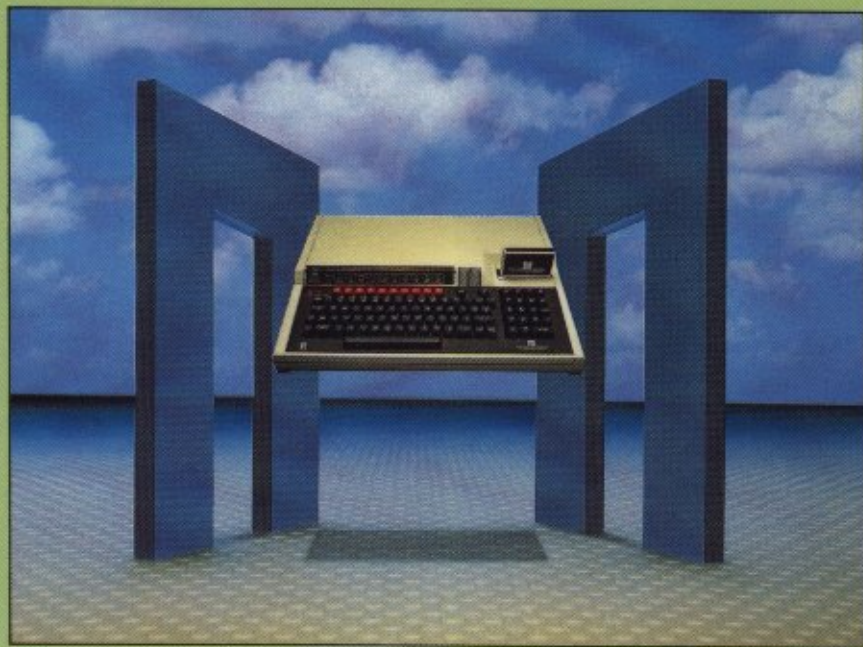


MASTER 512 USER GUIDE



BRITISH BROADCASTING CORPORATION
MASTER SERIES MICROCOMPUTER

The BBC Microcomputer System

Master Series 512

USER GUIDE

Part number 0443,200

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Part 1

THE GEM COLLECTION

CONVENTIONS USED IN THIS MANUAL

- *CONFIGURE** Text to be typed in literally, or text displayed on the screen.
- <number>** An item of data of the type indicated must be supplied, or is displayed on the screen. For example, a line described as Page <number> would appear with a number in place of <number>.
- Open ...** Option in a menu line or dialogue which can be selected with the mouse.
- RETURN** Press the key named.
- 4** Press a numeric keypad key. This **MUST** be used where shown; where numbers are shown otherwise, either set of numeric keys may be used.
- f0** Press the red function key indicated.
- User Guide* The title of a manual.

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1 INTRODUCTION

1.1 What is GEM?

The GEM software package consists of three applications. These are:

- GEM Desktop
- GEM Write
- GEM Paint.

GEM Desktop is a filing and administrative system. It allows you to control and order the documents and pictures you create using GEM Write and GEM Paint.

GEM Write is a versatile word-processing system. Using GEM Write you can produce documents of any length from the briefest letter to a full length book.

GEM Paint is a graphics program which enables you to produce exciting and original pictures using a variety of painting techniques and automatically generated patterns.

The three parts of the GEM package are closely linked. The most unusual feature of the package is that you can incorporate pictures created using GEM Paint into GEM Write documents. Documents and pictures can be arranged in a filing system using GEM Desktop, and printed.

Although the GEM applications interact closely, it is not necessary to understand how to use every part before you start. After mastering the basic principles, you could begin with GEM Write or GEM Paint and produce a document or painting before learning how to operate GEM Desktop.

1.2 How to Use this Manual

This manual is divided into the following sections:

1 Introduction

This introduces the general concepts of GEM and some of the terms and techniques you will encounter. The first time you use GEM, go from the introduction to the Set-up Guide in the Appendix.

2 Starting to Use GEM

This introduces procedures which are common to all the GEM applications, and the Desktop features necessary to beginning the Paint and Write programs. After reading this section, you can read any of Sections 3, 4 or 5 next. It may be best to go to Write or Paint, returning to the other Desktop commands later.

3 GEM Paint

This describes the drawing and other techniques available within Paint. You should experiment freely with Paint, as this is the easiest way in which to learn how to use it.

4 GEM Write

This describes all the operations available within GEM Write. It refers you to a tutorial supplied on the discs which demonstrates the use of all the facilities.

5 GEM Desktop

This section describes the techniques and procedures which are specific to Desktop. It may be left until after you have become acquainted with Write and/or Paint.

6 Output

The Output Guide describes the output options available from GEM Desktop, Gem Write and Gem Paint. As the procedures are the same irrespective of which application they are accessed from, they are grouped together in a separate section. You should create one or more documents with Write or Paint before using the output options.

7 Appendix: Set-up Guide

This covers the procedures involved in setting up the hardware and software before you can use the GEM package. Most of this information will be required once only.

8 Glossary

9 Index

1.3 General Concepts

The GEM package is based on the use of the mouse and the display of symbols on the screen. Moving the mouse causes a pointer to move around on the screen. You will quickly become accustomed to how far you need to move the mouse to achieve the corresponding movement of the pointer which you require.

The symbols displayed on the screen represent facilities or attachments which are available. They are known as **ICONS**. For example, GEM Desktop displays a floppy disc icon, a simple line drawing of a floppy disc. All the icons used in GEM are easily recognisable.

As well as the icons, GEM has a series of **MENUS**, or lists of commands. These give access to a wide variety of operations within each GEM application.

The pointer is moved around the screen to indicate and **SELECT** items. You can select any of the icons, or any of the highlighted commands in the menus. Moving the pointer to indicate menu items or icons, and using simple **CLICKING** techniques (described in 2.5) are the basic operations involved in using GEM. Combining these operations in a meaningful sequence instructs the computer to carry out a command. If you use them in a sequence which does not make sense to the computer, you can do no damage. In such a case, either nothing at all will happen, or the system will issue a message informing you that what you have requested cannot be done.

Moving the pointer to indicate menu items and icons is a technique which is very easy to use. It does not require you to learn and remember a series of keystrokes or to be a proficient typist; the facilities available are always readily visible on the screen.

Now turn to the Set-up guide in the Appendix.

2 STARTING TO USE GEM

2.1 Introduction

This section introduces the procedures and techniques common to all the GEM applications, using the Desktop to demonstrate these and provide examples.

After reading this section, you will be familiar with the general techniques and can go on to use Paint, Write or Desktop. It may be better to use Write or Paint first, turning to Desktop after creating some documents or paintings to learn how to copy and move them. The advantage of using Paint or Write first is that if you are moving 'real' documents rather than empty ones, you can open them to check that the operation has been successful.

Many of the operations and concepts in this section are introduced with an example; follow the instructions to test the procedures or see an example.

WARNING:

Always work on copies of the GEM discs. If you have not made copies, or have lost them, turn to the Set-up Guide in the Appendix for instructions (7.5). DO NOT USE THE MASTER COPIES to run GEM.

2.2 How to Start GEM

If the microcomputer has not been prepared for GEM, read the Set-up Guide. If you have used GEM before, or have completed the procedures described in the Set-up Guide, follow whichever series of instructions below is appropriate. For a system with floppy discs, follow the first series (2.2.1); for a system with a hard disc, follow the second series (2.2.2).

2.2.1 Floppy Disc System

Turn on the machine and monitor, and ensure that the disc drive and mouse are connected.

If the disc drive operates immediately and the word TUBE appears in the top line of the message on the screen, insert the Boot disc into the first drive (A: or 0:) and close the drive door.

If the disc drive does not operate immediately and the word TUBE is not present, type

*CONFIGURE TUBE

and press the **[RETURN]** key, then press the **[CTRL]** and **[BREAK]** keys simultaneously. When the drive begins to operate, insert the Boot disc and close the drive door.

A message similar to

Boot strap leader

Loading DOS Plus..

reports that DOS is being loaded. When the prompt

A>

appears, remove the Boot disc and insert the Program disc in the first drive. Either press the red function key **[F0]** or type

GEM **[RETURN]**

(Close the door when the drive begins to operate.) This loads and runs the GEM software.

2.2.2 Hard Disc System

Turn on the machine, monitor and hard disc drive and ensure that the mouse is connected.

After a short time, the message

Boot strap leader...

may appear. If it does not, type

* CONFIGURE TUBE

and press the **[RETURN]** key, then press the **[CTRL]** and **[BREAK]** keys simultaneously. The Boot strap message will appear when the command has been successfully completed.

Press the **[RETURN]** key to load DOS plus, the operating system. When the operating system has been loaded, the prompt

C>

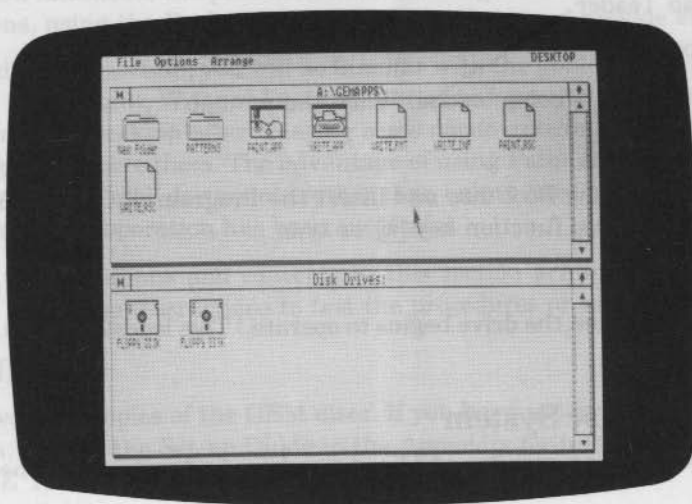
will appear. Either press the red function key **[F0]** or type

GEM **[RETURN]**

to load and run the GEM software.

2.3 The Desktop Screen

The image which appears on the screen when you first enter GEM is called the GEM DESKTOP. All administrative procedures – copying and moving documents, etc. – are carried out from the Desktop. The picture below illustrates the image which should appear when you first start GEM.



2.4 Using the Mouse

The principle means of communicating with GEM is by moving the mouse and CLICKING on items on the screen.

The mouse must be plugged into the User Port socket on the base of the microcomputer. Consult the Set-up Guide, 7.2, if the mouse is not connected. Place the mouse on a flat surface with the flex away from you and move it around. The rubber ball (visible from underneath the mouse) enables it to move freely. Moving the mouse causes a corresponding movement of an arrow – the POINTER – over the screen. If the pointer does not move, check that the mouse is properly connected.

The lefthand button on the front of the mouse is used for clicking, the means of selecting items. The clicking techniques are considered next.

2.5 Clicking Techniques

The concepts of icons, menus and using the pointer on the screen were briefly introduced in 1.3. In order to use the icons and menus, it is necessary to be familiar with the four different clicking techniques. These are referred to throughout this manual as

- click
- double-click
- shift-click and
- drag.

They are executed as follows – do not try them immediately.

To **CLICK** on an item, position the pointer over it and press the button on the mouse once.

To **DOUBLE-CLICK** on an item, position the pointer over it and press the button on the mouse twice in rapid succession.

To **SHIFT-CLICK** on an item, position the pointer over it and hold down the **SHIFT** key on the keyboard, or the righthand button on the mouse, while you click on the item using the lefthand button on the mouse.

To **DRAG** an icon, position the pointer over it and press and hold down the lefthand button on the mouse. Then move the mouse, keeping the button pressed down, until the outline of the icon moves to the position you want it to be in, then release the mouse button.

You may use a mouse you already have, or that supplied. If the mouse has three buttons, the centre button duplicates the function of the lefthand button.

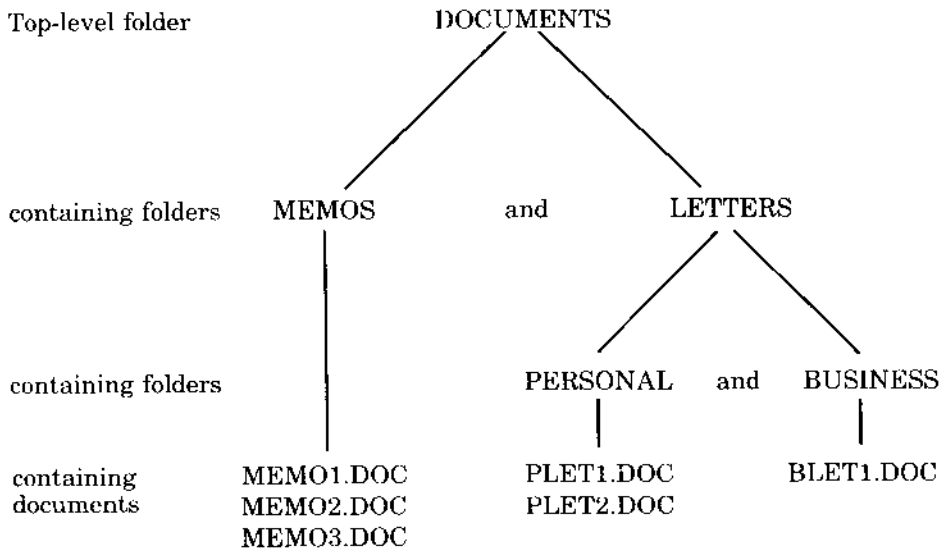
2.6 Folders and Documents

Folders and documents are part of the filing system provided by GEM Desktop. They mimic an ordinary office filing system.

GEM stores the text and paintings you create as **DOCUMENTS**. Each created item is a separate document, and has a different name. The name includes a suffix, **.DOC** or **.IMG**, indicating whether it is a text **DOC**ument or a **graphic IMA**ge created with Paint. GEM also creates additional documents with different suffixes for the use of the program. These will be considered later,

when they are relevant. They appear on the Desktop, but cannot be accessed and used like Paint and Write documents.

Documents are stored in FOLDERS. These are analogous to conventional folders; a folder is used to store documents, and does not itself have any text or graphics belonging to it – a folder without any documents holds no information. Folders may be stored one inside another to form a filing system. This allows documents to be kept in an order which reflects their contents, subject material, or purpose. For example, you might wish to store all memoranda together, and all letters together. You could subdivide the letters into personal and business correspondence. A suitable structure of documents would be:



The full name of a document includes the names of the folders in which it is stored, and also a letter indicating the disc drive in which the disc holding the folder is located. This is the **DIRECTORY PATH**, and is considered in detail in Section 5 (see 5.2).

A list of the contents of a folder is called a **DIRECTORY**. A directory may be displayed on the Desktop, or listed in an **ITEM SELECTOR** (described in 2.12) when you need to choose a document.

2.7 Windows

The part of the screen which is occupied by the picture – the Desktop, word-processing or painting area – is called the WINDOW. It is possible to alter the size of the window, and sometimes to view more than one window at a time, to alter the position of the window or to superimpose one window on another. Some commands cause an additional window to be superimposed over the drawing or writing window – these will be considered later.

The Desktop screen is divided into two windows. The upper window shows some of the folders and documents stored on one of the discs. The lower window shows the floppy and/or hard disc icons.

The Desktop windows share certain features with the other windows in GEM.

The MENU BAR is the strip along the top of the screen which displays the names of the menus: File, Arrange, Options and DESKTOP. The TITLE BAR reports the name of the folder which is currently open.

In the top righthand corner of each of the windows is a diamond shaped box. This is the FULL SIZE BOX; clicking in this box will alter the size of the window from half screen to full screen, or from full screen to half screen. Try clicking in the full size box of one of the windows. Click again to return both windows to the screen.

In the upper lefthand corner of each window is a 'butterfly' symbol. This is the CLOSE BOX; clicking in this box will close the folder and return the window which is one 'level' higher. On starting GEM, the upper window shows the contents of the GEMAPPS folder, displaying the applications icons. Click on the close box to close GEMAPPS; the window will be replaced by another window, displaying GEMAPPS as a folder. Clicking on the close box in the lower window will have no effect as the discs displayed are the top level of storage.

There is a vertical strip down the righthand side of each window. When you start using GEM, this strip will be clear, but when you use a document or directory which is too large to be displayed in its entirety, the clear area will occupy only part of the strip and any part above or below it will be shaded. The clear area is the SLIDER; the shaded areas are the SCROLL BARS. The position of the slider indicates the location within the whole directory or document of the part which is currently visible. When the beginning of the document or directory is on the screen, the slider is at the top of the strip. The size of the scroll bar beneath it indicates how much of the document or directory is not visible, as the relative sizes of the slider and scroll bars are directly proportional to the volume of the document or directory visible and not visible

at any time. To move to a different area of the document or directory, drag the slider up or down. Alternatively, click on the scroll bars or the arrows at their ends to move through the document by increments. Clicking on the scroll bars moves through the document more quickly than clicking on the arrows.

2.8 Icons

An ICON is a picture representing an item on the Desktop – a floppy or hard disc, folder, document or application.

The icons displayed in the lower window represent two floppy discs and a hard disc. The floppy discs are referred to as A and B; the letter indicates which drive the disc is in (A: or B:). The hard disc is referred to as C.

The icons displayed in the upper window show folders and documents. If you clicked on the close box, one of the folders displayed will be named "GEMAPPS"; it contains the GEM applications Write and Paint. When you have created some documents, the icons representing them will illustrate whether they are text or graphics documents.

Using just the pointer and icons it is possible to SELECT an item, to OPEN or use it, or to copy it.

An item is selected by clicking on its icon. Once you have selected it, you can do something with it – for example, choosing a command from a menu which will then operate on the selected icon. To DE-SELECT an item without using it, simply click on an empty part of the screen.

An icon is selected and opened by double-clicking on it, or by selecting it and then using the **Open** menu command, or by clicking on it and then using the **[RETURN]** key on the keyboard.

To move or copy the contents of a disc, folder or document, drag the appropriate icon to its new destination. This is primarily a Desktop technique, and will be considered in more detail later (5.4).

2.9 Opening an Application or Folder

To use an application or examine the contents of a folder it is necessary to OPEN it. Opening a folder replaces the window in which the folder appeared with one showing the contents of the folder. Opening an application loads and runs that application. Opening a disc displays the top-level folders held on that disc.

A disc, application or folder can be opened by double-clicking on the appropriate icon, or by selecting the icon and then clicking against the **Open** command in the File menu (see 2.10). Try opening GEMAPPS by double-clicking on its icon. The window is replaced by that displayed when you entered GEM, showing the contents of GEMAPPS. Now the icons include the GEM Paint folder – which shows a picture of a palette – and the GEM Write folder – which shows a picture of a typewriter. If you double-click on either of these, the application will be opened and will replace the Desktop. Click on the close box (the butterfly symbol in the upper lefthand corner) to close the folder again.

2.10 Menu Commands

The menus used by GEM are called DROP-DOWN menus because they drop down from a bar across the top of the screen (the MENU BAR). Moving the pointer into the menu bar and over the name of a menu causes that menu to be displayed. When a new menu is called up, the last one is removed from the screen. To remove a menu from the screen without selecting a command, click anywhere else on the screen.

To use one of the menu commands, click on the appropriate line of the menu. For example, click on the clock option in the DESKTOP menu (on the righthand side), and the clock accessory will appear on the Desktop. To remove the clock, click on its close box.

Some of the menu commands require that an icon or a group of icons is selected before the command can be used. These lines appear in faint type when no icons are selected, indicating that they cannot be used. If you click on one of these lines, the command will be ignored and the menu will disappear. To test this, display the File menu and click on the **Open** command. Now select the GEMAPPS icon and display the File menu again; this time, the **Open**

command is visible. If you click on **Open**, the initial window showing the contents of GEMAPPS will be restored.

The only menu commands which you will need to use at this stage are:

Open in the File menu

Exit to DOS in the File menu.

Exit to DOS leaves the GEM software suite and returns to DOS, the Operating System. Type **GEM** or press **[F0]** to re-enter GEM and restore the Desktop. (Type **NOTUBE** and press the **[RETURN]** key to return to the BBC Master Series, bypassing the Tube.)

You may wish to use the desk accessories; these are opened from the Desk menu, and are discussed in 2.13.

The other menu commands are concerned with Desktop procedures, and are discussed in Section 5.

2.11 Dialogues

Many of the menu commands in the GEM applications, and some other operations, require that you make a choice between two or more options. The options are offered in the form of a **DIALOGUE**. A dialogue is a rectangular box superimposed over the picture on the screen; it has a series of boxes, each displaying a possible choice, sometimes a line for text, and boxes labelled **OK** and **Cancel**. To make a selection, type any necessary text and click on the appropriate box or boxes.

The most simple form of dialogue offers only the **OK** and **Cancel** boxes, asking you to confirm a command or to abandon it. Other dialogues offer several choices, or allow you to set several options at once. The boxes showing the current settings are highlighted; to change the settings, click on the required options and then either click on **OK** or press the **[RETURN]** key on the keyboard. Pressing the **[RETURN]** key is equivalent to clicking on **OK** in any dialogue. To reject the new settings, click on **Cancel** and the original settings will be retained.

A second type of dialogue has a **TEXT FIELD** so that you can type in text (the name of a folder or document, for example).

To display a dialogue of each type follow these instructions:

- a. Click on the **Set Preferences** command in the Options menu; the following

dialogue is displayed:

SET PREFERENCES

Confirm Deletes:	Yes	No			
Confirm Copies:	Yes	No			
Double-Click Speed:	Slow	2	3	4	Fast
Sound Effects:	On	Off			
		OK			Cancel

The highlighted options are those currently set. Click on **Cancel**.

b. Double-click on the **New Folder** icon; the following dialogue is displayed:

NEW FOLDER

Name: | _____ . ____
OK **Cancel**

Type a name up to eight characters long (using the **DELETE** key if necessary), and press **RETURN** or click on **OK** to create the folder. Click on **Cancel** to abandon the command.

Sometimes GEM issues messages providing information. This occurs if you request something which is impossible, or sometimes if you make a mistake.

The message is a type of dialogue. It requires that you click on **OK** to confirm that you accept the message and its implications, or sometimes on **Cancel** to abandon an impossible command.

2.12 Item Selector

The ITEM SELECTOR is a box which appears superimposed over the window whenever you issue a command which requires a choice of folder or document to be made, or a name for a new document to be supplied.

The item selector is similar to a dialogue. It lists the names of documents and folders contained in the folder currently open. It has **OK** and **Cancel** boxes.

An example of an item selector is illustrated on page 15. This example offers different documents available within Paint. The name currently selected appears in the text field. To select an item, click on the appropriate line; the

name will be highlighted. To confirm your choice, click on the **OK** box. You can also select an item by double-clicking on it, or by typing its name in the text field (the letters will automatically appear in the line marked **Selection:**) and clicking on the **OK** box. Pressing the **[RETURN]** key has the same effect as clicking on the **OK** box.

The item selector has room to display only nine names, although it is possible to have many more documents than this within a folder. In such a case, only the first nine titles are displayed (they are arranged alphabetically). To select an item which is not displayed, use the slider and scroll bars to move through the list until the required name is visible, then click on it. Drag the slider up or down to display higher or lower sections of the list, or click on either the arrows or the scroll bars to move by increments through the list.

When you have created some documents and built up a directory path structure (explained in Section 5.2), you may want to select an item which is not listed in the item selector because it is not held in the folder which is currently open. In this case, move the pointer to the line showing the path name of the folder and click once, then type the directory path name and the title of the document, using the **[DELETE]** key if necessary. To clear the whole line, press the **[ESCAPE]** key. Alternatively, click on the close box of the item selector to move up the directory path until the relevant folder name is displayed. Click on this, and when the contents of this folder are listed, click on the appropriate folder or document name. Continue to move through the directory path until the document name is displayed, then select it in the usual way. The item selector only lists documents of the type indicated by the suffix in the directory path line. If the last part of the name is ***.DOC**, only **.DOC** documents in the open directory will be listed.

Clicking on the close box of the item selector shown on the next page would display the options

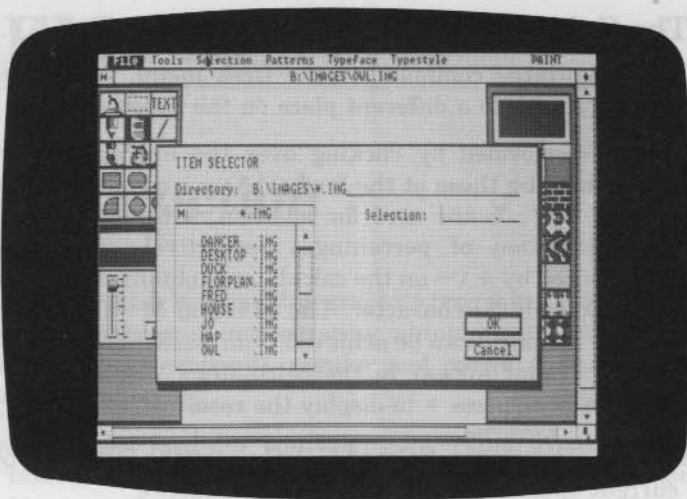
DOCUMENTS

IMAGES

Clicking on **DOCUMENTS** would list folders and any documents suitable for use with Paint available in the **DOCUMENTS** folder. If you had not yet created any more folders or any graphics documents with the suffix **.IMG** in **DOCUMENTS**, the only available folder would be

TUTORIAL

Clicking on **TUTORIAL** would display any documents with the suffix **.IMG** in that folder; as the folder does not contain any **.IMG** documents, the directory would be empty.



2.13 Desk Accessories

The DESKTOP menu includes the options

Calculator
Clock.

These are DESK ACCESSORIES; these examples are equivalent to the accessories you might have on a real desk, and behave in the same way. The other accessories supplied as standard and offered in this menu are **Snapshot** and the **Print Spooler**. These use documents, and will be considered later. (For details of the Snapshot, see 3.7.7; for details of the Print Spooler, see 4.6.7 or 6.6.4.) Additional accessories may be obtained and installed.

To make an accessory appear, click on the appropriate menu line. To remove an accessory, click on its close box. The accessories may be moved about the screen. To move an accessory, drag the title bar (the shaded bar along the top in which the name of the accessory appears) to the new position. To drag the title bar, move the pointer into the title bar, press down the mouse button and move the pointer. An outline rectangle moves with the pointer as a guide to the area the accessory will cover. Keep the button pressed until the outline is where you want it. When you release the mouse button, the accessory will appear at the new location.

2.13.1 The Calculator

Click on the **Calculator** command in the Desk menu. When the calculator appears, try dragging it to a different place on the Desktop.

Calculations are performed by clicking over the appropriate symbols and numbers, or by entering these at the keyboard, or a combination of both. The characters +, -, *, /, % are used for addition, subtraction, multiplication, division and calculation of percentages respectively. The 'change sign' operation represented by +\ - on the calculator is obtained from the keyboard by using the backslash (\) character. The **M+** and **M-** functions (add to or subtract from the memory) can be achieved from the keyboard by typing **M+** or **M-**. The numbers input appear in the calculator's 'display' area above the 'buttons'. Click on = or press = to display the result.

There are two 'Clear' buttons, **EC** and **C**. **EC** clears the last entry but does not abort the current operation. For example, the sequence

45 + 10 EC 15

is equivalent to

45 + 15.

C clears the display and terminates the current operation.

2.13.2 The Clock

The clock is a twelve-hour clock; **am** or **pm** is displayed to the right of the time.

Because the microcomputer has a 'real time' clock built into it, it should not be necessary to set the time on the clock. However, should you wish to set the time, the procedure is as follows: click on the clock symbol to the left of the display to enter the time-setting mode; click on the hours or minutes figure and then type in the number of hours or minutes as a two-digit number at the keyboard. Only two-digit numbers will be accepted (01 to 12 for the hours, 01 to 60 for the minutes). Click on **am/pm** to change its setting.

You can use Sections 3, 4 and 5 in any order. It may be best to turn first to either Section 3 or Section 4 to create some documents using Paint or Write.

3 GEM PAINT

3.1 Introduction

GEM Paint is a versatile and exciting graphics program. Using Paint, it is easy to create colourful images incorporating automatically generated patterns (which you can design yourself), regular and irregular shapes, and lines of different widths and styles.

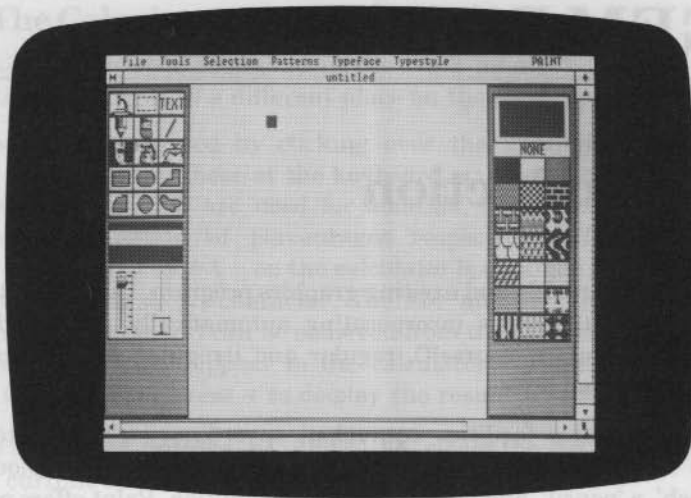
GEM Paint provides facilities equivalent to ordinary painting techniques. There are 'brushes' of varying thicknesses and shapes, different colour 'paints', an 'airbrush', a 'pencil', and an 'eraser'. But in addition, Paint offers much more than the conventional paintbox. Regular and irregular geometric shapes can be generated easily; parts of the painting can be moved or copied after they have been created; sections can be moved or copied onto and from other paintings; areas can be flooded with a colour or a regular pattern; a section can be magnified, allowing you to work on it in detail.

Paint is very easy to use. The simplest way in which to become familiar with its capabilities is to experiment freely. This section introduces Paint, but you will learn through experience and exploration how best to use it.

3.2 Selecting GEM Paint

Beginning from GEM Desktop, open Paint by double-clicking on its icon (called **PAINT.APP**) or by clicking once on the icon and selecting **Open** from the File menu. The Paint screen will be displayed; it is illustrated on the next page.

Documents created in Paint are automatically given the suffix **.IMG** to identify them as pictures. The icon used on the Desktop to illustrate Paint documents shows that these are pictures, making them readily recognisable.



3.3 The Paint Screen

The Paint screen is illustrated above. Like the Desktop and Write screens, it has a menu bar along the top and a title bar beneath this. Every time you create a new picture, the title bar reports that the painting is *untitled* until it is saved and given a name. When a picture which has previously been saved is recalled, its title appears, together with the directory pathname, indicating in which folder or series of folders it is stored (see 5.2).

A broad column down the lefthand side of the screen displays representations of options in Paint. The **TOOLS PALETTE** occupies the upper half of this, showing the fifteen tools available. Below this, the available colours are displayed in a strip called the **COLOUR PALETTE**. Beneath the colour palette are a scale and slider used to regulate the line width. The current line width is displayed and reported to the right of the slider.

The column on the righthand side of the screen displays the **PATTERN PALETTE**. The large rectangle at the top of this column shows the currently selected pattern. Beneath this are seven rows of three boxes, each displaying a different pattern. Shapes drawn or flood-filled are filled with the current pattern. The airbrush and paintbrush also use the current pattern.

The large blank area in the middle of the screen is the **PAINTING SURFACE**. Graphics may be drawn anywhere in this area.

As in Write and Desktop windows, the close box is in the upper lefthand corner; the full size box and the size box are in the top and bottom righthand corners respectively. In addition to the vertical scroll bars and slider common to other GEM windows, Paint has horizontal scroll bars and slider. All these are used to control the size and content of the window. Their operation is described in 3.7.1.

3.4 General Procedure

This section describes how to select and combine the various facilities of Paint. An operation is suggested which demonstrates the action of each selection procedure; follow the instructions and observe the results on the screen.

3.4.1 Default Parameters – Colour, Line Width, Pattern and Tool

When you enter Paint, you can start to draw immediately. Move the pointer onto the painting surface – it changes shape. Press the mouse button and drag. Paint draws a line along the path of the pointer using a style and pattern which are automatically selected by the program. These are known as the DEFAULT settings because they are used by default, that is, if no other line width, colour, pattern or tool is chosen in preference to them. At the start of each Paint session, the default tool, the paintbrush, is highlighted on the tools palette; the default pattern is a solid colour (the default colour), and the default line width is 1.

3.4.2 Selecting a Pattern

The default tool, the paintbrush, uses a pattern rather than a colour. At the start of Paint, the current pattern is a solid block of the default colour. To select a new pattern, move the pointer onto the required pattern and click once. The new pattern will be displayed in the CURRENT PATTERN box at the top of the pattern palette. Any geometric shapes you draw using the tools in the bottom two rows of the tools palette will be filled with this pattern. Using the tap to flood-fill will cause areas of the painting to be filled with this pattern, and the airbrush will also use this pattern.

It is possible to edit or re-design the patterns, and to store the new patterns for later use. This will be discussed later (3.6.4).

The NONE pattern allows you to have no current pattern. When this is selected, geometric shapes will not be filled, the paintbrush will erase graphics in its path, and the tap and airbrush will erase areas of the picture. These effects are considered later.

3.4.3 Selecting a Tool

Because the paintbrush uses the current pattern instead of a colour, and is unaffected by changes in the line width, it is necessary to select a different tool to observe the effects of altering colour and line width.

To select a different tool, move the pointer onto the required tool and click once. The newly selected tool will be highlighted. The tools in the bottom two rows of the tools palette draw filled geometric shapes. The shapes drawn are always filled with the currently selected pattern. The pencil, eraser and airbrush operate in the same way as a conventional pencil, eraser and airbrush. The line tool draws straight lines, the ABC icon allows text to be added to the picture, and the tap floods a space with the currently selected pattern. The microscope magnifies a section of the painting and the broken rectangle is used to select areas which can then be moved, copied, inverted, etc. The operation of each of the tools is described in Section 3.5.

3.4.4 Setting the Line Width

The scale and slider beneath the colour palette are used to select a thicker or thinner line. Move the pointer onto the indicator on the scale and drag it up or down to decrease or increase the line width. Alternatively, click in the square box to the right of the scale to increase the line width by increments of 2. Shift-click on the box to decrease the width by increments of 2. The thickest line (at the bottom of the scale) has a width value of 29; the line width is always increased or decreased in increments of 2. A line of the current width is displayed to the right of the slider, and a number representing the width is reported below this.

The line width set is used by the pencil, straight line and geometric shape tools. Change the line width and use the pencil to examine the effect.

3.4.5 Selecting a Colour

To select a different colour, move the pointer onto the required colour in the colour palette and click once. The current colour is used by the pencil and straight line tool, and for the outline of the shapes in the bottom two rows of the palette. Move the pointer back onto the painting surface and draw in the new colour using one of these tools.

3.5 The Tools Palette

This section describes the operation of each of the tools in the tools palette. The tools in the bottom two rows will be considered first.

3.5.1 Geometric Shapes

The tools in the bottom two rows draw regular and irregular geometric shapes filled with the current pattern. The outline is drawn in the current colour; the width of the outline is determined by the currently selected line width. To draw a shape without a visible outline, set the line width to 0.

The **RECTANGLE** tool at the start of the fourth row draws filled rectangles. Select the rectangle tool and position the pointer at the starting corner of the rectangle, then drag it to where you want the diagonally opposite corner to appear. As you drag across the screen, an outline of a rectangle moves with the pointer as a guide to the size and shape of the rectangle being drawn. Release the mouse button when the outline rectangle is the required size and shape. The rectangle is automatically filled with the current pattern.

The **ROUNDED RECTANGLE** operates in the same way as the **RECTANGLE**, except that it draws rectangles with rounded corners.

The **QUADRANT** at the beginning of the bottom row of tools draws quarters of a circle or ellipse filled with the current pattern. The size and shape of the quadrant are defined by dragging the pointer. An outline arc appears, constantly showing the current size and shape of the quadrant during dragging.

The **CIRCLE** draws circles or ellipses filled with the current pattern. To make a circle, the vertical and horizontal distances covered by the dragged pointer must be equal. If the pointer moves further across the screen than up or down it, a long horizontal ellipse will be drawn. Correspondingly, moving the pointer a greater vertical than horizontal distance will draw a taller ellipse. An outline of the shape being drawn appears as a guide.

The **POLYGON** at the end of the fourth row draws polygons by linking straight lines defined by a series of clicks. Select the polygon, move the cursor to the starting point of the first side of the polygon and click. Then click for each subsequent corner (or vertex) of the polygon. Paint displays a line continuously to indicate the current appearance of the polygon between clicks. To complete the polygon, double-click, and the last vertex will be connected automatically to the starting point of the first line, and the polygon filled with the current pattern. (If the pattern set is **NONE**, the polygon will not be closed and filled.)

The **CURVED SHAPE** at the end of the fifth row draws free-form shapes. Move the pointer to the starting point of the shape, press the mouse button and drag to define the outline. When you release the button, the final point of the drag will automatically be joined to the first point by a straight line, and the shape filled with the current pattern. If the **NONE** pattern is selected, the shape will remain open and unfilled. The size of the shape will be limited unless the **NONE** pattern is selected.

3.5.2 Painting Techniques

The tools in the second and third rows offer different painting techniques.

The **PENCIL** and **ERASER** operate in exactly the same way as their conventional counterparts. Select the pencil and draw some lines or shapes by dragging the pointer. Select the eraser and then drag the pointer across part of the painting surface. The painting beneath its path will be erased.

The **STRAIGHT LINE** tool at the end of the second row draws straight lines. Click on the starting point for the line, move the pointer and click on the end point of the line, or drag from the start to the finishing point. The lines are joined only if the pointer is not moved between the end of one line and the beginning of the next.

The **PAINTBRUSH**, **AIRBRUSH** and **TAP** all use the current pattern.

Several shapes and sizes of **PAINTBRUSH** are available. Double-click on the paintbrush to display the alternatives. The current brush is enclosed in a rectangle. Click on the brush you want. (To keep the same brush, click inside the rectangle.) There is also a menu command to display the paintbrush shapes (see 3.6.2).

The **AIRBRUSH** is similar to a conventional airbrush. As the pointer is dragged across the screen, a pattern of dots appears in its path. The colouring of the dots corresponds to an area of current pattern, but the density is not the same as if flood-fill was used, or a filled shape drawn. Covering the same area repeatedly will produce a more intense pattern, eventually giving full cover.

The **TAP** floods a closed area with the current pattern. A single click identifies the area to be filled. The pattern will flow through narrow gaps but will stop at the borders of any closed shapes (or the edge of the painting surface).

If the pattern is set to **NONE**, the tap erases blocks of pattern and the airbrush erases spots of pattern.

3.5.3 Text

The text tool is represented in the tools palette by **ABC**. After selecting the text tool, click on the painting surface to identify the starting place for the text. The

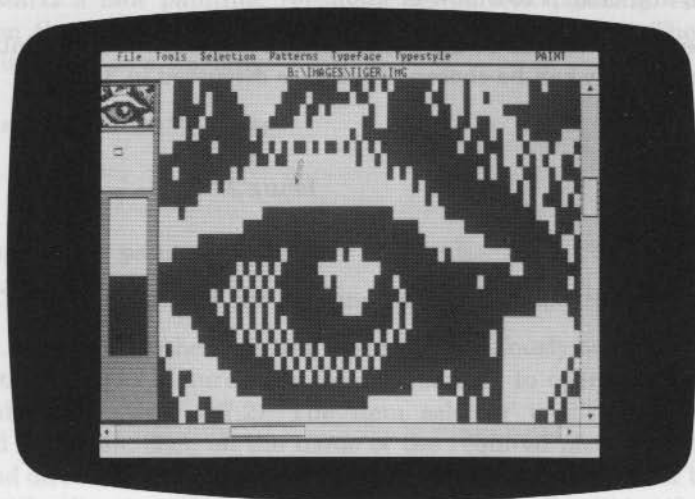
pointer changes to a vertical bar. Type the text you want using the keyboard in the usual way, and press the **RETURN** key at the end of the line. You can type as many lines as you like, and use the **RETURN** key to add blank lines. At the end of the text, press the **RETURN** key. You can move the cursor to a different position and resume typing text, or continue with other painting operations.

The font (the style and size of letters) is set using the Typeface and Typestyle menus discussed in Section 3.6.5 and 3.6.6.

3.5.4 The Microscope

The microscope at the beginning of the first row of tools magnifies a small area of the screen for detailed work. After selecting the microscope, move the pointer until it is over the area you want enlarged, and click once. A rectangular area under the pointer is magnified and fills the whole painting surface. In the upper left of the screen, two small windows appear. The upper one shows the magnified area at its normal size. The position of the small rectangle in the lower window indicates the location on the whole painting of the magnified area.

The magnified image on the painting surface consists of small blocks of colour. Each block is known as a PIXEL (– a PICTURE ELEMENT). To edit the painting, click on single pixels and they will change to the current colour. If a pixel is already displayed in the current colour, it will not change. The effect of the changes on the appearance of the area at full size is visible in the upper window.



To move the microscope around the picture, drag the rectangle in the lower window. The upper window displays the area under the microscope as it moves. When the mouse button is released, the new area appears on the painting surface. Alternatively, use the sliders to move around the painting. (See 3.7.1 for a reminder of the operation of the scroll bars and slider.)

To return to the full-size painting, click in the upper window.

3.5.5 The Selector

The rectangle drawn in a broken line in the first row of the Tools Palette is the **SELECTOR**. It is used to select an area of the painting which can then be edited using commands from some of the menus, moved or copied.

To select an area of the screen, click on the selector, and then define a rectangle by dragging the pointer from one corner to the diagonally opposite corner. A guiding rectangle is displayed, indicating the area currently selected during the drag.

When you release the button, the selected area is enclosed in a rectangle drawn in a broken line. The segments of the line alternately flash on and off, giving the effect of a 'blinking' line.

When the pointer is inside the selected area, it changes to a hand. To **COPY** the selected area, drag from anywhere inside the box to the place on the painting surface where you want the copy to appear. To **MOVE** the selected area, hold down the **CTRL** key on the keyboard while dragging the box. A copied area can be moved without holding down the **CTRL** key; move the pointer back into the copied area and drag it to a new position.

Several operations offered in the menus require an area of the painting to be selected before they can be chosen. These are discussed in 3.6.3.

3.6 Menu Commands

The illustration of the Paint screen at the start of this section shows the location of the different menus in the menu bar. This subsection briefly describes the commands available in each of the menus.

Commands which appear in faint letters on the screen are not currently available. In Paint, this is often because an area of the picture must be selected before the command can be used, but it may be for some other reason. For example, if the painting is new and therefore has no title, the **Save** command in the File menu is not available; when a painting already has a name, this command appears in normal type.

3.6.1 File

The File menu offers the following commands:

New
Open . . .
Close
Save
Save as . . .
Abandon
To Output . . .
Quit

New – starts a new painting, replacing the current painting. Any picture already on the screen will be lost unless you first **SAVE** it. The following dialogue is issued as a warning:

Abandon edited image? **Yes**
 No
 Cancel

Yes – deletes the painting.

No and **Cancel** – return to the painting session, aborting the **New** command.

Open . . . – opens another painting which has previously been saved. This can be used to display a picture on a clear screen, or to open a painting in an additional window (see 3.7.2). The item selector is displayed when this command is chosen; click on the name of the required picture, or type in its name (and directory path name if necessary). You can use the slider to move up and down the directory if more documents are held in the folder than there is room to list. Use the close box to move through the directory path. (An account of pathnames and directories is given in GEM Desktop, 5.2.)

Close – closes the current painting. The **Abandon edited image?** dialogue is issued asking you to confirm the action.

Yes – abandons the painting without saving the changes.

No – saves the painting under the same name, preserving any changes made to it in the session.

Cancel – returns to the painting session.

Save – stores the changed picture under its original name, replacing the previous saved version. The painting remains on the screen and the session can continue.

It is advisable to save the image intermittently during a session. If a recent version has been saved, any mistakes you make, or a power or computer failure, will not necessitate re-creating the whole painting.

Save as . . . – stores the picture under the name you supply when the item selector appears. This can be used to save a second version of a picture that already has a name without overwriting the original version. If a document with the same name already exists, a dialogue offers you the opportunity to confirm or cancel the command before the original document is overwritten.

Abandon – removes the current painting without saving it. If the painting was untitled, the painting surface is left blank; if the picture has been previously saved, that version of the painting is restored to the screen. As a safety precaution, the **Abandon edited image?** dialogue is displayed, allowing you to confirm or cancel the **Abandon** command.

Yes – abandons the changes to the painting, restoring the original state of the painting, or clearing the painting surface.

No and **Cancel** – return to the painting session.

To Output . . . – enters the Output system allowing you to send an image of the picture to the screen or printer. If the current version of the painting has not been saved, the **Abandon edited image?** dialogue is displayed, as entering the Output system removes the painting from the screen.

Yes – enters the Output system.

No – displays the item selector so that the painting may be saved.

Cancel – returns to the painting session.

Details of the Output system are given in the Output Guide, Section 6 of this manual.

Quit – returns to the Desktop. The **Abandon edited image?** dialogue is displayed if the painting has not been saved.

3.6.2 Tools

The Tools menu offers the following commands:

Keyboard equivalent

Undo

[ESCAPE]

Grid On/Off

Transparent On/Off

Brush Shape ...

View Picture ...

Size Picture ...

Undo – cancels the last operation, with some exceptions. **Undo** cannot be cancelled itself; text cannot be cancelled after the **[RETURN]** key has been pressed; no more than one instance of any operation is cancelled – that is, if you have drawn three rectangles, **Undo** cancels only the last one.

Pressing the **[ESCAPE]** key has the same effect as **Undo**.

Grid On/Off – turns on or off Paint's invisible grid. The invisible grid is made up of points approximately a quarter of an inch apart. When the grid is turned on, some graphics operations 'snap' to the grid point nearest to any position supplied. This helps to align parts of the painting more closely than is possible judging positions by eye. When the grid is turned off, the exact position under the pointer is taken as the starting point for the graphics produced.

Transparent On/Off – turns on or off the transparency of colour blocks. When transparent is on, any pattern or colour behind another block is partially visible. When transparent is off, all blocks are completely opaque. Changing the transparency setting does not affect the appearance of the picture already on the screen.

Brush Shape ... – displays the available brush shapes, a range of sizes and shapes. The current brush is enclosed in a rectangle. To select a different brush, click on it; this brush shape will be used whenever the paintbrush is selected.

The brush shapes are also displayed if you double-click on the paintbrush in the tools palette.

View Picture ... – superimposes a small window showing the whole painting. Inside the superimposed window, a rectangle indicates the area of the painting which is currently displayed on the painting surface. To display a different area of the painting, drag the rectangle to cover the required area. When you release the button, the newly selected area will be displayed.

Size Picture ... – displays a dialogue offering different picture sizes: full, half, or quarter size, or as much as will fill the screen. The command deletes the

picture from first the bottom and then the right. The reduction cannot be reversed; if the picture is not already saved, the full picture will be permanently lost.

3.6.3 Selection

The Selection menu offers the following commands:

Clear

Complement

Flip Horizontal

Flip Vertical

All these commands require that an area of the painting surface is selected (see 3.5.5).

Clear – clears all graphics from the selected area.

Complement – reverses the colours in the selected area. If transparency is set ON, the selected area will consequently appear black.

Flip Horizontal – turns the graphics in the selected area around horizontally.

Flip Vertical – turns the graphics in the selected area around vertically (turns the image over).

3.6.4 Patterns

The Patterns menu offers the following commands:

Hide/Show Patterns

Make Pattern

Edit Pattern . . .

Save Patterns . . .

Load Patterns . . .

Hide/Show Patterns – hides or shows the pattern palette. By default, the pattern palette is shown, and the menu then displays the **Hide Patterns** option. If this command is selected, the pattern palette is hidden, and the menu command displayed is the **Show Patterns** option. With the pattern palette hidden, you can draw over this area, but not select patterns.

Make Pattern – creates a new pattern from an area of the painting and adds it to the pattern palette, replacing an existing pattern.

Click on the pattern in the palette which is to be replaced, making this the current pattern, then click on the selector. Paint uses an area 16 pixels square for the new pattern; identify the area to be used by clicking over the position for the top lefthand corner of the square. The selected area will be enclosed in a

'blinking' rectangle. Choose the **Make Pattern** command, and a pattern made by repeating this area will appear in the current pattern box, replacing the previous current pattern, and in the small box of the pattern palette originally occupied by the other pattern.

The new pattern will be lost at the end of the Paint session unless you save it using the **Save Patterns . . .** command.

Edit Pattern . . . – allows a pattern in the pattern palette to be edited. Click on the pattern to be edited, making it current. When you select the **Edit Pattern** command, a window will appear superimposed on the picture showing an area of the current pattern and a blank area. Move the pointer over the blank area and observe the changes to the pattern area. The blank area corresponds to a pattern block; the pattern is made up by repeating this block.

The available colours are displayed in a strip in the window; click on a colour to make it current. When the background colour is in use, the effects of moving the pointer are not visible in the drawing area, but the results of editing are continuously displayed in the pattern area. When the pattern is satisfactory, click on the **OK** box. Click on **Cancel** to return to the original pattern and remove the editing window.

Double-clicking on a pattern has the same effect as choosing the **Edit Pattern . . .** command.

An edited pattern can be saved for later use by the **Save Patterns . . .** command.

Save Patterns . . . – saves the current pattern palette on disc so that it can be recalled later. The item selector box appears; supply a name for the pattern file, which must end with the suffix **.PAT** (e.g. **FRED1.PAT**). The patterns can be recalled with the **Load Patterns . . .** command.

The pattern palette used at the start of Paint is called **MONO.PAT**. To replace this with a different set of patterns, first save **MONO.PAT** under a different name and then save the new pattern as **MONO.PAT**. (This can be achieved most easily from the Desktop; see 5.5.1.)

Load Patterns . . . – recalls a pattern palette saved earlier. When the item selector appears, click on the name of a saved pattern document (with the suffix **.PAT**) or type the name (and directory path name if necessary) in the text field.

3.6.5 Typeface

The Typeface menu offers the typefaces and point sizes available for text. The currently selected style and size are marked.

system font

Swiss

8 point

10 point

14 point

16 point

18 point

20 point

28 point

36 point

The higher the number of the point size, the larger the letters appear on the screen. Not all sizes are available in each style.

Always press the **RETURN** key after entering text; if you select a new typeface size or style after adding text and without first pressing the **RETURN** key, the program will attempt to overwrite the last piece of text in the new size or style and may produce messy results.

3.6.6 Typestyle

The Typestyle menu offers the typefaces and justification modes available for text. The currently selected style and alignment are marked. Changing the options does not change the appearance of text already on the picture, except that the last piece of text added will change if you have not pressed **RETURN** and have not carried out any other operation since typing in the text. Similarly, the colour of the last piece of text will change if you select a different colour after typing in the text and before pressing **RETURN** or carrying out another operation.

Normal

Bold

Italic

Underline

Left Justify

Center

Right Justify

Normal – unsets the selection of special features; text typed in will appear in normal typeface in the size and style selected from the Typeface menu.

Bold – causes text input to appear in **bold** type.

Italic – causes text input to appear in *italic* type.

Underline – underlines the text input.

Left Justify – aligns text so that each line begins at the same position on the left (left-justification):

These words are left-justified; the first letter of the second line is directly beneath the first letter of the first line.

Center – aligns the text so that the centre of each line is at the same position (centre-justification):

These words are centre-justified; they are aligned about the centre of each line, although the lines are of different lengths.

Right Justify – aligns text so that each line ends at the same position on the right (right-justification):

These words are right-justified; all the lines end at the same righthand position, although they begin at different positions on the left.

3.6.7 PAINT

The PAINT menu offers information about Paint, and the desk accessories:

Paint Info . . .

Snapshot

Calculator

Clock

Print Spooler

Paint Info . . . – reports information on GEM Paint. This is not all relevant to the Acorn version of Paint.

Snapshot – takes a SNAPSHOT of the painting and saves it on disc. A window is superimposed on the painting surface showing a camera and a question mark. Click on the question mark to see instructions on how to use the Snapshot accessory. Click on the camera to take a snapshot. The item selector appears for you to supply a name for the saved picture; this must have the suffix .IMG (e.g. CATS.IMG). When the item selector disappears, drag the cursor to define the rectangular area which will form the snapshot. The snapshot is taken when the button is released. The camera window reappears so that you can take more snapshots. To close the accessory, click on its close box.

Calculator – superimposes the calculator over the window. Instructions on using the calculator are given in 2.13.1.

Clock – superimposes the clock on the window. Instructions on using the clock are given in 2.13.2.

Print Spooler – displays the print spooler list, allowing document names to be added to or deleted from the list for printing. Only text documents can be sent to the print spooler. Instructions on using the print spooler are given in 4.6.7.

3.7 Windows

3.7.1 Size and Position of the Window

The size of the Paint screen can be altered using the size box and the full size box. The size box is the solid rectangle in the bottom righthand corner. To reduce the size of the window, position the pointer over the rectangle and then drag in towards the centre of the screen until the pointer reaches the new position for the bottom righthand corner of the window. To enlarge the window, drag the size box back out towards the bottom righthand corner of the screen. Click on the diamond shaped full size box symbol in the top righthand corner of the window to return the window to its full screen size, or to its most recent reduced size. Click repeatedly in the size box to reduce the size by a small increment.

When a reduced size window is on the screen, only part of the picture may be visible. To view a part of the picture which is not contained in the window, use the scroll bars and sliders. These are situated along the bottom and down the righthand side of the window. The slider is the clear area in the middle of the strip. To move to another area of the screen, drag the slider in the appropriate direction or click on one of the arrows at the ends of the scroll bars to move by increments. For example, to move down the picture, drag the vertical slider downwards or click on the arrow at the bottom of the vertical scroll bar. To move across the picture to the right, drag the horizontal slider to the left, or click on the arrow at the left of the horizontal scroll bar. When you release the button, the newly selected area of the painting will appear. If the slider is at one end of the strip, you have reached the edge of the picture. If it occupies the whole strip, the entire picture is visible.

To move a window, drag the title bar to the new position.

3.7.2 Using an Additional Window

It is possible to display and use two paintings at once. To open another painting, select the **Open . . .** command from the File menu (see Section 3.6.1) and choose another painting. It will probably be necessary to reposition one or both windows and alter their sizes so that both are visible at the same time. Sections can be copied or moved from one window to the other.

Sections are moved or copied between windows in the same way as within a single window. The area is selected using the selector and dragged to a new position. If the **[CTRL]** key is held down, the area is moved; if not, it is copied.

One window is always ACTIVE; this is displayed over the other painting and is the one you can work on. To make a window active, click anywhere inside it.

When two windows are displayed, the title bar of the active window is highlighted.

4 GEM WRITE

4.1 Introduction

GEM Write is a versatile word-processing program which is very easy to use. Unlike many word-processing systems, it does not require you to remember sequences of combined keystrokes to invoke the various operations available. Instead, all the operations are displayed on the drop-down menus and are selected by clicking. However, if you prefer to use keystrokes, many of the keystrokes used in WordStar and Volkswriter are recognised by Write (see 4.8).

The most innovative feature of GEM Write is its link with GEM Paint, enabling graphics to be added to the text. A picture drawn with Paint can easily be inserted at any point into a document written with Write. This makes it possible to create impressive and attractive illustrated documents very simply.

A tutorial in three parts is supplied on the GEM discs. This introduces and explains the facilities available within Write. This manual provides a backup to the tutorial, and can be used for reference, but you should use the tutorial to learn how to use Write.

4.2 Starting GEM Write

If you are using floppy discs, insert the Data disc into the second disc drive; close the door when the light comes on after selecting Write.

Beginning from the GEM Desktop, open Write by double-clicking on its icon (**WRITE.APP**, illustrated with a typewriter), or by clicking once on it and then selecting **Open** from the File menu. The Write screen will appear. This is shown on the next page.

Documents created in Write are automatically given the suffix **.DOC** to identify them as text documents. The icon used on the Desktop to illustrate a Write document shows 'writing' on a page, identifying it as a text document.

The first time you use GEM Write, the following dialogue will appear:

WELCOME TO GEM WRITE!

Please enter the following so that GEM Write can be personalized for your use.

My name is: _____

My system has

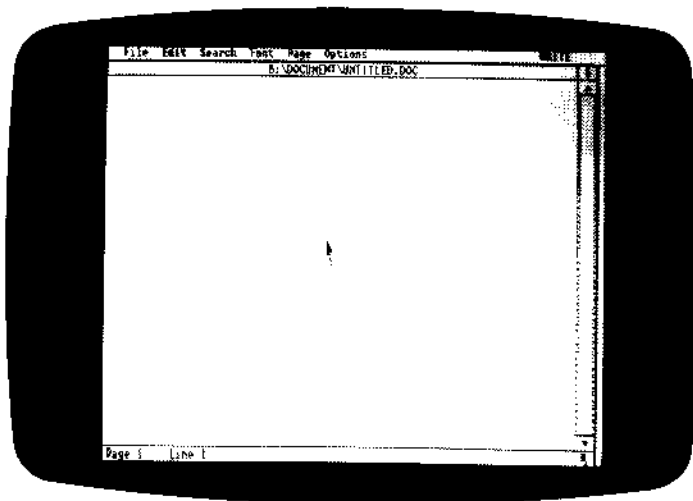
Floppy Disks:	1	2
Hard Disk	Yes	No

OK

Supply the information required and click on **OK** to start Write.

4.3 The Write Screen

The Write screen is illustrated below. Like the Desktop and Paint windows, it has a menu bar along the top and a title bar beneath this. Every time you create a new document, the title bar shows that the document is *Untitled* until it is saved and given a name. When a document which has previously been saved is recalled, its name, including the directory path name, appears in the title bar. The directory path name indicates where the document is stored (see 5.2).



A slider and scroll bars down the righthand side of the screen allow you to move up and down through the document. When you start a new document, the slider occupies the whole of the strip, indicating that all the document is displayed on the screen.

The symbol in the lower righthand corner is the size box. Drag the size box to modify the size of the window, or click on it to reduce the size by increments. Click on the full size box in the upper righthand corner to restore the window to full size. If you click on the full size box when the window is at full size, it will return to its most recent reduced size.

The CURSOR is the flashing bar which is initially located in the top lefthand corner of the writing area. This indicates the position at which text or modifications to the text will appear. It can be moved around the screen to insert, move, copy, edit or delete text.

A bar along the bottom of the window, the STATUS BAR, reports the current location of the cursor expressed as the page number and the number of the line on that page. Any messages issued by the Write program are displayed in this line.

The cursor is at the top of the document when you create a new document. You can begin to type immediately.

4.4 Using the Tutorial

The Write tutorial is divided into three sections. The three parts are stored on the Data disc, and have the titles TUTOR1.DOC, TUTOR2.DOC and TUTOR3.DOC. The tutorial documents are held in a folder called TUTORIAL.

To load the first part of the tutorial, move the pointer over the name of the File menu so that this menu drops down, select the **Open . . .** command and, when the item selector appears, click on the line offering **TUTORIAL**. The diamond symbol to the left of the line indicates that this is the name of a folder. The contents of the Tutorial folder are listed in the item selector; click on **TUTOR1.DOC** to display the first tutorial document.

If at any point you want to leave the tutorial, whether to use Write on your own, or to use another application, or to finish the GEM session, select the **Quit** command from the File menu. If you have altered the document, a dialogue appears warning that the document has not been saved; **DO NOT SAVE THE TUTORIALS**. The tutorials are already preserved on disc, and saving them

after editing them will destroy the original versions. Click on **OK** to close the tutorial document and return to the Desktop.

4.5 Basic Techniques

4.5.1 Moving the Cursor

Text always appears at the position of the cursor, thus it is obviously necessary to be able to move the cursor around the document in order to edit the text. Most simply, if you make a mistake when typing in text, press the **DELETE** key (next to the **SHIFT** key on the right). This deletes the last character typed and moves the cursor back one character. Holding down the **DELETE** key deletes characters rapidly as long as you hold it down. Very frequently, though, you will need to move the cursor to a different part of the document.

To move the cursor to a part of the document which is visible on the screen, move the pointer to the appropriate position, and click once. The cursor jumps to the position of the pointer. Use the scroll bar to move up or down through the document to go to parts which are not immediately visible on the screen, then position the pointer and click as before.

The arrow keys above the **RETURN** key move the cursor one character to the left, right, up or down.

Several key combinations move the cursor automatically to positions in the document which may be useful. The following combinations use the arrow keys:

- | | |
|---|----------------------------------|
| Hold down SHIFT and press ↑ | moves up half a screen |
| Hold down SHIFT and press ↓ | moves down half a screen |
| Hold down CTRL and press ↑ | moves to line 1 of the last page |
| Hold down CTRL and press ↓ | moves to line 1 of the next page |

The keys in the following instructions are the numbers on the numeric keypad. Each key has a name; the number corresponding to the key name is given in brackets after the name. If at first the key does not perform the function, and numbers are inserted into the text, press the **SHIFT LOCK** key. (The shift lock light should be off.)

Press HOME	(7)	twice		cursor moves to upper left of screen
Press HOME	(7)	three times		page 1, line 1
Press HOME	(7)	then END	(1)	last page, end of last line
Press HOME	(7)	then UP ARROW	(8)	top of screen, same column
Press HOME	(7)	then DOWN ARROW	(2)	bottom of screen, same column
Press HOME	(7)	then LEFT ARROW	(4)	beginning of line
Press HOME	(7)	then RIGHT ARROW	(6)	end of line
Press HOME	(7)	then PAGE UP	(9)	up one screen
Press HOME	(7)	then PAGE DOWN	(3)	down one screen
Press END	(1)			lower left of screen.

4.5.2 Selecting Text

Many commands offered in Write menus require that a portion of the text is selected. If no text is selected, these commands appear only in faint letters and cannot be chosen.

There are three methods of selecting text:

Move the pointer to the beginning of the passage to be selected and drag to the end. Releasing the button marks the end of the selected passage. As you drag, the selected text is highlighted; the selected passage remains highlighted after you release the button.

OR

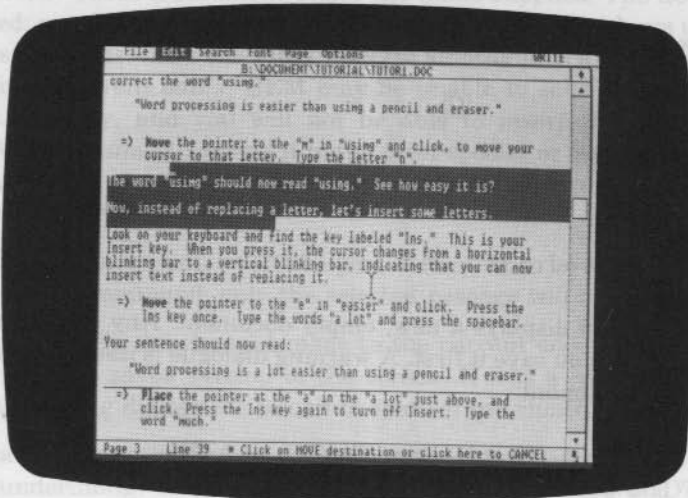
Using the Function keys – these are the red keys along the top of the keyboard numbered **F10** to **F19**. Move the cursor to the beginning of the passage to be selected and press the function key **F15**; all the text after the cursor becomes highlighted. Use the arrow keys to move the cursor to the end of the passage to be selected and press **F16**; the highlighting disappears from the text after the cursor.

OR

Move the pointer to the beginning of the passage to be selected, and shift-click; all the text after the cursor becomes highlighted. Move the pointer to the end of the passage to be selected and shift-click again; the highlighting disappears from the text after the pointer.

The first and second of these options are most useful for selecting passages visible on a single screen. The first can be modified to select entire lines; move the pointer into the lefthand margin and move down to indicate which lines are to be selected. To select one line, click in the margin against the required line.

The third method is most useful for selecting text which covers two or more screens. The second method can also be used to select text over two or more screens. Move the cursor to the start of the text to be selected, press **[F5]**, then display the Search menu and click on the **Go To...** command (see 4.6.3). Supply the destination page or line number and click on **OK**. When the page appears, use the arrow keys to move the cursor to the end of the selected passage, and press **[F6]**.



4.6 Menu Commands

Many of the commands offered in the menus can also be obtained from the keyboard. The combination of keystrokes required to invoke a menu command is indicated at the end of the menu line. Where the function key name is preceded by an arrow in the menu line, press the **[SHIFT]** key down at the same time as the function key. Where it is preceded by a diamond symbol, press the **[COPY]** key at the same time as the function key. Where it is preceded by the symbol **^**, press the **[CTRL]** key at the same time as the function key.

Using the keystroke combinations is exactly equivalent to selecting the corresponding menu commands. For example, **[COPY]** and **[F2]** pressed together are equivalent to selecting the **Insert Text...** command: the dialogue is displayed as when the menu is used. (**Insert Text...** is in the File menu; see 4.6.1.)

In the following descriptions of the menu commands, the keystroke alternatives are given to the right of the menu commands.

4.6.1 File

The File menu offers the following commands:

	Keyboard equivalent
New	<input type="checkbox"/> COPY <input type="checkbox"/> f0
Open ...	
Insert Text ...	<input type="checkbox"/> COPY <input type="checkbox"/> f2
Insert Graphics ...	
Save	<input type="checkbox"/> f2
Save As ...	
Abandon	
Print Draft To Output	<input type="checkbox"/> COPY <input type="checkbox"/> f1
Quit	

New – begins and displays a new, empty document. Any current document will be lost unless you save it first. A warning dialogue is issued to confirm loss of the current document:

You have not **SAVED** the file you were editing. Changes made will be lost if you **OPEN** or start a **NEW** file.

OK
Cancel

Open ... – opens a previously saved document. The item selector is displayed when this command is selected. Click against the name of the document required, or type in the name, including the directory path name, if necessary; use the arrow and **DELETE** keys to move to and edit the directory path name. Use the slider to move through the window if the folder contains more documents than there is room to list. Use the close box to move through the directory path; an account of pathnames and directories is given in 5.2.

Insert Text ... – inserts a text document into the current document at the position of the cursor. The item selector is displayed; click against the document required, moving through the window or directory path as necessary. The document selected must have the suffix **.DOC**.

Insert Graphics ... – inserts a graphics document into the current document at the position of the cursor. The document selected must be a **GEM** graphics document with the suffix **.IMG**. The item selector appears when this command is issued. Click on its close box to move up through the directory path until the folders **DOCUMENTS** and **IMAGES** are offered; click on **IMAGES** to

display a list of .IMG documents and select one.

The picture will either appear in the text, or shading and its title will indicate the area to be occupied by the picture. This depends upon the setting of the **Turn Graphics On/Off** command (4.6.5). The picture is printed when the document is printed, whether or not the graphics are set on.

Save – saves the current document under the same name, overwriting the previous version. If the document is new, this command is not available.

Save As . . . – saves a document under the name supplied. The item selector is displayed; supply a name for the document. The name may have up to eight characters, and must have the suffix .DOC to identify it as a text document. (If you give it a different suffix, GEM may be unable to save the format of the document properly, and you will not be able to insert the document into another Write document, or send it to the print spooler or output list.) You can use the **Save As . . .** command to save a second version of a document without overwriting the original version.

To save part of a document, select the part of the text to be saved and then use the **Save As . . .** command; only the selected passage will be saved.

Abandon – aborts the changes made to the current document and restores the most recently saved version to the screen. If it is a new document, it is deleted. A warning dialogue is issued to confirm the choice.

Print Draft – prints a draft of the document without special text attributes (such as underlining) or pictures, but with HEADERS and FOOTERS (see 4.7.3). The document is printed from the position of the cursor to the end.

To Output – enters the Output system and creates an output file for the current document. The following dialogue is issued:

```
Create .OUT file and start OUTPUT      Start
      . . . and stay in WRITE          Stay
                                       Cancel
```

Start – leaves Write, creates an output file and adds it to the Output list, and enters the output system.

Stay – creates an output file and adds it to the Output list, but stays in Write.

Cancel – remains in Write.

The Output system is described in Section 6 of this manual.

Quit – returns to the Desktop. A warning dialogue is issued to confirm exit from Write without saving the current document, as this will be lost.

4.6.2 Edit

The Edit menu offers the following commands:

	Keyboard equivalent
Insert Line	COPY F3
Center Line	COPY F9
Delete Line	CTRL F4
Move	COPY F5
Copy	COPY F6
Delete	COPY F8

The last three of these commands operate on selected text; if no text is selected, the commands will not be available.

Insert Line – inserts a blank line at the position of the cursor, moving down any text previously on that line.

Center Line – centres the line on which the cursor is positioned between the set margins.

Delete Line – deletes the line on which the cursor is positioned, moving the text below that line upwards.

Move – moves the selected text, adjusting the position of the other text to accommodate it. The pointer changes shape to a vertical bar (called an I-BEAM) and a message appears in the status line:

* Click on MOVE destination or click here to CANCEL

Move the I-beam to the new position of the text, press down the mouse button and the I-beam changes to the INSERT CURSOR. Move this to the final position and release the button; the text moves to the new position. If the first line of a picture block is included in the selected text, the whole picture is moved.

Copy – copies the selected text, adjusting the position of the other text to accommodate it if necessary. As with Move, the pointer changes to an I-beam and then the insert cursor appears when the mouse button is pressed down. The message

* Click on COPY destination or click here to CANCEL

appears in the status line. If the first line of a picture block is included in the selected text, the whole picture is copied.

Delete – deletes the selected text and moves up the text below it.

4.6.3 Search

The Search menu offers the following commands:

Keyboard equivalent

Find ...

Replace ...

Find Next

F7

Replace Next

COPY F7

Go To ...

CTRL F7

Find ... – finds the first occurrence of a sequence of characters in the document. A dialogue appears; type in the string of characters to be sought and click on **OK**. (A string is any sequence of letters, numbers, spaces and punctuation marks.) The cursor moves to the next occurrence of the string in the text. Select the **Find Next** command to move the cursor to the following incidence of the string.

Only occurrences of the string which match exactly the sequence supplied to **Find ...** will be identified; take care to use upper- and lower-case as appropriate. To find occurrences both with and without an initial capital, omit the first letter. For example, to find both 'Typing' and 'typing', supply **yping** as the string.

Replace ... – replaces one string of characters with another. The following dialogue appears:

Find: _____
Replace with: _____
Replace all? **Yes** **No** (Press **f0** to stop)
 OK **Cancel**

Supply the first string, use the mouse, arrow keys or **TAB** key to move to the second line and supply the string which is to replace the first. Then click on **Yes** to replace all occurrences of the first string with the second string, or on **No** to move from one incidence of the string to the next, optionally replacing each. The default is **No**. Click on **OK** to begin the operation, or on **Cancel** to cancel it.

Unless you clicked on **Yes**, the cursor will move to the next occurrence of the first string. Select the **Replace Next** command to replace it, or the **Find Next** command to leave it unchanged and move to the next occurrence. You can interrupt the search to edit the text at any time. The replacement string will always appear in the same type style as that it replaces.

To stop replacement of all occurrences of a string once begun, press the **f0** key.

Find Next – moves the cursor to the next occurrence of a string supplied to a **Find ...** or **Replace ...** command.

Replace Next – replaces the character string at the position of the cursor with the string supplied to the **Replace ...** command. Use **Replace Next** without using **Find Next** to find and replace the next occurrence of the string in a single move.

Go To ... – moves the cursor to the page and line specified. When a dialogue appears, supply a page number, or a line number if pagination has been set OFF with the **Format** command in the Page menu (see 4.6.5).

4.6.4 Font

The Font menu offers the different type styles:

Keyboard equivalent

Normal

Bold

Italic

Underline

SHIFT F7

SHIFT F0

SHIFT F9

All these operate on selected text; if no text is selected, the commands are not available. The text remains selected after a change in style.

Normal – returns the selected text to a normal type face. This has no effect if the selected text is already in normal type.

Bold – changes the selected text to **bold** type.

Italic – changes the selected text to *italic* type.

Underline – underlines the selected text.

4.6.5 Page

The Page menu offers the following commands:

Keyboard equivalent

Turn Graphics Off/On

Turn Auto-Reformat On/Off

Turn Insert Mode On/Off

Show Ruler

Set Tabs & Margins ...

Format ...

F9

CTRL F1

Turn Graphics Off/On – controls whether pictures are displayed or replaced by shading. When graphics are set ON, the menu offers **Turn Graphics Off**, and vice versa. Clicking on the command changes the setting, and the menu then displays the other option.

When graphics are set OFF, the name of the picture precedes the lines reserved for it. You cannot write in or alter these lines. With graphics set off, the screen is redrawn more quickly than with graphics on.

Turn Auto-Reformat On/Off – controls whether or not text is automatically re-aligned between the margins after insertions. When auto-reformatting is set ON, text is re-aligned at the next movement of the mouse, or click on the text. Clicking on the command changes the setting, and the menu then displays the other option. When auto-reformatting is set OFF, text is not re-aligned automatically. Each paragraph can be reformatted by positioning the cursor at the start of the paragraph and pressing the **F8** key. Text will be reformatted up to the next ¶ character. Press **CTRL** and **F3** to make the paragraph markers (¶ characters) visible; press it again to hide them.

Turn Insert Mode On/Off – controls whether text typed overwrites existing text or is inserted in front of it. When insert mode is set ON, the menu offers **Turn Insert Mode Off**, and vice versa. Clicking on the command changes the setting, and the menu then displays the other option.

With insert mode set ON, the cursor appears as a vertical bar, and text typed is inserted immediately after the cursor.

Show Ruler – displays the RULER marked with the tab positions and margins. The ruler is graduated, each position corresponding to a character in a text line. The diamond symbols mark TAB positions, the right angle bracket (>) marks the left margin, and the left angle bracket marks the right margin (<). The left margin is the position at which the text starts, the right margin marks the position at which the text line finishes. The TABS allow the text to be aligned in columns easily. Pressing the **TAB** key on the keyboard causes the cursor to jump to the next tab position. For example, if a tab is set beneath the figure '1' on the ruler (corresponding to the tenth character in the line) and the **TAB** key is pressed when the cursor is at the start of a line, the cursor will jump to the tenth character position.

The column in which the cursor is currently positioned is indicated on the ruler by a solid rectangle. If the righthand margin indicator is not visible, move the cursor to the end of the line to make it visible.

When the ruler is hidden, the command reads **Show Ruler**; when the ruler is displayed, the command reads **Hide Ruler**.

Whenever the ruler is displayed, tabs and margins can be set. When the pointer moves onto the ruler it changes to a hand. Tabs and margins are set in the

same way as when using the **Set Tabs and Margins . . .** command (below).

Set Tabs and Margins . . . – allows tabs and margins to be set. The pointer changes to a hand, and a dialogue appears describing how tabs and margins can be set. Click over the character position in which a tab is required, either on the ruler or somewhere in the text. Click on an existing tab symbol to clear that tab. Drag the margin indicators to their new positions; during dragging the margin indicator is highlighted. When the tabs and margins are correct, click on **OK**. To restore the original tabs and margins, click on **Cancel**.

Resetting the tabs and margins does not affect existing text.

Format – displays the format dialogue, allowing options to be set:

PAGE FORMAT FOR OUTPUT

Document mode:	On	Off	
Pagination:	On	Off	
Justification:	On	Off	
Line spacing:	1	2	3
Page length:	66 lines		
Text begins on:	3_		
ends on:	60		
Left margin:	5 characters		

OK Cancel

The options have the following effects:

Document mode – **Off** cancels auto- and manual reformatting, prevents paragraph markers being entered in the text when the **[RETURN]** key is pressed, turns off the **Font** menu commands and text selection. **On** restores these attributes.

Pagination – controls display of the page number in the status line. If it is set **On**, the options **Page length**, **Text begins on** and **Text ends on** can be used to control the format of the page.

Justification – controls whether the text is right-justified (i.e. is aligned down the righthand margin). This affects printed text, but not the appearance of text on the screen.

Line spacing – sets the line spacing to single, double or triple.

Page length – sets the number of lines allowed for each page. (Set this to conform with the paper size used by the printer; 66 is a standard length.)

Text begins on – sets the line at which printing will begin (not including any headers). The number of lines available for headers is determined by this

setting; for example, if the text starts on line 10, 9 lines of headers could be printed.

Text ends on – sets the line at which printing will end on each page. The number of lines available for footers is determined by this setting and the page length. For example, if the page length is set to 66 and the text ends on line 60, 6 lines of footers could be printed.

Left margin – controls the character position at which text will start printing from the left.

Click on **OK** when the options are correct, or on **Cancel** to retain the original settings.

4.6.6 Options

The Options menu offers the following commands:

Keyboard equivalent

Short Cuts . . . **[F1]**
Set Preferences . . .

Short Cuts . . . – displays a list of helpful shortcuts and explains the conventions used in the keystroke alternatives listed in the menus.

Set Preferences . . . – displays the Set Preferences dialogue, allowing you to alter the program default settings (i.e. the actions which will be taken if no alternative is requested):

SET PREFERENCES

Turn Graphics:	On	Off
Turn Auto-Reformat:	On	Off
Create *.BAK files:	On	Off
Delete *.OUT files:	On	Off
Defaults for startup:		
Document Disk:	8	
Spill-file Disk:	8	
	OK	Cancel

The options have the following effect:

Turn Graphics **On/Off** – controls the display of pictures in the text or their replacement with shading.

Turn Auto-Reformat **On/Off** – controls whether text is automatically reformatted within a paragraph after every editing command.

Create *.BAK files – controls whether, when a previously saved document is saved again, the previous version is stored with the file type .BAK as a back-up copy.

This is a useful security precaution if it is possible that you will want to return to the original version, but uses extra disc space to store the additional version.

Delete *.OUT files – controls whether the automatically created output file is deleted after printing. If you want to print the same document several times without changing it, it will be useful to retain the .OUT file (set Delete to OFF). Deletion of unnecessary output files saves disc space.

Document Disk – indicates on which disc drive the documents are to be stored and sought. This will be B with a dual disc drive or C with a hard disc. If you have more than two disc drives, other options will be possible.

Spill-file Disk – indicates on which disc drive the SPILL-FILES are stored. These are automatically created temporary files which hold parts of a document too large to be stored in the computer's memory. With a dual drive, this will be B, with a hard disc it will be C. Enter X to prevent use of any spill-files.

Do not change discs during an editing session, as the spill-files will be lost. If you change the spill-file drive it will be necessary to exit from GEM Write and restart it.

4.6.7 WRITE

The WRITE menu offers the following commands:

GEM Write Info . . .

Snapshot

Calculator

Clock

Print Spooler

GEM Write Info . . . – displays copyright information about GEM Write; not all of this applies to the Acorn version.

Snapshot – takes a snapshot of the screen and saves it on disc, giving it the document type .IMG. Details of how to use the Snapshot facility are given in Paint, 3.6.7.

Calculator – superimposes the calculator over the window. Instructions on using the calculator are given in 2.13.1 .

Clock – superimposes the clock over the window. Instructions on using the clock are given in 2.13.2.

Print Spooler – displays the Print Spooler list, allowing document names to be added to or deleted from the list for printing. To add a name, click on the **Add** box and the item selector appears; select the document to be added. Only text can be sent to the spooler; documents must have the suffix .DOC. To delete a name, click on the name and then on the **Delete** box. Documents are printed immediately, as soon as the item selector is removed from the screen. Printing is interrupted whenever the item selector is displayed. Text is printed in draft form, without special text attributes (bold type, underlining, etc.). Click on its close box to remove the spooler list.

4.7 Embedded Commands

EMBEDDED COMMANDS are commands typed into the text which control the presentation of the document on the page when it is printed out. They offer the facility to define HEADERS and FOOTERS (lines of text which appear above or below the main body of the text, such as running chapter headings or page numbers), to force a page break, to reset the page number counter, to send special command sequences to the printer, or to insert non-printing comments. Embedded commands are recognised by GEM Write as having a special status; they are not printed literally, and are not counted in the line count.

Embedded commands are preceded by two full stops. They must begin in the first two columns of the text. They may be typed in upper or lower case.

4.7.1 ..PAGE

The ..PAGE command forces a page break. The new page will start with the next line of text.

4.7.2 ..<comment>

A comment may be inserted for reference while editing. It will not be printed. This may be useful for providing reminders, recording the date of a draft, etc.

4.7.3 ..HEAD and ..FOOT

The header and footer commands have the format

..HEAD<number><letter><text>

and

..FOOT<number><letter><text>

The number must be a two-digit number identifying the number of the line to be occupied by the header or footer. The number must fall within the lines allowed for printing headers and footers when the page format was set with the **Format . . .** command (see 4.6.5). The letter must be one of the following: C, L, R, A. This controls the alignment of the header or footer. C positions it centrally, L prints from the lefthand side of the page, R aligns the end of the header or footer with the righthand margin, and A aligns the text on the left and right alternately. The text supplied will appear literally, except that page numbers can be included by inserting two hash (#) signs in the text. For example, the command

```
..HEAD03Achapter 1 - Page ##
```

would print a header on the third line of every page, aligned alternately on the left and right, with the text

```
Chapter 1 - Page <number>
```

with the current page number inserted.

The headers and footers will appear on the next page after that on which the command appears. List header and footer commands in the order in which they are to be printed (i.e. in consecutive order of line number), and insert them before other embedded commands where possible.

4.7.4 . . PGNO

The **..PGNO** command resets the page number counter to the number supplied. The format of the command is

```
..PGNO <number>
```

The next page will have the number specified.

4.7.5 . . CMD

The **..CMD** command sends a command code to the printer. The meaning of each command code will depend upon the type of printer in use; consult the printer manual to determine the functions of the codes which can be used with this command.

4.7.6 . . GEM

The **..GEM** command is automatically entered by GEM when a picture is inserted into the text. It has the format

```
..GEM,<number>,<picture name>
```

The number indicates how many lines the picture occupies. The picture name is reported in full, including the full directory path name and a letter identifying the disc drive.

4.8 Compatibility with other Programs

GEM Write can be used with any documents in standard ASCII format, whether or not they were originally produced using Write. Select and open the document in the usual way using the item selector. However, the only graphics documents which can be inserted into Write text documents are those created in GEM (using GEM Paint or GEM Draw).

Write acknowledges many of the most frequently used commands from the common word-processing programs WordStar and Volkswriter. A list of the keystrokes recognised by Write is given in one of the tutorial documents.

5 GEM DESKTOP

5.1 Introduction

GEM Desktop is an administrative and filing system. It allows you to move, copy and delete documents or folders easily, and to store your documents in a useful and logical order.

To take full advantage of the facilities offered by the GEM package, it is necessary to form a structured filing system. You can either design a filing structure before creating documents and then give new documents names which will slot them directly into the right place, or you can create a filing structure and move existing documents into it. The first parts of this section are concerned with organising and creating a filing system. This includes an example you can re-create.

The list or display of the contents of a folder which appears on the Desktop or in the item selector is called a **DIRECTORY**. Using the commands in the Desktop menus, you can control the way in which the Desktop displays directories and choose the icons it uses.

5.2 Directory Paths

The filing and administrative system offered by GEM is equivalent to a conventional office filing system. The elements of GEM's filing system are the folder and the document (see 2.6). These are arranged inside each other to form a structure of folders, culminating in the final document. This enables documents (and folders) to be grouped according to their subject matter or contents.

Each folder has a name; within a directory this name is sufficient to identify the folder. However, in order to represent the location of a document or folder within the whole filing system, it is necessary to supply the names of all the folders which must be opened to find it. This series of folders is called the **DIRECTORY PATH**. The full name of a document includes the directory path. The first element of a directory path name is a letter identifying the disc drive to be used; this is followed by a colon (e.g. B:). The folder names are given in the

order in which they must be opened, starting with the outermost folder. The elements of the directory path name are separated by backslash characters (\). The following is an example of a document name including the directory path name.

Example:

B:\SALES\EAST\JONES\SAL1.DOC

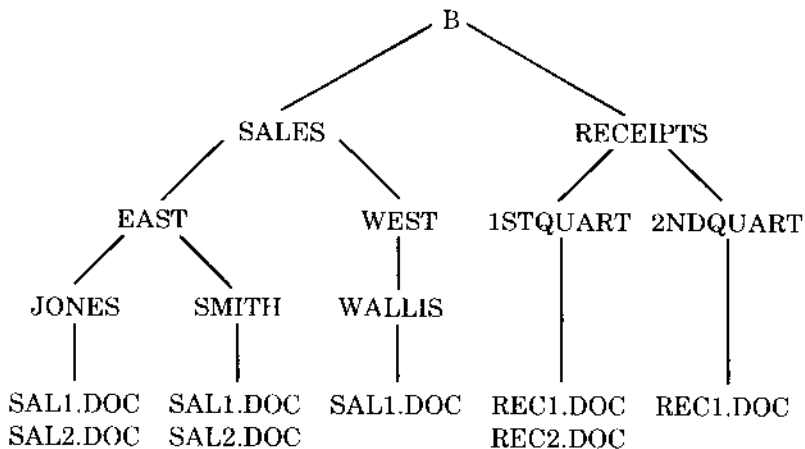
The parts of this name are:

B:\ - the disc drive holding the disc from which the information was read. The folders displayed when you click on a disc drive icon are in the ROOT DIRECTORY.

SALES\EAST\JONES\ - the directory path name; the folder JONES is held inside the folder EAST which is stored inside the folder SALES. SALES is in the root directory.

SAL1.DOC - the document name, including the suffix .DOC which indicates that it is a text document and was created using GEM Write.

Folders are frequently arranged in a tree-like structure; one folder will contain several others, each of these containing further series of folders. The directory path name maps out the route which must be taken through the structure to find a document. The document in the example above might be part of a directory structure like this:



Note that two or more documents may have the same name as long as they are not in the same directory.

To achieve the directory path illustrated you would need to create nine new folders. The creation of new folders is described in 5.3. You could either write the documents and supply their full directory path names to the item selector when saving them, or give each document a different name and copy them into the appropriate folders later from the Desktop. The first is the better method, but the second can be used to incorporate existing documents into a new filing structure. To supply a full directory path name to the item selector, move the pointer to the line displaying the directory path name and click. Then use the **DELETE** key to delete elements of the path name which do not coincide with the name of the new document, and type the remainder of its directory path name. Press the **RETURN** key, and type the document name and suffix on the Selection line. Alternatively, click on the item selector's close box to move back through the directory path, and then click on each folder in the directory path of the new document until the correct position in the filing system is reached. Type the document name in the selection line.

5.3 Creating a New Folder

To create a new folder, double-click on the **New Folder** icon. A dialogue will be displayed allowing you to name the folder. Type a name of up to eight characters in the editable text field, adding a three-character suffix if you want. The suffix is not necessary, but might be helpful if the folder is to contain only one type of document. After naming the folder, click on **OK** and the dialogue will disappear; an icon for the newly created folder will be displayed on the Desktop, with its name printed beneath.

Documents or other folders can now be added to this folder.

If you try to give the new folder the same name as an existing folder in the same directory, a dialogue will ask either for an alternative name or for the command to be abandoned.

Example:

To create the directory path illustrated in 5.2, follow these stages:

Click on the close box until the disc icons are displayed, then double-click on disc **B** – this displays the root directory.

Create a new folder and give it the name **SALES**.

Create another new folder and give it the name **RECEIPTS**.

Double-click on the **SALES** icon to open the new folder. The folder is empty, but the **New Folder** icon is present to allow you to create more folders inside this one.

Create two new folders, called **EAST** and **WEST**.

Open **EAST** and create two new folders, called **JONES** and **SMITH**.

Click on the close box; this returns the **SALES** directory.

Open **WEST** and create a new folder, called **WALLIS**.

Click on the close box to return the **SALES** directory and again to return the root directory.

Open **RECEIPTS** and create two new folders called **1STQUART** and **2NDQUART**.

Move through the directory path opening and closing folders to check that the structure is correct.

5.4 Copying Folders and Documents

If you have already created some documents using **Paint** or **Write**, use these to experiment with the techniques described here.

To copy an item, drag its icon to the destination icon. When you begin to drag an item, the pointer changes to a hand; the hand must be directly over the destination icon when you release the mouse button. To check that the copy operation works, open a newly created empty folder (not one from the example). The window which appears should contain only the **New Folder** icon, as the folder just created is empty. Click on the close box to return to the previous window, and drag one of the other icons onto the icon of this folder. Unless **Confirm Copies** is set to **NO** (see 5.5.3), the **COPY** dialogue is displayed:

COPY FOLDERS / ITEMS

Folders to Copy: _____ <number>

Items to Copy: _____ <number>

OK Cancel

(The number of folders and items represented by the dragged icon is reported.)

When more than one item or folder is being copied, the dialogue constantly reports how many remain to be copied, counting down as copying progresses. Click on **OK** to start copying.

When the dialogue disappears, open the new folder again; this time the copied icon appears in the new window.

Several items can be copied at once. Hold down the **SHIFT** key on the keyboard, or the righthand button on the mouse, and click on all the items to be copied. Without releasing the lefthand button on the mouse after the final shift-click, drag to the destination icon. The **COPY** dialogue appears and will report the progress of the copying operation.

To make a duplicate of a folder or document without adding it to another folder, release the mouse button at the end of the drag over a blank area of the Desktop. It is necessary to supply a name for the new copy as two items of the same name cannot exist in the same directory. Try copying the newly created folder to a blank area. The following dialogue will appear:

NAME CONFLICT DURING COPY

Current Name: <name of folder>
Copy's Name: | _____ . _____

OK

Cancel

Stop

Type a name for the new copy of the folder and click on **OK** or press the **RETURN** key. After the dialogue disappears, the new folder is visible on the Desktop. Open it to check that everything you added to the folder has also been copied to the new copy of it. Open the original version to check that copying does not alter the original.

Copying an item to a disc icon saves the item on that disc. It will not be added to any folders, and will appear in the first window displayed when the disc icon is opened (the root directory). Copying a disc icon to another disc icon adds the data from the first disc to the second disc (if there is sufficient space free on the disc). Copying a disc icon to a blank area of the Desktop will not alone set up another disc drive; the **Install** procedure must be used to set up the Desktop for an additional disc drive (see 5.5.2).

Example:

Experiment with the capabilities of the Desktop by copying documents into the filing structure created in the example. Use both windows and copy documents between the two.

Any documents you have already created are probably stored in one of the folders **DOCUMENTS** or **IMAGES**. Open one of these folders to display its

contents. Then open one of the folders **JONES**, **SMITH**, **WALLIS**, **1STQUART** or **2NDQUART** in the other window. Drag or shift-click and drag to copy items from the **DOCUMENTS** or **IMAGES** folder to the empty folder. Open other folders in the structure and copy documents into them. You can delete the original copies from **DOCUMENTS** or **IMAGES** later using the Delete command in the File menu (see 5.5.1).

5.5 Menu Commands

Many of the menu commands available from the menus on the Desktop are concerned with maintenance, administration and display of the filing system. Others are more general, such as those in the File menu and the accessories in the **DESKTOP** menu, which are common also to Paint and Write.

Some of the menu commands can also be invoked by using combinations of keystrokes. In the screen menus and the following lists of commands, the keystroke equivalents are given to the right of the menu commands. On the screen menus, the diamond symbol indicates that the **[COPY]** key must be held down while the other key is pressed.

Some menu commands require an icon or group of icons to be selected. The commands appear in faint type and are unavailable unless an icon or group of icons of the correct type is selected.

5.5.1 File

The File menu offers the following commands:

	Keystroke equivalent
Open	
Info/Rename . . .	[COPY] I
Delete . . .	[COPY] D
Format . . .	
To Output	
Exit to DOS	

Open – opens the selected disc, folder, application or document. If a disc or folder is selected, **Open** displays a directory of its contents. If an application is selected, **Open** runs the application.

Info/Rename . . . – displays information about the selected item. For example, if the selected item is a folder, its name, its date of creation, details of

its contents and the number of bytes used by it are reported. (A BYTE is a unit of computer memory storage.) To rename a folder, click on the name, use the **[DELETE]** key to remove all or part of the name, type in a new name and click on **OK** or press **[RETURN]**.

Delete . . . – deletes the selected item or group of items. Deletion is permanent; deleted items cannot be restored. You can select whether or not GEM asks for confirmation before proceeding with deletion; the default action (i.e. that which it takes if the setting is not altered) is NOT to ask for confirmation. To change the setting, use the **Set Preferences . . .** command in the Options menu (see 5.5.2).

Format . . . – formats the disc in drive B: (the second drive). A warning dialogue asks for confirmation, as formatting destroys all data on the disc.

To Output – enters the Output system ready for printing, or displaying documents on the screen. The options available within the Output system are described in the Output Guide, Section 6 of this manual.

Exit to DOS – leaves the GEM software suite and returns to the operating system. An **A>** prompt will appear. To re-enter GEM, press the red function key **[F10]**, or type **GEM** and press the **[RETURN]** key. To leave DOS and return to the BBC Master Series bypassing the Tube, type **NOTUBE** and press the **[RETURN]** key.

5.5.2 Options

The Options menu offers the following commands:

	Keyboard equivalent
Install Disk Drive . . .	
Configure Application . . .	[COPY] A
Set Preferences . . .	
Save Desktop	[COPY] V
Enter DOS Commands	[COPY] C

Some of these commands require an item to be selected; they appear in faint type and are unavailable unless an item of the appropriate sort is selected.

Install Disk Drive . . . – allows an additional disc drive to be installed, the description of an existing disc drive to be modified, or a disc drive to be removed. A disc icon must be selected. To add an additional disc drive, copy one of the disc icons and select the copy; to alter the description of a drive already represented on the Desktop, select its icon. A dialogue is issued when this command is selected; in this example, the icon for drive B: was selected.

INSTALL DISK DRIVE

Drive Identifier: B| **Install**
Icon Label: FLOPPY DISK_ **Remove**
Icon Type: Floppy Hard **Cancel**

Type a letter which will be used to identify the disc drive; this is usually A or B for a system with two floppy discs, or C for a hard disc. If you have more than two floppy discs, use any letter(s) for the additional drive(s). If appropriate, move the pointer to the next text field and click, use the **DELETE** key to erase FLOPPY DISK, and then type HARD DISK. Click on **Floppy** or **Hard** as appropriate. Finally, click on **Install** to instal the newly described disc, **Remove** to remove the icon of an existing disc from the Desktop, or **Cancel** to retain the original status of the disc icons.

Configure Application ... – allows the information stored about applications to be altered. An application icon must be selected. A dialogue is issued which reports the selected application's name, the document suffixes recognised for the application, the application's type and whether it requires full computer memory to be run. The application type for the supplied applications is GEM. It is also possible to instal separately purchased DOS applications (e.g. WordStar). (DOS applications installed as **DOS** run as soon as selected; those installed as **DOS-takes-parameters** require additional information to be supplied – for example, the name of a file to be loaded.)

A window shows the icons used to represent the application and the documents created by it. Use the scroll bars and slider to move through this window to select different icons to be used for the application and its documents. Type additional suffixes which you want GEM to recognise as identifying a document as created by the application. Click on **Install** to finalise the modification, on **Cancel** to retain the original description or on **Remove** to delete an application icon. You will not need to alter the other options unless you buy another GEM application. In this case, the new application will be accompanied by instructions on its installation.

Set Preferences ... – allows the default behaviour of the Desktop and its commands to be altered. The following dialogue is issued:

SET PREFERENCES

Confirm Deletes: Yes No
Confirm Copies: Yes No
Double-Click Speed: Slow 2 3 4 Fast
Sound Effects: On Off

OK Cancel

The highlighted options are those currently set. Setting **Confirm Deletes** and/or **Confirm Copies** to **Yes** will cause GEM to issue a warning message whenever the command is issued asking for confirmation. It is advisable to set **Confirm Deletes** to **Yes** until you become familiar with the Desktop. The **Double-Click Speed** option enables you to alter the interval allowed between the two clicks of a double-click. Experiment with different settings until you find the one which suits you best. Click on **OK** to set the new preferences, or on **Cancel** to retain the original settings. The preferences will be reset to the original defaults on leaving GEM unless the Desktop is first saved.

Save Desktop – saves the current state of the Desktop as the default. Every time the Desktop is displayed, it will show the directory displayed and use the defaults set with **Set Preferences** when it was saved. For example, opening a folder other than GEMAPPS and then saving the Desktop will cause the resultant directory to be displayed by default. However, any alterations made to the contents of a directory will be reflected each time the Desktop is displayed – so deleted items will not reappear, and new items will be shown. If the folder providing the directory is itself deleted, the default Desktop will show the disc icons until another Desktop is saved.

Enter DOS Commands – allows commands from the operating system to be used. Details of the operating system can be found in Part 2 of this manual.

5.5.3 Arrange

The Arrange menu offers commands to control the form in which the Desktop directories are displayed:

Keystroke equivalents

Show as Text/Icons	[COPY] S
Sort by Name	[COPY] N
Sort by Type	[COPY] P
Sort by Size	[COPY] Z
Sort by Date	[COPY] T

Show as Text/Icons – displays the directories as text or icons. The default action is to show the contents of directories as icons, and the menu offers **Show as Text**. Selecting this command displays a list of the names of folders, documents and applications in the current directory, with information about each item, and changes the menu command to **Show as Icons**. The order in which items in a directory shown as text are listed is controlled by the following commands. The current setting is indicated by an arrowhead to the left of the menu line.

Sort by Name – lists items in a directory in alphabetical order.

Sort by Type – lists first folders, then applications, then documents.

Sort by Size – lists items in order of size, measured as how many bytes of memory they occupy, beginning with the largest.

Sort by Date – lists items in the order in which they were created, beginning with the most recently created. The date and time are given in the form

<month>-<day>-<year> <hour>:<minute> <am/pm>

Items in a directory displayed as text can be opened and selected in the same way as items shown as icons.

5.5.4 DESKTOP

The DESKTOP menu offers the following commands:

Desktop Info . . .

Snapshot

Calculator

Clock

Print Spooler

Desktop Info . . . – displays copyright information about GEM Desktop.

Snapshot – takes a snapshot of the screen and saves it on disc, giving it the document type .IMG. Details of how to use the Snapshot facility are given in Paint, 3.6.7.

Calculator – superimposes the calculator over the window. Instructions on using the calculator are given in 2.13.1.

Clock – superimposes the clock over the window. Instructions on using the clock are given in 2.13.2.

Print Spooler – displays the Print Spooler list, allowing document names to be added to or deleted from the list for printing. To add a name, click on the **Add** box and the item selector appears; select the document to be added. To delete a name, click on the name and then on the **Delete** box. Click on its close box to remove the spooler list. Only text documents can be sent to the print spooler; they are printed in draft form (i.e. without special text attributes). Printing begins as soon as the item selector is removed from the screen (but is interrupted if it is restored to add more names).

6 OUTPUT GUIDE

6.1 Introduction

This Output Guide describes the functions and use of the GEM Output System. From the Output System, documents can be printed, displayed on the screen, or sent to a plotter.

The Output System allows you to create a list of documents to be output (an OUTPUT LIST), and to select printing OPTIONS which control the way in which documents are printed or displayed. Both output lists and sets of options can be saved and recalled later for repeated use.

All Output commands are selected from the menus. This Guide deals first with the possible output devices, then with the output lists and option selection, and finally reviews the menu commands.

6.2 Connecting Output Devices to the Microcomputer

Output of text or graphic documents to the screen is always available as an option. Documents can also be sent to a printer or plotter to produce a permanent copy on paper if you have these devices. Check that the printer and/or plotter is correctly connected before sending documents to it.

6.2.1 Printer

A printer for use with GEM must be an Epson FX80 or Epson-compatible printer with a parallel interface. (It is possible to run a printer on serial interface; contact an Acorn dealer for details.) Push the plug on the printer cable into the socket labelled Printer on the underside of the microcomputer. Align the projection on the plug with the notch in the socket; the plug will only fit one way. Ensure that the securing arms clip across the back of the plug.

6.2.2 Plotter

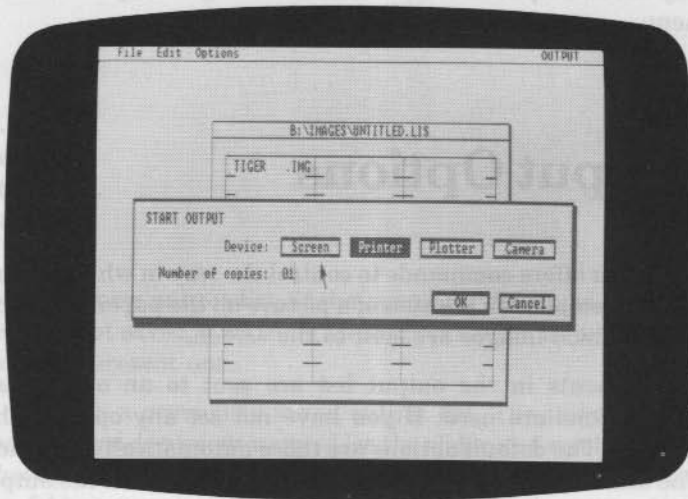
It is possible to run a plotter from the Master Series BBC microcomputer, but this is not supplied or supported as standard; contact an Acorn dealer for advice.

6.3 Entering the Output System

Entry into the Output System is by selection of the menu command **To Output** from the File menu in one of the GEM applications or the Desktop.

Starting from the Desktop, an empty output list will be displayed on the Output screen.

Starting from one of the applications, an untitled output list is displayed with the document currently in use as the only entry. The Start Output... dialogue is superimposed over the list, allowing output to begin immediately. The Output screen is illustrated below.



6.4 Output Lists

An OUTPUT LIST is a list of documents to be sent to the printer, screen or plotter. The list has thirty-six lines to hold document names, but is subject to a maximum of 128 characters in total. In effect, this means that fewer than thirty-six names can be included; the exact number will depend upon the length of the document names.

Names are added to the output list, and existing names are deleted or duplicated, using commands in the File menu. Only documents of certain types can be included in an output list; they must have one of the suffixes .GEM, .DOC or .IMG. Documents with the suffix .GEM are automatically created – a .GEM document is created for each .IMG document produced in Paint.

An output list can be used to print or display documents immediately, and can also be saved and recalled at a later date for editing and use. A new output list is saved using the **Save As . . .** command in the File menu, supplying a name up to eight characters long and with the suffix .LIS. A previously saved list can be saved again under the same name with the **Save** command in the File menu.

A previously saved output list can be recalled using the **Open . . .** command in the File menu.

6.5 Output Options

The Options menu offers commands to control the way in which documents are presented. For example, the position of a picture on the paper can be controlled, or the speed at which images are sent to the screen.

When the documents in the output list are sent to an output device, the currently set options are used. If you have not set any options, the default options are used. (The default options are those automatically set when GEM is started.) The same options are used for all the documents in the output list. To set different options for each document, it is necessary to create a separate output list for each.

A series of options can be saved using the **Save Options . . .** command in the File menu. The options are saved in a document with the suffix .OPT. A previously saved set of options can be recalled with the **Get Options . . .** command in the File menu.

The default options can be altered to a set of specially selected options. To make a set of options the default, use the **Make Default** command in the Options menu. These options will then be used automatically every time GEM is started, although it remains possible to select different options or saved sets of options within each session.

Documents with the suffix .OPT are stored in the GEMSYS folder. To delete option documents you no longer require, open the **GEMSYS** folder from the Desktop and delete the unwanted documents. If you have changed the default options, and want to restore the original defaults, open the **GEMSYS** folder from the Desktop and delete the **DEFAULT.OPT** document. The original defaults will be restored.

6.6 Menu Commands

6.6.1 File

The File menu offers the following commands:

- New
- Open ...
- Close
- Save
- Save As ...
- Get Options ...
- Save Options ...
- Start Output ...
- Quit

New – begins a new output list. If the currently displayed list is new or has been edited and not saved, a warning message is issued, as beginning a new list would delete the present one.

Open ... – opens a previously saved output list. The item selector appears; click on the required document name. Use the slider and scroll bars if necessary to move through the directory, or click on the close box of the item selector and open other folders to select a document in another directory. Alternatively, type the directory path of the document, and either click on the document name or type it on the selection line. The directory displayed when the item selector first appears will be that open in the application used before entering Output, or that displayed on the Desktop. If a new or edited output list is already open, a warning message is issued before the item selector appears, as opening

another list would delete the present one. The document selected must have the suffix .LIS.

Close – closes the list currently on the screen and does not display another list. A warning message is issued if the current list is new or has been edited since it was last saved.

Save – saves the currently displayed output list under the same name. This command is not available if no list or a new list is displayed.

Save As . . . – saves the currently displayed list under a name supplied to the item selector. The name may have up to eight characters, and must have the suffix .LIS – if a name without a suffix or with a different suffix is supplied, a warning is issued.

Get Options . . . – retrieves a previously saved set of options. The item selector appears; the document selected must have the suffix .OPT.

Save Options . . . – saves the current options under a name supplied to the item selector. The name may have up to eight characters and must have the suffix .OPT – if a name without a suffix or with a different suffix is supplied, a warning is issued.

Start Output . . . – allows documents to be sent to the printer, plotter or screen. The following dialogue appears:

START OUTPUT

Device:	Screen	Printer	Plotter	Camera
Number of copies:	01			
		OK	Cancel	

The camera is not currently available as an output device.

The highlighted device is that currently selected. If necessary, use the **DELETE** key to delete the number in the Number of copies line and type in the required number. Output will begin as soon as you click on **OK** or press the **RETURN** key. All items in the output list will be printed or displayed, using the currently selected options. If items are sent to the printer, a dialogue reports the progress of printing, counting down the documents and copies printed. Press the **ESCAPE** key to abandon output at the end of the current page.

Quit – leaves the Output System and returns to the application from which the Output System was accessed, or to the Desktop.

6.6.2 Edit

The Edit menu offers the following commands:

Add Name . . .

Duplicate Name

Delete Name

Duplicate Name and **Delete Name** require that an item on the list is selected; if none is selected, these commands are not available. To select a name, click on it once. To select several names, drag from the first to the last name. Selected names are highlighted.

Add Name . . . – adds a name to the output list. The item selector is displayed. If there are no other documents in the list, a document may be selected from another directory by using the close box and opening other folders, or by deleting the current directory path and typing the directory path of the required document. If there are already other entries in the list, however, the next document must be selected from the same directory. If it is not, a message will be issued, and the document will not be added to the list. Only documents with the suffix .GEM, .IMG or .DOC may be added.

Duplicate Name – duplicates the selected name in the list. The document will then be printed or displayed twice.

Delete Name – removes the selected name(s) from the list.

6.6.3 Options

The Options menu offers the following commands:

Screen . . .

Printer . . .

Plotter . . .

Camera Film . . .

Camera Color . . .

Make Default

The camera is not currently available as an output device.

Screen . . . – allows options to be set controlling the display of documents output to the screen. The following dialogue is displayed.

SCREEN OPTIONS

		Seconds			
Wait for:	Key	2	5	10	20
Cycle:	No	Yes			
		OK	Cancel		

The **Wait** for option allows you to choose the time delay between documents sent to the screen. This may be a number of seconds (**2, 5, 10, 20**) or until a key is pressed (**Key**). Any key can be used, except **[↑]**, which displays the previous picture, and **[ESCAPE]** which aborts the output sequence. Press the **[ESCAPE]** key at any time to interrupt output to the screen.

Printer ... – allows options to be set controlling the presentation of printed documents. The following dialogue is displayed:

PRINTER OPTIONS

	Scale:	Full Scale	Best Fit	
	Initial Form Feed:	Yes	No	
	Final Form Feed:	Yes	No	
Horizontal Justification:	Left	Center	Right	
Vertical Justification:	Top	Center	Bottom	
Print in Background:	Yes	No		
	OK	Cancel		

Full Scale prints the picture or text at full size, taking several sheets of paper if necessary. (This option can only be used with continuous form feed paper if documents cover more than one sheet.)

Best Fit reduces the size of the picture to fit it onto a single sheet of paper.

The **Initial Form Feed** setting controls whether the printer advances by one sheet of paper before beginning to print each document.

The **Final Form Feed** setting controls whether the printer advances by one sheet of paper after printing each document.

The **Horizontal Justification** setting controls the horizontal alignment of the document on the paper.

The **Vertical Justification** setting controls the vertical alignment of the document on the paper.

The **Print in Background** setting controls whether the GEM applications and Desktop are available for use while the printer operates. Background printing requires 320 Kilobytes of Random Access Memory (320K RAM); check the capacity of the system before selecting this option.

Make Default – sets the present selection of options as the default. To restore the original default options after replacing them, open the folder **GEMSYS** from the Desktop and delete the icon for the document **DEFAULT.OPT**.

6.6.4 OUTPUT

The OUTPUT menu offers the following commands:

Output Info . . .

Snapshot

Calculator

Clock

Print Spooler

Output Info . . . – displays copyright and other information about the Output System; not all of this applies to the Acorn version of GEM.

Snapshot – takes a snapshot of part of the screen and saves it, giving it the document type .IMG. Details of how to use the Snapshot facility are given in Paint, 3.6.7.

Calculator – superimposes the calculator over the window. Instructions on using the calculator are given in 2.13.1.

Clock – superimposes the clock over the window. Instructions on setting the clock are given in 2.13.2.

Print Spooler – displays the print spooler list, allowing document names to be added to or deleted from the list for immediate printing. To add a name, click on the **Add** box and the item selector appears; select a document to be added (it must be a text document with the suffix .DOC). To delete a name, click on the name and then on the **Delete** box. Click on its close box to remove the spooler list. Items added to the print spooler list are printed immediately in draft form (i.e. without special text attributes). Printing is interrupted while the item selector is displayed, but recommences as soon as it is removed from the screen. The Desktop and applications can be used while printing continues.

7 APPENDIX: SET-UP GUIDE

7.1 Introduction

The following items make up the GEM package; check that you have all these:

Hardware – co-processor
 mouse

Software – three discs holding the GEM software.

If any of these is missing, return to your dealer.

The order in which the installation is carried out is:

- attach the mouse
- fit the co-processor
- configure the system
- copy the discs.

If you have any problems with the installation, or if you feel uncertain about whether you can carry out the installation yourself, take the package and microcomputer to your dealer and ask him/her to instal the package for you. The dealer may charge for the installation.

7.2 Attaching the Mouse

The mouse is attached by fitting its plug into the socket marked User Port on the underside of the microcomputer, near the front. The plug will only fit into the socket one way, so it is not possible to fit it incorrectly. Align the projection on the plug with the notch in the socket and press the plug in firmly. Two securing arms will move into place when the plug is correctly positioned. Ensure that these click across the back of the plug.

7.3 Fitting the Co-processor

7.3.1 Notes

Any modification or upgrade carried out to the printed circuit board of any Acorn equipment is undertaken at the sole risk of the person carrying out the modification or upgrade. No claim for loss or damage to the equipment caused by the modification or upgrade of the printed circuit board by unqualified personnel shall be accepted by Acorn Computers Ltd.

Some of the components used in Acorn equipment are sensitive to static electricity. Take precautions to prevent static electricity damaging the equipment.

Read all through the instructions before attempting the installation.

7.3.2 The Co-processor

The co-processor runs computer languages, applications and user programs. The microcomputer handles all input and output (e.g. input from the keyboard or discs, output to the screen, disc, printer, network, etc.). Communication between the co-processor and the microcomputer is by means of an interface known as the TUBE.

The co-processor fitted to run GEM is an 80186 co-processor.

7.3.3 Dismantling the Microcomputer

Disconnect the microcomputer from the mains supply.

The upper half of the case must be removed to allow access to the main printed circuit board. Turn the microcomputer upside down on a firm, flat surface. Locate the four fixing screws on the underside of the unit; there are two at the front and two at the rear of the case, and they are labelled FIX. These hold the upper part of the case in place. Remove all four screws; the two screws at the rear are longer than those at the front. Hold the two halves of the case together and carefully turn the computer back over so that it is the right way up. Lift away the top part of the case. This reveals the main printed circuit board where the co-processor is to be fitted.

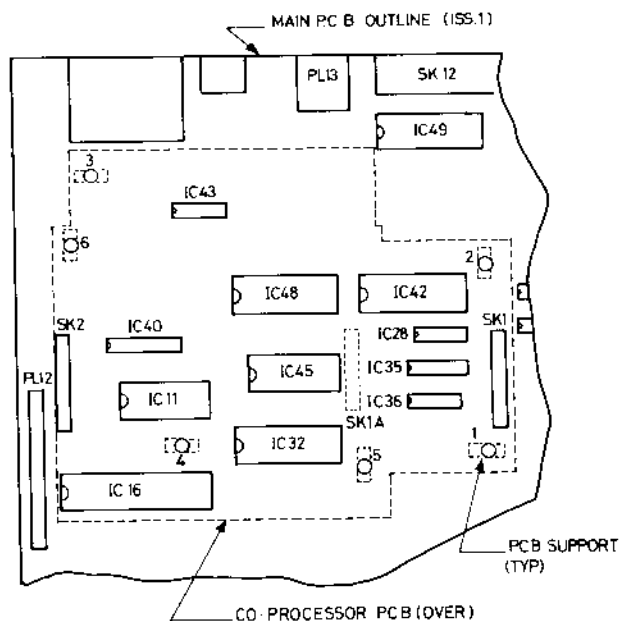
7.3.4 Installing the Co-processor

The co-processor is a printed circuit board which is fitted above the main printed circuit board of the microcomputer and is supported by plastic support posts. Communication between the microcomputer and the co-processor is by means of the Tube, a series of pins which must be fitted exactly into the corresponding sockets on the computer's circuit board.

The support posts must first be inserted into the circuit board of the microcomputer. The illustration below shows the positions; the supports must be inserted in numerical order. There is no difference between the support posts, and both ends of the supports are identical. At each end of each support is a flange; this prevents the support being dislodged once it has been positioned, so it is important to align the support correctly before pushing it home. Place a support in the first hole and check that the flange does not obstruct or interfere with any component on the circuit board. When it is straight, press it down gently.

When all the support posts have been pressed in, place the co-processor on the supports, aligning the holes in it with the support posts. Ensure that the pins of PL1 on the co-processor are aligned with the corresponding holes in SK1 on the main circuit board, and that the pins of PL2 on the co-processor are aligned with the holes in SK2 on the main circuit board. When all the pins and support posts are correctly positioned, gently press the co-processor into place. Do not put too much pressure on the co-processor as this may damage it. The barbs on the ends of the supports should clear the co-processor board, and will make an audible click when they spring into place.

To re-assemble the microcomputer, replace the upper part of the case, hold the two parts together while carefully inverting the unit, and replace the four fixing screws. Use the longer screws in the two holes at the rear of the case.



7.4 Configuration

Set up the microcomputer following the instructions in the *Welcome Guide* and turn it on. A message similar to the following should appear:

```
ACORN MOS
```

```
ACORN ADFS
```

```
BASIC
```

```
>_
```

Although the co-processor has been fitted correctly, the microcomputer does not yet recognise it. It is necessary to CONFIGURE the system to include the co-processor. Configuration may be performed either by using the control panel included with the Welcome package or using the *CONFIGURE command. To use the *CONFIGURE command, type

```
*CONFIGURE TUBE 
```

```
*CONFIGURE INTUBE 
```

and then press the and keys simultaneously. A message similar to the following should then appear:

```
ACORN TUBE 80186 512K
```

```
ACORN ADFS
```

```
BASIC
```

The top line of the display acknowledges the presence of the tube, which is now recognised. The first disc drive will begin to operate as the microcomputer waits for an operating system to be loaded. This will be done next.

If the message displayed does not acknowledge the presence of the co-processor, use the *STATUS command to determine whether the Tube has been correctly configured. If it has, check that it has been fitted correctly. If no obvious mistakes have been made, take the microcomputer to a registered Acorn dealer for testing.

7.5 Copying the Software

It is VERY IMPORTANT that you copy the GEM discs before using them to run GEM. If you always use copies, you can make another copy in the event of losing or destroying your working copy, or inadvertently deleting any of the data needed to run GEM. Ensure that the master copies are write-protected so that the data cannot be corrupted or deleted.

The procedure for copying the software is not the same with a system using floppy discs as with a system using a hard disc. Follow the instructions in 7.5.1 and 7.5.2 for a floppy disc system, or those in 7.5.3 for a hard disc system.

7.5.1 Formatting the Discs – FLOPPY DISC SYSTEM

Three discs are needed to hold the GEM software:

the BOOT disc holds the data needed to load DOS, the operating system from which GEM is entered.

the PROGRAM disc holds the GEM programs.

the DATA disc stores data for documents you create or which are supplied.

If necessary, configure the system to acknowledge the presence of the co-processor (this is described in 7.4). The top disc drive should be operating, and the red light should be illuminated. Insert the Boot disc into the drive and close the door. A message similar to

```
Loading DOS..
```

indicates that the operating system is being loaded. When loading is complete, the prompt

```
A>
```

appears. Type

```
DISK [RETURN]
```

and insert a blank disc into the second disc drive. A list of options is displayed; one of these is Format Diskette, and is highlighted. Press the [RETURN] key to accept this selection. A list of format options appears; when copying discs, it is necessary to use the same format as that of the disc to be copied. In this case, the required format is 640 Kb [DOS] Bootable DOS Disk, which is already highlighted. Press the [RETURN] key to select this format. A message asking you to confirm the selection appears; press [RETURN] again, and close the door of the second disc drive when the drive begins to operate. The progress of the formatting operation is reported as it proceeds.

When formatting is complete, a message asks whether the disc is to be made bootable. Yes is highlighted; press the **[RETURN]** key to make the disc bootable. At the end of the verifying procedure, the formatting options list reappears. Remove the disc in the second drive, insert another blank disc and use the arrow key or space bar to select the format **800Kb [DOS] Acorn DOS Format**. Repeat the formatting; this time the verifying procedure will follow automatically with no message. After formatting the second disc, insert and format the third in the same way (i.e. 800Kb format).

When the formatting options are displayed after formatting the third disc, use the arrow key or space bar to select the option **Return to main menu** and press **[RETURN]**. The first selection list is restored.

Any additional data discs you want to create to hold GEM documents must also be formatted as 800Kb discs.

7.5.2 Copying the Discs – FLOPPY DISC SYSTEM

Leave the Boot disc in the first disc drive and insert the blank, newly formatted 640Kb (Bootable DOS) disc into the second drive. Use the **[↑]** key to select the option **Copy Diskette** and press **[RETURN]**. The next selection offers **Copy from drive A:** – press **[RETURN]** to accept this, and again to accept the next selection, **Copy to drive B:**. A warning message asks you to confirm the copy command; press **[RETURN]** again. The progress of the copying is reported as it proceeds. When copying is complete, remove the discs, and write a label and attach it to the copy. (Always write the label BEFORE attaching it to the disc, to avoid damaging the disc.) Put a blank 800Kb disc in the second drive, and the Program disc in the first drive. Repeat the copying procedure, and then copy the Data disc onto the other blank disc. Label each newly copied disc, and put a write-protect tag over the new Boot disc.

7.5.3 Copying the Discs – HARD DISC SYSTEM

Before configuring the system to recognise the Tube, ensure that the drive is correctly connected and that the disc is formatted. Consult the *Winchester Disc Filing System User Guide* for instructions if necessary. Configure the system and load DOS as described in Section 7.4.

The first stage is to create a partition on the disc to hold the GEM software. Type the command

```
HDISK [RETURN]
```

Several sizes of partition will be offered. It is not necessary to allocate all the available space to DOS, and it is possible to alter the size of the partition later (although this will involve deletion of all the data stored). A partition of ten megabytes is a suitable size. If a message reports that the disc is full, select a smaller size. If a message reports that compaction is necessary, consult the

Winchester Disc Filing System User Guide for instructions on compacting the disc.

Select a size and press the **[RETURN]** key. Press it again to confirm the choice. Progress is reported as the disc is processed.

The list of selections returns to the screen. Use the arrow keys to select **Make Bootable**, press the **[RETURN]** key, and press it again to confirm the selection. Progress is reported. This copies the operating system from the floppy disc.

It is now possible to load DOS from the hard disc; press the **[CTRL]** and **[BREAK]** keys simultaneously. When prompted, press the **[RETURN]** key to load DOS.

The next stage is to copy the GEM discs onto the hard disc. Type

HDINSTAL [RETURN]

The system prompts for the discs to be inserted in the correct order – follow the instructions to copy the discs.

The system is now ready for loading GEM. Turn to Section 2 of this manual for instructions. If you want to turn off the co-processor instead, ensure that the Boot disc is in the first drive and then type

NOTUBE [RETURN]

This re-configures the system to bypass the Tube.

8 GLOSSARY

accessory

See desk accessory.

active window

The window on which you can work; it is always displayed over any other windows. It may be a picture in Paint superimposed over another picture or any of the special windows produced by some commands – for example, the clock or item selector.

application

A computer program which performs a function for the user. Drawing, word-processing and accounts programs are examples of applications. The applications in the GEM package are Paint, Write and Desktop.

boot disc

Disc containing the data required to BOOT UP or prepare the computer. The DOS Plus boot disc used with GEM prepares the computer for the GEM package by loading the DOS Operating System.

click

To press and immediately release the lefthand or centre mouse button.

close

To close a window, folder or directory. Closing a window removes it from the screen. Closing a folder or directory moves up one level through the directory path.

close box

The butterfly symbol in the upper lefthand corner of a window. Clicking on this closes the window, or closes the directory if the window is the item selector.

command

Word or phrase in a drop-down menu which causes the program to take some action.

communication port

An outlet on the computer to which a hardware device can be connected.

cursor

Horizontal bar showing the position at which text will be added in a Write document. When Insert Mode is set ON, the cursor changes shape, appearing as a vertical line.

de-select

To remove the highlighting which indicates that an icon or text is selected and return it to its usual state.

desk accessory

A device accessed from the Desktop, Write, Output or Paint menu. An accessory performs a function which is independent of the main application in use. The accessories supplied are a clock, a calculator, a camera (snapshot) and a print spooler. Additional accessories may be added.

dialogue

A message or question(s) issued by GEM in response to a command.

directory

A collection of folders and/or documents stored in a single place and listed together by the item selector or displayed together in a Desktop window. For example, the contents of the GEMAPPS folder displayed on the Desktop comprise a directory.

directory path

The sequence of folders which must be opened to find a document or folder.

directory path name

Formal representation of the sequence of folders which must be opened to find a document or folder. The directory path name begins with a letter identifying the disc drive; folders are listed with the highest level first, each folder name being followed by a backslash (\); the document name appears at the end, with its suffix. The directory pathname of the document in use is reported in the title bar of the active window.

document

A picture or text file produced with Write or Paint. It has a suffix indicating its type (e.g. .DOC for a text document).

double-click

To press and release the lefthand mouse button twice in rapid succession.

drag

To hold down the lefthand mouse button, move the cursor across the screen by moving the mouse, and release the button.

drop-down menu

List of commands which are displayed ('drop down') when the pointer moves over the name of the menu in the menu bar.

embedded command

Line in a Write document beginning with two full stops (..) which gives an instruction controlling the presentation of the printed document. The command is not printed literally in the document, but may force a page break, define headers or footers, record an unprinting comment, mark the place of an inserted Paint document or alter the current page number.

folder

Item in which documents or other folders are stored. It is analogous to a real folder.

font

Set of letters, numbers, punctuation marks and symbols of a consistent design.

footer

Line of text printed at the foot of each page of a text document.

format (disc)

To prepare a disc to receive data. A new disc must be formatted before it can be used. Discs used with GEM should be formatted as 640Kb (for the Boot disc) or 800Kb (for the Program and Data discs, and for any additional discs for storing created documents).

format (text)

To reposition text after editing so that it is aligned between the margins and is continuous within each paragraph.

full size box

Diamond shaped box in the upper righthand corner of a window; clicking on the full size box returns the window to its full size, or reduces it to its last size if it is already full size.

header

Line of text printed at the top of each page of a text document.

icon

Pictorial representation of a disc, application, folder or document. Any operation performed on an icon causes the computer to take the equivalent action with the corresponding data, etc. For example, deleting a document icon causes the data stored under the name of that document to be erased from the disc.

item

Application, folder or document in a directory.

item selector

Window displayed when a choice of document or a name for a new document is required. The item selector lists the documents in the current directory; the directory path name is shown in the top line of the window. To select an item, click on it or type its name in the selection line, and press the **RETURN** key or click on **OK**. If the required item is not in the current directory, move through the directory path by clicking on the close box and opening other folders by clicking on them. Folders are identified by diamond shapes to the left of their names.

memory

Temporary data store within the computer. Data stored only in the computer's memory will be lost on leaving the system or turning off the computer. As a safety precaution, always save your documents at frequent intervals during editing.

menu

List of commands or other options; click on the line offering the required function to select it.

menu bar

The bar along the top of the screen containing the names of the menus. Moving the pointer onto a name in the menu bar causes that menu to drop down.

mouse

Box with buttons; moving the mouse causes a corresponding movement of the pointer across the screen. Items and menu commands are selected by pressing the lefthand button when the pointer is over the required line or icon.

open

Display the contents of a disc directory, application, folder or document. Opening a document makes it available for editing. Opening a folder causes the contents of the folder to be displayed, either in a new Desktop window, or in the item selector if the folder is selected from this. Opening an application (the Paint or Write icon) starts the appropriate program and displays the screen with a new, empty document. Opening a disc icon displays the contents of the disc in a new Desktop window. An icon can be opened by double-clicking, or by clicking and then choosing the **Open** command from the **File** menu. In **Paint** or **Write**, a document is opened by selecting the **Open . . .** command from the **File** menu and supplying the document name to the item selector.

operating system

A large collection of programs which governs the internal management of the computer. The operating system coordinates the hardware and software, retrieves and interprets data input from the keyboard or disc drive and performs all types of controlling operations.

pointer

Indicator of position on the screen, usually in the form of an arrow. It moves corresponding to the movement of the mouse. The pointer changes shape during some operations.

save

Transfer information from the computer's memory to disc for permanent storage. It is advisable to save documents frequently to prevent substantial loss of data in the event of a power or computer failure, or accidental deletion of the document from the computer's memory.

scroll bar

Shaded area in the right or lower margin (or both) of many windows. Clicking on the shaded area causes a different part of the window to be displayed. The position of the slider indicates which part of the window is currently visible; click on the scroll bar to the right of the horizontal slider to display an area of window to the right of that displayed, click on the scroll bar below the vertical slider to display a lower part of the window, and so on. If no scroll bars are present, the entire window is visible. If one scroll bar is missing, the part currently visible extends to the limit of the window in that direction. For example, if there is no scroll bar above the vertical slider in a **Write** window, the beginning of the document is on screen.

select

To choose a menu item, icon or Paint symbol by clicking on it. Selecting a menu item causes a command to be executed; selecting an icon designates that icon as the one which will be affected by the next action or command; selecting a Paint symbol makes that the current tool, colour or pattern.

shift-click

Press and immediately release the lefthand button on the mouse whilst holding down either the **[SHIFT]** key on the keyboard or the righthand button on the mouse. Shift-clicking is used to select several items at once on the Desktop.

size box

Symbol in the lower righthand corner of many windows; drag the size box to modify the size of the window.

slider

Clear rectangle within the scroll bar. The size and position of the slider corresponds to the area of the window currently visible on the screen.

title bar

Bar across the top of a window reporting the name of the document or directory displayed in the window. When two windows are visible, the title bar of the active window is highlighted.

unavailable command

Menu command which is not currently available; unavailable commands appear in faint type.

window

Rectangular area displaying a document, directory, desk accessory or item selector. Only part of the document or directory may be present, in which case scroll bars and sliders indicate the area which is visible. Many windows have a title bar, menu bar, and size, full size and close boxes. More than one window may be present on the screen at once, but only one can be used (the active window).

9 GEM INDEX

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Part 2

DOS+

THE
CITY
OF
NEW
YORK
COUNTY

CONVENTIONS USED IN THIS MANUAL

- *CONFIGURE** Text to be typed in literally, or text displayed on the screen
- <number>** An item of data of the type indicated must be supplied, or is displayed on the screen. For example, a line described as Page <number> would appear with a number in place of <number>
- Open . . .** Option in a menu line or dialogue.
- RETURN** Press the key named.
- 4** Press a numeric keypad key. This **MUST** be used where shown; where numbers are shown otherwise, either set of numeric keys may be used.
- F0** Press the red function key indicated.
- User Guide* The title of a manual.

PREFACE

DOS Plus is a Disc Operating System whose function is to enable you to run your own applications and many commercial applications with maximum ease. It was developed by Digital Research to support both IBM PC DOS applications and CP/M applications. This version of DOS Plus (1.2) has been specially adapted for the Master series and is compatible with DOS version 2 and with most features of DOS version 3.

This manual is intended as an introduction to the many powerful features provided by DOS Plus for running your applications. It contains information on the common operations you will require and should be adequate for most of your requirements. If you want to go deeper into the full range of facilities offered by DOS Plus, see the Digital Research DOS Plus Users' Guide, 2nd Edition, available from Digital Research.

Chapter 1 is a brief outline of DOS Plus and its command format. Chapter 2 contains details of how to load the DOS Plus operating system, and get started using it. Chapters 3, 4 and 5 contain details of the commands and facilities you might use to handle your discs and files and Chapter 6 contains information on how you might want to set up particular applications that you use frequently. Chapter 7 outlines some of the other facilities in DOS Plus, and Chapter 8 introduces other commands and more complex use of commands already mentioned.

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1 INTRODUCING DOS PLUS

1.1 Introduction

This chapter explains briefly what an operating system is and what it does. It then introduces a specific operating system, DOS Plus, and describes some of its main features. Finally it shows the relationship between DOS Plus and the BBC Master.

1.2 What an Operating System Does

An operating system gives you control of the computer without having to learn complex sets of instructions. It enables you to manipulate files easily. It accepts characters from the keyboard and displays them on the screen. It controls the organisation and cataloguing of files on a disc and it gives you a flexible means of copying, rearranging or even erasing files. The operating system is a powerful tool that enables you to concentrate on the task you want to do, without worrying about how it is done or understanding the internal working of a computer.

There are many different operating systems each with their own particular features and accepting a specific range of instructions. But they all give you more or less the same facilities and they're used in much the same way. You instruct the computer to perform a task by giving it a command or a series of commands.

Some operating systems have become widely known and widely accepted because they are issued in different versions to suit a variety of computers. This is obviously a great advantage. It means that once you're familiar with a set of commands, you can use them on a number of different computers and achieve identical results. It also means that you don't have to worry about differences in hardware; the operating system will reliably and consistently interpret your commands and behave in a predictable manner.

However what matters to most users is not the operating system so much as the quality and variety of the applications software available. That is, the software that performs specific tasks: word processing, stock control, accounting and so on. The principle benefit of using a popular operating system is that a number of major software companies will have developed applications for it. This means that the applications are probably well designed, that you have a wide choice and that you can use the same application on a variety of computer systems.

Two operating systems have achieved particularly wide acceptance. The first is CP/M, developed by Digital Research Inc. and the second is DOS (Disc Operating System) introduced by IBM for the IBM Personal Computer. Because these two operating systems were adopted by a number of computer manufacturers, a wide range of applications has been developed and marketed that will run under versions of CP/M or DOS.

The availability of the applications led in turn to the development by Digital Research of a combined operating system, DOS Plus, that effectively offered the facilities of both DOS and CP/M. With one operating system, you can run either the applications that were originally developed to run under DOS or those that were developed to run under CP/M.

1.3 DOS Plus and the BBC Master

The DOS Plus Operating System allows you to select from an increasing range of commercial software applications to run on your BBC Master. For instance you have access to a number of sophisticated DOS and CP/M based application programs that were originally written for the IBM and other personal computers. However there can be compatibility problems and before buying a particular application you should check that it will function correctly on your BBC Master.

When the BBC Master is running a DOS or CP/M based application parts of its own operating system are disabled and replaced by appropriate parts of CP/M or DOS. This means that the Master no longer responds to the BBC range of commands but it behaves instead as a CP/M or DOS based personal computer.

However the facilities of DOS Plus have been extended to allow you to take advantage of many of the Master's facilities. For example you can use the mode and colour facilities and these are covered in later chapters of this manual.

The original CP/M and DOS operating systems have many features in common, and some fundamental differences. DOS Plus, by virtually combining

the facilities of both, exploits the common features and enables you to ignore some of the fundamental differences. For example, CP/M and DOS store data in different formats – and one operating system will not normally read from or write to a disc formatted for the other. However with DOS Plus you need not concern yourself about the different formats. The common features are described in the next section.

1.4 Features of DOS Plus

With DOS Plus the physical drives are identified by the letters A and B. If, in addition, you have a hard disc, this is identified as drive C. DOS Plus treats the whole of the disc surface as a single drive, so drive A reads and writes files on both sides of one disc and drive B reads and writes files on both sides of another disc.

The DOS Plus prompt is normally

```
A>
```

which indicates that A is the currently selected drive. In common with most operating systems DOS Plus has a number of default settings. A default is a value or choice that will automatically be made unless you specify something different. Therefore when you load DOS Plus it will automatically default to drive A, or drive C if you have a hard disc. Changing drives is covered in Chapter 2.

Communication with DOS Plus is through a set of instructions called commands. These commands are really just a set of program names. You enter the name of the command and the appropriate parameters, and the program is executed.

For example if you want to erase a file which you have called TEMP.TXT, you could issue the command

```
A>ERASE TEMP.TXT RETURN
```

where ERASE is one of the commands that you can use to delete a file.

1.4.1 Filenames

Generally speaking, filenames can be any combination of up to 8 letters and/or numbers. So you could have files called FRED, FRED1, ACCOUNTS or MAILSHOT. The filename can be followed by a full stop and an optional extension of up to 3 characters. The extension is often used to indicate file types, say BASIC files,

text files, GEM files, COBOL files and so on. Therefore the previous files could be named, FRED.GEM, FRED1.BAS, ACCOUNTS.COB, MAILSHOT.TXT

Chapter 2 explains in greater detail how you can use these file identifiers.

The erase command used in an earlier example was shown entered in capital letters but it could have been entered as

```
A>ErAse Temp.txt RETURN
```

because DOS Plus ignores the distinction between capital and lower case letters.

Files with names such as TXT, T.T, TEM.TX and Temp.tex will all be correctly identified as different files. But remember that temp.txt and TEMP.TXT will be identified as the same file.

Although DOS Plus ignores the case of letters you do have to be very precise about spaces (and other punctuation characters) because these are interpreted as separators between items. For example:

```
A>ERASE te mp.txt RETURN
```

would give you an error message because the space after te would be interpreted as the end of the filename and DOS Plus won't find a file named te. Of course if you do happen to have named a file with the abbreviation te DOS Plus would act on the command and erase it.

To summarise, a filename can be up to 8 characters with an optional 3 character extension that usually indicates the file type. But to specify a file completely you should also identify where it is. In other words you should indicate which drive holds the disc containing the wanted file.

Therefore to specify the file TEMP.TXT you should really define it as A:TEMP.TXT, where the A: indicates that the file is on drive A. In practice if your selected drive is A (confirmed by the prompt A>) you can omit the A: from the filename and DOS Plus will automatically look for the file on drive A. However if TEMP.TXT was in drive B you would need to specify B:TEMP.TXT or DOS Plus would fail to find the file.

Extending this idea a little further, you can use a single command to perform several operations. For example

```
A>COPY B:temp.txt A:final.txt RETURN
```

indicates that you want DOS Plus to copy TEMP.TXT from drive B to drive A and name it FINAL.TXT. Remember that the spaces mark where one file specification finishes and the next one starts. If you put an extra space after B: or A: the command will fail to produce the desired effect.

1.5 Conventions

In this manual we have basically to set out the examples of commands in the form that you would probably use. That is we've used lower case letters for filenames and we've left out anything such as drive letters that would be assumed by default. To ensure there is no ambiguity, we have included the prompt A> in each command, although you would not type that in. You might in fact be working with drive C (that is with C> as the prompt).

Anything you type in is shown in a different typeface on a separate line, like this

```
A>ERASE fred RETURN
```

The **RETURN** symbol means press the key on the keyboard marked RETURN.

For clarity we have shown commands in upper case and filenames in lower case as in the above example, but you would probably enter

```
A>erase temp.txt RETURN
```

The next chapter covers loading and starting to use DOS Plus and it discusses the concept of default drives in more detail.

2 GETTING STARTED

2.1 Introduction

This chapter shows you how to load DOS Plus on your Master system and then illustrates some of the naming conventions and rules for DOS Plus commands and files. Your first job after loading DOS Plus is to make a backup copy of the DOS Plus boot disc and that process is described here too.

If you have already been running an application that uses DOS Plus (for example GEM), you will already know how to load DOS Plus and you may already have taken a backup. In this case you may want to turn straight to section 2.5 of this chapter.

To load and run DOS Plus you need the following:

- Master Series computer with a co-processor fitted

- At least one disc drive

- A copy of DOS Plus (on disc)

- A blank disk (for the backup copy)

The co-processor is a printed circuit board housing an 80186 processor, which fits above the main circuit board in the Master series machine. It offers extra processing power to run computer languages, applications, and your own programs. For instructions on how to install the co-processor, refer to Section 7.3 in Part 1 (The GEM Collection) of this user guide.

2.2 Loading DOS Plus

- 1 Set up the microcomputer following the instructions in the *Welcome Guide* and turn it on. A message similar to the following should appear.

```
Acorn MOS
```

```
Acorn ADFS
```

```
BASIC
```

```
>_
```

- 2 Put the DOS Plus boot disc in drive A. (This may be labelled '0' on the disc drive.)
- 3 The computer doesn't yet know that the co-processor has been fitted. The computer communicates with the co-processor through a mechanism called the "TUBE" and the TUBE must be activated before the computer will recognise the co-processor. Do this by typing the command:

```
>>CONFIGURE TUBE [RETURN]
```

- 4 Then holding down **[CTRL]**, press and release **[BREAK]**
- 5 The screen ought to clear and then display a message like:

```
boot strap loader  
Loading DOS Plus ...
```

Wait for a few moments while the operating system is loaded from the disc in drive A.

- 6 The screen clears again and will display a new message something like:

```
Acorn MASTER 512, DOS Plus 1.2  
Copyright (c) Digital Research 1985, 1986  
80186 Xios Ver 1.00, Acorn Computers 1986
```

- 7 Finally the prompt, A>, appears which shows that DOS Plus is loaded and ready for use.

Before you do anything further, it is sensible to make a backup copy of the DOS Plus disc, and store the original disc safely away. If you don't take a copy you risk the problem of not being able to load DOS Plus if the original disc gets damaged or corrupted.

The way to copy the software is different for floppy disc systems (see the next section) and hard disc based systems (see section 2.4).

2.3 Copying DOS Plus – floppy disc system

- 1 Type

```
A>DISK [RETURN]
```

and a menu of options should appear.

- 2 Choose the **Format Diskette** option, which is highlighted on the list that appears, by pressing **RETURN**.
- 3 You will now be asked which disc drive you want to format on. Insert a blank disc into the second disc drive (drive B) and press **RETURN**. (If you only have a single disc drive then remove your master disc from your disc drive and replace it with a blank disc. Next, using the cursor keys, highlight the **Format on drive A** option and press **RETURN**. Disk will prompt you to swap discs at the appropriate time.)
- 4 This leads to a menu of format options. Choose the **640 Kb [DOS] Bootable DOS Disc** which is the one highlighted, by pressing **RETURN**.
- 5 A message appears to confirm your choice; check and press **RETURN** for yes.
- 6 The screen displays the formatting progress track by track. At the end you will see a message asking whether the disc is to be made bootable. Press **RETURN** for yes. If you have a single disc drive you will be asked to swap discs at this point.
- 7 The verifying procedure then follows automatically. At the end the screen returns you to the format menu. Move the cursor to the **Exit to main menu** option by using the cursor keys and press **RETURN**. Repeat this and you will be at the main menu.
- 8 Choose **Copy Diskette** from the main menu and press **RETURN**.
- 9 Press **RETURN** to copy from drive A and then press **RETURN** again to copy to drive B. (If you have a single disc drive system you will have to use the cursor keys to copy from drive A to drive A. DISK will then prompt you to swap discs at the appropriate time.)
- 10 Press **RETURN** to confirm your choice when the warning message appears. The screen displays the copying process. At the end, take out the freshly-copied disc, label it, and stick a write-protect tag over the notch on the disc.
- 11 Use the cursor keys to select the **Exit to DOS** option and return to the A> prompt. Remove the original disc from drive A and store it in a safe place. Use the copied disc as your boot disc from now on.

2.4 Copying DOS Plus – hard disc system

- 1 Check that the hard disc drive is properly fitted and formatted – consult the *Winchester Disc Filing System User Guide* for instructions if necessary.
- 2 Load DOS Plus from your DOS Plus boot disc as described in section 2.2.
- 3 Type the command:

```
A>HDISK 
```

- 4 The screen offers several different partition sizes: you don't need to allocate all the available space to DOS Plus and you can change the size of the allocation later (Note, however, that doing this will involve the loss of all the data stored on the hard disc and so you will need to take backup discs before changing your hard disc partition size). 10 megabytes is a suitable size. When you've made your selection, press . Press it again to confirm the choice. If a message reports that the disc is full, try allocating a smaller partition for DOS Plus. If you see a display saying that compaction is necessary, consult the *Winchester Disc Filing System User Guide* for instructions on compacting the disc.
- 5 The screen displays the progress of the allocation process and lists the options again. Choose **Make Bootable**, press and then press again to confirm the choice. This copies DOS Plus onto the hard disc and reports progress.
- 6 Select the **Exit to DOS** option using the cursor keys. This returns you to the A> prompt.
- 7 Type the command

```
A>COPY A:*. * C: 
```

to copy your files from your master floppy disc onto your hard disc.
- 8 Remove the DOS Plus boot disc and store it in a safe place. From now on you can load DOS Plus from the hard disc by pressing and simultaneously.

2.5 Using DOS Plus

We can now look at some of the features and conventions found in DOS Plus, by using a simple DOS Plus command. For convenience, in this section, we have assumed that drive A is the current default drive and therefore you will see the A> prompt at the front of each command; you don't need to type this when you are typing the command line. Remember too to key a **RETURN** at the end of each command line.

2.5.1 The DIR command

The directory (DIR) command lists the files on a disc. To see the files already contained on your DOS Plus boot disc, type

```
A>dir RETURN
```

The screen should fill with a list of files, each of the form:

```
DISK CMD      16640      16/04/86      9:13a
```

This example indicates that the disc contains a file called DISK, which is a program file (this is indicated by the CMD file extension), that occupies 16,640 bytes of store and was last changed at 9:13 am on April 16.

At the bottom of the listing is the number of files on the disc, the amount of free space (1 "byte" is equivalent to one typed character), and the message "system files exist" – this message shows that other files are present on the disc but haven't been displayed. System files aren't displayed by the DIR command because they are used by the system itself, rather than by you.

Next try typing, the command with some capital letters – for example:

```
A>dir RETURN
```

You will see the DOS Plus displays the directory listing again. DOS Plus ignores upper or lower case differences. You can enter commands in lower case, upper case, or any combination of the two.

However, now try,

```
A>d  ir RETURN
```

This doesn't work, and produces an error message, because DOS Plus recognises spaces as separators.

2.5.2 Filenames and filetypes

List the directory again by typing

```
A>DIR RETURN
```

and now look at how the files are listed. Each has a filename, for example, "DISK". (You will recognise DISK as the formatting/copying program you used earlier to make a backup of DOS Plus. DOS Plus permits filenames of up to eight characters and using any combination of letters and numbers on the keyboard. Most other keyboard symbols will cause an error, because DOS Plus recognises them as having other uses.

Each file should also have a filetype. DISK's filetype is CMD, which, by convention, shows that DISK is a "command" file (ie a program) in DOS Plus.

Filetypes can be up to three characters long and you can chose any combination of letters and numbers, just as you can for filenames. However, you will find it useful to adopt some conventions for your filetypes. COM, CMD, and EXE filetypes are often used for program files. TEX or TXT is common for text files; BAK is standard for backup files of any kind. Applications will often generate files with readily identifiable filetypes – for example, GEM Paint creates files with an IMG extension.

These "filetype" conventions do not actually mean anything in themselves – they are just a useful way of classifying files. You could, without creating an error message, create files with random collections of 1,2 or 3 character filetype extensions to their filenames. However, just as it is useful to give files sensible filenames, it is useful to give files sensible filetypes.

Another advantage of filetype conventions is that they enable you to use 'wildcards' in certain DOS Plus commands.

For example, suppose you want a directory of all the command files on your disc. Type:

```
A>DIR *.cmd [RETURN]
```

The "wildcard" character "*" represents any character or group of characters in a filename. If you type:

```
A>DIR d*.* [RETURN]
```

You will see this lists all the files beginning with d. Wildcards are described fully in section 4.3.

As well as filename and filetype, the DIR listing displays the amount of disc space occupied by the file and the date and time it was copied.

2.5.3 Internal and external commands

Look again at the DIR listing of DOS Plus boot disc by typing

```
A>DIR [RETURN]
```

We have said that this lists all the command (ie program) files. Notice, however, that DIR itself is not listed. This is because DIR is one of many

“internal commands”. Internal commands are loaded into the computer memory whenever DOS Plus itself is loaded. The files listed on your screen are the DOS Plus “external commands”; they are only loaded from disc into the computer memory as you need them – generally, it is the large programs which are external.

You could think of the internal commands as the ordinary instructions and the external commands as utility programs. But they are all used in the same way.

The only practical difference between internal and external commands is that you don’t need the DOS Plus boot disc in the drive when you are using internal commands. However, if you try to use an external command without the DOS Plus boot disc in the drive, the screen will prompt you to insert the DOS Plus boot disc into drive A with the message:

```
Not ready error reading drive A
Abort or retry?
```

2.5.4 Default drive

Now try typing:

```
A>b: RETURN
```

Notice the screen prompt has changed to

```
B>
```

What you have done is change the “default drive” – the drive which DOS Plus automatically looks at if you don’t specify a drive. If you now try

```
B>DIR RETURN
```

you see an error message, because DOS Plus looked for a disc in drive B and didn’t find one.

If you want DOS Plus to look at a drive other than the default drive, simply include the drive name plus a colon when you type the command – for example:

```
B>DIR a: RETURN
```

This will list the contents of the DOS Plus boot disc that is in drive A, as before. But notice that the default drive stays unchanged until you specifically change it. You will continue to get the B> prompt until you enter the command

```
B>a: RETURN
```

to switch the default drive back to A.

2.6 Leaving DOS Plus

To leave DOS Plus and disconnect the TUBE, simply type:

```
A>NOTUBE 
```

and the system returns to the familiar Master Series prompt.

3 DISK HANDLING

3.1 Introduction

This chapter looks at how you prepare discs and organise files, when using DOS Plus or applications that run under DOS Plus. You will be familiar with some of these procedures already, as they were introduced in the previous chapter when you copied the DOS Plus boot disc. Here we look at the whole process of formatting, verifying and copying discs. We also show you how to create families of files to simplify the storage and retrieval of data.

3.2 Formatting and verifying discs under DOS Plus

An unformatted disc contains neither files, nor data or any other meaningful signals. When you format a disc you simply lay down some basic control information that enables DOS Plus to identify areas of the disc quickly. It needs this information so that it knows where to save files and where to look when you want to retrieve them. The disc format also gives DOS Plus the basic information it needs to create and maintain a catalogue (or directory) of your files.

Different operating systems, and different makes of computer running the same operating system all format discs in slightly different ways. DOS Plus accepts discs that are formatted either under the DOS or CP/M operating systems, as explained in Chapter 1.

Once a disc has been formatted the operating system then verifies it to confirm that the process has been carried out correctly. Hard discs and floppy discs must all be formatted before they are used. Once formatted, a disc can be used indefinitely without reformatting.

Caution:

Formatting a disc destroys any information already on the disc. Remember too that a disc can have only one format at any one time. You cannot,

for example, have a disc containing a mixture of BBC-formatted files and DOS formatted files.

DOS Plus allows you to format blank discs as either DOS or CP/M discs by using the DISK command.

To use DISK, load DOS Plus as explained in Chapter 2 and type

```
A>DISK [RETURN]
```

When the menu screen appears press **[RETURN]** to select the **format disk** option.

Press **[RETURN]** again to format on drive B, or use the cursor keys to choose drive A.

This produces a new screen with several different choices for disc formats. Generally you will be using the Acorn-type formats, which prepare discs suitable for use on the Master 512. (The remaining options allow you to prepare discs in formats used on machines other than the BBC Master 512).

The first option in the list:

640KB [DOS] Bootable DOS disc

is designed mainly for copying the DOS Plus boot disc. The one you will use most of the time is the next one:

800Kb [DOS] Acorn DOS Format

You might also use one of the other options

400Kb [CP/M] Acorn Z80 Format

if you have a Z80 second processor running CP/M.

The choice of format depends on what you will be using the formatted disc for.

Having decided which format you need, use the cursor keys or the spacebar to select the appropriate formatting option.

Press **[RETURN]** and then follow the on-screen directions.

Once formatted, the disc is automatically verified.

3.3 Copying discs

DOS Plus allows you to copy discs. A typical use for this is to make a backup copy of a disc as a safeguard against disc failure or accidental damage. You will

see later (Chapter 4) that DOS Plus also allows you to copy individual files or groups of files.

To copy the contents of an existing disc onto a new blank disc, you must first format it as described in the previous section. (Note that the format chosen should be the same as that of the existing disc.) You then use the DISK command again

```
A>DISK 
```

and select the **Copy Diskette** option by using the cursor keys or the spacebar. Then follow the on-screen instructions.

3.4 Formatting and copying from within applications

Some commercial applications that run on DOS Plus allow you to format discs and make backup copies from within the application. Note that the procedures may be different from those outlined here and you should refer to the manufacturers' documentation in each case.

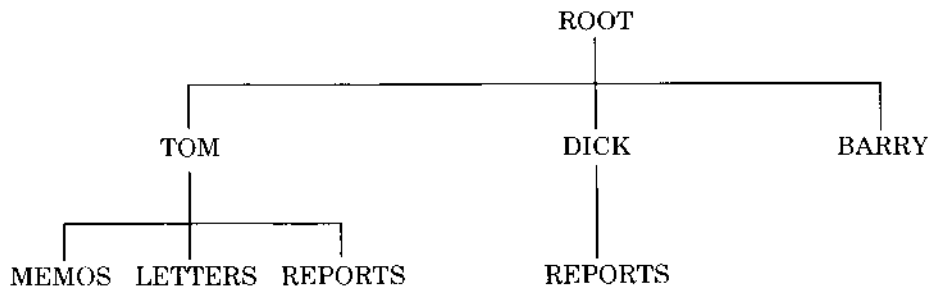
3.5 Organising your discs

Once your discs are formatted correctly you can use them with your chosen applications. However, if you will be storing a large number of files on disc, you may find it helpful to organise your disc in some way, so that files can be stored within a logical structure.

Under DOS Plus you can store files in directories (similar to the catalogues in the BBC format). DOS has two types of directory: root directories and subdirectories, and it is by using these that you can create a logical file structure. The root directory can be a master directory with as many levels of subdirectory beneath it as you wish. Using these directories you can find and store files easily and efficiently.

For example, suppose three users, Tom, Dick and Barry, are writing memos,

reports and letters, and storing them all on the same disc. They might want a directory structure with two levels of subdirectory such as that outlined below.



Tom files all his memos, letters and reports in separate subdirectories. Dick keeps his reports in one subdirectory and everything else in the subdirectory DICK. Barry hasn't bothered to separate his work out and he stores all his different text files in the one subdirectory called BARRY. It is extremely difficult to keep track of the contents of files once they are on disc. You are advised in your own interests to use the subdirectory facility.

Files such as address lists that Tom, Dick and Barry may need to use are usually kept in the root directory.

3.5.1 Creating a directory structure: the MKDIR command

You can easily create a directory structure under DOS Plus by using the MKDIR command. MKDIR creates as many subdirectories as you like, and you can create directories whenever you like, so that your filing system grows with the contents of the disc. (Note that there are limits to the number of subdirectories you may have, but you are unlikely to reach these in normal disc use).

MKDIR commands are all of the following form:

```
A>MKDIR {drive}<path to new directory>>directory name
```

So, to create subdirectory TOM in the above example you would need to type:

```
A>MKDIR \TOM RETURN
```

where \ stands for the root directory. To create MEMOS as a subdirectory of TOM you need to specify the location of the new subdirectory in relation to \ (the root) and TOM. So you would type:

```
A>MKDIR \TOM\MEMOS RETURN
```

In this case the path from the root directory to the new directory is ROOT-TOM-MEMOS and the DOS Plus syntax for that path is \TOM\MEMOS

Similarly, to create Tom's subdirectory LETTERS, type:

```
A>MKDIR \TOM\LETTERS [RETURN]
```

Tom's directory structure is then completed by creating his REPORTS subdirectory:

```
A>MKDIR \TOM\REPORTS [RETURN]
```

Dick's subdirectory structure is created in the same way:

```
A>MKDIR \DICK [RETURN]
```

(this creates DICK as a root directory of the subdirectory)

```
A>MKDIR \DICK\REPORTS [RETURN]
```

(this creates REPORTS as a DICK's subdirectory)

3.5.2 Displaying a directory structure: the TREE command

The TREE command displays all the subdirectories on a specified disc.

Example:

```
A>TREE b: [RETURN]
```

displays the directory structure of the disc in drive B. If you don't specify a drive, TREE displays the subdirectories in the default drive.

3.5.3 Using Subdirectories: the CHDIR and PATH commands

Each time you try to access a file, DOS Plus looks for it in the root directory, unless you specify otherwise. The root directory is the 'current' directory at the beginning of each DOS Plus session.

However, if you are using a directory structure, most of your files will be in subdirectories rather than the root directory. If you want DOS Plus to look in a specified subdirectory, rather than in the root directory use the CHDIR command.

The CHDIR command

CHDIR changes the current directory, so that DOS Plus looks for a file in your specified subdirectory rather than in the root directory. That directory remains the current directory until you change it with another CHDIR command or finish your DOS Plus session.

You can use CHDIR in a similar way to MKDIR, and specify the path from the root directory to the subdirectory. For instance, in our example, if Dick wants

his REPORTS directory to be the default directory, he can type:

```
A>CHDIR \DICK\REPORTS [RETURN]
```

and DOS Plus will access files on his REPORTS directory (and nowhere else) until he specifies another subdirectory to be the default directory.

The PATH command

Sometimes it's useful to tell DOS Plus to look for a file in several subdirectories. You can do this with the PATH command. After you've set a PATH command, DOS Plus will look for a file first in the current directory, and then in the list of subdirectories you specified in the PATH command.

Note

PATH only works for executable files (programs) with CMD, COM, EXE, or BAT filetypes. For other files (such as text files), DOS Plus will only look in the current directory.

For example:

```
A>PATH \TOMREPORTS;\DICKREPORTS;\BARRY;B:\ [RETURN]
```

This will cause DOS Plus to look first on the current directory (whatever that is) and then in TOM's REPORTS directory. It will then go to DICK'S REPORTS directory and then to directory BARRY. Finally it will go to the root directory in Drive B. Note that

- each directory in the PATH list is separated by semicolons in the PATH command and
- PATH will search drives other than the default drive.

To display the current PATH setting simply type:

```
A>PATH [RETURN]
```

To cancel the current PATH setting type:

```
A>PATH; [RETURN]
```

If no PATH is set, or the PATH setting is cancelled, DOS Plus will only look for a file on the current directory.

3.5.4 Deleting Directories: the RMDIR command

RMDIR removes a subdirectory from the specified disc. Before using RMDIR you must remove any files that are in the subdirectory.

Note:

DOS Plus creates two files on each subdirectory for its own use; one is called '.' and the other '..'. These can't be removed and you can ignore them.)

Example: provided all files have been removed from the subdirectory MEMOS, the following command removes it from the disc

```
A>RMDIR \TOMMEMOS RETURN
```

4 FILE HANDLING AND PRINTING

4.1 Introduction

DOS Plus offers powerful file handling features: you can use DOS Plus for all the things you might want to do such as copying files, or combining several files into one, as well as erasing files when you don't need them any more, or renaming them as your filing system structure develops. You can also 'print' text files on the console screen or on a printer.

Files are usually created by applications programs rather than by DOS Plus itself. We will see later how you can create files with DOS Plus, using either the COPY or ED commands. In this chapter, however, we will concentrate on using DOS Plus in file management with existing files.

4.2 Copying files

The COPY command enables you to copy a file onto another disc, drive or directory. The original file remains intact.

Suppose you want a copy of the file filename.ext on another disc. Put the original disc (the source disc) into one drive, say drive A, and then type:

```
A>COPY a:filename.ext b: [RETURN]
```

The screen will then prompt you to insert a disc into drive B (because you specified b: in the command as the destination). COPY works equally well with systems containing one or two floppy disc drives, or a Winchester hard disc drive; the Winchester is typically referred to as drive C.

COPY differs from the copying option found in the DISC command. That option is designed for producing backup copies of entire discs. Use COPY when you want to process single files or groups of files:

- COPY doesn't automatically copy the whole disc. You can choose which files you want to copy.

- COPY only overwrites existing files of the same name on the target disc, DISK will overwrite all files on the target disc.

COPY is a powerful DOS Plus command which can do more than we have described here. (See section 4.5 for a use of COPY in combining files, and section 5.2 for creating files using COPY CON:). COPY can be used to move copies of files to or from a printer, keyboard, console or auxiliary device such as a modem. For information on these functions, see the full DOS Plus manual.

You can use wildcard characters to copy groups of files. For example, suppose you have many files on a hard disc and you want to take a disc of all the letters sent to Belgum (which you have identified by the blg extension), type:

```
A>COPY c:*.blg a: 
```

The * character matches all letters in a filename, so *.blg identifies and copies all the files with the blg extension (see next section for full details.)

4.3 Using Wildcards

If you are performing the same operation on a number of similar files, DOS Plus provides a shortcut that will save you typing in a string of similar commands. "Wildcard" characters can replace some or all of the characters of the filenames specified in most commands.

Two wildcards are provided in DOS Plus:

- The ? character which replaces a single letter in a file specification
- The * character which replaces several letters in a file specification.

These characters can be used separately or together to create ambiguous file specifications.

For example, suppose you have the following files in a directory on drive A:

```
reports1.jja  
reports2.jja  
reports3.jja  
memo.jja  
address.jja  
reports1.amk  
reports2.amk  
amemo.amk  
bmemo.amk  
report  
report10.jja
```

You could use wildcards in several ways:

```
A>DIR reports?.* RETURN
```

Lists all the files that begin with the letters "REPORTS", followed by one character and have any (or no) file extension. That is, it will list reports1.jja, reports2.jja, reports3.jja, reports1.amk and reports2.amk. It would miss report10.jja and report. You would need report??.* to catch those.

```
A>COPY a:?memo.amk b: RETURN
```

Copies amemo.amk and bmemo.amk from drive A onto drive B.

```
A>DIR r*.jja RETURN
```

or

```
A>DIR rep?????.jja RETURN
```

or

```
A>DIR rep*.?j? RETURN
```

or several other combinations would all list reports1.jja, reports2.jja, reports3.jja and report10.jja, but not reports1.amk or reports2.amk

Remember that wildcards can only be used in filenames and file extensions, not as drive specifiers or in typing DOS Plus command names DOS Plus only uses wildcards as a pattern when it is searching a disc directory, so a few commands do not permit wildcard characters.

4.4 Renaming files

The RENAME command simply changes a file's name. You can change the filename, the filename extension, or both.

To rename a file, inset the disc that contains the file you want to rename and type, for example:

```
A>RENAME oldfile.ext newfile.ext RETURN
```

This will rename the file oldfile.ext as newfile.ext. The renamed file stays in the same drive (and directory), which in this example is drive A.

Notes

- 1 You can abbreviate RENAME to REN

- 2 You can rename a file that is in a different drive by adding the drive letter before the old file name, for example:

```
A>REN b:oldfile.ext newfile.ext RETURN
```

- 3 RENAME permits wildcards – see section 4.2 above – so that you can rename a series of files. For example:

```
A>REN b:*.tex *.bak RETURN
```

This will rename all your tex files on drive B as bak files.

4.5 Combining files

You can use COPY to combine several small files into a larger one.

Put into drive A the disc containing the files you want to combine and type

```
A>COPY file1.ext+file2.ext newfile.ext RETURN
```

This copies the contents of file1.ext and file2.ext into a new file called newfile.ext on the same drive. Note the space before newfile.ext that signals the end of the source file list. You can also copy to or from a different drive by adding drive letters. For example:

```
A>COPY file1.ext+file2.ext b:newfile.ext RETURN
```

copies from the default drive onto drive B.

The original file1.ext and file2.ext are left intact (you can erase them if you want to by using the ERAQ command as described below.)

4.6 Erasing Files

The ERAQ command erases files from a disc. Use this command carefully, because once a file is erased it is lost completely.

To erase a file, insert into drive A the disc containing the file you want to erase and type

```
A>ERAQ filename.ext RETURN
```

This produces the message:

```
filename.ext (Y/N)?
```

Check the filename to make sure it is correct, and they type *y* to erase the file (or any other key to leave it untouched).

You can delete several files in a series by using wildcards. This saves you typing in a long list of similar commands. For example if you wanted to delete all the backup files from a disc you could enter ERAQ*.bak. Use ERAQ in this way if you want to keep one or two bak files but delete the rest.

There is another command, ERA, that works in a very similar way to ERAQ except that ERA deletes the files without questioning you. ERAQ is safer because it gives you the chance to check before it's too late.

4.7 Displaying files

TYPE displays the contents of a specified text file on your screen, or at the printer, or both.

To use TYPE, insert, into disc A for example, the disc containing the file you want to display and type:

```
A>TYPE filename.ext RETURN
```

This scrolls the text of the file up the screen. Press **CTRL** and S to interrupt the listing and **CTRL** and Q to resume.

If you want to display a screenful of text at a time, type /P:

```
A>TYPE filename.ext /p RETURN
```

To list the file at a printer as well as on the screen, type **CTRL** and P before entering the TYPE command. To stop the printer at any time, type a second **CTRL** and P. The listing will continue on the screen.

5 CREATING AND EDITING FILES

5.1 Introduction

Generally speaking, you will be creating and editing files within your application programs. For example, you would normally create text files using your word processor, program files using your compiler program, record files using your database program, and so on. And then you would change those files using the same application program that you used to create it.

However, sometimes you may want to create or edit text files in DOS Plus, perhaps because you want to run a batch program as described in the next chapter. There are two ways of creating a text file in DOS Plus: you can either 'copy' it from the keyboard or use the ED text editor to type it into a file.

5.2 COPY CON:

The COPY command is used to copy files between discs, as described in Chapter 4, but it can also be used to copy files to and from other devices such as a printer, screen or keyboard. Therefore, you can 'copy' a file from the keyboard into a file on disc, thus creating a file.

To do this you specify the source file (where the file originates) as CON: (the console), in a statement such as:

```
A>COPY CON: batch.bat RETURN
```

Whatever you type in after **RETURN** will then be recorded in the file batch.bat on drive A. You can type in anything you want, and it might typically be a few lines of DOS Plus commands.

At the end of the last line, enter **CTRL** and Z (press Z whilst holding down the **CTRL** key) instead of **RETURN** and you will be returned to the command line prompt, A>. You have created a text file batch.bat that contains the characters you typed in and can be processed in the same way as any text file.

So, COPY CON: is a quick and easy way of creating files. But you cannot

correct typing errors during the copy, so you need to be very careful, and therefore this method is practical only for text files of a few lines. The ED text editor is probably easier to use for creating larger text files, and you can also use ED for correcting errors in your COPY CON text file.

5.3 The ED Text Editor

The text editor, ED, can be used to create text files or to edit existing text files. It is designed as a programmers editor rather than for word-processing as such. ED is a comprehensive editing program, and only the basic writing and editing commands are documented here.

If you wanted to create a new file called (for example) batch.tex. You would call the editor with the command:

```
A>ED batch.tex RETURN
```

A new file, batch.tex would then be opened and you would see the ED prompt asterisk on the left hand side of the screen.

You are in the ED command mode after typing the above command, so any characters you type will be interpreted as commands by DOS Plus. So the first thing to do is put ED into insert mode by typing:

```
:*i RETURN
```

Now type in the text you want (ignoring any typing errors for the moment), and when you have finished press **CTRL** and Z to change back into command mode, indicated by the :*.

Your text is now stored in a buffer. To write your text to your file batch.bat, enter the command:

```
:*e RETURN
```

which ends the edit session. You now have a file batch.tex on the disc in drive A.

If you now want to edit your file, call ED again:

```
A>ED batch.tex RETURN
```

ED now displays

```
:*
```

to show that its pointer (an imaginary cursor) is at the beginning of the buffer.

First you want to bring the text into the buffer by entering

```
:*#a RETURN
```

Then to display the contents of the buffer on the screen. You do this by entering the 'page' command that moves the pointer to the end of a 23-line 'page' of text:

```
:*0P RETURN
```

Now you can move the pointer to the place in the file that you want to edit with the commands:

ln to move the pointer up or down by n lines, and
cn to move the pointer right or left by n characters.

For example:

```
:*l4 RETURN
```

```
:*C-8 RETURN
```

will move the pointer down four lines and left eight places. And:

```
:*l-2 RETURN
```

```
:*c3 RETURN
```

will move the pointer up two lines and right three places.

At any point

```
:*Op RETURN
```

will display the text to the right and below the current pointer position.

Once you have the pointer where you want it, you can insert characters (by using the command i followed by the characters, followed by **CTRL** and Z), to delete characters using the command d with a number to indicate how many characters to delete. For example:

```
:*d-4 RETURN
```

will erase the four characters on the left of the cursor position.

If you get confused

```
:*b RETURN
```

will move your pointer to the start of the buffer.

Carry on in this way until you are happy with the text and then use the command e to end the editing sequence and write your text from the buffer into the file. ED will, as a precaution, retain the original, unedited file and change its filetype to bak to signify that it is a backup file – so in our example the original file batch.tex would be renamed as batch.bak.

In some cases you may want to use a fuller version of ED, specifying a destination filename as well as a source filename, for example:

```
A>ED B:source.tex A:newname.tex RETURN
```

In this case file `source.tex` on drive B will be preserved intact and the edited version of `source.tex` will be written to the file `newname.tex` on the drive A.

This description of ED has assumed that you are creating and editing small files (less than 23 lines in length), and therefore has given only a few of the ED commands. In fact you can do quite complex things with ED such as searching for strings of characters, substituting strings, deleting lines, repeating a group of commands, and so on. These facilities are described in the *DOS Plus Users' Guide* and the *DOS Plus Programmers' Reference Guide*.

6 DOS PLUS AND APPLICATIONS

6.1 Introduction

This chapter outlines some general features of running applications programs under DOS Plus. You will also find ideas on how to minimise some of the repetitive tasks involved in using your Master with an applications package.

6.2 Running Applications Under DOS Plus

An application is any program or set of programs that enables you to perform a specific task. Many commercial applications are available – spreadsheets for your accounts, word processing packages for your letters, databases for your records, or multi-purpose packages which do all three. Or you may have written your own application to run under DOS Plus.

Whatever the task is, and whatever your chosen application, you can treat it as a program, needing some sort of organised input, and producing some sort of organised output. And the process is always the same. To run the program you need to switch on the computer, load DOS Plus, load the program, enter the input, produce the output, leave the program, perhaps tidy up and file the output, leave DOS Plus and switch off the computer.

In the simplest case, you use DOS Plus just to run the application program: all you have to do is type the program name on the command line. For example, suppose you have bought a word processing package called EXAMPLE. Running EXAMPLE involves the following steps:

- Load DOS Plus
- Load EXAMPLE by entering:
A>EXAMPLE **RETURN**
- Create, edit, print files using EXAMPLE

● Leave EXAMPLE

You have done everything you want using the application itself, including saving, sorting and deleting your text files.

6.3 Configuring, Entering and Leaving Applications

There are, however, three ways in which your life with EXAMPLE may not be quite so simple:

- 1 EXAMPLE may be a general purpose program that needs to be tailored for your particular configuration. Typically you might need to give specific details of your printer and the amount of memory you have available, and you will probably want to set the function keys if your application has function key facilities. This whole process is known as 'configuring' your application.
- 2 EXAMPLE may not include all the facilities you want for handling your files. Typically you might want to look at the DIR listing of a particular disc, to see if it's the one you need or to remind yourself of a particular filename. This means leaving the application, using DOS Plus commands, and then reentering the application where you left it.
- 3 Similarly, after you have finished with an application, you may want to do some 'housekeeping' tasks that you can't do within the application. For example, you may want to backup all your files on disc, or process selected files to use as input for another application.

In the first case, what you need to do depends very much on the particular application. In other cases, the documentation provided with the package will enable you to configure the package for your Master 512. More than likely, you will be able to 'save' this configured version of the application, so you need only go through the exercise once.

In the second case, you need to ensure that you leave the application tidily, so that you do not lose any files or waste any of your work. So follow the procedure as if you had finished the task, quitting the application in the usual way. When you restart, you may have to repeat some activities or go through some file opening exercise again to get back to your exit point.

A few applications, such as GEM, allow you to break off and return to the

application without having to re-load it. Such applications make use of the DOS Plus EXIT command. If you are running an application that allows you to use EXIT, and you are in DOS Plus, and you want to return to the application, simply type:

```
A>EXIT RETURN
```

and you will return to the application without reloading the program.

In the third case, your concern is probably one of efficiency, file security or storage space (or a mixture of all three). All three involve moving, erasing and duplicating files using the DOS Plus commands covered in earlier chapters. But bear in mind that sensible use of filetype extensions and wildcard characters can make housekeeping quite easy. You might also consider using a 'batch file' if you are continually doing the same kind of routine job that involves a series of DOS Plus commands – see the next section.

6.4 Automatic Loading and Batch Files

So far we have considered using an application as an occasional exercise. You might, however, use a particular application (say word processing) almost all the time. If so, you may be able to save yourself some time by writing a program such that the application is loaded automatically when you load DOS Plus.

Such a program is an example of a 'batch file' – that is, a file containing a list of DOS Plus commands which DOS Plus reads to save you entering each command individually from the keyboard. A batch program used for a startup sequence is often called an AUTOEXEC.BAT batch file.

You can create an AUTOEXEC.BAT file (or any batch file) using a word processing program or editor and then store it on the DOS Plus boot disc (or hard disc). The file can contain any DOS Plus commands, and they will be executed automatically as soon as DOS Plus is loaded. The effect is therefore as if you had loaded the application directly.

Batch files allow you to display remarks on the screen as the batch file is being executed, and also have a facility for pausing whilst you change discs, for example, or type in some information such as the current date.

Below is an example of an AUTOEXEC.BAT file which will automatically run after you load DOS Plus, change the default drive to B, prompt you to insert

the disc containing your word processing program EXAMPLE, and then load EXAMPLE. (REM is the batch programming command for 'remark'):

```
REM Ready to load word processor EXAMPLE . . .
```

```
B:
```

```
PAUSE Insert EXAMPLE Disc in Drive B
```

```
EXAMPLE
```

You might want to create another batch file for the disc housekeeping purposes. For example, at the end of each day's work you may want to store your files on a backup disc. Below is a batch file that would do this for you. It assumes that all the files you want to backup have the XWP (for example) filetype.

```
PAUSE load work disc in drive A
```

```
PAUSE load backup disc in drive B
```

```
COPY A:*.XWP B:*.BAK
```

```
REM Copy finished. Don't forget to take out the discs.
```

If you called this file, say ENDOFDAY.BAT, you could run it simply by typing the command:

```
A>ENDOFDAY RETURN
```

after you have left the application you were using. It would prompt you to insert the appropriate discs, perform the copy operation, and then prompt you to remove the discs before returning you to the A> prompt so that you can switch off.

You can put any valid DOS Plus command into a batch file, and there are several powerful batch programming commands in addition to REM and PAUSE. Some of these are mentioned in Chapter 8 and all of them can be found in the DOS Plus Users' Guide and the DOS Plus Programmers' Reference Guide.

7 OTHER FACILITIES IN DOS PLUS

7.1 Introduction

This chapter looks at some features of DOS Plus that are unique to the BBC Master.

7.2 Passing commands to the BBC Operating System

The utility STAR allows you to pass commands to the BBC operating system.

WARNING

Make sure that you are clear exactly what you are doing when you use the STAR command as incorrect use could lead to serious loss of data.

If you type:

```
A>STAR RETURN
```

you will receive the prompt

*

You can then enter a command (such as CAT for example) that is recognised by the BBC operating system. The * prompt will continue to appear until you enter

```
* RETURN
```

when you will be returned to the normal DOS Plus prompt.

If you want to use a single * command, such as CAT, and then return directly to DOS Plus, you can type

```
A>STAR CAT RETURN
```

7.3 Copying files between DOS Plus and BBC format

If you wish to copy files from BBC format to or from DOS Plus, you can do this with the GETFILE and PUTFILE commands. GETFILE copies from BBC Master filing systems to DOS Plus and PUTFILE copies from DOS Plus to BBC filing systems.

For example:

```
A>GETFILE :0.fred B:jim RETURN
```

copies the file fred from ADFS format in drive 0 to DOS Plus format in drive B, and renames it jim

```
A>PUTFILE A:letter :3.letter /disc RETURN
```

copies the file letter from DOS format in drive A: to DFS format in drive :3

7.4 Using DOS Plus for screen emulation

PCSCREEN allows you to select an IBM screen emulation mode. The main use of this is to reset to the mode after a program has changed it.

Modes 0-6 emulate modes on an IBM Colour Card. Mode 7 is the native BBC 80x25 text mode.

For example:

```
A>PCSCREEN 7 RETURN
```

sets you to screen mode 7.

7.5 Altering the screen colours

COLOUR allows you to change the screen colours between various options. The command has the form

```
A>COLOUR x y
```

The options for x are:

- 0 — 80 column background
- 1 — 80 column foreground
- 2 — GEM background
- 3 — GEM foreground
- 4 to 7 — 4 colour modes

The second number is the physical colour to be displayed. The options are:

- | | |
|-------------|-------------------------------|
| 0 — black | 8 — flashing black / white |
| 1 — red | 9 — flashing red / cyan |
| 2 — green | 10 — flashing green / magenta |
| 3 — yellow | 11 — flashing yellow / blue |
| 4 — blue | 12 — flashing blue / yellow |
| 5 — magenta | 13 — flashing magenta / green |
| 6 — cyan | 14 — flashing cyan / red |
| 7 — white | 15 — flashing white / black |

These colours remain set throughout a DOS session. The default choices are black on white.

For example:

```
A>COLOUR 0 2 RETURN
```

```
A>COLOUR 1 0 RETURN
```

This produces black text on a green background.

8 THE NEXT STEP

8.1 Introduction

This Introduction has given you the basic information you need to run applications under DOS Plus. It has concentrated on the commands most frequently used for file manipulation.

However, DOS Plus has far more facilities than can be covered in here. It has other commands and facilities, and there are more versatile and complex forms of the commands you've already met. Whatever you might want to do with DOS Plus, there is almost certainly a way of doing it.

This chapter very briefly outlines some of these extra facilities. You will find full details in the Digital Research's DOS Plus Users' Guide.

8.2 Advanced file copy facilities: COPY and PIP

The COPY command can include options to the files you specify. For example, the + option has already been described in Chapter 4. It is used to combine several files into one file. The most useful of the remaining options is probably /V, which compares source and destination files. For example,

```
A>COPY <sourcefile> <destfile> /V RETURN
```

will cause the newly copied file destfile to be verified against sourcefile, to check that the copy is complete and accurate. (Note that the copying will take longer because of the verification stage).

You may also find the /A and /B options useful if you want to read or write ASCII text files. For example:

```
A>COPY <sourcefile> <destfile> /A RETURN
```

causes the destination file to be written as an ASCII (text) file followed by an end-of-file character **CTRL-Z**. On a source file /A will copy characters up to the first **CTRL-Z**, and then ignore anything that follows. /B has the same

effect except that it ignores any **CTRL-Z** characters in a source file, and doesn't add a **CTRL-Z** to a destination file.

COPY can also be used to copy files between disc, keyboard, screen and printer by specifying an output device. In chapter 5 the device name CON: was used to create a file by 'copying' it from the keyboard. You can also use CON: instead of the destination filename to display files on the console screen. For example:

```
A>COPY B:myfile con: RETURN
```

displays the file on the screen.

Perhaps more useful is the device name PRN: which you can use to copy ASCII (text) files onto your printer:

```
A>COPY *.txt PRN: RETURN
```

gives you a printed copy of all the txt files from the disc in drive A.

Another command that performs much the same operations as COPY is the Peripheral Interchange Program (PIP). PIP is one of the most powerful and versatile DOS Plus commands. It takes the basic form:

```
A>PIP <destfile>=<sourcefile> RETURN
```

but allows you to specify twenty or so different options to process your files while they are being copied. You can also specify 'auxiliary' devices such as printer or keyboard for the source and destination of the file. In addition, if you have a sequence of copying commands to enter, you can save time by using PIP in a multiple command mode. This saves you from loading the program into memory for each copy operation.

Here are some of the PIP options:

- [A] is the archive option, which will only copy files that have been modified since the last backup operation.
- [C] asks you to confirm each file before the copy operation, so that you can selectively copy files or groups of files.
- [L] after the sourcefile changes all uppercase characters in the sourcefile to lowercase in the destination file. [U] will achieve the opposite, changing lowercase to uppercase in the destination file.

8.3 Background Programs

DOS Plus allows you to run certain programs in the background. This means that you can run your applications using the screen and keyboard as usual, but up to three other programs may be running (fairly slowly) at the same time.

This is possible because the memory and the computer processor are shared between the various background programs and the foreground program. DOS Plus manages the use of store and processing power in such a way that you may not even notice that your foreground program is running a bit more slowly than usual. (In fact you can use commands `ADDMEM`, `COMSIZE` and `SLICE` to specify different timesharing rates to suit your particular requirements).

You are kept informed of what is happening in the background via the `BACKG` command, which displays the names and current status of your background programs. For a status display, type:

```
A>BACKG RETURN
```

Two background programs are provided with DOS Plus: `ALARM` (a diary/ alarm facility) and `PRINT`.

8.3.1 The `ALARM` command

The `ALARM` command enables you to send yourself messages at specified times and days. It is a background program that can be used as a diary or 'bring up' reminder.

The options are:

```
A>ALARM RETURN
```

This will display a list of the alarms currently set, and whether `ALARM` is `ON` or `OFF`.

```
A>ALARM <date time message> RETURN
```

This adds the specified alarm to the `ALARM` list, and starts `ALARM` running if it isn't already. If you don't specify a date, the current date is chosen.

For example:

```
A>ALARM 16/02/86 1:00 Lunch at the Unicorn RETURN
```

will add that message to the list. At the specified time (if `ALARM` is running) the computer will beep and display the message on the screen.

```
A>ALARM <date time> /C RETURN
```

This cancels the specified alarm. The `/T` option deletes all the entries and terminates the program. Finally:

```
A>ALARM /ON RETURN
```

starts `ALARM` running and

```
A>ALARM /OFF RETURN
```

stops the program but retains the alarm entries.

8.3.2 The PRINT command

PRINT allows you to print files while you are working on another program in the foreground.

For example:

```
A>PRINT chapter1.tex RETURN
```

starts printing chapter1.tex and enables you to carry on writing (say) chapter2.tex. If you finish chapter2.tex before PRINT has finished printing chapter1.tex, simply type:

```
A>PRINT chapter2.tex RETURN
```

PRINT will add the file to a print queue, and print it when it has finished with chapter1.tex. Up to 32 files may be queued in this way at any one time. Alternatively you can type in the whole print queue at once:

```
A>PRINT one.tex two.tex three.tex four.tex RETURN
```

To remove a file from the print queue at any time, use the /C option, for example:

```
A>PRINT three.tex /C RETURN
```

will remove three.tex from the print queue.

Note: You cannot remove an entry while it is being printed, but only if it is waiting to be printed.

PRINT also supports wildcard file specifications. For example:

```
A>PRINT *.bak RETURN
```

will print all files with the bak filetype.

Note: If you are using a directory structure, all the files you specify in a PRINT command must be in the current directory when the PRINT command is issued.

Use the /T option to terminate the PRINT program:

```
A>PRINT /T RETURN
```

8.3.3 Other Background Programs

You can develop your own programs to run in the background. See the DOS Plus Programmers' Reference Manual for details.

8.4 Changing the prompt – the PROMPT command

The PROMPT command enables you to change the standard prompt from (for example) A> to anything you want. It has the form:

```
A>PROMPT <text> RETURN
```

where <text> can be any character string except \$,=,<,>, or |

For example:

```
A>PROMPT Type command here: RETURN
```

will cause A> to be replaced by:

```
Type command here:
```

until you change the prompt.

In addition, you can include certain special strings, indicating them with the \$ character. The special strings are:

- t the time
- d the date
- p the current directory
- v the version of DOS Plus
- n the default drive letter
- u the user number
- \$ the \$ character
- g the > character
- l the < character
- b the | character
- q the = character
- e the escape character (ESC)
- h backspace

Any other character following \$ is ignored. PROMPT without any text resets the prompt to the default DOS Plus prompt.

For example:

```
A>PROMPT $p$g RETURN
```

sets the prompt to the current directory level followed by the > character:

```
\TOM\MEMOS>
```


8.5 More on Batch Programs

In Chapter 6 batch programs were introduced as a text file of commands that can be executed by entering the filename. The subcommands `REM` and `PAUSE` were also introduced.

Batch programs can be made more useful by introducing some other subcommands, and by using variables.

Briefly, some other subcommands are:

ECHO Normally commands are displayed on the screen as they are executed. `ECHO OFF` and `ECHO ON` can be used to switch this display off and on again. `ECHO` message will substitute a message for the commands.

GOTO If you add labels to your file, that is, any string of up to 8 characters preceded by a colon, you can branch to the command after that label, for example: `GOTO ERROR . . :ERROR REM Error sequence`

IF This takes the form:

```
IF {NOT} <condition> <command>
```

where `NOT` is optional. The condition can be either:

```
<string1>==<string2>
```

or

```
EXIST <filespec>
```

If condition is true, then the command is executed.

For example:

```
IF EXIST temp.tex REN temp.tex temp.bak RETURN
```

or

```
IF %I==OK ECHO file found RETURN
```

where `%I` is a variable that contains a string.

You can also pass parameters to a batch program by using any of the ten variables `%1` to `%9`. For example:

```
A>COPY CON: listing.bat RETURN
```

```
COPY %1.txt %2.txt
```

```
TYPE %0 CTRL-Z
```

```
A>listing prog1 B:prog2 RETURN
```

Listing would replace %0, prog1 would replace %1 and B:prog2 would replace %2. The listing on the screen of listing.bat would be:

```
COPY PROG1.TXT B:PROG2.TXT  
TYPE LISTING
```

8.6 Other commands

Some of the other DOS Plus commands are:

CLS: clears the screen of the current display.

DATE: displays and changes the date

TIME: displays and changes the time.

FSET: sets file and drive-related attributes such as Read Only and Read/Write

SDIR: displays extra information about file status

SET: displays and changes the DOS Plus environment buffer, for example to change the number of lines or the length of lines displayed on the screen.

DEVICE: changes character device characteristics e.g. sets up serial line BAUD rates.

This selection of commands is intended to illustrate how DOS Plus can be used to achieve some very complex operations with a fairly small number of commands. Almost anything can be done, but you need to understand DOS Plus (and your applications) very well before attempting anything really sophisticated. The few commands described in the early chapters of this book will probably suffice for most of your activities.

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⁺ +	⁻ -	[/] /	[*] *
⁷ HOME	⁸ ↑	⁹ PG UP	[#] BREAK
⁴ ←	⁵	⁶ →	DEL DEL
¹ END	² ↓	³ PG DOWN	,
⁰ INS	[.] .	RETURN	

COPY
ALT