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Create and maintain your own:
■ Address & phone lists ■ Tax records ■ Budget ■ Family tree ■ Health records ■ Insurance inventory ■ Auto maintenance schedule ■ Wine tasting chart ■ LP & book catalogs ■ Estate planning information ■ Sports records ■ Stock comparisons ■ Travel expense reports

DATA PERFECT™

DATA BASE FOR THE
ATARI COMPUTERS

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IMPORTANT

MAKE A BACKUP COPY OF YOUR DATA PERFECT PROGRAM DISK USING YOUR ATARI DOS COPY PROGRAM. PLACE THE MASTER IN A SAFE PLACE AND USE THE BACKUP AS YOUR WORKING COPY.

BECAUSE DATA PERFECT IS A NON PROTECTED PROGRAM LJK WILL OFFER ASSISTANCE AND SUPPORT *ONLY* TO REGISTERED OWNERS OF THE PROGRAM.

FAILURE TO REGISTER THE PROGRAM ON THE ENCLOSED REGISTRATION FORM WILL FORFEIT ALL PRIVILEGES OF OWNERSHIP INCLUDING FUTURE UPDATES, AND CUSTOMER SUPPORT. ANY CORRESPONDENCE SHOULD INCLUDE YOUR PROGRAM REGISTRATION NUMBER.

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DATA PERFECT — CONFIGURATION

Data Perfect is a very powerful and versatile program. This manual is designed to teach you as much of the program as possible in the shortest amount of time. The first section in the manual is a tutorial. Work the tutorial to become familiar with the functions of the program and how to utilize them. A reference section follows the tutorial. The reference section is divided into the following parts:

1. Loading a Data Base
2. Creating a Data Base
3. File Maintenance
4. Utilities
5. Reports
6. Mailing Labels
7. Appendix, Trouble Shooting

Each of these reference sections explains, in more detail, the operations of the program. You will find at the top of each page a section title. This will help you when flipping through the manual. At the end of the manual is an index to help you find specific page references. Also at the end of the manual is an Appendix which outlines the parameters of the program. Work the tutorial, use the reference, and let your imagination work for you. There are no limits on the variety, or versatility to which this program can be put. This program can be used to: Keep a Christmas List, Balance a checkbook, Keep expense records, Keep a household inventory, Chart stock variations, Run a payroll, Keep accounts payable, Keep accounts receivables, Keep an inventory of parts for a small business, Keep family records, Keep a recipe file, Keep track of your budget, Keep purchasing records, and almost any other function you can imagine. You have the capability with this program of designing almost any application for which a need exists.

Remove the program disk from the front of your manual and place it in disk drive #1 and turn on the computer. The program will load into the computer.

Upon loading the program for the first time, you will see the following screen display:

If you attempt to load the program as above, and it does not LOAD; turn your computer off. Turn the computer back "ON" and press the ESC key as the program starts to reload.

DATA PERFECT — CONFIGURATION

```
OPTIONS: numbers
COMMAND: -Data-

          - - - VIDEO CONTROL - - -

            0> EXIT
            1> 40 COLUMN
            2> BIT 3
            3> AUSTIN FRANKLIN

               Select [0-3]:
```

This question is asking what type of video display your computer has. If you have one of the 80 column boards listed above, press the number preceding the name of the board and press **RETURN**. If you do not have one of the 80 column boards listed above, you should choose the 40 COLUMN option. After pressing **RETURN** your screen should look as follows:

```
OPTIONS: numbers
COMMAND: -Data-

          SOURCE      BACKUP
          Drive: 2    Drive: 1

Density: Single

          — — — DISK CONTROL — — —

            0> Update disk
            1> Source Drive
            2> Backup Drive
            3> Density

               Select [0-3]:
```

This screen is asking how many disk drives you have and whether they are single or double density drives. If you have two drives and they are both single density disk drives then select the UPDATE DISK option by pressing **0** and then **RETURN**. From this point on, when you load DATA

PERFECT it will assume you have two drives and that the SOURCE drive will be drive two and the BACKUP drive will be drive one. If you have only one disk drive, you should press 1 RETURN. The prompt in the COMMAND line will read "SOURCE Drive: __". Press 1 RETURN indicating the source dirve will be drive number one. After pressing RETURN you should notice the default values at the top of the screen have changed indicating the current configuration status. The last selection under DISK CONTROL is "Density". The default listings at the top of the screen indicate the present configuration is for single density. If you are using a double density disk drive such as the double density Percom disk drive, press 3 RETURN. The prompt in the the default line now indicates the density setting is now for "Double". If you have a single density drive then you must run the program in the single density mode. You can, however, run either single or double density with a double density drive. The double density selection is designed for use with Amdek protocol (OSA+) drive. If you are not sure of your drives' capabilities then you should refer to your disk drive manual or local computer dealer.

You have completed the one-time configuration process for your machine. If you have made an incorrect selection in one of the preceding questions, make your corrections now. The last step in configuring your program is to choose the "0> UPDATE DISK" option. Make sure the disk is not write-protected. After pressing 0 RETURN the disk in the drive will spin and the screen will look as follows:

```
OPTIONS: -Input-
COMMAND: Date:
```

Type in today's date and press RETURN. The date is in the format of mm/dd/yy. For example, you might type 10/12/83 RETURN.

REMOVE THE PROGRAM FROM THE DISK DRIVE. YOU SHOULD PLACE A WRITE PROTECT TAB OVER THE NOTCH ON THE PROGRAM DISK. IF FOR SOME REASON YOU NEED TO RECONFIGURE THE PROGRAM, THE WRITE PROTECT TAB MUST THEN BE REMOVED.

DATA PERFECT — TUTORIAL

INTRODUCTION

Congratulations on your purchase of DATA PERFECT, a powerful and versatile program for the ATARI Personal Computer. The purpose of this manual is to assist you in appreciating the many applications to which this program can be put and in gaining familiarity with the command structure of the program.

DATA PERFECT is a data base management program. Think of a data base as simply a file of records, similar to a set of folders you might keep in an office filing cabinet. Each drawer in the cabinet represents a FILE. Each folder in the drawer represents one RECORD in the FILE. And in each folder or RECORD are items or FIELDS of information. Thus a data base consists of FILES of information and each file contains RECORDS made up of FIELDS of data.

In the course of this tutorial we will discuss several examples of FILES, RECORDS and FIELDS. But let us briefly consider one simple example to reinforce the concept—a mailing list of friends and relatives. The entire mailing list can be said to be a FILE. Each individual in the file has a RECORD. Each item in a RECORD (name, street, city, state, etc.) represents a FIELD.

With DATA PERFECT you can establish a file of records on a disk. The number of records you can store on any one disk will depend upon the number of fields and the length of the fields in each record. The program will report this number to you after you have configured the structure of the file. You may specify up to 32 fields in each record. A field may be up to 127 characters in length. The total number of characters in all the fields in a record (i.e., the maximum record length cannot exceed 511. Each field is given a name and field names are limited to a maximum of 12 characters.

In summary:

Maximum number of fields/record:	32
Maximum length of a field:	127
Maximum record length:	511
Maximum length of field name:	12

DATA PERFECT allows you to specify four special types of fields. The most commonly used field is the alphanumeric field (sometimes referred to as a "string" field). A name or a street address is a typical example of alphanumeric information. The second type of field allowed is the date field which has the format MM/DD/YY (M = month, D = day, and Y = year). The third field type is the numeric field; information which can be treated arithmetically such as amounts of money or the number of items

in an inventory. The last field type is the formulated field, a field that is derived from calculations performed on numeric fields. The information in a formulated field is not entered by the user, but is computed from data entered in other numeric fields. DATA PERFECT will accommodate up to 16 formulated fields per record. The use and definition of these field types will become obvious as you proceed through the examples which follow.

The first step in using the program is to create the file structure. You will define field names and types. In addition, you will be able to screen format your fields; that is, you will be able to arrange the layout of the fields on the screen of your monitor or TV to create a form for data entry and display.

Once you have configured the structure of a record, the system will save the file structure to two disks. Two disks are used for the added security of having automatic backup of all files created and records entered.

The next step is to proceed with data entry. The data entry form will be displayed and you will type in the appropriate information for each field. As each record is completed, the information is saved to disk.

Once the records are established, DATA PERFECT offers you powerful facilities for searching, editing, updating, sorting and reporting the data in your files. The examples to be presented in this manual have been selected to demonstrate many of these features of the program.

Finally, DATA PERFECT is a companion program to LETTER PERFECT word processing. The DATA BASE MERGE facility of LETTER PERFECT can access fields in DATA PERFECT records. An example of the use of LETTER PERFECT with DATA PERFECT will be presented to demonstrate the interaction of the two programs.

We recommend that you proceed through this tutorial step-by-step. This tutorial does not cover all the functions and operations of DATA PERFECT. Rather, it is intended to help you gain a working familiarity with the general features of the program by taking you through, one step at a time, several examples of how the program works. Work through the examples on your computer as you read the manual. The tutorial will provide you with a "hands on" experience with DATA PERFECT. After the tutorial, the manual lists in detail all the operations of DATA PERFECT. This can be utilized best as a quick reference manual.

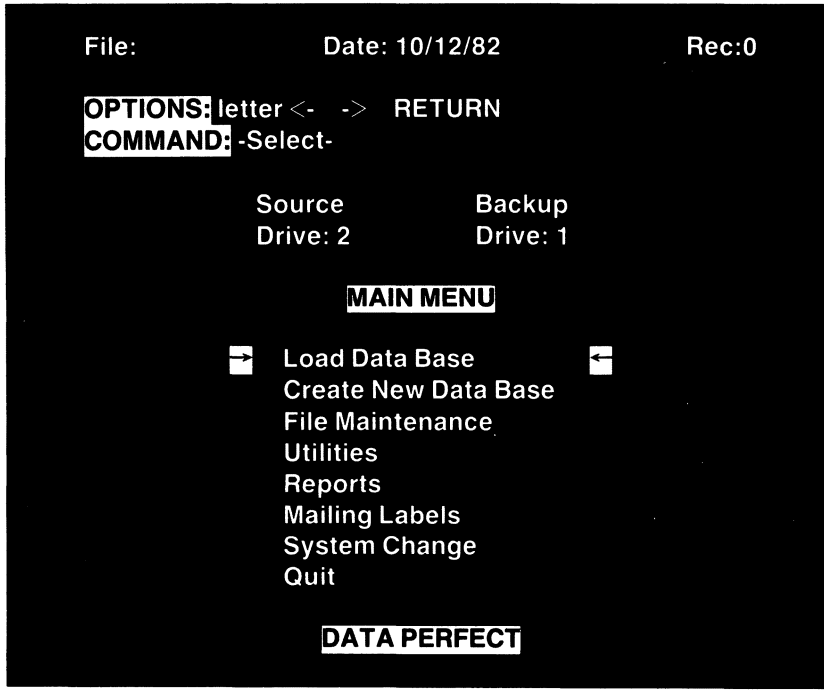
Throughout this manual we will indicate specific keyboard responses by placing type in reverse. Thus, RETURN means press the key labeled RETURN and N means press the key labeled "N". When two keys are to be pressed simultaneously they will be separated by a "-". For example,

to type a "#" mark you must press the SHIFT key and the "3" key simultaneously. This is designated as **SHIFT-3**.

The MAIN MENU should be displayed on the video screen. At the top of the screen will be the prompt:

The top line of the screen display indicates the current file name, the current date, and the current record number. The OPTIONS line indicates what responses the system expects from you. The COMMAND line indicates what question the system is presently asking you. At this point, you should see only the date you have entered displayed. Since we have not loaded or created a file name yet, no file name is displayed and the record number is 0.

DATA PERFECT contains several menus. We will review each of the system menus as we go through the examples in this manual. Let us first review the choices which appear before you on the MAIN MENU.



DATA PERFECT — TUTORIAL

THE MAIN MENU

→ LOAD DATA BASE ←

This option is selected to load a data base you have already created on a disk. A disk containing the appropriate file is placed in your disk drive and the file structure is loaded in and displayed. You may then load in the data file. The program returns to the MAIN MENU once loading of the data file is completed.

→ CREATE NEW DATA BASE ←

This option is selected to create a new file. You will move to the option in DATA PERFECT which enables you to specify a filename and the fields each record in the file is to contain. The system will then format your data file disks and store the file structure on the disks.

→ FILE MAINTENANCE ←

Once a file has been created or loaded by DATA PERFECT, this selection will permit you to ADD new records to a file or EDIT and update existing records. The EDIT section is also used to review data in the file on the screen display. Special features available in the section include the ability to GLOBALLY UPDATE or DELETE records in a file, and to TOTAL and average NUMBER fields.

→ UTILITIES ←

This selection enters you into the UTILITIES package. Included here are facilities for making backup copies of data files, packing files (removing space freed by deleted records), reformatting the file structure, merging an old data base into a reformatted data base, and sorting records.

It may be that some time after you create a data base, you may wish to modify the structure of that file. You may wish to delete certain fields, add other fields, or change field length or type. This is called reformatting your file. DATA PERFECT can merge the data from your old file into the new one, saving you the tedious task of having to manually transfer the old data into the new file. We will demonstrate its use by example.

→ REPORTS ←

The time will come when you will want a printed report of the information contained in your files. DATA PERFECT includes a powerful report generator which will enable you to design page headings and define details to be reported on a printer.

→ MAILING LABELS ←

In a sense, this is also a report generator, but it produces hardcopy in a form suitable for creating mailing labels. Once you have mastered the report generator, you will find it easy to use this feature.

→ SYSTEM CHANGE ←

If for any reason you wish to change the number of drives in use on the system and/or the current date, you may have the system bring back up the startup prompts for drives and date using this selection.

→ QUIT ←

Quit will cause the computer to leave DATA PERFECT and boot whatever disk is in disk drive 1. You will have one chance to abort this operation.

Making a selection from the MAIN MENU is easy. Press the first letter of the menu option you wish to use. For example, press S for SYSTEM CHANGE and you will see the exact same prompts which you answered when you loaded the program. You may also select a menu option by moving the arrows next to the desired item, and press RETURN. Either method is acceptable.

We will begin our demonstrations of DATA PERFECT with the example of creating a personal checking file. Press the letter C for CREATE NEW DATA BASE.

EXAMPLE 1: "THE CHECKING FILE"

We assume you have properly selected the CREATE NEW DATA BASE option on the MAIN MENU. Your screen display should now look as follows:

The system is asking you to input the name of your new file. Filenames must be no more than 8 characters. Let us call our new file CHECKING. Type in CHECKING. You may use the regular editing features of Data Perfect including CTRL Del Backs, CTRL INSERT for deleting and inserting characters. When you have the name you want, hit RETURN.

The following editing commands are available to you throughout DATA PERFECT:

CTRL A	—	Move cursor to beginning of line
CTRL B	—	Move cursor to beginning of line
BREAK KEY	—	Break present option and exit
CTRL Delete/Backs	—	Delete character at cursor
CTRL E	—	Go to end of line
CTRL F (n)	—	Find next occurrence of "n"
CTRL G	—	Delete all after cursor (gobble)
CTRL ←	—	Move cursor left
CTRL →	—	Move cursor right
TAB	—	Tab to next tab stop
Delete/Backs	—	Delete character left
Shift Caps/Lower	—	Lock upper case
Caps/Low	—	Lock lower case
ESC	—	Quit at cursor and erase rest of line
CTRL S (n)	—	Search for next occurrence of "n"
CTRL/Insert	—	Insert character at cursor
RETURN	—	Accept entire input line
Shift/Clear	—	Erases edited line, returns original line
CTRL Z	—	Move cursor to end of line

After hitting RETURN your screen will look as follows:

```
File: CHECKING          Date: 10/12/83          Rec:
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-

KEY: _ _ _ _ _ _
```

We are being prompted to position the cursor for entry of a field name. The cursor control keys ↑↓←→ are used to position the cursor anywhere you wish on the screen display. Up arrow (↑) and down arrow (↓) are up and down respectively. Left arrow (←) and right arrow (→) are for left and right respectively. Pressing B for BEGINNING will move the cursor to the default position for the screen mask. S or RETURN is used to SELECT the present position of the cursor for entry of a field name. Q for QUIT is used to leave this section of the program once all fields have been entered.

We are now ready to begin entering our field specifications and position them on the screen display. This requires a little planning ahead. For demonstration purposes, we are going to create records containing the following six fields:

FIELD #	NAME	TYPE	FORMAT	LENGTH
0	KEY	ALPHA		5
1	CHECK #:	ALPHA		4
2	DATE:	DATE	MM/DD/YY	8
3	PAY TO:	ALPHA		25
4	FOR:	ALPHA		25
5	AMOUNT: $	NUMBER	XX,XXX.XX	10

Two definitions need to be understood before proceeding.

1) alphanumeric—This refers to a field which contains both letters and numbers. No mathematical calculations will ever be used in reference to an alphanumeric field.

2) numeric—Numeric refers to those fields which contain only numbers and may be used in a mathematical calculation.

The first field, the "KEY" field, is a special field that is automatically created by DATA PERFECT and is intended for use with the DATA BASE MERGE function in LETTER PERFECT. We recommend the "KEY" field be left as it is.

Our second field will be named "CHECK #:". This field will contain the check number. Note we have designated this to be an alphanumeric field rather than a numeric field. Although the check number is composed of numeric characters, anytime you *will not need to do a numeric calculation* on the contents of a field, it is better to designate the field as an alphanumeric field. Reserve numeric fields only for data which require arithmetic computations.

The third field, named "DATE:" will contain the date a check was written and can therefore be specified to be a DATE field. DATA PERFECT will automatically format this field to be 8 characters in the form MM/DD/YY.

The fourth field, "PAY TO:", will tell us to whom a check was paid and will be an alphanumeric string of up to 25 characters.

The fifth field, "FOR:", will be an alphanumeric string of up to 25 characters containing information about the purpose of a check.

The sixth and final string will be called "AMOUNT: $". Note the field name includes the "$" to aid in prompting what the numbers in the field represent. It is possible to format how numbers are to be presented in a numeric field including placement of commas and decimal points. This will be explained shortly, but in our example, will take the form XX,XXX.XX.

Although we have six fields, they are numbered from 0 to 5 because the "KEY" field is always field 0. The total record length (the total number of characters reserved for the six fields) is the number of characters plus the number of fields or 83. You will soon learn this will enable us to record up to 1480 records (i.e., checks) on a single disk.

Now let's get on with actually creating the fields on the screen.

The first field we wish to create is the **CHECK #:** field, an alphanumeric field of 4 characters. Position the cursor two lines below the **KEY** field at the left hand margin and press **S** for SELECT. The screen will now prompt you with the following:

```
OPTIONS: -Input-
COMMAND: Name:
```

Type in the name of the field (we are allowed up to 12 characters):

CHECK #:

and hit **RETURN**. The field name will be placed on the screen and you will be prompted with the following:

```
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

It is at this point we specify what type of field we are creating. Alphanumeric fields require only specification of string length, so we need only enter a number. Our **CHECK #:** field is an alphanumeric field of 4 characters so simply type **4** and **RETURN**. Your screen display should now appear as:

```
File: CHECKING          Date: 10/12/82          Rec: 11
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-

KEY: ------

CHECK #: ----
```

Note the record number on the top line is 11. During file creation, this number represents the current record length. We currently have 5 char-

acters reserved for the KEY field, 4 for the check number field and 2 for the total number of fields (field name lengths do not count as part of the record length). This is to assist you in keeping within the maximum record length of 511 characters.

We can now move on to field #2, the DATE field. Let's position the DATE field on the same line as the CHECK #: field. Move the cursor so it is on the same line and a few spaces to the right of the CHECK #: field. When you have the cursor where you want it, type S for SELECT.

The screen display will now change and the prompts will be:

```
OPTIONS: -Input-
COMMAND: Name:
```

The system is again asking us to type in the name of our field. You respond by typing in:

DATE:

and hitting RETURN. The field name will appear positioned on the screen and highlighted in inverse characters. Now we are prompted with the following:

```
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

Since we wish to have a DATE field, simply type D for DATE and press RETURN. The screen should now look like as follows:

```
File: CHECKING      Date: 10/12/82      Rec: 20
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: Name:

KEY: _______

CHECK #: _____      DATE: D__________
```

Note the record number in the upper right corner is now 20, the total length of the three fields created so far. Note also the DATE field is marked with a D for easy identification.

Now we are ready to enter our next field. Move the cursor down two lines below the **CHECK #:** field at the left hand margin. Press **S** to SELECT this position.

Now type in the field name:

PAY TO:

and hit **RETURN**. You will again be prompted to specify the field type with the display:

```
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

We wish to create an alphanumeric string field 25 characters in length. All you must do is type in the number 25 and hit **RETURN**. Now your screen display should be as follows:

```
File: CHECKING          Date: 10/12/82          Rec: 46
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-

KEY: ______

CHECK #: _____    DATE: D_________

PAY TO: ________________________________
```

The next field is also an alphanumeric string, named **FOR:** which is 25 characters in length. Move the cursor two lines down at the left hand of the screen. Follow the same procedure used to create field #3. If you do everything correctly, your screen display should look as follows:

```
File: CHECKING          Date: 10/12/82          Rec: 72
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-

KEY: ______

CHECK #: _____    DATE: D_________

PAY TO: ________________________________

FOR: ________________________________
```

We are almost done—one more field to go, the amount of the check. Position the cursor two lines down from the last field at the left hand margin. As mentioned before you can either press the RETURN or S to SELECT a field. Hit RETURN, type in the name of the field:

AMOUNT: $

Press RETURN. You will now again be prompted with:

```
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

We are going to designate this field as a numeric field. DATA PERFECT will be able to perform arithmetic calculations on the information contained in this field. For example, we will demonstrate how DATA PERFECT can rapidly determine the account balance.

A numeric field is specified by typing N. You must then indicate the format you wish the field to take. For example, entering XXXXX would format a five digit whole number without decimal point or commas. Entering XX,XXX.XX would format a number with up to five significant digits left of the decimal point and two digits to the right of the decimal point with commas inserted in appropriate places. This is the format we will choose for our field. The comma can be typed anywhere in the specification. Now type the following:

NXX,XXX.XX RETURN

(Note: you could also have typed N,XXXXX.XX or NX,XXXX.XX)

You will now see the following screen display:

```
File: CHECKING        Date: 10/12/82        Rec: 83
OPTIONS: IJKM, Begin, Sel, Quit
COMMAND: -Position-

KEY: ______

CHECK #: ______      DATE: D__________

PAY TO: ________________________________

FOR: ___________________________________

AMOUNT: $ N___________
```

Note the capital "N" in the field to signify this is a numeric field. Also note the field length is 10 characters in length: five digits to the right of the decimal, a comma, the decimal point, and one character reserved for the sign of the number.

We're done! We now have all six fields arranged on the screen and can go on to the next part of the program. Press **Q** for **Q**UIT to see the following display:

```
File: CHECKING          Date: 10/12/83          Rec:83
OPTIONS: I, K, R, Begin, Up, Down, Sel, Quit
COMMAND: -Select-
```

These selections are used for editing the file structure should you decide to change what you have done. We will cover this in detail later. We are satisfied with the file structure we have built for our checking file, so let's just go on. Select **Q** for QUIT by pressing **Q**. If for some reason you accidentally arrived at this screen, press **R** to RETURN to the previous screen.

After making the decision to quit and do no further editing, you will be presented with the following prompts and a screen display of your fields:

```
OPTIONS: -Input-
COMMAND: -Data-

Default
```

At the bottom of the screen will appear the prompt message "DEFAULT". You may at this point specify default data entries for any or all fields in each record. If later during data entry in the ADD data mode, you enter no information in a field (such as simply hitting **RETURN**), these default entries will automatically be placed in that field.

Consider the following example: You are creating a mailing list using DATA PERFECT and most of the individuals on the list are located in Colorado. Instead of typing in CO for Colorado in a STATE field, you can set CO to be the default. Now you only have to enter the state for those few records that are not in Colorado. DATA PERFECT will automatically enter CO in the other records for you.

The cursor will move through each field one at a time. Press RETURN if you do not wish to enter a default value into a field. Enter a default value if you wish there to be one, then press RETURN.

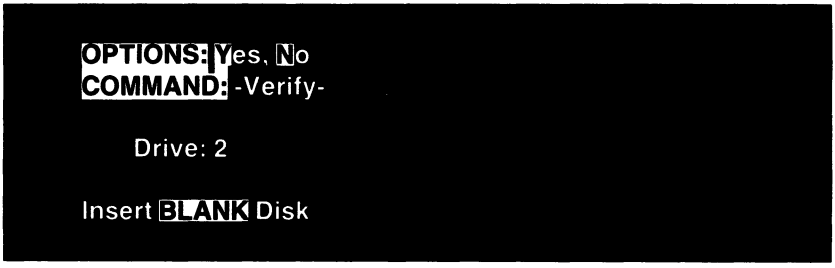
There is one exception to this, and we will use it to our advantage in our checking file. DATE fields will default automatically to the current system date (entered at startup each time you load the DATA PERFECT program disk). Thus, the date field in our check records will automatically default to the current date unless we specify another date later during record entry.

We do not need to specify any default entries in this file, so just press RETURN as the cursor moves to each field. You will then be presented with:

Note the current date has automatically been placed in the DATE field as the default value. You may edit the default values if you are not happy with what you have specified by pressing E. If the default entries are satisfactory, press Q.

Press Q to quit the EDIT mode and you will see two screens of data profiling the data base you have created. There is nothing for you to do at this point except examine the data on the screen and press RETURN when you are ready to go on. The first screen display will show you the fields you have created including the FIELD NUMBER, NAME, and LENGTH. The second screen will display information on the size and storage capacity of the file you have created.

Press RETURN until you are presented with the following prompt:



We are ready to format our data disk. Insert a blank, unformatted disk into drive 2 (drive 1 if you are only using one drive). Press Y when you are ready. If you press Y for YES, the disk drive will activate, the disk will be formatted and a data file containing the structure of your file will be written to the disk. When the formatting is complete, you will see a prompt directing you to insert your BLANK disk. Press RETURN and the BLANK disk will be formatted. When this process is complete you will be returned to the MAIN MENU.

CAUTION: This operation will erase any information currently on the disk. If you wish to abort the operation, press N. You may then input the name of the file "CHECKING" to get cycled back through the create program. Be sure you use a disk that is blank or has information you do not need any longer. You may use a disk that has been formatted and contains old information, but remember, the disk will be reformatted and all previous information will be lost.

The BREAK key can be used at any time during the process of creating a data base to return to the MAIN MENU or to return to the ADD or EDIT screens. Hit the BREAK key at any time and you will be prompted with:

```
OPTIONS: -Input-
COMMAND: Name: FILE
```

"FILE" is the current file name (i.e., "CHECKING"). If at this point you press BREAK a second time you will be returned to the MAIN MENU. THIS WILL DESTROY THE FILE YOU HAVE BEEN ENTERING. If instead, you type RETURN you will be returned to the ADD or EDIT mode depending on when the BREAK key was pressed. You may then continue to ADD new fields or EDIT the existing fields. This provides a convenient way to return to the ADD/EDIT modes before you format your data disks should you decide to make additional changes in the file structure.

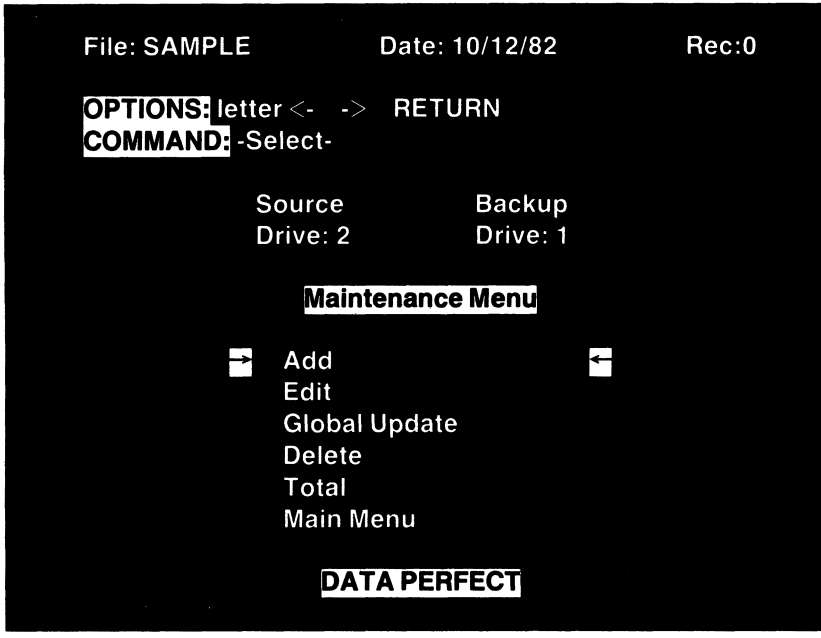
Once you have completed formatting the data disks, you will be returned to the MAIN MENU. We have now finished creating our "CHECKING" file and have generated a master data disk and a backup data disk. We are ready to enter data into the file.

DATA PERFECT — TUTORIAL

ADDING DATA TO "THE CHECKING FILE"

Select the FILE MAINTENANCE MENU option on the MAIN MENU by pressing the letter **F** for FILE MAINTENANCE.

You will now be presented with the MAINTENANCE MENU.



We are ready to add data to "THE CHECKING FILE," with the cursor positioned at the ADD option, press **RETURN**.

You will now be presented with a screen display of your data entry form containing all the fields you defined and positioned in the previous section. You will also be presented with the following prompt (with the cursor positioned at field #0, the **KEY** field):

We are being prompted to enter data in the field where the cursor is currently positioned. We have no data to enter in the **KEY** field at this time, so just press **RETURN**. The cursor will advance to the next field, the **CHECK #:** field. Since we have no need for the CHECK # at this time, press **RETURN**. The cursor has now advanced to the **DATE** field.

Notice the default value is displayed. Press RETURN to accept this DATE.

The cursor advances to the PAY TO: field. Enter:

Start checkbook balance RETURN

The cursor advances to the FOR: field. Leave this blank by simply pressing RETURN.

Finally the cursor advances to the AMOUNT: $ field. Notice a default value of "0.00" appears in the AMOUNT: $ field. This is because all numeric fields will automatically display "0.00" if no other value had been entered. For this tutorial type 662.19 and then press ESC instead of RETURN. The ESC command functions the same as RETURN except it erases all characters after the cursor.

We have now entered the data for the last field in the record and will see the following prompts on the screen:

The possible responses are:

E to go back and EDIT the current record as there is incorrect data entered.

S to SAVE the current record to the data base disk, but leave the current information on the screen because it is quite similar to the next record to be entered.

N to save the current record to disk and display the same data entry form with only the default values being displayed.

Begin over; clears screen returning original default values.

Q to save the current record to disk, then QUIT the ADD mode and return to the FILE MAINTENANCE MENU.

A to ABORT the saving of the current record. This will return you to the FILE MAINTENANCE MENU without saving the record currently displayed.

We wish to go on to the next record, so press N. You will again see a blank form, with the exception of the default values, containing the data fields displayed. Enter the following data:

FIELD	DATA TO ENTER
KEY:	RETURN
CHECK #:	1115 RETURN
DATE	RETURN
PAY TO:	Western National Savings RETURN
FOR:	Mortgage payment RETURN
AMOUNT: $	– 550.32 ESC

Note we enter the amount as a negative number. We will adopt the convention of entering all debits (withdrawals) to the account as negative numbers and all credits (deposits) as positive numbers.

After entering the last field you will again see the following prompt:

```
OPTIONS: Edit, Save, Next, Begin, Quit, Abort
COMMAND: -Select-
```

Let's assume we made a mistake in entering the amount of check 1115 and we meant to enter -550.23 rather than -550.32. Type E to enter the EDIT mode. You will see the following prompt:

```
OPTIONS: Begin, Up, Down, Sel, Quit
COMMAND: -Select-
```

The options are:

BEGIN to move the cursor to the beginning field (in our case, field #0, the KEY field).

UP to move the cursor up one field.

DOWN to move the cursor down one field.

SEL to select the field where the cursor is currently positioned for editing.

QUIT to quit the EDIT mode and return to the ADD mode.

Note we use the U and D keys to move the cursor up or down from field to field. You may also use the directional arrows found on the computer's keyboard. Try it. When you see how it works, press U or D (or arrow keys ↑↓) until you have positioned the cursor at the last field, the AMOUNT: $ field.

Now press S to SELECT this field for editing. Type in your correction:

– 550.23 ESC

We could now move the cursor to any other field using the U or D keys and then select that field for editing using the S key. However, we have no further changes to make, so press Q to QUIT and return to the ADD mode. Press N to save the current record and proceed to the NEXT.

Here is a list of the remaining items to be added to our file. Just repeat the steps we have outlined above to enter the data. If you make a mistake, use the EDIT mode to correct the record. Use N to proceed to the next record after filling out all the fields of the current record. Leave the KEY field blank by pressing RETURN.

Check #	Date:	Pay to	For:	Amount
1128	7/2/82	Master Card	Credit charges	– 69.91
1129	7/2/82	Local Times	Deliveries	– 6.50
1130	7/2/82	VISA	Credit charges	– 234.70
1131	7/2/82	Randy Shannon	Lawn care	– 19.00
1132	7/2/82	Computer World	Disks	– 55.45
1135	7/11/82	West Cleaners	Dry cleaning	– 56.70
1136	7/11/82	Public Utility	Gas/electric	– 125.07
1137	7/11/82	Rexxon	Gas charges	– 63.23
1138	7/11/82	Bell Phone	Telephone bill	– 75.80
1139	7/11/82	Water Board	Water	– 37.92
1140	7/9/82	Safeway	Groceries	– 124.90
1141	7/9/82	Smith's Drug	Toiletries	– 47.90
5142	7/11/82	National Bank	Car payment	– 237.00
DEP	7/11/82	MicroCorp	Salary	1056.34
DEP	7/11/82	Unity Corp	Stock dividend	34.89

Finally, enter the last record:

DEP	7/12/82	Computer Mag.	Article fee	150.00

Press Q (rather than N) to save this last record and return to the FILE MAINTENANCE MENU.

We have now completed entry of a set of records in our checking file. Now we need to know how to review the records in the file and, if necessary, update records in the file.

From the menu, move the cursor to the EDIT selection by pressing the letter E.

DATA PERFECT — TUTORIAL

SEARCHING "THE CHECKING FILE"

Now that we have created "THE CHECKING FILE" and stored some records in the file on a data disk, how do we go back to our file and examine our records? How can we recall and, if needed, update existing records?

To search, display and, if necessary, edit our records, we select the EDIT option on the FILE MAINTENANCE MENU. Move the cursor to the EDIT selection and press RETURN. You should now see displayed:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

R stands for Record number and we can search the file for a particular Record number or a group of Records. Let's try it. First, press R. You will now see displayed:

```
OPTIONS: numbers
COMMAND: Min, Max
```

You may enter two numbers separated by a comma. Here are some examples:

1. If we wish to find only Record #4 we would simply type 4 RETURN Q.
2. If we wish to find all Records starting at Record #4 to the end of the file, we type 4 , RETURN Q.
3. If we wish to find records #4 through #10 we type 4 , 10 RETURN Q.
4. To find all records from the beginning of the file through Record #10 type , 10 RETURN Q.
5. To find all the records, type RETURN Q.

Let's search our checking records for all records starting with record #3. Type 3 , RETURN.

You will again see displayed the prompt:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

If we type Q for QUIT, the computer would proceed to search and display the records in "THE CHECKING FILE", beginning with Record #3. But let's make our search more refined. Using U and D keys (or arrows) we can move the cursor to the various fields in the record and specify search parameters in up to four additional fields. We will use the DATE field as our first example. Type U or D until the cursor is in the DATE field. Then type S to SELECT this field.

The prompt display will now show:

```
OPTIONS: ''> = <? * \
COMMAND: -Data-
```

We can now enter the characteristics of the DATE field which we want our search to match. Several types of searches are possible. Let's assume we wish to find only those credits or debits entered between 7/1/82 and 7/11/82. First, we want to find only those records greater than 7/1/82 (i.e., records written on or after 7/2/82). Secondly, we wish to find only those records written with a date less than 7/11/82 (i.e., written on or before 7/10/82).

First type:

>7/1/82 (Do not type RETURN yet!)

Now type \ (the backslash character = SHIFT \) followed by:

<7/11/82 RETURN

You should now have on the DATE field the following information:

>7/1/82\<7/11/82

If you made a mistake, type S to reSELECT the field and type in your corrections.

The backslash character is used to separate multiple search criteria within a field. The ability to have two search criteria within a field gives DATA PERFECT powerful search capability. Now let's do our search. Remember we have specified the following criteria:

1) All records from Record#3 to the end of the file.
2) Only records written between 7/2/82 and 7/10/82.

Now type Q and the search will commence. You will now be asked by a prompt at the bottom of the screen "And Type Search?" You may perform either an "AND" search or an "OR" search. An AND search requires all search criteria to be met. The OR search is satisfied if any one of the search criteria specified is met. In summary:

AND = ALL search criteria met
OR = ANY of the search criteria met

We want all criteria to be met for our search so type **Y** to answer "YES" to the question "And Type Search?". The screen will now display the first record which meets our search criteria. You will also find the prompts:

```
OPTIONS: Print, Back, Next, Del, Edit, Quit
COMMAND: -Select-
```

You may now select from among the following options:

P will **P**RINT the record displayed on your printer.

B will move **B**ACK in the file to the last record which meets the search criteria.

N will move forward in the file to the **N**EXT record which meets the search criteria.

D will **D**ELETE the current record on display from the file. You will be asked to verify this operation before the delete function is executed. **CAUTION: Once a record is deleted from the file, it cannot be recovered.**

E will enter the **E**DIT mode and permit you to change data in the record, i.e., you can update or modify the record.

Q will **Q**UIT the search and return you to the FILE MAINTENANCE MENU.

Note the current record on display is at least Record #3 and is dated between 7/1/82 and 7/11/82. To see the next record which meets our search criteria, type **N**. Notice the record appears instantly, since DATA PERFECT is searching computer RAM, not the disk.

(NOTE: If the file is large, only a portion of the file will be resident in RAM and from time to time the system will read additional data from your data disk.)

To delete the record on display, type D. Do it now. You will now be asked to verify this operation with the prompt:

```
OPTIONS: Yes, No
COMMAND: -Verify-

Delete
```

If you type Y at this point, the currently displayed record will be DELETED from the file. If you press N you can abort the DELETE operation. Press N to abort the DELETE operation.

Turn on your printer. Press P to obtain a printout of the record currently on display.

Now let's exit this mode—press Q. You will now see the number of records that have been retrieved up to this point. Press RETURN to return to the FILE MAINTENANCE MENU.

Let's do one more search and then edit the record recovered. Again select the EDIT option from the FILE MAINTENANCE MENU.

The prompt is now:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

This time we will search "THE CHECKING FILE" for check numbers in a certain range and checks of a certain amount. Use the U and D keys to position the cursor at the CHECK #: field. Press S to SELECT this field. You will again be presented with the search criteria prompt:

```
OPTIONS: ''> = <? * \
COMMAND: -Data-
```

The options line presents the possible matching criteria:

1. blank implied =
2. < less than search criteria
3. <= less than or equal to the search criteria
4. = equal to search criteria
5. >= greater than or equal to search criteria
6. <> not equal to the search criteria
7. > greater than the search criteria
8. " data is included in some form in this field

* and ? are wild card criteria. The asterisk (*) is used to replace a block of characters, while the question mark (?) is used to replace a single character.

Let's set up a search to find all checks numbered between 1130 and 1140 which were written for at least $50.00. We have the cursor positioned at the CHECK #: field. Type in the following criteria:

>=1130\<=1140 RETURN

Now using the U or D keys move the cursor to the AMOUNT: $ field. Enter the following criteria:

<= -50

Note since we are recording checks paid (withdrawals) as negative numbers, in order to search for all checks paid of $50.00 or more we must search for check amounts less than or equal to -50. (We cannot simply search for checks less than -49 since this would exclude, for example, a check for -$49.75.)

We have completed defining our search. Press Q and begin the search. The question "And Type Search?" will appear at the bottom of the screen. Press Y for YES and proceed. Note the record which appears meets the search criteria. Now press E to enter the EDIT mode.

Use the U key to move the cursor UP from field to field and the D key to move DOWN from field to field. Use the B key to move to the first field from wherever the cursor is currently positioned.

To edit any field, position the cursor in that field using B, U or D and press S to select the field in which you have positioned the cursor. To try this out, position the cursor in the AMOUNT: $ field of the record currently on display and press S. Now type in a new value for the check amount. When you have the result you want, hit ESC.

You can repeat this procedure to edit any other fields in the record. When you have finished editing the record on display, type Q and the changes will be saved to disk.

We are now returned to the prompt:

```
OPTIONS: Print, Back, Next, Del, Edit, Quit
COMMAND: -Select-
```

You can continue to search through the file moving forward using the N key or moving backwards using the B key. Remember only records which meet the current search criteria will be displayed and can be edited. Any time you see a record you wish to edit, hit the E key to enter the EDIT mode.

When you are finished searching the file, type Q. (If you reach the end of the file, the system will exit for you and the number of records retrieved will be displayed. Hit RETURN to return to the menu.)

There is one more useful feature of DATA PERFECT available to us on the FILE MAINTENANCE MENU which we can use to great advantage with "THE CHECKING FILE". Press the letter T for TOTAL while on the FILE MAINTENANCE MENU.

You will now be presented with the prompt:

```
OPTIONS: Begin, Up, Down, Sel, Quit
COMMAND: Formula:
```

Suppose we wish now to calculate the current balance of our checking account. This requires adding up the amounts in the AMOUNT: $ field for all the records in "THE CHECKING FILE". The TOTAL option enables us to do this. Only numeric and formulated fields can be totaled. So you should be sure that whenever you design a data base you define any fields upon which you plan to perform numeric operations as numeric fields. Fortunately, our AMOUNT $: field is a numeric field.

We must now select the field for totaling. Move the cursor to the AMOUNT: $ field using U or D keys. When the cursor is properly positioned, press S to select this field. The screen prompt will then change:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

You have seen this search prompt before. To find the current balance of all deposits and withdrawals from our account, you must total all the records in the file. Thus, you do not need to specify any search criteria. Therefore, type Q and you will be presented with the results of totaling the entire file. (The field being totaled is also averaged for you, but this has no meaningful value in this particular example.)

Hit RETURN when you are ready to return to the FILE MAINTENANCE MENU. Suppose you wish to refine the total listing only the deposits made to the account. Since you have given all deposits the CHECK #: DEP, you could use this as a search criteria. Or you could search only for check amounts greater than 0. Either way you would selectively total only the deposits on account.

Again select TOTAL from the FILE MAINTENANCE MENU. Move the cursor to the AMOUNT: $ field using U or D and then select this field with S. Now move the cursor to the CHECK #: field using U or D. Press S to select this field and display the prompt:

```
OPTIONS: ''> = <? * \
COMMAND: -Data-
```

You wish to find all records with the CHECK #: = DEP so type:

DEP RETURN

That defines our search so now type Q to commence the total operation and display the result. Hit RETURN to return to the FILE MAINTENANCE MENU.

How would you set up a search to total only withdrawals from your account?

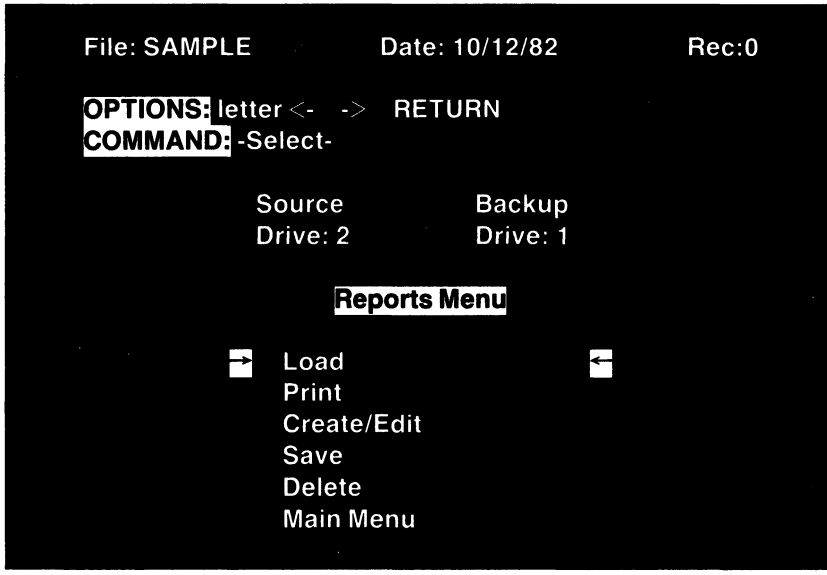
You have now seen several examples of how DATA PERFECT can search a file you have created. We have not covered all the features of the search function of this powerful program, but there are more examples to come.

DATA PERFECT — TUTORIAL

Let's now move on to see how we can generate a printed report ("hardcopy") of the data in "THE CHECKING FILE". Move the cursor to the MAIN MENU selection on the FILE MAINTENANCE MENU and hit RETURN to return to the MAIN MENU.

CREATING A PRINTER REPORT—"THE CHECK REGISTER"

Type the letter R for REPORTS while resting on the MAIN MENU. You will now see the REPORTS MENU:



Press C to select the CREATE/EDIT function. You will be prompted by:

At this time you may set the line width of your printer. Pressing RETURN will select the default setting of 80 characters per line. If you have a wider printer or one which can use condensed print, you may enter a maximum of 127 characters per line. Do not enter a number larger than 80 if your printer is not designed to print more than 80 characters per line or you will generate extra line feeds that will cause problems. For our example, select the default value of 80 by typing a RETURN.

Many printers have the ability to implement special print fonts, multiple pass print modes, and special features such as skip on page perforation (SOP) which can be controlled by sending a sequence of CHR$ functions to the printer. If this feature is active on your printer, it will cause problems with the automatic pagination feature of DATA PERFECT and should be disabled. You can do this by resetting the appropriate DIP switch in the printer, but it is usually more convenient to accomplish this under software control. With an Epson printer this can be done by passing the CHR$ sequence 27,79 (which is equivalent to ESC 0). EPSON printers can execute double strike, emphasized print if sent the CHR$ message 27,69,27,71 (which is equivalent to ESC E ESC G).

DATA PERFECT permits you to initialize any printer with a sequence of up to 7 CHR$ decimal codes.

Thus, to deactivate the SOP feature and activate double strike, emphasized printing on an EPSON printer with GRAFTRAX-Plus, enter:

27,79,27,69,27,71 RETURN

Remember, you can only enter a sequence of up to seven numbers. Any more will be truncated. Also, some printers require you send the high byte equivalent of the CHR$ function. This means you must add 128 to the decimal number.

NOTE: When entering values to activate the boldface print on and off, the program will recognize only the first three CHR$ decimal codes. If you want to enter codes in HEX code rather than decimal, precede the HEX code with a "$". For example, if you want to send ESC (27) in HEX code, you would type $1B.

Many printers such as the EPSON MX series, the C.ITOH and the Centronics 735/737 series have a double width print mode. For example, to turn on expanded print with EPSON and the C.ITOH printers the code is 14. For the CENTRONICS 735/737 series the code is 27, 14.

```
OPTIONS: numbers
COMMAND: Bold off: _
```

You must also provide the code for your printer which turns off the expanded print mode. For the EPSON series it is 20, for the C.ITOH, 15 and for the Centronics series, it is 27, 15.

Next the system will ask you to indicate where in the report you wish level breaks to occur. We will not implement or explain this feature just yet, so simply ignore this section by pressing RETURN.

We now enter the ADD mode of the report generator. The screen prompt will change to:

```
OPTIONS: C, N, E, ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-
```

The report generator will create a heading at the top of each page which may contain up to seven lines of information. Typically, the header will contain such information as a report title, the date of the report, and the headings for the columns of data to be reported. DATA PERFECT will automatically paginate the report and you may also have the page number printed as part of the header.

The rest of the page will contain data extracted from the records in the file. You may have one, two or three lines of detail (i.e., data) per record.

The program will also permit you to specify how many lines to skip between the header and the printing of the detailed data and between each of the records detailed.

In the ADD mode, you can move the cursor anywhere in the seven lines reserved for the header or the three lines reserved for detail using the usual cursor controls ↑↓←→ (or arrow keys). You can also rapidly move the cursor to the left hand margin of the screen (column 0) by typing B for beginning, or to the right hand margin of the report screen (column 80) by typing E for end. Notice when the cursor is positioned on any of the lines reserved for the header, the message HEADER appears at the bottom of the screen. Similarly, when the cursor is in either of the three lines reserved for detail, the message DETAIL appears at the bottom of the screen.

Practice moving the cursor around using B, E, and ↑↓←→ until you are comfortable with it and understand the mechanics of the screen display. If you have a 40 column video display you should note how the column numbers scroll as you move past the screen margins from left-to-right and right-to-left.

Let's begin designing the report, a register of the checks and deposits. First, position the cursor at the beginning of the first line of the HEADER (line 1, column 0). Now press RETURN to SELECT this position. A new prompt appears:

```
OPTIONS: Bold, Total, @DRN#F"I
COMMAND: -Data-
```

We must now indicate just what kind of information it is we want placed at this position. We will have the current Date printed in the upper left hand corner of each page of our report. Simply press D RETURN for DATE. This is the D option in the list @DRN#F"I on the options line.

We now return to previous prompt. Now move the cursor rapidly to the right hand margin of our report page (column 80) by pressing E. Move the cursor to the left about 8 spaces. Now press RETURN to select this position. Again we have the prompt:

```
OPTIONS: Bold, Total, @DRN#F"I
COMMAND: -Data-
```

We will place the page number in the upper right hand corner of each page of our report. Type the following (note: SP stands for the space bar):

"PAGESP

Notice the word "PAGE" is preceded by a quotation mark. This is also one of the options in the prompt @DRN#F"I and is used to indicate literal text. The quotation mark will not be printed, only the word PAGE followed by a space. Do not follow the text with a second quotation mark—it will be printed! Now hit the RETURN and observe the result.

Leave the cursor right where it is! Hit RETURN again and now type @ (which is SHIFT-8). This is also one of the options in the list @DRN#F"I and designates the page number. Hit RETURN and you will now have in the upper right hand corner of your report the symbols "PAGE @@@". The "@" characters will be replaced by page numbers when the report is actually is printed.

Okay. Now let's generate a banner title for our report. We will use a centered, expanded print for the title "CHECK REGISTER". Type C for "CENTER". We now return to the data entry prompt. Now type the following:

B"CHECK REGISTER

The B character will select bold (expanded) print. This will only work, of course, if during the initialization procedure you provided the program with the proper codes for BOLD ON and BOLD OFF for your printer. The quotation mark designates literal text is to be entered, the text being the words "CHECK REGISTER".

Now press RETURN. Notice the text is centered but there is a trailing line. Since the screen display cannot produce bold print, the trailing line indicates to you the actual number of columns the printed text will occupy on the report.

So far so good. Now move the cursor ↓ (down) one line at a time until the message DETAIL appears at the bottom of the screen. We are now positioned in the first line of detail. Position the cursor at the left hand margin. Now move in 5 spaces to the right (it is a good idea to move in a bit from the edge if you are planning to keep your reports in a ring binder since this will avoid holes in the paper where your printed material is). Hit the RETURN to select this position.

We will list the check numbers in this position. Type the following:

#1

Again # is one of the options offered in the list @DRN#F"I and is used to designate you want the data in Field #1, which is the CHECK #:, printed at this position. Type RETURN and note a string of four # symbols appears. This indicates 4 places have been reserved to print out the data from Field #1.

Stay on the same line, but move the cursor over four places to the right. Press RETURN to select this position. Now type:

#2

This indicates you wish the data in Field #2 (the DATE:) printed here. Hit RETURN and note again that characters appear telling you how much space is reserved for printing this data.

Keep on the same line and move to the right another 4 spaces. Hit RETURN. Now type:

#3 RETURN

Note a string of 25 characters is printed to reserve space in the report for the data in Field #3 PAID TO:. By the way, you do not have to print out the entire string. If we had typed #3.10 RETURN, only 10 spaces would have been reserved and any characters in Field #3 beyond 10 would be truncated during print out (but only on the printout—your data on disk is not disturbed). We have plenty of room however, so we can afford to print the entire string length in Field #3.

Stay on the same line, but move to the right 5 spaces. It is possible for the report to include a CONDITIONAL statement based on the value of a particular field. For example, depending upon whether the value of a particular NUMBER or FORMULA field is negative, zero, or positive, a selected result may be printed. In our check register, all deposits are positive and all checks are negative. We can print a literal statement, "CHECKS" for all amounts which are negative, "VOID" for all zero amounts, and "DEPOSITS" for all amounts which are positive, using the CONDITIONAL features of the report generator.

Hit RETURN to select the current position of the cursor. You will now see the prompt:

```
OPTIONS: Bold, Total, @DRN#F''I
```

The I option is used to select a CONDITIONAL statement. Enter the following:

ICHECK\VOID\DEPOSIT RETURN

Remember the backwards slash is SHIFT \.

You will now be prompted for the FORMULA you wish evaluated in the format F(N) where N is the number of the field upon which the CONDITIONAL statement is based. In our case the field is Field #5, the AMOUNT: $ field. Therefore, enter:

F(5) RETURN

This will have the following effect when the report is printed. All records with a negative value in the amount field will have the literal statement "CHECK" printed in this column of the report. All records with a zero amount will have the statement "VOID" printed. All records with a positive amount will have the statement "DEPOSIT" printed.

Now, still staying on the same line, move over 8 spaces and hit RETURN. Type:

T # 5 RETURN

Field #5 is the AMOUNT:$ and is a numeric field. We can have the grand total for this field printed at the end of the report. This, of course, will be the account balance if we print out the entire check file. Notice we preceded the field designation with "T" which stands for TOTAL. Any time you wish to have a NUMBER or FORMULA field totaled in a report, simply type T before the field designation.

Note how the space reserved the the NUMBER field is designated on the screen display.

Now move the cursor down one line. The message DETAIL should still be on the screen display. Move the cursor so it lies directly under the first character reserved for Field #3 (PAID TO:) and press RETURN. Type:

#4 RETURN

This will place the data for Field #4, the FOR: field, directly under the data for Field #3.

Now move the cursor ↑ (up) two lines. The message at the bottom of the screen will change to HEADER. We are now at the bottom line of the header. Let's draw a double line across the page at this position. There is an easy way to do this. Be sure the cursor is positioned at the left hand margin. Now hit RETURN. Then type:

R=,80 RETURN

Presto—a double line appears across the page. What you have done is use the repeat R mode to print the "=" character 80 times across the screen. Again, R is an option from the list of options @DRN#F"I. The format is R char, 80 where R is the repeat option, char is any keyboard character, and 80 is the number of times you want the character printed on the line. We selected the "=" character and printed it 80 times (the width of our report).

Now move up three more lines and move five spaces in from the far left margin. Your cursor should be in the column directly above the first character in the check number field. Press RETURN and type:

"CHECK NO. RETURN

Now move the cursor to the right until it is over the first character in the next field (DATE:). Press RETURN and type:

"DATE RETURN

Again move the cursor to the right until it is over the PAY TO: field, press RETURN and type:

"PAID TO: RETURN

Stay on the same line but move the cursor so it is directly over the first character in the CONDITIONAL field (designated by a series of "I" characters) and press RETURN. Type:

" TYPE RETURN

Move the cursor over so it is above the first character in the AMOUNT: $ field. Press RETURN and type:

N 5 RETURN

Pressing N indicates you want to position a particular field name on the report. In the example above we typed N 5. The number 5 indicates you want the field name of field 5 printed at this position. Pressing RETURN will cause the field name AMOUNT: $ to be displayed on the report.

Finally, move the cursor down one line and left arrow ← so it is once again directly above the first character in the PAID TO: (and the FOR:) field. Press RETURN and type:

N 4 RETURN

We have now finished labeling the columns in our report header. Note that we placed the DETAIL information in position before putting in the headings. It is often easier to fill out the one or two lines of DETAIL before finishing the HEADER.

That completes our task of designing a report. We are now ready to leave the ADD Mode. Type Q for quit. You will enter the EDIT Mode.

```
OPTIONS: K, R, Begin, Up, Down, Sel, Quit
COMMAND: -Select-
```

This mode gives you the opportunity to modify the report you have created. It works much like previous sections of DATA PERFECT. Use the U and D keys to move the cursor from item to item in the report.

You can edit previously existing entries by Selecting them, or you can Kill entries (remove them) by pressing K. You will be asked to verify kills before they are executed. This protects you from accidentally killing entries you did not intend to remove.

Suppose we wish to change the title of our report from "CHECK REGISTER" to "CHECKING ACCOUNT". Use the U or D keys until the cursor is positioned in the header at the title "CHECK REGISTER". Now type S to select this field. The prompt will return to the ADD mode. Again press the S key to SELECT this field for editing. Retype the entry to change it from "CHECK REGISTER" to "CHECKING ACCOUNT" and hit RETURN.

When you are finished creating your REPORT, it should look similar to the one below.

```
0123456789012345678901234567890123456789012345678901234567890123
11/27/83            CHECKING ACCOUNT                @@@



CHECK NO.   DATE       PAID TO:                 TYPE    AMOUNT $
                       FOR:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

####        ######## ################## II..           ####.##

                       ##################
```

Now type Q to exit the EDIT mode. We are finished editing our report. You can add more items to the HEADER or to the DETAIL by returning to the ADD mode by typing R. However, we have finished formatting the HEADER and DETAIL. The prompt will now be:

```
OPTIONS: Blank lines
COMMAND: Header 0
```

You are being asked to indicate how many lines you wish to skip between the header and the listing of the detailed records. The default is 0. Enter 2 instead so 2 lines will be skipped between the header and the detail. Type RETURN.

The next prompt is:

```
OPTIONS: Blank lines
COMMAND: Detail 0
```

Now you are being asked how many lines to skip between each record. Enter 1 RETURN to leave one blank line between each record. You will return to the REPORTS MENU. All that is left for us to do is save a copy of our report format on the data disk. Move the cursor on the menu to the SAVE option and type RETURN.

```
OPTIONS: -Input-
COMMAND: Name:
```

Enter a file name. You may use up to 8 characters and the file name must begin with a letter. DATA PERFECT will automatically append ".RPT" onto the file name of your report. There is room on the data disk to keep up to four report or label files.

We can now print the report. Select the PRINT option on the REPORTS MENU and the following prompt will appear:

```
OPTIONS: numbers
COMMAND: Pages:
```

Once your data files are large enough, a complete report may take up several pages. DATA PERFECT will automatically paginate your report, print the header on the top of each page, and appropriately number pages. You can print out only selected pages of a report by entering the start page and/or the ending page (using notation START, END similar to that which we used to search for particular records in a file). At this time, however, we wish to print the entire report, so just type RETURN and you will see the familiar search prompt:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

You have the ability to select records for inclusion in the report using the same versatile search capabilities we used in the FILE MAINTENANCE MENU. We will use this feature later. For now, we will list our entire file, so just press Q.

The message "POSITION PAPER" will now appear at the bottom of your screen together with the prompt:

```
OPTIONS: Yes, No
COMMAND: -Verify-
```

Check to be sure your printer is on and the paper is properly positioned. Press **Y** to begin printing. Press **N** only if you wish to abort printing the report.

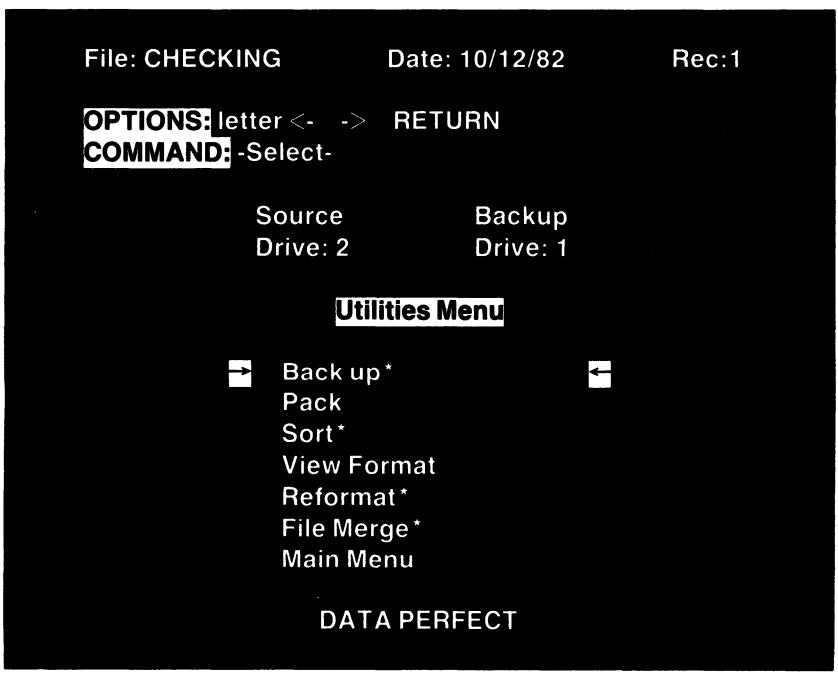
Congratulations. You have just produced your first printed report.

SORTING "THE CHECKING FILE"

Return to the MAIN MENU by selecting the MAIN MENU option on the REPORTS MENU. You will first be asked to verify you want to erase the report before you can leave the reports menu. If you have not saved the report you should do so prior to leaving the reports menu. To leave the reports menu, verify with a **Y**, the report will be erased from the computer's memory, not from disk, and you will be returned to the MAIN MENU.

The checks and deposits listed in our CHECKING FILE are presently listed in the order in which we entered them. Our next task is to generate another report in which all checks and deposits are listed in order of their date. Before we can do this, we must rearrange, or "sort", our file so the records are listed in order of date. DATA PERFECT has a powerful DISK SORT utility which will permit us to do this.

Move the cursor to the UTILITIES selection on the MAIN MENU and press **RETURN**. You will now be presented with the UTILITIES MENU:



Move the cursor to the SORT selection and press RETURN. The following prompt will appear:

```
OPTIONS: numbers
COMMAND: Sort:

#  Name:        Len    #  Name:        Len
0  KEY            5    1  CHECK #:       4
2  DATE:          8    3  PAY TO:       25
4  FOR:          25    5  AMOUNT: $      10
```

The options line indicates you are to enter the field numbers for the field(s) you want to sort. For alphanumeric fields you may also indicate the depth to which you want the sort to take place.

For example, suppose we wanted to alphabetize our check file by payee. We would then sort on Field #3, the PAY TO: field. This field contains a maximum of 25 characters. We could simply sort based on the entire length of the field, but in fact a sort on much fewer characters would probably give us the desired result and might be faster. We could sort on only the first 5 characters in the field. To sort on Field #3, you would enter 3 RETURN. If you wanted to limit the sort to the first 5 characters, you would enter 3.5 RETURN.

Let's arrange our checking records in order of date. Within each date we can sort again by check number. The result will be that our entire file will be reordered so all the checks are listed in order by date, and within each date, the checks will be in numerical order. Enter the following:

2,1 RETURN

This will cause the primary sort to be conducted on Field #2 and a secondary sort to be done on Field #1. You will be prompted next by:

```
OPTIONS: Yes, No
COMMAND: -Verify-

Ascending?
```

We can have the sort performed in either ascending or descending order. Usually you will want, as in our example, to sort in ascending order. Type Y at this time to indicate an ascending order of sort.

What happens next depends upon whether you have a one or two disk drive system. If you have a one drive system, you will be asked to place your backup disk in the disk drive. If you have a two disk drive system, you will be asked to verify that your backup disk is in drive 1. Type **Y** to verify the backup disk is in place in the appropriate disk drive. The sort operation will now commence. If you have a two drive system, the entire operation will proceed automatically. The data will be read from the source data disk in drive 2 and the sorted data will be written to the backup disk in drive 1. If you have a one drive system, you will be asked to swap the source and backup disks during the sort procedure by prompts on the screen.

CAUTION: The sort operation should always be allowed to continue until it has been completed. Interruption of a sort once it has been initiated could cause incorrect data to be transferred or for data to be lost completely.

Once you have completed the sort, your backup disk temporarily becomes your new source disk and the original source disk becomes the backup disk (it still contains the file in its original unsorted order).

That's all there is to it. Actually you may construct a sort up to four fields in depth to a maximum of 255 total characters. Our example only sorted on two fields. To see the results of our sort, let's do another report. This time we will implement the level break feature of the report generator.

Return to the MAIN MENU and again select the REPORTS option. You will again be presented with the REPORTS MENU. The easiest way to create our new report is to edit the one we previously created. Select the LOAD option on the menu, type in the filename of your previously saved report and hit **RETURN**.

When the load is complete, the REPORTS MENU will reappear. Select the CREATE/EDIT option. We will now repeat many of the steps used in creating the original report. We will again be asked to set line width, provide initialization codes for our printer, and provide codes for BOLD ON and BOLD OFF. We have no changes to make for any of these options, so just type **RETURN** in response to the prompts to accept the current values.

Now we come again to the prompt for level breaks:

```
OPTIONS: numbers
COMMAND: Level: _
```

This feature enables us to break up our report into sections. We wish to list the checks in our report grouped by date. We have already sorted the file so the records are listed on the data disk in order of date. Using the level break feature, we can now specify to the report generator which field we are using to group the records. In our example, this is Field #2, the DATE: field. We can also indicate how many lines to skip between groups of records. Thus, to cause a level break in the report generator on the date field which will skip 2 lines, enter:

2.2 RETURN'

As the report generator lists the records, whenever there is a change in the value of the date field (field #2), a level break will be printed and 2 lines will be skipped before printing of the next set of records. Any specified TOTAL field such as a NUMBER or FORMULA field will be sub-totaled each time there is a level break. If this is not clear to you now, just keep going. It will become obvious when you see the printed report.

After entering the level breaks we are advanced to the EDIT mode. There are no further changes required at this time. Press Q to exit the EDIT mode. We also do not need to make any changes in the number of blank lines after the header, or in the number of lines between records, so type RETURN in response to these prompts to accept the current settings.

We have now finished creating a modified report. Save this report to your data disk using the SAVE option on the REPORT MENU. CAUTION: Be sure you use a name that is different from other .RPT files on the data disk.

Now let's print the report only for checks paid. Select the PRINT option on the REPORTS MENU. We will print all pages, so just type RETURN in response to the pages prompt. Now we have the SEARCH mode prompt. Position the cursor at the AMOUNT: $ field using the U or D keys and then type S to select this field. Now type:

<0 RETURN

Since all our checks are entered as negative numbers, this should satisfy our request to print only checks, not deposits. We could refine our search further, but now type Q to exit the SEARCH mode. Be sure your printer is turned on and the paper is properly positioned. Type Y to begin printing.

You will notice the report is quite similar to the one we previously produced, but with the following exceptions. First, only checks are printed. Secondly, the checks are grouped by date. When the date changes, a level break is printed and the total for the last group of checks is printed.

DATA PERFECT — TUTORIAL

As you become increasingly familiar with DATA PERFECT, you will think of ways to enhance this checking file even further. For example, you might wish to add another field to keep track of whether a check or deposit is outstanding or has cleared the bank. It is possible to add new fields or delete old ones. Furthermore, once you have reformatted a file in this way you can merge the previous file into the reformatted file. Let's try it.

The following three pages show the variety of printouts you can design using DATA PERFECT. At the top of the next page is the data base structure obtained from the VIEW FORMAT option of the UTILITIES MENU. Beneath the data base structure you will see a printout of your data base using the MAILING LABELS generator. The following two pages show a printout using the REPORTS generator.

DATA PERFECT — TUTORIAL

File: CHECKING
Date: 07/11/82
Rec: 19

#	Name:	Len	#	Name:	Len	#	Name:	Len
0	Key:	5	1	Check #:	4	2	Date:	8
3	Pay to:	25	4	For:	25	5	Amount: $	10

Fields: 6
Record length: 83
Max # of Records: 18
Active # : 18
Created: 05/21/82
Updated: 07/11/82
Formula: 0

Check #: DEPOSIT
Date: 07/01/82
Pay to: Starting checkbook bal.
For:
Amount: $ 662.19

Check #: 1115 CHECK
Date: 07/02/82
Pay to: Western National Savings
For: Mortgage payment
Amount: $ -550.23

Check #: 1128 CHECK
Date: 07/02/82
Pay to: Master Card
For: Credit charges
Amount: $ -67.91

Check #: 1129 CHECK
Date: 07/02/82
Pay to: The Local Times
For: Monthly deliveries
Amount: $ -6.50

Check #: 1130 CHECK
Date: 07/02/82
Pay to: VISA
For: Credit card payment
Amount: $ -234.70

Check #: 1131 CHECK
Date: 07/02/82
Pay to: Judy Shannon

File: CHECKING
09/18/82 Page 1

Check Register

No.	Date	Paid to For	Type	Amount
1115	07/02/82	W. National Sav. Mortgage Payment	CHECK	-550.23
1128	07/02/82	Master Card Credit charges	CHECK	-67.91
1129	07/02/82	The Local Times Monthly deliveries	CHECK	-6.50
1130	07/02/82	Visa Credit card payment	CHECK	-234.70
1131	07/02/82	Randy Shannon Lawn mowing service	CHECK	-19.00
1132	07/02/82	Computer world Disks	CHECK	-55.45
1135	07/11/82	Western cleaners Dry cleaning service	CHECK	-56.70
1136	07/11/82	Public utility Gas/Electric	CHECK	-125.07
1137	07/11/82	AMOCO Gas (credit card)	CHECK	-63.23
1138	07/11/82	Bell Telephone Telephone charges	CHECK	-75.80
1139	07/11/82	Water Board Water	CHECK	-37.92
1140	07/09/82	Safeway Groceries	CHECK	-124.90
[illegible]	07/09/82	Smith's Drug [illegible]pharmacy	[illegible]	-47.90

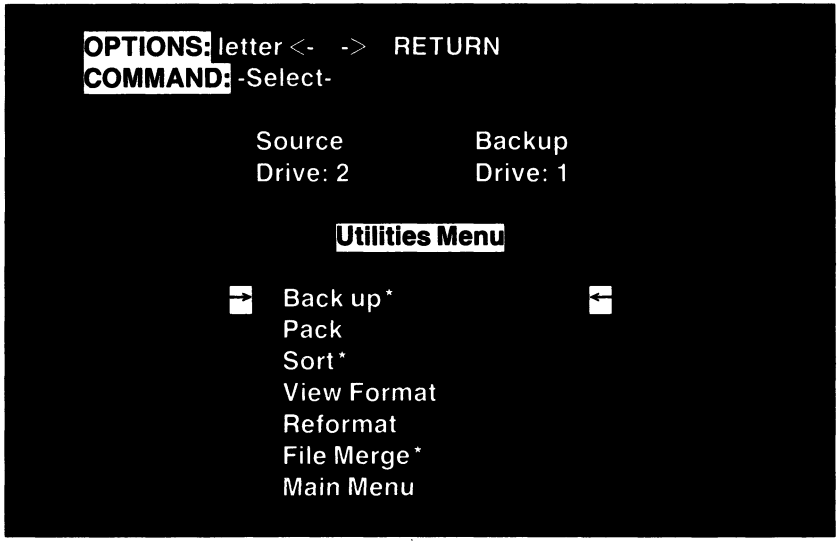
09/18/82 Page 1

Check Register

Date	No.	Paid to For	Type	Amount
07/02/82		Start Checkbook	DEPOSIT	662.19
07/02/82	1115	W. National Sav. Mortgage Payment	CHECK	-550.23
07/02/82	1128	Master Card Credit charges	CHECK	-67.91
07/02/82	1129	The Local Times Monthly deliveries	CHECK	-6.50
07/02/82	1130	Visa Credit card payment	CHECK	-234.70
07/02/82	1131	Randy Shannon Lawn mowing service	CHECK	-19.00
07/02/82	1132	Computer world Disks	CHECK	-55.45
Date: Level:				-933.79
07/09/82	1140	Safeway Groceries	CHECK	-124.90
07/09/82	1141	Smith's Drug Toiletries, pharmacy	CHECK	-47.90
Date: Level:				-172.80
07/11/82	1135	Western Clean Dry cleanin	CHECK	

REFORMATTING AND MERGING "THE CHECKING FILE"

Return to the MAIN MENU by selecting the MAIN MENU option on the REPORTS MENU. Type **Y** in response to the query "ERASE?"—you should have already saved the report to disk. (Note: Saving the report means saving the format of the report, not the actual printed report, on the disk.) Select the UTILITIES option on the MAIN MENU. This will bring up the UTILITIES MENU.



We will first REFORMAT our file to add a **STATUS** field and a **TAX** field. We will then MERGE our old checking file into the new one. Select the REFORMAT option on the UTILITIES menu and then press **RETURN** when the filename appears.

You should now see the following prompt:

This should look familiar to you. It is the same prompt you see in the EDIT mode when creating a new data base. We wish to create a **STATUS** field in our data base.

Move the cursor to the CHECK #: field using the U and D keys to flip from field to field. Now type I which stands for insert. Position the cursor on the top line about 5 spaces to the right of the KEY field. Press RETURN. Type:

STATUS: RETURN

Then type:

1 RETURN

The EDIT mode prompt will again be displayed. The I option is used to insert a new field. We have inserted a new one character alphanumeric NUMBERS field named STATUS between the KEY field and the CHECK #: field. The KEY field remains Field #0, but the STATUS field is now Field #1 and CHECK #: is Field #2. All the subsequent fields are also incremented by one with respect to field number.

All the other options of the EDIT mode can also be used. R will return you to the ADD mode and permit you to add additional new fields to the data base. Regardless of where you position the cursor, the field becomes the next number available. If you have six fields (#0 through #5) in a data base, the next field added becomes #6. Note this is different from the INSERT mode, which inserts a new field between existing fields and reorders the numerical sequence of the fields.

Let's try adding another field. Hit R to return to the ADD mode. Position the cursor on the same line but a few spaces to the right of the AMOUNT: S field using the cursor control key → for right. Hit RETURN and then type:

TAX STATUS: RETURN 1 RETURN

We have now added another field, TAX STATUS:, which can be used to keep track of tax deductible items. Type Q to exit the ADD mode and return to the EDIT mode.

We can also delete fields using the K option for kill. Use the U or D keys to position the cursor on the field you wish to remove, then type K. You will be asked to verify this operation to prevent accidental deletions. Type Y to delete the field or N to abort and return to the EDIT mode. If you delete a field or fields, the remaining fields will be reordered. All fields created above the deleted field retain their field numbers, but subsequent fields move up one number.

For demonstration, let's kill the FOR: field. Position the cursor on this field using the U or D keys. Then type K and verify the deletion by typing Y. Observe the result. Now press Q to quit the edit mode.

You will now be prompted to enter default values for the reformatted file:

Let's enter default values for our STATUS and TAX STATUS fields. Move the cursor to the STATUS field by pressing RETURN until the cursor is resting on the STATUS field, then type the following:

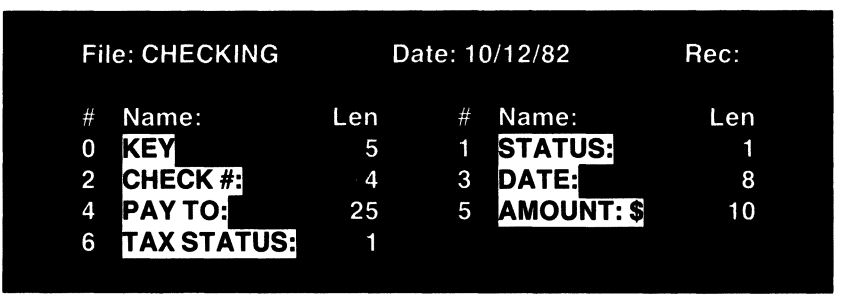
O RETURN

The "O" will stand for items outstanding, that is, items which have not yet cleared the bank. Now, move the cursor to the TAX STATUS: field by continuously pressing RETURN. Then enter:

N RETURN

The "N" will stand for "Not tax deductible." We have now finished entering default fields.

Press Q to quit the EDIT mode. You will now see a screen display of the format of your revised record structure:



Notice we now have seven fields in our data base and several of the fields in our original data base have been given new field numbers since we inserted a new field at Field #1. This means the report designed for our original checking data base will have to be revised if we intend to use it with the reformatted version.

Hit RETURN to continue reviewing the format of our new data base. You will then be asked to format two new data disks to contain the new data base. DO NOT USE THE DISKS CONTAINING YOUR ORIGINAL DATABASE. Use two new disks or old disks containing information you no longer need.

Once you have completed formatting the new data disks we are ready to merge the old data base into the new one. It is not necessary for you to manually enter all the original data into the new data base. DATA PERFECT will transfer the data for you. Load your new data base into memory and proceed.

Select the FILE MERGE option on the UTILITIES MENU. You will see a screen layout of the new data base with the prompt "Search by" appearing in the top left hand corner. This feature would give you the ability to do a selective merge. The specifics will be explained in the reference manual following the tutorial. For purposes of this tutorial we will merge every record from our old data base to our new. Therefore, press **Q** to QUIT and proceed to the following screen display.

File: CHECKING Date: 9/24/82 Rec:

OPTIONS: numbers
COMMAND: order:

#	Name:	Len	#	Name:	Len
0	**KEY**	5	1	**STATUS:**	1
2	**CHECK #:**	4	3	**DATE:**	8
4	**PAY TO:**	25	5	**AMOUNT: $**	10
6	**TAX STATUS:**	1			

NEW DATA BASE

Displayed is the new data base you wish to merge into. The data base you are merging into is always the one that will be resident in the computer. You will read data to this file from the old data base. In our example, the old data base has the format:

#	Name:	Len	#	Name:	Len
0	**KEY**	5	1	**CHECK #:**	4
2	**DATE:**	8	3	**PAY TO:**	25
4	**FOR:**	25	5	**AMOUNT: $**	10

OLD DATA BASE

We must now match the fields in the new data base to the fields in the old one and provide the *order* in which the fields from the old data base are to be merged into the new one. For example, there are two more fields in the new data base than there are in the old one. Here is a comparison of the corresponding fields in the new and old databases.

DATABASE	FIELD #					
NEW	0	2	3	4	NONE	5
OLD	0	1	2	3	4	5

To accomplish the merge of the old data base into the new one, we must indicate how the fields in the old data base correspond to the new data base. Remember, we are merging the old into the new. Thus:

Old field #0 goes into *New* field #0
Old field #1 goes into *New* field #2
Old field #2 goes into *New* field #3
Old field #3 goes into *New* field #4
Old field #4 has been dropped
Old field #5 goes into *New* field #5

Note new Field #1 and new Field #6 have no corresponding fields in the old data base. We simply ignore them for now.

If a field in the old data base has been dropped and is not to be merged into the new data base, we assign that field the numeric designation 99 (which stands for "none") in the new data base. Thus, we can rewrite our comparison as follows:

DATABASE	FIELD #					
NEW	0	2	3	4	99	5
OLD	0	1	2	3	4	5

The order of the merge is now defined by the sequence of numbers listed for the new data base. We thus enter the following order of merge:

0,2,3,4,99,5 RETURN

The next prompt is asking you if your old data base is an Atari Dos file or not. In this case press N for No.

After entering the order of merge, you will be asked to insert the old data base data disk into drive 1. Verify you have placed the *old* data base into drive #1 by typing Y. You will be prompted for the name of the file to merge into the new data base. Type in the filename along with the extension ".DB".

From this point on, if you are using two disk drives, things will proceed automatically. The data in the old data base in drive #1 will be transferred into the appropriate fields in the new data base in drive #2.

If you are using a single drive system, you will be prompted to swap the old data base and the new data base disks as the merge progresses.

We have now completed creating a new checking file incorporating selected data from a previous set of records. Obviously, you must enter the data for new fields not found in the old data base. Computers are good—but they still cannot create data which does not exist!

The STATUS field we created can be used to denote items which are still outstanding, including both checks and deposits which have not yet cleared the bank. The TAX field can be used to denote checks for tax deductible expenses. Using the search feature of the report generator, you could use this field to report a listing of all checks for tax deductible items written between dates you specify.

EXAMPLE 2: "THE SALES INVOICE"

Let's move on now to a second example of an application of DATA PERFECT, "THE SALES INVOICE". In this example, you will learn more about the use of NUMBER fields and FORMULA fields and how to interface DATA PERFECT with LETTER PERFECT word processing. The report generator in DATA PERFECT essentially generates a listed report of selected fields in each record. But the report generator cannot produce forms, such as a sales invoice. However, you can create forms using LETTER PERFECT and then, using the DATA BASE MERGE feature, access the records in a DATA PERFECT file to generate a sales invoice for each record in the DATA PERFECT file.

First, let's set up our new DATA PERFECT file. You will need two data disks, one to be the source disk and one to be the backup disk. From the MAIN MENU, select the CREATE A NEW DATA BASE option. If another data base is still resident in the computer, you will see the following prompt:

```
OPTIONS: Yes, No
COMMAND: -Verify-
```

With a message "ERASE?" at the bottom of the screen. Pressing Y will erase the data base presently in memory (RAM is erased—not your disks!) and proceed to the ADD mode. If you press N, you will return to the MAIN MENU.

Press Y to erase the data base and go on to the ADD mode. (If there is no prior data base in the computer, you will go straight from the MAIN MENU to the prompt for the new file name.)

From here on, the sequence of steps is similar to those we used in creating the CHECKING file, except we will introduce a new field type, the FORMULA field.

The program now asks for the name of the new file. Type in the name:

INVOICE **RETURN**

You now enter the ADD mode with the prompt:

```
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-
```

Here is the screen display format we wish to create:

```
KEY: _____          INV. _________

NAME: ____________________________

STREET: ____________________________

CITY: _____________          STATE: __

TEL: _____________          ZIP: _____

DATE OF SALE: D_________

ITEM: ____________________________

UNIT COST: N__________

QUANTITY: N_____

TOTAL COST: F__________

TAX RATE: N_____          TAX: F__________

TOTAL DUE: F__________

DEPOSIT: N__________

BAL DUE: F__________
```

The fields are as follows:

Field #	Name	Type	Format	Length
0	KEY	ALPHA		5
1	INV#	ALPHA		8
2	NAME:	ALPHA		25
3	STREET:	ALPHA		25
4	CITY:	ALPHA		15
5	STATE:	ALPHA		2
6	ZIP:	ALPHA		5
7	TEL:	ALPHA		14
8	DATE OF SALE:	DATE		8
9	ITEM:	ALPHA		25
10	UNIT COST:	NUMBER	X,XXX.XX	9
11	QUANTITY:	NUMBER	XXX	4
12	TOTAL COST:	FORMULA	XX,XXX.XX	10
13	TAX RATE:	NUMBER	XX.X	5
14	TAX:	FORMULA	X,XXX.XX	9
15	TOTAL DUE:	FORMULA	XX,XXX.XX	10
16	DEPOSIT:	NUMBER	XX,XXX.XX	10
17	BAL DUE:	FORMULA	XX,XXX.XX	10

The KEY field has already been set up by DATA PERFECT. Fields #1 to #7 are NUMBER fields. You are already familiar with how to create these fields. The sequence of steps is:

1. Position the cursor at the appropriate location on the screen display and press RETURN.
2. Type in the name of the field. Press RETURN.
3. Type in the number of characters in the field (i.e., the string length). Press RETURN. Return to step 1.

Field #8 is a DATE field. Follow the steps listed above, but in step 3 instead of typing the length of the field, type D to signify a DATE field.

Field #9 is another alphanumeric (or "string") field. Follow the steps listed above.

Fields #10 and #11 are numeric fields, similar to the AMOUNT: $ field we created in our CHECKING FILE. Position the cursor on the screen display where field #10 is to be located and press RETURN. Type the field name and press RETURN. The prompt is now:

```
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

Pressing N will designate a NUMBER field. We can also define a format for this numeric field. For the field UNIT COST type the following:

NX,XXX.XX RETURN

This will create a numeric field and reserve nine characters (four digits and a comma to the left of the decimal, the decimal point, two digits to the right of the decimal, and the sign of the number).

Field #11 is a numeric field in the format XXX (i.e., a three digit whole number). Position the cursor and type RETURN. Type QUANTITY RETURN. Then enter:

NXXX RETURN

Field #12 introduces a new feature of DATA PERFECT, the FORMULA field. Field #12 is the total cost of the items ordered. Total cost is the product of the unit cost and the quantity. In other words:

Field #12 = Field #10 × Field #11

Position the cursor on the screen display at the appropriate place for Field #12 and press RETURN. The following prompt is again displayed:

```
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

FORMULA fields are indicated in the COMMAND line by placing an F in the space provided after the "LENGTH" prompt. The "F" is followed by a format designation similar to the way you format any numeric field, including the placement of commas and decimal points. Enter the following:

FXX,XXX.XX RETURN

The screen display will now change to the following:

```
OPTIONS: -Input-
COMMAND: Formula:

#  Name:          Len    #  Name:          Len
0  KEY              5    1  INV#:            8
2  NAME:           28    3  STREET:         25
4  CITY:           15    5  STATE:           2
6  ZIP:             5    7  TEL:            14
8  DATE OF SALE:    8    9  ITEM:           28
10 UNIT COST:       9    11 QUANTITY:        4
```

FORMULA fields are always fields in which you have two or more fields related in an arithmetic expression (i.e., a formula). A number of arithmetic functions are available to you. Consult the reference manual following the tutorial for a complete description of the functions allowed. In our example, we want the product of fields #10 and #11. Fields are designated as formulas in the form F(N) where N is the number of the field. Thus F(10) returns the value in field 10 and F(11) returns the value in Field 11. Type the following:

F (10) * F(11) RETURN

The screen display will now show Field #12 with the letter "F" designating Field #12 is a FORMULA field.

Field #13, the TAX RATE, is a NUMBER field. Suppose the sales tax rate is 3.5%. We can enter this as a NUMBER in the format NXX.X. Therefore, position the cursor where you want Field #13 and press RETURN. Then type:

NXX.X RETURN

Field #14, the tax, is another example of a FORMULA field. It is the product of the TOTAL COST and the TAX RATE, or:

Field #14 = Field #12 × Field #13 / 100

Move the cursor to position Field #14 and press RETURN. Then type:

FX,XXX.XX RETURN F(12) * F(13) / 100 RETURN

Field #15, the TOTAL DUE, is the sum of the TAX and TOTAL COST, or:

Field #15 = Field #12 + Field #14

Position the cursor and press RETURN. Then type:

FXX,XXX.XX RETURN F(12) + F(14) RETURN

The DEPOSIT field, Field #16, is a NUMBER field. Position the cursor, hit RETURN, then type:

NXX,XXX.XX RETURN

Finally, we have Field #17, the BAL DUE:. This is again a FORMULA field:

Field #17 = Field #15 — Field #16

Position the cursor and type RETURN. Now enter:

FXX,XXX.XX RETURN F(15) – F(16) RETURN

Press Q to exit the ADD Mode. You will now be in the EDIT Mode. If you made any mistakes, you can use this to correct them. (Many of the features of the EDIT mode were discussed earlier in the section on REFORMATTING the checking file.)

Type Q to exit the EDIT mode. We now have the opportunity to enter default settings for any field. Let's suppose our imaginary business is located in the state of Colorado, most of its clients are also in Colorado, and the sales tax is usually 3.5%. We can set CO to be the default setting for Field #5 and 3.5 for Field #13. Press RETURN until you come to Field #5. Then type:

CO RETURN

Press RETURN until you reach Field #13. Then type:

3.5 RETURN

Continue pressing RETURN until you have passed the last field and the prompt lines change to:

```
OPTIONS: Edit, Quit
COMMAND: -Select-
```

Press E for EDIT and move the cursor DOWN to the TELEPHONE field. SELECT this field and type 303-. This is the area code for CO. Press RETURN and this will be added as a default value.

If you made any mistakes in setting the DEFAULT fields, you may type E to EDIT and make corrections. If not, type Q to exit the DEFAULT mode.

Three screen displays will now be presented to review the file structure you have created. Press RETURN to move on to the next screen when you are ready. Next you will be instructed to insert your data disk into the disk drive. The disk will be formatted and the file structure written to the disk. You will then be asked to insert the BACKUP disk to format. When both disks have been formatted you will be returned to the MAIN MENU.

We have now completed creating our data disks and are ready to enter data into the file.

ENTERING RECORDS IN THE INVOICE DATABASE

Let's now put four records into the database we have created. Select FILE MAINTENANCE from the MAIN MENU. Now select the ADD option from the MAINTENANCE MENU. Notice the default values are displayed before any data entry takes place. When your cursor arrives at the STATE field, just press RETURN and accept the default value. When the cursor is on the TELEPHONE field, type CTRL E and the cursor will automatically move to the end of the field. Type the rest of the phone number and press RETURN. Also, you should recognize when data is

being entered into a numeric field it is better to press ESC instead of RETURN. The ESC command erases all data following the cursor and advances you to the next field. You should already be familiar with how to enter new records so we will not repeat the details. Enter the following records:

FIELD	REC 1	REC 2
KEY		PRT
INV#	1001	1002
NAME:	WEST. SOFTWARE	COMPUPRINT CORP.
STREET:	123 E. 16 STREET	SUITE 6 145 WEST AVENUE
CITY:	DENVER	LAKEWOOD
STATE:	RETURN	RETURN
ZIP:	80012	80124
TEL:	(303) 765-1234	(303)435-6754
DATE OF SALE:	09/20/82	09/20/82
ITEM:	5 INCH DISKS	PRINTER CABLE
UNIT COST:	15.75	12.98
QUANTITY:	200	50
TAX RATE:	RETURN	RETURN
DEPOSIT:	150.00	100.00

FIELD	REC 3	REC 4
KEY	PRT	
INV#	1012	1006
NAME:	BYTEWARE, LTD.	AMERICAN COMPUTER
STREET:	123 W. 56 STREET	45 CLIFF STREET
CITY:	NEW YORK	DENVER
STATE:	NY	RETURN
ZIP:	10034	80033
TEL:	(212) 332-0967	(303) 342-5098
DATE OF SALE:	09/20/82	09/12/82
ITEM:	8 INCH DISKS	PRINTER RIBBONS
UNIT COST:	34.70	3.45
QUANTITY:	300	240
TAX RATE:	0	RETURN
DEPOSIT:	200.00	125.00

You should notice a number of things as you enter the data. First, note you enter data for the alphanumeric, date and numeric fields, not for the formula fields. As soon as all the required fields are completed, the computer completes the formulated fields. Note also the use of the default value for the tax rate. All but one of the accounts are located in Colorado and are charged 3.5% sales tax. However, one account is located out of state, in New York, and is therefore not charged any sales tax.

Note we entered "PRT" in the key fields of records 2 and 3. This will be used shortly to demonstrate the use of the data base merge with LETTER PERFECT.

BUILT IN CALCULATOR

When you are entering data into a numeric field you have a built in calculator. For instance, suppose in the previous example you were entering in the data from an invoice. The invoice may list the QUANTITY sold as 256 and a TOTAL PRICE of $12,349,27. If your data base had a UNIT COST: field as in the example above, you would probably need a calculator to enter the UNIT COST. Instead of using a calculator, enter the following into your UNIT COST field:

12,349.27 / 256 RETURN

After you have entered data into the remaining fields (if there are any), the calculation listed above would be performed and the result will be placed in that field. You may use the numeric field as a calculator when entering data. The totals are computed after all data has been entered into the record. The result of the calculation will be placed in the specified numeric field.

PRODUCING INVOICES USING A WORD PROCESSOR

The report generator included with DATA PERFECT is a powerful and flexible list generator, but it cannot produce a form such as a sales invoice. However, a form can be created using some word processors and the data from DATA PERFECT can be merged into such a form. The following examples all use LETTER PERFECT for the word processor.

Examine Figure 3. It shows how an invoice form for the COMPUTER SUPPLY CORPORATION might be created using the editor of your word processor. Inverse characters represent control characters which are displayed in inverse video on the screen display (they are used to signify instructions and are not printed when hardcopy is generated). The first line is a format line setting line width at 72 characters (w72) and turning off right margin justification (j0). The next three lines are a centered company letter head. The company name will be printed in expanded print. The centered "SALES INVOICE" follows. The remaining items on the form relate to fields in the DATA PERFECT file. The V (CTRL V) notation is used to designate fields in the database. V$8 refers to Field #8 in the database. Note how the other items all correspond to the appropriate fields in our INVOICE file. Consult your word processor manual for additional details concerning form letters.

Now examine figures 4 and 5, actual printings of the sales invoice using the DATA BASE MERGE feature in the word processor LETTER PERFECT with the DATA PERFECT file INVOICE.

Let's now see how these invoices were produced. First, go to the MAIN MENU of DATA PERFECT. Insert a LETTER PERFECT program disk into drive 1. Select the QUIT option on the MAIN MENU. Now press Y to verify you wish to quit DATA PERFECT. The system will automatically boot the program disk in drive 1.

Create a LETTER PERFECT file exactly like the one illustrated in Figure 3 using the LETTER PERFECT text editor and save the text to disk with the file name INVOICE.

Figures 1 and 2 on the following pages show a printout obtained by using the PRINT option from the EDIT selection in the FILE MAINTENANCE MENU. At the bottom of figure 2 you should notice the printout obtained from the VIEW FORMAT option in the UTILITIES MENU.

FIGURE 1

File: INVOICE
Date: 09/28/82
Rec: 1

Key:
Inv#: 1001
Name: Western Software
Street: 123 E. 16 Street
Zip: 80012
Tel: (303) 765-1234
Date of sale: 09/20/82
Item: 5 inch disks
Unit cost: 15.75
Quantity: 200
Total cost: 3,150.00
Tax rate: .035
Tax: 110.25
Total due: 3,260.25
Deposit: 150.00
Bal due: 3,110.25

File: INVOICE
Date: 09/28/82
Rec: 2

Key:
Inv#: 1002
Name: Compuprint Corp.
Street: Suite 6, 145 West Avenue
City: Lakewood
State: CO
Zip: 80124
Tel: (303) 435-6754
Date of sale: 09/20/82
Item: Printer cable
Unit cost: 12.98
Quantity: 50
Total cost: 649.00
Tax rate: .035
Tax: 22.71
Total due: 671.71
Deposit: 100.00
Bal due: 571.71

File: INVOICE
Date: 09/28/82

FIGURE 2

File: INVOICE
Date: 09/28/82
Rec: 4

Key:
Inv#: 1006
Name: American Computer Supply
Street: 45 Iliff Street
City: Denver
State: CO
Zip: 80033
Tel: (303) 342-5098
Date of sale: 09/12/82
Item: Printer ribbons
Unit cost: 3.45
Quantity: 240
Total cost: 828.00
Tax rate: 0.035
Tax: 28.98
Total due: 856.98
Deposit: 125.00
Bal due: 731.98

File: INVOICE
Date: 09/28/82
Rec: 1

#	Name:	Len	#	Name:	Len	#	Name:	Len
0	Key:	5	1	Inv#:	8	2	Name:	28
3	Street:	25	4	City:	15	5	State:	2
6	Zip:	5	7	Tel:	14	8	Date of sale	8
9	Item:	28	10	Unit Cost	9	11	Quantity:	4
12	Total cost:	10	13	Tax rate:	6	14	Tax:	9
15	Total due:	10	16	Deposit:	10	17	Bal due:	10

Fields: 18
Record length: 224
Max # of Records: 310
# of Records: 4
Active # : 4
Created: 09/28/82
Updated: 09/28/82
Formula: 4

Formula:
12 f(10)*f(11)
14 f(12)*f(13)
15 f(12) + f(14)
17 f(15) – f(16)

FIGURE 3

Fw72j0
BCComputer Supply Corporation
C1234 East Orchard Road
CEnglewood, CO 80122

CSALES INVOICE

Invoice No. V$1 Date of sale: V$8

Sold to: V$2
V$3
V$4, V$5 V$6

Item: V$9

Unit cost:	V$10
Quantity ordered:	V$11
Total cost:	V$12
Sales tax:	V$14
Total payment due:	V$15
Deposit received:	V$16
Balance due:	V$17

FIGURE 4

Computer Supply Corporation
1234 East Orchard Road
Englewood, CO 80122

SALES INVOICE

Invoice No. 1002 Date of sale: 09/20/82

Sold to: Compuprint Corp.
Suite 6, 145 West Avenue
Lakewood, CO 80124

Item: Printer cable

Unit cost:	$12.98
Quantity ordered:	$50
Total cost:	$649.00
Sales tax:	$22.71
Total payment due:	$671.71
Deposit received:	$100.00
Balance due:	$571.71

FIGURE 5

Computer Supply Corporation
1234 East Orchard Road
Englewood, CO 80122

SALES INVOICE

Invoice No. 1012 Date of sale: 09/20/82

Sold to: Byteware, Ltd.
123 W. 56 Street
New York NY 10034

Item: 8 inch disks

Unit cost:	$34.70
Quantity ordered:	$300
Total cost:	$10,410.00
Sales tax:	$0.00
Total payment due:	$10,410.00
Deposit received:	$200.00
Balance due:	$10,210.00

Now let's print our invoices. Turn on your printer. Select the DATA BASE MERGE option on the LETTER PERFECT menu.

At the top of the screen will appear the prompt:

```
Insert Database Disk
```

Remove the text file disk from drive #1 and place the data base disk containing the INVOICE file you created using DATA PERFECT into the drive. (Note: If you are using a two drive system, you can configure LETTER PERFECT to keep your text file disk in one drive and a data base disk created by DATA PERFECT in the second drive.) Press RETURN. A directory of the files on this disk will be displayed.

You will now be asked for the search criteria. Recall that we entered "PRT" in the KEY fields of records 2 and 3 in our INVOICE file. LETTER PERFECT does not have the extensive search capabilities of DATA PERFECT, but can search on the KEY field and use this ability to pull out selected records for printing. The search criteria is based on an "include" type search meaning that *any* character in the search string, if found in the KEY field, will result in printing of that record. For example, if in a payables file, the KEY characters are set for O for overdue, P for paid, and D for due, entering "OD" as the search criteria would select all records that are overdue *or* due. That is, any record with either an "O" or a "D" (or both) in the KEY field would be selected. To select records 2 and 3 for printing, we could enter "P", "R", or "T", or any combination of "P", "R", and "T". Let's enter the entire string "PRT" followed by RETURN. In response to the copies and pages question which follows, simply type RETURN.

The computer will now search for the first record. You will be prompted to check your printer to be sure the power is on and the top of form is properly positioned. Hit RETURN when you are ready to commence printing. Sit back and relax as the invoices are generated for all the records which meet the search criteria.

That does it. You have now seen how LETTER PERFECT or another word processor can be used to create a form and access DATA PERFECT files to print individual records on such forms.

One more thing. The FILE MAINTENANCE MENU in DATA PERFECT offers a GLOBAL UPDATE feature that is especially convenient for modifying the KEY field of a selected number of records in the data base file. You can select any number of fields to be modified in any way you choose and SELECT for modification only those records which meet the specified search criteria. You have the full search capabilities of Data Perfect at your disposal.

DATA PERFECT — TUTORIAL

Let's try it. Load the DATA PERFECT program into the computer. Select the LOAD option from the MAIN MENU. Place the INVOICE data disk in drive #2 (drive 1 if you have a one drive system and type Y to verify the disk is ready. The file format will be displayed. Press RETURN twice. At the bottom of the screen will appear the question "LOAD THIS DATA BASE?" Enter Y to load. Select FILE MAINTENANCE from the MAIN MENU to bring up the MAINTENANCE MENU. Now select the GLOBAL UPDATE option. The first prompt you will see is:

```
OPTIONS: Begin, Up, Down, Sel, Quit
COMMAND: Formula:
```

Use the U and D keys to move the cursor to the field you wish to update. We will be updating the KEY field. The cursor should already be positioned there when the prompt first appears, so all you need to do is press S to SELECT the KEY field in records 2 and 3 to change "GEN" from "PRT". We now enter what we want the new KEY field to be so type:

GEN RETURN

You can only globally update one field at a time, but you can, of course, repeat the use of the GLOBAL UPDATE option to successively update as many fields as you wish. Next appears the familiar DATA PERFECT search prompt:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

We wish to selectively change records 2 and 3 so we will search on the basis of record number. Press R and then enter:

2, 3 RETURN Q

If you wish, DATA PERFECT will automatically read through the entire file and change all the records which meet your search criteria. Or DATA PERFECT will display each record which meets the search criteria and ask you to verify if you wish the changes to be made. The message "-VERIFY-" will appear at the bottom of the page along with the following prompt at the top of the page:

```
OPTIONS: Yes, No
COMMAND: -Verify-
```

If you wish to verify the change for each record, type Y. If you wish to have all the records modified automatically, type N.

For demonstration purposes, type Y. The system will now find record 2 and display it. If you wish to update this record, type Y. Do it. The next record which meets the search criteria is record 3. We also wish to change this record, so type Y again.

No more records will be found which satisfy the search and the system will report 2 records were found. Hit RETURN to return to the FILE MAINTENANCE MENU.

Suppose now you wished to print records 1 and 4. We can change the KEY field in these records to "PRT".

Again select the GLOBAL UPDATES option from the menu. Then Select the KEY field. Enter the following:

PRT RETURN

We have now completed entering the change we wish to make. We must now enter the search criteria. Let's search for all records which *do not* have "GEN" in the KEY field. This will exclude records 2 and 3. With the cursor positioned at the KEY field, press S for SELECT. Then type:

<>GEN RETURN Q

"<>" stands for "not equal to". We will permit the changes to be made automatically this time, so type N for "NO" when asked if you wish to verify the changes.

We are finished. Now try going back to Letter Perfect and print invoices for records 1 and 2 by using "PRT" as the search criteria.

MAKING MAILING LABELS WITH DATA PERFECT

We have the ability to generate invoices for a file of customers using our INVOICE file. These invoices can be printed and sent to customers. Since the INVOICE records contain the names and addresses of each customer, this information can be used to print mailing labels.

From the MAIN MENU, select the MAILING LABELS option. You will be presented with the LABELS MENU, which is identical in appearance to the REPORTS MENU you have already used. Nearly all the functions on this menu operate in the same fashion as the corresponding functions on the REPORTS MENU. The only significant differences are in the CREATE/EDIT mode.

Select the CREATE/EDIT mode from the menu. You will again be asked to set printer width and initialize the printer as in the REPORTS function. You will not be asked to specify level breaks, since these have no meaning in generating mailing labels. After the printer initialization is completed, the following prompt will appear:

```
OPTIONS: C, N, E, ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-
```

At the bottom of the screen the message "LABELS" will be displayed instead of the message "REPORTS".

LABELS are simply rows of data without a page header. You have ten lines available for your use. Let's create a three line mailing label for our INVOICE file which will have the following format:

NAME
STREET
CITY, STATE ZIP

Position the cursor at the left hand margin of the first line (it may already be there if you have not yet moved the cursor). Hit RETURN to select this position. The next prompt is:

```
OPTIONS: Bold, Total, @DRN#F''I
COMMAND: -Data-
```

Type the following to put Field #2 on the first line:

#2 RETURN

Move the cursor to the beginning of the next line. Type RETURN. Then enter the following to put the street address (Field #3) on this line:

#3 RETURN

The third line is a bit more complex. We want to have the CITY, STATE and ZIP printed, but each record will have different lengths for the CITY field. It would look sloppy to have the data printed with the comma separating the city and state floating out at a fixed point in space. However, the NEXT option will adjust for this problem. Here is how it works.

Move the cursor to the beginning of the third line. Type RETURN to select this position. Enter:

#4 RETURN

The following prompt returns:

```
OPTIONS: C, N, E, ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-
```

Leave the cursor where it is (right at the end of the last field entered). Type N for NEXT. This selection will place the data you next enter at the current cursor location, but at printout time, the data will be placed immediately adjoining the previous field entered. Now type:

", SP RETURN (SP = space bar)

We have now placed a literal comma followed by a literal space to follow immediately adjoining the CITY field. Now type N again and enter:

#5 RETURN

This will place the STATE field immediately adjoining the ",". Type N again, then:

" SP SP RETURN

This will place two literal spaces immediately after wherever the STATE field is printed. Type N again, then:

#6 RETURN

This places the ZIP two spaces immediately after the STATE field.

This completes our three line address label. The new function that you have learned here is the use of the NEXT operation. (Note: The NEXT option also works in the report generator—we did not have to use it with "THE CHECKING FILE".) Type Q to move from the ADD mode to the EDIT mode. The EDIT mode functions identically to the EDIT mode in the REPORTS section. If you are satisfied with the current design of the label, type Q to exit the EDIT mode.

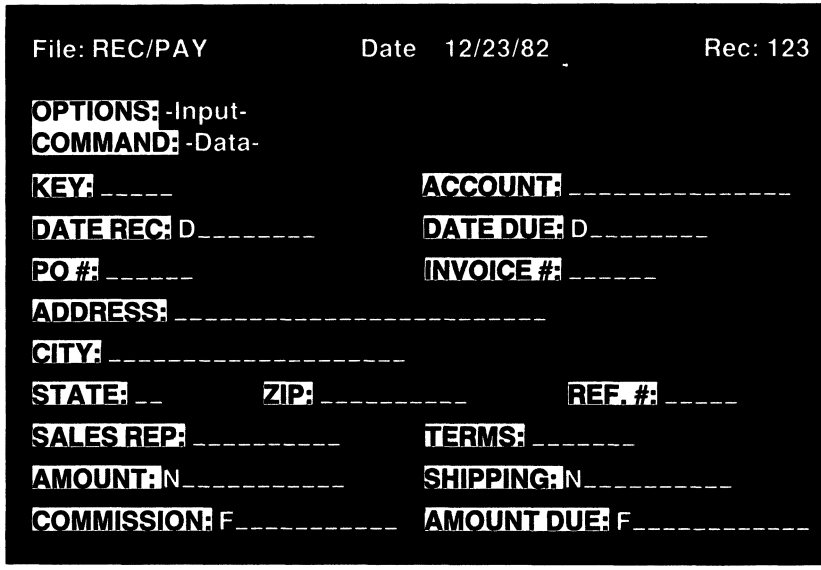
The following prompt appears:

```
OPTIONS: Blank lines
COMMAND: Detail: 0
```

You are being asked how many blank lines you want on your label. Mailing labels are available in different sizes but a label with room for six lines is the most commonly used. Since our address label has only three printed lines of text, we need three additional blank lines to complete the label and proceed to the next label. Therefore enter:

3 RETURN

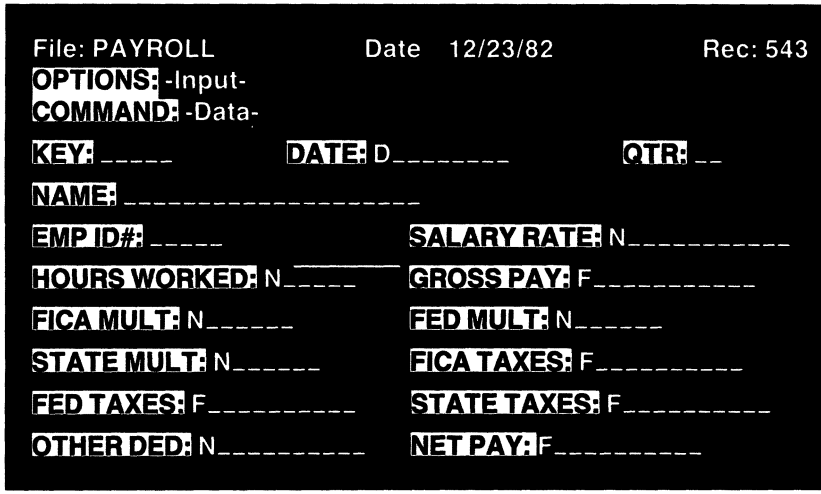
ACCOUNTS RECEIVABLES / PAYABLES ORDER EXAMPLE



Field #:	NAME:	LEN:	FORMAT:	TYPE:
0	KEY:	5		ALPHA
1	ACCOUNT:	15		ALPHA
2	DATE REC:	8	MM/DD/YY	DATE
3	DATE DUE:	8	MM/DD/YY	DATE
4	PO#:	6		ALPHA
5	INVOICE #:	6		ALPHA
6	ADDRESS:	25		ALPHA
7	CITY:	20		ALPHA
8	STATE:	2		ALPHA
9	ZIP:	10		ALPHA
10	REF. #:	5		ALPHA
11	SALES REP:	10		ALPHA
12	TERMS:	6		ALPHA
13	AMOUNT:	11	XXX,XXX.XX	NUMERIC
14	SHIPPING:	10	XX,XXX.XX	NUMERIC
15	COMMISSION:	10	XX,XXX.XX	FORMULA
16	AMOUNT DUE:	11	XXX,XXX.XX	FORMULA

FORMULA: 15 f(13)*(.10)
16 f(13) + f(14)

PAYROLL EXAMPLE

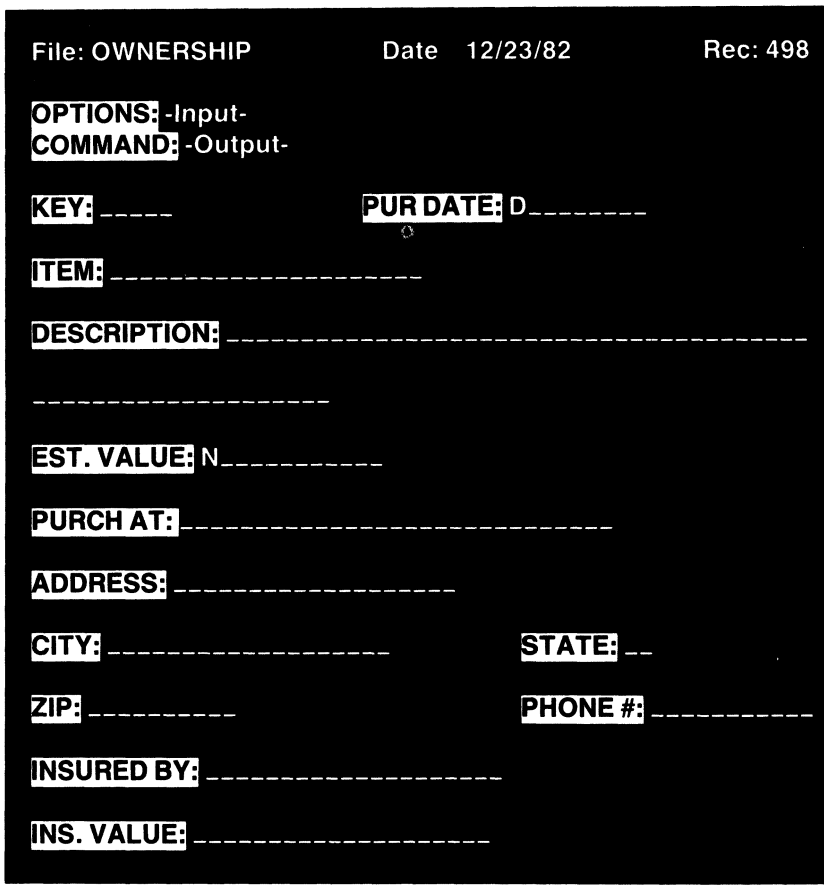


Field #:	NAME:	LEN:	FORMAT:	TYPE:
0	KEY:	5		ALPHA
1	DATE:	8	MM/DD/YY	DATE
2	QTR:	2		ALPHA
3	NAME:	20		ALPHA
4	EMP ID#:	5		ALPHA
5	SALARY RATE:	10	XX,XXX.XX	NUMERIC
6	HOURS WORKED:	5	XXXX	NUMERIC
7	GROSS PAY:	11	XXX,XXX.XX	FORMULA
8	FICA MULT:	6	.XXXX	NUMERIC
9	FED MULT:	6	.XXXX	NUMERIC
10	STATE MULT:	6	.XXXX	NUMERIC
11	FICA TAXES:	10	XX,XXX.XX	FORMULA
12	FED TAXES:	10	XX,XXX.XX	FORMULA
13	STATE TAXES:	10	XX,XXX.XX	FORMULA
14	OTHER DED:	10	XX,XXX.XX	NUMERIC
15	NET PAY:	10	XX,XXX.XX	FORMULA

FORMULA: 7 f(5)*f(6)
11 f(7)*f(8)
12 f(7)*f(9)
13 f(7)*f(10)
15 f(7) – (f(11) + f(12) + f(13) + f(14))

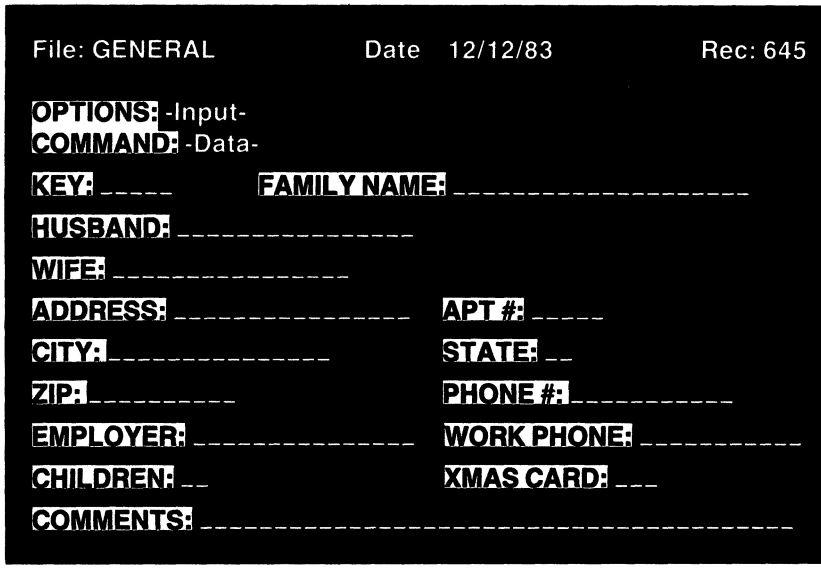
DEFAULT: 8 .067

OWNERSHIP DATA BASE



Field #:	NAME:	LEN:	FORMAT:	TYPE:
0	KEY:	5		ALPHA
1	PUR DATE:	8	MM/DD/YY	DATE
2	ITEM:	21		ALPHA
3	DESCRIPTION:	60		ALPHA
4	EST. VALUE:	11	XXX,XXX.XX	NUMERIC
5	PURCH. AT:	30		ALPHA
6	ADDRESS:	18		ALPHA
7	CITY:	19		ALPHA
8	STATE:	2		ALPHA
9	ZIP:	10		ALPHA
10	PHONE #:	11		ALPHA
11	INSURED BY:	20		ALPHA
12	INS. VALUE:	20		ALPHA

GENERAL DATA FILE

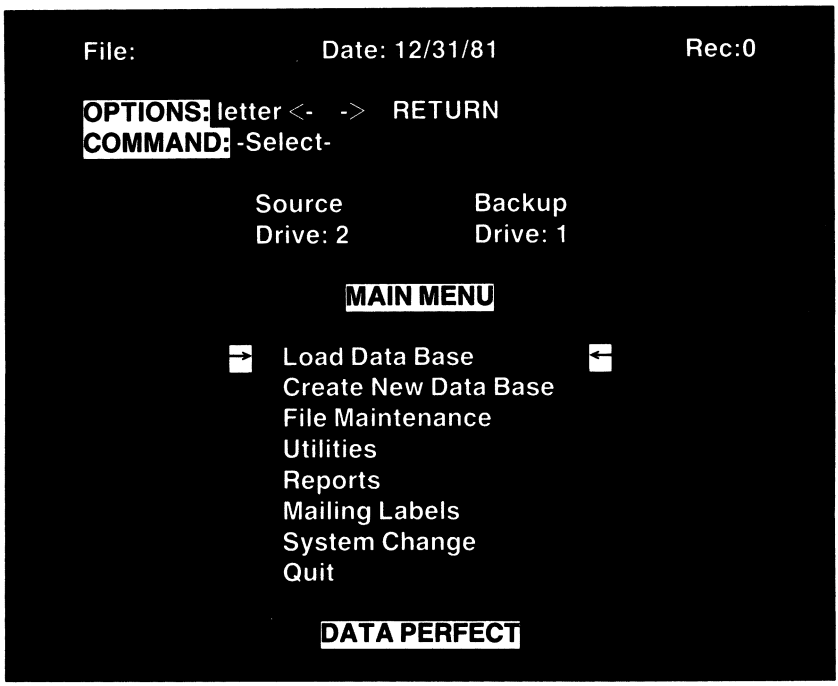


Field #:	NAME:	LEN:	FORMAT:	TYPE:
0	KEY:	5		ALPHA
1	FAMILY NAME:	20		ALPHA
2	HUSBAND:	15		ALPHA
3	WIFE:	15		ALPHA
4	ADDRESS:	15		ALPHA
5	APT #:	5		ALPHA
6	CITY:	15		ALPHA
7	STATE:	2		ALPHA
8	ZIP:	10		ALPHA
9	PHONE #:	11		ALPHA
10	EMPLOYER:	15		ALPHA
11	WORK PHONE:	11		ALPHA
12	CHILDREN:	2		ALPHA
13	XMAS CARD:	3		ALPHA
14	COMMENTS:	40		ALPHA

DEFAULT: 13 YES

DATA PERFECT — LOADING A DATA BASE

The following pages will describe the process of loading a data base file into the computer.



You will have two disks for each data base. One disk will be the source disk and one will be the backup disk. If you have two drives, you should place the source disk in drive #2 and the backup disk in drive #1. If you only have one disk drive you have to place the source and backup alternately in your drive when you want to do the backup procedure. For the loading process, it will be necessary to place the source disk in your drive. After placing the disk in the drive, you should press RETURN as directed on the MAIN MENU. You can use the greater than key, >, to move down the MAIN MENU and the less than key, <, to move up the MAIN MENU and the RETURN key to indicate your selection. You may choose the selection you want by pressing the first letter of the desired option. For example, press L to select the LOAD operation.

Selecting LOAD DATA BASE will cause one of two things to happen. You will either need to verify the loading procedure or it may start automatically. The verifying is caused when you have been working on another data base and the program verifies you want to erase the old data base before you attempt to load another one. This verifying process will be asked in the following manner:

```
OPTIONS: Yes, No
COMMAND: -Verify- 
Erase ?
```

The choices are **Y** for YES, and **N** for NO. Answering NO will cause the loading procedure to be aborted and returns you to the MAIN MENU. Pressing **Y** for YES will allow you to proceed to the second step of loading a data base. This screen is represented below and instructs you to insert the data base disk you desire.

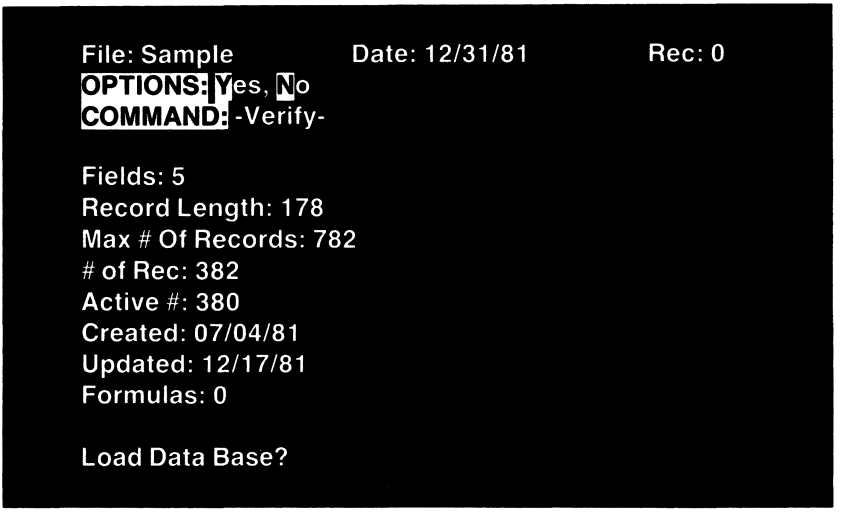
```
OPTIONS: Yes, No
COMMAND: -Verify- 
Drive: 2

Insert Source Disk
```

You should insert the data disk you want to load. Press the **Y** key for YES to cause the loading procedure to continue. The next section will allow you to preview the data base you have just inserted into the disk drive and verify it is the data base you want to load.

This section allows you to see the data base file you have just loaded. This is for those individuals who have several data bases. By viewing the format information, you will be allowed to confirm this is the data base you intended to load. The screen mask will be the same as if you were going to be entering records into the data base.

```
Name:              Date  12/31/82          Rec: 0
OPTIONS: RETURN
COMMAND: press RETURN 

KEY: _____          DATE: D________

NAME: ____________________

ADDRESS: ____________________

CITY: _______________

STATE: __           ZIP: __________
```

Your only option is to press RETURN or do a BREAK operation. The BREAK operation will cause you to abort the present operation and go back to the MAIN MENU. Pressing RETURN allows you to continue the verifying procedure by getting additional information about the data base. This information includes the number of fields in the data base, the length of a record, the maximum number of records allowed under this format, the number of records that have been entered into the data base, the number of active records currently entered into the data base, the date which the data base was created, the date the data base was last updated, and the number of formulas in the data base. You will be asked to indicate with a Yes or No if you want to "LOAD DATA BASE".



The "# OF REC: 382", and "ACTIVE REC: 380" are not the same. In this example, it would indicate two records have been deleted. Deleted records are kept but can be removed at the user's option. For example, if you have a check register and we were using one of the fields to keep the check numbers, you would not want to remove the deleted records. Removing the deleted record (for a voided check), would cause the check numbers to be out of order. The above example shows two records have been deleted. To remove deleted records you should see the UTILITIES section under PACK A DATA BASE.

Press Y if this is the correct data base. Press Y and the file will be loaded and you will be returned to the MAIN MENU. If this is not the data base you want to load, press N for NO, and start the loading procedure over with a different data disk. After loading, the only difference you can see in the MAIN MENU is that the name of the file, which you have just loaded, will be in the space reserved for the file name.

DATA PERFECT — CREATING A DATA BASE

The CREATE NEW DATA BASE option is the second selection on the main menu of DATA PERFECT. You will have the opportunity of creating a data base in this section, designing the screen mask (the way the screen will look), and preparing the information you want organized in a way which will be the most meaningful.

Press the letter **C** to select the CREATE NEW DATA BASE option. The screen will do one of two things. If a different data base has previously been loaded, it will "VERIFY" you want to erase the data base. This is a "fail-safe," or safety feature, preventing you from accidentally erasing important information. This "verify" operation will appear as follows:

```
File: Sample          Date: 12/31/81          Rec: 0
OPTIONS: Yes, No
COMMAND: -Verify-

Erase ?
```

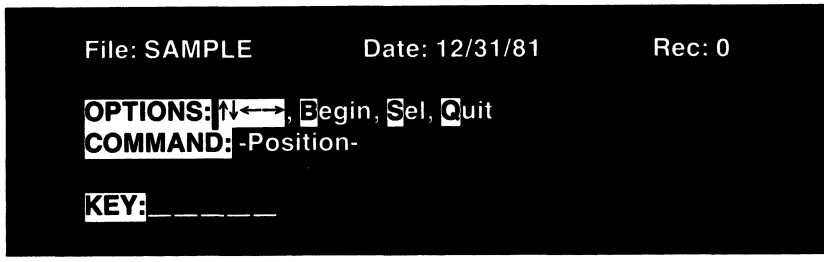
The screen mask, in the example above, allows for two responses, **Y**ES or **N**O. The COMMAND prompt tells you to VERIFY the question being asked at the bottom of the screen. That question is ERASE ? You have to push either the **Y** for YES or the **N** for NO. If you answer **Y** for YES you will erase the data base in memory. Answering **N** will return you to the MAIN MENU. After answering **Y** for YES, you will see the following screen mask:

```
File:                 Date: 12/31/81          Rec: 0
OPTIONS: -INPUT-
COMMAND: Name:
```

Enter a name for the data base you are creating. The only restriction in creating a name is not to exceed a maximum of 8 characters. For this example, let's assume the name SAMPLE was entered, as the NAME of the data base. Failure to enter a file name and just pressing **RETURN** aborts the operation and returns you to the MAIN MENU.

DATA PERFECT — CREATING A DATA BASE

Upon entering a file name and pressing RETURN, the screen will appear as follows:



The KEY field is automatically entered into the data base having a length of 5 characters. The ↑↓←→ keys will move you around the screen in four directions.

The other OPTIONS at your command are B, S, and Q. The Q stands for QUIT and is used at the end of the create procedure. S means SELECT location at cursor. When you have moved to the position on the screen which you wanted to SELECT you would use this option to indicate this is where you want to enter a name. B stands for BEGINNING. Pressing this key will return you to the default position for that field. If you are adding fields, it will place the cursor in column 2 one line below the previous field. If you are editing fields, it will place the cursor where the field was previously located.

You must use the above keys to move the cursor and indicate where it is you want each of the fields to be located. Careful thought should be given to this operation. You should sit down with paper and pencil to map out the formation of the data base. Quadrille paper can be used to design the exact format you want on the screen, prior to actually entering the information on the screen. This type of preparation will make the final appearance and ease of data entry much more satisfying. Fields start with field 0, the key field, and continue upward with a maximum of 32 fields. You also have a maximum of 511 characters in a single data base record. As you enter fields into the data base, the REC: number will keep a running total of the number of characters you have used. You should leave the key field intact during creation for maximum use of the program.

The key field is of great consequence when combined with a word processor such as LETTER PERFECT, word processing, when preparing form letters. Fields can be of many different types. They can be strings, numbers, formulas, or date fields. The exact procedure for creating each of these will be explained in this section.

Use the arrow keys to locate the exact location where you want to place a field and then press the RETURN key. Pressing RETURN (or S for SELECT), fixes the field location and indicates this is where you want the field. After pressing RETURN, the following will appear on the screen:

```
File: SAMPLE          Date: 12/31/81          Rec: 0
OPTIONS: -Input-
COMMAND: Name:
```

Type in the name of the field you want. The field name should not be longer than 12 characters in length.

After entering the name of the field, press RETURN. If, for example, you wanted to enter the field SOC SEC:, you could do so with little problem. This is a field 8 characters in length (the spaces between words count also). After pressing RETURN, you will find the name in inverse video (black lettering in a white box) at the position you indicated the name should be located. The screen will change, along with the OPTIONS and COMMAND line. The new command and options are shown in the following screen mask:

```
File: SAMPLE          Date: 12/31/81          Rec: 0
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

As you can see, you have four different options at your command. You can press the D, N, or F keys, or you may enter a number (i.e. 8, 14, 17, etc.). These four options are explained in the following sections.

The last option is the selection numbers. Enter a number for the desired field length. Fields can be composed of either numbers or letters; i.e. 1, 2, 3, or a, b, c; or they may be combinations of both. A good example of a field that used both would be an address field (i.e. 123 Maple Street). Any time you use a string of characters (one which does not require a mathematical calculation), it is best to use this type of field.

Enter the number (e.g. 11) and press RETURN. The screen will show 11 underlined characters after the field name. The record number on the status line will be updated to show the number of characters you have used in creating this field.

Social Security numbers are never added or subtracted. It would serve no purpose to enter them as a field which would allow such an operation. numbers fields are assigned lengths according to your needs. Take care in entering the length of a number field. It is poor utilization of space to assign a number value of 45 for an address field which will never be longer than 25 characters. Allocating space for fields longer than necessary will restrict the space and number of records available on a disk. Care should be taken so the fields are not too short. Making the field too short will cause a truncation of information.

D is pressed when you want to create a DATE field. Entering a date field requires no other information to be entered. When you press this key, you will automatically set aside an 8 character field. Date fields are always expressed as MM/DD/YY. Date fields will easily be recognized on the screen because the date field will have the letter D after the field name.

Pressing N for Number indicates you want a numeric field. Number fields are different from numbers on the option line. The numbers option (all lower case letters) is used to indicate the length of the field.

Pressing the letter N indicates the desire for a numeric field. You can indicate the format with upper case "X's" or lower case "x's", following the letter N. Nxxxxxxx would indicate you want the numeric field to be a unit type number field with no decimal points, and carried to 8 places (the number of x's + 1). The largest number which can be represented before using exponents is 142,300,000. If you want the number represented to be separated by commas, (i.e. 1,234,567) you would indicate this by placing the commas between the x's as they would normally be placed, or by placing a single comma anywhere in the format line after entering the N (i.e. xxx,xxx,xxx or ,xxxxxxxxx or xxxxx,xxxx). The location of the comma is unimportant. The presence of the comma is the determining factor. You should give some consideration to the length (number of X's) of a field.

N for NUMBER could also be used to indicate a dollar and cents field. Entering Nxxx.xx would indicate you want the field to be a Number field and the format to be xxx.xx. Note the decimal point is entered, indicating the number is to be carried to two places. If you want numbers to be carried to 5 places, enter the format as xx.xxxxx.

During data entry, numbers smaller than the field length will have all leading zeroes removed. Thus, the number 237.68 when entered into a field created with the format xxxxxx.xx will remove the two preceding zeroes. Numbers that are positive will not be indicated as such. Negative numbers will be represented with the minus (–) sign preceding the numbers.

Exponents will be represented with the letter "E" after the mantissa.

FORMULA fields are indicated in the COMMAND line by placing an F after the LENGTH prompt. After placing the F, you have to indicate the type of formula field you desire. Formula fields can be designed using any numeric structure. For instance, they could be a unit type, or they could be a dollar and cents field. This method of indicating the format of the formula is identicial to the way Number fields are entered.

Formulas also allow for the placement of commas in large numbers. Let's say, for example, you were creating a formula field which was to be the product of the number of units shipped multiplied by the cost of each unit. This type of field would be the product of a unit field (number of units) multiplied by a dollar and cents field (cost of each unit). The new field, a formula field, will be in a dollar and cents format. Type F and the format xxxxx.xx after the LENGTH prompt. Upon pressing RETURN, the screen mask will change, and you will have to enter the formula. The screen mask appears as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 187
OPTIONS: -Input-
COMMAND: Formula:

#  Name:              Len    #  Name:              Len
0  KEY                 5     1  CUSTOMER NAME:     15
2  INV. DATE:          8     3  UNITS SHIPPED:     12
4  UNIT COST$
```

Enter the formula on the COMMAND line, after the FORMULA prompt. The screen mask has changed to show the fields and their corresponding field lengths. In this example, you would have field 3, UNITS SHIPPED:, multiplied by field 4, UNIT COST$. This would be expressed as F(3)*F(4)RETURN. The formula is the product of field 3 times field 4.

Formulas can take many different forms. You could design a formula to take field 1 plus field 2 and divide its sum by field 3. Then have its result multiplied by field 17 with the product multiplied by 100. This formula might be entered as follows:

(((F(1) + F(2))/F(3))*f(17))*100

As you can see the F designating a FIELD can be in either upper or lower case. Also, parentheses are used to establish the order in which the calculation is to be performed. The following section lists the order of precedence. A maximum of 64 characters can be entered into a formula. The 64 characters include the parentheses, arithmetic symbols, and the F designating field number. If you exceed the 64 character limit the formula will be truncated after the 64th character.

In the expression of the previous formula, the F stands for FIELD and the number in parentheses represents the field number to be manipulated. After entering this formula and pressing RETURN, you will be returned to the CREATE screen mask.

Formula fields are fields in which you have one, two, or more entries involved in some type of arithmetic calculation. The fields can be added, subtracted, multiplied, divided, or have a variety of mathematical functions performed upon them. As with any computer, the precedence of order is important. Precedence can be likened to determining "who's on first". Precedence is the order in which the mathematical calculations are performed. Following is the order of precedence:

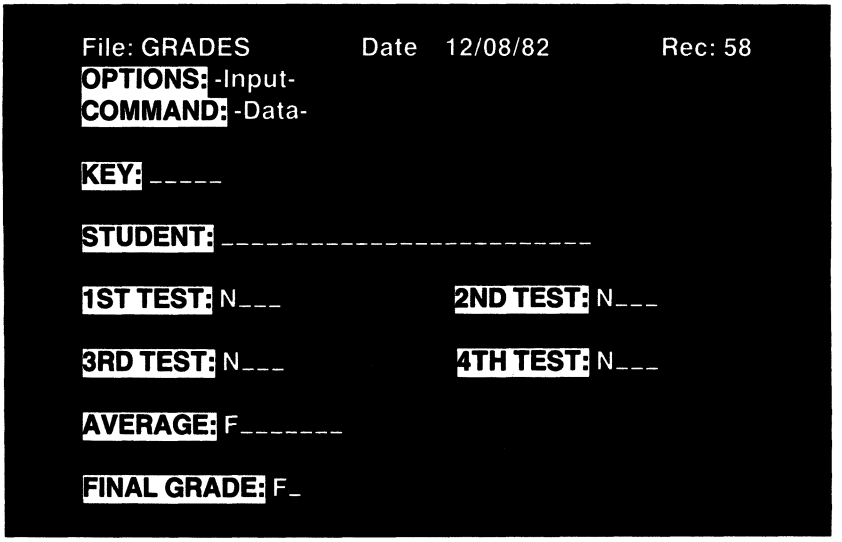
1. ( )	Highest Priority
2. Functions	– (unary) + (unary)
3. ^	powers
4. * /	multiplication, division
5. + –	addition, subtraction
6. < = >	(boolean lowest priority)

The following functions are available. They can be used in either upper or lower case or in a combination of the two.

R(0)	Returns the current record number and must have a dummy argument.
F(n)	Value of field number "n". Field "n" should be a numeric string. Date fields should not be used. "n" can be a mathematical expression.
INT(x)	Returns the integer value of "x" where the integer is the highest integer less than "x".
LN(x)	Returns the log base "e" of "x".
LOG(x)	Returns the log base 10 of "x".
ABS(x)	Returns the absolute value of "x".
EXP(x)	Returns "e" raised to the power of "x".
SQR(x)	Returns the square root of "x".

DATA PERFECT — CREATING A DATA BASE

The ability to create complex formulas is one of Data Perfect's greatest attributes. Let us consider an example of a school teacher who is recording test grades. Using Data Perfect and the powerful boolean (>=<) functions you have the ability to evaluate numbers on a true or false basis and use the result in a formula. Following is one example of how this could be utilized. Essentially booleans can be used in defining conditional statements.



FIELD #:	NAME:	LEN:	FORMAT:	TYPE:
0	KEY:	5		ALPHA
1	STUDENT:	25		ALPHA
2	1ST TEST:	3	XXX	NUMERIC
3	2ND TEST:	3	XXX	NUMERIC
4	3RD TEST:	3	XXX	NUMERIC
5	4TH TEST:	3	XXX	NUMERIC
6	AVERAGE:	7	XXX.XX	FORMULA
7	FINAL GRADE:	1	X	FORMULA

The above example illustrates how a teacher might organize test grades for a given semester. The purpose of this data base is to show how the booleans (<=>) are used in a formula. The formula for the AVERAGE: field looks as follows:

AVERAGE: = (F(2)+F(3)+F(4)+F(5))/(1+(F(3)>0)+(F(4)>0)+(F(5)>0))

1st part	(F(2)+F(3)+F(4)+F(5))
divided by	
2nd part	(1+(F(3)>0)+(F(4)>0)+(F(5)>0))

Overwhelming, not really. Let's evaluate this formula to see exactly what is happening. In the first portion of the formula we see fields 2, 3, 4 and 5 are being added together. These fields represent the test scores. To figure the average, you divide the sum of the test scores by the number of tests taken. Using the booleans as seen in the second part of the formula allows you to set up a counter. When an evaluation of a boolean takes place one of either two things will happen. If the boolean is true, a value of one will be placed in the counter. If the boolean is false, a value of zero will be placed in the counter.

This will become more clear as we analyze the second part of the formula. When creating any formula it is important that the possibility of dividing by zero never occur. It is for this reason a 1 is added to the counter. The 1 will be the divisor if only one test score has been entered into the record. Moving right along, we see the next portion, "(F(3)>0 + ". This is our boolean statement. As mentioned above, a boolean will either be true or false. If the boolean is true a value of 1 will be stored, otherwise a 0 will be stored. If field 3 (2nd test score) has a value greater than zero a 1 will be placed at that location in the formula. Supposing fields 4 and 5 are blank (have a value of zero) the booleans concerning fields 4 and 5 would evaluate to being false and thus a value of zero would be placed at that location in the formula.

To make this point clearer we are going to use some test scores to show exactly what is happening. Suppose Joe Smith received a 90% on his first test and an 80% on his second test. These numbers apply to our AVERAGE formula in the following manner:

AVERAGE: = (F(2) + F(3) + F(4) + F(5))/(1 + (F(3)>0) + (F(4)>0) + (F(5)>0))
90% + 80% + 0% + 0% / 1 + 1 + 0 + 0 = 85%

Since the boolean involving field 3 was true, a value of 1 was inserted at that location in the formula. Since fields 4 and 5 evaluated to false, zeroes were inserted. The important point to remember is if a boolean is used in a formula, it will evaluate to either a zero or a one. These values can be very useful when creating your formulas.

The FINAL GRADE: will appear as a 1, 2, 3 or 4 depending upon the student's AVERAGE. As seen in the FINAL GRADE: formula, a 1 will appear (in the final grade) if field 6 is greater than or equal to 60. A 2 will appear if field 6 is greater than or equal to 70. If field 6 is greater than 80 or 90 a 3 or 4 will appear respectively.

DATA PERFECT — CREATING A DATA BASE

After you have finished creating the data base, save it to disk. You will need two blank disks for this purpose. The disks will be erased and rewritten. It is important no information of value be on the disk. You will be saving the screen format you have just created to each of the disks. One disk will be the source disk and the second disk will be the backup disk.

When you are finished creating a file, press Q for QUIT. This indicates you have completed the create operation.

Pressing Q for Quit will display the editing menu. This gives you one final opportunity to change the screen mask. The COMMAND and OPTIONS line looks as follows:

```
OPTIONS: I, K, R, Begin, Up, Down, Sel, Quit
COMMAND: -Select-
```

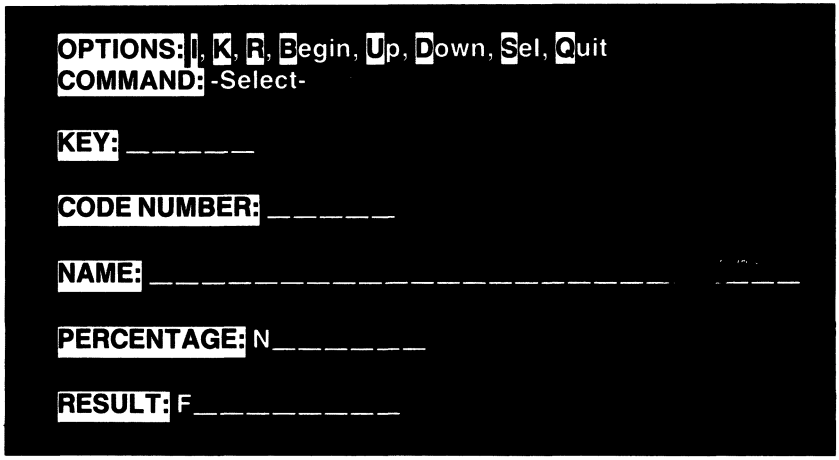
Following is a brief description of what each of these stands for:

- I Insert field before cursor location
- K Kill the field at cursor position
- R Return to ADD mode
- B Move cursor to first field
- U Move cursor up one field
- D Move cursor down one field
- S Select this field for editing
- Q Quit this operation

Note: When you INSERT a field into a data base, the field numbers will be reorganized according to where the new field has been inserted. For example, let's suppose you have a 2 field data base with field 0 being the KEY field and field 1 being the NAME field. If you were to insert a field between the KEY and NAME fields you would position the cursor on the NAME field. Press I to INSERT the field before current cursor location. Let's, for this example, use a field called CODE NUMBER. After you press the I key you will see the screen has switched back to the ADD screen. Position your cursor between the KEY and NAME fields and press RETURN thus SELECTING the new field location. Type in the name CODE NUMBER and press RETURN. Define its length and press RETURN. Your fields will now be organized in the following manner:

Field #0 — KEY
Field #1 — CODE NUMBER
Field #2 — NAME

When you INSERT fields while CREATING or REFORMATTING a data base, the fields are reordered. If you have any formulas already created they will probably need to be changed since the field numbers have changed. You can edit an existing field without DELETING it. In the following example we will show how to edit a field without having to retype everything. Listed below is a "sample" data base:



In the example above we want to change the field name PERCENTAGE so instead, it reads, COMMISSION. This can be done in the following manner:

1. Move the cursor until it is resting on the PERCENTAGE field
2. Press S to SELECT this field for editing
3. Once again press S to SELECT this field's position
4. Type the word COMMISSION over the word PERCENTAGE and press RETURN
5. Press RETURN to accept the field designation
6. You are now back at the edit screen with the same OPTIONS line as shown above

In step number 2 you should notice the OPTIONS and COMMAND lines changed as follows:

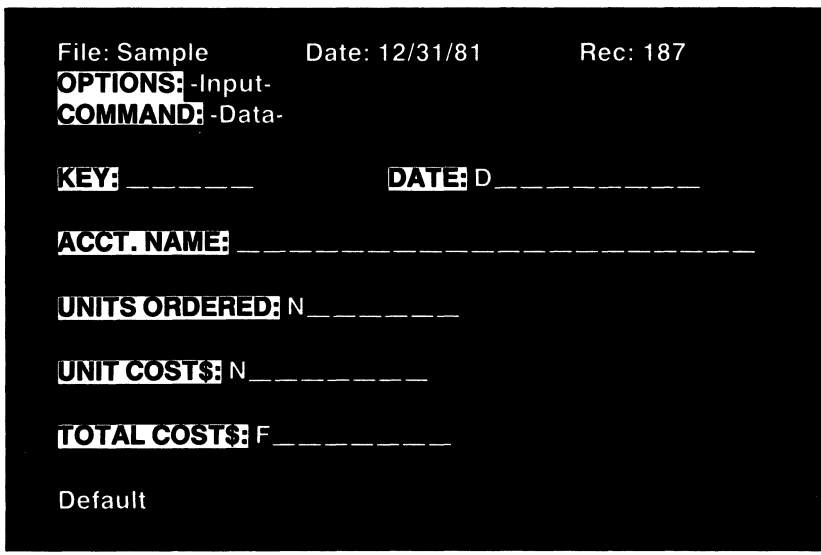
These are the same prompts that appeared in the ADD MODE. The "key" word is in the COMMAND line. You can REPOSITION existing fields without retyping them. Using the example above, we will move the

RESULT field down 4 lines on the screen. Following is a list of steps to follow:

1. Position the cursor on the RESULT field
2. Press S to SELECT this field for editing
3. Press the ↓ key 4 times and then press RETURN
4. Press RETURN since we do not want to change the field name
5. Press RETURN to accept the field designation
6. Press RETURN since we do not wish to change the formula

The screen should now show the RESULT field 4 lines below the COMMISSION field. By following the steps listed above you can move any field on the screen. In steps 4, 5, and 6 you could change the field name, the field designation, or the formula by simply typing in what you desire and pressing RETURN. When the cursor tabs from field to field it moves in order according to field numbers. For example, when the cursor moves down it moves from field 0, to field 1, to field 2, to field 3, and so on. The reverse is true if you are moving upward. Merely moving fields will not reorder the field numbers. For this reason, when inserting fields between two existing fields, you should use the INSERT feature so the cursor will move from field to field in the proper order.

Upon QUITTING the editing operation, you will see the screen mask allowing you to input default values. If you had created a data base as follows it would appear on the screen in the following manner:



The OPTIONS line indicates you can INPUT default values. The cursor is resting on the KEY field. At this point, press RETURN to indicate you do not want to enter any default values. You will have to press RETURN for each of the fields in succession to do this. Default values entered at this point will be displayed in the ADD MODE during FILE MAINTENANCE. In the above example, if the UNIT COST were always the same (i.e., 19.95), you could enter that value as you tab through the default settings. If you press RETURN on each field and enter no default value, there will be no default values entered. The only exception to this is a date field. Date fields are always defaulted to the date you entered when loading the data base.

Move from field to field by pressing RETURN. Notice the cursor moves in the sequential field number order. You have the choice of entering default values or not. Upon tabbing through all of the fields, the following screen mask will appear:

```
File: Sample          Date: 12/31/81          Rec: 187
OPTIONS: Edit, Quit
COMMAND: -Select-

KEY: ______           DATE: D_________

ACCT. NAME: ____________________

UNITS ORDERED: N_______

UNIT COST$: N 19.95_______

TOTAL COST$: F_______

Default
```

This screen mask allows you to either edit the default values you have just entered, or to QUIT the operation. Press E to EDIT or Q to QUIT.

Entering Quit will initiate two different screen displays. If a formula has been used in your data base, a third mask will be displayed which will show the formula. These screen masks review the composition of the data base. This is the same information displayed when LOADING the data base. The first thing shown is the names of the fields, the numbers assigned to each of them, and the length of each field. This will appear as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 88

OPTIONS: RETURN
COMMAND: Press RETURN

#  Name:          Len     #  Name:          Len
0  KEY             5      1  CUST. NAME:    48
2  INV. DATE:      8      3  UNITS SHIPPED:  8
4  UNIT COST$      8      5  TOTAL COST $    9
```

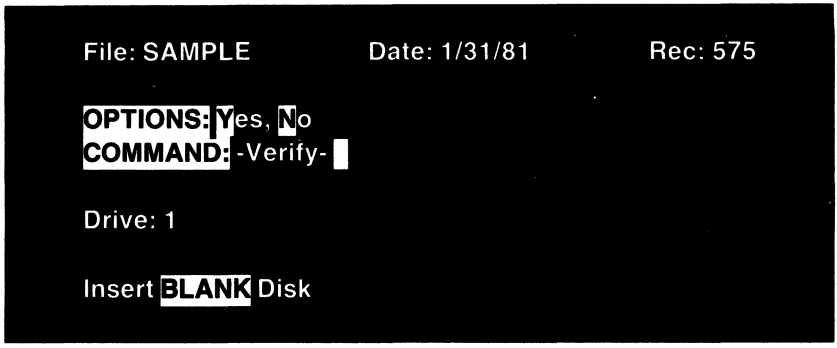
Your only response is to press RETURN. Your screen will change as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 88
OPTIONS: RETURN
COMMAND: Press RETURN

Fields: 6
Record Length: 88
Max # Of Records: 1396
# of Rec: 0
Active #: 0
Created: 12/31/81
Updated: 12/31/81
Formula: 1
```

In this example you have a formula. Pressing the RETURN key will cause the formula to be displayed. If you had more than one formula, each of them would be displayed. The formula will be displayed as entered. In this case the formula is F(3)*F(4).

Press RETURN as instructed, and you will have completed the create operation. If you have two drives, you may place the two *blank* disks in each of the drives. Drive 2 will be the source drive, and drive 1 will be the backup drive. If you have only one disk drive, you will have to follow the directions on the screen mask and place the disk in the drive as prompted.

After pressing RETURN, the following screen mask will be displayed:



If you press Yes the disk in the drive will be erased. The newly created data base will be saved to the disk. If you answer NO, you will be returned to the edit screen described earlier. Pressing BREAK will allow you to change the file name. Pressing BREAK a second time will return you to the Main Menu, and erase the newly created screen mask.

This will give you the opportunity to abort the erasing of a disk having important information on it. Pressing N will abort the operation. Pressing Y will cause the disk to be erased and reformatted with the data base just created. After pressing Y, the disk will spin for a few seconds, and the same prompt asking you to insert a BLANK disk will be displayed. Follow the procedure as prompted on the screen.

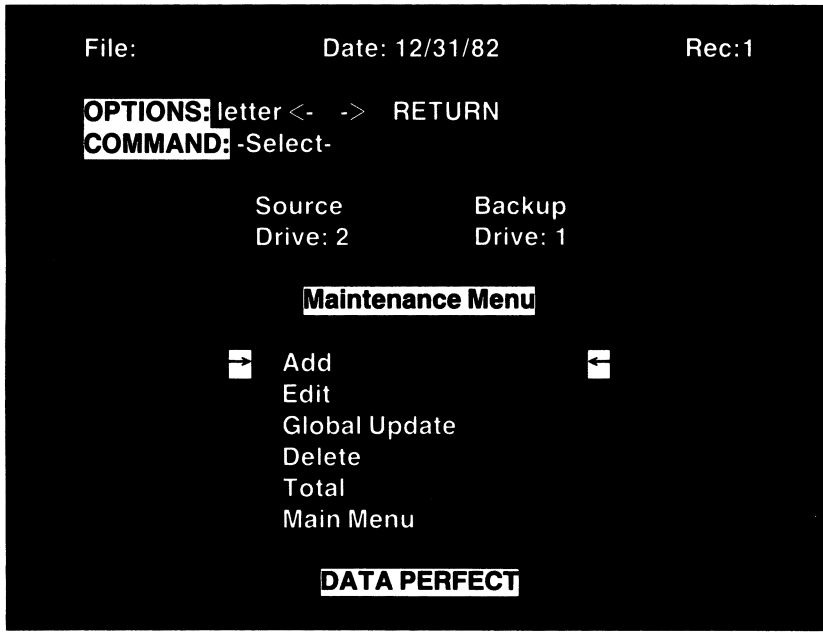
A single drive system will cause the same things to happen as described above. Prompts will indicate when to insert the proper disk. The SAVING of the newly created data base is designed to create a SOURCE and BACKUP disk at the same time.

DATA PERFECT — FILE MAINTENANCE

The FILE MAINTENANCE section in the Data Perfect program is used primarily to add information to the data base, edit existing information, globally update records, delete records, or to total a numeric field on a specified basis.

Move to the FILE MAINTENANCE menu, which is the third selection on the MAIN MENU. If there is no data base in the computer's memory, you will see an error message saying, NO DATA BASE. You will have to load a data base file from disk before you can use this menu selection.

If a data base has been loaded into the program, press the letter F and you will get the FILE MAINTENANCE menu as follows:



ADD—Add is for data entry of new records. The cursor will be on the first field entry, the key field. The options and command lines will appear as follows:

BUILT IN CALCULATOR

When you are entering data into a numeric field you have a built in calculator. For instance, suppose in the previous example you were entering in the data from an invoice. The invoice may list the QUANTITY sold as 256 and a TOTAL PRICE of $12,349.27. If your data base had a UNIT COST: field, as in the example above, you would probably need a calculator to enter the UNIT COST. Instead of using a calculator enter the following into your field:

12,349.27 / 256 RETURN

After you have entered data into the remaining fields (if there are any), the calculation listed above would be performed and the result would be placed in that field. You may use the numeric field as a calculator when entering data. The totals are computed after all data has been entered into the record. The result of the calculation will be placed in the specified numeric field.

Enter data in a field and press RETURN advancing to the next field. After you have entered the information in the last field, the options and command lines will change. All formulas will be calculated. If you have created a file where formulas are used in proceeding formula fields, the formula will be calculated twice to take into account the "nested" formulas. After moving through all the fields your screen will look as follows:

```
OPTIONS: Edit, Save, Next, Begin, Quit, Abort
COMMAND: -Select-
```

The options are explained as follows:

EDIT—Go back and edit this record because there is incorrect information.

After pressing E for EDIT the options and command lines will have the following information in them:

```
OPTIONS: Begin, Up, Down, Sel, Quit
COMMAND: -Select-
```

- B MOVE TO THE BEGINNING FIELD
- U MOVE THE CURSOR UP ONE FIELD POSITION
- D MOVE THE CURSOR DOWN ONE FIELD POSITION
- S SELECT THIS FIELD FOR EDITING
- Q QUIT EDITING AND RETURN TO THE ADD MODE

SAVE—Save this record to the data disk, but do not clear the screen. This is best utilized when you will be adding similar records.

NEXT—Save this record to the data disk and display the next form containing only default values.

BEGIN—This is used after the data has been entered on the screen mask. Pressing B will clear the screen and allow you to start the entry of that record again with no data being saved.

QUIT—Save the newly entered record to your data base and exit to the FILE MAINTENANCE MENU.

ABORT—This will abort the entering of a record and return you to the FILE MAINTENANCE MENU.

EDIT—The edit section in the FILE MAINTENANCE gives you the ability to search and retrieve desired records. The records may be updated and resaved as necessary.

Finding a record is called searching for a record. There are three ways in which to search for a record: 1. Search for the record number. 2. Match an exact part of the record you know exists. 3. Match a partial part of the record you know exists. Let's examine how to do each of these in turn. Listed below are the OPTIONS available after selecting the EDIT selection from the FILE MAINTENANCE MENU.

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

R stands for Record number. This is the number listed at the right of the status line. Pressing R for RECORD NUMBER will cause the following options and command lines to be displayed:

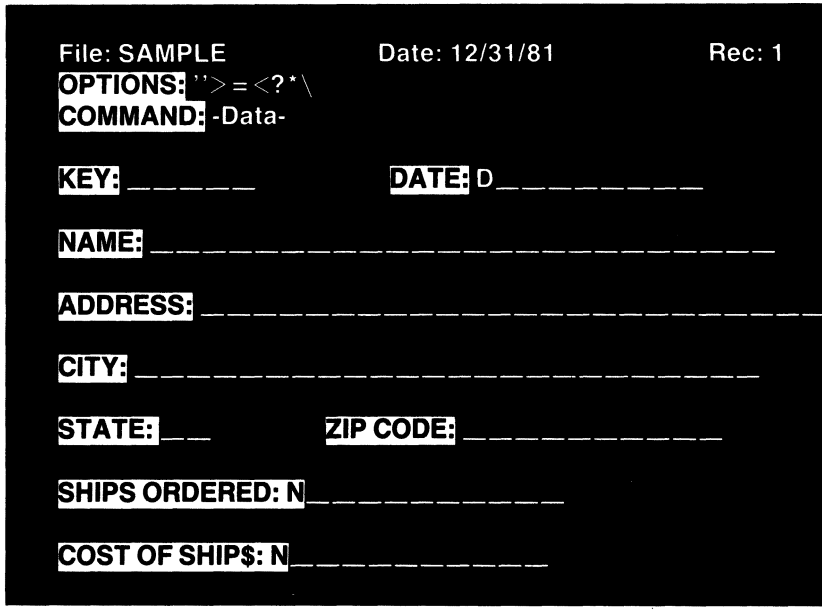
```
OPTIONS: numbers
COMMAND: Min, Max
```

Enter two numbers separated by a comma. The numbers you enter will be the range of records to retrieve. The MIN is the lowest and the MAX being the largest record number. Pressing RETURN will initiate the search. If you enter a MAX number that is larger than the total number of records you will get an "ERROR: Range" message. Press RETURN and reselect your search criteria. Listed on the next page are some examples of how you might search by record number.

5,7	search from records 5 to 7
5,	search from records 5 to end of file
,55	search from record 1 to record 55
5,5	record five only
5	record five only
RETURN	aborts min, max prompt

The other two methods for finding a single record in a file are by matching exactly, or partially, part of the record you know exists. Consider the following example. We are looking for a record in a file that has several hundred entries.

After Selecting a field to search, the screen will look as follows:



The search will allow you to find a record if you know certain things about the information contained in the file. Searches may be divided into several types. The matching type searches will be discussed first.

MATCHING SEARCHES

1.	nothing	implied =
2.	<	data less than criteria
3.	<=	data less than or equal to criteria
4.	=	data is equal to the criteria
5.	>=	data is greater than or equal to the criteria
6.	>	data is greater than the criteria
7.	''	data is included in some form in this field
8.	<>	data is not equal to search criteria

When no search criteria are entered, it is assumed you want an equal to (=) search initiated.

STATE:MD____ ZIP CODE:_____

Move to a state field, press S to select this field for a search. Enter the letters MD for Maryland. Press RETURN to indicate you have completed the field search criteria. Press Q to begin the search. All entries having the initials MD as the state entry will be retrieved.

If the less than symbol (<) is used, the search will find all occurrences matching this criteria. If we wanted to find the accounts available which could produce a ship for less than $6000, we could initiate a search on this basis.

COST OF SHIPS:N <6000_____

Move the cursor to this field, press S to indicate this is the field you want to search. Enter the search criteria. Enter the less than (<) symbol and the amount. Press RETURN after you have entered the search criteria, and Q to start the search. All fields that match will be found.

The less than symbol (<), when combined with the equal to symbol (=), will cause a match to occur only if it meets both criteria. Searching a date field could be done on this basis.

KEY:_____ DATE:D < = 11/31/76

Move the cursor to this field, press S to indicate this is the field you have selected. Enter the search criteria (< =), and the date. Press RETURN after you have entered the criteria and Q to start the search. All dates meeting the criteria will be retrieved.

The equal to (=) search criteria would be the same as explained above. The difference is the equal symbol would be entered. Move the cursor to this field, press S to indicate this is the field you have selected to search and enter the search criteria.

STATE: = MD____ ZIP CODE:_____

Press RETURN after you have entered the criteria, and Q to start the search. The records matching the search criteria, on an equal basis, will be retrieved.

The greater than (>) and equal to (=) searches combined will return all records matching both criteria. In order to find all the manufacturers who could build a ship for $5000 or greater, we would enter the following:

COST OF SHIPS:N > = 5000_____

Press RETURN after you have entered the search criteria, and Q to start the search.

Greater than (>) searches will match all criteria greater than the number entered. If we were to search our records to find all ship builders who had more than 10 ships, we would enter the search criteria as follows:

SHIPS ORDERED: N >10_____

Press RETURN after you have entered the search criteria, and Q to start the search.

The quotation mark (") when entered as part of a search criteria will cause an "include" type search to occur. "Include" searches mean you will find any record having this character somewhere in the field. If you were to do an include search on the NAME: field, it might look as follows:

NAME: "JO_____

Press RETURN after you have entered the search criteria, and Q to start the search. This "include" type search would match all records having the capital letters "O" or "J" in them. It would return James Madison, John Hancock, and Orville Wright in addition to any other records that had a capital "J" or "O" as a part of the field. Include type searches when used on numbers, formulas and dates will act as an equal to search.

MULTIPLE MATCHING CRITERIA—You have the ability to use the above matching type of searches on four fields, at the same time, with a maximum of two different search criteria on a given field. To perform a matching search with two different criteria on the same field, the search criteria must be separated with a backslash (\) character. The backslash character is obtained with the SHIFT \ combination. Consider the following example for multiple searches:

KEY:_____ DATE: D >11/01/76 \ < 11/30/76

The above example shows a date field with two matching criteria being searched for at the same time. All records with dates greater than November 1, 76 (>11/01/76), and less than November 30, 76 (<11/30/76) will be retrieved. The two search criteria are separated by the backslash symbol (\).

PARTIAL FIELD MATCHING—You have the ability to match partial items, which are generally called WILDCARD searches. The wildcard searches are indicated by using asterisks (*), question marks (?), or zeroes (0) while in DATE fields. The asterisk (*) is used to replace a block of characters. The question mark (?) is used to replace a single character. The zero (0) is used to ignore one portion of the DATE. A date search could be entered as mm/dd/00. The search would then ignore the year but find any matches on month and day.

The "*" is used to replace a block of characters. It can be used prior to the search string, after the search string, or in both places. If, for example, we know there is a ship builder whose middle name is Paul and could not remember the entire name, we could search for his record in the following manner:

NAME: *Paul*_____

The program is saying, "Ignore all of the characters before and after the name 'Paul'." Any record that has the name Paul in the name field would be retrieved. John Paul Jones would be retrieved in this illustration. Press RETURN after entering the search criteria, and press Q to initiate the search process.

If you wanted to search for an individual for whom you could remember only the first name, you could use the asterisk (*) wild card search. If you wanted to search for John "something", you would do it in the following manner:

NAME: =John*_____

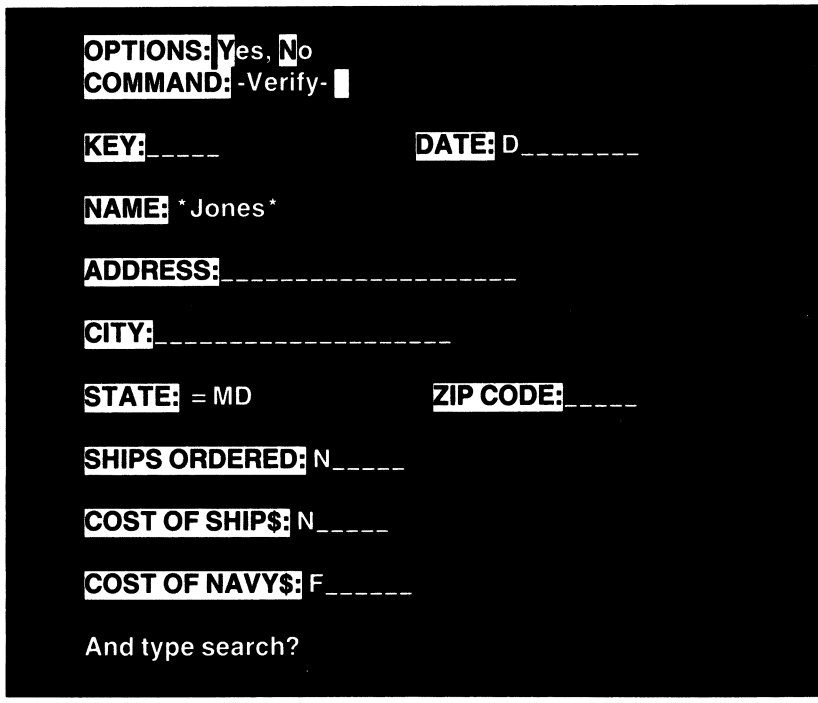
This search criteria says; Find the records having the first name John. This would return: John Paul Jones, John Hancock, John Quincy Adams and Johnny Carson.

SINGLE MATCHES—Single character matches (wild cards on an unknown character basis) are accomplished using the question mark (?). This is best utilized when wanting to search for a record in which you do not know the nature of a single character. Consider the following example:

NAME: *La?ayette*_____

In this example, you could search for the name General LaFayette, but not know if the "F" is a capital or lower case "f". Entering the search criteria as above would allow you to find any record in which the names were spelled in either fashion. The use of the asterisks would allow for the record of General Lafayette Esq. to be retrieved.

AND/OR SEARCHES—Any time you enter more than one search criteria for a particular file, you will have the option of choosing the degree to which you want the search to match. After entering the search criteria, initiate the search by pressing the Q key for QUIT. The screen mask will appear as follows:



Answering this question with a Yes means all the search criteria has to match for the search to be successful. If you answer NO, if any of the search criteria is met, the record will be retrieved.

YES = ALL SEARCH CRITERIA HAVE TO BE MET FOR A SUCCESSFUL MATCH

NO = IF ANY OF THE SEARCH CRITERIA ARE MET YOU HAVE A SUCCESSFUL MATCH

GLOBAL UPDATE—This is the third operation you can perform on the FILE MAINTENANCE menu. This is a very useful tool to update a large series of records with new information and thus saves the user the time of having to enter the data on each individual record. You have the ability to update any type of data with this option. You can globally update numeric fields, dates, string values such as zip codes, or dollar amounts for a price change. Press the G key to initiate this operation in the Maintenance Menu.

```
File: SAMPLE        Date: 12/31/81        Rec: 0

OPTIONS: Begin, Up, Down, Sel, Quit
COMMAND: Formula:

KEY:_____                    DATE: D________

NAME: *Jones*

ADDRESS:____________________

CITY:____________________

STATE: = MD                  ZIP CODE:_____

SHIPS ORDERED: N_____

COST OF SHIP$: N_____

COST OF NAVY$: F______
```

Use the U, B, and D keys to move to the field you want to globally update. When the cursor is on the field you want to update, press the S key for Select and one of three things will happen. If you are on a number field the screen mask will change and ask you for a FORMULA. Date and string fields will ask you for DATA. The formula, when asked in regards to a number field, is the formula to apply in updating fields. If the field were a price that was being increased $4.22 and you were on field 3 you would enter the formula as follows: F(3) + 4.22 RETURN. If it were a date field it would ask for DATA and you would enter the date in the format: dd/mm/yy. For this example, let us assume that Uncle Sam has decided that the cost of a ship is going to go up because of inflation. To update all the records of ship builders, move the cursor to the item you wanted to update, in this example the COST OF SHIPS$: field. Using the directional keys (U, D, and B or arrows), place the cursor on this field and press the S key for SELECT. After pressing the S key, the options and command lines will change as follows:

```
OPTIONS: -Input-
COMMAND: -Formula-
```

Following these directions, you would input the new data to replace the old. Let us assume Uncle Sam wants to increase the cost of ships to $7478.19. Enter the formula F(8) + 2478.19 (this example assumes the value of the old cost of ships was $5000.00) and press RETURN. Upon pressing RETURN you would get the following options and command messages:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

Use the same search functions explained in the preceding section of this manual. Use the same matching, partial matching, wildcard, or record number search criteria. Failure to enter any criteria, and pressing Q for Quit, will cause all records to be updated. For this example, let us match the key fields having the character "S" in them. Move to the key field, press S for select, and enter the search criteria as illustrated:

```
OPTIONS: '' > = <? * \
COMMAND: -Data-
KEY: = S
```

This search criteria would find all records having the letter "S" (for Shipbuilders) in the key field. It would globally update them with the new cost. You can search on 4 fields (with 2 different criteria per field) in addition to the record number, for a total of 9 different search criteria. After entering all the search criteria, you would press Q for QUIT, and the options and command lines will change as follows:

```
OPTIONS: Yes, No
COMMAND: -Verify-

KEY: = S                        DATE: D

NAME:

ADDRESS:

CITY:

STATE:                          ZIP CODE:

SHIPS ORDERED: N

COST OF SHIPS: N 7478.19

COST OF NAVYS: F

        -Verify-
```

You have the option to view each record that matches the search criteria and selectively update it. If you want all records to be updated, without viewing each record individually, press N for NO when asked the verify question.

Press Y to indicate you want to verify each record separately. When you press Y the search will begin. When the first record is found which matches the search criteria, the record will be displayed on the screen with the following options and commands available:

```
OPTIONS: Yes, No
COMMAND: -Verify-
```

Pressing the N key will cause the record not to be updated. The program will continue to look for additional matches. Pressing the Y key will cause the record to be updated, in the way you had indicated, and continue to look for additional matches. After going through the entire data base file and updating the records, the following message appears on the video screen:

```
OPTIONS: RETURN
COMMAND: Press RETURN

  # of Records: 11
```

This message indicates the number of records updated and asks you to press RETURN. When you press RETURN, you will be returned to the FILE MAINTENANCE MENU.

If you had indicated you did not want to -VERIFY- each record on an individual basis, you would have answered the verify command with the letter N. All the records which matched the search criteria would be updated with the new information. When the update was completed, the above screen would be displayed.

FORM LETTERS—The GLOBAL UPDATES can be useful when used with LETTER PERFECT word processing in order to generate form letters. LETTER PERFECT is capable of merging with DATA PERFECT data files, and incorporating the data into form letters. You address a DATA PERFECT data file from the DATA BASE MERGE option in LETTER PERFECT. When doing this, you will be asked to search the data file on the basis of the key field. The searches are MATCHING type searches. If you had globally updated the KEY field with the letter "S" it would indicate

you wanted to send a letter to all of these records. In LETTER PERFECT, you would enter the letter "S" when asked for the search criteria during the data base merge. The program would load each record and print the data indicated in your letter. If you entered no search criteria and instead pressed RETURN, all records would be considered a match.

After you had finished the form letter, you could go back and remove the "A" from the KEY field using the same GLOBAL UPDATE procedure. Move the cursor to the KEY field, press the S key, indicating you want to update the KEY field. Enter a blank space (press the space bar once) for the records you want updated. This would search the KEY field on the " = A" basis. Press RETURN to indicate you are finished entering the search criteria, and finally, press Q to start the global update procedure. You would be asked if you wanted to verify each record, Yes, or just have the update occur without your examining each record, No. The number of records updated would be displayed at the end of the global update process. Pressing RETURN will return you to the FILE MAINTENANCE MENU. Following this procedure, you will have globally updated the records having an "A" in the key field and replaced that character with a blank space in its place.

DELETE—is the fourth entry on the FILE MAINTENANCE MENU. This menu selection lets you delete records in the same manner you globally updated records. The exception is, instead of updating them, you are making a decision to globally or selectively delete the records from the data base.

Press the letter D to select the DELETE operation. You can move from field to field with the standard cursor movement options (U, D, B or arrows). Press S to indicate the field you want to search upon and delete those records. Pressing S while on the state field, and entering = CA, will cause all the records matching "CA" to be deleted. Press Q to initiate the delete process (you can search on the same 9 different criteria), and you will be prompted with the same Yes, No options to -VERIFY- each record. The number of records deleted will be displayed at the end of the DELETE operation. Pressing RETURN will take you back to the FILE MAINTENANCE MENU.

TOTAL—The TOTAL column on the FILE MAINTENANCE MENU is a very useful tool. This option allows you to get the total value of any numeric field using specific search commands.

After pressing T for TOTAL the following will appear on your screen:

```
File: SAMPLE          Date: 12/31/81          Rec: 1

OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: Formula:

KEY:                          DATE:

NAME:

ADDRESS:

CITY:                         STATE:    ZIP:

PREVIOUS BALANCE: N

        PURCHASES: N

     NEW BALANCE: F
```

Use the B, U, and D keys to move the cursor to the numeric field you want totaled. Totals work only on numeric fields and formula fields. Data fields would return meaningless information. Attempting to select other than a numeric field will return an INVALID ENTRY error message.

If you have a file that keeps track of invoice records, such as the one illustrated above, move the cursor down to the NEW BALANCE: field. With the cursor resting on this field, press S for SELECT to indicate this is the field you would like to total. After indicating your selection, the options and command lines will change to look as follows:

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

Having selected the field you want totaled, indicate the criteria for the search. After Selecting the desired field to search upon, the options and command lines will change as follows:

```
OPTIONS: ''> = <? * \
COMMAND: -Data-
```

These are the same search options explained earlier. In this example, let us search the record by the DATE field. Move to the DATE field with the cursor movement keys and press S to indicate we want to search on the DATE field. We could search for a particular week: >12/01/81\<12/09/81. This would search for all records from December 2 through December 8, 1981. The backslash key has been used to indicate you are searching on two criteria. You could search for all dates in December with the criteria: 12/00/00. This criteria would search for all records in the month of December regardless of year. Pressing RETURN will yield the same search menu.

```
OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-
```

You could search on multiple criteria (the record number, four fields, and two search criteria on each field). You can start the TOTAL procedure by pressing Quit.

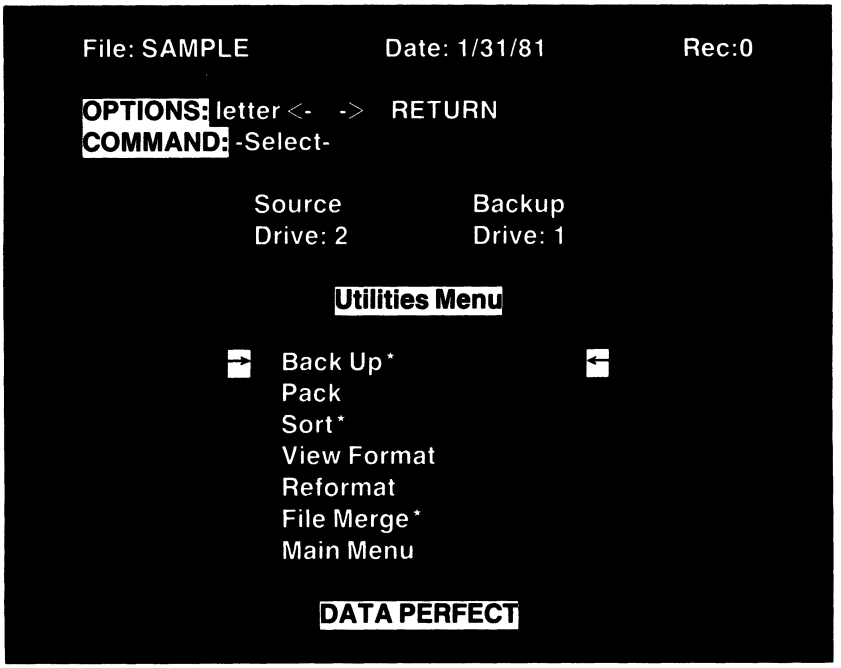
The time it takes to total the records will depend upon the number of records being examined. To examine all records on a disk will take a few seconds. When all the fields have been totaled, the screen mask will change as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 237
OPTIONS: RETURN
COMMAND: Press RETURN

                  # of Records: 17
                      Total: 161.31
                     Average:  9.49
```

When you are finished examining the screen display, press RETURN. You will be returned to the FILE MAINTENANCE MENU. You may use the same procedure to total any numeric field in the same manner. If no records are found which meet the search criteria, no average will be displayed along with a TOTAL of 0.

DATA PERFECT — UTILITIES

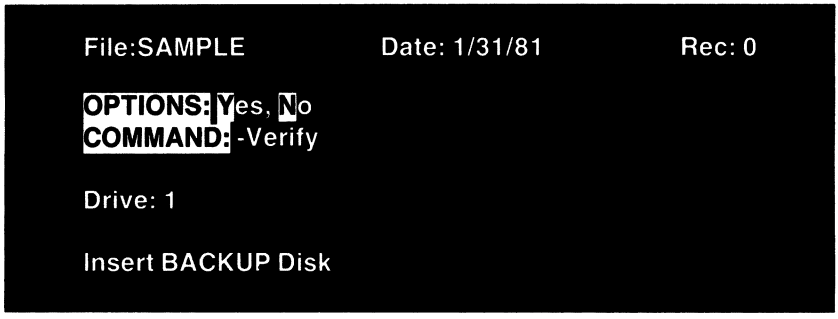
The UTILITIES selection on the MAIN MENU allows you to perform a series of very useful and necessary housekeeping operations. If you are on the main menu and press the letter **U**, the Utilities Menu should appear as follows:



The Utilities Menu gives you greater flexibility with DATA PERFECT. After three of the options, Back Up, Sort and File Merge, there are asterisks. The asterisk indicates this is a two disk drive function. If you have one disk drive it requires swapping of disks. Remember, when using two disk drives, drive 2 is the source drive and drive 1 is the backup drive. You would always want to place your original data base in drive 2 and your backup copy in drive 1. The status line will show the name of the data base, the date entered when you loaded the program, and the current record number. To select the desired menu option, press the first letter of the selection you want (e.g., press **M** to return to the MAIN MENU).

BACK UP*—The BACK UP option allows the user to make a BACK UP copy of the data base. It is a good idea to back up a data disk anytime a significant number of records have been added or edited. The back up will copy the entire disk including deleted records. The BACKING UP of a disk will copy any REPORTS saved on the data disk. The back up operation wil not copy the file's structure but only the data within the structure. For this reason, the BACKUP disk must be formatted prior to using the

BACK UP option. Use the REFORMAT option to format new data disks if necessary. When you CREATE A NEW DATA BASE, the SOURCE and BACKUP disks are automatically formatted. It is expected the user will create the master and the backup disk when creating a data base. The user should never break (press BREAK) in the middle of a backup. The backup copy may not be valid in terms of the data present, or the number of records present. The asterisk indicates the operation is a two drive operation. Remember drive 2 is where you want to keep the original, and drive 1 is where you want to keep the backup disk. Pressing RETURN, with the arrows pointing towards this menu selection, will cause the following screen to appear:



The options line tells you how to do something, and the command line tells you what it is you are doing. You have the option of entering a Yes or a No to indicate your intentions. If you have made an error and do not wish to backup the data disk, press No. If it is your intention to backup the data base, insert the backup disk in drive 1, and the original source disk in drive 2, and press RETURN. The disk will spin, alternating from reading drive 2 to writing drive 1. When the backup procedure is finished, you will be returned to the UTILITIES MENU. If you have a one drive system, the screen will instruct the user to INSERT SOURCE DISK and press RETURN. The disk drive will read information, stop spinning, and print the message INSERT BACKUP DISK. This alternating of reading and writing will continue until the data disk has been backed-up. NOTE: IT IS A GOOD IDEA TO WRITE PROTECT THE SOURCE DISK PRIOR TO PERFORMING A BACKUP. THIS IS ESPECIALLY THE CASE WHEN USING ONLY ONE DISK DRIVE. THIS COULD PREVENT YOU FROM ACCIDENTALLY INSERTING THE WRONG DISK AND ERASING DATA.

PACK A DATA BASE—The PACK allows for removal of deleted records. Deleted records are not removed from the disk. They are not addressable from the program, but are on the storage disk. If a large number of deleted records are there, they will occupy space on the disk. If the

records are not important, in terms of values are stored, you may delete them. The deleted records are removed with the PACK option on the UTILITIES MENU. The deleted records are removed by pushing down all succeeding records on the disk. This will change the record numbers, but will not change the way records are stacked. There are times when you may not wish to remove deleted records. This would occur, most likely, where the record number was a part of a formula (e.g., a check register). You should never break (press BREAK) during a Pack operation because it may duplicate records. The following is a screen representation of what happens upon initiating a PACK operation:

```
File: SAMPLE          Date: 1/31/81          Rec: 586

Working . . .
```

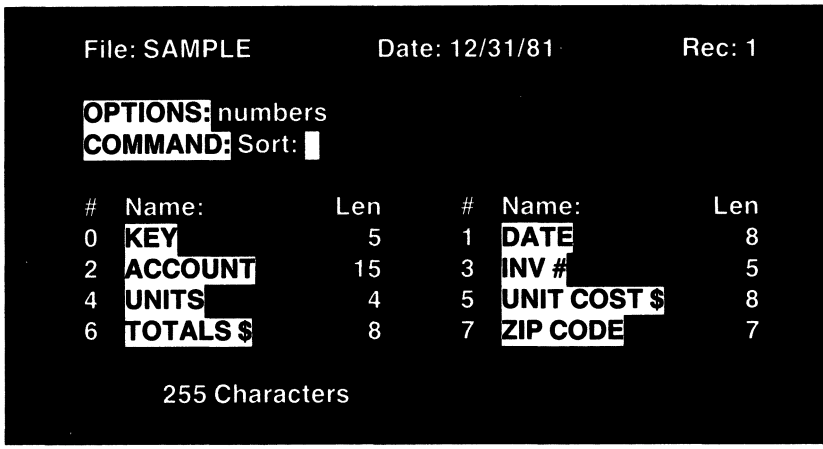
Upon pressing RETURN, the UTILITIES MENU will be replaced with the WORKING . . . message on the screen, and the disk will spin. Depending upon the length of the file and the number of records in the file, this procedure could take from a few seconds to two minutes. Long files, with a great number of records to be removed, could take up to several minutes. You have nothing further to do and should wait until the operation is completed. When the operation is completed, the following screen mask will appear:

```
File: SAMPLE          Date: 1/31/81          Rec: 545

OPTIONS: RETURN
COMMAND: Press RETURN

  # of Records: 11
```

This screen mask shows the operation has been completed. It shows 11 records have been removed. The total number of records in the status line has been reduced by that amount. Upon pressing RETURN, you will be moved back to the UTILITIES MENU.

Sorting is the rearrangement of records. Alphabetizing is the most common method of sorting records. In a file, you might want to sort the records so the last names of a customer file are in alphabetic order. You may also want to sort on the basis of invoice numbers, zip code, or any field which would make your records more meaningful.

SORT* —This is the third option on the UTILITIES MENU. Initiate the Sort and the following information will appear on the screen:



The options line indicates you are to enter numbers. The numbers you enter are for the field you want to sort and the depth you want the sort to take place. The field number, name, and length are displayed to help in making the correct choices. The bottom-most line, "255 CHARACTERS", says you are limited to 255 characters when sorting. You can sort a maximum of 255 characters, on a single record, at a given time. The number "255" listed above may be smaller depending upon the size of your data base. See Appendix for additional information regarding sorts.

String fields, such as field 2 above, always count as the entire length of the string (e.g., 15 characters for ACCOUNT), unless you indicate otherwise. To sort the ACCOUNT field alphabetically, you would enter the number 2 and press RETURN. If you want to sort only the first four characters of the field you may do so by entering the field #, a period, and the field length designation (e.g., "2.4"). This would indicate to sort field 2 on the basis of the first 4 characters. Later, you will be asked if you want this in ascending or descending order (i.e., a to z, or z to a).

SORTING ON MULTIPLE CRITERIA—To initiate a sort on multiple fields, enter the fields in the order you want them sorted. The fields are to be separated by a comma, " , ", to indicate you want a multiple sort on those two fields. If you wanted to sort on the basis of the date and invoice number, you would enter the field number for the date, a comma, and the field number for the invoices, to indicate you wanted the invoices arranged in numerical order after sorting the date. This would appear as follows:

```
OPTIONS: numbers
COMMAND: Sort: 1, 3
```

To sort the same record by date and then the account name, with a limit of 5 characters in depth, you would enter the line as such:

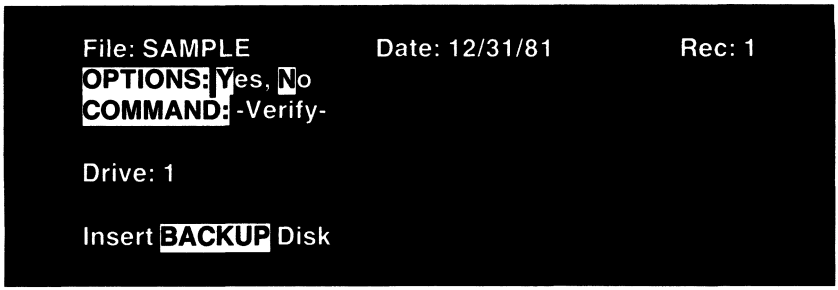
```
OPTIONS: numbers
COMMAND: Sort: 1,2.5
```

The above sort criteria indicates you want field 1 sorted first. After sorting the dates, it should sort the account alphabetically on the basis of the first five characters. Any time you are sorting a long field, you may want to limit the number of characters. Going beyond four or five characters in depth may cost a great deal of time and change the alphabetic sort little.

After you have entered the NUMBERS, or the sort criteria, you should press RETURN. When you do this, the options and command lines will change. The question ASCENDING? will appear on the bottom of the screen. Following is an example:

```
File: SAMPLE          Date: 12/31/81          Rec: 1

OPTIONS: Yes, No
COMMAND: -Verify-

#  Name:          Len    #  Name:          Len
0  KEY              5    1  DATE             8
2  ACCOUNT         15    3  INV #            5
4  UNITS            4    5  UNIT COST $      8
6  TOTALS $         8    7  ZIP CODE         7

        255 Characters

        Ascending?
```

Answer YES or NO for how you want the sort to occur (i.e., "yes" for ascending; "no" for descending). Pressing the Y key will cause the sort to be from the smallest to largest numerically or from "a" to "z" alphabetically. Pressing N for NO will cause the reverse to occur. After indicating the ascending/descending nature you desire, the screen will change as follows:



If you have a two drive system, your screen will appear like the one above. The backup disk should go into drive 1 and the source disk should go into drive 2. If you have a 1 drive system you will be instructed to place the backup in drive 1 and press RETURN. Pressing RETURN with two drives will initiate the sorting procedure, and the words "WORKING . . ." will appear on the video screen. With two drives, you have nothing further to do but wait until the sorting is done. With one drive, you will have to swap between the source and the backup as instructed at the bottom of the screen. The same results will occur regardless of a one or two drive system. If you have one drive be careful in following directions. Placing the wrong disk in the drive will cause your data to become scrambled. YOU SHOULD ALWAYS ALLOW A SORT TO CONTINUE UNTIL IT IS COMPLETED. THE ABORTING OF A SORT AFTER IT HAS BEEN INITIATED COULD CAUSE INCORRECT DATA TO BE TRANSFERRED OR FOR DATA TO BE LOST COMPLETELY. The write protect tab *MUST* be removed from both disks before attempting a sort. The sorted information will be found *ONLY* on the backup disk. After doing a sort, the program will look at drive 1 for the sorted information. The source drive is therefore drive 1. It was drive 2. This temporary switching of source and backup is desirable so you will be looking at the sorted data. You can backup the "backup" if you want both disks sorted in the same order.

VIEW FORMAT—allows the user to either view on the screen, or obtain a printout of the data base structure. This is particularly helpful for the person who wants to confirm that the file in memory is indeed the file desired, without repeating the loading procedure. The view format option shows/prints two or three screen masks depending on how you answer the question. Upon initiating the view format operation, the following screen mask appears:

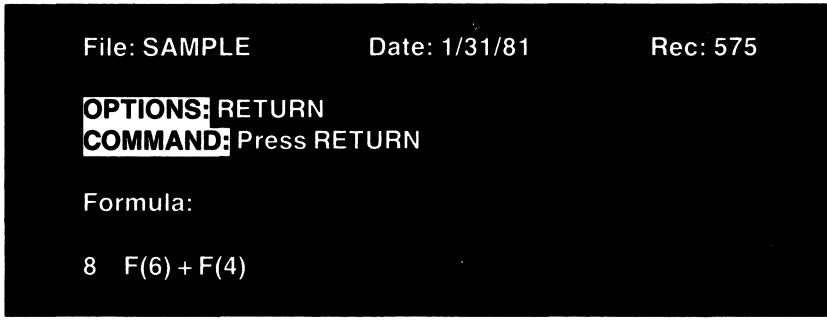
The user selects how he wants information to be displayed. Pressing P for print will provide a printout of the data base structure, while pressing S for screen will display the data base structure on the screen. If a person were about to prepare a form letter with the data base displayed above, you would want a printout for reference during the preparation of a form letter. If you want to confirm the validity of the data base in memory, or the particular structure for a formula, you might choose the screen option. After pressing either P or S, you will get output depending upon your selection. Your output might appear as follows:

```
File: SAMPLE          Date: 1/31/81          Rec: 545

OPTIONS: RETURN
COMMAND: Press RETURN

#  Name:          Len    #  Name:          Len
0  KEY              5    1  FIRST NAME:      8
2  LAST NAME:      14    3  ADDRESS:        12
4  CITY:           13    5  STATE:           2
6  ZIP CODE:        5    7  BALANCE:         8
8  PURCHASES:       6    9  NEW BALANCE:     9
```

This is an outline of the data base listing the names of the fields, and their corresponding field lengths. Upon pressing RETURN, the following information will appear:

```
File: SAMPLE          Date: 1/31/81          Rec: 545
OPTIONS: RETURN
COMMAND: Press RETURN

Fields: 9
Record Length: 169
Max # Of Records: 649
# of Rec: 620
Active #: 605
Created: 1/11/81
Updated: 1/31/81
Formula: 1
```

This screen display indicates the size of the data base and the date it was created and last updated. By comparing the MAX # OF RECORDS and the ACTIVE # of records in your file, you can see how much room you have left before you fill the disk. The RECORD LENGTH tells you how long the entire 9 field record is. The longer the record length, the fewer number of records that can be saved on a disk. Your only option is to press RETURN. If your data base contains formulas, they will be displayed as follows:



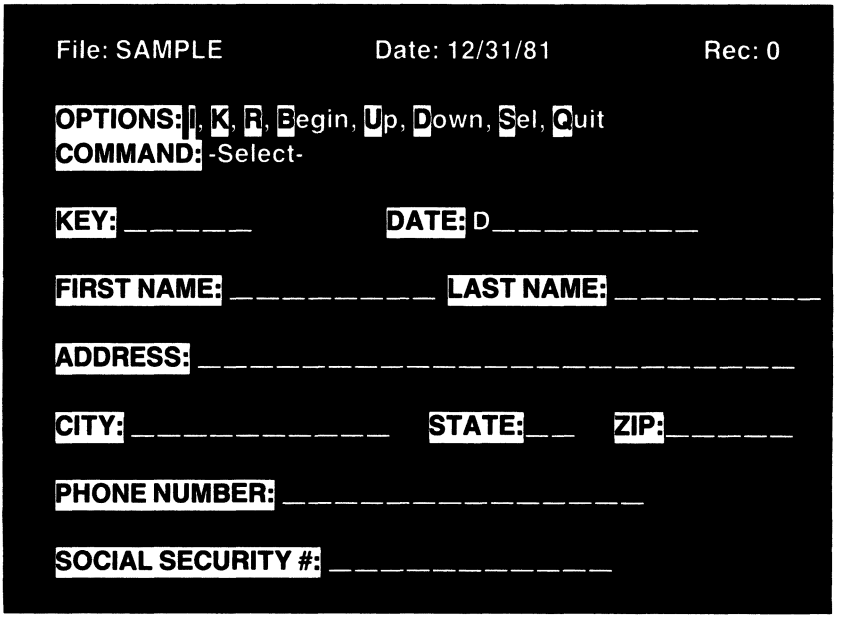
The preceding screen shows field 8 is a formula: F(6) + F(4). This means field 8 will show the total of field 4 added to field 6. All formula fields will be displayed in this fashion. Upon pressing RETURN, you will be returned to the UTILITIES MENU.

REFORMAT—The REFORMAT utility allows you to create a data base in a very easy and quick fashion. It allows you to make blank copies of existing data bases. It allows you to create new data bases similar to old data bases by just changing a few field names, field lengths, or formulas. Essentially, reformat is a procedure where you make a copy of the data entry screen (without the data in it) and selectively save it to a disk.

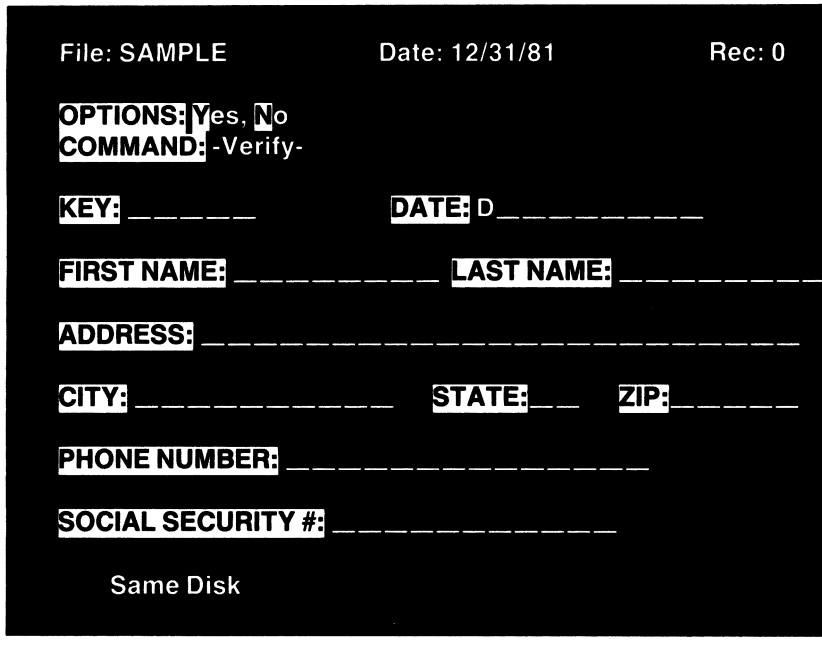
The REFORMAT utility can be used to add or delete fields within an existing data base. If you have a data base with fields which are unnecessary, you may delete them and thus create more space on the data disk. If you have a data base and want to create a new field, you may do so with this operation. It is not uncommon weeks or months after you have created a data base, to find you need an additional field or fields. You may use the reformat function and merge the old data into the new data base format using the FILE MERGE operation in the UTILITIES section.

DATA PERFECT — UTILITIES

The reformat operation is performed from the UTILITIES MENU. First load into memory the data base you want to reformat. After loading the data base, move to the UTILITIES MENU. With the arrows resting on the reformat selection, press RETURN. After pressing RETURN, the file name will be displayed at the top of the screen. If you choose the reformat operation accidentally, press BREAK to abort the operation. Otherwise, you may change the file name (or not) and press RETURN to proceed to the next screen mask. IF YOU PROCEED TO THE NEXT SCREEN MASK, THE DATA BASE IN MEMORY WILL BE ERASED, AND MUST BE RELOADED IN ORDER TO USE THE PROGRAM. The screen might look as follows:



This screen mask is what you see initially. What happens next depends upon what type of reformatting you do. Depending upon your response to the options line above, one of two things will happen. Pressing Q for QUIT will yield the following prompt:



The prompt "SAME DISK" is asking if you want this data base structure to be copied to your original SOURCE and BACK UP disks. This is a powerful tool if you only want to change default values. Answering the question with a YES instructs the program to copy the new data base including default values to the original SOURCE and BACK UP disks, without changing the data on the disk. If you answer with a NO you are indicating to the program that you want the data base structure copied to a BLANK disk. The latter is most often used when you want to create more than 1 BACK UP of a data disk. After the data base structure is copied to a new disk you could then use the BACK UP option and transfer your data to the new BACK UP.

The SAME DISK prompt is a conditional prompt. It will only appear if you do not change the structure of the data base. If you do not see this prompt you will have to copy your data base onto a blank disk. If you create a new data base and want the information from the old data base copied into the new data base, you will have to do a FILE MERGE. The SAME DISK prompt will *not* appear if you do any of the following when REFORMATTING a data base:

1. Insert a field
2. Delete a field
3. Change field lengths

Let us assume you want to create a field called BIRTHDAY: after the phone number field, and at the same time wanted to delete the SOCIAL SECURITY # field. The options/command tells what you may do. The options and their meanings are listed as follows:

I	Insert a field before cursor position.
K	"Kill" the field at cursor position.
R	Return to ADD mode.
Begin	Move cursor to first field.
Up	Move cursor up one field.
Down	Move cursor down one field.
Sel	Select this field for editing.
Quit	Quit this operation.

The cursor will be resting on the first field. Pressing D will tab down to the next field, and repeated D's will move down one field for each keystroke. If you pass the field you wanted, you could tab UP a field(s) with the U for UP tab command. When the cursor is resting on the SOCIAL SECURITY # field, press K for KILL and the screen will change as follows:

```
File: SAMPLE          Date: 1/31/81          Rec: 0

OPTIONS: Yes, No
COMMAND: -Verify-


          Delete
```

This is a verify message checking to see if you really want to delete this field. If you have pressed the wrong key, you may just press N for NO and abort the operation. If you want to KILL this field, press Y for YES and the field will be deleted. You will be back at the edit screen. By pressing the R, you return to the ADD MODE where you will find the following screen mask. This is the same screen mask you find when you are creating a new data base on the main menu:

```
File: SAMPLE          Date: 12/31/82          Rec:0
OPTIONS: ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-

KEY: _____          DATE: D_________

FIRST NAME: _________ LAST NAME: _________

ADDRESS: ____________________________

CITY: ___________ STATE:__ ZIP:_____

PHONE NUMBER: ______________
```

Use the ↑↓←→ keys to move the cursor to the position you want to locate a new field. Pressing RETURN will indicate a new field position. The screen will go blank, and the cursor will remain where it was. The following message will appear on the options and command lines:

```
File: SAMPLE          Date: 1/31/81          Rec: 0
OPTIONS: -Input-
COMMAND: Name:
```

Input the name of the field you want to create at this location. The field we are using, in this example, is BIRTHDAY. Type in this name and press RETURN. The message now changes and the options and command lines now appear as follows:

```
File: SAMPLE          Date: 1/31/81          Rec: 0
OPTIONS: Date, Number, Formula, numbers
COMMAND: Length:
```

You can, at this time, do the same things you did during the CREATE A NEW DATA BASE operation. Entering a D for DATE and pressing RETURN will make the field a DATE field reserving 8 characters. The DATE format will be: mm/dd/yy. The "m" being for month, the "d" for day, and the "y" for year. If the new field were anything other than a date field, you would have to provide the same information as done in the CREATE A NEW DATA BASE operation. For a more complete description see the CREATE A NEW DATA BASE section of this manual. All options work the exact same way.

DATA PERFECT — UTILITIES

FILE MERGE*—This is the sixth selection on the UTILITIES MENU. As you can see, an asterisk appears after this option indicating it is best performed with two drives or requires the swapping of either the "old" or "new" disk as prompted. The merge option allows you to merge data from one data base into another data base. This is handy when you want to create a new data base and take much of the data from an old data base and place it into the new one. This allows for reentry of data without tedious retyping. If you had created a new field(s) on a new data base, you could move all the previously added data from the old data base to the new data base without having to reenter everything. The ability to MERGE can save you many hours of work. You can also merge files from other data base programs, as long as they are standard text files.

Steps to follow before attempting a MERGE:

1. Use VIEW FORMAT to obtain a printout of both the old and new data bases
2. Load new data base into memory
3. Go to UTILITIES MENU
4. Select FILE MERGE

After selecting the FILE MERGE option you will see the following options and command lines:

Below the options and command lines you will see the screen representation of your new data base. You have the same SEARCH capabilities available to you as described in the FILE MAINTENANCE portion of this manual. As you can see, the selective MERGE applies to data being merged into the new data base. For example, if you wanted to do a selective MERGE based on the KEY field you would press the S key while the cursor is resting on the KEY field. Type in your search criteria and press RETURN. Pressing Q for QUIT will initiate the search. Any records from the old data base meeting the search criteria will be merged into the new data base.

THE EXCEPTION FOR SEARCHES:

If you choose R for RECORD # you will see the prompt "MIN, MAX:" in the OPTIONS line. When doing a MERGE, only the "Min" number is recognized. If, for example, you want to merge 50 records to the end of the data base, enter 50 , RETURN. You cannot, however, merge records 50 through 75 of a 150 record data base.

After pressing Q to QUIT the SEARCH BY: screen, your screen will change as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 0
OPTIONS: numbers
COMMAND: Order:

#  Name:          Len    #  Name:          Len
0  KEY              5    1  ACCOUNT         15
2  INV. DATE        8    3  INV. #           5
4  CAT. #           5    5  QTY              6
6  UNIT COST        9    7  TOTAL $         10
8  SALESMAN        12
```

OLD DATA BASE

This will be a display of the new data base from which you want the old data merged into. This data base will have been loaded under the typical load operation as explained in Loading A Data Base. The data base you are merging to should always be loaded first. You should prepare a printout of the structure of the old data base using the VIEW FORMAT option on the UTILITIES MENU. For this example, let us assume you have the printout in front of you and it looks as follows:

```
File: SAMPLE          Date: 06/04/81          Rec: 991
#  Name:          Len    #  Name:          Len
0  KEY              5    1  ACCOUNT         15
2  INV. DATE        8    3  INV. #           5
4  QTY              6    5  UNIT COST        9
6  TOTAL $         10
```

NEW DATA BASE

As you can see below there are two less fields in the new data base, CAT # and SALESMAN. Enter the number of the old data base which you want merged into the new data base. To understand this, consider the following example.

OLD DATA BASE	NEW DATA BASE
0 KEY	0 KEY
1 ACCOUNT	1 ACCOUNT
2 INV. DATE	2 INV. DATE
3 INV. #	3 INV. #
4 CAT. #	
5 QTY	4 QTY
6 UNIT COST	5 UNIT COST
7 TOTAL $	6 TOTAL $
8 SALESMAN	

NEW	0	1	2	3	99	4	5	6	99
OLD	0	1	2	3	4	5	6	7	8

This is the order you would enter information after the ORDER prompt. That order is: 0,1,2,3,99,4,5,6,99. As you can see, you have entered the old fields in the order you want the fields merged into the new data base. The number "99" is used to indicate an old field should not be merged into the new data base. You know the order of the data base in memory because it is displayed. You enter the fields you want to merge from the old data base in the order you want them merged into the new data base, separating the field numbers with a comma. Your entry would look as follows:

```
File: Sample          Date: 12/31/81          Rec: 0
OPTIONS: numbers
COMMAND: Order: 0,1,2,3,99,4,5,6,99
```

Pressing RETURN after entering the numbers will change the screen and ask you a question. The question "Atari Dos?" is asking if your old file is in Atari Dos or LJK's. If your old file was created on Data Perfect, press No. You will see the prompt "Insert OLD Disk." This is the OLD DATA BASE FILE YOU WANT TO MERGE. Upon doing this, press YES to the VERIFY prompt and there will be a catalog of the OLD DATA BASE FILE. You will see the prompt NAME: Enter the name of the file you want to merge from. If the name of the file was "OLD", you would type "OLD.DB" and press RETURN. The extension ".DB" must be typed if the old file was created using Data Perfect. At this point the program differs according to the number of drives you have. If you have two drives, the program starts merging the data from the "old data base" in drive 1 to the "new data file" in drive 2. If you have only one drive, the program instructs you to INSERT NEW DISK. You will be required to swap the diskettes between the "NEW" and the "OLD" as instructed.

MERGING PARTS OF FILES INTO A DATA BASE—You can merge parts of data from a larger data base into a much smaller data base just as easily. You may use this to create smaller data bases with similar information for special purposes. Consider the following example:

NEW DATA BASE	OLD DATA BASE
0 KEY	0 KEY
1 CONTACT PER.	
2 ACCT. NAME	1 ACCOUNT NAME
	2 CUST. NUMB.
3 ADDRESS	3 ADDRESS
4 CITY	4 CITY
5 STATE	5 STATE
6 ZIP CODE	6 ZIP CODE
	7 TELEPHONE #
	8 SALES LT/YR
	9 CURRENT/SLS
	10 CREDIT LIMIT
	11 CONTACT PER.

You would enter the data in the following order when prompted with "ORDER:"

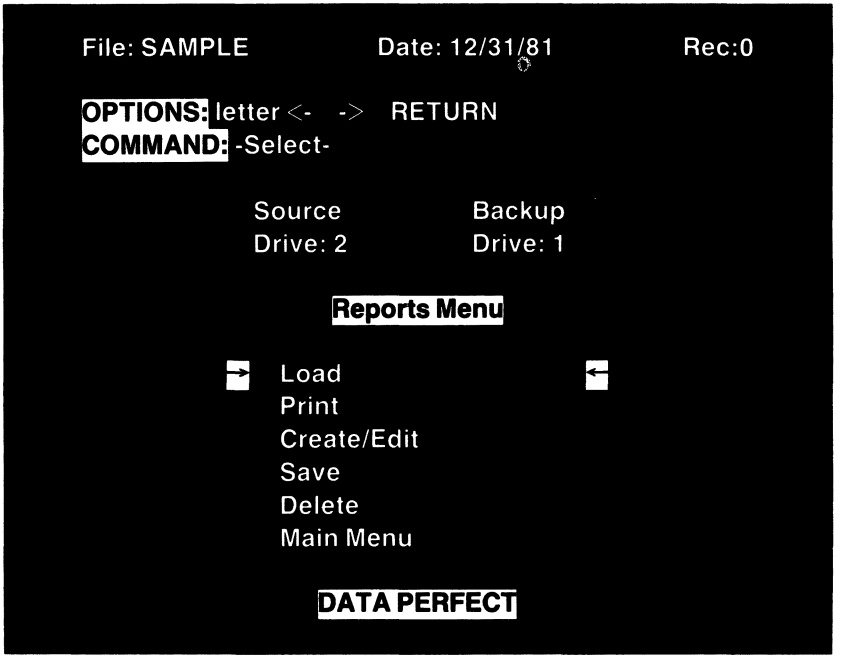
```
COMMAND: Order: 0,2,99,3,4,5,6,99,99,99,99,1
```

When the data is merged from the old data base file, it will pull the data in this order. Field 0 data will be placed in new field 0. Old field 1 data will be placed in new field 2. Old field 2 will be thrown away. Old field 3 will be merged in new field 3. Old field 4 will be placed in new field 4. Old field 5 will be merged into new field 5. Old field 6 will be placed in new field 6. Old fields 7, 8, 9 and 10 will be thrown away. Old field 11 will be placed into new field 1.

IMPORTANT—The thing to remember is the ORDER is the order you want to take fields from the old data base and insert them into the new data base. They must be inserted in the proper order in which the new data base has been designed. If you do not want a field to be taken from the old data base, you should enter the value "99" in its place. It is not required that data be entered in sequential order. You may completely rearrange the order you want fields moved from the old data base to where you want them placed in the new.

DATA PERFECT — REPORTS

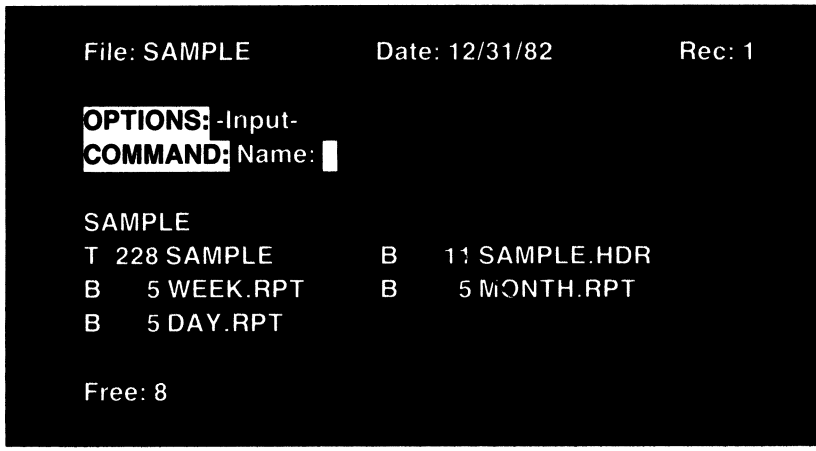
REPORTS is the menu selection allowing you to design many different printouts of your data. From the MAIN MENU press the letter R and you will see the following display:



LOAD—is the process of loading a report already created. It is possible to have several different reports that will allow you to express the same data in different forms. While the arrows are resting on the LOAD option, press RETURN. If you have a report already in memory, you will have to "Verify" you want to erase the report. This will give you an additional opportunity to save the report you had created and not saved to disk. If a report is in memory and you go to load another report, the following prompt will appear at the bottom of the screen:

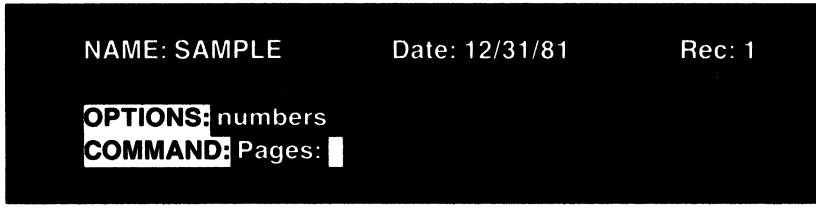
Erase?

You are being asked to verify you want to erase the report in memory. If you answer No you will be back at the previous menu. You should SAVE the report before proceeding. Answering YES will erase the report in memory, do a CATALOG of the disk in the drive, and ask for the name of the report you want to load. The screen mask will appear as follows:



The options line tells you to INPUT the name of the report you want to load. In this example there are 3 reports: WEEK, MONTH, and DAY. The name of the file appears in the status line and also before the directory. The reports are marked by the extension ".RPT" following their name. In order to load these reports, you will have to type in the name without the extension ".RPT". If you type in this extension, the program will respond: FILE NOT FOUND. Upon inputting the name and pressing RETURN, the report will be loaded and you will be back at the REPORTS MENU. To abort the loading of a report, press RETURN without entering a name.

PRINT—is the second menu selection on the reports menu. You print reports to the printer. You cannot print them on the screen. With the cursor resting on this selection, press RETURN. The following will appear on the screen:



This option allows for the printing of pages "x" through pages "y" of a report. The smallest "x" may be 1 and the largest "y" may be 255. Pressing RETURN without entering a number will print the entire report. If you want to print only specific pages of a report you may enter the page numbers in the following fashion:

1. x - print page x only -
2. x, - print page x to end of report -
3. x,y - print page x through page y -
4. ,y - print page 1 through page y
5. RETURN - print entire report -

This program is designed for 11 inch paper and will print 60 lines per page. After printing 60 lines, the program will automatically perform a pagination (automatically go to the top of the next form).

After entering the numbers desired or pressing RETURN, you will be asked to establish the search criteria for the report. The screen mask will appear as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 1

OPTIONS: R, Begin, Up, Down, Sel, Quit
COMMAND: -Search by-

KEY: ______           DATE: D_________

NAME: ____________________

ADDRESS: ____________________________

CITY: ____________________________

STATE: __          ZIP CODE: ______
```

Select the search criteria at this point. You may search on up to four fields, with a maximum of two different criteria in each field plus record number. This means you will be able to search on a total of nine different criteria.

Select the criteria you want to search upon and press Q to initiate the search. Upon pressing Q, the following message will appear:

```
Position Paper
```

This mesage indicates that the program is about to initiate the search and begin printing the report. If you want to abort the operation, press the BREAK key. Press the YES option, and the report will print. When the

report has printed, you will be returned to the REPORTS MENU. You can stop the printing by pressing the SPACE BAR or any letter key. If you press the space bar to resume printing it will print one line and stop. If you press a letter key other than the SPACE BAR it will restart continuous printing. If, while the printer is stopped, you press the SPACE BAR to restart printing, the printer should print one line and then stop. If you wanted to print one line at a time you would be continuously pressing the SPACE BAR to start and stop printing. There are several factors which may affect the printing of one line at a time. For instance, if your printer has a buffer it will continue to print until the buffer is empty, then it will stop printing. In some cases this may be a full page or more. Some printer interface boards contain buffers which may override this one line at a time printing feature. If you press the BREAK key the print operation will be aborted.

CREATE/EDIT—This is the powerful part in the REPORTS MENU. This is where you create REPORTS. You create reports in a design which will fit your needs. One data base may be expressed in many ways according to the needs you have. There are two parts to the CREATE/EDIT mode. There is the ADD mode, and the EDIT mode. The ADD mode is where you create the report, and the EDIT mode is where you edit the report before saving it to disk.

ADD MODE: C, N, E, ↑↓←→, Begin, Sel, Quit
SELECT MODE: Bold, Total, @DRN#F"I
EDIT MODE: K, R, Begin, Up, Down, Sel, Quit

When you first enter the CREATE/EDIT mode you will be asked the following question:

```
OPTIONS: numbers
COMMAND: Printer width: 80
```

Pressing RETURN will select the default value of 80 characters per line. If you are in the CREATE/EDIT mode and set the width to any value other than 80 characters, it will remain the default value for that report. If you have a printer such as an Epson MX-100 and you want to enter "100" for the printer's wider carriage, you may do so. The maximum printer width for this program is 127 characters.

It is important your printer not generate line feeds on its own. The generation of a line feed may occur when the printing exceeds 80 characters. If you enter a number larger than 80, your printer may generate a line feed which would cause printing problems. If your printer only allows 80 characters on a single line, accept this default value, and do not enter a larger number.

The next question that is asked is in regards to the printer initialization. That question is:

INITIALIZATION tells the printer which font you want to use. With this command you indicate the font you wish to use with your printer. The sequence of entry is up to 7 values inserted in the CHR$ fashion. When there is more than one decimal number, they should be separated by commas. The only number that cannot be entered is 0. If you enter more than 7 numbers, they will be truncated and only the first 7 will be sent to the printer. Pressing RETURN without entering a value will select the default font for your printer.

BOLD ON is the next question asked. It is asked in regards to boldface type. Boldface print for this program is expressed as the expanded dot matrix font. If your printer does not have "double width characters", you cannot use boldface. Attempting to use boldface without double width characters will throw the printed output off in its columnar spacing. You may use a total of three codes separated by commas when turning bold face on. Codes over this amount will be truncated. Press RETURN if you do not want boldface or do not know the value to enter. The question regarding boldface will be expressed as follows:

BOLD OFF is asked next. The codes are entered in the same fashion as with the bold on and the same 3 value restrictions apply to the bold off commands. The Bold Off question will appear as follows:

LEVEL BREAKS—After entering the value to turn bold off and pressing RETURN, the screen mask will appear as follows. This will give you the opportunity to enter level breaks into the program. Level breaks are breaks occurring when the data in a specified field changes. This could cause subtotals on the fields you had indicated to be totaled when

creating the report. You could, for example, do a level break on the date. Subtotals would be printed when the date changed. Pressing RETURN, without entering any values, will cause no breaking or subtotaling in the report. A GRAND TOTAL: will be printed on any field you had designated as a TOTAL field. Total fields are defined during report creation. The fields and their field numbers are displayed to assist in the assigning of level breaks. This will appear as follows:

The entry of level breaks follows the format of x.y,x.y . . . where "x" is the "level" field to break on, and "y" is the number of blank lines you want to occur after the level break. A period is used to separate the "level" break field and the number for line spacing. If you enter the "x" value and do not enter the "y" value, the values of "1, 2, 3 and 4" are automatically entered respectively. This is to say, you will have one blank line after the first level break, two blank lines after the second level break, three blank lines after the third break, and so on. Multiple level breaks are separated by placing a comma between them. If you use the value "99" after the level break field, a form feed will occur. A form feed is "pagination" or advancing of the paper to the top of the next form. This will allow level breaks to be separated by pages. You should choose level breaks in the ascending order of priority. For example, you could select level breaks by entering the line: "1,2.3,3.99". This example would ask for 3 level breaks to occur. The first (most often) would occur on field "1" with 2 blank lines after it. The second level break would occur on field "2" with 3 blank lines after it. The third level break would occur on field "3" and would have a form feed occur after it was printed. When the report is printed, the following will happen: If the data in field 3 changes, it will cause a level break on field 1 and field 2 before finally breaking on field 3. What this amounts to is the level fields are entered in ascending priority. When the data base is prepared, it should be sorted **reverse** order of level priority. In this example, the file should have been sorted by the command of 3,2,1.

Level Breaks occur when data, in a specified field, changes from one record to the next. Level breaks can be based upon dates, zip codes, number fields, or any field in the data base. It is not necessary that you enter level breaks; they are entered only when you want subtotaling or line spacing variations when the data specified changes from record to record.

Press **RETURN** after entering the LEVEL BREAKS and you will enter the ADD MODE of the Reports Generator. The ADD MODE is where you create the printout (appearance) of the report. The screen mask will appear as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 1

OPTIONS: C, N, E, ↑↓←→, Begin, Sel, Quit
COMMAND: -Position-

 #  Name:          Len    #  Name:          Len
 0  KEY:             5    1  DATE:            8
 2  NAME:           25    3  ADDRESS:        25
 4  CITY:           15    5  STATE:           2
 6  ZIP CODE:        5    7  PHONE:          11
 8  BALANCE $        8    9  PURCHASES       8
10  NEW BALANCE$     8   11  INVOICE #       4

1
2
3     HEADER: This term will be displayed while you are on
4             the first seven lines.
5
6
7_____________________________________________________
1
2     DETAIL: This term will be displayed while on
3           these three lines.
```

At this point, you are going to enter the fields and headings you want on the report. You will have 7 lines for headings and 3 lines of detail. Following is the way a finished report form might look in 80 column video. In 40 column video the report would look the same, however, the information would be split and you would be able to view the information with the horizontal scrolling. A sample report might look as follows:

```
  12345678901234567890123456789012345678901234567890123456789012345678901234567890
1 DATE                          LJK ENTERPRISES, INC.                        PAGE #
2 12/31/81                         7852 BIG BEND                             @@@
3 DAILY REPORT                   ST. LOUIS, MO 63119
4 ==========================================================================
5 ACCOUNT NAME                      ADDRESS                    STATE
6 INV #      INV DATE      CITY      ZIP CODE      OLD BALANCE      NEW BALANCE
7 ==========================================================================
  ########################      ########################      ##
  #####    ########    ###############    #####      ##########      ##########
```

This is the ADD mode. You have displayed one of two things according to the type of video you have. If you have 80 columns, you have all eighty columns displayed and the numerical line (1234567890123 . . .) will total eighty characters. In either case, you have the field numbers, name and length displayed. This display will assist you in designing the report. The options line displays the following commands:

C	-CENTER-	the following information
N	-NEXT-	place entry at cursor location print next to adjoining data at time of printing
E	-END-	move to end of line
↑	-UP-	move cursor up one line
←	-LEFT-	move cursor left one column
↓	-DOWN-	move cursor down one position
→	-RIGHT-	move cursor to right one position
B	-BEGIN-	move to the beginning entry
S	-RETURN-	select cursor location to enter information for report format
Q	-QUIT-	quit this operation and proceed to next screen

C or CENTER—No matter where the cursor is resting on the video line, when you press C it will cause the information to be centered on the report. The centering function will take advantage of the boldface (expanded) font as well. The centering capability is best used for centering titles in the HEADER LINE. You should not attempt to center two strings of information on the same line.

N or NEXT—This selection will place the data you want entered in the header or detail section of the report at the current cursor location. At printout time it will remove blank spaces between fields. This does not have many applications in the preparation of a report, but has many applications in the preparation of MAILING LABELS. This in effect removes all spaces so there are no large gaps between fields. Typically if you used the NEXT feature on a line, you would use it for every entry that followed, thus eliminating blank spaces on the entire line. To start the report we would first position the cursor at the beginning of the line with the B command. Move the cursor down the screen until the footer at the bottom of the screen reads DETAIL. Press RETURN to indicate this is where you want the data located. Type Shift-3 (#) and the corresponding field number for the last name. The last name field would be entered in that location when it is printed. Immediately after the last name you would enter the N for NEXT and use a literal space (i.e. _) to separate the two names and press RETURN. Use an N selection and enter the data field for the first name. Since report lines can be entered in any order, it is also important to remember any NEXT fields must be entered after the field they proceed. If you want spaces to occur between them, you must enter those spaces as literal fields (i.e. _).

E or END—This command moves the cursor to the end of the printed line. Note, this is the end of the video line and the screen will horizontally scroll if the printer width is wider than the video width.

↑↓←→—You will be able to move the cursor to the position on the report you want information entered. Press the S for SELECT indicating you want to locate information at this position.

Sel—This SELECTS the location on the report you want information printed. You may also use the RETURN key for this operation.

Begin—This will move the cursor to the first column of the desired line. This is the opposite from the E command. Because of the speed of the program, you may be on the first column so quickly you fail to see the trailing information scroll off the screen.

Quit—This will exit the ADD MODE and cause you to enter the EDIT MODE. This will happen if there has been at least one entry made in the report. If you have made no entries, and wish to exit the create mode without proceeding, you may do so by pressing the BREAK key.

After having selected the position you want data placed, you must specify the data. There are 8 distinct commands which can be used. They may be entered in either upper or lower case.

PREFIX COMMANDS—The prefixes are B for BOLDFACE, and T for Totaling the entry. Remember, you can only boldface with dot matrix printers which support the expanded double width character. The TOTAL operation can be used only on numeric/formula fields. The TOTAL, T prefix is placed prior to those fields you want totalized from the level break option. After indicating the position and pressing RETURN, the command and options lines will change to look as follows:

```
File: SAMPLE          Date: 12/31/81          Rec: 167

OPTIONS: Bold, Total, @DRN#F"I
COMMAND: -Data-

#  Name:          Len    #  Name:          Len
0  KEY:             5    1  DATE:            8
2  NAME:           25    3  ADDRESS:        25
4  CITY:           15    5  STATE:           2
6  ZIP CODE:        5    7  PHONE:          11
8  BALANCE $        8    9  PURCHASES        8
10 NEW BALANCE$     8    11 INVOICE #        4

12345678901234567890123456789012345678901234567890123456789012345678901234567890

                        HEADER:
```

The "PREFIXES" are the first two entries on the options line; they are followed by the series: @DRN#F"I. Following is a brief description of each.

@—Prints the current PAGE NUMBER. Selecting the @ symbol will print the current page number during a printout. The number will be in 3 digit form with preceding zeroes printed as blank spaces (e.g., page 010 will be printed as "10"). To have the page number printed, enter the @ symbol and press RETURN. The "at" symbol is obtained by the SHIFT-8 keystroke combination. If you wanted the word "PAGE" printed prior to the PAGE NUMBER you would enter the word page as a "literal" prior to the "@" symbols.

D—Print the current DATE. You enter the letter D as your selection and press RETURN. The date will then be automatically entered in this position. The current date will automatically be displayed, having been entered when you loaded the program. If you want just the month to be printed you would type D2 RETURN and just the month would be printed.The same is true if you type D4 RETURN. Only the month and day would be printed.

R—REPEATING CHARACTERS on the screen. Quite often you will want a line drawn across the page to separate the header lines from the detail lines. You would do this by pressing: R=,80. The R says you want a repeating character, the = sign indicates the repeating character you want, and the 80 indicates how many times you want the character repeated. You can either enter a comma or a period between the repeating character and the number of times it is to be repeated. You can use any character as a repeating character.

N representing field NAME—This will print the field name associated with it. You would enter the N and the number of the field you want printed. If you enter just the N and press RETURN you will be prompted to enter a corresponding field number. Consider the following example:

```
  #  Name:          Len
  3  ADDRESS:        15
```

Pressing S for SELECT would indicate you wanted data printed at the cursor location. If the data were the address title, you would enter N3 RETURN. This would cause the title ADDRESS, which is field 3, to be printed at cursor location.

You can use this technique to enter just part of the name. Entering N3,3 RETURN would cause the same thing to happen as above, but only the first three characters would be printed.

FIELD DATA—This will print a desired field at cursor location. If you were to have the title ADDRESS printed in the header portion of the report and wanted the field printed in the detail section, you would use this command. Pressing # followed by a corresponding field number will cause the specified field to be entered in the report at cursor location. If the field being used is a number or formula field, you may wish to increase the field length. This is important because you might want the report to total several fields. The combined total might be larger than any of the individual field lengths. An example of a field with a format declaration would be: #3.xx,xxx.xx. The # sign indicates you want the data from field 3 to be displayed in the xx,xxx.xx format. If you wanted this field to be TOTALED when a level break occurred, you would enter the prefix T prior to the field number (e.g., T#3xx,xxx.xx). This would appear as follows on the video screen mask: +#####.##. If you just enter the # sign and press RETURN, you will be asked to enter the field number from the -INPUT- prompt.

You have the ability to print portions of a field. For example, if field #3 were alphanumeric and 15 characters long and we wanted to print only the first 10 characters, you could accomplish this by typing #3.10 RETURN. If the same constraints as above are true, except field 3 is a numeric field, you would then need to type #3xxxxxxxxxx RETURN. If you are limiting the printing length of a numeric field, you need to use the format representation. If the field is alphanumeric, you should use the standard representation.

F FORMULA—The FORMULA allows you to have formulas entered into a report. This gives you the flexibility to create new data from existing data already in the file. The formulas are entered in the same way as explained in the CREATE NEW DATA BASE in the preceding section of the manual. The formula can be any type of mathematical operation on one or several different fields within the report. Different reports can be generated with the same data expressed in several different ways. Expressions can be prefixed with T's for totaling fields. An example of a totaled formula entry might be: TFxxx,xxx.xx with the formula being f(4)*f(5)/(f(6)*100).

" LITERAL—A LITERAL is just what the word indicates. You want to literally print what follows the quotation mark. If you wanted a title in a report which was different than the field name, you could enter the title as a literal. Pressing S for select and typing "TOTAL COST, would cause the title TOTAL COST to be printed in the header. Any time you want to enter a specific "literal" name in the reports, it must be preceded with a quotation mark.

I CONDITIONAL—The CONDITIONAL statement will print only if certain conditions are met. The data generated is literal in nature and can be printed on up to 3 conditions. They are always separated with the backslash (\) character, SHIFT \. Consider a data base where you were keeping a check register and were entering checks as either withdrawals (checks), voided checks (0 amounts), and deposits (positive values). Entering an expression: I Check\void\deposit as a conditional statement would cause the following to happen. The data checked will be printed as a "check" if it meets the first criteria (i.e., a negative amount). If it is a zero value it will be printed as "Void". If it were a positive value it would be printed as "Deposit". The order for entering the information must always be in the proper sequence. The literals (what is literally printed) must be separated with backslash characters (\). After entering the conditional, press RETURN. The command line changes and asks for the -FORMULA-. You would enter: F(n). The "n" represents the field number you want the conditional to be based upon. In most cases you would use only one field; you could have a mathematical formula performed upon the field. If you used the conditional to express the status of the transaction being made: i.e. CHECK\VOID\DEPOSIT; the formula is entered as f(8), where field 8 is the transaction field for keeping track of records.

In a general ledger, you would only want to enter debits and credits. After selecting a field position, you would type **IDEBIT\\CREDIT**. As you can see there has been no entry for the zero value. Only the word "DEBIT" would be printed if the value were negative, or "CREDIT" if it were a positive value. You might use the following types of example in the detail line of the report:

DATA ENTERED	HOW APPEARS IN REPORT
IDEBIT\\CREDIT	IIIIII
#8	+####.##

If the field being printed was negative, the negative would appear on the report. However, if the field is positive, no sign will precede the field.

Any invalid entries will be signaled with appropriate error messages. The entry will not be allowed. After the entry is successfully made, the data is printed to the screen and the cursor is moved to the next location on the screen. Boldfaced entries will have trailing underlines to signal the presence of double width characters. These trailing lines are shown to aid in designing the report when boldface is being used.

After creating your report, you should SAVE it to disk. To exit the ADD mode press **Q** for QUIT to proceed to the EDIT MODE. The options and command lines will change as follows:

```
OPTIONS: K, R, Begin, Up, Down, Sel, Quit
COMMAND: -Select-
```

This is the EDIT mode of the report create option. You can move from field to field in the following manner:

UP	Tab up one field
DOWN	Tab down one field
BEGIN	Tab to the first field

The other options allow you to edit the report you have created in the following manner:

KILL	Kill the field at this position
RETURN	Return to the ADD MODE
SEL	Select this field for editing
QUIT	Quit the edit mode

Pressing QUIT to quit the edit mode will cause the following options and command lines to appear:

```
OPTIONS: Blank lines
COMMAND: Header: 0
```

The question you are being asked is: "How many blank lines do you want between the heading of your form and the detail lines on the printout?" Enter the value that suits your taste.

Having entered the value for the header spacing, and pressing RETURN, the options and command lines will change as follows:

```
OPTIONS: Blank lines
COMMAND: Detail: 0
```

Indicate the number of blank lines between each detail line on the printout. Enter a value creating a pleasant looking report.

After entering a value that pleases you, and pressing RETURN, you will automatically be returned to the REPORTS MENU. You should move to the SAVE option on the REPORTS MENU. Save the report to the data base disk for future use. Reports may be generated on a periodic basis.

Pressing RETURN, while on the SAVE option, will cause the following information to be displayed:

```
OPTIONS: -Input-
COMMAND: Name
```

Save the report by typing in a name. Keep it shorter than 8 characters. It will be saved with the extension ".RPT". This will remind you it is a report when you want to load it at a later date.

Saving the report is completed by pressing RETURN. After doing so, you will return to the REPORTS MENU.

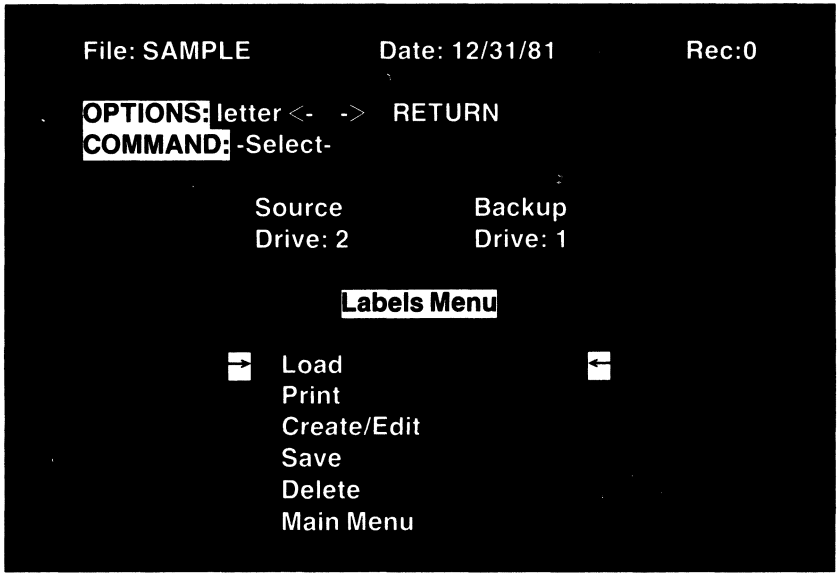
The last two selections are self-explanatory. Delete allows you to delete report formats you no longer need. Pressing RETURN with the cursor on this selection will cause the same options and command question to occur as when saving a report. Enter the name and press RETURN, the report will be deleted from the disk.

Selecting MAIN MENU will return you to the MAIN MENU. If you attempt to return to the MAIN MENU but have a report in memory, you will have to answer the following question:

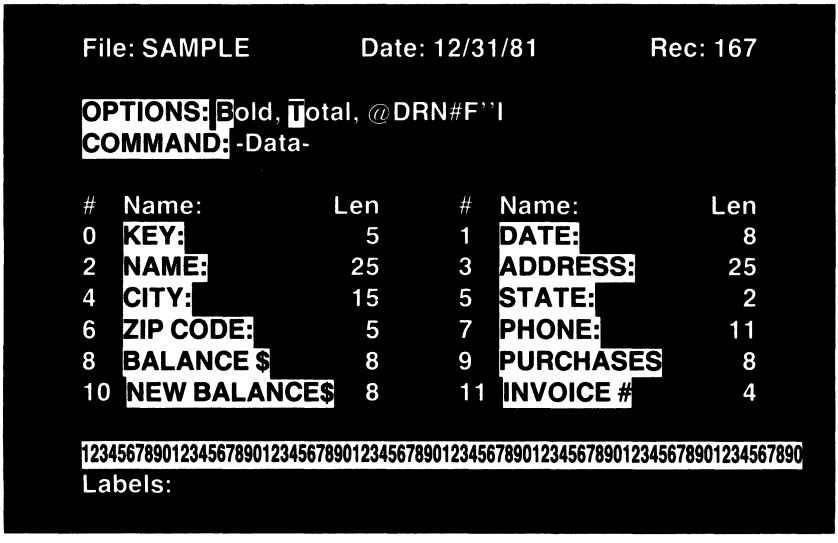
Indicate if it is alright to erase the report in memory. This is a "fail-safe" to keep you from accidentally erasing the report before saving it to disk.

DATA PERFECT — MAILING LABELS

MAILING LABELS is the menu selection enabling you to print mailing labels. This is the sixth item on the MAIN MENU. With the arrows resting on this selection, press RETURN, the following menu will appear:



The MAILING LABELS is designed the same as the REPORTS generator. There are a few exceptions. In the mailing labels you will see no prompt in regards to level breaks or header spacing. If you do not remember how a specific option works, you should refer to the reports section of the manual. Following is an example of a typical mailing label:

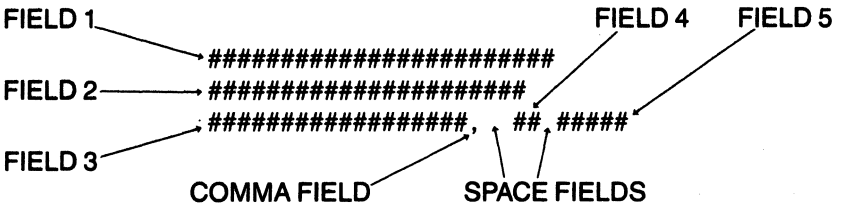


DATA PERFECT — MAILING LABELS

Go into the CREATE/EDIT mode, press RETURN, and enter a pound sign, #. You should enter the number of the corresponding field you want and press RETURN. The screen will have number signs indicating where the particular field will print. Consider the example which follows. Listed below is the necessary information for a mailing label:

FIELD NUMBER	DATA	VIDEO REPRESENTATION	LEN
1	name	########################	24
2	address	######################	22
3	city	##################	18
4	state	##	2
5	zip code	#####	5

Following is the same information showing how it would be represented in the Labels Generator during the creation of a label:



This is the most general type of label. An additional line might be created if you wanted to have a company name printed. The last line (city, state, zip code) shows the great flexibility found in the labels generator. The city field would be created as the previous two fields (name, address). The comma field would be created as an N (NEXT) field which would automatically have it (the comma) follow the city. Excessive blank spaces created by changing city lengths (i.e., Pickneyville vs. Cairo) would be removed. The comma would be entered as: N "," . You would create a "LITERAL" field after the comma field as a N field. This would be entered as a LITERAL blank field. It would be entered as such: N "_. This allows for one blank space to follow the comma. Next, place the state field as an N (NEXT) field so it would always fall directly behind the "blank space" field just created. Again, create a N (NEXT) field which is a literal field of two spaces ("_ _). This would place two blank spaces directly after the state field. Finally, you would create a N (NEXT) field which would be the zip code field. When creating the final line in this manner, you would always have the city printed, a comma printed directly after the city, and one space between the city and state. A space always follows the state and the zip code always follows two spaces behind the state.

NOTE: Data Perfect is designed for only 1 across MAILING LABELS. This is an important point when deciding which mailing labels to buy!

DATA PERFECT — SYSTEM CHANGE — QUIT

SYSTEM CHANGE

The menu selection SYSTEM CHANGE is provided in DATA PERFECT to allow you to change the date or disk drive configuration which was chosen when configuring the program. If, for instance, you had entered the wrong date during startup you could easily change the date by using the System Change option.

After selecting System Change you will see the following:

The question is asking what drive you want to be the source drive. Enter the desired number and press RETURN. The screen will change and the BACKUP prompt will appear. If instead of entering a drive number you pressed RETURN, the default value listed at the top of the menu will be accepted. Finally, the prompt concerning the date will appear. Type in the desired date and press RETURN.

QUIT

The QUIT option on the MAIN MENU will allow you to QUIT using the DATA PERFECT program and load another program without turning the computer off. Press the letter Q for QUIT and the following prompt will appear in the options line:

At this time remove the disk from the source drive and insert the different program you want to load. When you are ready to begin, press Y for YES and the program in the source drive will be loaded. Pressing No will abort the operation and you will still remain resting on the MAIN MENU.

DATA PERFECT — APPENDIX — TROUBLE SHOOTING

PRODUCT SPECIFICATIONS

Maximum number of fields: 32
Maximum number of formulas: 16

Types of fields: Alphanumeric, date, number and formula

Maximum length of a field: 127
Maximum record length: 511
Maximum number of records: 1 disk
Minimum number of fields: 1

Number of search criteria: 8 at 2 per field (maximum of 4 different fields) plus record number range for a maximum of 9 separate criteria.

Search parameter types:

<	(is less than)
<=	(less than or equal to)
<>	(not equal)
=	(equal)
>	(greater than)
>=	(greater than or equal to)
"	(include)

The characters of ? and * provide single character and block (0-n) wildcard capability in strings. Where entering 0 and a portion of a date field offers wildcard capability.

Maximum number of sort fields: 4 with truncation of strings and sorting in either ascending or descending order.

Merge capability with either DATA PERFECT or LETTER PERFECT.

Maximum number of level breaks: 4

Maximum printer width: 127

Maximum number of drives: 2

Program requires 32K of memory to operate.

Reports can be printed page x,y with search criteria and with or without totals and subtotals.

INTERNAL STORAGE FOR SORTS

When the data base is sorted, the number of bytes of memory used in internal storage is important. Strings are stored as 1 byte per character and 1 byte for the CR at the end. Dates are stored as 3 byte numbers. Numbers and formulas are stored as 5 byte numbers regardless of the length of the output format. The number of characters at the bottom of

the sort mask tells the user how many characters are the maximum he can sort on. This is based on memory allocation internal to the machine. Strings can be truncated with an option .n where n stands for the number of characters to sort on. Dates will always take 3 bytes, numbers and formulas will always take 5 bytes per record.

ERROR MESSAGES

I/O—The disk handler was unable to complete the command due to some irregularity in the data on the diskette.

NO DATA BASE—There is no data base loaded in the system, and one must be there before the operation attempted can be performed.

TOO LONG—The input or the file length is too long. On data entry, this message will not be printed, but the field will be truncated at the maximum length.

DISK FULL—The disk is too full to take another print format or file entry in it.

FULL—The maximum number of search or sort criteria have already been entered and no more can be added without first deleting one.

INVALID—The data entered did not match the data type that was required. This is similar to a syntax error.

NUMERIC OVERFLOW—The floating point calculation overrides its limits of a maximum value of 10^{38} or the minimum value of 10^{-38}.

DIVIDE BY ZERO—A division was attempted with a denominator of 0. This is a definite no-no in mathematics.

I/O ERROR—A write or format operation was tried on a disk with a write protect tab on it.

INVALID—In a mathematical expression, there was an unbalancing of parentheses or an undefined function.

TOO COMPLEX—The expression to be evaulated had too many parentheses or functions and overflowed the limits of the expression handler. A result of 0 will be returned.

FILE NOT FOUND—The file attempting to be loaded or merged does not reside on the disk searched.

RANGE—The parameter returned is outside of the limits set for it.

NO ENTRIES—There are either no entries in the data base when entries are required for the operation to be performed, or there are no entries in the print format when a printout of a report or label is attempted.

IMPORTANT—IF YOUR PROGRAM SEEMS TO LOAD WHEN YOU TURN THE COMPUTER ON BUT THEN NOTHING APPEARS ON THE SCREEN, DO NOT PANIC! TURN THE COMPUTER OFF AND THEN BACK ON. AS THE PROGRAM STARTS TO SPIN PRESS THE ESCAPE KEY. THIS SHOULD RETURN YOU TO THE RECONFIGURATION SCREEN. FOR FURTHER DETAILS READ THE SECTION IN THE MANUAL MARKED CONFIGURATION.

DATA PERFECT — APPENDIX

DRIVE SETTINGS

If you have single density data base files and you wish to convert those files to double density, you will have to use the LJK Utilities version 2.0. If you have one disk drive which is single density and one drive which is double density you will either have to run a two drive system in the single density mode or a one drive system utilizing the double density. You can't run two drives with one set in single density and the other set in double density.

FORMAT OF INFORMATION ON THE DISK

The data base information is stored on the disk as a random access text file with data starting at record zero. Each field within a record starts at a fixed location according to the defined maximum allowed field length. Each field is padded with twos (2s) out to the allowed field length, if necessary. The end of the active data base is marked by an ESC (27 or 1B). Any deleted records have the entire space filled with threes (3s).

Memory locations of interest for single density disks:

Byte 3, sector 1 — FCNT (start at 1) max field #
Bytes 4 & 5, sector 2 — Active record count (low, high)
Bytes 10 & 11, sector 2 — Maximum allowed # of records
Bytes 0 & 1, sector 2 — Total # of records
Bytes 64 on, sector 3 — Low byte of index to field array
Bytes 96 on, sector 3 — High byte of index to field array
Bytes 8 & 9, sector 2 — Record length

Memory locations of interest for double density disks:

Byte 3, sector 4 — FCNT (start at 1) max field #
Bytes 4 & 5, sector 4 — Active record count (low, high)
Bytes 138 & 139, sector 4 — Maximum allowed # of records
Bytes 128 & 129, sector 4 — Total # of records
Bytes 64 on, sector 5 — Low byte of index to field array
Bytes 96 on, sector 5 — High byte of index to field array
Bytes 136 & 137, sector 4 — Record length

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