

FOR THE BBC MICRO

DEEBUG
SOFT

MASTERFILE II

General purpose
database

DEEBUG
SOFT

MASTERFILE II

ADDITIONAL NOTES

and

HINTS

MASTERFILE II ADDITIONAL NOTES AND HINTS

The version of DFS or ADFS Masterfile II that you have been supplied contains some differences in operation from the manual and earlier versions. The following points have been improved or updated on this version of the program. Page 6 outlines the sections that are not relevant to ADFS users.

USE OF THE "BREAK" KEY

On no account must the BREAK key be used to exit from Masterfile II . This is the most common cause for query that we receive. At all times during the use of Masterfile II there remains a significant amount of data within the computer not yet written to disc. If you press BREAK all this will be lost, and your files will remain open. Always exit using option P.

***** YOU HAVE BEEN WARNED *****

DIFFERENCES:

1. The "Fuzzy Search" DOES work using AND and OR, contrary to the comment in the manual.
2. Label printing doesn't produce an extra line feed if your printer has "auto line feed at 80ch". Labels are also more evenly spread. You can now print multiple copies from each label. You will be prompted for the number of copies just after you have been asked "Lines per label".

LABEL ALIGNMENT

If labels do not match your label paper sufficiently accurately you should try adjusting the line length setting via option D:

If the second and subsequent labels on the line are too far to the left try increasing the line length.

If the second and subsequent labels on the line are too far to the right try decreasing the line length.

If the first label is too far to the left adjust the left margin setting via option D.

3. The date field is now printed when in vertical mode.
4. Single disc drive operation requires fewer disc changes.
5. The demonstration file LFreadd is now included on the disc. It may be deleted or copied onto a new disc. It is not needed for the operation of Masterfile II .
6. The "Find" operation in option C is now "case specific".
7. The decimal formatting now works on horizontal printout.
8. The manual doesn't mention the @ command in the "Forms design option". See later for a full description.

9. The manual doesn't make it clear that the screen size represents the maximum size for any one record. This is the reason that when a field of longer than 28 characters is specified, you will lose one field.

It is best to optimise your field lengths and prune all fields to 28, 56, 84 etc lengths rather than waste an extra field by using 29, 57, 85 etc.
10. Form design has an extra command Q which can be substituted for P (page feed). The difference between P and Q is that Q will pause until a new sheet of paper is inserted, pressing "space" will continue printing.
11. When using "Forms" output, strings that are too long to fit on the current line now flow over onto the next line instead of being truncated.
12. In "Forms" the T (for tab) command works similarly to TAB in Basic.
13. Tag sort will now sort on field 18.
14. In Global calculations a string field may be accessed with f\$(1) etc.

THE @ COMMAND

Using this command it is possible to format numbers precisely as you want them. The general form is @m.n where:

m is the field width
n is the number of decimals

If the number to be printed was 98.123 the following outputs would be obtained:

```
@8.5 >98.12300<
@8.3 >98.123 <
@5.1 >98.1 <
@5.0 >98 <
@2.1 >***<           Insufficient field width
@-2.4 >ILLEGAL @ FORMAT<  Negative field width
@0 >98.123<
```

The @0 format defines "free" format and any number will be printed to its full accuracy but without trailing zeros.

WARNING

ON NO ACCOUNT should discs EVER be removed from the drives (even if the drive appears to be inactive) until Masterfile II prompts with:

"Data File not found" or "Program disc not in drive 0" or other similar message.

Your data disc (or even the program disc) WILL BECOME CORRUPTED if a disc is changed other than when prompted. Also, when you have finished using Masterfile II you MUST exit via option P. This is another reason why you should always keep backups of your important discs. This is not a fault in Masterfile II but is a feature of all random access filing when files remain open and a disc is changed.

WORDWISE PLUS

Wordwise Plus operates slightly differently from ordinary Wordwise. It may occur when spooling out text that your Wordwise file has a | (vertical bar) character at the ends of lines. In order to remove these you will have to perform a global replace of | with "nothing" to remove them.

ADDITIONAL NOTES ON TAG FILES

No "tag" operations will be active until you have first activated them using option M. So if you wish to perform a tag sort, or work with a tag file, you must first use option M.

HINTS (supplied by Peter Stone)

In the PEOPLE file to print the date as 12/6/64 rather than 120664 enter calculations:

```
Calculation 0 VAL(F(7)) DIV 10000
              1 VAL(F(7)) DIV 100 MOD 100
              2 VAL(F(7)) MOD 100
```

in the form design use:

A(0):"/":A(1):"/":A(2)

Note 1: The date field must be entered on all records, a value of zero or spaces will not work.

Note 2: When the form design is loaded and re-displayed, the calculations will be displayed as F\$(7) DIV 10000, do not worry about the change, the calculations will work correctly.

AUTO-STARTUP OPTIONS

It is possible, using program "LF" to alter the way Masterfile starts up, and also alter some of the pre-set values within the package. For example these are the defaults:

```
D%=0      Tag file drive number
E%=0      Tag directory
G%=0      Left margin
L%=80     Line length

$&C00=""   Today's date
$&C20=""   File name
$&C30=""   Menu option entered at startup
$&C40=""   Printer control code string.
*DRIVE0    Masterfile II data drive
```

The following set of options will enter the package ready to access a file called COINS on drive 1, without asking for the date. It will enter at option C, and it will reference a tag file on drive 3 with directory "A". When printing is to be done the line length will be 132 characters with a left margin of 10. On an Epson printer the control sequence will set condensed print with 1/8th line spacing, and having set the form length to 11 inches will skip over 5 lines at every page end.

```
D%=3      Tag file drive number
E%=ASC"A"  Tag directory
G%=10     Left margin
L%=132    Line length
$&C00="None" Today's date
$&C20="COINS" File name
$&C30="C"   Menu option entered at startup
$&C40="15,27,48,27,67,0,11,27,78,5" Printer control code string.
*DRIVE1    Masterfile II data drive
```

UNKNOWN DESCRIPTOR FORMATS

Occasionally you may omit to keep a backup and somehow corrupt or alter the descriptor file rendering the master file unreadable. To overcome this you will have to re-create the descriptor file with the correct field lengths.

The following program will scan the master file and tell you the field lengths found. However, it will not be able to tell the beginning of each record, so it is up to you to spot the recurrence of the pattern of field lengths.

When re-creating the descriptor file it will not matter how you describe the field type, it is simpler in the first instance to create them as "S". When the file becomes readable again (via option C) you can then get the field types correct.

```
1 CLS
2 PRINT"" MASTERFILE II"
3 PRINT"" To display field lengths"
4 PRINT"" for use if sizes unknown"
5 PRINT""Note that the program will not detect the end of a
record, this can only be ascertained by repetition of the field
lengths."
10 ON ERROR GOTO 130
20 INPUT"Filename ",name$
30 INPUT" Drive ",drive$
40 IF drive$>"" drive$=":"+drive$+"."
50 A=OPENIN(drive$+name$)
60 VDU14
70 REPEAT
80 B=BGET#A
90 UNTIL B>0
100 PRINT"Field length ";B
110 FOR I=1 TO B:B=BGET#A:NEXT
120 IF NOT EOF#A THEN 70
130 CLOSE#0
140 VDU15
```

IMPROVED APPENDING INSTRUCTIONS (page 27)

Appending can also provide a mechanism for adding a field to an existing file. In order to do this you create a new record description (descriptor file) for the file and append the existing file to this new file.

Use OPTION N to make a copy of the descriptor file giving it a different name from that of the original. Next use OPTION B to add extra fields to this new descriptor. Use OPTION J to effect the transfer.

WORKED EXAMPLE

Suppose that we wish to add an extra field entitled "Tel No" to the PEOPLE file. While we are modifying the file descriptor we will also change field 6 (Sex) to "Gender" and make it 6 characters long instead of 1, with this change the field can now hold MALE and FEMALE instead of just M and F. This last modification is rather a waste of file space, however it serves to illustrate what is possible while appending.

As fields 1 to 9 are in use we will use field 10 to hold the Telephone Number. A more logical place for the telephone number would be between fields 5 and 6, however we can always print the record in any order using option H, so the actual position of the telephone number field doesn't really matter.

Enter OPTION N (Utilities)

Option 2 will make a copy of the PEOPLE file, we'll call it STAFF

old filename <PEOPLE > drive <0>

new filename <STAFF > drive <0>

When the drive has finished turning, <esc> returns to the main menu.

Use OPTION A to change the file currently in use to STAFF.

Use OPTION B to display the current STAFF descriptor (it will appear identical to the PEOPLE descriptor).

Enter 10 <ret> and the cursor will move to field 10, set up the following:

Fld	Type	Length	Title
10	S	15	Tel No

Now enter 6 <ret>

Fld	Type	Length	Title
6	S	6	Gender

Use <esc> to return to the main menu.

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Select OPTION J

Use option 3 to append:

File you want to append to:

filename <STAFF > drive <0>

File to be appended:

filename <PEOPLE > drive <0>

From record number: 1

To record number: 20

Now watch the box on the bottom right of the screen as it steps through reading records from one file and writing them to the other.

The main menu is returned to automatically when appending is complete.

Use OPTION C to show you the correctness of your new arrangement. Note how the data in field 6 has been preserved. As a matter of interest you can change all the Ms to MALE and Fs to FEMALE as follows:

Using OPTION G

6 Gender ="M"

OPTION L

Field: 6

Formula: "MALE"

From record: 1

To record: 20

Using OPTION G again, this time for females:

6 Gender ="F"

OPTION L

Field: 6

Formula: "FEMALE"

From record: 1

To record: 20

Now look at the results using OPTION C.

MOVING THE MAIN FILE TO THE END OF THE DISC ALLOWING ROOM FOR MAXIMUM SIZE DESCRIPTOR FILE

You will need a spare disc onto which you may copy the two files. Alternatively you may use the reverse side of a double sided disc (if it has room); if so substitute drive 2 in place of drive 1 in the instructions below. The following example will perform the operation on the PEOPLE file, simply substitute the name of the file you require for the PEOPLE file.

```
*DRIVE 0
*COPY 0 1 PEOPLE
*COPY 0 1 D.PEOPLE
*DELETE PEOPLE
*DELETE D.PEOPLE
*COMPACT
*SAVE D.PEOPLE 0+500
*COPY 1 0 PEOPLE
*COPY 1 0 D.PEOPLE
```

NOTES TO ADFS USERS

Some sections of this leaflet are not appropriate to ADFS users. The following comments should be remembered:

Section 5	Not applicable
Additional notes on tag files	Not applicable
Auto start_up options	Drive, date and tags not applicable
Moving the main data file	Not applicable

The ADFS comes with an additional leaflet covering operational changes.

MASTERFILE II

DISC VERSION FOR THE BBC MICRO

by
Sheridan Williams

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CONTENTS OF THE DISC**PROGRAM FILES**

(The program disc must be on drive 0 for correct operation of the package, disc must autoboot with *OPT4,3)

!BOOT	LF	LFmain	LFutils
LFprint	LFsort	LFform	LFread

LFread is a sample file reading program, see appendix 6.

DATA FILES (For demonstration purposes only)

D.PEOPLE	Descriptor file
9.PEOPLE	Tag file in ascending order of height
E.PEOPLE	1st example form design
F.PEOPLE	2nd example form design
G.PEOPLE	3rd example form design
PEOPLE	Master file ordered on surname
LETTER	Letter to be incorporated in form design G.PEOPLE

INTRODUCTION

Masterfile II is a general purpose file management program. Its uses are manifold. For example you can file:

- A BEEBUG magazine index
- Names and addresses of friends
- School class lists
- Family historical data
- Booklists
- Client/customer lists
- Record, Stamp, Coin collections

FEATURES

- Dynamic data files, updated as they are processed.
- Displaying individual records on the screen or printer.
- Direct access to any record by record number, or by binary search.
- Searching for a particular match.
- Sorting on any item or items in ascending or descending order.
- Fast "Tag" files.
- Printing of labels, singly or in multiples.
- Transferring files to and from the cassette version of Masterfile.
- Appending files.
- Record insertion.
- Field calculations on any numeric field.
- Column totals, averages and s.d.
- Your own form designs.

GETTING STARTED

Masterfile II is a very versatile program indeed, and it can take some time to master all of its subtleties. However, it is simple to use the standard features. You will be taken through a dummy run. Note: when you see <ret> this means press the 'return' key, and that <esc> means press the 'escape' key.

CONTENTS OF THE PACKAGE

The package contains auto-booting Masterfile II programs, together with a sample data file called "PEOPLE". Also supplied are other files that will be used later for printing and tag searching.

The "PEOPLE" file contains the following fields for a set of imaginary people:

Record Description	
<u>Field</u>	<u>Contents</u>
1	Title & Initials
2	Surname
3	Address line 1
4	Address line 2
5	Address line 3
6	Sex
7	Date of birth
8	Number of Children
9	Height (in metres)

Notice the use of the following terms used throughout the manual:

- File — An organised collection of related records.
- Record — A collection of related items of data.
- Field — One single item of information, a section of a record.

In the example we have a FILE of people. Each RECORD relates to one person; and each FIELD describes one attribute of that person.

You cannot create a file using MASTERFILE II until you have done two things:

1. Given a name to the file that you are processing.
2. Constructed a record description for the file.

Until you have done both of these, the computer will not be able to construct your file. However, the record description is saved automatically so that you only have to give a record description in the case of a BRAND NEW file.

MENU OPTION A: SET UP FILENAME

Run the Masterfile program by inserting the disc and holding down <shift> and pressing <break>, do not release shift before the break key.

The Masterfile package MUST reside in drive 0; if it is removed to insert a data disc you will be prompted when the Masterfile disc needs replacing. If you only have a single sided, single disc drive, it is easier to keep a copy of all the Masterfile programs on each disc that you use for data storage.

The first request that the computer makes is for Today's date. This is required for printing and labelling the disc. You may enter any string up to 20 characters in length. Examples of valid formats are: 5/8/83 or 05-1-79 or 5-31-82 or 15th September 1984. (The date is not validated, leaving the user free to choose his own format).

Having successfully entered the date you will see the 'Main Menu'. You will see this a lot during the use of the program, and you can always return to this main menu by pressing <esc> — remember <esc> means press the 'escape' key.

BEEBUG MASTERFILE II	
A.	Set up file name
B.	Enter record description
C.	Look at/alter a record
D.	Printer configure
E.	Open file
F.	Initialise/Clear file
G.	Enter search data
H.	Print/Search file
I.	Sort
J.	Transfer/append files
K.	Compact the file
L.	Global field calculation
M.	Activate 'TAG' file
N.	Utilities
O.	Form design
P.	Stop the program
OPTION?	

You now press A so that you can tell the computer the name of the file, and you will see a message appear:

New filename> <
Type in PEOPLE and press <ret>

The action of specifying a filename will also open the file. Occasionally the computer may report that the file does not exist (or maybe that it is 'Locked'), maybe you have saved it on the other side of your disc, or another disc altogether. In this case you may have to use *DRIVE 2, to change drives or put in the correct disc. (If the computer reports that the file doesn't exist, then you must select option E when the correct disc is inserted.)

MENU OPTION C: LOOK AT/ALTER A RECORD

From the menu, select option C by pressing C. This allows you to look at or alter the data held in any particular record. The screen should appear as follows:

BEEBUG MASTERFILE II		Record=1
Field	Data	Filename: PEOPLE
1 Title and i	:Dr. A.G.	<
2 Surname	: Andrews	<
3 Address 1	:42 High Street	<
4 Address 2	: Computer Town	<
5 Address 3	: Cleveland	<
6 Sex	:M<	
7 D o B	:211004<	
8 No of Child	:1 <	
9 Ht (m)	:1.73<	
record: ←=bck →=fwd ↑=1st down=end Field number, All, X=edit, Ins, Erase, Find, Dump, Rec, Calc. CMD?		

Whenever a screen is displayed always look at the bottom 3 lines. These hold suggestions, error messages, or prompts for further instructions. In this case if you want to look at a particular record other than the one displayed you enter R19<ret> if you want to look at record 19. The screen display above shows record 1. Try entering R19<ret> and you will see the data relating to it. Successive pressing of <ret> will step through the records in turn.

CURSOR KEYS

When not at command level the cursor keys can be used for moving about within a file as follows:

Left	—	move to previous record
Right	—	move to next record
Up	—	move to first record
Down	—	move to last active record

If the tag file is active then "previous", "next", "first" and "last" refer not to numbered records but to sorted tag order. Use the tag file with directory 9 to see how the records are stepped through in ascending order of height. (This is supplied on the disc.) How to activate the tag file is explained later in the manual.

Once within the record screen, the up and down arrow keys move the cursor up and down the fields on the screen. To finish, move the cursor to the last field and press <ret>.

There are two ways to enter or update the data in the individual fields: ENTRY MODE or EDIT MODE:

ENTRY MODE:

Simply respond to COMMAND in the bottom right corner of the screen with the field number you wish to enter or update. Alternatively you may wish to run through all of the fields in turn, in this case respond with the letter A.

- 1 a number on its own moves to that particular field blanking it out and waiting for data entry. Pressing <ret> with a blank field will restore the previous data if any existed. If you wish to clear the field enter one space before pressing <ret>.
- A this will start at field 1 and step through all fields in turn, so that you can enter a complete record with the minimum of effort. Enter a blank field by entering one space before pressing <ret>. You can use the cursor keys to move up and down the fields. Pressing return at the last field returns you to command level.

EDIT MODE:

Edit mode is not really for data entry, but rather for editing data that already exists. It is of greatest use with long fields.

- Xn This is used for editing field n. To edit field 4 for example use X4. The cursor will move to field 4. To edit all fields use XA.

The following keys are now active:

left arrow	—	Move left
right arrow	—	Move right
shift-left arrow	—	Move to start of field
shift-right arrow	—	Move to end of field
shift-up arrow	—	For long fields move up a line
shift-down arrow	—	For long fields move down a line
up arrow	—	Move to previous field (only in XA)
down-arrow	—	Move to next field (only in XA)
delete	—	Delete character to left of cursor
return	—	Finish editing
Ctrl Q	—	Quit editing without making changes

Any other character pressed will cause that character to be inserted to the left of the cursor and the remaining characters moved to the right. Any characters spilling to the right are lost.

When editing numeric fields be careful because numeric values are not validated thoroughly, eg 1 . . 2 could be entered in edit mode, but not in the normal entry mode.

- E for erasing the whole record or just individual fields. For example E5<ret> will just erase field 5. Whereas EA<ret> will erase all the fields (the whole record).
[NOTE: If the tag sort is active, erasing the sort field will make the tag file no longer match the master file.]
-

- F for finding a record according to the contents of a field. The file must previously have been sorted on that field in ASCENDING order. For example to find the surname Safari on the PEOPLE file enter F2 <ret> (because the surname is field 2), you will now get the prompt:

Contents:

From:

To:

enter Safari as the contents and press <ret> to both the "from" and "to" prompts. (You could enter values here if you have sorted only part of the file, and want to restrict the search to this particular range). This is a fast search (using the binary chop technique), and will find any record in a 1000 record file in less than 4 seconds! (You can see the record numbers being scanned in the bottom right corner). It takes slightly longer if the tagfile is active.

- D for dumping a copy of the current record screen to the printer.
- I for inserting a record in the file. This is faster than placing a record at the end of the file and then re-sorting the whole file (unless you use the "tag" option). To use the insert feature move to the record where you want insertion to take place. Place the number of records to be inserted after the I. For example I5 will insert 5 records. If the record on display is record 10 and you ask for I5 then record 10 will move up to record 15, record 11 to 16 etc.

Anywhere between 1 and 100 records may be inserted. You will have to answer "YES" to the prompt "ARE YOU SURE?". The useful fact about insertion is that the inserted records are all identical to the record on display. This gives a quick way of duplicating the contents of a record across several consecutive records. If you do not want the records duplicated you must erase them using the "EA" feature mentioned earlier, or use option F from the main menu to clear the required records. (See option F later on).

[NOTE: Insert will alter the master file so that accesses under an existing tag file will not be correct. You should delete the tag and re-create it.]

- C for calculating on a particular field, as detailed next.
-

THE "FIELD CALCULATOR" FEATURE

C6 can be used to calculate on field 6.

Try the following, using the PEOPLE file:

```
Enter  C9 <ret>
now    *3.280833 <ret>
```

you will see that field 9 has changed. You have, in fact, just converted the height in metres to the height in feet.

Any valid BASIC language mathematical expression can be used to operate on ANY numeric field. If you wish to use another field as part of the expression, then you can — simply use f(6) for field 6, or f(12) for field 12 etc.

For example: if you wanted to add field 9 squared to field 6, then you would use C6 followed by:

+f(9) ↑ 2

You MUST use the lower case letter f — ie use f(9) not F(9).

An expression may, or may not, begin with an operator, IE:

+f(9) and f(9) are both valid, although they have different meanings.

+f(9) means add f(9) to the field,

f(9) means replace this field with the value in field 9.

See the description under option L for details on how to apply the calculations over a range of records.

ALTERING THE RECORD ON DISPLAY

To effect an alteration, or enter new data to the record displayed, you either enter the number of the field to be altered, or you press A to alter them all. Alternatively you can use X to edit long fields (for example X3 will edit field 3). Numeric fields should not be edited using X as they are not validated when using the X option. For example if you wanted to change field 6 (the sex) from M to F you would press 6<ret> and the cursor would move to field six, you then type F<ret>. To return to the main menu at any stage you press <esc>.

Using the above technique, you can easily construct new records or modify existing ones.

ENTRY OF NUMERIC FIELDS

Skip this paragraph on your first read through this manual. Go straight to MENU OPTION G a little further on.

Field type N will allow only the keys 0 1 2 3 4 5 6 7 8 9 . and –

Field type I will allow only the keys 0 1 2 3 4 5 6 7 8 9 and – (ie no decimal point)

When using 'entry mode' fields with types 1-9 will be validated to allow only valid numbers to be entered. Extra zeros will automatically be added after the decimal point if needed. You will hear an error-beep if an invalid entry is given. For example, if the field width is 4, and the field type is 2 (2 decimal places) (this is the specification for field 9 in the PEOPLE file), then entry of 12 is invalid because when padded with 2 decimals it would become 12.00 which exceeds the field width specified.

MENU OPTION G: SEARCHING PARAMETERS FOR PRINTING SPECIFIC LISTS

Using option G on the menu you can obtain printed lists containing selected records that you require. However you must return to the menu and then select option H to obtain the printout after setting up the search criteria via option G.

NOTE: Once set up the search parameters remain in force until cleared or altered. This applies even on re-loading Masterfile as the search data is filed on the descriptor file.

For example you can specify lists containing:

- Only males.
- Females under 18 on 1st Sept 1982.
- Those people with a surname beginning with S with more than 2 children.
- People living in postcode region AL.
- Stock items with less than 50 in stock.
- Product codes with an X somewhere in the code.

A little bit of practice is needed to produce the rules for selection. Those with a knowledge of Basic programming will probably find it quite easy.

For the "PEOPLE" file the option G screen looks like this:

SEARCH PARAMETERS	
Field	Match command
1 Title and i	
2 Surname	
3 Address 1	
4 Address 2	
5 Address 3	
6 Sex	
7 D o B	
8 No of Child	
9 Ht (m)	
Enter number of field to be input A for all. 'Esc' for menu Command?	

The idea is to enter the matching criteria against their respective fields. Here is an example:-

In order to specify that we only want those people who are female we proceed as follows:

6 <ret>

The bottom of the screen changes and now reads:

Enter match description for example
Example 1: ="M" or: ?"M" (Fuzzy search)
Example 2: >"A" AND <="C"

The bottom of the screen is just for reference and gives examples for you to follow. Your requirements would be:

6 Sex ="F"

The following are examples of valid match commands:

Example 1: All females 1.6m tall and over.

SEARCH PARAMETERS	
Field	Match command
1 Title and i	
2 Surname	
3 Address 1	
4 Address 2	
5 Address 3	
6 Sex	= "F"
7 DoB	
8 No of Child	
9 Ht (m)	>=1.6

Enter number of field to be input A for all. 'Esc' for menu Command?	

Example 2: People with between 2 and 4 children (inclusive) whose surnames are after M, and who live in a "Road".

SEARCH PARAMETERS	
Field	Match command
1 Title and i	>"M"
2 Surname	
3 Address 1	? "Road"
4 Address 2	
5 Address 3	
6 Sex	
7 D o B	
8 No of Child	>=2 AND <=4
9 Ht (m)	
Enter number of field to be input A for all. 'Esc' for menu Command?	

FUZZY SEARCH

(as used in ? "Road" above)

The "fuzzy" search will search for the occurrence of any sub-string within a field, for example:

? "Mac"

This will search the field for an occurrence of Mac anywhere within the field. Whereas >="Mac" AND <"Mad" will only find Mac at the start of the string.

NOTE: You cannot use AND and OR in the fuzzy search.

After setting parameters via option G, you must escape to the main menu and select option H to perform the search.

CLEARING THE SEARCH PARAMETERS

This can be done as follows:

Once in option G select each of the fields in turn and press <ret>, this deletes the search parameters for that field.

MENU OPTION H: PRINT/SEARCH FILE

Don't forget that you can always obtain printout of a single record by selecting D (for dump) from menu option C; however option H gives you a printout of a selection of records from your file. If any search parameters have been activated using option G then they will operate on this printing option.

Provided that you have a printer you can obtain a printout for all or part of the file by selecting option H from the main menu. However, for the PEOPLE file the output is extremely wide and requires paper that is about 130 characters wide if you want to print the whole record. If you haven't got a printer that will support that width then the output will look messy unless you restrict the number of fields to be printed or design your own layout (see "Form Design" later). [You can select the width of the printed page using option D. This is covered elsewhere in this manual. Using option D select line length of 130. Control code 15 will select condensed print on an Epson compatible printer thus allowing the whole record in the PEOPLE file to fit on one line.]

For the purpose of the demonstration let us just print the Surname (field 2), sex (field 6) and height (field 9). Press 'escape' and proceed as follows:

```
Select option H
From record: 1
To record: 5
Labels (Y/N):N
If form required, enter directory E-Z
If not press <return>:
Print fields (press return for all):
2,6,9 <ret>
Vert/Horiz (V/H) : H
Print (Y/N) : Y
Spool (Y/N) : N
File (Y/N) : N
```

The printer should now print the following:

Surname	Sex	Ht (m)

Andrews	M	1.70
Baxter	F	1.83
Brooker	F	1.66
Cottentail	F	1.55
Curtis	F	1.58

		8.32
		1.664
		0.099

Number of records is 5

Notice that at the bottom of the column headed "Ht(m)" there are three numbers; these are the total, average and standard deviation for that column. Numeric fields always have these at the bottom. Because of slight errors in storing decimal numbers in binary, the values at the bottom of the columns may print with more decimals, this is because of rounding errors introduced by Basic on the Beeb, and is not a function of Masterfile.

There are several choices of printout:

Label printing.

List using your own form design.

List horizontally or vertically.

List on the printer or the screen.

List "spooled" to the disc for later use under Wordwise or View (for example).

Send the output to another Masterfile file.

"Spool" and "File" output may be selected separately or together or with most of the other options.

DEFAULTS — The most commonly used options are horizontal, printing, no spooling, and no file. To obtain these simply press return to each question.

Each of these choices operates under control of the search parameters selected in option G, enabling you to obtain specific lists.

ORDER OF PRINTOUT

Provided that you have not selected "Tag" you will be asked for a range of records to be printed. Provided that you have not selected "Forms" you will now have to give a list determining the order of the fields for printout. You may just press <ret> to get all the fields. For example in our "People" file you may only want columns headed:

Sex	Surname	D o B

and don't want any of the other fields at all. You must therefore select

Print fields:

6,2,7

because field 6 is Sex, field 2 is Surname, and field 7 is D o B.

FIELD ZERO

Field zero holds the record number, so that lists can be produced with their corresponding record number, for example:

PRINT FIELDS: 0,2,1

will produce a list of surname and initials with record numbers in the left hand column. One use for this may be if you wanted to erase from the file all those people whose names had the string "er" in them. You would define the search screen as:

2 Surname ?"ER"

When you printed the lists using:

PRINT FIELDS:

0,2

you would get:

REC	Surname
2	Baxter
3	Brooker
16	Roberts
17	Rogers
20	Shatner

From this you would know that records 2,3,16,17 and 20 are the ones that need deleting.

Note that searches are NOT "case specific". That means that you can only enter capital letters on the search screen. All matches whether upper or lower case will be found.

LABEL PRINTING

Labels are obtained by answering 'Y' to the labels question in option H.

There are two further questions to answer, and these are:

Number of labels per page

Number of lines per label

One of the commonest label paper has three labels across the page, and is 9 lines to the start of the next label. You would answer 3 and 9 to the two questions respectively.

The left margin and the line length set up under option D are used here, so make sure that they are correctly set.

Next you must state which fields are to be printed on each line. For the people file you would answer:-

Line 1 2,1
 Line 2 3
 Line 3 4
 Line 4 5
 Line 5 press <ret> to the remaining prompts.

You can put any number of fields on the label (including field 0).

MENU OPTION I: SORT

One of the particularly versatile features of this package is its sorting capabilities.

There are two types of sort available in this package, "File sort" and "Tag sort". The differences are:

FILE SORT

Here the file itself is actually sorted, the records are interchanged to get them in the specified order. It is up to you to have made a copy of the file before the sort if you wish to retain the file in its original order. One disadvantage is that if you wish to access the file in order of surname, and also in order of height then you will need to keep two copies of the file and call them PEOPLES and PEOPLEH say. If the file is larger than 50% of your disc capacity you will have to put these on separate-discs as two copies will be larger than the capacity of one disc.

WARNING: A copy **MUST** be made before sorting using this method. Any power failure or similar problem will corrupt your disc.

TAG SORT

Here the file remains untouched and another file is created that contains a list of the order of access to the records on the main file. This has two main advantages:

1. It is very much faster.
2. Each tag file is only 3k long so several tag files can be kept on the same disc as the master file.

One disadvantage is that tag sorting can only be done on two fields at once (although in practice this is hardly a limitation).

SORT SPECIFICATION

Sorts are specified in much the same way as the print fields are specified. For instance:

SORT FIELDS: 2,1

would mean sort on field 2 (Surname), and then on field 1 (Title and initials) if there are two items in field 2 that are the same. To sort the PEOPLE file with females first, males second, in order of the number of children, would be achieved with:

SORT FIELDS: 6,8

Sorts so far have been in ascending order, with numbers first, and the letter A before the letter Z. If you want the sort in descending order then you simply place a minus sign in front of the required field. Any or all of the fields may be negative. For example: -6,8 or 2,-9,-8

NOTE: Sorts on strings are 'case specific', this means that A-Z come before a-z. Therefore McDonald will come before Macdonald, but McDonald will come after MacDonald.

COMBINING THE TAG AND FILE SORT

It may happen that you want the file actually rearranged, and already have a tag file for the sorted field.

This can be achieved by performing the tag sort and then selecting option N (Utilities) from the menu. One of the options here is to produce a rearranged master file from the tag file. It would be difficult to make it any faster as the maximum speed is determined by the speed of the disc drives and not the BBC computer. It still takes about 5 seconds per record so leave yourself some time.

As was stated before in the file sort, it is essential to have made a backup copy first because any power failures will corrupt your master file.

SORT SPEED WARNING

If the tag sort is NOT being used, file sorting can be very slow, especially when the size of the file exceeds 50 records. This is because of all the swapping around of records on the disc. You will notice that the fastest sorts are made when just ONE field is being used for the sort, so if possible sort using just ONE field.

To sort 50 consecutive records on just ONE field will take 4 minutes, assuming that all the records are out of order. A completely out of order 700 record file with 5 fields takes 57 minutes.

It is essential that you keep a copy of the files before you proceed with a "File" or "combined" sort. The reason is that a power cut or similar unpredictable failure may occur whilst sorting is taking place. This WILL CORRUPT your file.

Again, practise using the PEOPLE file, and you will find that sorting is very easy.

MENU OPTION B: CREATING A TOTALLY NEW FILE

As was stated earlier in this manual:

You cannot create a file using Masterfile II until you have done two things:

1. Given a name to the file that you are processing.
2. Constructed a record description for the file.

Also, earlier you were shown how to enter the name for a file using the A option from the menu. So choose a new name and enter it via option A. A message should appear saying "descriptor file does not exist".

I will now show how to create the 'file description' for a completely new file using menu option B.

Let us suppose that you wanted to create an index for your record collection, and this was to contain the following items (fields):

Album Title
Artist Name
Medium (Cassette, Disc or CD)
Date Bought
Reference

We must construct this description using option B before we attempt to enter any data. The reason is that the computer will not know how to head-up all the columns on the screen or printer, nor will it know how to organise the data on the disc. Also it will not know how many, and what type of characters to allow you to enter when typing in the actual data.

This record description is created using option B from the menu. When you have pressed B you will see:

Record Description for ALBUMS			
Field	Type	Length	Title
1	S	0	
2	S	0	
3	S	0	
4	S	0	
5	S	0	
6	S	0	
7	S	0	
8	S	0	
9	S	0	
10	S	0	
11	S	0	
12	S	0	
13	S	0	
14	S	0	
15	S	0	
16	S	0	
17	S	0	
18	S	0	

Enter number of field to be input or
A for all. 'Esc' for menu Command?

You will notice that the column headed 'Title' is empty. You now proceed to complete each line of details, although in this case you will only be entering 5 fields. (There is room for a maximum of 18 fields).

Proceed with the entry of your file description by pressing A for entry of 'All' fields. The cursor will move to the first field and you can now type:

S <ret> 27 <ret> Album Title <ret>

The purpose of the 'S' is to tell the computer that the data that can be entered here is 'String' data, ie data that can be any collection of characters. In some instances such as 'Age' you would enter an 'I' to tell the computer that only 'Integer' data can be entered. Another option is 'N' for 'Numeric' data that is not integer (whole number) data, for example 'height'. (Numeric allows decimal numbers to be entered, whereas Integer does not). The number '27' following that is the length of the field (the number of characters that can be entered for this field). Try and keep this to a minimum because this is where you can waste excessive amounts of disc space unnecessarily. (An extra 1 character in a 1000 record file will waste 1k). However once the description has been completed and data actually entered via option C you cannot change the field length without rendering the file unreadable. (This is a simple security device — see Appendix 7). You CAN change the title and type, but you MUST leave the length the same. If you accidentally alter it, you will have to reset it before the file will become readable. You will simply get the message "File is not initialised beyond this point".

You will now see the cursor move down to the second field. Repeat your entries until you have entered all 5 fields. Now just press <ret> when under the 'type' column and your entry will be complete.

If you make a mistake you should continue your entries until you have done all 5, and then you can correct each one by moving to the respective field (just enter the field number instead of the letter 'A' from Command?). Pressing <ret> to any column after the first will fill in what was there previously, saving retying.

When complete the screen should look like this:

Record Description for ALBUMS			
Field	Type	Length	Title
1	S	27	Album Title
2	S	27	Artists Name
3	S	1	Medium
4	D	6	Date bought
5	S	5	Ref. Number
6	S	0	
7	S	0	
8	S	0	
9	S	0	
10	S	0	
11	S	0	
12	S	0	
13	S	0	
14	S	0	
15	S	0	
16	S	0	
17	S	0	
18	S	0	

Enter number of field to be input or
A for all. 'Esc' for menu Command?

Press <esc> to return to the menu. You must now select option F. This option must be used immediately following the use of option B to clear sufficient space on the disc for the new file. Pressing <return> will usually result in sensible default values for initialising. If you "clear/extend" an existing file, the default value for 'from' is the record following the highest non-blank record. If you put in a lower number you will do just what the words imply ... you will clear whatever that file contains in the records from "from" to "to" inclusive. You will not be allowed to start clearing the file higher than the current highest used record; this is to prevent an un-initialised portion of the file from being created.

You can now move to option C from the menu and enter data in a similar manner to the 'file description' sequence that you have just done. The only difference here is that you must enter a record number before typing in the data if you do not want to use the record on display. Use R17 <ret> to enter data into record 17 etc.

You can look at the file description for the 'People' file at any time by selecting option B from the menu. Once the descriptor file has been created, and data records actually stored, you should not alter the "field length". (Altering a field length will render the file unreadable until it is reset to its original value).

If you wish to alter the length, the whole file will need re-initialising, and this can be done by appending the existing file to a new file with the new file description (See "Appending" elsewhere).

FIELD TYPES AND LENGTHS

The following field types are available:-

TYPE	MAX LENGTH	DESCRIPTION
S	255	STRING — any collection of characters
D	255	DATE — a special form of string where pairs of characters are swapped before sorting.
I	9	INTEGER — only whole numbers. Integers are not subject to rounding errors.
N	11	NUMERIC — general numeric, results will not be formatted.
1	11	NUMERIC — results will be formatted to one decimal place.
2	11	NUMERIC — results will be formatted to two decimal place.
.		
.		
9	12	NUMERIC — results will be formatted to nine decimal place.

Note that if you are using a field type 1-9 as opposed to types N or I, you MUST enter a field length that is greater than this number in order to allow space for the number to be entered. For example if you are using a field type 2 then numbers will be in the form 1.22 11.45 .56 1234.01 etc each of these being at least 3 characters long.

The data entered via option C will be validated according to the field type specified.

MENU OPTION D: PRINTER CONFIGURATION

You may wish to tailor the output to suit your particular printer. There are three values that you can select:

- Line length: Your printer may be able to take advantage of lines longer than 80 characters in length. Set this value. For instance, if you select a width less than the width of the paper, you will get new lines more frequently — not necessarily very readable though.
- Left Margin: You may need a left margin of 10 spaces to allow your output to be put in a ring file. Alternatively for label paper you will need to match the left margin exactly.
- Control Codes: Use this option to use the special features of your printer. The printer manual will specify the codes. For example on an Epson, code 15 selects condensed print. Also on the Epson to select narrow line spacing use 27 followed by 48. Therefore select condensed print and narrow line spacing use:

Control codes: 15,27,48

Some printers allow skip over perforations too.

The control codes set up are sent before each printout to the printer.

OPTION E — OPEN DATA FILE

It may occasionally occur that you enter a file name using option A and an error occurs. Some of the reasons may be: that the disc is write protected; the file is locked; the wrong drive has been selected, or the file is not found. In any of these cases once you have corrected the error you should select option E to allow the system to re-read the disc. This option also resets the current record number to the start of the file. [Option E can be selected at any time without harm.]

OPTION F — INITIALISE (CLEAR) FILE

Once the file has been given a name using option A, and a file description created using option B, the next thing to do is "initialise" the file. This is, in effect, writing blank records onto the file, and is essential before writing live data to the file.

You should always start a new file by clearing it to around 150% of its expected maximum length. This will show you whether your file will really fit onto the remaining part of the disc. If you get an error such as "disc full" or "can't extend" you will be able to see how many records have been initialised just before the error occurred.

It is quite possible that there is more room on the disc, but that there is no more room for the file. This can be cured by exiting Masterfile and "compacting" the disc. Another good hint is to make sure that the data file is the LAST one given in any list obtained by *COMPACT, or the FIRST one in any list given by *INFO *.* , this will ensure the maximum amount of space for your file. The important fact being that if the file is the last one on the disc, there is maximum room for expansion.

CLEARING A BATCH OF RECORDS

Option F is also useful for clearing a batch of records. Suppose that you no longer require the data stored in records 57 to 93. Rather than clear each one individually you can simply respond to the "From:" "To:" questions with the required range of fields.

You cannot start clearing records at a point higher than the current maximum record. [This is to prevent a batch of un-initialised records occurring in the file.]

BEWARE — make sure you have a copy of the file, because once cleared they can NEVER be restored, and you may want those records after all!

OPTION J — TRANSFER/APPEND FILES (TAPE/DISC)

DISC to CASSETTE & CASSETTE to DISC

This can be used to copy tape files created under the cassette version of Masterfile onto disc, or vice versa.

WARNING

Cassette Masterfile will not allow records with fields greater than 25 characters. This means that Disc Masterfile records that have more characters will be truncated on transfer to cassette.

If you don't have motor control on your cassette player, the best method is to watch the cassette motor light (bottom left of keyboard) and use the 'pause' button to stop tape motion whenever the light goes out.

You can also create disc files from tape files using this option. There is no problem with compatibility here.

The disc drive and filename must be set from the main menu before entering option J.

APPENDING FILES

You can append one disc file onto another. The process of appending compacts the appended file (i.e. blank records are not appended).

It is up to the user to make sure that there is a meaningful relationship between the fields on the source file and the fields on the file onto which it is to be appended. Shorter fields will be truncated, longer fields padded, and field types changed if appropriate.

METHOD FOR ADDING AN EXTRA FIELD

Appending provides a mechanism to add a field to an existing file. You create a record description for a file with the enlarged description, and append the existing file to this. [Use OPTION N to make a copy of the descriptor, and OPTION B to add extra fields].

OPTION K — COMPACT THE FILE

This is self explanatory, and simply compacts the file removing any blank records.

OPTION L — GLOBAL FIELD CALCULATION

This is an extension of the "C" (calculate) feature used when in option C. Please refer to the notes on option C for more details of its use under option C.

When used globally an expression may be given, and this expression can be used over a range of records. For example, you may wish to increase the price (field 6 say) by 10% for the whole of your stock file. This can be achieved very simply using this option:-

CALCULATE FILE

From: 1

To: 500

Field: 6

Formula: *1.1

(The formula may also be $+0.1 * f(6)$ and still have the same effect).

The calculate option works on the current range of records set up under option G. This allows say a field to be doubled only under certain conditions.

ADVANCED CALCULATIONS

Any fields may be used in the calculation of any other field.

For example, suppose we had a stock file where:

4 Number in stock

5 Cost Price

6 Selling Price

7 Total Value

Now using the calculation mode, field 7 would be $f(4) * f(5)$ NOTE that you must use a lower case f, NOT an upper case F.

Also, if selling price was a 40% mark-up on the cost price, then field 6 would be $f(5) * 1.4$

You can clear field 6 to zero on a whole range of records by multiplying by zero.

Any valid BASIC expression can be used, provided it can be entered on one line. For example field 10 could be derived from this expression:

$$\text{SIN}(f(1)) + \text{PI} * f(3) / 4 - \text{LOG}(f(6)) ^ f(3)$$

rec

The variable 'rec' can be used in the expression; rec holds the record number of the record being processed.

FNr(r,f)

This function will return the contents of record number *r*, field number *f*. It must be used EXACTLY as FNr and not FNR, and must be followed with TWO values in brackets separated by a comma. For example an expression such as: 10+FNr(20,8) can be used.

There are not many practical uses for this feature, but it has been included for the sake of completeness. An example of its use can be seen in the PEOPLE file. If you are going to try this out please copy the PEOPLE file first because it will alter field 8.

From: 1

To: 20

Field: 8

Formula: f(8)+FNr(rec-1,8)

The effect of this is to add the contents of the previous record's field 8 to the current field 8; hence producing a cumulative total in successive field 8s. Print the file before and after to see the effect. Note that the "previous record" is the previous numbered record. If the tag file is active it does NOT refer to the previous sorted record.

(Note that FNr(r,f) returns the value zero if *r,f* are out of range, or if the field read is a string or date. If calculations are being performed on a string field then FNr(r,f) returns with a string.) These features are only available under the "global calculate" option, and not under the on-screen calculate via option C.

GLOBAL CALCULATIONS on non-numeric fields

This is possible and has several important uses. For example it will save entering data which is the same over a batch of records. As an example, suppose that you are creating a file for your collection record albums, and that field 1 is the Artist, and field 2 is the Album Title, there are other fields but we are not interested in them at present. Now suppose we are entering records from our collection and we have found a stack of Beethoven records for his Symphonies numbers 1 to 9, suppose that we are at record number 121. We can save having to enter Beethoven 9 times, by using option L and selecting:

From: 121
To: 129
Field: 1
Formula: "Beethoven"

Note that the text **MUST** be contained within quotes.

We can even force the automatic entry of field 2 as follows:

From: 121
To: 129
Field: 2
Formula: "Symphony No " + STR\$(rec-120)

Note the SYNTAX here, it is important. The field is a non-numeric field so you must convert the numeric quantity rec-120 into a string variable using STR\$. This is then joined to the text using the + sign.

FNr(r,f) is also available here and it returns a string value. See a little earlier for a precise description.

WARNING

If, during the processing, a mathematical error occurs this option will be abandoned, and only part of the file will have been updated. For example, if you were using the expression /f(5) then if somewhere in the file field 5 was zero, then a "division by zero" error would abort the run, and you will be notified of the offending record number.


OPTION P — STOP THE PROGRAM

This exits the program, restoring the cursor keys and closing all open files.

You must answer YES to the prompt:

ARE YOU SURE (YES/NO)?

* COMMANDS FROM THE MENU

*  This displays the contents of the disc.

*DR.n Switches file accesses to drive n. n must be a valid drive number, usually 0 1 2 or 3.

*KEYn text Used to place "text" in red function key number "n". The main use for this is to save repeated typing while in option C. For example, suppose that the most common entry for field 1 was "University of" followed by its name. You can save having to type this by entering from the menu:

*KEY0 University of

Now while working under option C and next to field 1, if you want to enter "University of" you simply press the red function key marked f0, and the text appears.

If automatic entry includes the need to move on to the next field (ie an automatic <ret> key press) end your *KEY definition with ||M. (The || key is the one immediately to the left of the left-arrow cursor key, and you must press shift to obtain it.) For example if you want to enter "BIRMINGHAM" and move to the next field use:

*KEY1 BIRMINGHAM||M

Note that several ||M can be used to move down several lines, and even move on to the next record. Note also that you can only define keys 0-9.

Note that function key definitions are lost on entry to option O (Form design). This option use the keys for its own purposes.

Several other operating system commands are available, however some commands corrupt the memory so are not allowed. These will have to be given after you have exited the program via option P. See the "User Guide" for the use of other commands.

MENU OPTION M — TAG FILE

A "TAG" file is a file containing the order for accessing the Master file. For example suppose your file had the following records:

REC	NAME
1	Bloggs
2	Smith
3	Jones
4	Williams
5	Patel
6	Rumplestiltskin

and you wanted to produce a list sorted in alphabetical order, you have two alternatives to produce this sorted list. Either use the ordinary sort to sort the data as follows:

REC	NAME
1	Bloggs
2	Jones
3	Patel
4	Rumplestiltskin
5	Smith
6	Williams

or select the tag sort. Here the file will stay in the ORIGINAL order but the list 1 3 5 6 4 (corresponding to the sorted order of records in the original file) will be filed away. Now provided that the tag feature is switched on and the computer told which tag file you want (several can be stored) all printing and option C and L work will be conducted in the tag file order. You will notice that tag file sorting is very much quicker than sorting the whole master file and you can have as many tag files as you want, no tag file will exceed 4k even with 2000 records.

A tag sort on the 1000 record file will take about 6 minutes, whereas it would take 2 hours to sort the master file.

Tag sorts can be done on up to two fields. Either field can be in ascending or descending order. More complex sorting must be done without the "tag" file active.

TAG DRIVE AND DIRECTORY

It is your choice which drive to select for holding the tag file. However it is more usual to keep the tag file on the same disc as the master file. It may sometimes occur that the whole disc is being used for the master file and the 3-4k needed for the tag file is unavailable, in this case another drive can be selected.

NOTE: For those with only a single sided single drive, the tag file must reside on the same disc as the master file.

A directory character must be given, and can be chosen from a letter or digit 0 to 9 or A to C inclusive. It is appropriate to use directories 1 2 3 4 5 6 7 8 and 9 to represent the tag files for fields 1 to 9 respectively. In the "PEOPLE" file the tag file provided has the directory 9, this is because it is a sort on field 9 (height). This is a suggestion only, and any valid character may be used as directory for a sort on any field.

SWITCHING OFF THE TAG FILE

To de-activate the tag file select option M, now press return to both drive and directory prompts, and the tag file will be de-activated.

NOTE

The tag file is a passive file, it is NOT updated automatically if the data in the master file is changed or the file altered in any way. However the tag file need only be re-created if you have altered the sort field.

If the tag file is "active" all activities with the package will be in the tag order. If the tag is inactive references are in record number order.

When "tag" sorting very long files, the fields may be truncated during the sort. The actual data being sorted is visible as the sort routine runs.

Numeric fields are right justified before sorting. It is up to you to make sure that you use a fixed format when creating these numeric fields if they are to be sorted correctly.

Date fields are swapped before sorting, eg 230284 is sorted as 840223. (Pairs of characters are swapped end-for-end, eg 0182 would be sorted as 8201; 12345678 would be sorted as 78563412).

MENU OPTION N — UTILITIES

The following utilities are available:-

1. Make changes to descriptor file:

- (a) Date created
- (b) Date last used
- (c) Last record in use

2. Make a Copy of a descriptor file

NOTE: This copy process sets the "Date created" and "Date last used" to today's date, and "Last record in use" to zero. You will have to change these using option 1 if required.

3. Delete a field from every record in the file.

4. Make new master from tag file.

This will take the tag file specified using option M from the main menu, and using the currently specified file will sort the master file in the tag order. You must backup the masterfile first.

MENU OPTION O — FORM DESIGN

This is a very flexible feature and allows you to design a layout which is not included as standard, for example a label, invoice, letter etc.

This facility will allow fields, dates, invoice numbers, headings, calculations and text to be placed anywhere on the printout. You can incorporate control codes for special printer features within the layout and also perform calculations during the printout.

Many different forms may be specified per file, these can be held with directory letters E to Z inclusive.

Selecting option 0 takes you to the form design routine. Here you must first enter the directory letter you are going to use (E-Z). The drive is the current drive selected from the main menu using *DRIVE.

You are now asked if you want to enter any calculations. You would do this if you want to perform calculations on fields during the printout. Eg. $(F(7)+F(8))*0.15$ — which may mean "find VAT @ 15% on field 7 added to field 8". You can enter a maximum of 8 calculations.

The fields must be specified as F(8) and not f(8) and calculations may contain the "user variable" K and line counter L.

If you want to enter less than 8 calculations simply type END in place of the final calculation.

USER VARIABLES available in calculations

K Will be initialised at start of printout and incremented after each record. This can be included in the calculations as well as in the form.

L Contains the number of lines printed so far. It's most likely use will be to decide whether to start a new page or not and maybe print a new set of headings. For example:

Calculation 0 - L MOD 66 > 60

In the form you would use:

I(0):P:G"HEADING"

which means if calculation 0 is true (if more than 60 lines have been printed on a 66 line page) then "page feed" and print the file called HEADING. However this will not print a heading at the start of the output, the following calculation will:

L MOD 66 > 60 OR L MOD 66 = 0

[The MOD operator is used as follows — L MOD 66 means find the remainder on dividing L by 66. Hence L MOD 66 = 0 will detect the EXACT start of a new page, L MOD 66 > n will detect if more than n lines have been printed.]

If you are working on the PEOPLE file, then to load a prepared form press f4. There are three pre-designed form layouts supplied for you to examine:

E — Labels

F — Certificates

G — Letter

You can, of course, re-define the forms already stored under directories E, F and G.

FORM COMMANDS

The commands allowed in the form design editor are shown below together with a brief description:-

- A(n) Print the result of calculation n.
- C Centre what follows.
- D Print the date.
- En Repeat form n times.
- F(n) Print contents of field n (Must be upper case F).
- G"x" Insert a previously prepared text file. This could have been prepared using Wordwise or View and then spooled to disc with the filename "x". You can choose any name you wish as long as it does not clash with filenames currently in use. It is up to you to get the text file arranged in the required format by spooling it out from your wordprocessor.
- H(n) Print stored heading for field n (Must be upper case H).
- I(n) If calculation n evaluates to a negative value (or logical TRUE) then perform this line.
- K User variable — will be initialised at start of printout and incremented after each record. Can also be used in calculations.
- Ln Turn paper up n lines.
- Mn Set margin to n spaces.
- N Print current record number.
- P Page feed (Form feed).
- R Right justify what follows. (Using current line length see Wn).
- Sn Print n spaces.
- Tn Tab to position n.
- Wn Set width of printout to n characters.
- Xn Send control character n to printer, consecutive characters are sent as X27,52 etc.
- * Send command to O.S. (Allows for example PRINTMASTER commands to be given.)
- : New statement follows on the same line.
- " " Print text between inverted commas.
- + When using "right or centre justification" this command will add what follows to the text being justified: eg.
R"NAME"+F(1)+F(2)
CAUTION: Do not try to add strings ie. "Beebug" + "Soft"

Any command may be used more than once, you are only limited by the size of the design screen. [See your printer manual for how to send a pound sign. It will probably be a "hash" sign, or it may be a control code sequence.]

The following keys are available during the design process:

Cursor	Cursor down
Cursor left	Cursor right
<ret>	Move to next line
DEL	Delete character to left of cursor
f0	Test printout to screen or printer
f1	Print current form design screen
f2	Erase current layout
f3	Save layout to disc
f4	Load layout from disc
f5	Restart form design
f6	Insert a blank line above cursor
f7	Delete current line
f8	Insert character to left of cursor
f9	Delete character at cursor
<esc>	Return to main menu

Don't forget to save the form design using f3 before returning to the main menu. It is also essential that you check the form for errors using f0 before returning to the main menu. An error will occur if you use a faulty form in option H.

THE "I" COMMAND

This allows the form to contain conditional printing, for example in the supplied form on directory F the certificate requires the word "HE" or "SHE" depending on the sex of the person. This is achieved by using I(0) which means — If calculation 0 is TRUE execute the rest of the line.

Use:-

calculation 0 — F(6)="M"

calculation 1 — F(6)="F"

Now in the form design:

I(0): "He"

means: if calculation 0 is TRUE perform the rest of the line — ie print "He".

Similarly

I(1): "She"

means: if calculation 1 is true print "She"

The I command can occur anywhere on a line but will only operate on the remainder of the line if the calculation is TRUE. If you cannot fit enough on the rest of the line simply prefix the next line with the same I command and continue.

The I command can be used to test for any NEGATIVE value (TRUE is represented as -1). Another example might be if you wanted to print the message:

"has 0 children" or

"has 1 child" or

"has 2 children" as appropriate.

You would set up:

Calculation 0 — $F(8)=0$ OR $F(8)>1$

Alternatives that have the same effect:

$F(8)<>1$

NOT ($F(8)=1$)

and then use:

"has ":F(8):"child":I(0):"ren"

K — The 'user variable'

When the form is being printed K will be replaced by a number supplied at printout time under option H. On each successive form, K will be incremented by one. This number has a variety of uses, for example you can place invoice numbers on your form using:

"INVOICE NUMBER: ":K

When printout is to commence using option H you will be asked for a starting value for the 'user variable'. The number supplied is the number that will appear on the first form. Subsequent forms (provided they apply to different records) will be numbered sequentially in ones.

EXAMPLES OF FORM DESIGNS

Once you have prepared or loaded the form, you can obtain a test print by pressing f0 followed by P for printer, or S for screen.

The simplest way to learn more about form design is to examine the printout and screen for each of the example designs and obtain printouts of the commands using f1, and their result using f0. Now study the design and its effect, this way you can see what effect each command has.

To help you here are the design and results from both E.PEOPLE and G.PEOPLE.

E.PEOPLE

This is the form design saved on the disc as E.PEOPLE: it prints a single label together with the persons date of birth and membership number. It finishes with 2 blank lines ready for the next label.

Form Design Routine — File E.people
F(1):S1:F(2)
L1:F(3)
L1:F(4)
L1:F(5):S5:"D.O.B. ":F(7)
L1:T14:"Membership No ":K
L3

(See a little later for a precise explanation of these commands.)

This could equally well have been entered like this, and still had the same effect. Spacing and layout on the design form has no effect on output:

```
-----  
F(1):S1:F(2):L1:F(3):L1:F(4)  
L1:F(5):S5:"D.O.B. ":F(7)  
L1:T14:"Membership No ":K:L3  
-----
```

This is the output associated with the form design E.PEOPLE just given:

```
-----  
Dr. A.G. Andrews  
42 High Street  
Computertown OK  
Cleveland          D.O.B. 041021  
                   Membership No 0  
-----
```

EXPLANATION OF THE COMMANDS

Refer back to the form design. Each line is explained in detail below:

Line 1: F(1) means print field 1; S1 means follow it with one space; F(2) means follow it with field 2. The colons simply separate one command from the next.

Line 2: L1 means print one line (move to next line); F(3) means print field 3.

Line 3: L1 means print one line (move to next line); F(4) means print field 4.

Line 4: L1 means print one line (move to next line); F(5) means print field 5; S5 means leave 5 spaces; "D.O.B."; F(7) means print the message "D.O.B." followed by field 7

Line 5: L1 means print one line; T14 means tabulate to column 14; "Membership No ":K means print the message in quotes followed by the current value held in the user variable K. This is increased by one each time the form for a new record is printed.

Line 6: L3 means turn up 3 lines.

G.PEOPLE

This is the form design saved on the disc as G.PEOPLE:

Form Design Routine — File G.people
W80
L2:R"BEEBUGSOFT
L1:R"PO BOX 50 "
L1:R"St.Albans "
L1:R"Herts "
F(1): " ":F(2):L1
F(3):L1
F(4):L1
F(5):L2
CD
L2:"Dear "
I(0):"Sir,"
I(1):"Madam,"
L2:G"LETTER":L2

Calculations

0) F(6)="M"

1) F(6)="F"

This is the output associated with the form design E.PEOPLE just given:

BEEBUGSOFT
PO BOX 50
St. Albans
Herts

Dr. A.G. Andrews
42 High Street
Computertown OK
Cleveland

11th October 1984

Dear Sir,

This letter was composed using Wordwise for use in the new MASTERFILE II "Form" layout printing option. It shows the use of the I(n) conditional command to print the correct salutation on this letter. It also shows the G"xxx" command allowing this file called "LETTER" to be printed.

Once created, the file should be spooled out using formatting commands suited to the form design layout you are using. The form design program will not rearrange this text, it is therefore up to you to get Wordwise (or other word processor) to arrange this document appropriately.

This feature alone increases the possible uses of Masterfile II beyond that of most other databases.

Yours faithfully
BEEBUGSOFT

Line 0: W80 means set line width to 80 characters

Line 1: L2: start by turning up 2 lines:

R"BEEBUGSOFT" print "BEEBUGSOFT" right justified in the current line length.

Line 2: L1: Turn to next line; R"PO BOX 50 " right justify "PO BOX 50"

Line 3: L1:R"St.Albans " turn to next line and print text right justified.

Line 4: L1:R"Herts " turn to next line and print text right justified.

Line 5: F(1): " ":F(2):L1 Print field 1 followed by 1 space, followed by field 2, followed by a new line.

Line 6: F(3):L1 Print field 3 and turn up a line.

Line 7: F(4):L1 Print field 4 and turn up a line.

Line 8: F(5):L2 Print field 5 and turn up 2 lines.

Line 9: CD Print the date centred on the line.

Line 10: L2:"Dear " Turn up 2 lines and print "Dear ".

Line 11: I(0):"Sir," If calculation 0 is TRUE print "Sir,".

Line 12: I(1):"Madam," If calculation 1 is TRUE Print "Madam,"

Line 13: L2:G"LETTER":L2 Turn up 2 lines, get the file called "LETTER" (previously prepared on disc using a word processor) and print it; and finally turn up two lines.

APPENDIX 1

SOME NOTES ON STRUCTURING A DISC FOR MASTERFILE

1. If using more than one data file on a disc get the descriptor files all on the beginning to leave space at the end for the data files. (See 2. below for a method). I have a disc with the program files and five financial files initialised to a total of 1300 records with record lengths between 73 and 149 (500 records of the largest) all on one 200k side. These were written to the disc using the general routine:

First descriptor file, then datafile, then extend (option F), Second descriptor, data, extend, etc.

2. On double-sided drives it is a good idea to make a copy of the data file on the reverse side. If you get "can't extend ..." errors see Appendix 9 for details on how to overcome this.

Drives other than zero can be used for the data files, so that you can reserve a whole disc side per application. This is a good idea for files that may grow and grow. However it is still a good idea to "Initialise/Clear" the file first to see how many records you will be able to get on.

To use a drive other than zero you must change drives using the Beeb's command *DRIVE 1 (or *DR.1) given when you are on the menu page.

APPENDIX 2

PRINTER CONFIGURATION

Printers differ in the way they operate. There are two main categories: 'Serial' and 'Parallel' printers. A serial printer is set using *FX5,2. There are also two main ways in which they handle 'new-line' characters: auto line feed on ASCII-13, and line feed only on ASCII-10. This is controlled with the *FX6,0 or *FX6,10 commands.

If you have a serial printer, you will also have to set the baud rate. This is done using the *FX8,x command, where x is the code representing the baud rate (See the User Guide P.424).

These types of printer may be configured by using the *FX commands from the Masterfile menu.

For example for a serial printer with auto line feed working at 1200 baud, you would use:

*FX5,2
*FX8,4
*FX6,0

TV CONFIGURATION

On some TV/monitors the picture may need shifting up or down one line. This is achieved using *TV1 or *TV255 as necessary from the main menu.

APPENDIX 3

LIMITATIONS OF DISC MASTERFILE

These are the main limitations to Masterfile, and cannot be overcome:

1. The maximum number of fields is 18.
2. The maximum number of characters per String field is 255; per Integer field is 9; per Numeric field is 11.
3. The largest file is dependent on the capacity of one side of your disc. To estimate the maximum number of records, divide the disc capacity minus 3k, by the record length plus (2 times the number of fields).

Eg. With a 200k disc and 50 ch per record and 10 fields you can have
 $(200,000-3000)/(50+2*10)=2814$ records

4. Filenames cannot contain : or . characters. This is to stop you from accidentally using a reserved directory. However, drives can be changed by using the *DRIVE command from the menu.
-

APPENDIX 4

FILE BACK-UP SUGGESTIONS

This is VERY important. You should NEVER work using a file that has not got a copy. A power failure during updating will corrupt your file.

You should particularly make sure that you have a copy before you start sorting or using the "Global Calculate" facility (options I and K) as both of these update the disc continuously.

COPYING

Use the *COPY facility available on the standard BBC Micro DOS. You must copy BOTH the main file and the descriptor file. For example for the PEOPLE file you will see two files:-

D.PEOPLE

PEOPLE

Both of these must be copied. This can be done using:

*COPY 0 1 D.PEOPLE

*COPY 0 1 PEOPLE

NOTE: The order is important, the PEOPLE file must be the last one copied.

On examining the disc you may notice other PEOPLE files eg E.PEOPLE 1.PEOPLE 9.PEOPLE etc. These need not be copied unless you require them.

Note that directories E-Z hold form designs, and all other directories (except D) hold tag files.

Any time a major update to your file is undertaken you should make a back-up copy of the master file (the file with no directory is the master file) first. This may mean that you have 3 or 4 discs that you use in rotation. You will be grateful that you kept all these copies when you suddenly find that you entered some incorrect data last week, and you can still go back to the disc that you used the week before that.

You probably will prefer to invent a system of your own, but nevertheless it is still advisable to keep back-up copies of ALL data files.

APPENDIX 5

DOS COMMANDS, FX and TV CALLS

Several of the Beeb's disc operating system commands, FX or TV calls may be given from the menu page. Simply type them in. For example you can get a disc catalogue by typing:

*CAT or more simply *.

Some commands are not allowed because they would corrupt Masterfile. If you wish to use these commands you must exit Masterfile and then re-boot having used the command.

CHANGING DRIVES IN MID PROGRAM

This is simply done by typing *DR.1 for drive 1, *DR.2 for drive 2 etc. Remember though that Masterfile programs must reside in drive 0. You can remove the program disc, and you will be prompted to replace it each time it is required.

USING A SINGLE DRIVE

Masterfile will work on a single drive, however you will need to remove the Masterfile disc to insert your data discs as you produce and use them. Masterfile will prompt you when it needs re-inserting. The Masterfile disc will need inserting whenever you swap between some options. A pair of disc drives or a double sided drive makes things easier.

The simplest solution for those with only single sided single drives is to copy all the program files onto each disc being used. These are:

LFmain LFprint LFutils LFsort LFform !BOOT LF (the order of copying is important).

Also type *OPT4,3 to enable the disc to auto boot.

Now type *ACCESS *.* L to protect them from erasure.

Having done all this you can now copy your data files, or start creating a file using the Masterfile package.

APPENDIX 6

FILE SPECIFICATIONS

For those with knowledge of file handling, who would like to link Masterfile data files with other packages that they write, here are the file descriptions.

FILE NAMES

Each time a file is created, two files will be made on the disc: the main data file, and the descriptor file. The descriptor file has a D.<filename> directory prefix. The main data file has no (\$.) prefix.

DESCRIPTOR FILE

This contains various details to allow the program to handle and access the main data file:

```
mf  number of fields
mr  number of records

ft$(2)  type (S,D,I,O,1....9)
fl(1)   length          FIELD 1
fn$(1)  name

ft$(2)  type (S,D,I,O,1....9)
fl(2)   length          FIELD 2
fn$(2)  name

ft$(3)  type (S,D,I,O,1....9)
fl(3)   length          FIELD 3
fn$(3)  name
```

the above three fields are repeated mf times.

```
date_created$
date_last_used$
0
```

The remainder of the file is used to hold the searching criteria set up under option G, and can be ignored.

THE MAIN DATA FILE

All data is held as strings. Record 0 is not used. Direct access is used to read each record or part of a record, and is calculated from

$$\text{record_no} * \text{record_length}$$

where record.length is calculated noting that each field is 2 ch longer than its field length. (Field lengths are known from the descriptor file.)

```
fi$(1)  contents of field 1
fi$(2)  contents of field 2  FOR
fi$(3)  contents of field 3  RECORD ONE
fi$(4)  contents of field 4
etc for mf fields
```

repeated for each record.

EOF

FILE READING EXAMPLE

This is an example of a program that will read and print the PEOPLE file. It can be found on the disc under the name Lfread.

```

10  REM "Sample MASTERFILE file reader
20  ON ERROR CLOSE#0:REPORT:PRINT" at line ";ERL:END
30  DIM ft$(18),fn$(18), fl%(18)
40  CLS
50  REPEAT
60      INPUT "Filename ", filename$
70      x=OPENIN("D."+filename$)
80      IF x=0 PRINT "File not found"
90  UNTIL x>0
100 INPUT #x,mf%,mr%
110 PRINT "No of fields = ";mf%
120 PRINT "No of records = ";mr%
130 reclen%=0
140 PRINT'  "FIELD FIELD FIELD"
150 PRINT  "TYPE LENGTHNAME"
160 PRINT  "-----"
170 FOR f%=1 TO mf%
180     INPUT #x,ft$(f%),fl%(f%),fn$(f%)
190     PRINT TAB(2);ft$(f%);TAB(9);fl%(f%);TAB(14);fn$(f%)
200     reclen%=reclen%+fl%(f%)+2
210 NEXT f%
220 INPUT #x,dc$:PRINT' "Date created: ";dc$
230 INPUT #x,dlu$:PRINT "Date last used: ";dlu$
240 INPUT #x,spare:REM Spare
250 CLOSE#x
260 x=OPENIN(filename$)
270 REPEAT
280 REPEAT:OK=TRUE
290     INPUT' "Display which record number ",record%
300     IF record%<1 CLOSE#x:END
310     add%=record%*reclen%+1:REM Calculate address
320     IF add%>EXT #x PRINT "Record number too large":OK=FALSE
330 UNTIL OK
340 PTR #x=add%
350 FOR f%=1 TO mf%
360     INPUT #x,fd$
370     PRINT,f%;TAB(3);LEFT$(fn$(f%),10)TAB(13)">"fd$;"<"
380 NEXT f%
390 UNTIL FALSE

```

APPENDIX 7

SECURITY

A simple (but effective) way to stop unauthorised people having access to your file, is to alter the field length for any field using option B. The file will become unreadable until it is reinstated to its correct value.

APPENDIX 8

DEFAULT VALUES

Whenever a value is required by the package you can often just press 'return'. The package will attempt to supply sensible (default) values.

It is wisest to glance at the values selected in case they do not meet your requirements.

APPENDIX 9

ERRORS

Errors such as "Drive fault" and "CRC error" are not due to the Masterfile package. They are problems associated with a disc drive fault.

You should check the following:

- Drive heads are clean.
- Drive heads are correctly aligned.
- Drive heads are not magnetised.
- Discs not worn out.
- Discs not scratched.

Floppy discs do not last forever, they should be replaced occasionally. Re-format the discs and try again if you have problems. Copy the files first of course.

OTHER ERRORS eg DISC FULL
CAN'T EXTEND

These are nothing to do with Masterfile but arise because the computer cannot find any more room on the disc.

In order to overcome the problem, proceed as follows:-

Exit from Masterfile using option P

Make a copy of the offending file (and all its associated files) onto a spare blank formatted disc.

Suppose that the offending file is the PEOPLE file, and it is in drive 0. You have your blank disc in drive 1:-

*DRIVE 0
*COPY 0 1 * PEOPLE

Now delete all the PEOPLE files from drive 0:-

*ENABLE
*DESTROY *.PEOPLE
Delete (Y/N)? Respond with Y

Now compact the disc in drive 0 to free up any spare space using:-

*COMPACT

Finally copy back all the files, making sure that the PEOPLE master file is the LAST one copied. Unfortunately there is no single command that will do this, so use:-

*COPY 1 0 D.PEOPLE
*COPY 1 0 9.PEOPLE
*COPY 1 0 E.PEOPLE
*COPY 1 0 F.PEOPLE
*COPY 1 0 G.PEOPLE
*COPY 1 0 PEOPLE

This may seem very tedious but it will not occur very often.

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