SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT
SAGESOFTSAGESOFT

RETRIEVE

Data Base Software for Amstrad

Instruction Manual

SAGE

Popular Database Program

for

Amstrad CP/M Computers

Copyright

Contents

Printing Documents

Appendices

A.   Additional Field Types

B.   Enquiry Processor Commands

C.   Formatting Commands

INTRODUCTION

Database management – the storage, organisation and useful application of business records – is one of the principal purposes for which companies install micro computers. SAGE Database is a database management program which performs all the standard functions for this type of product but with features not normally found on competing products.

SAGE Database is a powerful information retrieval system and may be thought of as an efficient electronic filing cabinet. Once the information you wish to store, whether it be names and addresses, machine part details, or whatever, has been entered, then all that information can be interrogated and manipulated to provide the answers you need and in the way you find most useful.

SAGE Database has the unique ability to understand enquiries phrased in normal conversational English, so that even the most inexperienced user can use the system productively. It allows the user to change the vocabulary at will, or even to translate the vocabulary into a foreign language, a feature which makes it particularly useful in a multi-national office.

This user manual includes a highly effective tutorial section with a number of typical example applications for the program. A few hours taken at the outset to work through the tutorial will be time well spent and should make you sufficiently familiar with SAGE's facilities to begin work organising your own records.

Included in your purchase price is 90 days free 'hotline' telephone support. In order to qualify for this facility, **you must return the User Registration Card to Sagesoft plc**. Support and assistance will not be given if this is not done. After the first 90 days you may enrol for **SageCover** which guarantees ongoing support and automatic issue of program updates. There is a modest charge for **SageCover** and we recommend that you return the application to us now so that support will continue uninterrupted at the end of the free period.

DISK ORGANISATION

The SAGE database program has been supplied on both sides of the enclosed disk. One side contains the main database programs. The second side contains utility routines.

The main database routines consist of the following facilities

Enter a Database Layout
Enter Record Details
Enquiry Processor

The following utility routines are on the second side of the program disk

Text Editor
Document Processor
Print Database structure
Labelling routine

The program has been installed such that it will 'look' for all data files on drive B of your machine. If your machine does not have a second disk drive you will need to exchange the program disk for the data disk when the machine prompts you with a message similar to this:-

Please put the disk into drive B

If you have a second disk drive you will not need to exchange disks but you should ensure that both program and data disk are inserted into the correct drives before you run the program.

MAKING A WORKING PROGRAM DISK (PCW8256)

You should not use the SAGE database program supplied with this manual unless you have made a security copy.

To copy the Master disk follow these simple instructions:-

1. Switch on your Amstrad computer and insert your CP/M Plus disk.

   When the A> prompt appears type **DISCKIT** [**RETURN**]

   Press function key **f3**, to format a disk.

   Remove the CP/M Plus disk and insert a new disk. Press **Y** when prompted to do so.

   When disk formatting is completed, exit from the menu so that the A> prompt re-appears.

   Insert your CP/M Plus disk.

2. Type : **PIP** [**RETURN**]

   The * sign will appear on the screen.

   Type : **A:** =**B:*.*** [**RETURN**]

   You must change disks when prompted. (Please note that your SAGE DATABASE disk will always go into drive B and the disk you have just formatted into drive A.)

   When the files have been copied and the * re-appears type **ALT-C** (this is done by holding down the ALT key and pressing the 'C' key).

The A> prompt will now re-appear.

Label the formatted disk as your DATABASE PROGRAM DISK and store the original disk in a safe place.

3. Now repeat steps 1 and 2 but this time format the second side of the working program disk and copy the Master UTILITIES disk onto the second side of this disk.

MAKING A WORKING PROGRAM DISK (CPC6128)

You should not use the SAGE database program supplied with this manual unless you have made a security copy.

To copy the Master disk follow these simple instructions:-

1. Switch on your Amstrad computer and insert the CP/M Plus disk.

   When the A> prompt appears type **DISCKIT3** [**RETURN**]

   Press function key **f6**, to copy a disk.

   Replace the CP/M Plus disk with your SAGE DATABASE disk and then press **Y** to the question 'Copy a disk'.

   The program will ask you to insert a disk to 'write'. Replace the SAGE DATABASE disk with a new disk and continue following the prompts to copy all the disk.

   On completion you will be asked to remove the disk and press any key. Do so and press [**RETURN**]

   Now you will be asked if you wish to copy another disk.

2. Insert the SAGE UTILITIES disk and press **Y**. This time, when the program asks you to enter a disk to 'write to' you should use the second side of the new disk and continue to follow the prompts to copy all the disk.

On completion you will be asked to remove the disk and press any key. Do so and press [**RETURN**]

Now you will be asked if you wish to copy another. Press **N**

Finally press function key **f0** to return to the A> prompt.

RUNNING THE SAGE DATABASE PROGRAM

The disk supplied with this instruction manual does not contain the CP/M operating system which is supplied with your computer and which is essential for it to function. To run the SAGE DATABASE program you must go through one of the procedures described below, as appropriate for the machine you are using.

Please note: The SAGE DATABASE program will only run under CP/M Plus and not under CP/M 2.2

USING A CPC6128 COMPUTER

Place CP/M Plus disk into the disk drive on your Amstrad.

Reset your computer and after the ready prompt is displayed on the screen type:

lcpm [**RETURN**]

When the A> prompt appears replace your CP/M Plus disk with either your 'Working Database' or 'Working Utilities' program disk (depending on which program you want to run) and type:

DATABASE

After a few seconds the copyright message will appear on the screen.

USING A PCW8256 COMPUTER

Place CP/M Plus disk into the disk drive on your Amstrad.

Reset your computer and when the A> prompt appears replace your CP/M Plus disk with either your 'Working Database' or 'Working Utilities' program disk (depending on which program you want to run) and type:

DATABASE

After a few seconds the copyright message will appear on the screen.

Please Note: You run the program **'DATABASE'** for both the database and utilities programs. The appropriate menu will be displayed depending on which disk you have in your computer.

TUTORIAL

In the next 20 minutes you will create a simple database. Please follow the instructions closely.

Important Note: Customers using a twin disk machine must insert the data disk in the 'B' drive and the program disk in the 'A' drive before loading the program.

Customers using the single disk Amstrad must start with the program disk in the 'A' drive and insert the data disk when the following message appears:–

Please put disk into drive B

You must re-insert the program disk when asked to place a disk into drive A. **Please watch for these instructions very carefully.**

1. After loading the program you will be asked to enter today's date

   Enter : **06/01/86 [RETURN]**

2. After entering the date the following screen will appear. It lists the main options of SAGE database.

```
SAGE Database          Data Management System         DD/MM/19YY
Version: X.X                                          Page: 1
                          Master Menu



                    Enter selection number ( ..)

                    1. Enter a Database Layout
                    2. Enter Record Details
                    3. Enquiry processor
```
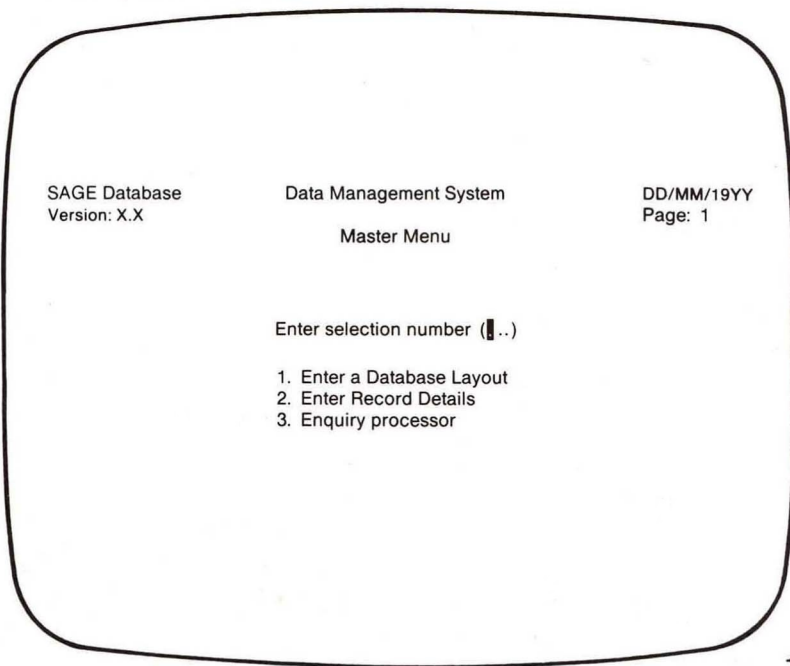
CREATING A SIMPLE DATABASE

3. To begin the process of setting up your Database…

   Enter : **1** [**RETURN**]

   and after a few seconds the following display will appear on your screen:-

```
SAGE Database           Data Management System          DD/MM/19YY
Version: X.X            File definition procedure        Page: 1
Access:


        File name: ? |  . . . . . . . . .      Record length:
   1. How many fields?  . . . . |

   2. Data file name  . . . . . . . |
   3. Data file type  . . . . . . . . |
   4. Screen title  . . . . . . . . . . |

   – – – – – – – File security  – – – – – –
   5. Update permitted  . . . . |

   6. Update password  . . . . |
   7. Access password  . . . . |
```

4. We will now set up a simple database. It will consist of the names, addresses and telephone numbers of people you frequently contact. You will need the following details on at least a dozen customers/contacts:

   1. Company Name   **5. City**

   2. Person   **6. County**

   3. Salutation   **7. Post-Code**

   4. Street   **8. Telephone**

12

Just like a manual system we will refer to our list of contacts as a 'file', except that we shall use the term 'data-file'.

Each group of these eight items is collectively known as a 'record'. A record is one set of unique information contained in a file and you are going to enter twelve records into this sample database, one for each contact.

Each individual item within a record is called a 'field', e.g. Company Name, Street etc. Our sample file will have eight fields per record.

It is also recommended that you give each record a number and use this number for reference purposes. This will make access to the database much easier and quicker.

We must give each file a name. Let's call this test file, 'CONTACTS'. On the screen the cursor will be alongside the word 'Filename'.

Enter : **CONTACTS** [**RETURN**]

5. Now fill in the rest of the details as follows:-

1. How Many Fields? nnnn

The 'n' means a number with up to four digits can be entered. We have nine fields (eight items listed above plus a record number).

Enter : **9** [**RETURN**]

2. Data File Name?

We will always use the same name as entered above therefore simply press [**RETURN**], and the words 'B:CONTACTS.DAT' will appear alongside this prompt.

Now press [**RETURN**] once more to accept this as the datafile name.

3. Data File Type?   Enter : **K** [**RETURN**]

Always use 'K' and this will speed up the retrieval of information from your database.

4. Screen Title?   Enter : **Contacts Information**

This will appear at the top of the screen when you are entering details and you can enter any title you choose.

5. Update Permitted?   Enter : **Y** [**RETURN**]

6. Update Password?   Enter : [**RETURN**] only

7. Access Password?   Enter : [**RETURN**] only

The following message will now appear:-

Enter Field number to change; '*' to void or 'RETURN' to continue?

You now have three choices:-

(i) If you have typed something erroneous into a field, enter the field number as shown on the screen and re-enter the correct details. Press [RETURN] when finished.

(ii) If you want to 'erase' everything you have just entered, enter '*' at this point.

(iii) If you want to continue setting up the database, press [RETURN] Do not press [RETURN] until you have compared your screen with the following screen:-

```
SAGE Database               Data Management System           DD/MM/19YY
Version: X.X                File definition procedure        Page: 1
Access:


        File name:  B:CONTACTS        Record length:

        1. How many fields?  .... ¦ 9

        2. Data file name  ....... ¦ B:CONTACTS.DAT
        3. Data file type  ........ ¦ K
        4. Screen title  .......... ¦ Contacts Information

         - - - - - - - File security  - - - - - -

        5. Update permitted  .... ¦ Y

        6. Update password  .... ¦
        7. Access password  .... ¦

        Enter field number to change; '*' to void or 'RETURN' to continue  ?█
```

Press [**RETURN**] and the following screen will appear:-

```
SAGE Database               Data Management System           DD/MM/19YY
Version: X.X                Field definition procedure       Page: 2


        Definition of field number: 1      Characters used: 0      Fields: 9

     - - - - Data Description  - - - -       - - - - Display parameters  - - -


        1. Field name ........ ¦              4. Justify (L/R) ........ ¦
        2. Field type .......... ¦            5. Output width ....... ¦
        3. Field length ........ ¦            6. Decimal precision    ¦
                                              7. Default print Y/N ... ¦


         - - - - - - - - - - - - - Data entry characteristics  - - - - - - - - - - - - -


        8. Forced entry Y/N ... ¦             9. Options:
        10. Entry pattern ....... ¦
        11. New display page ... ¦            12. Display position  .. Col:        Row:
        13. Range/calculation    ¦
```

6. Remember that we have listed nine items of information which we need on each contact. The first item that we need is called field number 1 and is the record number. With the above screen we are going to describe the first field, how this field is to be displayed and how entries can be made to this field.

The first item is the record number.

1. Enter : **NUMBER** [**RETURN**]

Field Type ?

2. Enter : **KY** [**RETURN**]

This entry means 'key' and implies that the program will use this field to search for the other details associated with a record within the database.

The program now completes the details for the additional lines on the screen. As you come to each line you can either enter the appropriate details or press [RETURN] to accept the details already there.

3. Field Length ?   This line will be ignored.

4. Justify (L/R) ?   Enter : [**RETURN**] only

Generally speaking, words are 'justified' (lined up) to the left (L) and numbers to the right (R).

5. Output Width ?   Enter : [**RETURN**] only

i.e. how many characters are to be printed out on a report ?

6. Decimal Precision?   This line will be ignored.

7. Default Print Y/N ?   Enter : [**RETURN**] only

We do not want the information in this field to be output unless we specifically request it.

8. Forced Entry Y/N ?   Enter : [**RETURN**] only

We will not require or 'force' an entry to be made in this field.

9. Options ?   Enter : [**RETURN**] only

10. Entry Pattern ?   This line will be ignored

11. New Display Page ?   Enter : [**RETURN**] only

12. Display Position ?

Columns run across the page from left to right and are numbered 0 – 80. Rows run down the page and are numbered 0 – 20.

We want every one of our fields to be displayed in column 10, therefore

Enter : **10** [**RETURN**] as the 'col' position

We'll position our first field on row 4 and each field thereafter on rows 6, 7, 8, 9, 10, 11, 12 and 13 respectively.

Enter : **4** [**RETURN**] as the 'row' position

13. Range/Calculation ?   Enter : [**RETURN**] only

The current screen for field number 1 should look like this…

```
SAGE Database              Data Management System           DD/MM/19YY
Version: X.X               Field definition procedure       Page: 2


   Definition of field number: 1        Characters used: 0       Fields: 9

   – – – – Data Description  – – – –        – – – – Display parameters   – – –

   1. Field name . . . . . . . . . ¦ NUMBER      4. Justify (L/R) . . . . . . . . ¦ R
   2. Field type . . . . . . . . . . ¦ KY        5. Output width  . . . . . . . ¦ 5
   3. Field length  . . . . . . . . ¦ 2          6. Decimal precision    ¦ 0
                                                 7. Default print Y/N  . . . ¦ N

   – – – – – – – – – – – Data entry characteristics  – – – – – – – – – – –

   8. Forced entry Y/N . . . ¦ N        9. Options:
   10. Entry pattern  . . . . . . . ¦
   11. New display page . . . ¦ N       12. Display position  . . . . Col: 10      Row: 4
   13. Range/calculation    ¦

       Enter field number to change; '*' to void or 'RETURN' to post        ? ▌ .
```

If you have made mistakes enter the relevant 'screen number' and you can re-type the correct details before moving on to the second field.

If no changes are necessary we can proceed to the second field by pressing [**RETURN**]

7. The second item is the Company Name.

   Enter : **COMPANY** [**RETURN**]

   Field Type ?

   Enter : **TX** [**RETURN**]

This entry means 'text' and implies that you can enter letters, numbers or symbols for the details in this field.

Field Length ?

Enter : **25** [**RETURN**]

How long will the longest name be on your list?. We have entered the total number of letters we think we'll ever need.

4. Justify (L/R) ?   Enter : [**RETURN**]

5. Output Width ?   Enter : [**RETURN**]

6. Decimal Precision?   This field will be ignored.

7. Default Print Y/N ?   Enter : [**RETURN**]

8. Forced Entry Y/N ?   Enter : [**RETURN**]

9. Options ?   Enter : [**RETURN**] only

10. Entry Pattern ?   Enter : [**RETURN**] only

11. New Display Page ? Enter : [**RETURN**] only

12. Display Position ?

Enter : **10** [**RETURN**] as the 'col' position.

Enter : **6** [**RETURN**] as the 'row' position.

13. Range/Calculation ? Enter : [**RETURN**] only

The current screen for field number 2 should look like this...

```
 ┌─────────────────────────────────────────────────────────────────────┐
 │  SAGE Database              Data Management System          DD/MM/19YY │
 │  Version: X.X               Field definition procedure      Page: 2    │
 │                                                                         │
 │      Definition of field number: 2      Characters used: 2    Fields: 9 │
 │                                                                         │
 │    - - - -  Data Description  - - - -        - - - - Display parameters  - - - │
 │                                                                         │
 │    1. Field name  .........  COMPANY      4. Justify (L/R) ........  L   │
 │    2. Field type  ..........  TX          5. Output width  .......  25   │
 │    3. Field length  ........  25          6. Decimal precision    0      │
 │                                           7. Default print Y/N  ...  N   │
 │                                                                         │
 │    - - - - - - - - - - -  Data entry characteristics  - - - - - - - - - - - - │
 │                                                                         │
 │    8. Forced entry Y/N ...  N       9. Options:                         │
 │   10. Entry pattern  .......                                            │
 │   11. New display page ...  N      12. Display position  .... Col: 10   Row: 6 │
 │   13. Range/calculation                                                 │
 │                                                                         │
 │      Enter field number to change; '*' to void or 'RETURN' to post    ?█ . │
 └─────────────────────────────────────────────────────────────────────┘
```

If you have made mistakes enter the relevant 'screen number' and you can re-type the correct details before moving on to the third field.

If no changes are necessary we can proceed to the third field by pressing [**RETURN**]

8. Now, without instruction, enter all the information required for the third field.

Your entries should look like the following screen when you have finished.

```
SAGE Database              Data Management System            DD/MM/19YY
Version: X.X                Field definition procedure          Page: 2


    Definition of field number: 3      Characters used: 27      Fields: 9

    - - - - Data Description  - - - -      - - - - Display parameters  - - -

    1. Field name .........| PERSON      4. Justify (L/R) ........| L
    2. Field type ..........| TX          5. Output width .......| 25
    3. Field length ........| 25          6. Decimal precision    | 0
                                          7. Default print Y/N ...| N

    - - - - - - - - - - - - Data entry characteristics  - - - - - - - - - - -

    8. Forced entry Y/N ...| N      9. Options:
    10. Entry pattern .......|
    11. New display page ...| N     12. Display position  .... Col: 10    Row: 7
    13. Range/calculation   |


      Enter field number to change; '*' to void or 'RETURN' to post      ?▌ .
```

When you are sure your entries are correct press [**RETURN**]

Now continue to enter the definitions for fields 4, 5, 6, 7, 8 and 9. All
the details will be the same as those for fields 2 and 3 with the
following exceptions:-

Name	Row
SALUTATION	**8**
STREET	**9**
CITY	**10**
COUNTY	**11**
POST-CODE	**12**
TELEPHONE	**13**

Please Note: No blank spaces are allowed in a field name.
Therefore, 'Post Code' must be connected in some way (e.g. a
hyphen) or spelt as one word.

When you have finished the details for field number 9 press
[**RETURN**]

You will be prompted to enter the details for another database file. We are only going to set up this one therefore press [**RETURN**] again.

The Main Menu will re-appear on the screen.

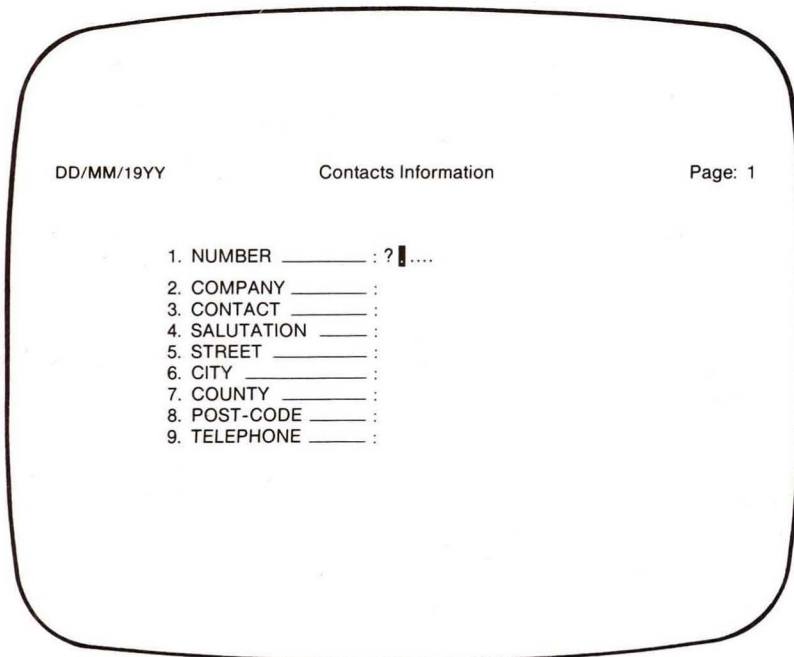## ADDING INFORMATION TO THE DATABASE

9. From the main menu we will choose option 2 to 'Enter Record Details'

   Enter : **2** [**RETURN**]

   After a few seconds you will be prompted to enter a filename

   Enter : **CONTACTS** [**RETURN**]

   The following display will appear on your screen:-

```
DD/MM/19YY                Contacts Information              Page: 1


           1. NUMBER _____ : ? ▌....
           2. COMPANY _____ :
           3. CONTACT _____ :
           4. SALUTATION _____ :
           5. STREET _____ :
           6. CITY _____ :
           7. COUNTY _____ :
           8. POST-CODE _____ :
           9. TELEPHONE _____ :
```

If your screen does not look like this you have probably entered the wrong display positions for the field names. You will have to return to the 'Enter a Database layout' option and correct any mistakes.

Now it's time to create individual records for our file.

Enter : + **[RETURN]**

The program will acknowledge that you are creating a new record by displaying the number 1 alongside the 'NUMBER' prompt and move to the 'COMPANY' prompt.

When you have completed the details for this company the following message will appear at the bottom of the screen:-

Enter field no. to change; * to void; D to delete; P, S or RETURN to post

A sample screen would look like this after entry:-

```
06/01/1986              Contacts Information                Page: 1


            1. NUMBER _____ | 1

            2. COMPANY _____ | ABC Products Ltd.
            3. CONTACT _____ | Mr. J. Smith
            4. SALUTATION _____ | John
            5. STREET _____ | 123 High Street
            6. CITY _____ | Anycity
            7. COUNTY _____ | Anycounty
            8. POST-CODE _____ | AB12 3CD
            9. TELEPHONE _____ | 01-234-5678

    Enter field no. to change; * to void; D to delete; P,S or RETURN to post ? ▌..
```

Now press [**RETURN**] to record these details in your database. The screen will be cleared.

Continue by pressing + [**RETURN**] and enter the details of another eleven of your business associates or friends whether they be real people or not.

Remember to press [**RETURN**] after each entry and when you have finished one record [**RETURN**] again to proceed to the next followed by + [**RETURN**] to add another record.

When you have entered the details for the last company (record) press [**RETURN**] twice to return to the main menu.

CONGRATULATIONS! You have now successfully created your first database using the SAGE program.

LISTING INFORMATION IN THE DATABASE

10. To see your Database in action select option 3 from the main menu to obtain the 'Enquiry Processor'.

Enter : **3 [RETURN]**

The word 'Ready' will appear on the screen.

Remember that we gave each of our fields a default value of 'N' or 'NO'. This means that none of our fields will show up on any output unless we specify the field we wish to see.

For example

Enter : **list contacts [RETURN]**

What happens? Nothing!!

However, if you enter your command in the following way

Enter :
list contacts show company person telephone [RETURN]

You can specify an individual field or any combination. You can also specify the field number instead of name (useful if you have a long command).

Enter : **list contacts show 1 2 3 9 [RETURN]**

Now try

Enter : **sort contacts by company show 1 2 3 [RETURN]**.

Notice that the details are now sorted into alphabetical order by company name.

Remember that when we were setting up our fields we specified something called 'default print' which was item 7 in the 'Field Definition' procedure. This item is used to determine which fields, if any, are to be shown on all reports. If you answer **'Y'** this will save you having to specify a particular field name (or number) for every command.

To return to the main menu

Enter : **MENU [RETURN]**

ANALYSING SALES ORDERS

The following example shows how the SAGE Database can be used to analyse daily sales orders. It also makes use of the calculation facility described later in this manual.

1. Enter a Database layout with the following file definitions:-

   Filename : **ORDERS**
   How Many Fields : **10**
   Data File Name : [**RETURN**] only
   Data File Type : **K**
   Screen Title : **Daily Orders**
   Update Permitted : **Y**
   Update Password : [**RETURN**] only
   Access Password : [**RETURN**] only

2. Enter the following field definitions:-

	Field Name	Type	Length	Column	Row	Range/ Calculation
1	**ORDER-NO**	KY		1	4	
2	**DATE**	DS		40	4	
3	**CUSTOMER**	TX	30	1	6	
4	**GOODS**	TX	30	1	7	
5	**CATEGORY**	TX	30	1	8	
6	**SALES-AREA**	TX	10	1	9	
7	**ANALYSIS**	TX	1	1	10	A/B/C/D/E/F/G/H
8	**QUANTITY**	VL	10	1	14	
9	**PRICE**	SP		1	15	
10	**VALUE**	ME		1	16	F8*F9

3. A typical entry would be as follows:-

```
23/12/1985                    Daily Orders                    Page: 1


   1. ORDER-NO _____ ¦ 2              2. DATE _____ ¦ 23/12/1985
   3. CUSTOMER _____ ¦ XYZ COMPANY LIMITED
   4. GOODS _____ ¦ ACCOUNTS SOFTWARE
   5. CATEGORY _____ ¦ SOFTWARE
   6. SALES-AREA _____ ¦ LONDON
   7. ANALYSIS _____ ¦ B

   8. QUANTITY _____ ¦ 5
   9. PRICE _____ ¦ 90.00
  10. VALUE _____ ¦ 450.00

   Enter field no. to change; '*' to void; 'D' to delete; 'P', 'S' or 'RETURN' to post ? ...
```

4. Reports that can be reproduced from the details held within the database include:-

Ready :
list orders with date = "16/01/86" show 1 3 4 total 10

This will give a list of all orders received on 16/01/86 and will show the customer's name, what he ordered and its value. The value will then be totalled to give the daily total.

Ready :
**sort orders by sales-area with date > 01/01/86 +
and with date < 31/01/86 break-on sales area +
show 1 2 3 4 total 10**

This report will analyse all the orders received in January and will list them by sales area type and sub-total all the orders within each area.

Ready :
list orders with 3 = "Smith]" show 1 4 total 10

This report will show all orders received by a company called "Smith" and display what they ordered, how much it was worth and totals the orders for this customer.

RECORDING PERSONNEL DETAILS

The following example shows how the SAGE Database can be used to record personnel details.

1. Enter a Database layout with the following file definitions:-

Filename : **STAFF**
How Many Fields : **12**
Data File Name : [**RETURN**] only
Data File Type : **K**
Screen Title : **Personnel Details**
Update Permitted : **Y**
Update Password : [**RETURN**] only
Access Password : [**RETURN**] only

2. Enter the following field definitions:-

	Field Name	Type	Length	Column	Row	Range/Calculation
1	REF-NO	KY		1	4	
2	SURNAME	TX	30	1	6	
3	FORENAMES	TX	30	1	7	
4	DEPARTMENT	TX	20	1	8	
5	POSITION	TX	20	1	9	
6	SALARY	SP		1	10	3000-25000
7	START-DATE	DT		1	11	
8	LEAVE-DATE	DT		1	12	
9	CHILDREN	IN		1	13	
10	SEX	TX	1	1	14	
11	TELEPHONE	TX	15	1	15	
12	AGE	IN		1	16	16-65

28

3. A typical entry would be as follows:-

```
23/12/1985                  Personnel Details                  Page: 1


              1. REF-NO _____ ¦ 4

              2. SURNAME _____ ¦ Smith
              3. FORENAMES ____ ¦ John
              4. DEPARTMENT ___ ¦ Administration
              5. POSITION _____ ¦ Sales Manager
              6. SALARY _____ ¦ 14000.00
              7. START-DATE ____ ¦ 05/04/1976
              8. LEAVE-DATE ____ ¦
              9. CHILDREN _____ ¦ 2
             10. SEX _____ ¦ M
             11. TELEPHONE _____ ¦ 01-234-5678
             12. AGE _____ ¦ 39

   Enter field no. to change; '*' to void; 'D' to delete; 'P', 'S' or 'RETURN' to post ? ...
```

4. Reports that can be reproduced from the details held within the database include:-

Ready : **sort staff by age show 3 2 12 on ptr**

This will give a list of all staff showing the youngest first and the oldest last and produce the report on the printer.

Ready : **sort staff by department show 1 2 3 6 +**
break-on department total salary

This report will sort all the staff into departmental order and show the total salary for each department.

Ready : **list staff with start-date < 01/01/80 +**
show 1 2 3

This report will show all the members of staff who joined the company before 1st January 1980.

29

TIME RECORDING

The following example shows how the SAGE Database can be used as a simple time recording system. It makes use of the calculation facilities and demonstrates how to produce some useful reports.

1. Enter a Database layout with the following file definitions:-

   Filename : **TIMEREC**
   How Many Fields : **11**
   Data File Name : [**RETURN**] only
   Data File Type : **K**
   Screen Title : **Client Time Recording**
   Update Permitted : **Y**
   Update Password : [**RETURN**] only
   Access Password : [**RETURN**] only

2. Enter the following field definitions:-

	Field Name	Type	Length	Column	Row	Range/ Calculation
1	TRANS-NO	KY		1	4	
2	JOB-CODE	TX	10	1	6	
3	STAFF-NO	IN		1	7	1-50
4	DETAILS	TX	30	1	8	
5	CLIENT-NO	IN		1	9	1-2000
6	TIME-HOURS	SP		1	10	0.25-8
7	RATE	SP		1	11	10/15/20/30/40/50
8	FEE	MS		1	12	F6*f7
9	VAT	MS		1	13	F8*0.15
10	CHARGE	MS		1	14	F8+f9
11	DATE-ENTERED	DS		1	15	

3. A typical entry would be as follows:-

```
24/12/1985                    Client Time Recording                    Page: 1


           1. TRANS-NO _____ ¦ 6
           2. JOB-CODE _____ ¦ 1237
           3. STAFF-NO _____ ¦ 7
           4. DETAILS _____ ¦ Management Accounts
           5. CLIENT-NO _____ ¦ 123
           6. TIME-HOURS _____ ¦ 6.75
           7. RATE _____ ¦ 15.00

          11. DATE-ENTERED _____ ¦ 24/12/1985

    Enter field no. to change; '*' to void; 'D' to delete; 'P', 'S' or 'RETURN' to post ? ...
```

4. Reports that can be reproduced from the details held within the database include:-

Ready :

list timerec with job code = "1237" +
show 4 7 total 6 total 8

This report will show all work carried out for job number "1237". It will display the number of hours and the fee to be charged and will total both these columns.

Ready :

sort timerec by job-code with client-no. = 123 +
show 4 7 total 6 total 8

This report will show all the work accomplished for one particular client and displays the total amount to be charged to that client.

Ready :
**sort timerec by client-no break-on client-no +
show 1 1 4 7 total 6 total 8**

This report gives a complete work-in-progress figure showing all work processed for each client detailing the date, type of work and amount to be charged. Sub-totals are produced for each client.

Ready :
list timerec with staff-no = 7 show 4 total 6 total 8

This report gives a list of all the work undertaken by a specific employee, the number of hours he/she worked and the charge-able cost.

There are many more reports that can be retrieved from the time recording details, we have only made a few suggestions. You can easily see the flexibility of the SAGE Database program and that it can be quickly tailored to suit a number of applications.

VIDEO RENTAL SHOPS DATABASE

The SAGE Database can be put to at least two uses within a Video Rental shop. The first is to maintain the membership list and keep track of who has which videos on hire and if they have been returned. The second example is on how to record the complete list of videos on offer and can be used to maintain the catalogue and help search for videos by a certain actor/actress, director or theme.

2. Enter the following field definitions:-

	Field Name	Type	Length	Column	Row	Range/Calculation
1	**REF-NO**	**KY**		**1**	**4**	
2	**TYPE**	**TX**	**4**	**1**	**6**	**VHS/BETA**
3	**TITLE**	**TX**	**30**	**1**	**7**	
4	**CATEGORY**	**TX**	**15**	**1**	**8**	
5	**LOCATION**	**TX**	**6**	**1**	**9**	
6	**ACTORS**	**TX**	**30**	**1**	**10**	
7	**DIRECTOR**	**TX**	**20**	**1**	**11**	
8	**STORYLINE (1)**	**TX**	**50**	**1**	**12**	
9	**STORYLINE (2)**	**TX**	**50**	**1**	**13**	
10	**STORYLINE (3)**	**TX**	**50**	**1**	**14**	
11	**COMMENT**	**TX**	**30**	**1**	**15**	

3. A typical entry would be as follows:-

```
24/12/1985                    Films for Rental                    Page: 1


   1. REF-NO _____ | 1
   2. TYPE _____ | VHS
   3. TITLE _____ | The Great Escape
   4. CATEGORY _____ | War
   5. LOCATION _____ | 1234
   6. ACTOR(S) _____ | McQueen, Garner, Bronson
   7. DIRECTOR _____ | R. Attenborough
   8. STORYLINE(1) ___ | Set in Prisoner of War Camp and tells story of
   9. STORYLINE(2) ___ | escape by 700 men. Includes famous motorbike stunt
  10. STORYLINE(3) ___ | by Steve McQueen
  11. COMMENT _____ | Good Family Entertainment

   Enter field no. to change; '*' to void; 'D' to delete; 'P', 'S' or 'RETURN' to post ? ...
```

4. Reports that can be reproduced from the details held within the database include:-

Ready : **sort videos by category by title +**
        break-on category show 5 3 6 2

This report will give a brief summary of all titles carried by the shop sorted into alphabetical order and shown in category order.

Ready : **list videos with actors = "[Redford]" +**
        show 2 3 9 10 11

This will list all films which star an actor by the name of "Redford" and will display the storyline for each film encountered.

The list below gives a selection of uses for this program:-

Accountants	Inventory Control
Asset Register	Investment Portfolio
Author Research	Libraries
Automatic Billings	Mailing Lists
Bills of Materials	Marine Spares
Budget Estimates	Membership Records
Car Hire Records	Patient Records
Cost Summaries	Maintenance Schedules
Customer Index	Press Cuttings
Dentist Records	Sales Prospects
Diary	Solicitors
Drug Testing Records	Spare Parts
Employment Bureaux	Stock Location Records
Estate Agents	Student Records
Exhibition Enquiries	Time Recording Systems
Farm Inventory	Timesheet Analysis
Housing Lists	Travel Agents
Inspection Records	Vehicle Records
Insurance Records	Video Records

SETTING UP A NEW DATABASE

It is important that you do not create a new database without first thinking carefully about all the details you want to store for each 'record' and working out the approximate position they will occupy on the screen.

We recommend that you list all the details you want to enter and sketch a rough diagram of the screen layout. You can use 20 rows and 80 columns, and record details on more than one screen. Each field will have a 15 character name, there are two spaces after the name and before the details and you will also need to account for the maximum number of characters for each field. For example, CUS-TOMER NAME may occupy $15 + 2 + 25 = 42$ characters on the screen.

You will also find the program much more efficient if you associate a unique number with each record and use this number as a reference for the details within a record. We call this the 'key' field and should always be the first field in any database record.

To create a new database select option [**1**] from the main menu.

You will be asked to enter a 'Filename'. Enter up to eight characters and choose a name that relates to your database.

FILE DEFINITION

The following display will appear on the screen and you will need to complete each line.

```
SAGE Database          Data Management System          DD/MM/19YY
Version: X.X            File definition procedure        Page: 1
Access:


        File name: ? █ . . . . . . . . .     Record length:
    1. How many fields? . . . . ¦

    2. Data file name  . . . . . . . ¦
    3. Data file type  . . . . . . . . ¦
    4. Screen title  . . . . . . . . . . ¦

    – – – – – – – File security  – – – – – –
    5. Update permitted  . . . . ¦

    6. Update password  . . . . ¦
    7. Access password  . . . . ¦
```

1. How Many Fields

Enter the number of different items within each 'record' e.g. customer name, telephone number, address (four lines) etc.

2. Data File Name

It is possible to give different names to the header and database files. We do not recommend this approach unless you are fully conversant and understand all the program features. Therefore simply press [**RETURN**] and the program will use the filename entered above.

3. Data File Type

Enter **'K'**. This relates to how the program will search for entries in the database. A 'K' tells the program to construct an 'index file' to help search for entries much quicker.

4. Screen Title

Any text entered alongside this prompt will be displayed at the top of each screen when you enter details onto the database.

5. Update Permitted

In the first instance always enter **'Y'**. This allows you to add, delete or change any details within the database. Subsequently you can enter **'N'** which allows people to see the details but cannot add, delete or change them although this can be changed back to 'Y' at a later date. Entering **'Z'** permanently 'locks' the database, i.e. you can't change any of the details, add new ones nor can you change this value back to either an 'N' or a 'Y'.

6. Update Password

You can allocate an eight character password that must be entered before anyone can make changes to the database. They can view the database without knowing any passwords provided the 'Access Password' is empty.

7. Access Password

You can allocate an eight character password that must be entered before anyone can use the database either to view details or change them.

If you do assign passwords please do not forget them! Once entered they are no longer displayed on the screen.

When you have entered the relevant details alongside each of the prompts you can either enter a field number **(1-7)** to make corrections, enter an asterisk·**(*)** to ignore what has been entered and return to the menu or press [**RETURN**] to move on to the next section.

FIELD DEFINITION

On the previous screen you were asked how many fields were to be used for each record. This next section describes the routine used to define each field in terms of name, number of characters, position on screen, etc.

The following display will appear on the screen...

```
SAGE Database          Data Management System          DD/MM/19YY
Version: X.X           Field definition procedure       Page: 2


    Definition of field number: 1      Characters used: 0     Fields: 9

    - - - - Data Description  - - - -      - - - - Display parameters  - - -

      1. Field name .........¦             4. Justify (L/R) ........¦
      2. Field type ..........¦            5. Output width .......¦
      3. Field length ........¦            6. Decimal precision    ¦
                                           7. Default print Y/N  ...¦

    - - - - - - - - - - - - Data entry characteristics  - - - - - - - - - - -

      8. Forced entry Y/N ...¦       9. Options:
     10. Entry pattern .......¦
     11. New display page ...¦      12. Display position  .. Col:       Row:
     13. Range/calculation   ¦
```

Starting with the first field you will have to enter the following details:-

1. Field Name

This is the name by which the field, or details in this field, are known. You can enter up to **15** characters.

2. Field Type

Enter one of the following two letter codes which are used to decide the type of information to be entered. The codes are as follows:-

TX Text entry, i.e. any character on the keyboard.

IN Integers, whole numbers in the range -32,767 to +32,767.

SP Single Precision, any number consisting of up to six digits which can also include a decimal point.

EP Extended Precision, any number consisting of up to 14 digits which can also include a decimal point.

VL Value, any number up to 14 digits which can include a decimal point. However, unlike the previous three codes which store the numbers in a shortened form to save space on the disk this value implies that numbers are stored directly as individual characters.

DT Date format, i.e. you must enter a date in the format DD/MM/YY and the program will check for invalid dates.

KY Key Field. This code can only be used for the first field and is used to generate a unique number for each record to speed up the search process. It is usually a numerical value.

3. Field Length

This will only apply to the TX and VL coded fields. Enter the maximum number of characters that will be required for any single entry.

4. Justify (L/R)

Text is usually 'left justified' and numbers usually 'right justified'. Enter either **'L'** or **'R'** as appropriate.

5. Output Width

Normally you simply press **[RETURN]** to skip past this entry although it is possible to enter a number less than the field length. If the actual details contain more characters than the output width, the details will be truncated.

6. Decimal Precision

This is only used for numeric data and specifies the number of decimal places that are to be displayed on reports.

7. Default Print

If this is set to **'Y'** the details in this field will be included on all reports whether it is requested or not.

8. Forced Entry

If this is set to **'Y'** the operator will be 'forced' to enter details before moving on to the next field.

9. Options

If any of the following letters are entered alongside this prompt the program will perform one of the following checks:–

A Auto Terminate. When the maximum number of characters have been entered the program will move on to the next field without waiting for the [RETURN] key to be pressed.

B Block Fill. This will force the operator to enter the maximum number of characters before moving on to the next field.

C Case Conversion. Converts all alphabetic characters to capital letters automatically.

H Hidden Entry. Details will not be displayed during entry or on reports.

10. Entry Pattern

Only relevant to 'text' fields and is used to check details as they are entered.

Enter a 'mask' consisting of the following letters:–

A representing alphabetic characters

N representing numeric characters

X representing any printable character

For example, an entry pattern of 'AAXXXNN' will imply that the operator must enter seven characters where the first two are alphabetic, the next three can be anything and the last two must be numeric.

11. New Display Page

Normally you will simply press [**RETURN**] but if you wish to spread the details onto a second screen answer **'Y'** and the program will refresh the screen when it reaches this field.

12. Display Position

You must indicate exactly where you want each field to appear on the 'data entry' screen.

You specify the location of the first character of the field name. The details will appear directly after the field name.

13. Range/Calculation

Used to check details as they are entered. For example, in a numeric field you might specify that values have to lie between 1 and 100.

Text comparisons should be enclosed in quotation marks and you can use oblique (/) to indicate more than one choice. For example, if the entry can only be 'YES' or 'NO' you would enter "YES/NO".

You can also insert mathematical formulae here, but we shall explain this concept in more detail later.

When you have entered the relevant details alongside each of the prompts you can either enter a field number **(1-13)** to make corrections, enter an asterisk **(*)** to cancel the details you have just entered and return to the menu, or press [**RETURN**] to move on to the next section.

When you press [**RETURN**] the screen will be refreshed ready for the next field definition.

If you have just completed the details for the last field, the program will expect you to enter another filename ready to define another database. If you press [**RETURN**] the main menu will re-appear.

CALCULATIONS

During the 'field definition' procedure you can insert mathematical formulae into any field which will then be processed to produce a calculated result.

The program uses simple algebraic formulae and you can refer to other fields within a record for simple addition, subtraction, multiplication and division. You can also use parentheses (brackets) to set the order of precedence.

A simple calculation might be:-

F1 + 15   i.e. The value in Field 1 plus 15

F1 * F4   i.e. Field 1 multiplied by Field 4

(F3 + 15) / F7   i.e. Field 3 plus 15 all divided by Field 7

Notice that you refer to a specific field by using the letter F followed by the field number.

Use the following symbols for arithmetic operation:-

+	Addition
—	Subtraction
*	Multiplication
/	Division

To set up a 'calculated' field you simply specify all the field parameters as before, e.g. field name, length, justification and so on. However the field type must be one of the following:-

MI   Maths Integer. The result of the calculation will be an integer, i.e. a whole number between -32,767 and +32,767.

MS   Maths Single Precision. The result of the calculation will be stored as a single precision number.

ME   Maths Extended Precision. The result of the calculation will be stored as an extended precision number.

MV   Maths Value. The result of the calculation is stored as a text string.

MD   Maths Display. The calculation is only performed and displayed within the enquiry processor. It is not shown on the screen during the data entry process.

Finally, simply type the calculation into the **'range/calculation'** section during the field definition process.

ENTERING DETAILS ONTO YOUR DATABASE

Select option [2] from the main menu.

You are asked to enter a filename. Enter the name you specified for any file created using the 'describe a file option'.

All the fields entered when setting up your database are now displayed on the screen at the position entered during field definition.

If you want to change the position of any of the fields on the screen, either because they have overwritten a previous field or they are in the wrong position, simply press [RETURN] to go back to the main menu and re-select option [1] and make all necessary changes to the field definitions.

The first field displayed on the screen should be the 'key' field.

ADDING A NEW RECORD

If you want to ADD a new record enter : + [RETURN]

The next number in sequence will appear and the cursor will move down to the next field.

Simply type in the appropriate details alongside each of the prompts and then press [RETURN] to move on to the next field.

The following characters are displayed on the screen when you are entering new details.

....   A row of dots for text entry. The number of dots corresponds to the maximum number of characters.

nnnnn	A row of 'n' characters for whole number (integer) entries. The number of 'n's corresponds to the maximum number of digits.
nnnn.nn	A row of 'n' characters including a decimal point for numeric entries. The number of 'n's corresponds to the maximum number of digits both before and after the decimal point.
DD/MM/YY	The prompt for a date. Dates are entered in the general form Day/Month/Year. You have to separate each of the numbers with non-numeric characters.

When you have entered the details for the last field you will be prompted with the following question:-

Enter field number, '*' to void, P, D, or 'RETURN' to continue

You can correct any mistakes by entering the field number, the cursor will move to this field and you can re-enter the details.

If you press * all entries you have made for this record will be cancelled.

If you press [**RETURN**] the details will be filed away onto disk and the screen will clear ready to enter the next record. At this point you can either enter + to add another record, recall a previous record by entering the appropriate number, or simply press [**RETURN**] to make your way back to the main menu.

If you go back to the menu, you are asked for another filename first. If you press [**RETURN**] the menu will be displayed.

UPDATING AN EXISTING RECORD

Enter the record number (this is automatically generated when you add a new record) and the existing details will be retrieved from disk and displayed on the screen.

Enter the 'Field No.' relating to the details that need to be changed. The cursor will move to the relevant field and you can re-enter the appropriate details.

When you have made all the necessary corrections press [**RETURN**] and the database will be updated, unless there is more than one page in which case the next page will be displayed.

If you press *, the changes you have made will be cancelled.

If you press **P** the details will be updated regardless of what appears on subsequent screens for the same record.

To return to the menu press [**RETURN**] instead of another record number and then [**RETURN**] once more when asked for another filename.

DELETING A RECORD

Enter in the appropriate record number such that the details are displayed on the screen and when the 'page prompt' appears at the bottom of the screen answer **D** to delete the record from the database.

RE-STRUCTURING AN EXISTING DATABASE

An existing database can be altered by making changes to the file and field definitions.

There are two kinds of alteration. First, there are simple cosmetic changes which affect details such as screen title, passwords, field names or any of the display positions.

Secondly, there are structural changes that require the records within a database to be re-organised. Structural changes include:-

1. Changing the number of fields, i.e. inserting or deleting one or more fields.

2. Moving one or more fields to a new position.

3. Changing the field type, e.g. from 'integer' to 'single precision'.

4. Changing the field length, e.g. from 20 characters to 25.

The program makes the re-structuring process as easy as possible, however there is quite a lot of 'behind-the-scenes' work and it is important that you bear the following points in mind.

1. Always make a back-up copy of your datafiles before starting any re-structuring.

2. The program creates a 'new' copy of the datafiles during the process and this implies that there must be as much 'free' space on the disk as there is for the relevant datafiles.

3. Changing the field type, or reducing the field length, will probably result in the loss of some data.

4. Inserting and moving fields are reversible operations, i.e. you can always delete an inserted field or move fields back to their original position. Deletion, however, is a permanent operation. Lost data cannot be replaced without copying the files from a back-up copy.

COSMETIC CHANGES

Cosmetic changes are performed quite easily by simply selecting the option to 'enter a database layout', entering the appropriate filename and then making the relevant changes by specifying the correct line number for the details to be changed.

You make changes to the 'file definition' first and then you will be presented with the data entry screen for the 'field definitions'. Enter the appropriate field number and the existing details will be displayed ready for you to make the necessary corrections.

STRUCTURAL CHANGES

If you alter the 'field type' or 'field length' the following message will appear on the screen when you press [**RETURN**] to post the changes to disk:-

Now restructuring data file...

The existing details held in the datafile will be modified to take account of the changes entered.

INSERTING FIELDS

Select 'enter a database layout' from the Main Menu and enter in the appropriate filename. The file definition will be displayed on the screen and you should press [**RETURN**] to move on to the field definition procedure.

Now call up any field on to the screen. We suggest you enter field no. **1**.

After displaying the existing details for field 1, the following message will appear at the bottom of the screen...

To amend enter 'I' to insert, 'D' to delete or 'M' to move fields

Now enter [**I**] and press [**RETURN**]

You will be asked the following two questions...

How many fields are to be amended....?

Enter the number of fields you wish to insert.

Enter the starting field number....?

Enter the field number after which the new fields will follow...

The existing field after which the new ones will follow will be displayed on the screen for verification. You will be asked if this is the correct field.

If you reply **Y**, you can then continue to enter the field definitions for the new field(s).

If you reply **N**, the process will be aborted.

When you have entered the field definitions the existing details in the database will be restructured to make space for the new fields. All new fields will be initialised as either 'blank' or 'zero'.

DELETING FIELDS

Select 'enter a database layout' from the Main Menu and enter in the appropriate filename. The file definition will be displayed on the screen and you should press [**RETURN**] to move on to the field definition procedure.

Now call up any field on to the screen. We suggest you enter field no. **1**.

After displaying the existing details for field 1, the following message will appear at the bottom of the screen...

To amend enter 'I' to insert, 'D' to delete or 'M' to move fields

Now enter [**D**] and press [**RETURN**]

You will be asked the following two questions...

How many fields are to be amended....?

Enter the number of fields you wish to delete. Remember that if you delete more than one field they must be consecutive.

Enter the starting field number....?

Enter the field number for the first field that has to be deleted.

The first and last fields will then be displayed for verification.

If all is O.K. the database will be restructured, removing the relevant fields from the database definition and subsequently the details from the datafile.

MOVING FIELDS

Select 'enter a database layout' from the Main Menu and enter in the appropriate filename. The file definition will be displayed on the screen and you should press [**RETURN**] to move on to the field definition procedure.

Now call up any field on to the screen. We suggest you enter field no. **1**.

After displaying the existing details for field 1, the following message will appear at the bottom of the screen…

To amend enter 'I' to insert, 'D' to delete or 'M' to move fields

Now enter [**M**] and press [**RETURN**]

You will be asked the following three questions…

How many fields are to be amended…. ?

Enter the number of fields you wish to move. Remember that if you move more than one field they must be consecutive.

Enter the starting field number…. ?

Enter the field number for the first field that has to be moved.

Position at which fields are to be re-positioned… ?

Enter the field number for the start of the new field position(s).

The first and last fields that are to be moved will then be displayed for verification.

If all is O.K. the database will be restructured.

ENQUIRY PROCESSOR

The Enquiry Processor is the heart of the SAGE Database program and it is by using this facility that you can analyse the data you have collected.

To access the Enquiry Processor select option [**3**] from the Main Menu and the screen will be blank except for the prompt:

Ready :

The program is now waiting for an instruction. This is entered in the form of an English sentence, as if you were giving an instruction to another person.

Here are some examples of enquiry sentences:-

list contacts

list contacts show company person telephone

list contacts show 2 3 9
(2 3 9 are the relevant field numbers for the company, person and telephone fields)

sort contacts by company

sort contacts by company show company contact telephone

list staff showing name position age salary on printer

sort staff by surname with salary > 8500

Each sentence must have both a verb and the name of a file. In the examples shown above the verbs used are 'List', 'Show' and 'Sort' and the filenames are 'Contacts' and 'Staff'. All other words are optional and can be written in any order.

Generally, you will ask to see the stored information by using the field name or number of the details you want to see.

The details required to select a record must be exact. For example, if a record that holds a person's name is in both upper and lower case letters, then you must request this information exactly as it is filed.

Although there are many more words than are covered in this chapter, the following list will enable you to use the Enquiry Processor for most of your work. The additional words are listed in the Appendix at the back of this manual.

To leave the Enquiry Processor and return to the Main Menu enter the command **'MENU [RETURN]'**

Each enquiry sentence can be made up of words that fall into one of the following categories:-

1. VERBS:
These are 'doing words' and tell the Enquiry Processor what actions it must take in order to obey your instructions.

LIST   List the details from a specified datafile in the order in which records are found.

list contacts show company telephone
list contacts show 2 9 on ptr

SORT   Sorts the records into any order and **MUST** be used in conjunction with the word **'BY'**. You state the criteria by which the file is sorted after the word 'BY'.

sort contacts by company
sort staff by surname by forename
sort contacts by 2

COUNT   Counts either the total number of records in a file or the number that meet certain criteria.

count contacts
count staff with age = **55**

PRINT   Similar to the verbs 'List' and 'Sort' except that the report is directed straight to the printer.

print contacts show company telephone
print contacts by company show company

FILES   Displays all database files held on disk.

SHOW   All field names (or numbers) following this verb will be displayed on the report. If this verb is not specified within an instruction then only fields with the 'default print' set to 'Y' will be printed.

2. MODIFIERS:

These words generally start selection clauses within an enquiry instruction.

WITH   Initiates a selection clause where certain conditions must be met before the details are included in a report.

list staff with surname = **"Smith"**
list staff with salary greater than 8500

OR   Extends a selection clause which already includes the word 'WITH'.

list staff with 2 = **"Smith" or salary** = **8500**
(notice that 'fields' can either be represented by name or number).

AND   Extends a selection clause which already includes the word 'WITH' but allows the selection to be more specific.

list staff with age = 55 and salary > 8500

BY   Used in conjunction with the verb 'sort'. It specifies the fields on which the sort is to be based.

sort contacts by company

ON   Directs the report to somewhere other than the screen, normally the printer, or another file.

list contacts show company on ptr
list contacts show company on NAMES.WP

BREAK-ON Used with sorted files and will produce a 'break' in the report whenever the value of the specified field changes.

sort contacts by county break-on county + show 1 2 3

TOTAL   Produces column totals for specified numeric fields. If you use 'Break-On' sub-totals will also be produced.

list staff show surname total salary

sort staff by dept show 1 total salary

3. OPERATORS:

These are used to compare data held in fields with details specified in the enquiry instruction. Valid operators are:-

EQUALS
OF   They all mean 'is equal to'
=

NOT

$<>$ Both mean 'is not equal to'

LESS THAN

$<$ Both mean 'is less than'

GREATER THAN

$>$ Both mean 'is greater than'

LE

$<=$ Both mean 'is less than or equal to'

GE

$>=$ Both mean 'is greater than or equal to'

For example:-

list contacts with county = "London"
list staff with salary = 8500
list staff with salary $>$ 5000 and salary $<$ 12000

4. DISPOSABLES:

These words can be included in an enquiry instruction for ease of reading but are ignored by the program without giving an error message.

A   ALL   AN   ARE   IS   OF   PLEASE   HOW
GIVE   ME   SHOWING   THAN   THANK   THE   TO   YOU

An example of the type of sentence that can be used:-

Please list the staff with a surname of "Smith" and +
with a salary greater than 8500 thank you

The same command could be entered as:-

List staff with 1 = "Smith" and 4 $<$ 8500

LENGTHY COMMANDS

If you want to enter a lengthy command which will not fit on one line on your screen you can enter a '+' character at the end of a line and continue on the next line.

For example:

Ready : **list staff with age greater than 45+**
Continue 2 : **and with salary greater than 5000+**
Continue 3 : **showing surname age department+**
Continue 4 : **total salary on ptr**

Note, however, that a word cannot be split over two lines. It must be completed on the line on which it is started. The same applies to any values or strings enclosed in quotes.

TEXT COMPARISONS

It is possible to enter a selection clause that makes a text comparison based on only part of the details held on the database.

There are three options:-

1. Match a series of characters that are found at the beginning of a text string.

   To do this, place the character ']' at the end of the string of characters.

   For example to find all employee records where the surname begins with the letters 'SMITH' the command would be:-

   list staff with surname = "[SMITH]"

2. Match a series of characters that are found at the end of a text string.

   To do this, place the character '[' at the beginning of the string of characters.

   For example, to find all limited companies in the list of contacts the command would be:–

   List contacts with company = "[LTD."

3. Match a series of characters that can be found anywhere in a text string.

   To do this, place the characters '[' and ']' around the string of characters.

   For example, to find any employee whose surname begins with the letters 'SMI' the command would be:–

   List staff with surname = "[SMI]"

These operations can only be applied to the 'EQUALS' and 'NOT EQUALS' operators.

PRINTING DOCUMENTS

The 'Utilities' program disk allows you to create a document and print it out containing details from your database file such as name and address of customers etc. 'merged' in with the text of the document.

This process is probably best described by showing an example.

SAMPLE DOCUMENT

Let's say that we want to send a letter to every customer informing them of a new product and inviting them to the product launch.

The letter might look something like this:-

The name, address and salutation for every customer is taken from the CONTACTS datafile. The date will be 'Today's date' entered at the beginning of the program and the rest of the letter will be typed using the text editor.

Here's how the program would produce such a letter for each customer:-

It is a three stage process:-

1. Type in the draft document using the text editor.

2. Create a file containing the names and addresses selected from the database.

3. Use the document processing routine to merge the letter and datafile together to print the final letter.

1. Use the 'Text Editor' from the 'Utilities' menu. Store the following document in a file labelled 'MAILSHOT.WP'

```
 1 | .no fill
 2 | .merge 'CONTACTS
 3 | .SET TABS 40
 4 | <Ref : KBK/TM/17
 5 | .sp1
 6 | .fill
 7 | <Date :
 8 | .date
 9 | .rm
10 | .sp1
11 | .no fill
12 | .include
13 | .include
14 | .include
15 | .include
16 | .include
```

17	.include
18	.fill
19	.sp2
20	**Dear**
21	.include
22	.sp2
23	.no fill
24	**Please find enclosed details of our new software product range**
25	**which will be officially launched next month.**
26	.sp1
27	**May I take this opportunity to invite you to the product launch**
28	**which will be held at our head office between 11.00 a.m. and**
29	**3.00 p.m. on Thursday 17th February.**
30	.sp1
31	**Light refreshments will be served and to help with catering**
32	**arrangements I would be grateful if you could contact us.**
33	.sp1
34	**Yours sincerely,**
35	**For SAGESOFT plc.**
36	.sp4
37	**Sales Director.**

As you can see this does not look like the letter we want to produce. You will see that the text of the letter is shown together along with other details which appear to have nothing to do with the letter. However, the other lines consist of commands to tell the program how to format the letter and where to pick up the customer details.

Let's look at it more closely.

First of all, notice that all 'commands' are preceded by a dot '.' If there is no dot the program assumes you have entered a line of text to be printed directly.

Notice also that there are no blank lines in the draft document. All blank lines are produced by using the 'space' command as shown in line 19 i.e. the command '.sp2' will print two blank lines before the next line of text.

Line 1 : the 'no fill' command means that it must print every line one after another as it encounters them, e.g. name and address etc. The 'Fill' command in line 6 tells the program to collect as many details as possible until it has enough letters to 'fill' a line and then print it. This is useful for lines such as 'Dear Mr. Smith' where it has to retrieve Mr. Smith's name from the database and add it to the word 'Dear'.

Line 2 : The 'merge' command tells the program which file it has to look in to find the names and addresses. You will specify this filename when you use the enquiry processor to create the list of details for each letter (see later). Lines 12-17 and 21 all contain the command 'include'. This tells the program to read the next line from the datafile and print it. The file is read sequentially and therefore it is important to make sure that you construct the file with the correct number of fields from each customer record. In this case we have used seven fields. Also ensure that the order is correct, i.e. name followed by address followed by salutation. If we only read six fields from each record into the 'CONTACTS.WP' file the program would pick up the first field from the next record as the seventh item on the first letter and so on.

Line 3 : The 'SET TABS' command allows you to indent text, such as reference, date, etc. In this example we want to indent by 40 spaces . The text to be indented is then preceded by an '<' character, see line 4.

Line 8 : The 'date' command prints out Today's date.

Line 9 : The .rm resets the margins after a tab statement.

We have now created the draft document, the next stage is to produce the 'merge' file. This is where the document processing routine will find the list of customer names and addresses for inclusion in each letter.

Select the 'Enquiry Processor' option from the 'Database' menu and enter the following instruction at the 'ready' prompt:-

**list contacts show person company street city +
county post-code salutation on contacts.wp**

or alternatively

list contacts show 3 2 5 6 7 8 4 on contacts.wp

The enquiry processor will now read through the 'CONTACTS' datafile and, for each record, write fields 2 – 8 onto the file 'CONTACTS.WP'

The document processor can't read the normal CONTACTS datafile since the text and numbers are stored differently and therefore you must use the enquiry processor to create a file in suitable format. This also allows you to select specific fields for each document rather than using all the fields stored for each record. It also means that you can specify which order the details are to be produced on the document.

Notice that the letter contains seven 'include' commands and we have requested seven fields from the 'CONTACTS' database.

Notice also that we have put field number 4, the salutation field, at the end of the list so that the document processor picks this name up last to add it to the word 'Dear' at the beginning of each letter. It will be printed after the address even though it appears before the address in the main database.

Finally, we go back to the 'Utilities' menu and select the 'document processing' routine to print our letters.

The program will ask for a file name. This is the name given to the draft document, but you do not need to add the '.WP' extension, i.e. just enter 'MAILSHOT'

You will then be asked a few questions concerning the number of copies, where to start and if you want to pause between letters before each one is printed.

The document processing routine will continue to print as many letters as it can until there are no more names and addresses in the 'CONTACTS.WP' file.

It is worth mentioning that you are free to choose how many addresses will go into this file. At the enquiry processor stage we can enter some selection criteria, for example:-

**list contacts with county = "Tyne & Wear" +
show 3 2 5 6 7 8 4 on contacts.wp**

This will select only those customers in Tyne and Wear and hence only letters will be produced for those customers.

USING THE TEXT EDITOR

All documents are initially created by entering the draft document into the text editor and storing it under a filename.

Select option [**1**] from the 'Utilities' menu.

When you have entered a filename you will be presented with a clear screen. Now simply type in the details as if you were using a word processor.

Please Note: Document filenames should always have the extension '.WP'. For example LETTER.WP, MAILSHOT.WP, SALESLET.WP etc.

It is a good idea to put each command on a separate line. This will make it easier to enter more commands within a document and also find the incorrect command if the letter is not printed correctly when you try it first.

Moving around the document

You can move the cursor around the screen by using the following commands

[**UP ARROW**]   moves up one line
[**DOWN ARROW**]   moves down one line
[**RIGHT ARROW**]   moves right one character
[**LEFT ARROW**]   moves left one character

You can create a document that contains up to 220 lines, each line can consist of up to 75 characters. The Text Editor displays 20 lines at a time.

When you come to the last line on the screen you can move down to the next screen by pressing [**CONTROL-C**] **or** [ALT-C] or back to the previous screen by pressing [**CONTROL-R**] **or** [ALT-R]

Inserting Text

When you first enter the Text Editor you are in 'Insert OFF' mode, i.e. whatever you type replaces the text already on the screen. If you press the [**ALT-V**] key the Text Editor will change to 'Insert ON' mode and all new characters will be inserted into the document and all other characters on the line will be shifted to the right. Press [**ALT-V**] again to return to 'Insert OFF' mode.

Deleting Text

You can use the following keys to delete text:-

[**DEL ←**] or [**BACKSPACE**] deletes one character to the left
[**DEL →**] or [**CTRL-G**]   deletes one character to the right
[**ALT-Y**] or [**CTRL-Y**]   deletes a whole line

Printing Text

You can print the document currently in the Text Editor by pressing **CONTROL** or **ALT P** (i.e. hold down the 'CONTROL' or 'ALT' key and press 'P' at the same time).

Saving Text

You can save the document by pressing **CONTROL** or **ALT Q** (i.e. hold down the 'CONTROL' or 'ALT' key and press 'Q' at the same time).

The program will return to the 'Utilities' menu.

COMMANDS RECOGNISED BY THE DOCUMENT PROCESSING ROUTINE

Although there are many more commands than are covered in this chapter, the following list will enable you to use the document processing routine for most of your work. The additional commands are listed in the Appendix at the back of this manual.

The following commands are used to change the style of print.

Centering Text

.Cn   The following 'n' lines of text will be centered on the page.

Example : **.C2** will centre the next two lines of text.

Printing Lines of Text

.fill

All lines of text from this command up to the occurrence of a 'no-fill' command will be merged together and lines of text will only be printed when there are enough characters to fill a whole line.

This is used to combine text such as 'Dear Mr. Smith' where the word 'Dear' appears on one line but the words 'Mr. Smith' must come from a datafile and therefore are specified by a command on the next line of the draft document.

.no fill

All lines of text are printed one after another on separate lines. This command should always be issued before printing an address or before the main body of a letter.

Justifying Text

.J

All text will be justified between the left and right margins until the 'non-justify' command is encountered.

.NJ

Text will no longer be justified with the right margin but will be printed as encountered in the draft document.

Setting Margins

.LM n

The left margin will be set at 'n' characters in from the left of the page.

If no value is entered the program assumes that the left margin is 10 characters in from the edge of the paper.

.LL n   The line length (i.e. number of characters that can be printed across the page) is set to 'n'. This has the effect of also setting the right margin.

If no value is entered the program assumes that the line length is 65 characters.

Paper Length

.PL n   'n' lines of text will be printed before the program starts a new page or moves on to the next document.

Please note that the program does not issue a form feed character at the end of each document/letter. It simply prints the appropriate number of blank lines to come to the end of one page and the beginning of the next.

If no value is specified the program assumes that the paper length is 66 lines.

Pitch

.pitch n   You can alter the 'pitch' (i.e. typestyle) to one of the following values:-

If n is 1   10 pitch is selected
   "   3   15 pitch is selected

If no value is entered the program assumes 12 pitch.

Setting Tabs

.set tabs n   Tabs are set at positions specified by 'n'. You can set more than one tab position at a time by separating each tab position with a comma.

To use the tab place a '<' before the text that has to be indented.

To move to the second or subsequent tab position you have to put the relevant number of '<'s before the text, i.e. '<<<' moves to the third tab position.

e.g.   .set tabs 25,50
<reference
<<date

Printing Blank Lines

.sp n   Prints 'n' blank lines before the next text line.

e.g. .sp3 prints three blank lines.

Underlining Text

—   The underscore character turns underlining on and off. You don't need the dot command before it.

e.g. This _ word _ will be underlined.

Printing Boldface

¦   The '¦' character turns boldface on and off.

e.g. This I word I will be printed bolder.

The following commands involve merging text from either another document or from a datafile.

Merging Data

.merge 'FILENAME

Before any data can be merged into a document the datafile created within the enquiry processor must be specified. Please note the single quotation mark.

Filenames must be in capital letters.

.include

The next line of data from the file specified in the 'merge' command will be read from the file and printed in the document.

Merging Text

.read 'FILENAME

The file named in this command must be a '.WP' file and will be included in its entirety within the current document.

Normally used for including standard paragraphs within documents.

Notice that you do not specify the '.WP' extension within the command. The program will automatically add this during processing.

Filenames must be in capital letters.

Other commands that you might find useful are:-

Entering Today's date

.date

This will print Today's date as entered when you first load the program.

Input from the Keyboard

.input   Text can be entered from the keyboard during the document processing routine.

Output to the Screen

.vdu   The document can be reviewed on screen before printing it out by including this command at the top of your draft document.

PRINTING LABELS

The 'Utilities' disk contains an option to enable you to print out labels from details stored in any of your databases.

The details are read from a file that must be created from within the enquiry processor by simply 'listing' particular details on a filename on disk rather than to the screen or printer. The labelling program then reads the details held on disk and prints them out in label format.

Labels can consist of between one and six lines and three labels are printed at a time.

This routine is best described by using an example.

Let's return to the Contact information we created using the tutorial.

Remember that we created a file where each record contained the following fields:-

1	**Number**
2	**Company**
3	**Person**
4	**Salutation**
5	**Street**
6	**Town**
7	**County**
8	**Post-Code**
9	**Telephone-Number**

We will now produce labels for each of the contacts in our database.

Load up the 'Database' menu and select option [**3**] to enter the enquiry processor.
At the 'ready' prompt type:-

list contacts show 3 2 5 6 7 8 on mailing.wp [RETURN]

The program will now select as many records as are held on the disk and will store them on the datafile called 'MAILING.WP''.

When the 'Ready' prompt re-appears type : **MENU [RETURN]**

Now exit from the 'Database' menu and load up the 'Utilities' menu.

Select option [**4**] to run the labelling program. You will be asked to enter a filename.

Enter : **MAILING.WP** (i.e. the filename used in the enquiry processor).

You will be asked how many lines their are on each label i.e. how many fields did you store for each record. In the example above you would enter 6.

Now you will be asked if you wish to print out a test pattern. Put mailing labels into the printer and press '**Y**'. A series of 'XXXX's will be printed out and you should continue to enter '**Y**' until the 'XXXX's all fall onto the labels correctly without overlapping.

When you have the labels lined up correctly answer '**N**'

Now each contact name and address will be typed onto labels.

APPENDIX A – FIELD TYPES

The following commands can also be used to describe a field type during field definition procedures.

Type Explanation

DS   Date Stamp. Calls up the system date and automatically applies that date to the relevant field.

DA   Date Abbreviated. Similar to type 'DT' but condenses the date to only two characters for storage purposes.

CK   Clock. Stores a time in the format HH:MM:SS. Please note that clock times are in the 24 hour format.

APPENDIX B – ENQUIRY PROCESSOR COMMANDS

The following commands can also be used within the enquiry processor.

Verb   **Explanation**

AMEND This verb accesses the procedure to create or amend records. It saves having to go via the menu option.

      e.g. amend contacts

BACKUP Copies whole files to a new name or a new disk.

      e.g. backup contacts.dat to customer.dat

CHANGE Allows you to select specific records to be amended.

      e.g. change staff with dept = "Maintenance"

COPY-LIST This verb allows you to copy a 'List' to a new name or to a new disk.

      e.g. copy-list phone numbers

DEFINE This verb loads the file definition procedure. It allows you to bypass the menu option.

      e.g. define
       define contacts

DELETE Allows you to delete all or selected records in a file.

      e.g. delete contacts with county = "London"

DELETE-LIST Allows you to delete a list which is no longer required.

e.g. delete-list phone

GET-LIST Allows you to recall a list which has been stored by the SAVE-LIST command.

e.g. get-list phone
list contacts show 1 2 9

RATIO Allows you to see what proportion of records in the file meet specified criteria.

e.g. ratio staff with sex = "male"

SAVE-LIST Saves a list on disk for future recall.

e.g. select contacts with telephone = "01]"
save-list phone

SELECT Similar to LIST.

e.g. select contacts with county = "London"

SYSTEM Exits from the enquiry processor back to the operating system.

APPENDIX C – DOCUMENT PROCESSING COMMANDS

The following commands can also be used within the document processing routine:-

Command   **Explanation**

.B   Break. Forces a line to be printed without being filled or justified.

.CHAIN "filename"
                     Opens 'filename' and reads all text from this file but does not return to the original file.

.Indent n   The left margin is indented by 'n' spaces but the right margin remains in its original position.

.Indent Right n
                     The right margin is indented by 'n' spaces but the left margin remains in its original position.

.lines n   The number of lines that can be printed on a page is set to 'n'.

.rm   Reset Margins. Both left and right margins are reset to the values specified in the last 'Left margin' and 'line length' commands.

.wc   The number of words printed so far will be printed with the message:-

                     Word Count = nnnn

.wc 'CLEAR   The word count command can be used several times within a document. If you add the word 'CLEAR, capital letters including the single quote, the word count is reset to zero.

SAGESOFT