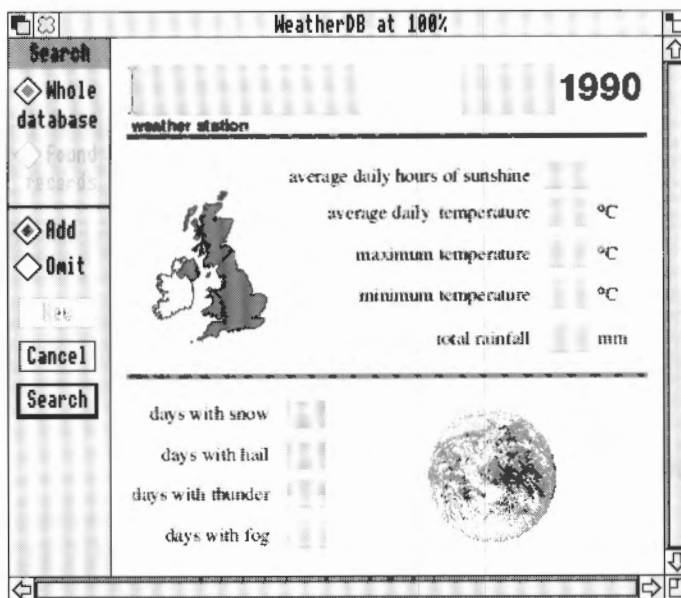
Getting started

Load Advance into your computer and open the Advance weather database, `WeatherDB`, as explained in *Getting started* on page 3.

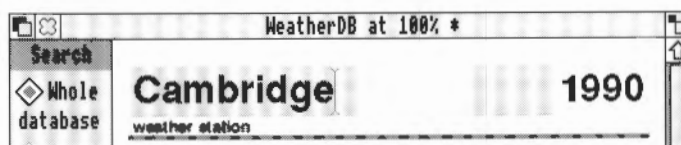
Searching for the Cambridge weather records

To examine the data for a single weather station, you need to search for all the records for that area, and then save them as a subset of the database.

To enter the Search window choose **Utilities/Search** or press F4. The Search window then appears:

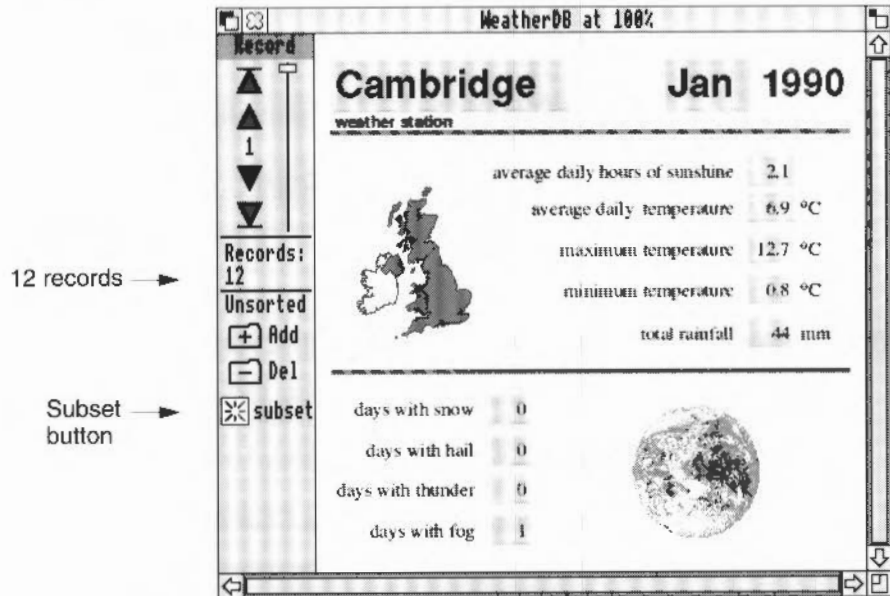


- 1 Place the caret in the Weather station field box and type in Cambridge (or the name of your chosen weather station).



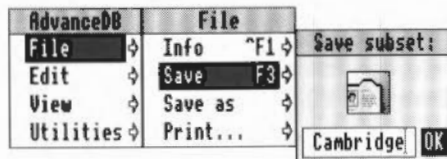
- 2 Click on the **Search** button.

When the search is finished, the **subset** button is switched on, and there are twelve records in the subset. The first record of this set (January 1990) is automatically displayed on the screen:



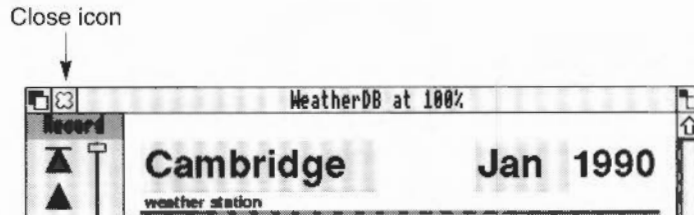
Saving your Cambridge subset

Choose **File/Save**, or press F3. Use the Delete key to rub out the default name `Subset` and type `Cambridge` (or the name of the weather station you're studying) into the dialogue box. Then drag the icon to your work directory.



Quitting the main database

You've now finished working with the whole database. To close the database, click Select on the Close icon:




Getting your Cambridge data into an Advance spreadsheet

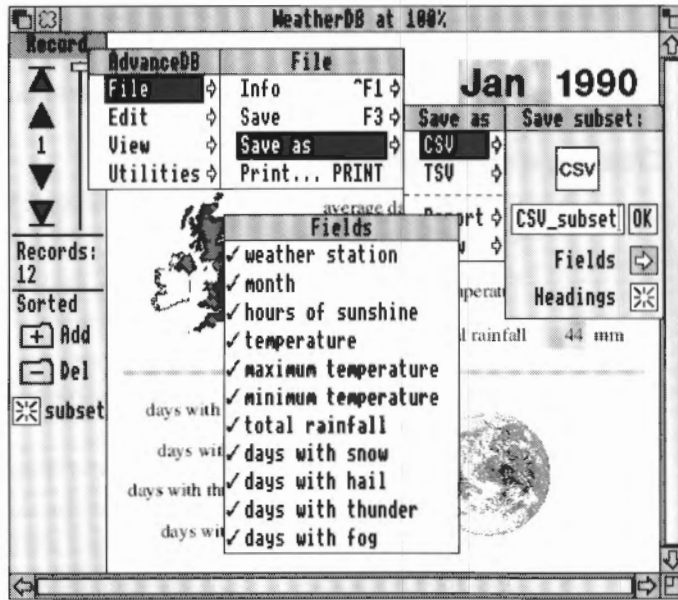
Now that you have a subset of records for Cambridge, you're going to copy some of the climate data into a spreadsheet. This will allow you to compare more easily the monthly figures for temperature, rainfall and hours of sunshine.

Saving your Cambridge subset as a CSV file

To copy data into a spreadsheet, the data must be in a form that the Spreadsheet can understand. You'll use CSV file format to save the data.

To save your Cambridge data in CSV file format:

- 1 Open your subset file by double-clicking on its icon.
- 2 Choose **File/Save as/CSV**.
- 3  Move the pointer over the **Fields** box, and when the pointer changes into a small menu icon, click Select. This displays the Fields menu listing all the field names in your subset file.
- 4 Drag this list over to the left of your screen so that it doesn't obscure the **Save CSV** dialogue box.



You can see that all the field names in the Fields dialogue box are currently selected.

- 5 You're only interested in the data for month, hours of sunshine, temperature and rainfall. Click Adjust on each unwanted field name to remove the tick against it. When you've finished, your list will look like this:



- 6 Move the pointer back into the **Save CSV** dialogue box, and give your file a suitable name such as subsetCSV. Drag the CSV icon into your work directory display to save it.

Now close your subset file by clicking on the Close icon.

Freeing up memory

You won't need to use the Database tool again during this project, so it is wise to tell Advance not to save any computer memory for it. To do this, click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

Creating a spreadsheet for your data

- 1 Click Menu on the Advance icon on the icon bar, and choose **Create/Spreadsheet**.

This displays a blank spreadsheet file. Cell A1 is automatically selected. You'll use this cell to give your spreadsheet a title.

- 2 Type *Weather in Cambridge during 1990* (of course, if you aren't using Cambridge, you should type the name of the weather station you've chosen to work on).



- 3 Click on the Enter button to accept your title.

- 4 Select cell A3. This is the cell which will be the top lefthand corner of the table of data that you're going to create using your CSV file.

- 5 Drag the CSV file's icon onto the spreadsheet. All the headings and data that you chose are automatically filled into the spreadsheet.

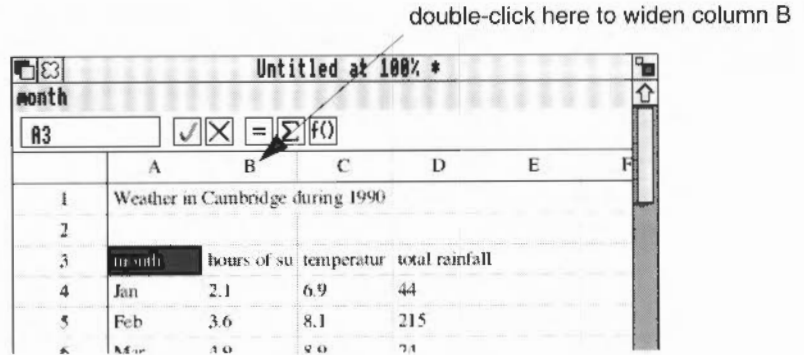
	A	B	C	D	E	F
1	Weather in Cambridge during 1990					
2						
3	month	hours of su	temperatur	total rainfall		
4	Jan	2.1	6.9	44		
5	Feb	3.6	8.1	215		
6	Mar	4.9	8.9	24		
7	Apr	6.9	8.5	29		
8	May	7.3	13.3	7		



- 6 Click Select on the Toggle size icon to see more of the spreadsheet.

You'll notice that you cannot see the headings properly. This is because by default the columns are all the same width as each other.

- To alter the width of the columns, double-click on the column label (the letter above the column) of the column which is too narrow. Do this for columns B, C and D.

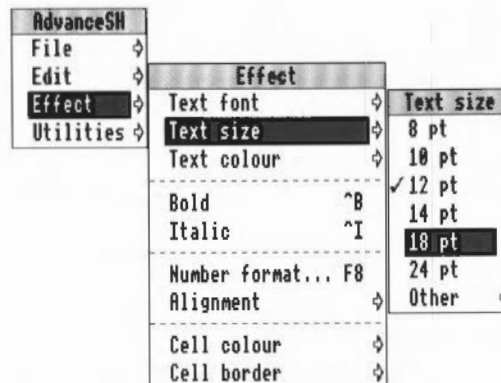


It is always sensible to save files regularly. Save your spreadsheet file now. Choose **File/Save**, give your file the name **CambSheet** and drag the **Save as** icon to your directory display.

Formatting your spreadsheet

At the moment, your spreadsheet title doesn't stand out very well. You can improve this by changing the text size and emphasis. (You could also change the font if you wish).

- Select cell A1.
- To change the title text from 12 point to 18 point text, choose **Effect/Text size/18pt**.



- Then to make the text bold, choose **Effect/Bold**.

- 4 As you've enlarged the text, you need to increase the height of the row so that the text fits. You do this in the same way as you increased the column width; double-click on the corresponding row label, in this case the 1 at the left of the window.
- 5 You can also see that the figures do not line up very well in the cells; they would look much better aligned to the right. To do this, select all the cells containing figures, and then choose **Effect/Alignment/Right**.
- 6 Save your work.

Printing your spreadsheet

Now that you've improved the appearance of your spreadsheet, you can print it out. This will make it easier for you to see the information it contains.

- 1 Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the RISC OS 3 *User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Appendix B: Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.
- 2 Switch off the row and column labels by choosing the **Utilities/Labels** option (otherwise you'll get the row and column labels down the side and across the top).
- 3 Select the area of your spreadsheet that you wish to print (cells A1 to D15).
- 4 Then choose **File/Print**.
- 5 Tell Advance to print just the selected cells by clicking on **Selection**.
- 6 Finally click on **Print**.

Studying the weather data

When you've collected your printout, look in turn at the figures for rainfall, hours of sunshine and temperature. Assume that the seasons are as follows:

Spring	March, April and May
Summer	June, July and August
Autumn	September, October and November
Winter	December, January and February

In which season is there the most rain in this area?

In which season is there the least rain?

In which season is there the most sunshine in this area?

In which season is there the least sunshine?

Which season is the hottest in this area?

Which season is the coldest?

Further suggestions

If you have another look at your database subset, you could find out in what months there have been snow. (To do this you'll need to open your database subset file.)

Which season has the most snowy days?

If you are using a 1MB computer, you should click Menu on the Advance icon on the icon bar, and choose **Minimise memory** when you have finished with the Database.

Plotting a graph of the climate changes through the seasons

The best way to see the seasonal variations in climate is to plot each type of weather on a graph. You can do this quite simply from your Spreadsheet unless you have a 1MB computer.

(If you are using a 1MB computer, please refer to *Appendix B: Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*. The file `GraphData1` in the `Project1` directory contains the plot data you need.)


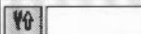
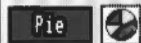

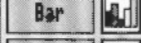
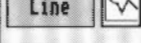
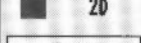
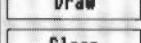
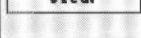
Selecting plot data

- 1 Switch the row and column labels back on by choosing **Utilities/Labels**.
- 2 Select rows 3 to 15 by clicking on row label 3, and then clicking Adjust on row label 15.
- 3 You now need to specify whether you wish to send the data to the Graph tool as row data or column data. Your data is organised into columns, so choose **Utilities/Graph type/Plot columns**.

When you go to the Graph window from the Database or Spreadsheet the selected data is automatically copied by the Graph tool and is ready to be displayed. (If no data is selected, all data is copied.)

Opening the Graph tool

Open the Advance Graph tool from the Spreadsheet by choosing **Utilities/Graphs**. This displays the Graph window. On the left side of the Graph window is the Graph toolbox. This allows you to choose which data to plot, and the type of graph to use to plot that data.

Toolbox	button	action
	X data	displays a menu of fields you can plot on the X-axis
	Y data	displays a menu of fields you can plot on the Y-axis
	Pie	selects a pie chart
	Scatter	selects a scatter graph
	Bar	selects a bar chart
	Line	selects a line graph
	2D	selects 2D, 3D, or outline for graph display
	Draw	draws the graph in the graph area
	Clear	deletes the graph in the graph area, and clears any data in the X and Y buttons

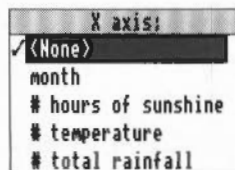
When you go to the Graph window from the Database or Spreadsheet the selected data is automatically copied by the Graph tool and is ready to be displayed. (If no data is selected, all data is copied.)

Creating graphs from the Spreadsheet is described in detail in the *Advance User Guide* under *Displaying results as a graph* on page 114, and under *More on graphs* on page 189.

Plotting a bar chart of monthly rainfall data

To plot the area monthly rainfall data:

- 1 Click on the **X data** button. This displays a list of all the fields in the database.

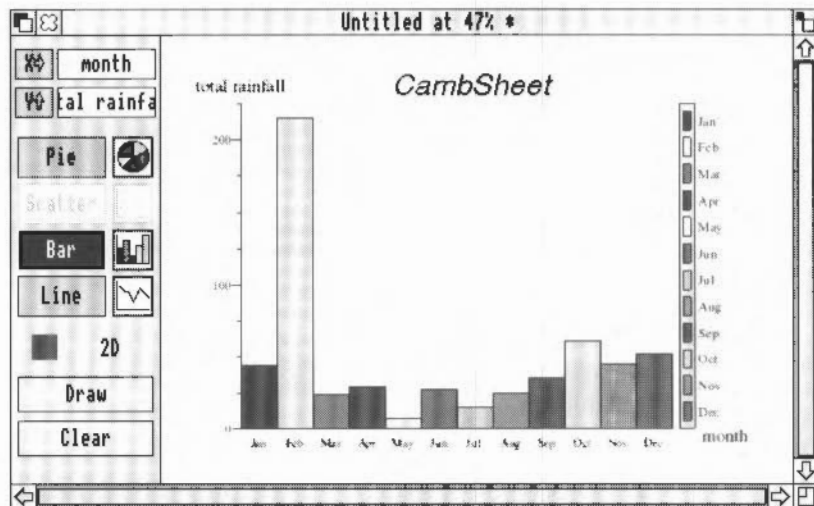


- 2 Click on **month**. The name of the field is displayed in the box next to the **X data** button.
- 3 Next click on the **Y data** button. The same list appears and this time click on **total rainfall**.

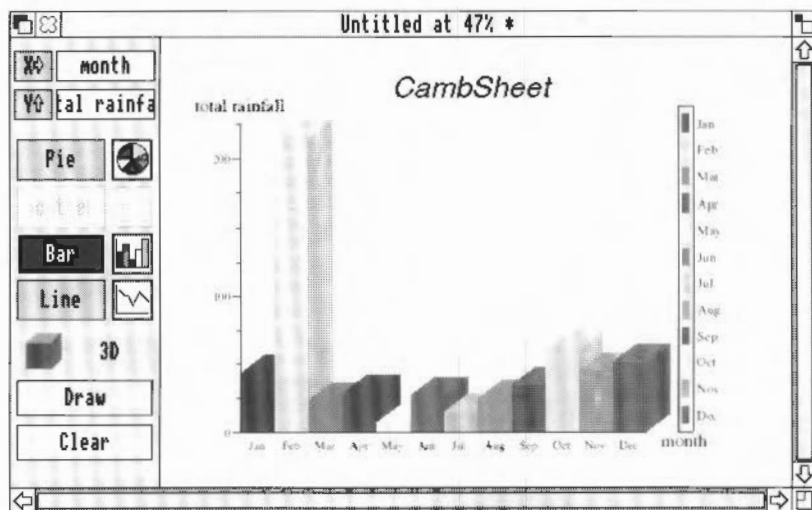
The Graph tool analyses the data, and highlights three of the four graph buttons to show that you can plot your data using these graph types.

- 4 Click on the **Bar** button.
- 5 Finally click on **Draw** to display the bar chart.

Your bar chart is displayed in 2D:



You can make your chart look more impressive by drawing it in 3D. Click on the **2D** button to change it to 3D, and then click on **Draw** again. The graph is redrawn in 3D:

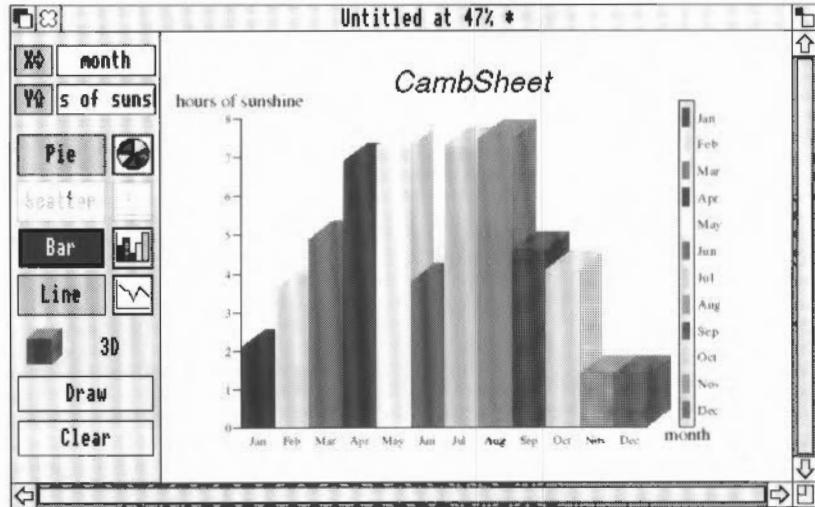


Displaying hours of sunshine

You can use a similar method to display a bar chart representing hours of sunshine:

- 1 Erase your previous graph from the Graph window by clicking on **Clear**.
- 2 Click on the **X data** button and then click on **month**.
- 3 Click on the **Y data** button and then click on **hours of sunshine**.
- 4 Click on the **Bar** button.

- 5 Finally click on **Draw** to display the bar chart.



Your chart is automatically drawn in 3D, as 3D remains set.

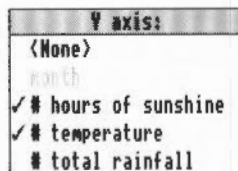
- 6 Toggle the **3D** button back to **2D** by clicking on it twice. This toggles it from 3D to Outline, and then to 2D.
- 7 Click on **Draw** again to redraw the graph in 2D.

Stacking bar charts to compare hours of sunshine with temperature

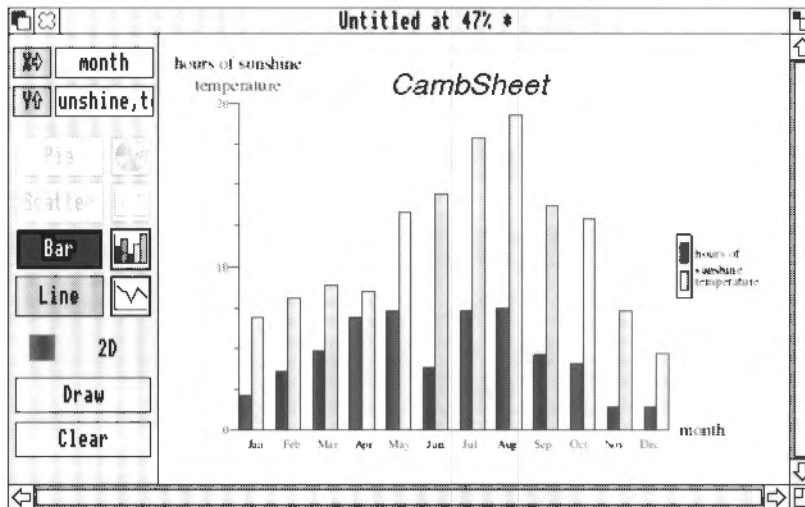
You can display more than one type of data on a graph. Overlaying graphs on top of each other allows you to compare trends and variations in data.

You currently have a bar chart representing monthly hours of sunshine. Now you'll add to this a bar chart representing average daily temperature.

- 1 Click on the **Y data** button. The standard list of fields appears as before. This time click Adjust on **daily temperature**. Two fields are now ticked.



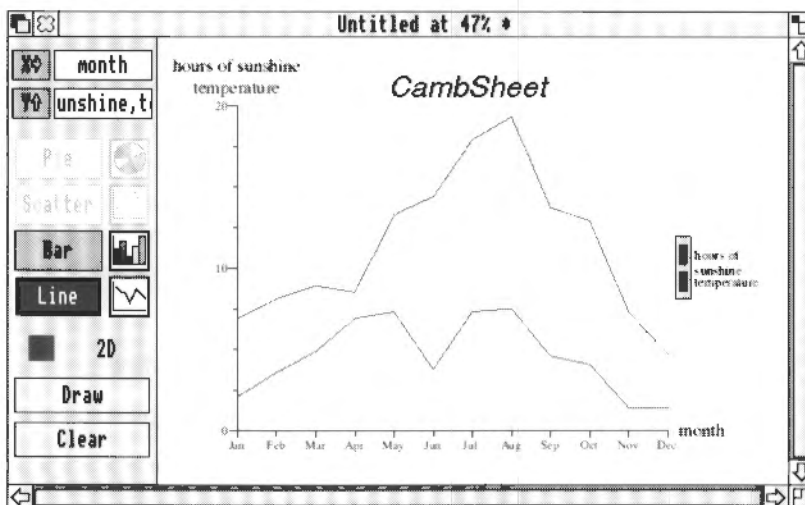
- The X data field still shows **month**, so you just have to click on **Draw**:



Drawing a line graph

You can also display your data as a line graph:

- Click on the **Line** button.
- Click on **Draw** to display the line graph.



It's a lot easier to see the seasonal differences in the data from the charts and graphs you've drawn.

For more on types of graph please refer to the *Advance User Guide* under *Selecting the right graph* on page 281.

Editing text on a graph

You can print a graph whenever you like. Before you do, it's a good idea to change the title to make it more informative.

By default, the Graph tool uses the filename of the spreadsheet, database, or CSV file as a title for the graph. To change the default title:

- 1 Move the pointer over the title and double-click on it. A caret appears in the text.
- 2 Double-click on the title again to select it.
- 3 Change the title to *Sun and temperature*.
- 4 Change your title to bold text by triple-clicking on your title to select all the text and then choosing **Effect/Bold**.

Note: Changes to text are **not** saved when you draw a new graph, so only change text when you're satisfied with the rest of the graph.

More information on editing graphs can be found in the *Advance User Guide* under *Editing a graph* on page 292.

Printing a graph

To print a graph:

- 1 Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the RISC OS 3 *User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.
- 2 Make sure that the graph you wish to print is displayed in the Graph window.
- 3 Click somewhere in the Graph window (this makes sure that data is printed from the Graph window, not from any other window you might have open at the time).
- 4 Go into the **Print** box by choosing **File/Print**.
- 5 Type in the number of copies you want and click on **Print**.

The graph displayed on the screen will be printed.

Saving a graph

You can save a graph in two formats; as Graph data or as a Draw file. You'll be saving your graph as a Draw file.

Saving a graph as a Draw file

Saving a graph in Draw file format gives you a permanent record of the current graph, exactly as it's displayed on the screen. You can edit and annotate the Draw file using any of Draw's tools.

Save your graph as a Draw file:

- 1 Go into the **File/Save as Draw** dialogue box and type in an suitable filename. (Note that this file is already saved as `Draw1` in the `Project1` directory.)
- 2 Drag the icon to your directory display.

Note: Graphs saved as Draw files can take up a large amount of storage space, so make sure that you have enough space available on your disc.

Saving a graph as Graph data

A Graph data file contains all the data needed to redraw a graph, and any format settings (like text font and colour) but discards any edits you've made to the text.

You don't need to do this now, but here's how to save a graph as a Graph data file: Go into the **File/Save as Graph** dialogue box and type in the filename, then drag the icon to your directory display.

The file `GraphData1` in the `Project1` directory contains the data from your `CambSheet` spreadsheet file.

Closing files and freeing up memory

You won't need to use the Spreadsheet or Graph tools again during this project, so you should now close your open file(s).

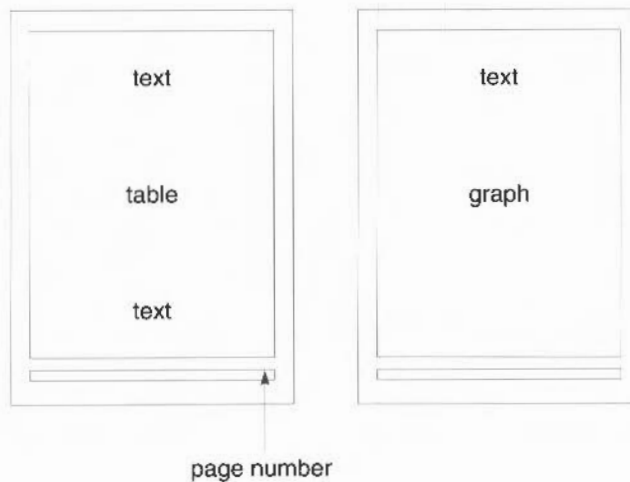
Then click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

Writing a report

You can use the Advance Word Processor to produce a written report about the seasonal weather variations in your area.

Before you start work, you need to decide what you want to include in your document, and how you want it to look. As well as some text about what you've learned, you'll want to include some examples of the work you've done using the Advance Database, Spreadsheet and Graph tools.

You'll lay your document out as shown here:



Creating a new document

To create a new Word Processor document, click Select on the Advance icon on the icon bar. A blank document appears. Click on the Toggle size icon to make the document fill the screen.

Scaling a document

By default, a document is displayed at full size (100%). It's often easier to work on a document when it's scaled in size (either to fit more on the screen, or to zoom in and get a closer look at something). Scale your document so that it's displayed at 80% of its full size:

- 1 Choose **Utilities/Scale view**.
- 2 Click on **80%** and then on **Scale**.

Changing the page size

Choose the **Edit/Alter pages** option to display the **Alter pages** dialogue box, then change the settings to those shown here:

The image shows a dialog box titled "Alter pages" with the following settings:

- Page size:** A3, A4, A5, Custom. Custom Width: 21cm, Depth: 29.7cm.
- Format:** Portrait, Landscape, Facing pages.
- Margins:** Margins. Top: 3cm, Bottom: 3cm, Left: 3cm, Right: 3cm.
- Header:** Header. Depth: 1.2cm.
- Footer:** Footer. Depth: 1cm. Vertical rules.
- Columns:** Number: 1, Width: 15cm, Gaps: 0.635cm.
- Restart page numbering at:** 1.
- Buttons: Cancel, OK.

- 1 Set the **Top**, **Bottom**, **Left** and **Right** margins to 3cm.
- 2 Click on **Footer** to set a footer frame, and set its **Depth** to 1cm.
- 3 Click on **OK** to apply the changes and remove the dialogue box.

The page now has 3cm margins all round, and repeating footer frames to carry the page numbers.

Choose **File/Save**, give your report an appropriate name and drag the **Save** icon to your directory display.

Importing files into a document

You can import various file types including Edit files (plain text), CSV files (the file format you used to save your subset data) and Draw files (the file format you used to save your graphs).

The method used for importing all types of file is the same – you simply place the caret where you want to insert the file, then drag the file's icon from a directory display into the text frame of the open Advance Word Processor document. As long as the file type is one that the Word Processor can understand, the file is added at that point.

Importing text, graphics and data are all covered in detail in the chapter *Learning more about the Word Processor* on page 45 of the *Advance User Guide*.

Importing text

There is some sample text in the file `Text1` which is in the `Project1` directory of `Advance Data` disc B. To import this text into your report, simply select the file `Text1` and then drag the file icon to your open document. When you release the mouse button, the text appears in the document window. You can of course write your own report, either in the `Advance Word Processor`, or in plain text which you can import.

Formatting text

To improve the look of your text, you need to change the appearance of the heading.

Select the heading by triple-clicking on it, then choose

- **Effect/Text size/24** to make the text larger.
- **Effect/Bold** to make the heading bold.
- **Effect/Alignment/Centre** to centre the heading on the page.

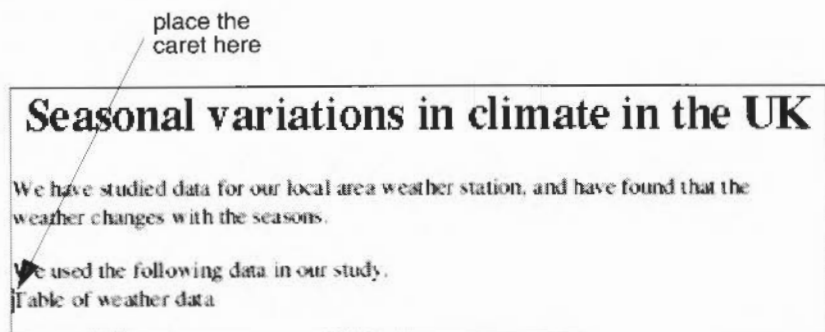
Save your work.

Text editing techniques are explained under *Changing the appearance of the text* on page 28 of the *Advance User Guide*.

Importing data

To import your spreadsheet data into the `Word Processor`:

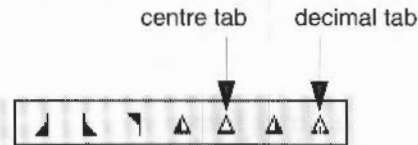
- 1 Place the caret in the document at the point at which you wish the data to appear, as shown here:



- 2 Then select the CSV file `Camb_CSV` (which you created earlier) and drag the file icon to your open document.
- 3 Release the mouse button to drop the data into the document window.

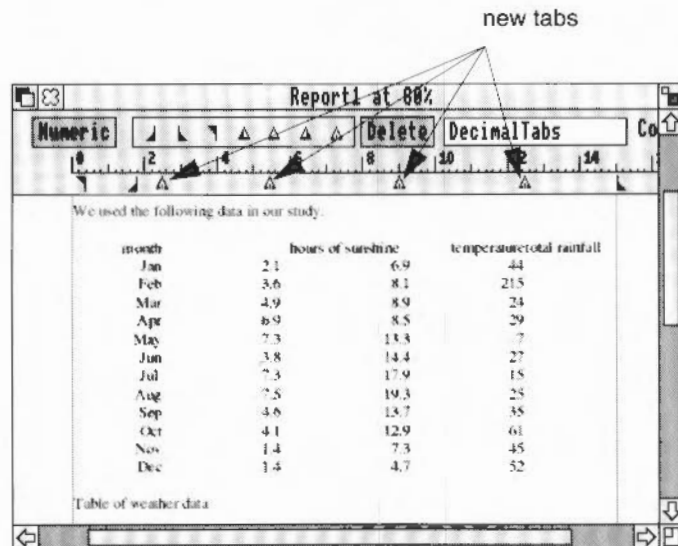
Tidying your table of data

To tidy up your table, you need to use the ruler to realign the tabs. To display the ruler, choose the **Ruler/Show ruler** option. The tab symbols you'll need to use are:

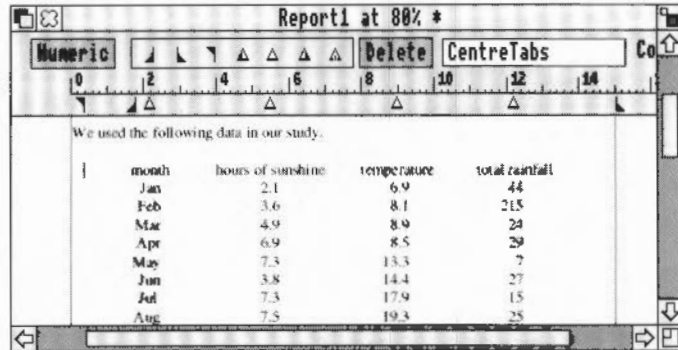


To tidy up the columns of data:

- 1 Select all the rows of data except for the column headings.
- 2 Get rid of the existing tabs by dragging them upwards from the ruler.
- 3 Click on the decimal tab symbol and then click just below the ruler at the 2.5cm position and again at the 5.5cm, 9cm and 12.5cm positions. Note that these positions are approximate; you can drag tab symbols along the ruler to position them where they look best.
- 4 Give the ruler the name `DecimalTabs` and press Return.



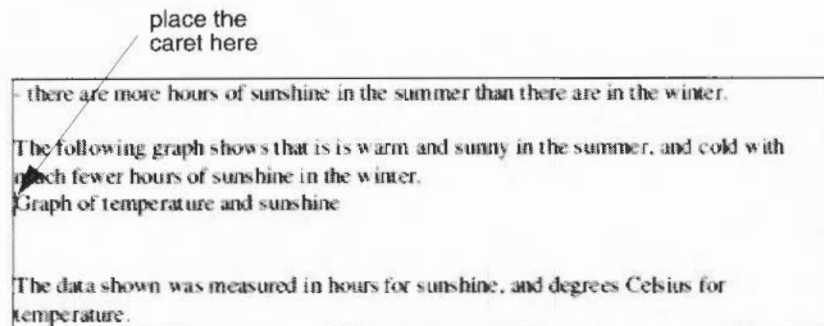
- 5 Next select the table's column headings only, and drag the existing tabs off the ruler.
- 6 Click on the centre tab symbol and then click just below the ruler at the 2.2cm position and again at the 5.5cm, 9cm and 12.2cm positions.
- 7 Give the ruler the name `CentreTabs` and press Return.



- 8 The table headings are still selected, so you can now change the font by choosing **Effect/Bold**.
- 9 Finally, put the cursor at the end of the word `rainfall` and press Return. Your table now looks much neater.
- 10 The line of text below the table is a caption which goes with the table. Select this line of text, and change its font to **Italic**, and its alignment to **Centre**.
- 11 Save your work.

Importing graphics

- 1 To import a graph into your report, place the caret where you want the graph to appear, as shown here:



- 2 Select the Draw file `Draw1` and drag the file icon to your open document.

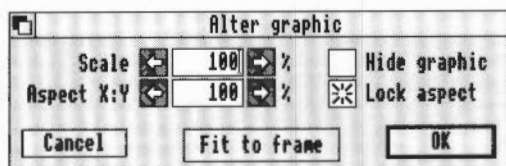
- 3 Release the mouse button to drop the graph into the document window.

A warning appears informing you that the graphic is too large and that it will be cropped. Don't worry about this; you'll resize your graph as soon as it is in the document. For the time being, just click on **OK** to import the graphic.

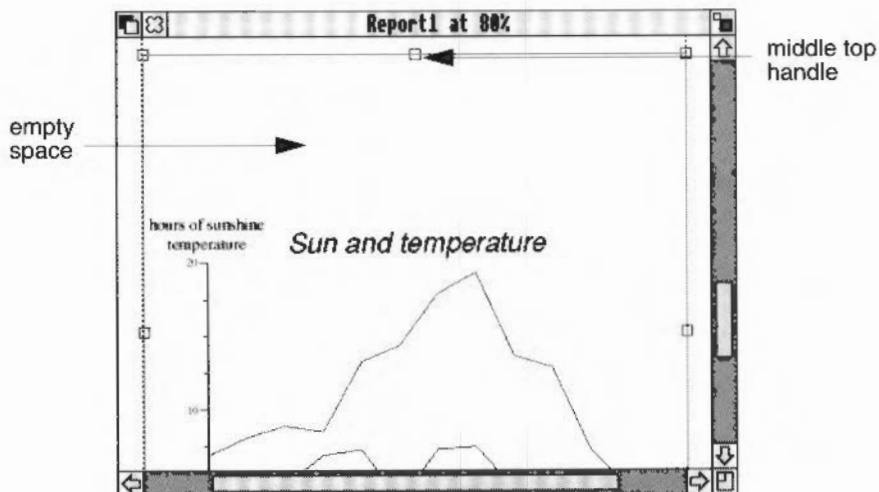
Changing the size of your graph

You need to reduce the size of your graph so that it fits within the boundary of the text frame. To do this:

- 1 Double-click on the graph to display the **Alter graphic** dialogue box.



- 2 Click on **Fit to frame**. This alters the scale of your graphic so that it fits within the frame.
- 3 The new scale of the graph is much better, so click on **OK** to accept the change. The graphic is still too tall; there is too much space at the top and the bottom:



- 4 Delete the empty space by dragging the middle top handle downwards and the middle bottom handle upwards.

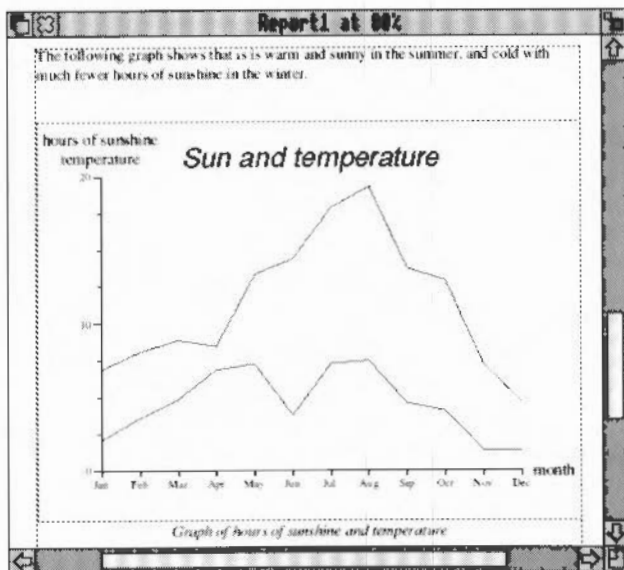
- 5 The line of text directly below your graph is a caption which applies to the graph. Select this line of text, and change its font to **Italic**, and its alignment to **Centre** as you did for the last caption.
- 6 Save your work.

Inserting a page break

Your graph was too large to fit on the first page of your report, so Advance automatically created a second page, and placed the graph at the top of this page. The paragraph before the graph explains what the graph is, so it really needs to be on the same page as the graph.

To move it to the next page:

- 1 Place the caret at the beginning of the paragraph.
- 2 Choose **Utilities/Insert/Column/page break** to move it to the top of the second page.



Inserting a page number

- 1 To add the page number to the bottom of each page go to the footer on the first page. (You can do this by double-clicking on any footer.)
- 2 Type `Page` and then press Space.

3 Choose **Utilities/Insert/Page number**.

The page number is inserted in the footer frame. It is currently aligned to the lefthand side of the footer.

4 Double-click on the footer text to select it, and then choose **Effect/Alignment/Right align**.

Checking the spelling

It is always wise to check your work for spelling mistakes when you've finished working on it. To do this, position the caret in the text and select the **Utilities/Spelling/Check entire text** option. (This option checks all the text in a document, starting from the beginning.)

A dialogue box may appear warning you that the spelling checker has not yet been loaded. Click on **SPELL** to load the default spelling checker.

- If a spelling mistake is found, a dialogue box is displayed, and you can correct your mistake before continuing with the check.
- If no mistakes are found, the cursor simply moves to the end of the document.

Save your work.

Printing

When you've finished your report, you can print it out.

Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the RISC OS 3 *User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.

To print your report, choose **File/Print** and then click on **Print** in the dialogue box.

Quitting Advance altogether

To quit Advance altogether, press Menu on the Advance icon on the icon bar and then choose the **Quit** option.

Summing up

You've now finished your report on seasonal climate variations in the UK and have reached the end of Project 1.

In this project you have used the Advance Database, Spreadsheet, Graph and Word Processor tools, and have learnt how to search for a group of records, transfer data to a spreadsheet, plot graphs from your data, and create a document containing examples of your work.

In the next project you will use more of the data in the weather database to investigate regional variations in climate.

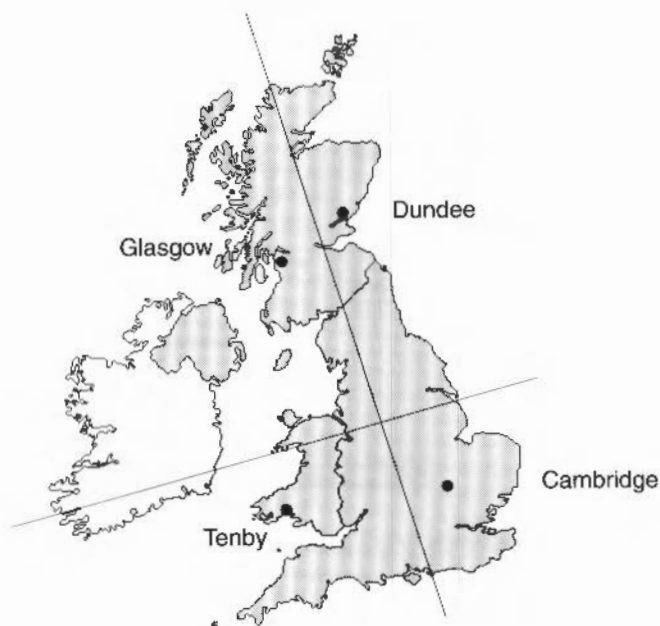
3

Project 2: Investigating regional variations in climate in the UK

In this project, you'll use Advance to compare climate data for four regions in the United Kingdom. You'll discover regional patterns in data and relate these to the UK climate quadrants. You can either use the data supplied with Advance or data you've collected for your own area.

The examples in this project use data supplied on Advance Data disc B.

The climate of the United Kingdom varies from one region to another. To look at the differences in climate, you'll look at a weather station in each of the four quadrants.



The weather stations you'll be studying are:

- Cambridge in the South East quadrant
- Dundee in the North East quadrant
- Glasgow in the North West quadrant
- Tenby in the South West quadrant

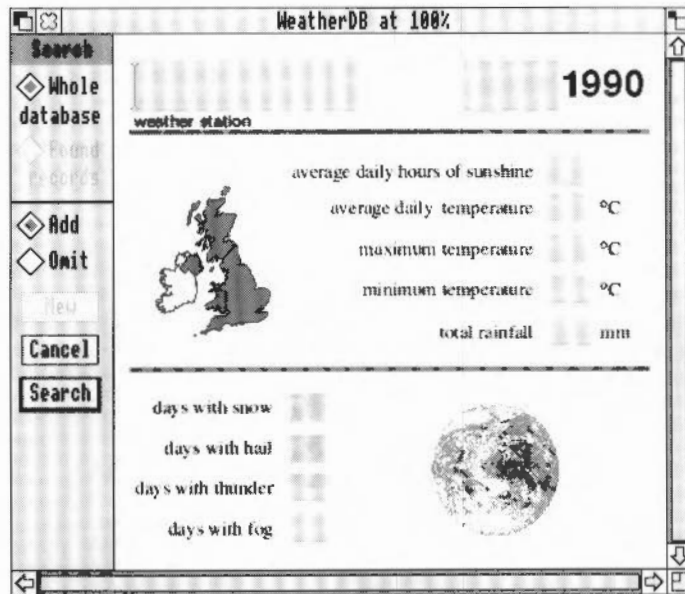
Getting started

Load Advance into your computer and open the Advance weather database, WeatherDB, as explained in *Getting started* on page 3.

Searching for several weather records

To examine the data for a group of weather stations, you need to search for all the records for that area, and then save them as a subset of the database.

To enter the Search window choose **Utilities/Search** or press F4. The Search window then appears:



The records you want to search for are those for Cambridge, Dundee, Glasgow and Tenby. You can search for these in turn, or you can use the OR operator to search for them all at once.

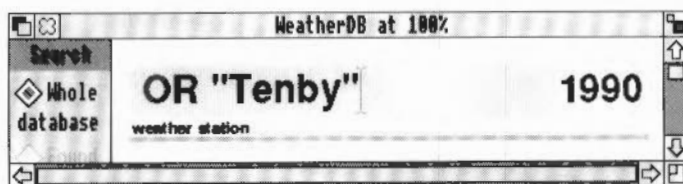
Using operators to make searching easier is explained in the *Advance User Guide* under *Finding data using operators* on page 233.

To use the OR operator in this search:

- 1 Place the caret in the Weather station field box and type in:

"Cambridge" OR "Dundee" OR "Glasgow" OR "Tenby"

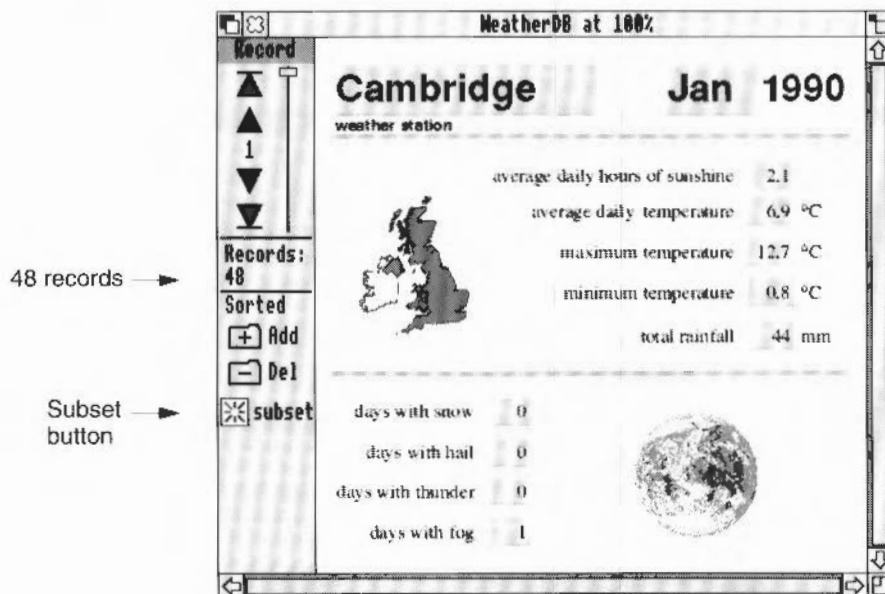
The search string scrolls to the left of the field box as you type it in. You can use the cursor keys to scroll left and right to make sure that you have typed it in accurately.



- 2 Click on the **Search** button.

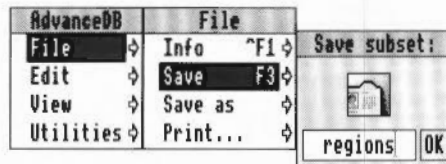
When you click on Search, Advance searches the whole database for records with Cambridge, Dundee, Glasgow or Tenby in the Weather station field.

When the search is finished, the **subset** button is switched on, and there are 48 records in the subset. The first record of this set (January 1990) is automatically displayed on the screen:



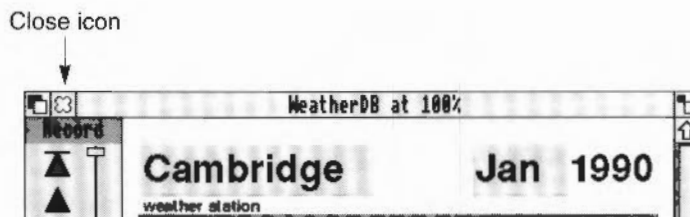
Saving your regions subset

Choose **File/Save**, or press F3. Use the Delete key to rub out the default name Subset and type regions (or some other appropriate filename) into the dialogue box. Then drag the icon to your work directory.



Quitting the main database

You've now finished working with the whole database. To close the database, click Select on the Close icon:



Getting your subset data into an Advance spreadsheet

Now that you have a subset of climate records for each region, you're going to copy some of the data into a spreadsheet. This will allow you to compare more easily the monthly figures for temperature, rainfall and hours of sunshine.

Saving your subset as a CSV file

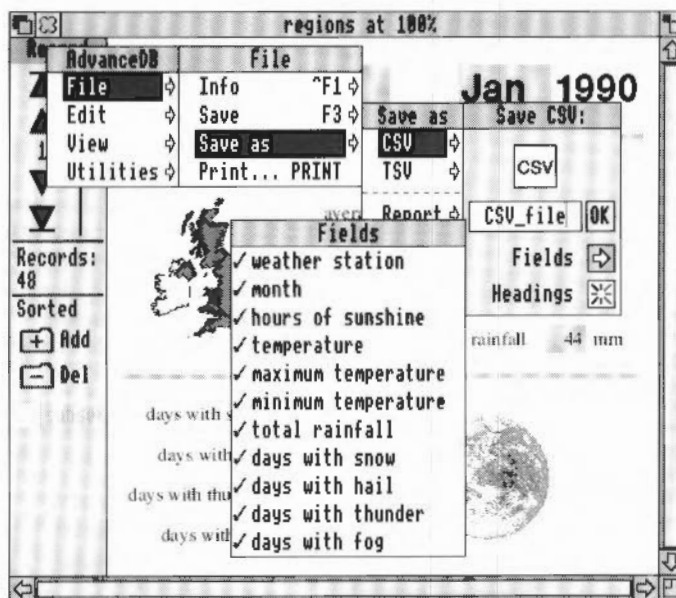
To copy data into a spreadsheet, the data must be in a form that the Spreadsheet can understand. You'll use CSV file format to save the data.

You need to save your data into three separate CSV files; one file for each type of weather:

- 1 Open your subset file by double-clicking on its icon.
- 2 Choose **File/Save as/CSV**.
- 3 Move the pointer over the **Fields** box, and when the pointer changes into a small menu icon, click Select. This displays the Fields menu listing all the field names in your subset file.



- 4 Drag this list over to the left of your screen so that it doesn't obscure the **Save CSV** dialogue box.



You can see that all the field names in the Fields dialogue box are currently selected.

- 5 Your first CSV file will contain the data for weather station, month, and rainfall. Click Adjust on each unwanted field name to remove the tick against it.

When you have finished, your list should look like this:



- 6 Move the pointer back into the **Save CSV** dialogue box, and give your file a suitable name such as `CSVrain`. Drag the CSV icon into your working directory display to save it.

- 7 Your second CSV file will contain the data for weather station, month and hours of sunshine. Click Adjust on **hours of sunshine** to select it, and then click Adjust on **total rainfall** to remove the tick against it. Your list should look like this:

Fields
<input checked="" type="checkbox"/> weather station
<input checked="" type="checkbox"/> month
<input checked="" type="checkbox"/> hours of sunshine
temperature
maximum temperature
minimum temperature
total rainfall
days with snow
days with hail
days with thunder
days with fog

- 8 Move the pointer back into the **Save CSV** dialogue box, and give your file a suitable name such as CSVsun. Drag the CSV icon into your working directory display to save it.
- 9 Your third CSV file will contain the data for weather station, month and temperature. Click Adjust on **temperature** to select it, and then click Adjust on **hours of sunshine** to remove the tick against it. Your list should look like this:

Fields
<input checked="" type="checkbox"/> weather station
<input checked="" type="checkbox"/> month
hours of sunshine
<input checked="" type="checkbox"/> temperature
maximum temperature
minimum temperature
total rainfall
days with snow
days with hail
days with thunder
days with fog

- 10 Move the pointer back into the **Save CSV** dialogue box, and give your file a suitable name such as CSVheat. Drag the CSV icon into your working directory display to save it.

Now close your subset file by clicking on the Close icon.

Freeing up memory

You won't need to use the Database tool for a while, so it's wise to tell Advance not to save any computer memory for it. To do this, click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

Creating a spreadsheet for your data

- 1 Click Menu on the Advance icon on the icon bar, and choose **Create/Spreadsheet**.

This displays a blank spreadsheet file. You'll start by adding some headings to the spreadsheet.

- 2 Select cell B1, and give your spreadsheet the title `Regional climate data for 1990`.



- 3 Click on the Enter button to accept your title.

- 4 The first file of data you'll import is the file `CSVrain`, so click on cell C3, and type the main heading `Rainfall in millimetres` and press Return.

- 5 Cell C4 is now selected. Type `Cambridge` then press Tab.

- 6 Next type `Dundee` and press Tab again.

- 7 Then type `Glasgow` and press Tab.

- 8 Your last region heading is `Tenby`. Type this and then click on the Enter button.

- 9 Lastly, select cell B4, type `Month` and click on the Enter button.

Your spreadsheet should look like this:

	A	B	C	D	E	F
1		Regional climate data for 1990				
2						
3			Rainfall in millimetres			
4		Month	Cambridge	Dundee	Glasgow	Tenby
5						
6						

Adding rows

By default a new spreadsheet has 28 rows. You need to add more rows to your spreadsheet before you import your CSV file, so that there are enough rows for all your data.

- 1 Click on a cell which is below all the text you have typed in so far (cell A5 for example).
- 2 Add 25 rows to the spreadsheet by choosing **Edit/Rows/Add rows**, and giving the value 25.

Importing your data

- 1 Click on cell A5. This is the cell which will be the top lefthand corner of your imported climate data.
- 2 Go to the directory which contains the file `CSVrain`, and drag its icon onto the spreadsheet. All the headings and data are automatically filled into the spreadsheet:

	A	B	C	D	E	F
1	Regional climate data for 1990					
2						
3			Rainfall in millimetres			
4		Month	Cambridge	Dundee	Glasgow	Tenby
5	weather station	month	total rainfall			
6	Cambridge	Jan	44			
7	Cambridge	Feb	215			
8	Cambridge	Mar	24			

- 3 It's always sensible to save files regularly. Save your spreadsheet file now. Choose **File/Save**, give your file the name `RegionsSH` and drag the **Save** icon to your directory display.



- 4 Click Select on the Toggle size icon to see more of the spreadsheet.

Formatting your spreadsheet

In order to be able to compare your figures using the Graph tool, you need to move some of the data:

- 1 Scroll down the spreadsheet and select all the figures for Dundee (cells C18 to C29).

	A	B	C	D
17	Cambridge	Dec	52	
18	Dundee	Jan	84	
19	Dundee	Feb	70	
20	Dundee	Mar	17	
21	Dundee	Apr	21	
22	Dundee	May	27	
23	Dundee	Jun	107	
24	Dundee	Jul	18	
25	Dundee	Aug	48	
26	Dundee	Sep	36	
27	Dundee	Oct	126	
28	Dundee	Nov	51	
29	Dundee	Dec	41	
30	Glasgow	Jan	206	

- 2 Choose **Edit/Cut**.
- 3 Scroll back to the top of the spreadsheet and select cell D6.
- 4 Choose **Edit/Paste**.
- 5 Scroll back down the spreadsheet and select all the figures for Glasgow (cells C30 to C41).
- 6 Again, choose **Edit/Cut**.
- 7 Scroll back to the top of the spreadsheet and select cell E6.
- 8 Choose **Edit/Paste**.
- 9 Scroll back down the spreadsheet for the last time and select all the figures for Tenby (cells C42 to C53).
- 10 Choose **Edit/Cut**.
- 11 Scroll back to the top of the spreadsheet and select cell F6.
- 12 Choose **Edit/Paste**.

Your spreadsheet now looks like this:

	A	B	C	D	E	F
1	Regional climate data for 1990					
2						
3			Rainfall in millimetres			
4		Month	Cambridge	Dundee	Glasgow	Tenby
5	weather stati	month	total rainfall			
6	Cambridge	Jan	44	84	206	172
7	Cambridge	Feb	215	70	218	144
8	Cambridge	Mar	24	17	151	24
9	Cambridge	Apr	29	21	78	25
10	Cambridge	May	7	27	49	35
11	Cambridge	Jun	27	107	100	81

Your rainfall data is now organised into a neat table. The spreadsheet still needs further editing, but at this stage it is better to add the remaining data. You can then do all your final editing in one go.

Adding more CSV data to your spreadsheet

Your spreadsheet has 10 columns by default. You need to add another eight columns to your spreadsheet before you import your next CSV file, so that there are enough columns for the data.

- 1 Click on a cell which is to the right of all the data in your spreadsheet (cell G1 for example).
- 2 Add eight columns to the spreadsheet by choosing **Edit/Columns/Add columns**, and giving the value 8.
- 3 To copy across the weather station headings, select cells C4 to F4, and then choose **Edit/Copy**.
- 4 Then click on cell I4, and choose **Edit/Paste**.
- 5 Scroll across to cell O4, and choose **Edit/Paste** again.
- 6 Save your work.

The method you use to import your other two CSV files is more or less the same as before:

- 1 Scroll to the left of the spreadsheet and click on cell G5.
- 2 Go to the directory which contains the file `CSVheat`, and drag its icon onto the spreadsheet. All the headings and data are automatically filled into the spreadsheet.
- 3 Save your work.
- 4 Scroll to the left of the spreadsheet and select cell M5.
- 5 Go to the directory which contains the file `CSVsun`, and drag its icon onto the spreadsheet. All the headings and data are automatically filled into the spreadsheet.
- 6 Save your work.

Now you need to move each block of data to the appropriate column. Again this is similar to before:

- 1 Scroll down the spreadsheet and select all the temperature figures for Dundee (cells I18 to I29).
- 2 Choose **Edit/Cut**.
- 3 Scroll back to the top of the spreadsheet and select cell J6.
- 4 Choose **Edit/Paste**.
- 5 Scroll back down the spreadsheet and select all the temperature figures for Glasgow (cells I30 to I41).
- 6 Again, choose **Edit/Cut**.
- 7 Scroll back to the top of the spreadsheet and select cell K6.
- 8 Choose **Edit/Paste**.
- 9 Scroll back down the spreadsheet for the last time and select all the temperature figures for Tenby (cells I42 to I53).
- 10 Choose **Edit/Cut**.
- 11 Scroll back to the top of the spreadsheet and select cell L6.
- 12 Choose **Edit/Paste**.
- 13 Save your work.
- 14 Repeat steps 1 to 12 for the hours of sunshine data, but make sure that the Dundee figures (cells O18 to O29) begin at cell P6, the Glasgow figures (cells O30 to O41) at cell Q6, and the Tenby figures (cells O42 to O53) at cell R6.

You now have all your data in the table, but there are a couple of headings missing:

- 1 Select cell I3 and enter the heading `Temperature in degrees Celsius`.
- 2 Select cell O3 and enter the heading `Hours of sunshine`.

Deleting unnecessary data

There is now quite a bit of excess data in your spreadsheet (data which came across in your CSV files, but which you no longer need). To get rid of this, you need to delete some rows and columns.

Each time you need to delete cells, save your work before deleting. Then, if you make a mistake while you're deleting, you should simply close your spreadsheet without saving it. You can then open the file again to get the spreadsheet back to its previous state.

Deleting rows

The easiest way to delete a row is to select all the row labels for the rows you want to delete. Be careful to follow these steps in the correct order, as cell labels can change following a delete instruction.

- 1 Click on cell label 53.
- 2 Scroll back up your spreadsheet and click `Adjust` on row label 18. Rows 18 to 148 are now selected. You can check this in the reference area.

	A	B	C	D	E	F
16	Cambridge	Oct	41	120	171	
17	Cambridge	Nov	45	51	50	
18	Cambridge	Dec	52	41	139	
19	Dundee	Jan				
20	Dundee	Feb				
21	Dundee	Mar				
22	Dundee	Apr				
	Dundee	May				

- 3 Choose **Edit/Rows/Delete rows**. Rows 18 to 53 are deleted.
- 4 Click on cell label 5.
- 5 Choose **Edit/Rows/Delete rows**. Row 5 is deleted, and all the data is shuffled up one row.
- 6 Save your work.

Deleting columns

You can now delete the unnecessary columns. Again, be careful to follow these steps in the correct order, as cell labels can change following a delete instruction.

- 1 Select on cell label A.
- 2 Choose **Edit/Columns/Delete columns**. Column A is deleted, and all the data is shuffled to the left.
- 3 Select cell labels F to G.
- 4 Choose **Edit/Columns/Delete columns**. Columns F and G are deleted.
- 5 Select cell labels J to K.
- 6 Choose **Edit/Columns/Delete columns**. Columns J and K are deleted.
- 7 Save your work.

Improving the appearance of your spreadsheet

At the moment, your spreadsheet titles do not stand out very well. You can improve this by changing the text size and emphasis. (You could also change the font if you wish).

- 1 Select the main title by clicking on cell A1.
- 2 To change the title text from 12 point to 18 point text, choose **Effect/Text size/18pt**.
- 3 Then to make the text bold, choose **Effect/Bold**.
- 4 As you have enlarged the text, you need to increase the height of the row so that the text fits. Double-click on the corresponding row label, in this case the 1 at the left of the window.
- 5 Select the whole of row 3 by clicking on the row 3 label.
- 6 Make the text bold by choosing **Effect/Bold**.
- 7 Save your work.

If, while you're editing your spreadsheet, it looks as though some of the headings get cut off to fit in their cells, you can get them back again by simply clicking **once** on the appropriate cell(s). (Don't confuse this with double-clicking on a label to widen a whole row or column.)

Formatting the data cells

You can see that at the moment the figures don't line up too well in the cells; they'd look much better aligned to the right. To do this, select the whole of the block of cells containing figures, and then choose **Effect/Alignment/Right**.

Save your work.

Printing your spreadsheet

Now that you've improved the appearance of your spreadsheet, you can print it out:

- 1 Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the *RISC OS 3 User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.
- 2 Switch off the row and column labels by choosing the **Utilities/Labels** option.
- 3 Then choose **File/Print**.
- 4 Tell Advance to print the spreadsheet sideways on the paper by clicking on **Sideways**.
- 5 Finally click on **Print**.

Plotting graphs of regional climate variations

The best way to see the seasonal variations in climate is to plot each type of weather on a graph. You can do this quite simply from the Spreadsheet unless you have a 1MB computer.










(If you are using a 1MB computer, please refer to *Appendix B: Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*. The file `GraphData2` in the `Project2` directory contains the plot data you need.)

Plotting line graphs of regional data

- 1 Switch the row and column labels back on by choosing **Utilities/Labels**.
- 2 Select rows 4 to 16 by clicking on row label 4, and then clicking Adjust on row label 16.
- 3 You now need to specify whether you wish to send the data to the Graph tool as row data or column data. Your data is organised into columns, so choose **Utilities/Graph type/Plot columns**.
- 4 Open the Advance Graph tool by choosing **Utilities/Graphs**. This displays the Graph window.

When you go to the Graph window from the Database or Spreadsheet the selected data is automatically copied by the Graph tool and is ready to be displayed. (If no data is selected, all data is copied.)

On the left side of the Graph window is the Graph toolbox. This allows you to choose which data to plot, and the type of graph to use to plot that data.

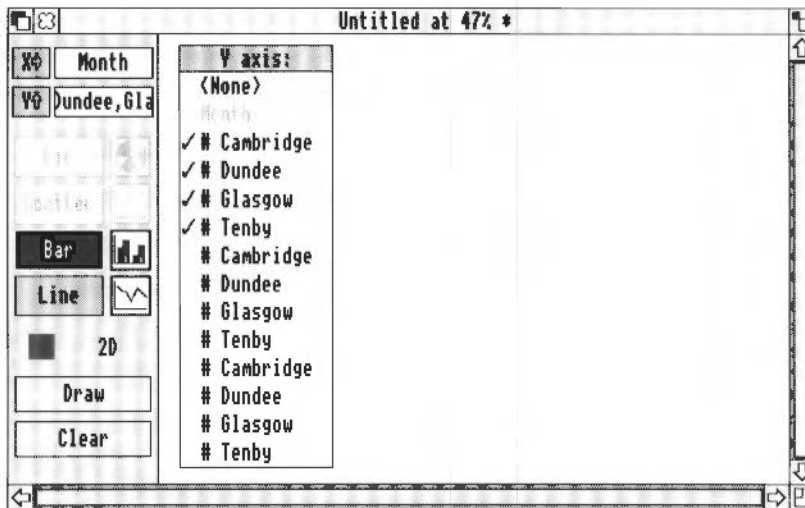
Toolbox	Button	action
	X data	displays a menu of fields you can plot on the X-axis
	Y data	displays a menu of fields you can plot on the Y-axis
	Pie	selects a pie chart
	Scatter	selects a scatter graph
	Bar	selects a bar chart
	Line	selects a line graph
	2D	selects 2D, 3D, or outline for graph display
	Draw	draws the graph in the graph area
	Clear	deletes the graph in the graph area and clears any data in the X and Y buttons

Plotting a line graph of rainfall data

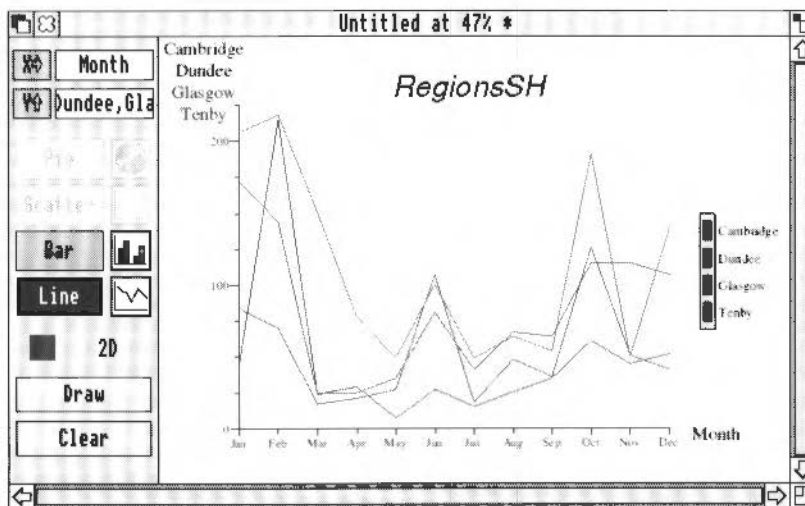
To plot the monthly rainfall data for each region on a line graph:

- 1 Click on the **X data** button. This displays a list of all the fields in the database.
- 2 Click on **Month**. This selection is displayed in the box next to the **X data** button.
- 3 Next click on the **Y data** button.

- The same list appears and this time click Adjust on the first four weather station names (these correspond with columns B, C, D and E of the spreadsheet, the columns containing rainfall data):



- The Graph tool analyses the data, and highlights two of the four graph buttons to show that these can be used to plot your data. Click on the **Line** button.
- Lastly, click on **Draw** to display the graph:



Note that this graph is much clearer in colour (as it is on the screen) or as a colour printout.

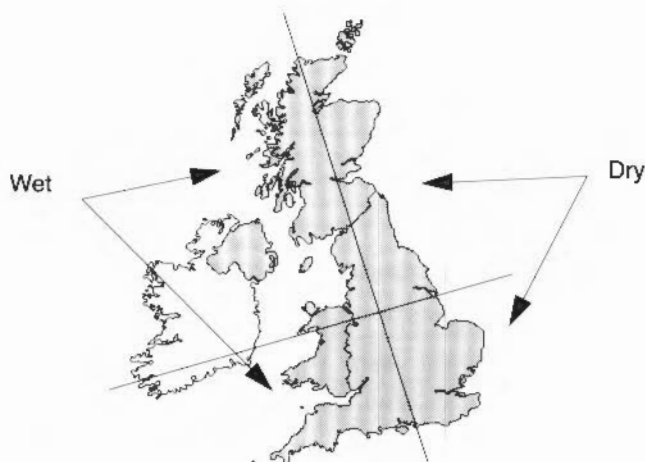
Studying your rainfall graph

Study your graph of regional rainfall.

Which two regions have the most rain in the summer? And which two regions have least rain in the summer?

Which two regions have the most rain in the winter? And which two regions have the least rain in the winter?

You can see from your figures that generally the East of the UK is drier than the West.



Plotting a line graph of temperature data

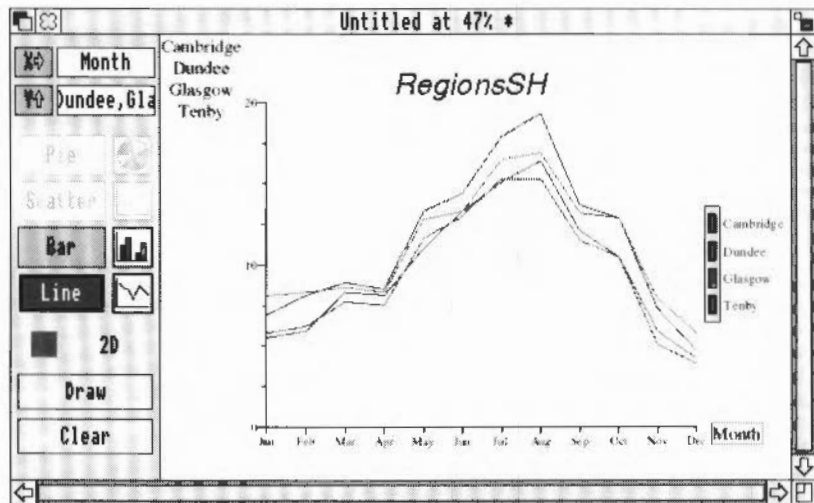
To plot the monthly temperature data for each region on a line graph:

- 1 Click on the **Y data** button. (The **X data** button still has Month selected so doesn't need to be changed.)
- 2 Click Adjust on the first four weather station names to remove the ticks against them.

- Click Adjust on the second four weather station names to select them.
(These second four station names correspond with columns F, G, H and I of the spreadsheet, the columns containing temperature data):



- Click on **Draw** to display the graph:



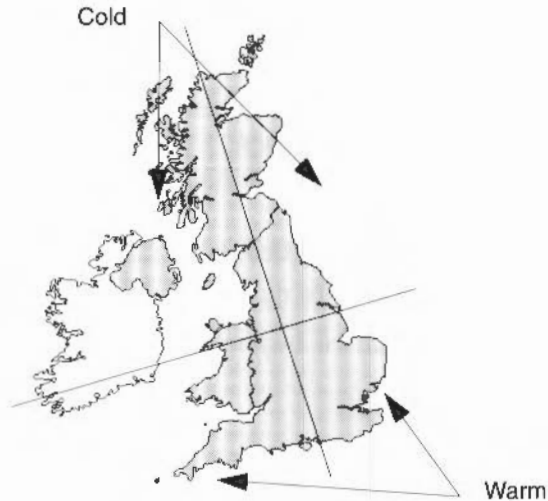
Studying your temperature graph

Study your graph of temperature.

Which two regions are hottest in the summer? And which two regions are coldest in the summer?

Which two regions are hottest in the winter? And which two regions are coldest in the winter?

You can see from your figures that generally the South of the UK is warmer than the North.



Editing text on a graph

You can print a graph whenever you like. Before you do, it's a good idea to change the title to make it more informative, and to make sure that the axis labels can be seen.



To move an axis label, move the pointer over the axis label. The pointer changes to a hand which you can use to drag the label to a new position.

By default the Graph tool uses the filename of the database or CSV file as a title for the graph. To change the title:

- 1 Move the pointer over the title and double-click on it. A caret appears in the text.
- 2 Double-click on the title again to select it.
- 3 Give the graph an appropriate title, such as *Temperature*.
- 4 Change your title to bold text by triple-clicking on your the title to select all the text and then choosing **Effect/Bold**.

Note: Changes to text are **not** saved if you draw a new graph. So only change text when you're satisfied with the rest of the graph.

For a full description of how to edit text on a graph see the section *Editing text on a graph* on page 279 of the *Advance User Guide*.

Printing a graph

To print a graph:

- 1 Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the RISC OS 3 *User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.
- 2 Make sure that the graph you wish to print is displayed in the Graph window.
- 3 Click somewhere in the Graph window (this makes sure that data is printed from the Graph window, not from any other window you might have open at the time).
- 4 Choosing **File/Print** to display the Print dialogue box.
- 5 Type in the number of copies you want and click on **Print**.

The graph will be printed, including any edits you have made.

Saving a graph

You can save a graph in two formats; as Graph data or as a Draw file. You'll be saving your graph as a Draw file.

Saving a graph as a Draw file

Saving a graph in Draw file format gives you a permanent record of the current graph, exactly as it's displayed on the screen. You can edit and annotate the Draw file using any of Draw's tools.

Save the graph of temperature, which is currently displayed on your screen, as a Draw file:

- 1 Go into the **File/Save as Draw** dialogue box and type in an appropriate filename. (Note that this file is already saved as Draw2 in the Project2 directory.)
- 2 Drag the **Save as** icon to your directory.

Note: Graphs saved as Draw files can take up a large amount of storage space, so make sure that you have enough space available on your disc.

Saving a graph as Graph data

A Graph data file contains all the data needed to redraw a graph, and any format settings (like text font and colour) but discards any edits you've made to the text.

You don't need to do this now, but here's how to save a graph as a Graph data file: Go into the **File/Save as Graph** dialogue box and type in the filename, then drag the icon to your directory display.

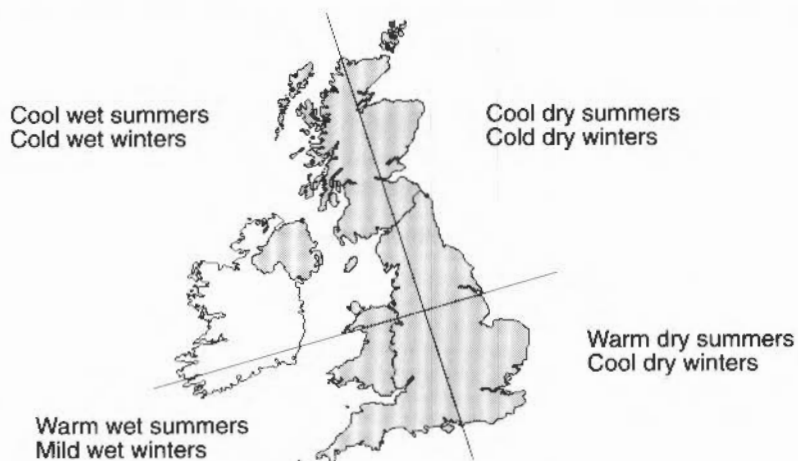
The file GraphData2 in the Project2 directory contains the data from your RegionsSH spreadsheet file.

For more on types of graph please refer to the *Advance User Guide* under *Selecting the right graph* on page 281.

Creating graphs from the Spreadsheet is described in detail in the *Advance User Guide* under *Displaying results as a graph* on page 114, and under *More on graphs* on page 189.

Studying the climate data

When you have displayed and studied your climate graphs, you'll be able to see regional patterns in the data. If you have used the data supplied with the Advance software, you'll see that the data fits with this map of the UK climate quadrants:



Closing files and freeing up memory

You won't need to use the Spreadsheet tool for a while, so you should now close your file. Then click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

Further suggestions

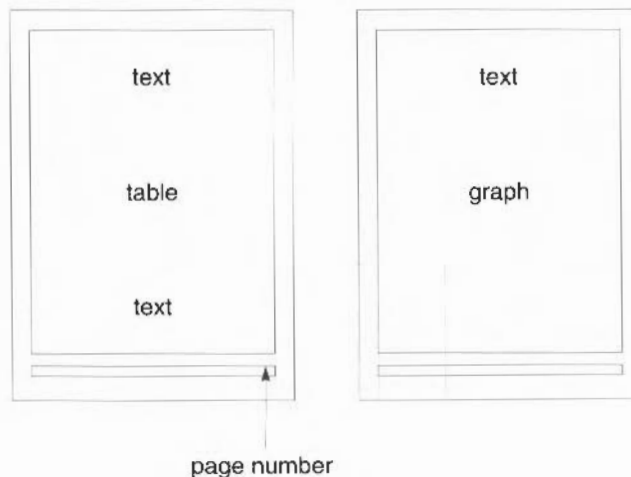
- 1 Plot a line graph of hours of sunshine.
Work out:
 - which two regions have the most hours sunshine in the summer, and which two regions have the least hours of sunshine in the summer.
 - which two regions have the most hours sunshine in the winter, and which two regions have the least hours sunshine in the winter.
- 2 Have another look at your database subset by opening the file `regions`. (If you are using a 1MB computer, you should close any open files, click Menu on the Advance icon on the icon bar, and choose **Minimise memory** before you do this.)
Find out in what months there have been snow and then work out which season has the most snowy days.

Writing a report

You can use Advance Word Processor to produce a written report about regional weather variations.

Before you start work, you need to decide what you want to include in your document, and how you want it to look. As well as some text about what you have learned, you may want to include some examples of the work you have done using the Database, Spreadsheet and Graph tools.

You'll lay your document out as shown here:



Creating a new document

To create a new Word Processor document, click on the Advance icon on the icon bar. A blank document appears. Click on the Toggle size icon to make the document fill the screen.

Scaling your document

By default, a document is displayed at full size (100%). It's often easier to work on a document when it's scaled in size (either to fit more on the screen, or to zoom in and get a closer look at something). Scale your document so that it's displayed at 80% of its full size:

- 1 Choose **Utilities/Scale view**.
- 2 Click on **80%** and then on **Scale**.

Changing the page size

Choose the **Edit/Alter pages** option to display the **Alter pages** dialogue box, then change the settings to those shown here:

The 'Alter pages' dialog box is shown with the following settings:

- Page size:** A4 (selected), A3, A5, Custom (Width: 21cm, Depth: 29.7cm)
- Format:** Portrait (selected), Landscape, Facing pages (unchecked)
- Margins:** Top: 3cm, Bottom: 3cm, Left: 3cm, Right: 3cm
- Header:** Depth: 1.27cm
- Footer:** Depth: 1cm (checked), Vertical rules (unchecked)
- Columns:** Number: 1, Width: 15cm, Gaps: 0.635cm
- Restart page numbering at:** 1

- 1 Set the **Top, Bottom, Left** and **Right** margins to 3cm.
 - 2 Click on **Footer** to set a footer frame, and set its **Depth** to 1cm.
 - 3 Click on **OK** to apply the changes and remove the dialogue box.
- The page now has 3cm margins all round, and repeating footer frames to carry the page numbers.

- 4 Choose **File/Save** or press F3, give your report an appropriate name and drag the **Save** icon to your directory display.

Importing files into a Word Processor document

You can import various file types including Edit files (plain text), CSV files (the file format you used to save your subset data) and Draw files (the file format you used to save your graphs).

The method used for importing all types of file is the same – you simply place the caret where you want to insert the file, then drag the file's icon from a directory display into the text frame of the open Advance Word Processor document. As long as the file type is one that the Word Processor can understand, the file is added at that point.

Importing text, graphics and data are all covered in detail in the chapter *Learning more about the Word Processor* on page 45 of the *Advance User Guide*.

Importing text

There is some sample text in the file `Text2` which is in the `Project2` directory of Advance Data disc B. To import this text into your report, simply select the file `Text2` and then drag the file icon to your open document. When you release the mouse button, the text appears in the document window. You can of course write your own report, either in the Advance Word Processor, or in plain text which you can import.

Formatting text

To improve the look of your text, you need to change the appearance of the heading.

Select all the heading text by triple-clicking on it, then choose

- **Effect/Text size/24** to make the text larger
- **Effect/Bold** to make the heading bold
- **Effect/Alignment/Centre** to centre the heading on the page.

Save your work.

Text editing techniques are explained under *Changing the appearance of the text* on page 28 in the *Advance User Guide*.

Importing data

To import some of your spreadsheet data into your report, you need to open your spreadsheet file.

- 1 Double-click on the file `RegionsSH`.
- 2 Select the area of the spreadsheet that you wish to copy. In this case, select the figures for rainfall (cells A4 to E16):

Regional climate data for 1990							
Rainfall in millimetres				Temperature in degrees Celsius			
Month	Cambridge	Dundee	Glasgow	Tenby	Cambridge	Dundee	Glasgow
Jan	44	84	296	172	6.9	5.5	5.5
Feb	215	70	218	144	8.1	5.9	5.9
Mar	29	17	151	24	8.9	8.3	8.3

- 3 Choose **Edit/Copy**.
- 4 Place the caret in the Word Processor document at the point at which you wish the data to appear as shown here:

place the caret here

Regional variations in climate in the UK

We have studied data for four regional weather stations, Cambridge, Dundee, Glasgow and Tenby.

The rainfall data we used is shown below.

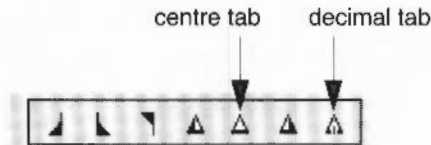
Table of regional rainfall data

- 5 Choose **Edit/Paste**.

Note that you cannot copy and paste between Advance tools if you are using a 1MB computer; please refer to *Appendix B: Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*. The CSV file `RegionsCSV` in the `Project2` directory contains the data you need.

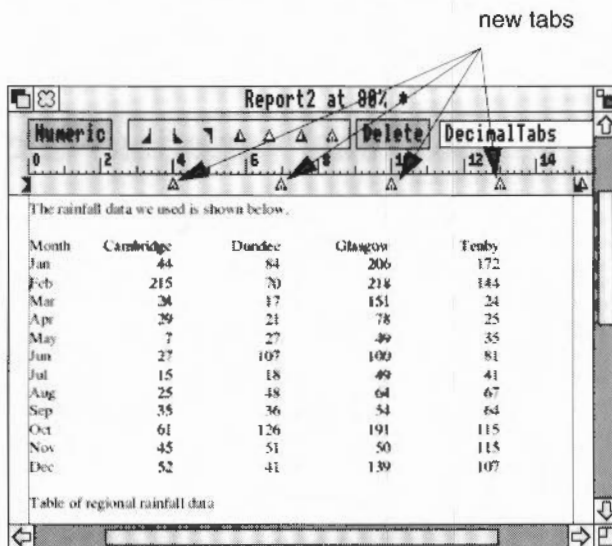
Tidying your table of data

To tidy up your table, you need to use the ruler to realign the tabs. To display the ruler, choose the **Ruler/Show ruler** option. The tab symbols you'll need to use are:



To tidy up the columns of data:

- 1 Select the whole of the table.
- 2 Get rid of the existing tabs by dragging them upwards from the ruler.
- 3 Click on the decimal tab symbol and then click just below the ruler at the 4cm position and again at the 7cm, 10cm and 13cm positions. Note that these positions are approximate; you can drag tab symbols along the ruler to position them where they look best.
- 4 Give the ruler the name `DecimalTabs` and press Return.



- 5 Next select the table's column headings only, and drag the existing tabs off the ruler.
- 6 Click on the centre tab symbol and then click just below the ruler at the 3.6cm position and again at the 6.8cm, 9.8cm and 12.8cm positions.

- Give the ruler the name **CentreTabs** and press Return.

The rainfall data we used is shown below.

Month	Cambridge	Oxford	Glasgow	London
Jan	44	84	206	172
Feb	215	70	218	144
Mar	24	17	151	24
Apr	29	21	78	25
May	7	27	49	35
Jun	27	107	100	81
Jul	15	18	49	41
Aug	25	48	64	67
Sep	35	36	54	64
Oct	61	126	191	115
Nov	45	51	50	115
Dec	52	41	139	107

Table of regional rainfall data

- The table headings are still selected, so you can now change the font by choosing **Effect/Bold**.
- Finally, put the cursor at the end of the word **Tenby** and press Return. Your table now looks much neater.
- The line of text below the table is a caption which goes with the table. Select this line of text, and change its font to **Italic**, and its alignment to **Centre**.
- Hide the ruler by choosing **Ruler/Show ruler**.
- Save your work.

Importing graphics

- To import a graph into your report, place the caret where you want the graph to appear, as shown here:

We were able to see regional patterns in the data, and these matched the UK climate quadrants.

place the caret here

The following graph shows the general pattern of temperatures in the four regions.
Graph of temperatures

From this graph we were able to see that temperatures are generally higher in the south of the UK than they are in the north.

We also learned that there is more rain in the West than there is in the East, and that

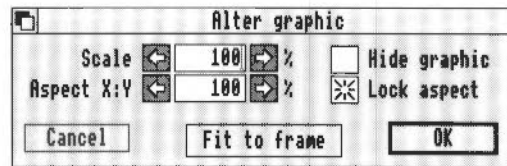
- 2 Drag the Draw file `Draw2` to your open document.
- 3 Release the mouse button to drop the graph into the document window.

A warning appears informing you that the graphic is too large and that it will be cropped. Don't worry about this; you'll resize your graph as soon as it is in the document. For the time being, just click on **OK** to import the graphic.

Changing the size of your graph

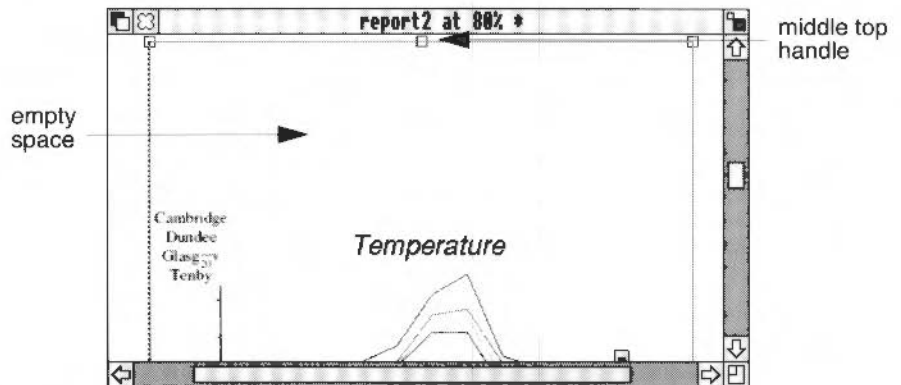
You need to reduce the size of your graph so that it fits within the boundary of the text frame. To do this:

- 1 Double-click on the graph to display the **Alter graphic** dialogue box.



- 2 Click on **Fit to frame**. This alters the scale of your graphic so that it fits within the frame.
- 3 The new scale of the graph is much better, so click on **OK** to accept the change.

The graphic is still too tall; there is too much space at the top and the bottom:



- 4 Delete the empty space by dragging the middle top handle downwards and the middle bottom handle upwards.

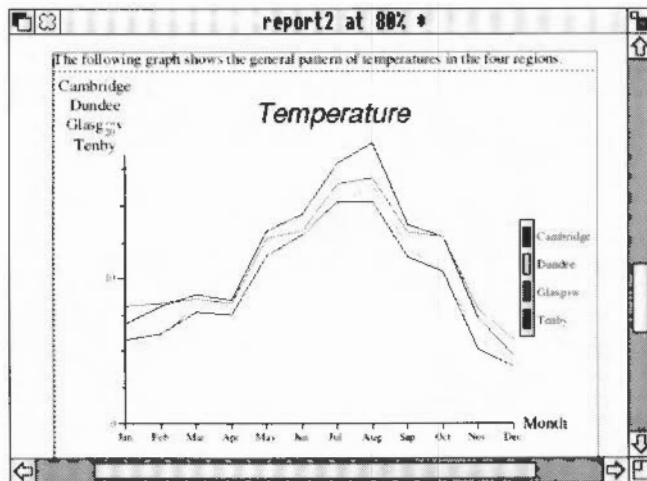
- 5 The line of text directly below your graph is a caption which applies to the graph. Select this line of text, and change its font to **Italic**, and its alignment to **Centre** as you did for the last caption.
- 6 Save your work.

Inserting a page break

Your graph was too large to fit on the first page of your report, so Advance automatically created a second page, and placed the graph at the top of this page. The paragraph before the graph explains what the graph is, so it really needs to be on the same page as the graph.

To move it to the next page:

- 1 Place the caret at the beginning of the paragraph.
- 2 Choose **Utilities/Insert/Column/page break** to move it to the top of the second page.



Inserting a page number

- 1 To add the page number to the bottom of each page go to the footer on the first page. (You can do this by double-clicking on any footer.)
- 2 Type Page and then press Space.
- 3 Choose **Utilities/Insert/Page number**. The page number is inserted in the footer frame. It is currently aligned to the lefthand side of the footer.
- 4 Double-click on the footer text to select it, and then choose **Effect/Alignment/Right align**.

Checking the spelling

It is always wise to check your work for spelling mistakes when you've finished working on it. To do this, position the caret in the text and select the **Utilities/Spelling/Check entire text** option. (This option checks all the text in a document, starting from the beginning.)

A dialogue box may appear warning you that the spelling checker has not yet been loaded. Click on **SPELL** to load the default spelling checker.

- If a spelling mistake is found, a dialogue box is displayed, and you can correct your mistake before continuing with the check.
- If no mistakes are found, the cursor simply moves to the end of the document.

Save your work.

Printing

When you've finished your report, you can print it out.

Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the *RISC OS 3 User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.

To print your report, choose **File/Print** and then click on **Print** in the dialogue box.

Quitting Advance altogether

To quit Advance altogether, press Menu on the Advance icon on the icon bar and then click Select on the **Quit** option.

Summing up

You've now finished your report on regional variations in climate in the UK and have reached the end of Project 2. You have used the Advance Database, Spreadsheet, Graph and Word Processor tools.

In this project you have learnt how to

- search a database for a several records at once
- transfer data to a spreadsheet and format it so that you have a neat table
- plot data for four weather stations on the same graph
- create a report containing examples of your work.

In the next project you'll look at one type of data across all twelve weather stations, and will work out the monthly average for each station, to use for comparison.

4

Project 3: Comparing local climate to the UK average

In this project, you'll use Advance to compare climate data for your own region with the rest of the United Kingdom. You'll finish by producing a report on your findings.

The examples in this project use the climate data supplied on Advance Data disc B.

Getting started


Load Advance into your computer and open the Advance weather database, WeatherDB, as explained in *Getting started* on page 3.

Getting data into an Advance spreadsheet

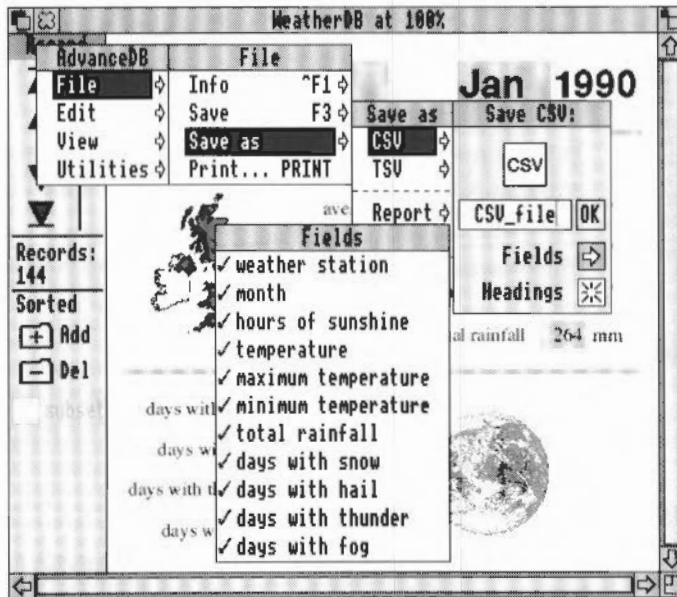
The best way to compare data is to import it into a spreadsheet file. To do this, the data must be in a form that the Spreadsheet can understand.

You'll save the temperature data for all weather stations as a CSV file. You'll then transfer all this data into a spreadsheet file in order to work out the average monthly temperature, and use a graph to compare this average with the temperature data for your area.

Saving data as a CSV file

- 1 Choose **File/Save as/CSV**.
- 2  Move the pointer over the word 'Fields', and when the pointer changes into a small menu icon, click Select. This displays the Fields menu listing all the field names in your database file.

- 3 Drag this list over to the left of your screen so that it doesn't obscure the **Save CSV** dialogue box.



You can see that all the field names in the Fields dialogue box are currently selected.

- 4 Your CSV file will contain the data for weather station, month, and temperature. Click Adjust on each unwanted field name to remove the tick against it.

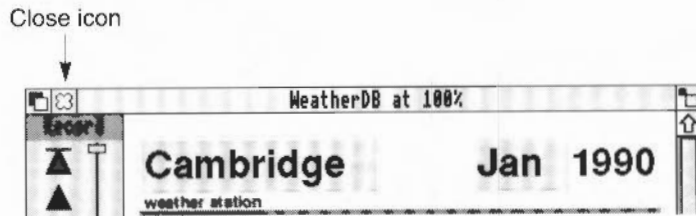
When you have finished, your list will look like this:



- 5 Move the pointer back into the **Save CSV** dialogue box, and give your file a suitable name such as `heat.data`. Drag the CSV icon into your working directory display to save it.

Quitting the main database

To close the database, click Select on the Close icon:



Freeing up memory

You won't need to use the Database tool for a while, so it is wise to tell Advance not to save any computer memory for it. To do this, click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

Getting your subset data into an Advance spreadsheet

Now that you have saved your data in CSV format, you can open a new spreadsheet.

Creating a spreadsheet for your data

- 1 Click Menu on the Advance icon on the icon bar, and choose **Create/Spreadsheet**.

This displays a blank spreadsheet file. You'll start by adding some headings to the spreadsheet.

- 2 Select cell B1, and type the title `Comparing temperature data`.
- 3 Click on the Enter button to enter your title.

Adding rows and columns

By default a new spreadsheet has 28 rows and 10 columns. You need to add more rows and columns to your spreadsheet before you import your CSV file, so that there is enough room for all your data.

- 1 Click on a cell which is below all the text you have typed in so far (cell A3 for example).
- 2 Add 120 rows to the spreadsheet by choosing **Edit/Rows/Add rows**, and giving the value 120.

- 3 Click on a cell which is to the right of all the text you have typed in so far (cell E1 for example).
- 4 Add 5 columns to the spreadsheet by choosing **Edit/Columns/Add columns**, and giving the value 5.

Importing your data

- 1 Click on cell A3. This is the cell which will be the top lefthand corner of your imported of climate data.
- 2 Drag your `heatdata` file's icon onto the spreadsheet. All the headings and data are automatically filled into the spreadsheet.

	A	B	C	D	E	F
1	Comparing temperature data					
2						
3	weather st	month	temperature			
4	Bala	Jan	6			
5	Bala	Feb	7			
6	Bala	Mar	7.6			
7	Bala	Apr	6.7			

- 3 It is always sensible to save files regularly. Save your spreadsheet file now. Choose **File/Save**, give your file the name `HeatSH` and drag the **Save** icon to your directory display.



- 4 Click Select on the Toggle size icon to see more of the spreadsheet.
- 5 Select cell C3.
- 6 Press `Ctrl-U` to delete the contents of the cell, and type the name of the first weather station, `Bala`.
- 7 Press `Tab`.
- 8 Cell D3 is now selected. Type the name of the next weather station, `Belfast`, then press `Tab`.
- 9 Type in the names of all the other weather stations (`Birmingham`, `Cambridge`, `Dundee`, `Exeter`, `Glasgow`, `Lairg`, `Long Sutton`, `Morecambe`, `Scarborough` and `Tenby`) pressing `Tab` after each.
- 10 Select cell O3 (if it is not already selected), and type `Monthly average`.
- 11 Click on the `Enter` button.

12 Save your work.

You'll notice that you cannot see the headings properly. This is because by default the columns are all the same width as each other.

13 To alter the width of the columns, double-click on the column label (the letter above the column) of the column which is too narrow. Do this for columns E, K, L, M and O.

double-click here to widen column E

	A	B	C	D	E	F
1	Comparing temperature data					
2						
3	weather st	month	Bala	Belfast	Birmingham	Cambrid
4	Bala	Jun	6			
5	Bala	Feb	7			
6	Bala	Mar	7.6			

You now have all the temperature data in your spreadsheet, and appropriate titles to assist you while you edit your table.

Editing your spreadsheet

In order to use the Graph tool to compare your figures, you need to move some of the data:

- 1 Scroll down the spreadsheet and select all the figures for Belfast (cells C16 to C27).
- 2 Choose **Edit/Cut**.
- 3 Scroll back to the top of the spreadsheet and select cell D4.
- 4 Choose **Edit/Paste**.
- 5 Scroll down the spreadsheet and select all the figures for Birmingham (cells C28 to C39).
- 6 Again, choose **Edit/Cut**.
- 7 Scroll back to the top of the spreadsheet and select cell E4.
- 8 Choose **Edit/Paste**.
- 9 Save your work.

- 10 Continue cutting, pasting and saving until you have moved each station's data from column C so that it is under the appropriate heading.

You have now edited your temperature data into an organised table, but you need to remove some cells which contain information which is no longer needed.

Deleting unnecessary data

There is now quite a bit of excess data in your spreadsheet (data which came across in your CSV files, but which you no longer need). To get rid of this, you need to delete some rows and column A.

Each time you need to delete cells, save your work before deleting. Then, if you make a mistake while you're deleting, you should simply close your spreadsheet without saving it. You can then open the file again to get the spreadsheet back to its previous state.

Deleting rows

The easiest way to delete a row is to select all the row labels for the rows you want to delete:

- 1 Click on cell row label 148.
- 2 Scroll back up your spreadsheet and click Adjust on row label 16. Rows 16 to 148 are now selected. You can check this in the reference area.

	A	B	C	D	E	F
13	Bala	Oct	10.7	10.8	11.6	12.9
14	Bala	Nov	6.1	6.2	6.7	7.3
15	Bala	Dec	3.8	3.9	4.1	4.7
16	Belfast	Jan				
17	Belfast	Feb				
18	Belfast	Mar				
19	Belfast	Apr				
20	Belfast	May				

- 3 Choose **Edit/Rows/Delete rows**. Rows 16 to 148 are deleted.
- 4 Save your work.

Deleting columns

- 1 Click on column label A.
- 2 Choose **Edit/Columns/Delete columns**. Column A is deleted, and all the data is shuffled to the left.

Your table now contains only relevant data.

Improving the appearance of your spreadsheet

At the moment, your spreadsheet titles do not stand out very well. You can improve this by changing the text size and emphasis. (You could also change the font if you wish).

- 1 Select the main title by clicking on cell A1.
- 2 To change the title text from 12 point to bold 18 text, choose **Effect/Text size/18pt**.
- 3 Then to make the text bold, choose **Effect/Bold**.
- 4 As you have enlarged the text, you need to increase the height of the row so that the text fits. You do this in the same way as you increased the column width; click on the corresponding row label, in this case the 1 at the left of the window.
- 5 Select the whole of row 3 by clicking on the row 3 label.
- 6 Make the text bold by choosing **Effect/Bold**.
- 7 Again, you won't be able to see some of the column headings completely. Alter the width of these columns by double-clicking on the column label of each column which is too narrow.
- 8 Save your work.

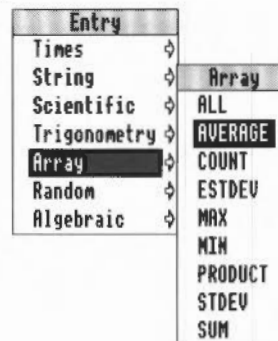
	A	B	C	D	E	
1	Comparing temperature data					
2						
3	month	Bala	Belfast	Birmingham	Cambridge	Dun
4	Jan	6	5.7	6.3	6.9	5.5
5	Feb	7	5.5	7.1	8.1	5.9
6	Mar	7.6	8	8.5	8.9	8.3
7	Apr	6.7	7.6	7.9	8.5	8.1
8	May	10.9	11.9	12.8	13.3	11

Calculating temperature averages

Advance Spreadsheet has a wide selection of standard functions for trigonometrical, algebraic and other types of calculations. You can read more about these in the *Advance User Guide* under *More about formulae and functions* on page 158.

You want to work out the average UK temperature for each month. To do this you can use one of Advance Spreadsheet's functions:

- 1 Select cells N4 to N15. These cells will all have the same average function in them.
- 2 Click on the Function button.
- 3 Choose **Array/AVERAGE**.



The Entry area displays the function, ready for you to enter values.

HeatsH at 100% *					
	J	K	L	M	N
3	Sutton	Morecambe	Scarborough	Tenby	Monthly average
4	6.8	6.6		5.4	8.1
5	8	7.1		5.7	8.3
6	8.5	8.1		7.8	8.6

- 4 Type B4><M4. This tells Advance that you wish to calculate the average of the values in cells B4 to M4, and place this value in cell N4, the first of the currently selected cells.

Advance automatically knows to calculate the average of the values in cells B5 to M5 and to place it in N5, the average of the values in cells B6 to M6 and to place it in N6, and so on for all the selected cells.

- 5 To perform the calculations, click on the Enter button.
- 6 A message appears warning you that you're about to change a block of cells. Click on **Accept**.

	J	K	L	M	N
3	Sutton	Morecambe	Scarborough	Tenby	Monthly average
4		6.6	5.4	8.1	6.15833333333333
5		7.1	5.7	8.3	6.775
6		8.1	7.8	8.6	8.05
7		8.3	7.6	8.3	7.75
8		12.9	11.1	12.8	12.0416666666666
9		13.7	12.7	13.3	13.175
10		16.3	11.9	16.5	15.0833333333333

Changing number format

The average UK temperature for each month is now displayed in the appropriate row, but the values look rather untidy as they do not have equal numbers of figures after the decimal point. To round the values to have just one figure after the decimal point, you need to change the number format:

- 1 If they are not still highlighted, select cells N4 to N15.
- 2 Choose **Effects/Number format** display the Number format dialogue box.
- 3 Click on the **Fixed decimal** button and give the value 1 as shown here:

When you click on Apply, the figures in your spreadsheet are updated.

- 4 Save your work.

Formatting the data cells

You can see that the figures do not line up very well in the cells; they would look much better aligned to the right. To do this, select the whole of the block of cells containing figures (cells B4 to N15), and then choose **Effect/Alignment/Right**.

	A	B	C	D	E
1	Comparing temperature data				
2					
3	month	Bala	Belfast	Birmingham	Cambridge Dun
4	Jan	6	5.7	6.3	6.9
5	Feb	7	5.5	7.1	8.1
6	Mar	7.6	8	8.5	8.9
7	Apr	6.7	7.6	7.9	8.5
8	May	10.9	11.9	17.8	13.3

Save your work.

Printing your spreadsheet

Now that you have improved the appearance of your spreadsheet, you can print it out.

- 1 Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the *RISC OS 3 User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.
- 2 Switch off the row and column labels by choosing the **Utilities/Labels** option.
- 3 Then choose **File/Print**.
- 4 Tell Advance to print the spreadsheet sideways on the paper by clicking on **Sideways**.
- 5 Finally click on **Print**.

Plotting a graph comparing an area's temperature with the UK average

The best way to compare local climate with the UK average is to plot the values on a graph. You can do this quite simply from the Spreadsheet unless you have a 1MB computer.



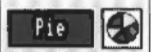

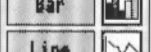
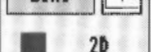

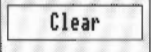
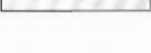
(If you are using a 1MB computer, please refer to *Appendix B: Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*. The file `GraphData3` in the `Project3` directory contains the plot data you need.)

Plotting line graphs of temperature data

- 1 Switch the row and column labels back on by choosing **Utilities/Labels**.
- 2 Select rows 3 to 15 by clicking on row label 3, and then clicking Adjust on row label 15.
- 3 You now need to specify whether you wish to send the data to the Graph tool as row data or column data. Your data is organised into columns, so choose **Utilities/Graph type/Plot columns**.
- 4 Open the Advance Graph tool by choosing **Utilities/Graphs**. This displays the Graph window.

When you go to the Graph window from the Database or Spreadsheet the selected data is automatically copied by the Graph tool and is ready to be displayed. (If no data is selected, all data is copied.)

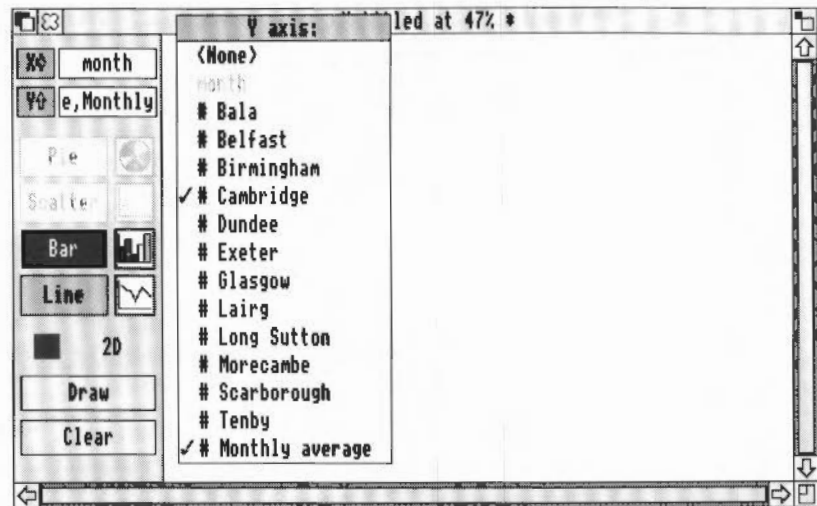
On the left side of the Graph window is the Graph toolbox. This allows you to choose which data to plot, and the type of graph to use to plot that data.

Toolbox	Button	action
	X data	displays a menu of fields you can plot on the X-axis
	Y data	displays a menu of fields you can plot on the Y-axis
	Pie	selects a pie chart
	Scatter	selects a scatter graph
	Bar	selects a bar chart
	Line	selects a line graph
	2D	selects 2D, 3D, or outline for graph display
	Draw	draws the graph in the graph area
	Clear	deletes the graph in the graph area and clears any data in the X and Y buttons

Plotting a line graph of temperature data

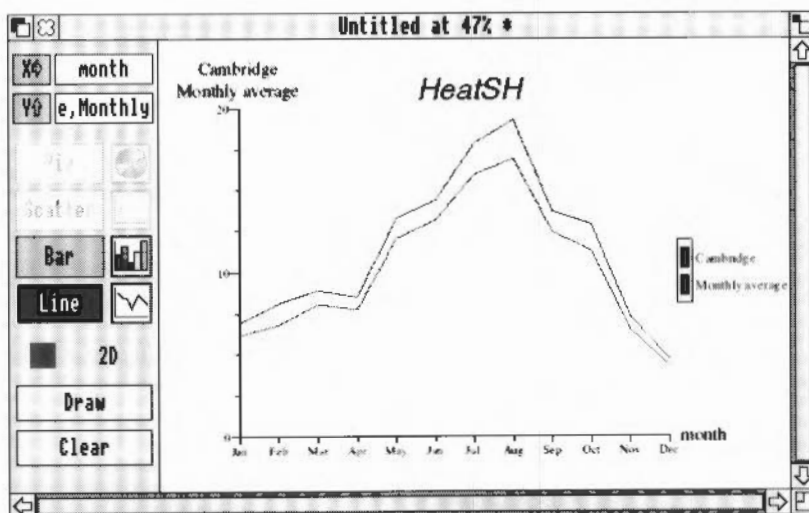
To plot the monthly temperature data for each region on a line graph:

- 1 Click on the **X data** button. This displays a list of all the fields in the database.
- 2 Click on **Month**. This selection is displayed in the box next to the **X data** button.
- 3 Next click on the **Y data** button.
- 4 The same list appears and this time click Adjust on **Cambridge** and **Monthly average**:



- 5 The Graph tool analyses the data, and highlights two of the four graph buttons to show that you can plot your data using these graph types. Click on the **Line** button.

- 6 Finally click on **Draw** to display the graph:



Study your graph of temperature. Does Cambridge have above average or below average temperatures?

Compare other areas with the average by clicking on the **Y data** button again, choosing different weather stations and clicking on **Draw**.

For more on types of graph please refer to the *Advance User Guide* under *Selecting the right graph* on page 281.

Creating graphs from the Spreadsheet is described in detail in the *Advance User Guide* under *Displaying results as a graph* on page 114, and under *More on graphs* on page 189.

Editing text on a graph

You can print a graph whenever you like. Before you do, it's a good idea to change the title to make it more informative, and to make sure that the axis labels can be seen.



To move an axis label, move the pointer over the axis label. The pointer changes to a hand which you can use to drag the label to a new position.

By default the Graph tool uses the filename of the database or CSV file as a title for the graph. To change the title:

- 1 Move the pointer over the title and double-click on it. A caret appears in the text.
- 2 Double-click on the title again to select it.
- 3 Give the graph an appropriate title.
- 4 Change your title to bold text by triple-clicking on the title to select all the text and then choosing **Effect/Bold**.

Note: Changes to text are **not** saved if you draw a new graph. So only change text when you're satisfied with the rest of the graph.

For a full description of how to edit text on a graph see the section *Editing text on a graph* on page 279 of the *Advance User Guide*.

Printing a graph

To print a graph:

- 1 Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the *RISC OS 3 User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.
- 2 Make sure that the graph you wish to print is displayed in the Graph window.
- 3 Click somewhere in the Graph window (this makes sure that data is printed from the Graph window, not from any other window you might have open at the time).
- 4 Go into the **Print** box by choosing **File/Print**.
- 5 Type in the number of copies you want and click on **Print**.

The graph will be printed, including any edits you have made.

Saving a graph

You can save a graph in two formats; as Graph data or as a Draw file. You'll be saving your graph as a Draw file.

Saving a graph as a Draw file

Saving a graph in Draw file format gives you a permanent record of the current graph, exactly as it's displayed on the screen. You can edit and annotate the Draw file using any of Draw's tools.

Save your graph as a Draw file:

- 1 Go into the **File/Save as Draw** dialogue box and type in a suitable filename. (Note that this file is already saved as `Draw3` in the `Project3` directory.)
- 2 Drag the icon to your directory display.

Note: Graphs saved as Draw files can take up a large amount of storage space, so make sure that you have enough space available on your disc.

Saving a graph as Graph data

A Graph data file contains all the data needed to redraw a graph, and any format settings (like text font and colour) but discards any edits you've made to the text.

You don't need to do this now, but here's how to save a graph as a Graph data file: Go into the **File/Save as Graph** dialogue box and type in the filename, then drag the icon to your directory display.

The file `GraphData3` in the `Project3` directory contains the data from your spreadsheet file.

Closing files and freeing up memory

You won't need to use the Spreadsheet or Graph tools again for a while, so you should now close your open file(s).

Then click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

Further suggestions

Other comparisons

You may like to compare rainfall and hours of sunshine data. To do this you'll need to go back to the Database, create a CSV file of your chosen data and import this into a new spreadsheet, where you can edit it as before.

Sorting records

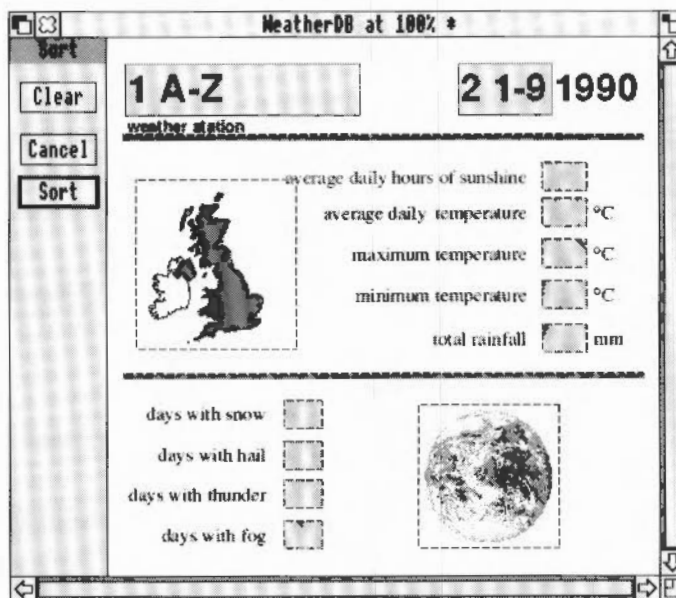
The records in the Advance weather database are supplied sorted into alphabetical order using the weather station name.

Under each station, the records are sorted into calendar order. So, the record you can see is the one which comes first in the alphabet, and has the name of the first month of the year. In this case it is the January record for Bala (unless data you have entered comes before this).

You can however sort your database into any order you like.

Sorting can be very useful for finding a piece of data quickly. You'll use sorting to find out which weather station had the highest and lowest temperatures during 1990.

To begin a sort, load `WeatherDB` into Advance, and then choose the **Utilities/Sort** option. The Sort window is then displayed:



You can see the current sort options; first, sort weather stations into alphabetical order, second, sort months into date order.

Sorting into order of temperature

Sorting minimum temperatures

- 1 To remove the current sort settings, click on the **Clear** button.
- 2 Click Select in the minimum temperature field. The label '1 1-9' appears inside the field. The '1' indicates that this is the first sort field, '1-9' indicates that this is a numeric field which will be used to sort the records into ascending order (the record with the lowest minimum temperature will be placed first in the database).
- 3 Then click on the **Sort** button.

After a few seconds you are returned to the One Record window. The records have been sorted into numeric order using the contents of the minimum temperature field box.

The first record is the January record for Lairg. If you page through the database you'll see that this is the record with the lowest minimum temperature.

Sorting maximum temperatures

Although your sort showed you the record with the lowest recorded minimum temperature, it did not help you to find the highest recorded temperature. To find this, you need to do a second sort, this time using the maximum temperature field.

- 1 Remove the current sort setting by clicking on the **Clear** button.
- 2 Click Select in the maximum temperature field. The label '1 1-9' appears inside the field.
- 3 You want the record with the highest temperature to be placed first in the database, so click Select again in the maximum temperature field. The label changes to read '1 9-1'.
- 4 Then click on the **Sort** button.

After a few seconds you are returned to the One Record window. The records have been sorted into numeric order using the contents of the maximum temperature field box.

The first record is the August record for Cambridge.

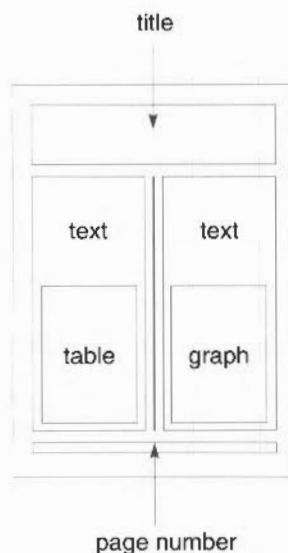
Sorting is explained in detail in the *Advance User Guide* under *Sorting records* on page 226.

Writing a report

You can use the Advance Word Processor to produce a written report about your findings.

Before you start work, you need decide what you want to include in your document, and how you want it to look. As well as some text about what you have learned, you may want to include some examples of the work you have done using the Advance Database, Spreadsheet and Graph tool.

You'll lay your document out as shown here. Each page will have two text columns, divided by a ruled line, and the leaflet will include graphics (from the Graph tool) and a table (from the Spreadsheet):



Creating a new document

Close any open files, then click Menu on the Advance icon on the icon bar, and choose **Minimise memory**.

To create a new Word Processor document, click Select on the Advance icon on the icon bar. A blank document appears. Click on the Toggle size icon to make the document fill the screen.

Scaling your document

By default, a document is displayed at full size (100%). It's often easier to work on a document when it's scaled in size (either to fit more on the screen, or to zoom in and get a closer look at something). Scale your document so that it's displayed at 80% of its full size:

- 1 Choose **Utilities/Scale view**.
- 2 Click on **80%** and then on **Scale**.

Changing the page size

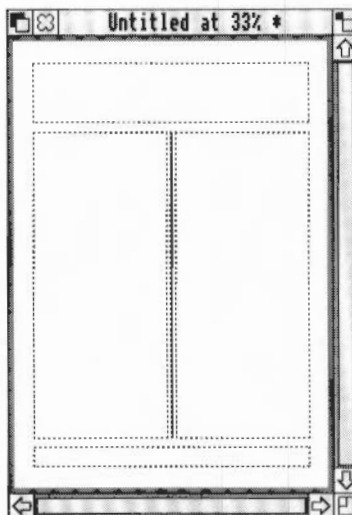
Choose the **Edit/Alter pages** option to display the **Alter pages** dialogue box. Change the settings in this box to those shown below:

The 'Alter pages' dialog box is shown with the following settings:

- Page size:** A4 (selected), A3, A5, Custom (Width: 1.1m, Depth: 29.7cm)
- Format:** Portrait (selected), Landscape, Facing pages (unchecked)
- Margins:** Top: 1.55cm, Bottom: 1.45cm, Left: 1.284cm, Right: 1.287cm
- Header:** Depth: 4cm
- Footer:** Depth: 1.27cm
- Vertical rules:** (checked)
- Columns:** Number: 2, Width: 8.897cm, Gaps: 0.635cm
- Restart page numbering at:** 1
- Buttons:** Cancel, OK

- 1 Click on **Header** and **Footer** to set header and footer frames.
- 2 Set the **Depth** of the Header frame to 4cm.
- 3 Click in the **Vertical rules** box to specify a vertical line between the columns.
- 4 Change the **Columns Number** to 2.

- 5 Click on **OK** to apply the changes and remove the dialogue box. Your document now looks like this:



The page now has two columns for text with a vertical rule between them, and repeating header and footer frames to carry the title and page numbers.

- 6 Choose **File/Save** or press F3, give your report an appropriate name and drag the **Save** icon to your directory display.

Importing files into a Word Processor document

You can import various file types including Edit files (plain text), CSV files (the file format you used to save your subset data) and Draw files (the file format you used to save your graphs).

The method used for importing all types of file is the same – you simply place the caret where you want to insert the file, then drag the file's icon from a directory display into the text frame of the open Advance Word Processor document. As long as the file type is one that the Word Processor can understand, the file is added at that point.

Importing text, graphics and data are all covered in detail in the chapter *Learning more about the Word Processor* on page 45 in the *Advance User Guide*.

Importing text

There is some sample text in the file `Text3` which is in the `Project3` directory of Advance Data disc B. To import this text into your report, simply click in the first column of your open document, then select the file `Text3` and drag the file icon

over your document. When you release the mouse button, the text appears, starting in the first column. You can of course write your own report, either in the Advance Word Processor, or in plain text which you can import.

Formatting text

Give your report a heading by placing the caret in the first header, then typing:

Comparing local temperature data with the UK average

This title is automatically repeated on every page.

To improve the appearance of your heading, select the text by triple-clicking on it, then choose

- **Effect/Text size/Other** to increase the text size. Type in the value 36 and click on **Set**.
- **Effect/Bold** to make the heading bold.
- **Effect/Alignment/Centre** to centre the heading on the page.



Save your work.

Text editing techniques are explained under *Changing the appearance of the text* on page 28 of the *Advance User Guide*.

Importing data

You can copy data from the Spreadsheet into a Word Processor document, but if you want separate blocks to form a table when copied, you need to reorganise your spreadsheet data into that table before you copy it.

Note that you cannot copy and paste between Advance tools if you are using a 1MB computer; please refer to *Appendix B: Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*. The CSV file `EditCSV` in the `Project3` directory contains the data you need.

Preparing your spreadsheet data

- 1 Make a copy of your spreadsheet file and call it `EditSH`.
- 2 Open `EditSH`.
- 3 Select all the values under the heading `Monthly average` (cells N4 to N15).
- 4 Choose **Edit/Cut** to cut these values.
- 5 Choose **Edit/Paste values**. This changes the contents of these cells to the value of the formula, rather than the formula itself.
You can now delete all the rows and columns that you do not want to include in your spreadsheet.
- 6 Select columns B to D and choose **Edit/Columns/Delete columns**. The columns shuffle to the left to replace the deleted block.
- 7 Select columns C to J (note these are the new column labels) and choose **Edit/Columns/Delete columns** again. This leaves the columns headed `Month`, `Cambridge` and `Monthly average`.

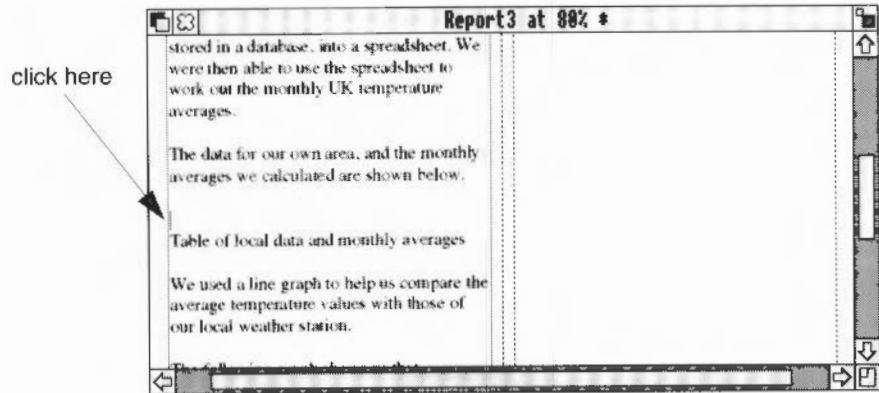
	A	B	C
1	Comparing temperature da		
2			
3	month	Cambridge	Monthly average
4	Jan	6.9	6.2
5	Feb	8.1	6.8
6	Mar	8.9	8.0
7	Apr	8.5	7.7
8	May	13.3	12.0
9	Jun	14.4	13.2
10	Jul	17.9	16.0

- 8 Save your work.

Copying from the Spreadsheet into the Word Processor

You can now copy the data into your report.

- 1 Select rows 3 to 15 by clicking on the row labels.
- 2 Choose **Edit/Copy**.
- 3 Go back to your report and place the caret in the document at the point at which you wish the data to appear:



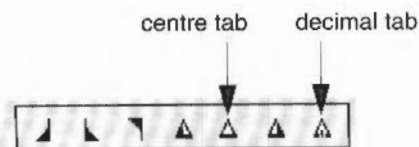
- 4 Choose **Edit/Paste**.

You now have your data in your document.

Tidying your table of data

Your data has been copied into your report exactly as it appeared in the spreadsheet. However, if you have used a CSV file to transfer your data, you will find that the monthly average figures now have several numbers after the decimal point. Delete the extra figures after the decimal point, rounding up where appropriate.

To tidy up the general appearance of your table, you need to use the ruler to realign the tabs. To display the ruler, choose the **Ruler/Show ruler** option. The tab symbols you'll need to use are:



To tidy up the columns of data:

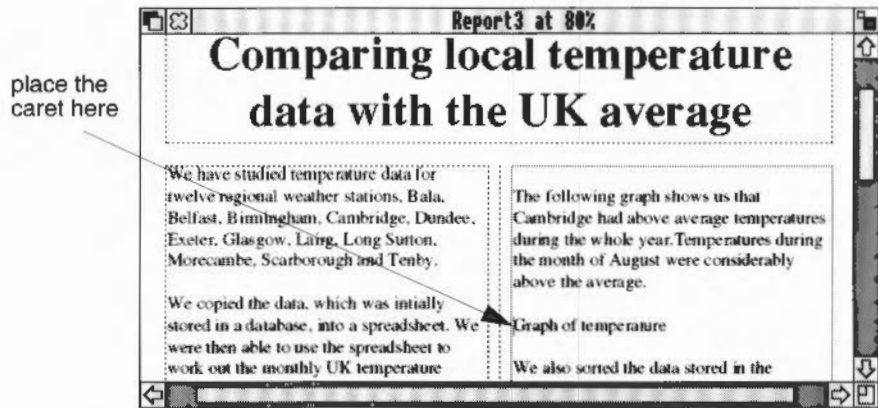
- 1 Highlight the whole of the table.
- 2 Get rid of the three existing tabs by dragging them upwards from the ruler.
- 3 Click on the decimal tab symbol and then click just below the ruler at the 3cm position and again 6.5cm position. Note that these positions are approximate; you can drag tab symbols along the ruler to position them where they look best.
- 4 Give the ruler the name `DecimalTabs` and press Return.
- 5 Next select the table's column headings only, and drag the existing tabs off the ruler.
- 6 Click on the centre tab symbol and then click just below the ruler at the 3cm position and again at the 6.5cm position.
- 7 Give the ruler the name `CentreTabs` and press Return.

Month	Number	Month/Percentage
Jan	6.9	6.2
Feb	8.1	6.8
Mar	8.9	8.0
Apr	8.5	7.7
May	13.3	12.0
Jun	14.4	13.2
Jul	17.9	16.0
Aug	19.3	16.9
Sep	13.7	12.4
Oct	12.9	11.3
Nov	7.3	6.5
Dec	4.7	4.3

- 8 The table headings are still selected, so you can now change the font by choosing **Effect/Bold**.
Your table now looks much neater.
- 9 The line of text below the table is a caption which goes with the table. Select this line of text, and change its font to **Italic**, and its alignment to **Centre**.
- 10 Hide the ruler by choosing **Ruler/Show ruler**.
- 11 Save your work.

Importing graphics

- 1 To import a graph into your report, place the caret where you want the graph to appear, as shown here:



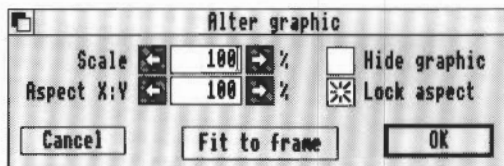
- 2 Select the Draw file `Draw3` and drag the file icon to your open document.
- 3 Release the mouse button to drop the graph into the document window.

A warning appears informing you that the graphic is too large and that it will be cropped. Don't worry about this; you'll resize your graph as soon as it is in the document. For the time being, just click on **OK** to import the graphic.

Changing the size of your graph

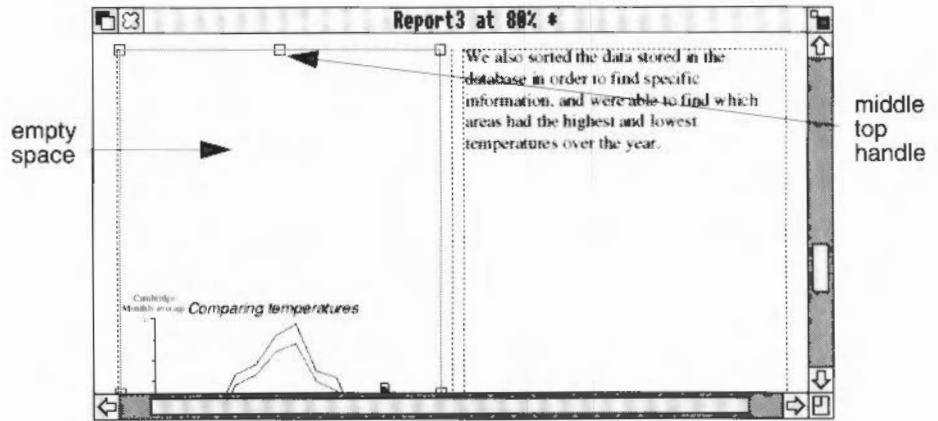
You need to reduce the size of your graph so that it fits within the boundary of the text frame. Scroll down to the next page of your document and then:

- 1 Double-click on the graph to display the **Alter graphic** dialogue box.



- 2 Click on **Fit to frame**. This alters the scale of your graphic so that it fits within the frame.
- 3 The new scale of the graph is much better, so click on **OK** to accept the change.

The graphic is still too tall; there is too much space at the top and the bottom:



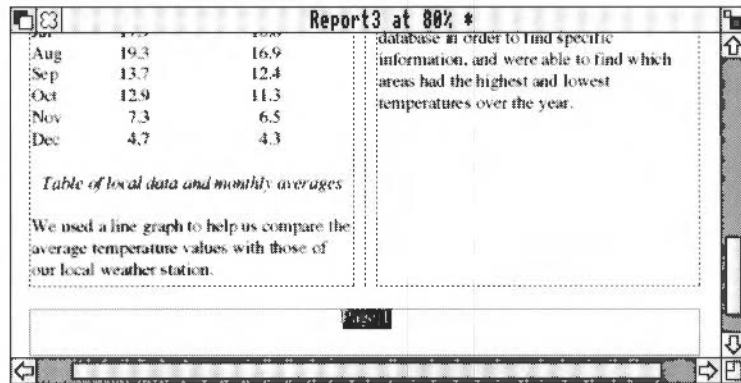
- 4 Delete the empty space by dragging the middle top handle downwards and the middle bottom handle upwards.
- 5 The line of text below your graph is a caption which applies to the graph. Select this line of text, and change its font to **Italic**, and its alignment to **Centre** as you did for the last caption.
- 6 Save your work.

Inserting a page number

- 1 To add the page number to the bottom of each page go to the footer on the first page. (You can do this by double-clicking on any footer.)
- 2 Type Page and then press Space.
- 3 Choose **Utilities/Insert/Page number**.

The page number is inserted in the footer frame. It is currently aligned to the lefthand side of the footer.

- 4 Double-click on the footer text to select it, and then choose **Effect/Alignment/Centre**.



Checking the spelling

It is always wise to check your work for spelling mistakes when you've finished working on it. To do this, position the caret in the text and select the **Utilities/Spelling/Check entire text** option. (This option checks all the text in a document, starting from the beginning.)

A dialogue box may appear warning you that the spelling checker has not yet been loaded. Click on **SPELL** to load the default spelling checker.

- If a spelling mistake is found, a dialogue box is displayed, and you can correct your mistake before continuing with the check.
- If no mistakes are found, the cursor simply moves to the end of the document.

Save your work.

Printing

When you've finished your report, you can print it out.

Make sure that a suitable printer is correctly connected and set up, and that the !Printers application is loaded onto the icon bar (the *RISC OS 3 User Guide* describes this). If you have a 1MB computer and wish to print, please refer to *Using Advance on 1MB or 2MB computers* on page 303 of the *Advance User Guide*.

To print your report, choose **File/Print** and then click on **Print** in the dialogue box.

Quitting Advance altogether

To quit Advance altogether, press Menu on the Advance icon on the icon bar and then click Select on the **Quit** option.

Summing up

You've now finished your report on comparing local climate to the UK average and have reached the end of Project 3. You have used the Advance Database, Spreadsheet, Graph and Word Processor tools.

In this project you have learnt how to:

- search a database for several records at once:
- transfer all temperature data to a spreadsheet and format it so that you have a neat table
- calculate average monthly figures for temperature
- compare local data with other areas and with the calculated average, all on the same graph
- sort the database to extract maximum and minimum information
- create a two-column report containing examples of your work.

The projects in this guide have shown you just a few of the features of the Acorn Advance software suite. For further reference, please see the *Advance User Guide*.

Appendix A: Collecting your own climate data

If you wish to record your weather for inclusion in the weather database, there are kits available for schools from:

Hatfield Advisory Unit: Computers in Education
126 Great North Road
Hatfield
Herts

Tel: 0707 266714

Michael Jay Publications
St Just
Cornwall

Tel: 0736 787808

If you wish to add local data for 1990 to the database, you may like to purchase the appropriate Meteorological Office Monthly Weather Reports. These can be obtained from:

Her Majesty's Stationery Office
49 High Holborn
London
WC1V 6HB

Her Majesty's Stationery Office
80 Chichester Street
Belfast
BT1 4JY

Schools that have Campus Plus have access to a considerable range of weather and climate data on Prestel. These schools also have access to Meteosat images and daily weather data for Gosport (a service provided for Hampshire Microtechnology Centre and Campus 2000 by St Vincent's 6th Form College, Gosport).

How to add data to your database is explained under *Entering data* on page 211 of the *Acorn Advance User Guide*.

Reader's Comment Form

Acorn Advance Climate Project Guide

We would greatly appreciate your comments about this Manual, which will be taken into account for the next issue:

Did you find the information you wanted?

Do you like the way the information is presented?

General comments:

If there is not enough room for your comments, please continue overleaf

How would you classify your experience with computers?

First-time user

Used computers before

Experienced user

Programmer

Cut out (or photocopy) and post to:
Dept RC, Technical Publications
Acorn Computers Limited
645 Newmarket Road
Cambridge CB5 8PB
England

Your name and address:

This information will only be used to get in touch with you in case we wish to explore your comments further



