INFOMAG

INFOMAG
INFOrmation MAnagement by Groups

A Data Base Management System
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GETTING STARTED WITH INFOMAG

1. Copy onto program disk.

2. Copy X-Basic onto the program disk.
    Copy PRINT.SYS for your system onto the sample data disk.

3. Enter Basic and get ready prompt.

4. Insert Program Disk into system drive and sample data disk
    into work drive.

5. Type "RUN" (system drive #). MENUDBM"

6. Program will request the password. Use "PASS" until you
    install your own passwords.

7. The sample data disk has 1 (one) master file,

    ### SUNSHINE, an inventory database

8. Once you are in the Menu select option 1 (one) to look at
    the Sunshine records. Select function (1) for inquire.
    Use the "WILD CARD" ID entry mode and ask for "A/".

9. The special Master Password to change or add passwords is,
    "123456789"

10. When in the Database Specify Program (# 4), the keyboard
    keys to move or position the field on the screen are as
    follows:

    Move Left.............(J)
    Move Right............(L)
    Move Up...............(I)
    Move Down.............(,)

    These keys follow the convention of the STYLOGRAPH WORD PROCESSOR

11. To toggle the Audit Trial from ON to OFF (or visa versa), type
    "AT" while in the Entry Mode of (Option 4).

INFOMAG SETUP FOR COLOR COMPUTER

1. You will receive three single sided double density disks: Infomag
   program disk #1, program disk #2, and a sample data disk. Make at
   least one copy of these disks, and archive the originals. If your
   system has the ability to read double sided disks, you may combine the
   two program disks onto one disk.

2. Copy XBASIC onto the program disk(s) that you just made. Whatever your
   printer driver is, name it PRINT.SYS and copy it onto the program
   disk(s).

3. There are two Control Code files on your data disk, SYSFHL.COD and
   SYSDCP.COD. These files contain information the programs need to
   handle cursor movement, screen display, and printer functions. If you
   have Frank Hogg Lab FLEX, rename SYSFHL.COD to be SYSTEM.COD. If you
   have Datacomp FLEX, rename SYSDCP.COD to be SYSTEM.COD.

4. Insert your program disk into the system drive and the sample data disk
   into the work drive. Enter Basic and get the 'READY' prompt. Type
   'RUN "(system drive #).MENUDBM"'. The program will request the
   PASSWORD. Use "PASS" until you install your own passwords. The sample
   data disk contains one master file, SUNSHINE.

5. Once you are in the Menu, select item #11 - SYSTEM CONTROL CODES.
   Although we have provided you with appropriate control codes for your
   FLEX, you need to setup information for your printer. See Chapter 7 of
   the manual for assistance with this program.

6. Now you can experiment with the sample data. Select Menu Item #1, and
   do an Inquiry. Use the "wild card" ID/ entry mode and ask for "A/".
   See Chapter 3--General Instructions for directions for using an
   existing database and for creating a new database.

OTHER INFORMATION

The special Master Password to change or add passwords is, "123456789".
Note that anyone who has this number has the ability to control your files.

When in the Database specify program (Menu Item #4), the keyboard keys
(arrows) to move or position the field on the screen are as follows:

        Move left.........(J)
        Move right........(L)
        Move up...........(I)
        Move down.........(,)
These keys follow the convention of the STYLOGRAPH Word Processor.

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CHAPTER 1

INTRODUCTION TO INFOMAG

INFOMAG is an Information Management system specifically designed for microprocessor based computer systems.

The microcomputer is revolutionizing today's society and culture. It is being used to run our appliances, control our automobiles, and process data in our homes, schools, factories, small businesses, and large businesses.

INFOMAG is a collection of programs designed to manage data for any specific application. It is designed for non-computer experts. The various modules or programs of INFOMAG present the user with options which he or she selects. The modules also accept user defined syntax and incorporates it into data files and support programs. So, in effect, traditional programming is replaced with a simple question and answer dialogue which specializes a generalized information management system.

INFOMAG is capable of handling almost any collection of data. However, there are some restrictions, mostly due to a microcomputer's hardware or equipment limitations. Being realistic, a computer system costing only a few thousand dollars can't possibly perform like a million dollar mainframe computer, but with INFOMAG it comes close!

Probably the most important thing to realize is that any computer, regardless of its size, must have information stored within it in an orderly fashion. INFOMAG takes care of the internal storage for you, but, to be effective in solving your information management problems, it will inevitably require some organization on your part!

The following programs comprise the INFOMAG Data Base Management
system. The function of each program is listed along with the
names of any support programs required.

PROGRAM   PURPOSE

MENUDBM   This is the main menu program for the entire INFOMAG
           package. It requires the file MENUDBM.DAT for
           operation.

DBM-FM1   Master file maintenance program part 1. Used to edit
           existing records in the master file.

DBM-FM2   Master file maintenance program part 2. Used to add
           new records to data base.

DBMUPDAT   Master file update program. Used to update existing
           data in the master file.

DBMSPEC   Data base specification program. Used to set up a new
           data base or modify an existing data base. This
           program consists of two parts—DBMSPEC1 which defines
           the file record structure and DBMSPEC2 which sets up
           the files.

DBM-GRPN   New group creation program. This program is used to
           define the specifications for a new group. The
           specifications are saved in a file. A new group is
           processed by the program DBM-GRPA using the
           specification file.

DBM-GRPE   Old group file maintenance. This program is used to
           modify or list existing group files.

GRPSORT   Group sort program. This program is used to sort an
           existing group file. Up to ten fields can be used in
           the sort. Two additional programs, SORTPROC and
           MERGEGRP are required to perform the sort operation.
           The first performs the actual sorting, while the second
           is used to merge together temporary files created
           during the sort process.

GRPROUT   Group reroute program. Used to change a single data
           field in many records to a new specified value.

DBM-LIST   Data base list program. This program is used to list
           the contents of the audit log, index file, master file,
           and master file specification. The audit log can be

copied or deleted.

DBM-REIN Master file reindex program. This program generates a
new index file for the master data file. No user
action is required. Two additional programs, SORTINDX
and MERGINDX are required to create the index file.
The first sorts the data while the second merges any
temporary files created by the sort program.

DBMCNTRL Control code definition program. This program is used
to set up the proper control codes for the system
terminal and printer.

DBM-XFER Data base transfer program. This program is used to
transfer a data base from one disk to another

PASSWORD Password setup program. Used to enter, modify, or
delete passwords and users from the password file. A
special password is required to use this program.

DBM-REPC Columnar Report creation program. Used to define the
specification for a columnar report. The report is
printed by another program.

DBM-REPM Modular Report creation program. Similar to columnar
reports, this program is used to define the
specification for a modular type report. The report is
printed by another program.

DBMSTAT   Statistics Report program. This program is used to
generate a statistical report based on data in the
master file. The program consists of two parts--
DBMSPEC1 which defines the report specification and
DBMSPEC2 which processes the specification file and
produces the report.

DBMREP2   Multi-file Report generator. This program is used to
generate reports using data from two different data
base master files.

DBM-REPO General Report output program. This program is used to
output reports using the specifications set up in the
columnar or modular create programs. Modular reports
are output directly by this program while DBM-COUT is
used to output columnar reports.

FILES USED BY INFOMAG

INFOMAG makes use of a large number of data files for various purposes. There are ten files that must be present for any data base. In addition to these ten, a variable number of other support files may be present, depending on the complexity of the data base and its application. A complex data base could easily have 20-30 support files. Most of these files are short and take only one or two sectors of disk space.

The description following will show the various files. The description is divided into two parts. The first part describes the mandatory files plus some miscellaneous files over which the user has no control. Please note the extensions used in this section. None of these extensions should be used for group or report files. The second part of the description deals with support files which may be present and the method by which INFOMAG assigns the extension to these files.

In the following table, <dbname> refers to the data base name, and <anyname> means any file name can be used.

FILE NAME	PURPOSE
<dbname>.DBR	Master Data File (This is the central data base)
<dbname>.DBI	Master Index File
<dbname>.DBG	Group File Directory
<dbname>.DBM	Master Information File
<dbname>.SPC	Data Base Specification File
<dbname>.DEL	Master File Deleted Records
<dbname>.TRL	Audit Log
PASSWORD.COD	Password Information (Passwords are encoded)
SYSTEM .COD	Control Code File
DBMNAMES.DAT	Directory of Data Bases on current disk
MENUDBM .DAT	Display Mask and Program list for Main Menu
<anyname>.WRK	Various temporary files
<anyname>.TMP	" " "

The extension on the above files will always be the same, regardless of the data base name. This is not true for the files described below. These files may have a variety of names and extensions but specific rules are followed by INFOMAG to determine the extension. One rule the user must follow is that a group extension must NEVER start with "U". The reason for this will become apparent, shortly.

When a data base is initially specified (defined) the user is
asked to specify a file extension which will be used for group
files and another extension which will be used for report files.
These two extensions form the basis by which INFOMAG determines
the extensions for all other support files. For the purpose of
illustration, assume that the group file extension is ".GRP" and
the report file extension is ".RPT". It should be noted that
none of the files described below use the data base name.
Instead, they should be given a name representative of their
function.

Here are the extension rules for support files:

1. Group Files use the extension given in the data base
    specification, ".GRP" in this case.

2. Group Create Specification files change the third
    character of the group extension to "1". In this case,
    the extension would be ".GR1".

3. Group Sort Specification files change the third character
    of the group extension to "2". In this case, the
    extension would be ".GR2".

4. Update Specification files change the first character of
    the group extension to "U", hence the rule about U's. The
    extension in this case would be ".URP"

5. Columnar Report Specification files use the extension
    given in the data base specification, ".RPT" in this case.

6. Modular Report Specification files change the third
    character of the report extension to "2". Thus, our
    example extension becomes ".RP2".

7. Statistics Report Specification files change the third
    character of the report extension to "4". Our example is
    ".RP4" in this case.

DEFINITION OF TERMS

Many new terms are introduced or used in this manual which might not be familiar even to the experienced programmer. These terms are listed and defined below.

DBM   DATA BASE MANAGEMENT--A term used to describe a collection of computer programs that function to define data, store data in an orderly fashion, and output that data in any desired format.

FILE   A collection of information in an organized fashion. In INFOMAG, files are always on floppy disks or hard disk. Files can be of any length up to the size of the storage disk.

RECORD   A subdivision of a file that contains a collection of related information about an item. In a mailing list file, all the pieces (fields) of information for a person are collectively referred to as that person's record. (e.g. Name, address, city, state, zip code, phone number, etc.)

RECORDS are stored in the file in a slot referred to as the Master File Record Number - similar to storing information in file pockets in a storage file cabinet in your office.

All RECORDS within a file are of the same physical length and can have a maximum of 252 characters of actual data. This length is defined when the file is specified.

FIELDS   The records are further subdivided into pieces that store one parameter called a FIELD. Name, address, City, etc. are each a FIELD of information. FIELDS are also specified to be a certain type and a certain length as the Master File is being specified.

A FIELD can be any length up to 252 characters, the maximum length for a record.

TYPES of FIELDS
There are six (6) FIELD TYPES available

STRING   A STRING FIELD can contain as data, any printable character on your terminal -- letters, numbers, or punctuation in any combination. STRING FIELDS can be defined to have any length up to 252 characters.

NAME   A NAME field is used for personal NAMES and is
            entered as :

                LAST, First   MI

            Personal NAMES should always be entered into a
            file record as shown above for accurate sorting
            functions and correct data handling for Mailing
            labels.

            NAME fields can be defined to have any length up
            to 252 characters, but practically, 25 to 30
            characters will usually suffice.

DATE   DATE fields are used for storing calendar dates.
            The form is: MO/DY/YR where MO=MONTH, DY=DAY, and
            YR=YEAR (last two digits only). Any character may
            be used to separate the month, day, and year but
            some character must be used (no blanks). If the
            month-day-year order is not followed, some of the
            sorting and searching functions will not work
            properly.   All DATE fields occupy 8 storage
            characters in the record.

MONEY   MONEY fields ($) are defined the same as floating
            point fields below except the computer will
            automatically handle the dollar sign for you
            during data entry and on reports.

NUMBER-(Floating point) A NUMBER field is used to store
            numerical data.   NUMBER fields can only contain
            the characters 0 to 9, a decimal-point (.), or
            minus sign (-).   NUMBER fields have special
            meaning to the report programs and will be
            subtotaled and totaled if you request it.

            Floating point NUMBER fields occupy eight (8)
            characters of storage, internal to the computer or
            file record, regardless of the size of the number
            being stored.   Floating point NUMBERS many be in
            the range of + or - 10^{38} with up to seventeen
            digits of accuracy.

NUMBER-(integer) An integer NUMBER field is used to hold an
            integer (whole-no fractions) number in the range
            of + or - 32767.   Integers require two (2)
            characters of memory or file storage.

FIELD LABEL   Each field must have its own descriptive label.
                   This label makes it easier for you to converse
                   with INFOMAG in non-computer terms. A descriptive
                   label can be up to 35 characters in length. "ZIP"
                   could be the label for a field of a mailing label
                   file which contains zip code data.

FIELD NUMBER   The FIELD NUMBER simply refers to the sequential
                   position of a particular field within a record.
                   FIELD NUMBERS begin at zero (Ø). In some cases,
                   INFOMAG will ask for "NEXT ITEM" and is waiting
                   for you to enter the next FIELD NUMBER item with
                   which you want to work. FIELD NUMBERS are
                   generated automatically by INFOMAG and precede the
                   field label. Example: 5.ZIP indicates that the
                   fifth field in the record is the zip code field.

KEY FIELD   The KEY FIELD is always field zero (Ø) of a master
                   record. This field automatically becomes the
                   index field for the master file. KEY FIELDS must
                   ALWAYS be STRING type fields, of any length
                   (recommended - 1Ø). This field becomes the
                   primary means of finding an entry in the master
                   record file.

SPECIFICATION   SPECIFICATION, as used in INFOMAG, refers to a
                   set of parameters used to describe how a function
                   is to be performed. SPECIFICATIONS must be
                   defined for creating a new data base, creating a
                   group, sorting a group, creating reports, etc.

INDEX FILE   The INDEX FILE is a disk file containing the key
                   fields from all records in the master record file.
                   This file is always maintained sorted in ascending
                   order. It is used by INFOMAG to find a master
                   file record.

RECORD NUMBER   The RECORD NUMBER is the term applied to the
                   location of a specific record of information in
                   the master file. You can compare it to a slot or
                   folder in a filing cabinet. This number is also
                   stored in the index file opposite the key field
                   with which it is associated.

GROUP   A GROUP is a collection of record numbers of items
                   in the master file along with the GROUP's creation
                   date and a tile for the GROUP. This data is
                   stored in a disk file under a GROUP file name.

There is no limit to the number of different GROUPS you can have except for space on the disk. GROUPS may contain any number of master file record numbers from one to the maximum number of records in the master file.

GROUPS form the basis for many of the functions in INFOMAG. They provide an easy means of gathering together only the records of interest for any function you desire.
For example:
In a mailing list, if you wanted to send a letter only to certain individuals, you would create the GROUP containing only those you wanted, sort the GROUP by zip code, output mailing labels using the modular reports functions, output a form letter for the GROUP using modular reports, then use the GROUP reroute function to store in each individual's master file record the fact that the letter was mailed.

COLUMNAR REPORT   A COLUMNAR REPORT is a term used to describe one of four report types available in INFOMAG. In the COLUMNAR REPORT, data is printed down the paper in vertical columns.

The first step is to specify to INFOMAG how the report should appear. The specifications are then stored in a disk file. Any number of report specifications may be stored on the data disk for future use. Once a report format is known to INFOMAG, it is available to output the data for any group file.

MODULAR REPORT   MODULAR REPORT is the term used to describe the second type of report available in INFOMAG. Like columnar reports, MODULAR REPORT formats must be specified and saved in a disk file. Any number of MODULAR REPORT formats may be specified.

MODULAR REPORTS allow setting up output of data in almost any form you desire. There can be from one to five MODULES across the printed page and from 6 to 88 lines down the page. MODULAR REPORTS can be used to output items such as:
MAILING LABELS--1 to 5 across
3"x5" cards, Rolodex cards, Post cards, etc.
Form letters, Statements, Invoices, etc.
Any preprinted form (purchased or designed by you).

As with colunar reports,Modular Reports can be output
for any group file.

STATISTICS REPORT STATISTICS REPORTS are used to output statistical
data on information in the master file. For example, in an
inventory application, quantitative data for products from
each individual vendor can be displayed.

The STATISTICS REPORT is a modular type report but the format
is fixed. Only the title lines can be changed. The fields
used in the report must be specified and the specification
saved in a disk file. STATISTICS REPORTS can be output for
any group file.

MULTI-FILE REPORT The MULTI-FILE REPORT allows the user to obtain a
printed report based on data extracted from 2 separate data-
bases which have a 'common' data field. See Chapter 8 page
8.15 for further details.

AUDIT TRAIL Most data base systems for microcomputer systems suffer
from the lack of historical information. Changes are made
to the data file, the particular fields are updated but it is
usually impossible to determine, after the fact, why a particular
field contains what it does. INFOMAG has an audit trail capability.
The user may specify by means of an AUDIT TRAIL on/off flag
whether a history is maintained of all additions and modifications
to the master data file.

SYSTEM CONCEPTS--IDNO SCHEMES

This system is designed as an integrated system. That is, one master file contains all the information on your data base. All other programs access this database master file. What this means is any changes have to be entered one time, not many times, and reports, labels, 3x5 cards, etc. can be reprinted immediately (containing the new data) without sorting, shuffling, or modifying them.

The system hinges on a master data index file. This index is always maintained in sorted ascending order as new items are entered or deleted. If is sorted on the 0 field or key field (IDNO field).

Before entering your data base, you should determine a numbering scheme for identifying all the master file items that will uniquely identify each item, while allowing for expansion in the future.

Any printable character may be used for any of the characters in the IDNO field. You do not have to use the maximum number of characters available for the IDNO field. The computer will append spaces to fill the field.

Your numbering scheme directly affects the ease of use of the system, since most computer functions require this field for identification purposes. Updating information begins with your entering this IDNO. Groups, reports, labels, etc. are then processed in IDNO order.

Some possible IDNO schemes are shown below. Examples refer to an inventory database.
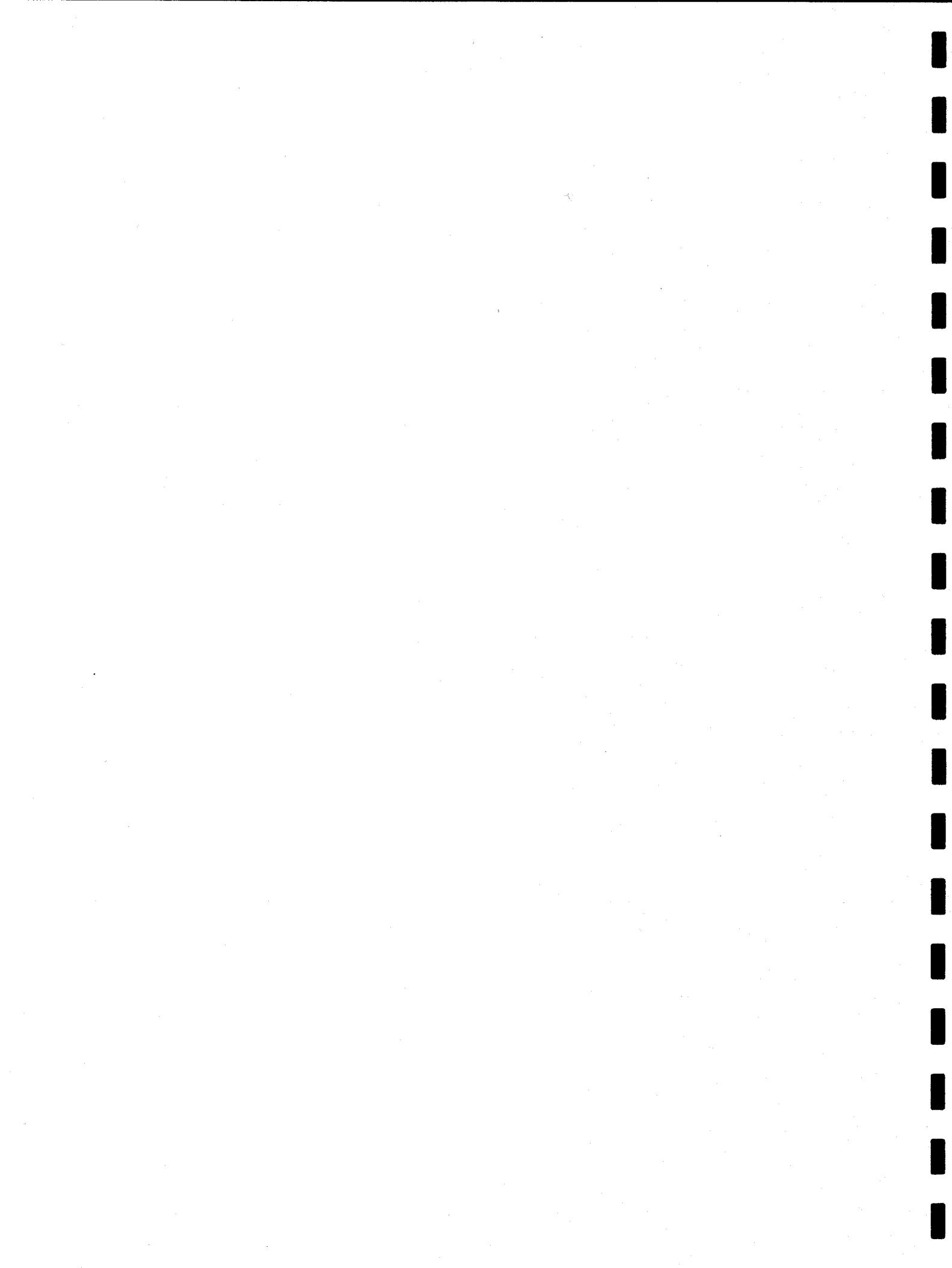
	IDNO		COMMENTS
1)	10	:	Sequential number order with increment of 10
	20	:	to allow future entries
	30	:	0 - 1000 = General Supplies
	40	:	1010 - 10000 = Electronic Items
	50	:	10010 - 15000 = Books, Publications, etc.
	60	:	etc.

	IDNO		COMMENTS
2)	9-12345	:	Vendor # followed by
	41-LM304	:	Vendor part #
	62-CD400	:	Etc.

IDNO		COMMENTS
3) 9-001	:	Vendor # code followed by
41-1011	:	your Stock number
62-9073	:	Etc.

USER ACCESS LEVELS

When a user is assigned a password, a user access level (0-9) is
assigned at the same time. This access level determines what
privileges the user has while running INFOMAG. The following
table shows the privileges associated with various levels.

LEVEL	USAGE
0 - 1	LISTS AND REPORTS allowed but no data changes
2 - 4	MODIFY and ADD records allowed
5 - 8	DELETE, REROUTE, TRANSFER allowed
9	No restrictions

CHAPTER 3
GENERAL INSTRUCTIONS
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OUT OF THE PACKING BOX

If your INFOMAG package was supplied on 8 inch disks, there
should be one disk labeled "INFOMAG PROGRAMS" and a second disk
labeled "SAMPLE DATA BASE". If you received 5 inch double-sided
disks, there are three disks labeled "INFOMAG PROGRAM DISK 1",
"INFOMAG PROGRAM DISK 2", and "SAMPLE DATA BASE".

The supplied disks should be copied, immediately, on to freshly
formatted disks of the same size and the originals should be
filed away in a safe location. Then, if something should happen
to the copy (Computers invariably do what we tell them to do!),
it can be reproduced from the original. It is also advisable to
maintain backup copies of your data disks and to update the
backup disks frequently. The frequency of use and your
particular application will dictate how often to backup.

GETTING STARTED

In order for INFOMAG to function, some system files must be
copied on to the program disk(s). These include XBASIC, CAT, and
PRINT.SYS. Other programs that may be useful are DIR, LIST,
DUMP, DELETE, and any others that you might want. If your
printer driver program is not called PRINT.SYS, it must be
renamed for use with INFOMAG. PRINT.SYS and CAT must be present
on all program disks. It is not mandatory for XBASIC to be on
the program disk(s) but it makes startup much easier.

To start INFOMAG, insert the program disk containing XBASIC into
the SYSTEM drive and the sample data base disk into the WORKING
drive. It doesn't matter which physical drives are assigned as
SYSTEM and WORKING drives. INFOMAG will automatically determine
this information.

Assuming the system drive is 0 and working drive is 1, type the
command "XBASIC 0.MENUDBM" to load XBASIC and begin running the
INFOMAG main menu program. When the menu program has loaded and
is running, it will prompt for a password. More information on
using the menu program is presented in the next chapter.

USING AN EXISTING DATABASE

Select MENU item #1 (MODIFY, FIND, DELETE). When the first prompt is displayed, press <I> and then <ENTER> for inquiry. INFOMAG will then request an ID/ or IDNO (identification number). The slash permits a "wild card" or partial IDNO. Type "1-4/" and press <ENTER>. The first record with an IDNO starting with "1-4" will be displayed. Use the keys indicated at the bottom of the screen mask to move around in the file. The <B> will take you to the last record, the <T> will return you to the first record and etc.

Select a record and press <M> for modify. You will be prompted for an <N> (next field) or for the number of the actual field you want. Press <N> and the current contents of the "DESCRIPTION" field will be displayed. Type in something new and press <ENTER>. Press <O> and then <ENTER> to exit the modifying function. Press <ENTER> and INFOMAG will now request another IDNO. Press <ENTER>. Answer <Y> to the prompt and press <ENTER> you will be back to the main MENU.

Now select MENU item #6 (OLD GROUP FILE MAINTENANCE). When the options are displayed, Press <G> and <ENTER>. Press <T> for terminal and a group directory will show that the group ALLITEMS has been created for the Sunshine database. Press <ENTER> to return to a listing of the functions.

Press <L><ENTER> for a listing of the group. Select the <T> for terminal and type in the name 'ALLITEMS' for the group name, then press <ENTER>. Preselected fields from the records indicated in the group will be listed to the screen.

After the listing, press <ENTER> to return to the list of functions. Press <ENTER> again and answer <Y> to the prompt. Press <ENTER> to return to the main MENU.

CREATING A NEW DATABASE

Now select MENU item #4 and try your hand at creating a simple address file. When the first prompt appears, enter an <N> for new. Enter 'NAMES' for the name of the new database and press <ENTER>. After the screen mask is in place, press <A> to add a field. Type in 'IDENT' in response to the prompt for a label and press <ENTER>. Enter '5' for the length and press <ENTER>. By definition, this field (0) is the Key field and is always a string type.

Now use the arrow keys to position the field two thirds of the way to the left and all the way to the top of the mask. Press <S> to set it into position.

Now press <A> to add another field. This time enter 'NAME' for the label. You will be requested to select a field type. Enter <S> for string and press <ENTER>. Enter '25' for the length and press <ENTER>.

Again, move the field up into position under the IDENT field and press
<S> to set the field.

Follow the same procedure to add the 'STREET', 'CITY' and 'ZIP'
fields. Select the string type for each. When you are through, press
<S> to save the database definition.

INFOMAG will now enter the second part of the definition by setting
up the data files according to your instructions. When prompted,
request a maximum of 50 records and press <ENTER>. Answer the next
several prompts as they appear. Leave the audit trail 'OFF'.

When ask if you want to initialize any fields, answer <Y> and press
<ENTER>. Press <ENTER> until you come to the 5th field ('ZIP') and
enter your zip code. Then press <ENTER> again. Now when you enter data
into any of the records, the zip code will already be there. More
details on the SPECIFY function can be found in this manual.

After the files are created, you will be asked for the password
again. Type 'PASS' and press <ENTER>. Then enter the name of the data
base you just created and press <ENTER>. You are now at the main MENU
again.

You have just been introduced to the way INFOMAG functions. Please
turn to the manual for instructions on adding data to your newly
created address file. After a little practice, you will be ready to set
up serious applications.

ANSWERING QUESTIONS IN INFOMAG

When INFOMAG displays a question on the console screen, it will usually summarize the options offered as follows:

        Inquire, Add, Delete, Modify [I, A, D, or M]: ?
                                or
        Inquire, Add, Delete, Modify (I, A, D, or M): ?

In the first example, the "[ ]" signifies that your response must be terminated using the <RETURN> key and should be one of the single letters displayed. The "[ ]" also signifies that any FLEX (tm) command line may be entered, preceding the command with "+". Care should be used not to execute a FLEX command that will overwrite INFOMAG. Commands such as LIST, CAT, FREE, FILES, etc. are OK to use. Commands like COPY, NEWDISK, EDIT, etc. are NOT to be used. In this manner, you can obtain on-line HELP by entering:

        +LIST HELP   to list a "help" file to the screen or
        +P LIST HELP   to list a "help" file to the printer.

If nothing is entered but <RETURN>, INFOMAG will backup to the preceding program level. This allows you to terminate a function you selected in error or to return to the command level of a particular program.

In the second example, above, the "( )" signifies that the <RETURN> key is not required. Simply press the single letter designating the function desired. No FLEX commands can be entered at this point.

In many instances, INFOMAG will ask you for a Yes or No response. For example:

        PRINTER READY (N or Y): ?

In this case a <RETURN> entry will default or assume the last option is the one desired. In the example, "Y" or Yes would be assumed.

In all cases, INFOMAG will verify your responses and if there is an error, an appropriate message is displayed and/or a "beep" tone is sounded to get your attention.

CHAPTER 4
DATA BASE MENU PROGRAM

The Data Base MENU program is the central dispatcher for all functions carried out in INFOMAG. Since INFOMAG is a very large program, it is physically impossible for the entire program to fit into memory at the same time. Instead, it is divided up into several different programs, each organized to perform one function or a group of related functions. Each of these individual programs is small enough to fit into the computer memory.

It is the main purpose of the MENU program to present to the user a list available functions or groups of functions and to load into memory the appropriate program to perform the desired function(s). When the desired function is completed, the MENU program is again loaded into memory for selection of a new function.

The MENU program in INFOMAG performs some additional functions besides loading programs. It allows the selection of which data base to use. The MENU program also provides the ONLY normal exit point to get out of INFOMAG and return to BASIC.

Another function of the MENU program is to process the user password. Since this is the only point where the password is entered, it is the security control point for the entire system. Due to the password security structure of the system, all programs except the password setup and the control code setup programs must be executed from the MENU. Any attempt to execute any of the other programs directly from BASIC will result in the menu program being loaded.

The reason the password and control code programs are exempt from password protection is to allow configuring a new data base on a blank disk. (Note--The password setup program requires a special "master password" to function. This prevents compromising existing passwords.)

USING THE MENU PROGRAM

When MENUDBM (the menu program) is loaded and begins execution, a header line is displayed at the top of the CRT screen. This header contains the current program name, version number, data base file name, function being executed and the current date. If your terminal supports special display modes such as inverse video and blink, the header line will be inverted with the function name blinking during function changes.

A request for the user PASSWORD is then displayed. As the password is typed, the individual characters are not displayed but replaced with asterisks (*) to indicate how many characters have been entered. If the password entered is not valid, the prompt will be repeated. Three attempts are permitted for

entering the correct password. After failing on the third
attempt, control is returned to BASIC.

After a successful password entry, the menu program checks the
status of data bases on the current data disk. Three possible
conditions can exist: There may be no data base present; there
may be only one data base; or there may be more than one. Each
of these cases is handled differently.

If there is no valid data base on the current data disk, this is
reported and you are asked if you want to create a new data base
or insert another disk with a data base on it. If you elect to
enter a new data base, the data base specification program is
loaded and executed. If another data disk is inserted, the test
is repeated.

If there is only one data base on the disk, the name of that data
base is reported along with the fact that it is the only one.
The menu mask is then displayed.

If more than one exists, the names of all data bases present are
displayed and you are prompted for your choice. The menu mask is
then displayed.

The main menu display shows all available functions or groups of
functions along with a number for each. To select a desired
function, simply type the number of the function followed by
<return>.

Functions "Ø" and "19" have special meaning for INFOMAG. If you
select function "Ø", the menu program is reloaded and the
password is again requested. The purpose of this is to allow you
to switch data bases and still maintain security on the system.
Function "19" returns control to XBASIC (or UniFLEX BASIC). This
is the normal exit point from INFOMAG. Unless something goes
wrong, this is the only method that should be used to exit the
program.

CUSTOMIZED MENU OPERATIONS

The MENUDBM program has been specially designed so that you may
use your own custom menus. Menus can be nested. That is, a menu
selection in one menu can be used to display an entirely new
menu. This nesting can be repeated as often as needed.

To create your own menu for INFOMAG or any other group of BASIC
programs, a text editor should be used to create a file
containing the menu display mask and the list of programs to be
used. The primary (first) menu file must be named MENUDBM.DAT.
All others can have any name that you desire.

The menu display mask can be organized in any way you want, but
certain basic rules must be adhered to. The display must be
exactly 20 lines in length. If 20 lines are not needed, blank
lines must be used to fill out the mask. All menu items should
be numbered, starting with "1". In addition to the desired menu
items, two additional items must be included. Item number "0" is
reserved for returning to the primary menu and requesting the
password. Another item, numbered one higher than the highest
number on your list must be designated for returning to XBASIC.

After you have entered the display mask, the next line of the
file should contain the number of menu items, not including "0"
and the return to BASIC. Following the item count, enter the
BASIC program name for each of the menu items. Each program name
must be on a separate line, separated by carriage returns. The
number of program or file names must be the same as the item
count previously entered.

If one of the menu items requires a new menu to be displayed,
then instead of a BASIC program name in file list, the name of a
text file containing the menu data should be used and the name
must be preceded with a "+" in the list. The "+" informs the
menu program that the specified file is not a BASIC program but
rather a new menu data file. This feature may be used as often
as desired.

It should be noted that regardless of which menu data file is
currently in use, if "0" is entered for the menu selection, the
primary menu file, MENUDBM.DAT will be loaded and displayed.

For more information on the format of a menu data file, examine
the supplied MENUDBM.DAT file with your text editor.

CHAPTER 5
MASTER FILE OPERATIONS

This chapter deals with the various operations which can be
performed on the master record file for a given data base. These
operations include defining a new data base, adding records,
deleting records, modifying records, and updating existing
records with new data. Four separate main menu functions are
covered here and each will be dealt with in detail.

MENU ITEM #1--MODIFY, DELETE, FIND

This program is used to locate and display specified records in
the file, make modifications to records, and to delete specified
records. When the program is entered, a list of four available
functions is presented. These include "Inquiry", "Find",
"Modify", and "Delete". To proceed, enter the letter for the
desired function and hit <return>. Each of the functions is
described below:

Inquiry   This function is used to locate a specific record in
           the master file by specifying the IDNO or key field for
           that record. Once the record is located and displayed,
           it is possible to examine other records in the file by
           using the appropriate keys listed at the bottom of the
           screen to move forward or backward through the file or
           to move to the first or last record or to a specific
           record number.

           When the desired record has been located, it can be
           modified or deleted. These functions operate the same
           wherever they occur in INFOMAG and will be described
           later in this section.

Find   Another method of locating a record in the master file
           is to search for a string of characters that may be
           present somewhere in the record. The program will
           prompt with "Enter Search String Character". Enter the
           desired string and hit <return>. INFOMAG will begin
           scanning all records starting at the beginning of the
           file and will stop and display the first record
           encountered bearing the specified string. If this is
           not the desired record and it is known that other
           record(s) exist with the same string, the search may be
           resumed by typing CTRL-F. If the end of the file is
           reached without locating another candidate record, the
           terminal beeper is sounded and the last record found is
           redisplayed.

           When a record has been displayed with the FIND
           function, all of the functions described under
           "INQUIRY", above, may be used. A list of these
           functions is displayed at the bottom of the screen.

Modify   The MODIFY function is used to change data in an
           existing record.   When MODIFY is entered directly from
           the program menu, the "Inquiry" mode is entered first
           for the purpose of locating the record.   You must enter
           the correct IDNO of the desired record.   If the desired
           record is located, it is displayed and the following
           prompt appears at the bottom of the screen:

           'Ø' = DONE, 'N' = Next Field
           Item to MODIFY:

           Enter the field number of the field to be changed and
           hit <return>.   On the next line, the field label and
           current contents are displayed. On the bottom line the
           program will prompt for the new data.   Enter the
           replacement data, making sure that the new data is the
           same type as the original and does not exceed the field
           size.   Hit <return> to record the new data.   The record
           will be redisplayed with the new data and the above
           prompt again displayed.   If "N" is entered for the
           field number, the next sequential field is used.   When
           finished with the current record, enter a field number
           of "Ø" to end the operation.

Delete   The Delete function is used to remove a specified
           record from the master file.   The record number of the
           deleted record is placed in a file of deleted records
           so that the record can be reused for new data.

           To delete a record, select the delete function in the
           menu.   Enter the record IDNO.   If the record exists, it
           will be displayed.   At the bottom of the display, the
           question "ARE YOU SURE YOU WANT TO DELETE?" is
           displayed.   If you answer "Y", the record is deleted
           and the master file updated.   If you answer "N", the
           message "I THOUGHT SO!" and the list of available
           functions is displayed.

MENU ITEM #2--ADD, COPYADD

The primary function of this program is to add new records to the
master record file. The new records are added by entering new
data into the appropriate fields. Existing records can be copied
into new records with new IDNO's. The functions available in
this program are discussed in detail below.

Inquiry   This is identical to the "Inquiry" function in the
           previous program. This same function appears in many
           of the INFOMAG programs. In some of the programs, it
           is called "Find". The "delete" function is not
           available in the "inquiry" mode in this program.

Add   This is the function actually used to add new records.
           The first item to be entered is the new IDNO. This
           should be different from any already on file and should
           conform to the numbering scheme you have previously
           defined. This will ensure that records and groups are
           sorted properly.

           After the IDNO is entered, a blank record is displayed.
           All fields are displayed with their labels but no data
           is present. If you have predefined the desired fields
           for new data entry (see "Predefine" function below),
           the first predefined field is displayed at the bottom
           of the screen. Enter the required data and hit
           <return>. The record is redisplayed with the new data
           in place and a request for the next predefined field.
           When all predefined fields have been processed, you are
           asked if the data entered is correct. If you answer
           "Y", the record is recorded in the file. If you say
           "N", the "modify" mode (same as previously described)
           is entered and any field may be changed. If the data
           entry fields were not predefined, the "modify" mode is
           used to enter all data.

           After all desired new records have been entered, hit
           <return> in response to the request for IDNO. The
           program will then ask if you are ready to merge the new
           records into the master index file. If you answer "Y",
           the merge operation takes place and the program menu
           redisplayed. If the response is "N", a request for
           another IDNO is made.

Predefine Frequently, when entering new records, you may not want
Fields   to enter new data for all fields in the record when the
           record is first created. To save time during data
           entry, it is possible to specify, in advance, those
           fields which are to receive data during the creation of
           a new record. Then, as described in the "Add"
           function, only the specified fields will be used to
           prompt for new data.

When this function is entered, a list of all available
fields is displayed for reference. You are then asked
to   enter   a   list   of field numbers which you will use
during   data   entry.   Field   number Ø (IDNO) is always
required   and   thus   is   automatically included. After
each field number is entered, the field list is
redisplayed.   When you have made your choices, enter a
"Ø"   as the last item in the list. The program menu is
then redisplayed.

Copyadd   If the same data will be repeated in more than one
record, the simplest way to handle this is to "Add" the
first record and then "Copyadd" the remaining records.

To   use this function, enter the IDNO of the new record
and   the   IDNO   of   the   record   to be copied. The new
record   will   be   displayed   with the data from the old
record   and   the "modify" mode is entered. Any changes
that are desired are entered and the record saved.

MENU ITEM #3--UPDATE

The Update program is used to update existing records with new or modified data. As an example of this, in an inventory application, it is necessary to periodically update the quantity of stock on hand. This is a complex program which will require some studying and practice to master.

UPDATE allows up to five different new data items entered from the keyboard to be applied in five different ways to as many as twenty different record fields! (Did you understand that??!) To explain further, up to twenty different fields in one record can be updated at one time. The new data entered from the keyboard can be applied to a field in one of five different ways. These include: 1) Replace OLD data with NEW data; 2) Add NEW data to OLD data; 3) Subtract NEW data from OLD data; 4) Multiply OLD data by NEW; and 5) Divide OLD data by NEW. One NEW data item entered from the keyboard can be applied to more than one field. For instance, NEW data item #1 could be added to field 4, replace field 7, and subtracted from field 23 all at the same time. Up to five different NEW data items can be processed at one time.

The Update process is broken up into two major parts, specify and process. In the specification phase, the record fields to be updated, the action codes, and the new data items are determined and saved in a disk file. In the processing phase, the appropriate update specification file is chosen from a list of those that have been set up. The update specifications are displayed and you are given an opportunity to review and determine if this is the procedure you want. If it is, you are asked to enter the IDNO's of records to be updated and the new data to be applied to the record. After the new data is entered, the old data and the result of applying the new data are displayed for each affected field. If everything is OK, the record is updated immediately and the IDNO of the next record is requested. This is repeated until all desired records have been updated.

When the update program begins execution, a list of functions is displayed. These include Inquiry, Modify, Update, Specify update, and Directory of updates. These will now be discussed in detail.

Inquiry Inquiry, in this program, functions identically to the previous programs.

Modify Modify is also identical to the previous programs.

Specify As previously stated, this function is used to define
Update the specifications for an update process. When Specify is started, a few lines of explanation are displayed on the screen and you are asked if you are ready to proceed. If so, the screen is cleared and a list of

seven "action codes" is displayed at the top of the
screen along with the heading for a specification table
which you will begin filling. The table consists of
three columns labeled "Action code", "Field", and "New
Data Item". The cursor is positioned in the first line
and first column.

The action code column is used to specify the action to
be taken. The code to enter is one of the seven in the
list at the top of the screen. Five of these codes are
the functions described earlier. In addition, a
specified field can be selected for display only. This
makes it easier to positively identify the record when
the update is processed later. Action code #7 will
clear the screen and display a list of fields and their
descriptions. Hitting any key will return to the
specification table.

After entering the action code, the cursor moves over
to the second column where you must enter the desired
field number. This is the field to be updated. When
the field number has been entered, the cursor moves
over to the third column unless the action code was a
"1". The sequential number of the NEW data item to be
used in updating this field is entered here. Up to
five different numbers can be entered in this column
and a new data item number can be repeated for
different fields.

After entering the New data item number, the cursor
moves to the first column on the next line where you
can proceed to describe the next field to be updated.
This process is repeated until all required fields and
data have been entered. To end the specification
entry, hit a <return> when the cursor in the action
code column.

Here is a sample specification table:

ACTION CODE	FIELD	NEW DATA ITEM
1	2	
2	6	1
2	8	1
4	9	1
2	13	2
3	14	2

In this sample, field 2 will be displayed for reference
purposes. Fields 6 and 8 will both be replaced by new
data item #1. Field 9 will have new data item #1
subtracted from it. Field 13 is replaced with new data
item #2. Field 14 will have new data #2 added to it.

You are then asked if everything is OK. If you answer "N", the update menu is redisplayed and you must repeat the process again. If the answer is "Y", you are asked if you want to save the specification in a file. If you answer "N", the update processor (to be described later) is entered and the update performed immediately. If the answer is "Y", you are asked to enter the file name at the top of the screen. You will observe that the extension has already been filled in. You need only enter the eight-character (or less) file name. After entering a valid file name, the Update menu is redisplayed.

Update   This function performs the actual updating of specified records. Update starts by requesting the file name of the desired update specification. If the file is found, the list of fields to be updated and the action to be performed on each is displayed. The program then asks if you are ready to begin. If you answer "N", the update menu is redisplayed. "Y" results in the screen being cleared and a request for an IDNO is made. When a valid IDNO is entered, the specified record is displayed for review.

After reviewing the record, hit any key to continue. At the top of the screen, you are asked to enter the new data item(s). All new data items are entered on the same line, separated by a comma. The data must be entered in the same order as the items in the specification. Any items omitted are assumed to be zero. After entering the new data items, the screen is cleared and a list of updated fields with both the old and new, updated data is shown. You are then asked if everything is OK. If "Y", the record is permanently updated and a request for another IDNO is made. If you answer "N", the data entered is discarded and another IDNO request is made. After all desired records have been updated, enter <return> for the IDNO and the update menu is redisplayed.

MENU ITEM #4--SPECIFY A DATA BASE

This program is used to define a new data base, modify an existing data base, or to copy the specifications to another disk allowing changes enroute. The latter case allows creating a new data base which is related to an existing data base but is organized differently.

The specification program actually consists of two separate programs. The first is used to define the record specifications for the master file while the other is used to create and initialize the root or core files required for the data base.

Any aspect of a new data base can be modified before the specifications are saved in a file. In an old data base, there are limitations on what can be modified. Field labels and screen display positions can be changed. If the old data base uses a record I/O type file, and there is space left in the record specification, additional fields can be added up to a total record size of 252 bytes.

The functions available in the specification program include Specify a new data base, Modify an existing specification, and Transfer specifications to another disk. These are now discussed in detail.

SPECIFY

When the Specify function is called, the following screen mask is displayed:

```
=======TOP================OF================SCREEN============
                    ( Program header line )
FUNCTIONS: A)dd item, M)odify item, D)isplay, S)ave specs: > <
USE ARROWS TO MOVE, S)et item in place, or Exit this function: > <
************************************************************************
```

Amount of space here depends on
screen size defined in Control code program
(Usually 16 lines)

```
************************************************************************
          STORAGE CHARACTERS USED: XXX          FREE: XXX
(Question line) . . .  . . . . . . . . . . . . . . . .
(Error messages here)
====BOTTOM================OF================SCREEN============
```

You will note that there are two command lines at the top of the display mask. Only one of the command lines is in use at any time. The cursor will be positioned within the brackets to the right of the line currently in use.

The center portion of the display is where the data entry and display mask will be set up. The screen format you choose here will be used in many of the INFOMAG functions for the purpose of displaying records from the master file.

All questions pertaining to the specification of record format are displayed on the "Question line" at the bottom of the display.

ADD AN ITEM

The first step in specifying a new data base is to ADD new fields to the record specification. While the cursor is on the top command line, type an "A" to enter the "add" mode. The following prompt will appear at the bottom of the screen: "FIELD XX ENTER FIELD DESCRIPTION: ". This is the descriptive label applied to field number "XX". This label can be up to 35 characters long and may contain any printable character.

After the label is entered; the next question is "FIELD XX ENTER DATA TYPE [S)tring, N)ame, D)ate, $, #, or I)nteger]:?" This is the field data type specification for field "XX". The types are:

        String = Any string of printable characters
        Name   = A person's name (Last, First MI)
        Date   = A Date field stored at MO/DY/YR
          $ = A Money field (Floating point with dollar sign)
          #   = A Floating Point Number field
        Integer = An Integer Number field

The next question asked depends on the type of field selected. For string and name fields, the prompt is "FIELD XX ENTER DATA LENGTH: ". Enter any number between 1 and the number of "free" characters remaining (displayed just above "question line").

For numeric fields (money and floating point), the prompt is "Enter MAX Value using 9's [Include Decimal Point, No Commas]:" Numeric and Floating point fields both require 8 characters of disk or memory storage. The 9's are used to specify the display format, with each "9" representing one print position. Enough 9's should be included to insure that there is room to print grand totals on reports.

For Integer fields, the prompt is similar—"Enter MAX Value using 9's [No Decimal or Commas]:". Although integers only require two bytes of storage space, the print format can be up to five characters long.

Date fields require no further information.

After the above questions are answered, the field just specified is displayed in the lower right-hand corner of the record display area. You will note that the cursor has now moved to the second command line at the top of the screen. At this point, the keys which have been defined for cursor movement in the control-code program can be used to move the field display to the desired location on the screen. If an attempt is made to move the field outside the display area, the terminal beeper will sound and the field display will disappear. Moving one position in the opposite direction will restore the display.

Once the field has been moved to the desired location on the screen, type an "S" to set the field in place. This stores the field display location in a table in preparation for saving to disk. It should be noted that when moving a field around on the screen, other existing fields may be erased. This is not a problem as the erased fields will reappear when the moved field is set in place. Just use caution to make sure you do not move the new field into a location that was occupied by a field that has been temporarily erased.

After the field has been set in place, the cursor returns to the top command line and other fields can be added or existing fields modified.

MODIFY

INFOMAG will allow you to modify an parameter on any field if it is for a new data base file and the file has not, yet, been saved on disk. For old data bases, INFOMAG will not permit you to modify the types or lengths of fields, but you can change the display position on the screen and the field label.

If an old data base was set up as a record I/O type random file and there is some free space left in the record structure, INFOMAG will allow you to add new fields, using that free space. If the file was set up as a virtual array, no additions can be made.

Modify starts by requesting "ENTER ITEM NO. TO MODIFY:". The item number is the field number. After entering the field number, INFOMAG will ask a series of questions similar to those asked in the ADD function. Questions are asked only for those items which are allowed to be modified.

Specify or Modify -- Part II

After the record structure has been defined and the specification saved, it is necessary to enter information relative to the initial setup of the various data files required for the data base being specified or modified.

The first item requested is the number of master file entries. The default is 1000 records. Entering a <return> will use the default, otherwise you must enter the desired number. This number is the maximum number of records that the data base may contain. This number should be chosen based on available disk space and estimated size of the data base. If you choose a large number, be sure leave some space on the data disk for the various support files that will be created during the operation of INFOMAG. About 30-40 sectors should be sufficient for this purpose. If you are modifying an existing data base, the number of records previously specified is displayed and may be retained by hitting a <return>.

You are next requested to enter the Group file extension. Follow the guidelines for extensions stated in chapter 2. If you are modifying the data base, the extension previously specified is displayed and if satisfactory, a <return> will retain it. The Report file extension is requested in the same manner.

You must next enter a descriptive name for the data base. The name may be up to 40 characters long. This name is available for use in many of the various reports that are available. As with the previous prompts, if you are modifying the data base, the previous name can be retained with a <return> entry.

Some of the group functions (described later) have the ability to display to the CRT selected fields of the various records in the group. You must now specify how many fields are to be displayed (up to 5) and which fields to use. A list is the currently defined fields is displayed along with number of items currently selected for display. For a new data base, this number will be zero. Enter the desired number of display items in the range of 1-5. At lease one item must be displayed.

After the number of items has been selected, you must choose which fields are to be used for the display. The list of available fields is again displayed followed by the current list of display fields. If this is a new data base, these fields will all be listed as zero. INFOMAG will request each field up to the total number selected and redisplay the field list and current selections after each is entered.

The program next prompts for the Company name. This is name of the company whose name you want to appear on reports. The maximum length is 28 characters. If you are modifying a data base, the previous name is displayed and will be retained if you hit a <return>.

If a new data base is being defined, you must choose which type of random file to use for the master file. If you are modifying an existing data base, this section is skipped since it is not permitted to change the file type. The two file types are Record

I/O and Virtual Arrays. Record I/O files are processed much faster but may take up much more disk space. The program will display the amount of storage space required for a record in each file type and also informs you how many additional records can be stored in a Virtual Array in the same space as one record of a Record I/O file. You must then choose the desired file type. Enter a "1" for Record I/O or "2" for Virtual Array.

The next item to specify is whether or not you want the Audit trail file to be used. This can be changed at any time later when running the program. You are simply setting up the initial condition.

The last item(s) to specify is whether or not you want any fields automatically filled in with predetermined data. The effect of this is that when you enter a new record into the data base, the fields specified here will automatically be filled in with the predetermined data and you do not have to enter new data unless you want something different from the preset value. Any type of field can be preset with data. INFOMAG will present a list of fields and then ask which field(s) you want to initialize. After entering the field number, you are asked for the data to be used.

When all of the above data has been entered, INFOMAG proceeds to build all of the required data files to begin operation. If the number of records specified for the master file is quite large, this may take several minutes to complete. While INFOMAG is processing the master record file, it will inform you of its progress by displaying which record it is working on. When the file setup is done, control is returned to the INFOMAG master menu and the password is requested.

TRANSFERRING SPECIFICATIONS TO ANOTHER DISK

As previously described, this function is used to create a new data base on another disk using the specifications from an existing data base. The specification may be modified in any way desired execpt that a field may not be deleted. New fields can be added. Just be sure not to exceed 252 characters of storage space.

Prior to executing this function, you should have a freshly formatted disk available with the files SYSTEM.COD and PASSWORD.COD already copied onto it. If you have not done this, exit INFOMAG and do so at this time.

The Transfer function starts by requesting the name of the data base whose specification is to be transferred. After enterring the data base name, the data base specify mask is displayed with all of the current record fields displayed. At this point, you may proceed as if this were a new data base and use any of the specify functions as previously described.

When you are satisfied with the screen layout and the field
specifications, enter "S" to save the specifications. The
program will proceed to "Specify--Part II" and then ask you to
remove the program disk and insert the disk to receive the
transferred specifications. Insert the disk previously prepared
into the drive indicated on the CRT and hit any key to proceed.

The remainder of the transfer procedure is identical to creating
a new data base except that prior to returning to the main menu,
you will be asked to switch disks again, reinserting the program
disk into the "System" drive and the newly created data disk into
the "Working" drive.

CHAPTER 6
GROUP OPERATIONS

As mentioned earlier, in chapter 2, Groups form the basis for
many of the operations in INFOMAG and are responsible for much of
the versatility of the system. This chapter deals with the
various operations which involve groups, directly. These include
creating new groups, modifying existing groups, sorting groups,
and changing a field in all group members. Main menu functions
5-8 are now discussed in detail.

MENU ITEM #5--NEW GROUP CREATE

This program is used to create new groups. It has several modes
of operation. In all cases, if a specified group already exists,
it is replaced with the new group. Creating a new group has NO
effect on the master record file. A group is simply a list of
pointers to records in the master file.

When the Group Create program begins execution, six functions are
available. These include Group directory, Create group of all
items, Manual group create, Specify auto group create procedure,
Process an auto-create procedure, and Auto-create specification
directory. These are explained below.

Group   The Group directory function is used to list the names
Directory   of all existing group files on the disk along with the
            number of items in the group, the creation date, and a
            group title. This function is available in all group
            operations.

Create   Many of the functions in INFOMAG operate ONLY on
Group   groups. Consequently if a function is to be performed
ALLITEMS   on all records in the master file, a group must be
            created containing pointers to all records in the
            master file. To save time, this function does exactly
            that. The group file created is called ALLITEMS and
            has the title "ALL ITEMS IN <dbname>" where <dbname> is
            the data base name.

            This function is entirely automatic and no user
            information is required. The group of ALLITEMS should
            be recreated anytime records are added to or deleted
            from the master file.

Manual   With this function, you may choose which records from
Group   the master file are to be included in the new group.
Create   You are first asked to enter a file name for the group.
            If a group by that name already exists, the group
            directory entry for that file is displayed and you are
            asked if you want to delete the old file. If yes, you
            must enter the title for the group. If you answer no,
            the group create menu is redisplayed.

After the file name is entered, a list of functions is displayed at the bottom of the screen. The functions are essentially the same as in the Inquiry mode described in the previous chapter except that "Modify" and "Delete" have been replaced with "Include" and "Stop".

You may use these functions to scan through the file to determine which records you want to include in the group. When you locate a record that is to be included, type "I" to include it. The word "INCLUDE" will be displayed momentarily to show that the record has been accepted. Continue the above procedure until all desired records have been included. When finished, type "S" to stop. The word "STOP" is displayed, the group file saved, and control returned to the group create menu.

Caution should be observed when creating a group manually as it is possible to include a record more than one time. If it is discovered that this has happened, the group file maintenance program (described later) can be used to remove the duplicate entries from the group.

Specify
Auto
Create

This is probably the most powerful feature of INFOMAG! By specifying a few parameters, the computer does most of the work of setting up a new group. By comparing each record with the specified parameters, INFOMAG will determine whether to include the record in the group or to skip over it. This is a very complex program but it is not too difficult to learn.

Three types of data comparisons may be performed to determine if the candidate record should be included. A field in the record may be compared with a string typed in from the keyboard. One field may be compared with another field in the same record. Lastly, a group of contiguous fields in the candidate record may be searched for the occurence of a string typed at the keyboard. In the first two cases, one of six different logical tests may used for the comparison. These test operators are "=" (equals), "<>" (not equal), "<=" (less than or equal), "<" (less than), ">=" (greater than or equal), and ">" (greater than).

Three different tests may be performed at one time, using all of the features just described. If more than one test is performed, the logical operators, "AND" or "OR" must be used to specify the relationship between the tests. For example, you might want the record included if any of the tests is satisfied. In another case, you may require that all tests be satisfied to do

the inclusion.   If more than three tests are required
to qualify the record, the process must be done in two
or more steps, each performing a maximum of three
tests.   The process here is to create a group of
records which meets the first set of criteria and then
use that group as the basis for further classifying the
data   and creating another group.   This selection
process can be repeated   as long as there is still a
choice of records to include in the final group. All
interim groups created during this process are then
deleted automatically.

When the master file is searched using the criteria
previously set up, the order in which the master file
records are searched can be one of three. The master
file may be searched in the order that the records
appear therein. The master file may be searched in the
order listed in the master index file. Lastly, a
portion of the master file may be searched as specified
by an existing group file.

When the auto-create specify function is called, you
are asked to enter the new group file name. The
extension will already be filled in.   This is the
extension given in the data base specification. After
the file name is entered, you are asked for a
descriptive title for the group. The title may contain
any printable characters and may be up to 28 characters
long.

During   the following steps, part or all of the
following sample screen mask will be displayed or built
with the data entered.

After the file name is entered, approximately half of
the mask is displayed, extending down to the first line
in the specification table. Most of the information
displayed at this point is for reference only. The
group name and title you entered are at the top. The
next line down lists the types of comparisons that can
be performed. On the next line is a list of six tests
that can be performed to compare the data items. Both
of these features will be discussed in detail. The
next two lines form the heading for the specification
table which you must fill in.

```
=============TOP==============OF==============SCREEN=========================
                    (Standard header line here)
  FILE:  MYFILE  TITLE:  MY RECORDS           AUTO CREATE

  TYPES:     1) FIELD VS STRING 2) FIELD VS FIELD  3) FIELDS VS MATCH STRING

  TEST CODE:1) =     2) <>     3) <=     4) <      5) >=     6) >
  SEARCH  SEARCH  FIELD1  FIELD2  TEST  COMPARE
  NUMBER   TYPE   NUMBER  NUMBER  CODE  STRING

     1       1      12     ***    1     NEW........
     2       2      11     10     4
     3       3       1      5     1     GPCC........
  SEARCH CONNECTORS  (1=AND, 2=OR)              SEARCH 1 TO SEARCH 2:? 1
                                                SEARCH 2 TO SEARCH 3:? 2


  SEARCH ORDER IN FILE [ 1=MASTER INDEX FILE, 2=MASTER FILE, 3=GROUP FILE ]:? 3

  ENTER GROUP FILE NAME: 2.NEWPARTS.GIN
  TITLE: NEWPARTS IN INVENTORY   CREATED ON 2/21/82  NUMBER OF ITEMS = 34



  EVERYTHING OKAY [ N or Y ]:?

  ============BOTTOM==============OF============SCREEN========================
```

The first line of the specification table will have a "1" in it indicating this is the first comparison. The cursor is in the second column, "SEARCH TYPE". Enter the number for the desired search type from the list at the top of the screen. The cursor will move over to the next column, "FIELD1 NUMBER". Enter the desired field number. For search type "1", this is the only field number required and the next column is skipped. For search types "2" and "3", this is the first of two field numbers required. If the search type is "2", the number of the field to be compared with the first field must be entered in the next column, "FIELD2 NUMBER". For search type "3", the number of the field where the string search is to stop is entered in this column, and must be greater than "FIELD1".

The next item to be entered is the "TEST CODE". This is only applicable for search types "1" and "2". For search type "3", the test code is forced to "1". A list of the code numbers is displayed above the specification table. For search types "1" and "3", you are next asked to enter a "COMPARE STRING". For search type "1", this is the string that is to be compared with the specified field. If the field is a numeric

- 6.4 -

type, the compare string must be a number. For search
type "3", this is the string which INFOMAG will try to
locate in the record. Search type "1" does not require
a compare string.

When entering a compare string as described above, it
is possible to substitute "don't care characters", more
popularly known as "wild cards", for some of the
characters in the string. The wild card used by
INFOMAG is the question mark "?". Where a "?" appears
in the compare string, any character will match when
doing a comparison. More than one wild card may be
used in the compare string, but all wild cards must be
in groups at the beginning or end of the string. No
isolated wild cards are permitted. If a "?" appears in
the middle of a string, it is considered as a valid
character in that string. Some examples follow:

???ABC   Matches any 6-character string ending in
            "ABC"
TEST???   Matches any 7-character string starting with
            "TEST"
??23??   Matches any 6-character string with "23"
            starting in the third character position
MY?File   Not considered a wild card. The "?" in this
            example is treated as a valid character.

After the compare string (or test code for search type
2), the cursor moves to the next line and the same
process is repeated for second and third test
specifications if required. If fewer than three tests
are required, hit <return> when the cursor is in the
"SEARCH TYPE" column.

If more than one test specification has been entered,
you are asked to specify the "SEARCH CONNECTORS".
These are the "AND" and "OR" mentioned earlier. You
are first asked to specify the relationship between
test specifications one and two. If there are three
test lines, you are then asked to specify the
relationship between lines two and three. These two
search connectors do not have to be the same. Enter a
"1" for "AND" or a "2" for "OR".

The next item to specify is the search order in the
master file. Enter 1, 2, or 3 for Master Index file,
Master file, or a Group file, respectively. If you
specify a group file, you are asked for the file name
and the group directory information for that file is
displayed.

This completes the specification phase of this
operation. You are asked if everything is OK. If you

answer no, everything entered is canceled and you start over again. If you answer yes, you are asked if you want to save the specifications in a file. If you again answer yes, you are asked for the file name. To help associate the specification file with the group file, it is suggested that you use the same name for both, although this is not required. INFOMAG will automatically add the appropriate extensions. Whether or not the specifications are saved in a file, the auto-create processor program is then loaded and the new group is created.

Process   This function is used to process an existing auto-
Auto-   create specification file and create or recreate a new
Create   group. When the function is called, a list of specification files is displayed and you are asked which one to use. Enter the name without the extension. Operation of the program is automatic from that point. At the bottom of the screen, you can watch the progress of the group creation. The record numbers of each record tested are displayed along with a running count of the number of records included in the group. If no records in the master file or group file meet the criteria for selection, the new group is not created. This will be reported if it happens.

Auto   This command lists to the CRT, the names of all
Create   existing auto-create specification files on the data
Directory   disk.

MENU ITEM #6--OLD GROUP FILE MAINTENANCE

The Group file maintenance program is used to perform
miscellaneous operations such as adding items, deleting items,
etc. to existing group files. The functions available in this
program include Group directory, List a group, Rename a group,
Delete a group, Insert an item, Delete an item, and change a
group title.

Group   The group directory function in this program is
Directory   identical to the group directory in the group create
             program.

List   This function is used to list the contents of a group
A   file. When the data base was specified, you were asked
Group   to specify up to five fields that would be used for a
             CRT listing of a group. This is where those fields are
             used. You are first asked to enter the group file name
             (no extension, please). The Group directory entry is
             displayed and the listing begins. The listing consists
             of the field number, field label, and the data for each
             of the fields previously specified.

Rename   This function is used to change the name of a group
A   file. You are first asked to enter the name of the
Group   file to be renamed. You are then asked for the new
             name. The new name must be different from any other on
             the disk or in the group directory. The group disk
             file is renamed and the group name in the group
             directory is changed. The specification file for this
             group, if one exists, is not changed.

Delete   This function is used to delete an existing group file
A   from the data disk. The associated entry in the group
Group   directory is also deleted. The specification file for
             the group, if there is one, is not deleted.

             Caution--It is possible to delete a group file from the
             data disk using one of the various Flex utilities
             designed for that purpose. DO NOT use that method to
             delete a group file. The file will be deleted but NOT
             removed from the group directory. There is NO way to
             remove the directory entry if this has been done.

Insert   This function is used to add a record to an existing
An   group. This might be desired, for instance, if a new
Item   record has been added to the master file but you don't
             want to go through the process of recreating groups.
             You are first asked to enter the group file name. If
             the group exists, the directory information for that
             group is displayed. You are then asked at what
             position in the group you want the new record to
             appear. This may be anywhere in the group. If you

specify position 6, the new entry will be placed at
position 6. The entry previously at position 6 becomes
position 7, etc. as all records below get pushed down
one position.

After entering the position, you must enter the IDNO of
the record to be added. The record, if found, is
displayed and you are asked to verify if you want that
record inserted into the group at the position
specified. Answering "Y" causes the insertion to take
place. If you answer "N", a request for a different
position in the file is made. If you decide that you
don't want to enter the item, type CTRL-C to return to
the program menu.

After an item has been inserted, the prompt for a group
file name is repeated. This makes it easy to insert
the same item into more than one group. Hit <return>
to return to the program menu.

Delete   This function is the opposite of the Insert function
An   just described. It permits easy removal of an item
Item   from a group. You are first asked to enter the group
            name. You must then enter the position number of the
            item within the group. You can use the List function
            to determine this. The record specified is displayed
            for verification. If this is the correct record,
            answer "Y" to the prompt and the record is removed from
            the group. The group file name prompt is then
            repeated.

Change   This function is used to change the title of a group
Group   file. You are asked to enter the group name. The
Title   current directory information for that group is
            displayed and you are asked to enter the new group
            title. Please note that this is not the group NAME but
            rather the descriptive title for the group.

MENU ITEM #7--GROUP SORT ROUTINES

This program performs the primary task of sorting the contents of
a group file into any desired order. The sort may be in
ascending or descending order and may be based on the contents of
up to ten different fields within the record. If more than one
field is used, the fields are compared in the order specified.
Sort specifications can be saved in a disk file and may be
changed at anytime. When a group is sorted, the old group name
and title may be retained or a new name and title may be
specified.

Seven functions are available in this program, four of which are
identical to the same functions described previously. The
functions include Group directory (same), List a group (same),
File rename (same), Erase file (same), Specify a new sort,
Directory of sort specifications, and Process a sort. The first
four will not be described in this section. Refer to "Group File
Maintenance" for more information.

The actual sort process consists of several steps, most of which
are invisible to the user. Since it is possible that not all
information required for the sort process may fit in memory at
the same time, it may be necessary to sort the file in increments
that will fit in memory. INFOMAG does this by sorting a portion
of the file and saving the results in a temporary file. The next
portion is sorted and save in another file, etc. When the entire
file has been sorted, the various temporary files that were
created during the process are merged together into one final
sorted file and the temporary files deleted. If the group file
is short, the entire sort process may take place in memory with
no temporary files being created. If the sort/merge process is
required, the progress of the sort is reported on the CRT screen.

Specify   This function is used to specify how the sort is to be
Sort   performed. You must first enter the name of the sort
            specification file. If the file already exists, the
            existing specifications are displayed. If the file
            does not exist, this is reported. In either case, the
            name of the group file to be sorted is requested. The
            directory information for that group is displayed and
            you are requested to enter a name for the sorted group.
            If you want to retain the same name, hit <return>. A
            new title for the group is then requested. This title
            must be entered even if it is the same as the old one.

            The next item to be entered is the number of fields to
            be used in the sort process. Enter a number in the
            range of 1-10. A list of fields will then be displayed
            and you are asked to select the field to be used for
            the first comparison. If you have selected more than
            one field for the sort, the list of fields is
            redisplayed and you are prompted for each subsequent

field to be used.

The last item to be entered is whether the group should
be sorted in ascending or descending order. When this
has been entered, the new specifications are saved in
the file previously specified and the program menu is
redisplayed.

Process   This   function is used to process an existing sort
A   specification file.   The name of the specification
Sort   file is requested and the sort proceeds without any
           further operator intervention required.

Directory This function causes a list of all current sort
of   specification files on the data disk to be displayed.
Sort
Specs

MENU ITEM #8--REROUTE DATA IN A GROUP

This program is used to change the contents of one field in
several different records. This can be done automatically by
specifying the data that is to be inserted into the field and
allowing INFOMAG to change all records in the specified group.
The operation can also be done manually where you specify the new
data and as each record in the group is displayed, you are given
the opportunity to insert the specified data, insert some
alternate data, or to skip the record and proceed to the next.

There are five functions available in this program, four of which
are the same as in "Group File Maintenance" and will not be
discussed here. The functions include Group directory (same),
List a group (same), File rename (same), Erase file (same), and
Reroute data field for a group.

Reroute   You must first enter the name of the group to be
Data   processed. The directory information for the group is
               displayed, followed by a list of fields in each record.
               Enter the number of the field that is to be changed.
               The next item required is the new data to be inserted
               into the specified field.

               You are next asked if you want auto or manual
               operation. If you answer "A", each record in the group
               will be processed but the only information displayed on
               the screen will be the group record number currently
               being processed. There is no way to interrupt.

               If you select manual operation, each record in the
               specified group is displayed and you are asked if you
               want the field to be changed. If you answer "Y", the
               record is changed and the next group record is
               displayed. If you answer "N", you are asked for the
               new data to be used. If you answer "S" for "skip", the
               record is skipped and no changes made.

               Automatic operation is faster but manual operation is
               safer. In either mode, all records in the group must
               be processed before the program menu is redisplayed.

CHAPTER 7
INFOMAG UTILITY ROUTINES

This chapter deals with a number of unrelated programs which perform various miscellaneous maintenance functions on some of the data files maintained by INFOMAG. Some of these functions include listing a file's contents, changing passwords, setting up system control codes, reindexing the master file, and transferring records from one data base to another. Main menu items 9-13 are included in this group.

MENU ITEM #9--LISTS

This program provides the user with the ability to list the contents of the master record file, the master index file, and the audit log. The listings may be directed to either the CRT screen or to the system printer. Functions are also included to copy and delete the audit log.

List   This function is used to list the contents of the
Master   master record file to either the CRT or printer. The
File   CRT listing displays each record in the format
            specified for the data base currently in use. The
            printer format is similar except that all fields are
            listed in numerical order, one field per line.

            The list function starts by displaying the lowest and
            highest IDNO's on file and asking with which IDNO you
            want the listing to begin. If you enter "ALL", the
            entire file will be listed. After entering a starting
            record you must then enter the IDNO of the last record
            to be displayed.

            When using the CRT display, you have the option of
            manually advancing to each new record or of having the
            records advance automatically with a specified delay
            between each. To specify manual advance, simply type a
            <return> in response to the prompt on the screen.
            Thereafter, to advance to the next record, hit another
            <return>. If automatic advance is desired, enter a
            number representing the delay, in seconds, between each
            record. The display can be interrupted by hitting
            <escape><return>. The program menu will be
            redisplayed.

Terminal   This function lists the contents of the master index
Index   file to the system terminal. The information displayed
List   includes a sequential item number, the master record
            IDNO, and the physical record number of the record.
            The physical record number is the number by which BASIC
            and Flex access the record on the disk. Operation of
            this function is completely automatic.

Printer   This function is the same as the terminal index list
Index   except that the list is printed on the system printer.
List   The printout proceeds immediately with no questions
              being asked.

Audit   This function is used to list the contents of the audit
Log   log file to either the CRT or printer. You are first
List   asked if you want to list the current audit log. If
              you answer "N", you will be asked for the name of the
              audit log to be listed.   You must then specify whether
              the CRT or printer is to be used.

List   This function is used to list the current data base
Database   specification.   It may be output to either the CRT
Specs   screen or the system printer.

Copy   The audit log will grow in size quite rapidly. The
Audit   larger the file gets, the longer it takes to process
Log   it.   For this reason, is is desirable to periodically
              copy the current log to another disk and start a new
              one.   This function performs the copy.

              You are asked if you want to copy the current audit
              file.   If you answer "N", you are asked to enter the
              complete file name (Drive.Name.Extension) of the file
              to be copied.   You must next enter the complete file
              name of the destination file. After entering the file
              names, you are instructed to insert the proper disks
              and hit <return> to continue.   After the copy is
              complete, you are instructed to replace the original
              disks and hit any key when ready.

Delete   This function is used to delete the current audit log.
Current   The name of the current file is displayed and you are
Audit   asked if you want to delete it. If you answer no,
Log   INFOMAG responds with "I THOUGHT SO!". If you answer
              yes, you are asked if you are sure. If so, the file is
              deleted.

MENU ITEM #10--MASTER FILE REINDEX

This function is used to reorganize the index file for the master
record file. The master file is scanned, and the IDNO's
extracted, sorted, and stored in ascending order in the master
index file. The previous index file is replaced with the new
one. This program should be run any time records have been
deleted from the master file. Also, when something appears wrong
with the data base such as improper records being displayed or
improper data in records, reindexing may solve the problem. It
is normally not necessary to manually reindex after adding
records as the "ADD" program takes care of this automatically.

There is no menu associated with the Reindex program nor any
commands or prompts. Operation of the program is entirely
automatic upon initiation.

MENU ITEM #11--SYSTEM CONTROL CODES

In order for INFOMAG to operate properly on a large variety of
system configurations, a System Control Code setup program is
included. This program makes it possible for INFOMAG to use the
appropriate cursor control and printer control codes as required
by your system. Once you have the controls codes set up, it
should never be necessary to run this program again unless you
change your terminal type or printer.

You will need the operating manuals for your terminal and printer
for the following procedure. In each of the manuals, there
should be a table or list of codes or commands for performing
various special functions such as moving the CRT cursor or
changing print modes on the printer. Locate these tables and be
ready to refer to them.

The table on the following pages lists the various functions
which must be set up. The table follows the exact same order as
those items are requested in the control code program. It is
divided into three groups of functions as is the program. These
groups include CRT (terminal) functions, printer functions, and a
set of user defined keys for "moving around" in the master data
file. (See chapter 5 for INFOMAG functions that make use of this
feature.)

As the program runs, the function whose codes are to be entered
is shown along with the previous values if they have been
defined. INFOMAG allows up to three bytes or characters for each
control function. If not all three are required, enter the
value(s) for the required characters and zero(es) for those not
used. The entered values must be the DECIMAL ASCII code for the
function.

Some functions have slightly different requirements and these
will be explained when they are encountered. As you enter the
various control codes, you are encouraged to record them in
blanks provided in the table below for that purpose. By so
doing, you will not have to look them up if you need to do the
setup again.

The first two items requested are not control functions. The
first item requested is the name and model of your terminal.
This is for future reference only and is not used by INFOMAG.
Enter the name of your terminal. (e.g. Zenith Z-19)

The second item requested is the number of lines that can be
displayed on your CRT screen. For most users, this will be 24,
but for some it may be 16 or 20. This information is used by
INFOMAG to properly format the various screen display masks.

CRT Control Codes

There are fifteen sets of CRT Control Codes that must now be
entered. Use the following table as a guide for entering this
data. If your terminal doesn't have some of the functions (such
as inverse video), enter zeroes for those functions. Codes for
two popular CRT terminals are listed but the list may be
incomplete and may not be correct. Verify the codes before using
them.

CONTROL FUNCTION	CHARACTER	CT-82	SOROQ120	YOURS
1. Cursor LEFT	1	4	8	___
	2	Ø	Ø	___
	3	Ø	Ø	___
2. Cursor RIGHT	1	9	12	___
	2	Ø	Ø	___
	3	Ø	Ø	___
3. Cursor DOWN	1	2	1Ø	___
	2	Ø	Ø	___
	3	Ø	Ø	___
4. Cursor UP	1	1	11	___
	2	Ø	Ø	___
	3	Ø	Ø	___
5. HOME UP (Upper left)	1	16	3Ø	___
	2	Ø	Ø	___
	3	Ø	Ø	___
6. CLEAR SCREEN	1	12	27	___
	2	Ø	43	___
	3	Ø	Ø	___

CONTROL FUNCTION	CHARACTER	CT-82	SOROQ120	YOURS
7. CLEAR to END OF PAGE	1	22	27	___
	2	Ø	89	___
	3	Ø	Ø	___
8. ERASE Current Line	1	6	27	___
	2	Ø	84	___
	3	Ø	Ø	___
9. Direct CURSOR POSITION	1	28	27	___
	2	11	61	___
	3	Ø	Ø	___
10. REVERSE VIDEO ON	1	Ø	___	___
	2	Ø	___	___
	3	Ø	___	___
11. REVERSE VIDEO OFF	1	Ø	___	___
	2	Ø	___	___
	3	Ø	___	___
12. GRAY - HALFTONE ON	1	Ø	___	___
	2	Ø	___	___
	3	Ø	___	___
13. GRAY - HALFTONE OFF	1	Ø	___	___
	2	Ø	___	___
	3	Ø	___	___
14. BLINKING ON	1	Ø	___	___
	2	Ø	___	___
	3	Ø	___	___
15. BLINKING OFF	1	Ø	___	___
	2	Ø	___	___
	3	Ø	___	___

Some terminals require an offset number to be added to the line
or column number for direct cursor positioning. Enter a single
number for:

Y or LINE # Offset		Ø	32	___
X or COLUMN # Offset		Ø	32	___

Some terminals require "X before Y" for cursor positioning while
others require "Y before X". Some terminals provide the choice
of either order. If this is the case, make sure your choice here
is consistent with the code you entered for item number nine
above.

Enter 1 for X,Y or 2 for Y,X (circle one here for reference)

The next item requested is the model number of your printer. As with the CRT terminal model number, this is for reference only and is not used by INFOMAG.

The next group of codes is for printer control.

Printer Control Codes

CONTROL FUNCTION	CHARACTER	EPSON-MX80	TI-810	YOURS
1. VERTICAL FORMFEED	1	12	12	___
	2	0	0	___
	3	0	0	___
2. 10 CHAR/INCH	1	127	27	___
	2	0	54	___
	3	0	0	___
3. 16.5 CHAR/INCH	1	15	27	___
	2	0	55	___
	3	0	0	___
4. 6 LINES/INCH	1	___	27	___
	2	___	52	___
	3	___	0	___
5. 8 LINES/INCH	1	___	27	___
	2	___	53	___
	3	___	0	___

Master File Search Functions

Enter a single character code for each of the following functions. The character should be a printable character but any ASCII character may be used. Enter the DECIMAL ASCII value of the character.

CONTROL FUNCTION	RECOMMENDED	YOURS
Proceed Forward One Record	70 ("F")	_____
Backup One Record	80 ("P")	_____
First Record (Top) of File	84 ("T")	_____
Last Record (Bottom) of File	66 ("B")	_____

Special Memory Location (Flex version ONLY)

INFOMAG requires a memory location that can be used for certain
internal functions.   This byte must contain the ASCII <space>
character (Hex 20   or Decimal 32) prior to use and the <space>
will be replaced on a proper exit from INFOMAG.   For most 6809
Flex systems, location $CC61 is satisfactory. For 6800 systems,
try $AAE3.   The memory location should be in a location that will
normally not be disturbed.   The locations recommended above are
in the character string for the date prompt used by Flex at boot
up.   Consequently, the selected byte will never be used again and
no damage is done if the value is changed.   GPCC will be happy to
assist in choosing a memory location if the recommended location
is not satisfactory.

MENU ITEM #12--TRANSFER RECORDS

This program provides a means of copying records from one data base to another. The specifications for the two data bases do not need to be the same. You are given the opportunity to specify which field(s) in the original data base will be used and into which fields of the destination data base the data will be copied. This makes it very convenient to do things such as collecting data on a particular area of interest and then, later, incorporating that information into a much larger or broader data base.

The transfer process is group oriented. That is, the transfer program uses a specified group file to determine which records to transfer. By careful selection of the group creation parameters, a great number of useful applications of this program can be realized.

This is a rather complex program, but not too difficult to use. Prior to running the program, a disk with the data base to receive the transferred records must be available. If this is to be a new data base, use main menu function #4 (Specify Data Base) to create the required files.

PROGRAM OPERATION

When the Record transfer program begins operation, you are requested to remove the INFOMAG program disk and insert the disk with the "receiving" data base in its place. Hit <return> when ready. INFOMAG will determine what data bases are present on the receiving disk and ask you to enter the name of the one that is to be used.

The field number, field label, and data type for the first field in the "sending" data base is displayed along with a list of ALL fields in the "receiving" data base. You must select which field in the receiving data base is to receive the data from the sending field. If you don't want to use data from the listed field, type "S" for the field number and that field will be skipped. Be sure that the destination field is the same data type as the sending field.

The above process is repeated for all fields in the sending data base. After the last field has been processed, the screen is cleared and a list of the selections just made is displayed for verification. If you are not satisfied with the specification, type "N" and the fields will be presented again for selection. If everything appears satisfactory, type "Y".

You are then presented with three options for preserving a permanent record of this "transaction". You may have the audit record printed on the system printer; you may record the operation in the audit log file; or you may opt not to make an

audit record. Since a permanent record is desirable, the printed
record is the recommended method. If the disk is used, the disk
file could get quite large, especially if a large number of
records are transferred.

A group file name is then requested. This is the group from the
sending data base that will be used to determine which records to
transfer.   If you want to transfer all records, use the group
ALLITEMS.

The actual transfer then starts. A running tally of the records
being transferred is displayed on the CRT screen. After all
required records have been transferred, you are requested to
switch disks again.   Reinsert the INFOMAG program disk in the
specified drive and place the desired data disk in the specified
working drive. Hit <return> when ready to proceed.

Caution--The receiving data base MUST be reindexed before it can
be used.   Use the Master File Reindex (Main Menu #10, described
earlier in this chapter) program to do this.

MENU ITEM #13--PASSWORD CHANGES

This program, as the name implies, is used to enter, change, or
delete user passwords. These passwords pertain to INFOMAG ONLY
and have absolutely no bearing on any other Flex or UniFLEX
programs.

This   is a restricted program in that a special, "Master
Password" is required to perform any of the functions available.
This master password has been supplied in a sealed envelope
included with INFOMAG and should be entrusted only to management
personnel.   The master password can be changed only by persons
having access to the source code for the INFOMAG programs.

All user names and passwords are stored in the file PASSWORD.COD.
The information is encoded so that passwords cannot be obtained
by listing the file.

The program starts by immediately requesting the master password.
Only one opportunity is provided to enter it correctly. If the
entry is in error, control is returned to the INFOMAG Main Menu.
Four functions are available, once the master password has been
correctly entered.   These are Add a new user and password, Change
an old password, Delete an old password, and Show all password
information on file.
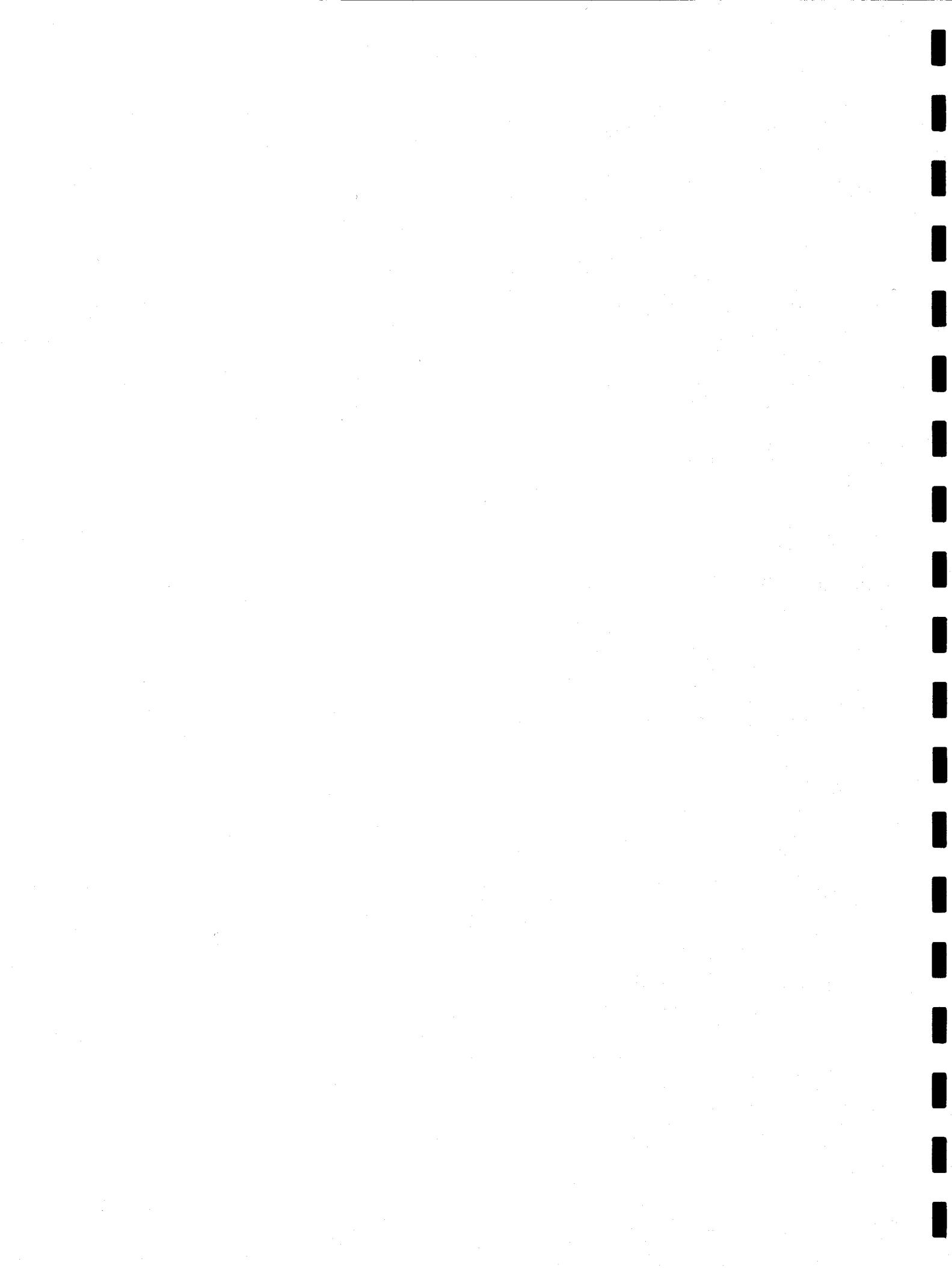
Add   This function is used to add new users and passwords to
New   the password file.   You are first asked for the User
User   Name.   Any printable characters may be used and the
            length may be up to sixteen (16) characters. The
            password is requested next.   It, also may contain any
            printable characters and may be up to sixteen
            characters long.   The last item is the User Access
            level.   This is a single-digit number in the range 0-9.
            User access levels are discussed in chapter two of this
            manual.   The program menu is then redisplayed.

Change   This   function is very similar to the Add function
Existing   except that instead of adding the new information to
Password   the end of the file, a specified entry in the file is
            replaced with the new information. The program first
            displays all entries in the file with a sequential
            number prepended, and then asks which item is to be
            changed.   After entering the number, all other
            questions are the same as the Add function.

Delete   This   function   is used to remove a user from the
Existing   password file.   All   data are displayed as with the
Password   Change function and you are asked to enter the number
            of the entry to be deleted.   The entry is deleted
            immediately.

Show   This   function   is used to list all current user names,
Passwords passwords, and user levels.

CHAPTER 8
REPORTS

Previous chapters have described some functions which can output
data to the system printer. These are not reports in the sense
that they will be described here. Instead, they are simply
listings of information contained on some of the INFOMAG data
files.

This chapter deals with the methods available to generate true
reports which take data from the master file and present it in a
more useable format. In three of the report types, the format is
completely controllable by the user. In the fourth, part of the
report is configurable.

In all of the report formats, you have control over which data
fields will be used and in which order they will be used. You
can insert descriptive strings. Field labels from the data base
specification can be used. In most report types, the data for a
single record can be spread over several lines of the report.
This flexibility makes it possible to generate a report in just
about any format you desire, from a tiny price tag to a full page
of information for each record!

Four types of reports are available with INFOMAG. These are
Columnar, Modular, Statistics, and Multi-File. These were
briefly described in Chapter 2. Each will be discussed in detail
at this time except for the Multi-File report. Information on
the latter will be released when that portion of the program is
ready for distribution.

Main Menu functions 14-18 are now discussed in detail.

MENU ITEM #14--CREATE COLUMNAR REPORT

As the name implies, the Columnar report organizes the data by columns. The data for each record field included in the report is always printed in the same column. Column headings are user defineable. The report heading can be either a machine generated heading or a custom design. Various options are available, such as form size, margin settings, print density, column totals, multiple-line spacing, and others.

Once a Columnar report has been specified, that report format can be used with any group. Thus you might set up a report to list the current inventory status for your company. With the same report format, you can print reports for each warehouse, the whole company, or products from a particular vendor, by simply creating and using an appropriate group.

It is important to remember which groups have been created for use with which report specification. It is also very important that the group used is current. Therefore, you will probably want to recreate all affected groups to ensure they are up to date before running any reports.

The Columnar Create program includes five major functions. These are Report directory, Columnar Report Create, Delete old Report Format, Print Report Specification, Output a Report. The last item loads the same program as that used by Main Menu function #18. (Described later)

Report   This function prints a list of all Columnar Report
Directory   Specifications on the current data disk.

Columnar   This is the function used to specify the format of a
Report   columnar report. Once the specification is completed,
Create   it is saved in a disk file for future use. The
             specification process consists of four major parts:
             Defining the environment, specifying the column
             contents, specifying the column headings, and
             specifying the report header.

             DEFINING THE ENVIRONMENT--

             The environment consists of ten items or options
             relating to the physical layout of the report. The
             first two items required are the left and right margin
             settings. The minimum value for the left margin is 3
             and the default is 5. If the "Item Count" option
             (described later) is selected, the left margin will
             automatically be increased by 4 to make room for the
             item numbers.

             The right margin value is the number of spaces from the
             end of the print line to the right edge of the page.

The default is 0. The right margin value along with
the line length is used to determine how much room is
left on the line when defining the column contents.

The next item requested is the number of printed lines
that will fit on one page or form. The default is 66.
This value is used to determine when to perform a page
eject or formfeed and start a new page.

The total line length is requested next. This is the
maximum length of the printed line. The default is 75
but any number up to the maximum permitted by your
printer is allowed.

Print Density is the next option. Many modern printers
allow for two or more different print sizes or widths.
INFOMAG is designed to make use of two sizes. These
are Standard (10 characters per inch) and Compressed
(16.5 characters per inch). Enter a "0" to select
standard print size or a "1" for Compressed print. The
default is "0".

Multiple spacing is the next option. It is possible to
print your report with one or more blank lines between
each printed line. Enter the number of blank lines
desired. The default is zero.

The next two items requested relate to the ability of
the Columnar report generator to separate the data into
various categories and print sub-totals for data in
those categories. This is referred to as "Break
totals" in INFOMAG. The first question asks if you
want to do Break totals. Enter a "1" for Yes or "0"
for No. If you enter a "1", you are asked "Break on
what field?". Enter the number for a non-numeric
field. As the records are printed and as long as the
data in the specified field does not change, totals are
accumulated for all numeric fields. As soon as the
data in the specified field changes, the totals for the
previous category are printed, and totals for the new
category begin accumulating. The group being printed
should be sorted on the "break" field before this
feature is used. This feature is useful for
applications such as breaking down an inventory list by
vendors, showing totals for each vendor.

The next option is whether or not to print grand totals
for all numeric fields in the report. Enter "1" for
yes or "0" for no. If you answer yes, ALL numeric
fields in the report are totalled. It is very likely
that some of these totals will have no meaning. For
instance, the total of reorder quantities in an
inventory listing probably has no meaning.

The last environment option to enter is whether or not
to number the items in the printed report. Enter "1"
for yes or "Ø" for no.   If you answer yes, all records
printed in the report will have a sequential number at
the   beginning of the line.   The left margin is
automatically adjusted to allow for this number.

This complete the environment section of the report.

SPECIFYING THE REPORT COLUMN CONTENTS--

This is where the actual data in the report is
specified.   The following screen mask is displayed and
a specification table is built similarly to the group
create specification table. At the top of the mask is
a list of data types and functions. These are items
that may be entered while the cursor is in the "TYPE"
column.   On the next line below the data types,
questions relative to the specification will appear as
necessary.   Near the bottom of the screen is a line
full of numbers.   Below this line will appear a
schematic representation of the print line as it is
built up in the specification table.   The numbers
represent print column positions. Only 80 columns are
shown.   If the print line is longer than 80 columns, a
second (continuation) line is built.

```
============TOP==============OF===============SCREEN========================
                 (Standard header line here)
TYPES: 1)=Data Field, 2)=Label, D)isplay fields, N)ext line, E)nd
             (Question Line Here)


ITEM   LINE   TAB COL   TYPE   FIELD   OUTPUT APPEARANCE
 1      1
```

```
123456789 123456789 123456789 123456789 123456789 123456789 123456789 12345678
```

```
          (Error Messages Here)
============BOTTOM==============OF===========SCREEN========================
```

The specification table consists of six columns. The
first is the specification item number. This is a
sequential number identifying the specification item.
The second column contains the line number for the
print record. The data for a file record may be spread
over several lines of print. The next column is the
"Tab column" for printing. This is the print column
number where the datum is to start. The next column is
the data type. Next, is the record field number to be
used. This is applicable only if the data type for
this item is "1". The final item in the table is a
schematic representation of what the data will look
like on the printed line. This item is repeated in
context at the bottom of the screen.

When the specification process starts, a "1" will be
already entered in the ITEM and LINE columns and the
cursor positioned in the TYPE column. The list of
types at the top of the screen is defined as follows:
A "1" indicates that contents of a data field for a
record are to be used. A "2" indicates that a string
of characters typed from the keyboard is to be used.
The string may consist of any printable characters. If
a "D" is entered, the list of available fields is
displayed. Hit <return> to return to the table. If
"N" is entered, a new print line is started and the
current number in the LINE column is incremented. "E"
terminates the specification process.

If a "1" is entered in the TYPE column, a message
appears above the specification table indicating the
allowed range of field numbers and the cursor moves to
the FIELD column. Enter the desired field number.

If a "2" is entered in the TYPE column, the message
"ENTER LABEL STRING" appears above the specification
table. Type the desired string followed by a <return>.
This string will appear in the report exactly as
entered.

In either of the previous two cases above, the cursor
next moves to the TAB COL position in the table and a
message "TAB COLUMNS: MINIMUM = nnn MAXIMUM = nnn
'RETURN' FOR MINIMUM" appears above the table. "nnn"
is a column number. The range of tab columns listed
shows the allowable locations in the print line for the
current item based on the number of characters already
used, the item size, and the right margin. If you want
to use the minimum value, simply hit <return>,
otherwise, enter the desired column number. If there
is not enough room for the specified item, an error
message is displayed at the bottom of the screen. You
must either start a new line or omit the item. If the

item is a string, you may be able to shorten the
string.

After the tab column has been entered, the schematic
representation of the item is displayed in the right-
hand column of the table and at the bottom of the
screen. The cursor moves to the next line of the table
and again to the TYPE column. The ITEM number is
incremented but the LINE number remains the same. The
steps previously described are repeated until the
specification is complete. If the table fills up, all
previous entries are cleared and the the specification
process continues at the top of the table. When the
last item has been entered, enter "E" for the TYPE.

SPECIFYING THE COLUMN HEADINGS--

The report items just specified will now be presented,
one at a time, and you must enter a column title for
the item. The field name (from the data base
specification) is displayed along with line of X's
enclosed in brackets. (e.g. ">XXXXXXXXX<") The X's
show the maximum number of characters that the column
title may contain. As you type the title, the X's are
replaced with the title characters.

SPECIFYING THE PAGE HEADING--

Two types of page heading are available for columnar
reports, standard and customized. The standard heading
displays the group title on the first line with double
spacing. The second line has the group file name on
the left, the group item count in the center, and data
base title on the right. The third line has the
current date in the center and the page number on the
right.

The customized heading provides you with four lines in
which to design your own heading. The specification
process for the heading is very similar to specifying
the main body of the report. A list of data types is
displayed at the top of the screen and you proceed to
build a specification table.

The data types supported in the custom heading are: 1)
Any text string, 2) Any text string, centered on line,
3) Group file name, 4) Group creation date, 5) Group
descriptive title, 6) Group Item count, 7) Current
date, 8) Page number, 9) Blank line, and 10) Next line.
The last item is not a data type, but a function. The
purpose of the columns in the specification table are
as follows: LINE is the line number. TYPE is the data
type. TAB COL is the starting print column. STRING is

the data string, if applicable. The screen mask used
for specifying the heading is shown below.

===========TOP===============OF===============SCREEN=========================
                    (Standard header line here)

   TYPES: 1 =String   2 =Centered string 3 =Group filename
           4 =Group date   5 =Group title   6 =Group items
           7 =Current date   8 =Page number   9 =Blank line
          10 =Next line
   LINE   TYPE TAB COL   STRING

        (Error messages printed just below error line)

===========BOTTOM===============OF===========SCREEN=========================

It is strongly suggested that you use a piece of graph
paper or a printer layout sheet (available from many
computer supply houses) to design your heading. The
specification table will NOT provide you with the
available range of tab columns as did the one for the
main body of the report.   This must be determined
manually, in advance. When heading items are entered
in the table, they should be entered in the order that
they will appear on the printed line. (e.g. from left
to right.)   Strings are entered directly in the table
at the cursor position.

When laying out the heading, be sure to leave ample
room for the item specified.   For instance, if you
specify a Group title, leave sufficient room for the
largest group title that will be used. In the case of
the "centered string", be sure that the string entered
will not overlap another string on the same line. For
most of the predefined data items (Group items, etc)
the data type specifies ONLY the actual data. You
must supply any descriptive label. For example, if

you use data type "6", only the actual number will be
displayed. You will probably want to insert a string
in front of the number indicating what it represents.

This completes the columnar report specification
process. You are asked for a file name in which to
save the specification and the program menu is
redisplayed.

Delete   This function is used to delete old report speci-
Old   fication files from the data disk. The program prompts
Report   for the file name, and if the file specified exists, it
File   is deleted. You should use the report directory
            function first, to verify the correct file name.

Print   This function is used to print a list of columnar
Report   report specification to the system printer. The
Specs   environment and main body specifications are shown.
            Custom heading information is not shown. The printed
            display is presented as a table similar to the table
            used to specify the report. You are asked to enter the
            report specification file name and to verify that the
            printer is ready.

Output   This function loads the general report output program
Report   to print the desired report.

MENU ITEM #15--CREATE MODULAR REPORT

A Modular report is a report in which the data for each record
are in individual groupings rather than columns. All data
printed for one file record is referred to as a module. Modules
may be organized to be any width, up to the width of the paper,
and any height, up to the length of the page. There may be up to
five modules printed across the page and any number vertically.

Since text strings may be freely inserted in the report format,
it is possible to generate a variety of reports. Some examples
are Form Letters, Mailing labels, Inventory File Cards,
Statements, etc.

The functions available in this program are similar to the
columnar report creation program. They include Report directory,
Modular Report Create, Delete old report format, Print report
specs, and Output a report. As with columnar reports, the last
function loads and executes the general report output program.

Report   This function prints a list of all modular report
Directory   specification files currently on the data disk.

Modular   This is the function used to specify the format of a
Report   modular report. The procedures for the specification
Specify   are very similar to those for specifying a columnar
             report. A set of environment parameters is defined,
             followed by the definition of the main body of a single
             module. There is no page heading associated with
             modular reports.

             It is strongly recommended that the modular format for
             your application be carefully planned in advance. Use
             graph paper or printer layout paper to plan not only
             how an individual module should appear, but, also how
             the modules should be arranged on the printed page.
             The page arrangement will probably depend on the type
             of form used for the printing. For example, mailing
             labels for computer use are typically arranged three or
             four labels across and about ten vertically on a page.

             DEFINING THE ENVIRONMENT--

             There are a number of environment parameters that must
             be specified. These are used, primarily, to determine
             how the modules are arranged on the printed page.

             The first item to enter is the vertical print density
             or the number of lines printed per inch vertically.
             The normal value is 6, but some printers allow 8. The
             default value for INFOMAG is 6.

             The second item requested is horizontal length of a

SINGLE module in characters.   The default value is 75.

Next, you are asked to enter the height (in printed
lines) of a SINGLE module. Any value from 1 to the
maximum page size may be used.   The default is 6.

The print density is requested next.   The Standard
density is 10 characters per inch. Compressed printing
on most printers is 16.5 characters per inch. Enter
"0" for standard or "1" for compressed.   The default is
standard.

The number of modules to be printed across the page is
entered next.   This should conform to the type of
printer form you are using.   The default is one.

The last environment item requested is the tab column
for the start of each module across the page.   This is
the print column for the entire page where the module
is to start printing.   Some experimenting will probably
be required to adjust to your forms.

DEFINING THE MAIN BODY OF A MODULE--

The following procedures are used to specify the format
of a SINGLE MODULE.   The first line of a module is line
#1, and the first column of a module is column #1.
This is the same, regardless of where the module
appears on the printed page.

On the following page is a sample of the screen mask
that is displayed for specifying a module.   You will
note that it is almost identical to the display for
columnar reports.   The only difference is the addition
of some data types not present in the columnar display
mask.

The data types available for modular reports include
the following: 1) Contents of a record field, 2) A
label string typed from the keyboard, 3) Contents of a
record field with the field number and label from the
data base specification, 4) The current date, 5) A
blank line.   Three functions associated with data
types, are available.   These are "D" to display all
fields, "N" to advance to the next module line, and "E"
to end the specification.   These functions are
identical to those in the columnar report procedure.

To specify the format of a module, you must fill out
the table on the screen.   This is done in the same
manner as with columnar reports (Refer to pages 8.4-8.6
for more details).   If the data type specified in the
TYPE column requires more information, the information

is requested at the top of the screen. Likewise, tab
column positions are also requested at the top of the
screen. These data requests will overwrite the list of
functions, but the function list is redisplayed when
the current operation is done. As each line of the
module is being entered, a schematic representation of
the line is displayed at the bottom of the screen for
reference.

```
============TOP=============OF===============SCREEN=========================
                    (Standard header line here)
TYPES: 1)=Field, 2)=Label, 3)=Field with desc., 4)=Date, 5)=Blankline
       D)isplay all fields, N)ext line, E)nd (This is question line, also)

ITEM  LINE  TAB COL  TYPE  FIELD  OUTPUT APPEARANCE
 1     1
```

```
123456789 123456789 123456789 123456789 123456789 123456789 123456789 12345678
```

```
          (Error Messages Here)
============BOTTOM=============OF===========SCREEN=========================
```

When planning the format for a module, some precautions
must be observed. When using data type "3", be sure to
allow enough room for the field number and label. The
label that appears in the field list (Displayed with
the "D" command) is the label that will be used. Also,
be sure that you allow enough room for the other data
types so that nothing overlaps or runs together.

When the specification is complete, type "E" while the
cursor is in the TYPE column. You will then be asked
to enter the name of a file to hold the specification.
This completes the modular report specification
process.

Delete
Report
Format

This function is used to delete an unwanted modular report specification from the data disk. You are asked for the file name and, if the file exists, it is deleted. You should use the report directory function first, to verify the file name.

Print
Report
Specs

This function is used to print a list of specifications for a modular report. The specifications are printed in a table similar to the table used to enter them.

Output
Report

This function loads the general report output program to print the desired report.

MENU ITEM #16--CREATE STATISTICS REPORT

The Statistics Report program provides you with the ability to generate some numerical statistics on data in your data base. The program functions as follows. You must choose a non-numeric field from the record specification. This field will be used as the basis for organizing the report. The specified field is scanned in all records for a specified group and a list of all DIFFERENT data items appearing in that field is made. At the same time, data for specified NUMERIC fields is collected and correlated to the non-numeric data list. After all the data collection is completed, each item in the non-numeric data list is printed, followed by a summary list of specified numeric fields associated with the data item. For each numeric field, the minimum value found, the maximum value found, the average value, and the totals are printed. At the end of the report the grand totals of each of these four categories is printed.

This is a very complex program and as such, takes a long time to execute. For a data base with 1000 items in it, the time required may be 20-30 minutes. Nothing is printed until all data has been collected and correlated.

There are four major functions included in the statistics report program. They include Group directory, Statistics report directory, Create Statistics report, and Process Statistics report.

Group   This function displays a list of available groups, the
Directory   group titles, number of items in each group, and the
            creation date. The function is identical to the group
            directory in several other programs in INFOMAG.

Statistics This function displays a list of all statistics
Directory   report specification files on the data disk.

Create   This function is used to define the specification for a
Report   statistics report. The program starts by requesting
Specs   the width of printer paper you are using. Enter either
            "8" or "14".

            The group file name is requested next. After the name
            is entered, the appropriate entry from the group
            directory is displayed.

            A list of NON-NUMERIC fields in the record
            specification is then displayed and you are asked for
            which one you want statistics generated. This is the
            non-numeric field mentioned in the opening discussion
            above.

            The NUMERIC fields from the record specification are
            then displayed, one at a time, and you are asked if you

want to include that field in the report. Enter "I" to
include the field or any other key to skip. At least
one numeric field must be included.

Up   to   three special report title lines may be
specified.   These title strings will be centered at the
top of the page.   The word "STATISTICS" will be printed
above the first special line and "FOR <dbtitle>"
printed below the last special line. <dbtitle> is the
data base title from the data base specification.

The report specification file name is then requested.
This is the name of the file in which the specification
will be saved.

The complete set of specifications just entered is then
displayed for verification and you are asked if
everything is OK. If you answer "Y", the specification
is saved. If you answer "N", the entire specification
is discarded and the program menu redisplayed.

Process   This function is used to output the statistics report.
Statistics You are asked to enter the report specification file
Report   name. The group name is not required since it is
            included in the report specification. The report
            specifications are displayed and you are asked if
            everything is OK. "Y" causes the report to be
            generated and printed. "N" returns control to the
            program menu.

MENU ITEM #17--CREATE MULTI-FILE REPORT

MULTI-FILE REPORTS

PURPOSE:
        INFOMAG contains programs which allow the user to obtain
a printed report based on data extracted from two separate
database files which have a `common' data field.

DISCUSSION:
        In the following discussions, the word "PRIMARY" refers
to the currently selected or active database - the file being
processed by INFOMAG after a valid password entry, usually
located on the data disk in drive 1.
        The word "SECONDARY" refers to a database file located on
another diskette not presently loaded into the computer.
        As with many other INFOMAG modules, you the user, simply
specify the multi-file report attributes, INFOMAG then retains
the specifications for the report on the primary database data
disk for instant retrieval in the future.

        The only restrictions are as follows:
1. Only columnar type reports are supported for the primary and
secondary files.
2. Only the "primary" columnar report page titles (top 6 lines of
each page) will be printed.
3. Only the "primary" column titles will be printed

        All   other   columnar report features are supported,
including multi-disks.

        To function properly the Primary and Secondary databases
must have at least one common field of data and the groups from
each database should be sorted on this common field.

        That's all there is to multi-file reports - you simply
tell INFOMAG which columnar report format and which sorted group
to use for the Primary database and likewise for the Secondary
database; which field is the common field in the Primary and
Secondary databases and how those common fields should be
compared.   There are six (6) compare modes available, for most
cases you will use `=' (equal to).

        INFOMAG will compare [the secondary-file common field] to

[the primary-file common field] as records are read from
respective group files. If the comparison is `true' or valid the
record will be printed.

All of the Primary records will be printed out. Each
primary will then be followed by 1 or more Secondary records
based on the comparison specified.

EXAMPLE USAGE:
Suppose in our "inventory" example database we wished a
report of items for reordering - printed out by "vendor", with
the vendor's name, address, etc. Also suppose in our inventory
database we had used a 2-digit code for `vendor name'. This
probably was done to conserve disk storage space (2 digits vs 30
characters for name). EX: 99 = The ABC Widget Company, Inc.

In a secondary file on another disk we had `vendor' data
- code no., name, address, salesman, phone number, etc.
Let's see how we could set-up the desired report in
steps.

STEPS TO SET-UP A NEW MULTI-FILE REPORT

1. Start INFOMAG with "Vendor" disk in drive #1.

2. Select Program 5 - New group create - from master menu.

3. Select function `C' - Create group "ALLITEMS".
   Let's suppose the code number field was INFOMAG's field 0
(Index field). The group "ALLITEMS" will be automatically
created sorted in ascending order of the `code no.', so we do not
need to sort this group - proceed to STEP 6.

4. Load Master Menu and select Program 7 - Sort a Group.

5. Specify sort of group `ALLITEMS' on common field and process
sort
    (or another group `filename' as necessary).

6. Load Master Menu and select Program 14 - Create Columnar
report.

7. Select function SPECIFY - and specify how you want the
vendor's name, address, phone number, etc to appear on the
report.

8. Load Master Menu
   At this point, we have completed the work required for the
Primary database.

9.   Select Program 0 — Re-enter the password, remove "VENDOR"
disk from drive 1 and install "INVENTORY" disk in drive 1.

       Now, REPEAT STEPS 3 thru 8 (at step 3, you would want to
create a `REORDER' group. At Step 7, you would want to specify
Part Number, Reorder quantity, and Net Cost. Refer to other
sections of this manual for greater details on creating and
sorting groups and creating reports.

10.   Select Program 0 — Re-enter the password, load Vendor disk
in drive 1, it will be the PRIMARY file.

11.   Select Program 17 — Create Multi-file Report — from the
Master Menu

12. Select function "V" — Specify a multi-file report.
       Answer   the   questions for the Primary file.   Install
Secondary disk (inventory) — only when prompted — in drive 0.
Answer the questions for the Secondary file. When PROMPTED,
reinstall the program disk in drive 0.

13. While still in Program 17, select function "O" — Output any
report. Enter the Multi-file report specification "filename" from
Step 12.

14.   THe Multi-fale output program will load and prompt you to
insert the "Inventory" disk in drive 0. The report will begin
printing.

                 RERUN OF A PREVIOUSLY SPECIFIED MULTI-REPORT

       The next time you need this report, all that is required
is to do Step 3 (Group Create) and Steps 4 & 5 (if a sort is
required) for both the PRIMARY and the SECONDARY Databases. Then
proceed to Step 13 for your rerort — INFOMAG "remembers" all the
details of the report.

MENU ITEM #18--OUTPUT ANY REPORT

This is the common output program which is used to print either
modular or columnar reports. It is the program that is loaded by
the "O" function in the modular and columnar report create
program.

Four functions are available in this program. They include
Columnar report directory, Group directory, Modular report
directory, and Output a report.

Columnar   This function lists the names of all Columnar report
Report   specifications for the current data base.
Directory

Group   This function lists names, titles, number of items, and
Directory   creation date for all group files associated with the
            current data base.

Modular   This function lists the names of all Modular report
Report   specifications for the current data base.
Directory

Output   This function is used to output either Columnar or
A   Modular reports. When executed, you are asked if you
Report   want to output a Columnar (C) or Modular (M) report.
            Enter either "C" or "M". You are then asked for the
            report file name. This is the specification file name
            for the desired report. The Group file name is
            requested next.
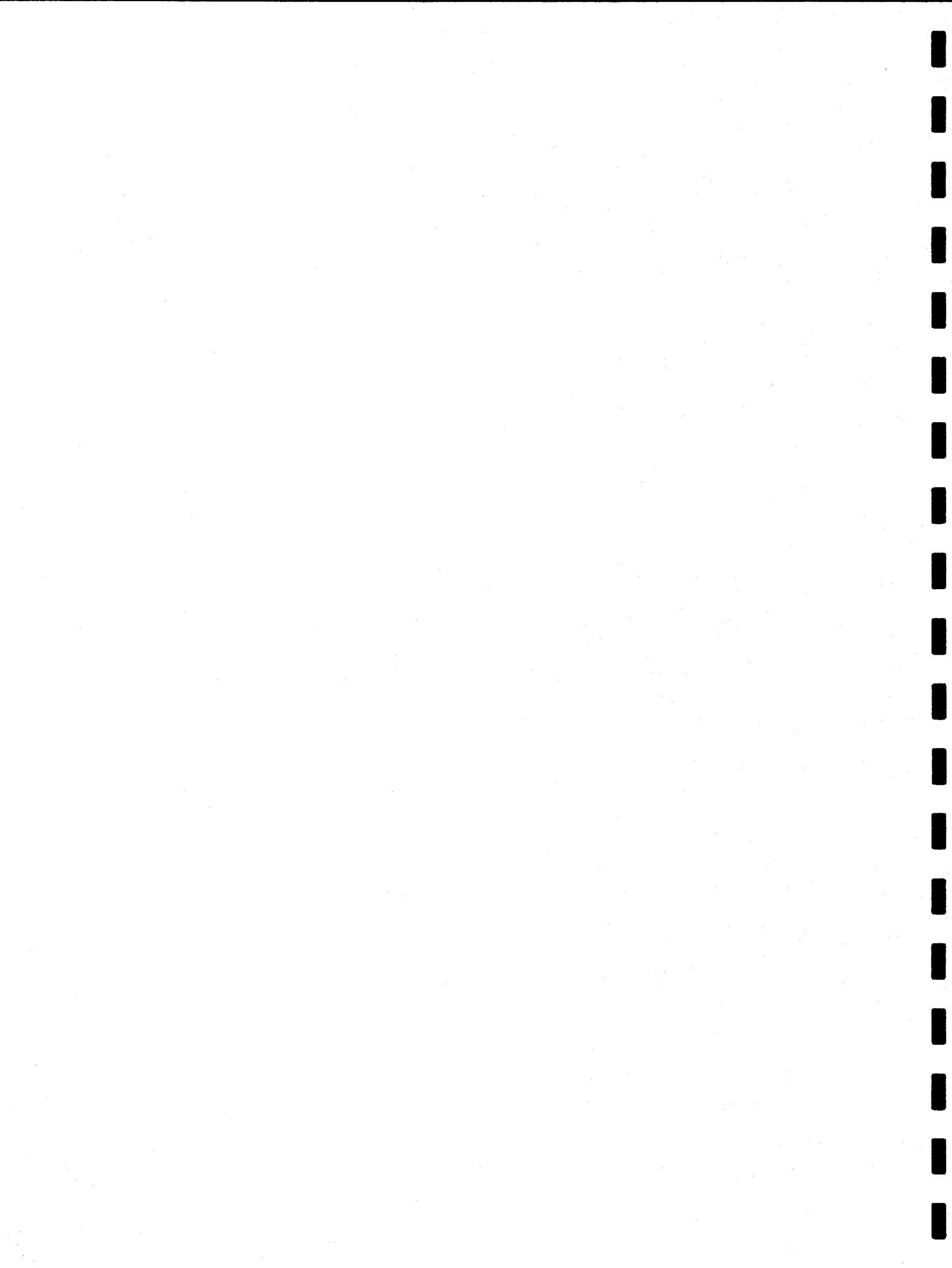
            It is possible to output a report from more than one
            disk or group. When the program asks if you want to do
            this, answer "Y" or "N". (More on this later)

            You are then asked how many copies of the report you
            want. If you only want one, enter "1" or simply hit
            <return>.

            You are then given an opportunity to prepare the
            printer. Hit any key when ready to proceed.

            After all items in the selected group have been
            processed, if you have selected the multi-disk option,
            you are asked to insert the disk containing the next
            group file to be printed into the working drive. If
            you want to print another group on the same disk, just
            hit return. The group directory will be displayed, and
            you are asked for the name of the next group to be
            printed. When that group is finished, the process is
            repeated. If no further groups are required, the
            current report is completed and if more than one copy
            was requested, the next copy started. The multi-disk

procedure is repeated for each report copy.

INFOMAG UNIFLEX SET-UP INSTRUCTIONS

Make sure you have sufficient space on your Uniflex System

Disk for about 650 blocks of files.   Place the disk from GPCCI
in drive #1 and type:

        ++/etc/mount/dev/fdl/usr2

        ++/usr2/insert-infomag

Follow the prompts given on the screen.

APPENDIX

The following pages are examples
of reports and data output of the
Infomag programs.

SUNSHINE, INC. INVENTORY SYSTEM
SALES SUMMARY

GROUP NAME : ALLITEMS
GROUP TITLE :ALL ITEMS IN SUNSHINE
CREATED :   02/12/83

02/15/83
PAGE   1

WH/PART#	DESCRIPTION	COST HDWR	COST MISC	YTD #	YTD SALES
1-400	SIDE FRAME	$88.12	$23.00	6	$69.00
1-403	END FRAME	$61.75	$0.00	7	$124.95
1-404	SIDE CAP	$23.27	$1.28	6	$40.80
1-408	T SUPPORT	$77.34	$2.34	0	$0.00
1-435	BACK SHEET IIB	$62.59	$11.95	3	$53.85
2-400	SIDE FRAME	$19.46	$2.43	2	$23.00
2-403	END FRAME	$175.00	$0.00	6	$107.10
2-404	SIDE CAP	$66.01	$2.01	0	$0.00
2-408	T SUPPORT	$16.23	$1.34	1	$13.65
2-435	BACK SHEET IIB	$42.48	$1.25	0	$0.00
3-404	SIDE CAP	$33.80	$0.00	12	$81.60
3-408	T SUPPORT	$34.56	$4.56	0	$0.00
3-435	BACK SHEET IIB	$21.87	$2.00	3	$53.85

NUMBER OF ITEMS IN REPORT = 13

1. Columnar report - (general format)
   generated by MENU selection # 17

GROUP NAME : ALLITEMS
GROUP TITLE :ALL ITEMS IN SUNSHINE
CREATED :   02/12/83

WH/PART#	DESCRIPTION	COST HDWR	COST MISC	YTD #	YTD SALES
1-400	SIDE FRAME	$88.12	$23.00	6	$69.00
1-403	END FRAME	$61.75	$0.00	7	$124.95
1-404	SIDE CAP	$23.27	$1.28	6	$40.80
1-408	T SUPPORT	$77.34	$2.34	0	$0.00
1-435	BACK SHEET IIB	$62.59	$11.95	3	$53.85
2-400	SIDE FRAME	$19.46	$2.43	2	$23.00
2-403	END FRAME	$175.00	$0.00	6	$107.10
2-404	SIDE CAP	$66.01	$2.01	0	$0.00
2-408	T SUPPORT	$16.23	$1.34	1	$13.65
2-435	BACK SHEET IIB	$42.48	$1.25	0	$0.00
3-404	SIDE CAP	$33.80	$0.00	12	$81.60
3-408	T SUPPORT	$34.56	$4.56	0	$0.00
3-435	BACK SHEET IIB	$21.87	$2.00	3	$53.85

TOTALS: $722.48 $52.16   46 $567.80

NUMBER OF ITEMS IN REPORT = 13

1a. Columnar report (totals included)
generated by MENU selection #17

GROUP NAME : ALLITEMS   SALES SUMMARY   02/18/83
GROUP TITLE :   PAGE   1
CREATED :

WH/PART#	DESCRIPTION	COST HDWR	COST MISC	YTD #	YTD SALES
2-435	BACK SHEET IIB	$42.48	$1.25	0	$0.00
3-435	BACK SHEET IIB	$21.87	$2.00	3	$53.85
1-435	BACK SHEET IIB	$62.59	$11.95	3	$53.85

BREAK TOTALS ON 3 ITEMS FOR : DESC.: = BACK SHEET IIB
COST HDWR : = $126.94   COST MISC : = $15.20   YTD #: =   6   YTD SALES : = $107.70

===

1-403	END FRAME	$61.75	$0.00	7	$124.95
2-403	END FRAME	$175.00	$0.00	6	$107.10

BREAK TOTALS ON 2 ITEMS FOR : DESC.: = END FRAME
COST HDWR : = $236.75   COST MISC : = $0.00   YTD #: =   13   YTD SALES : = $232.05

===

3-404	SIDE CAP	$33.80	$0.00	12	$81.60
1-404	SIDE CAP	$23.27	$1.28	6	$40.80
2-404	SIDE CAP	$66.01	$2.01	0	$0.00

BREAK TOTALS ON 3 ITEMS FOR : DESC.: = SIDE CAP
COST HDWR : = $123.08   COST MISC : = $3.29   YTD #: =   18   YTD SALES : = $122.40

===

1-400	SIDE FRAME	$88.12	$23.00	6	$69.00
2-400	SIDE FRAME	$19.46	$2.43	2	$23.00

BREAK TOTALS ON 2 ITEMS FOR : DESC.: = SIDE FRAME
COST HDWR : = $107.58   COST MISC : = $25.43   YTD #: =   8   YTD SALES : = $92.00

===

2-408	T SUPPORT	$16.23	$1.34	1	$13.65
3-408	T SUPPORT	$34.56	$4.56	0	$0.00
1-408	T SUPPORT	$77.34	$2.34	0	$0.00

BREAK TOTALS ON 3 ITEMS FOR : DESC.: = T SUPPORT
COST HDWR : = $128.13   COST MISC : = $8.24   YTD #: =   1   YTD SALES : = $13.65

===

TOTALS: $722.48 $52.16   46 $567.80

NUMBER OF ITEMS IN REPORT = 13

1b. Columnar report - (totals and
    sub-totals included), generated
    by MENU selection # 17

GROUP NAME : ALLITEMS
GROUP TITLE :ALL ITEMS IN SUNSHINE
CREATED :   02/12/83

02/15/83
PAGE   1

WH/PART#	DESCRIPTION	QOH	ALLOC	AVBL	ROPT	ROQTY	LIST PRICE
1-400	SIDE FRAME	11	2	9	5	10	$11.50
1-403	END FRAME	5	0	5	5	10	$17.85
1-404	SIDE CAP	9	0	9	9	10	$6.80
1-408	T SUPPORT	10	0	10	5	10	$13.65
1-435	BACK SHEET IIB	8	0	8	5	10	$17.95
2-400	SIDE FRAME	3	0	3	5	10	$11.50
2-403	END FRAME	14	0	14	5	10	$17.85
2-404	SIDE CAP	15	0	15	5	10	$6.80
2-408	T SUPPORT	2	0	2	5	10	$13.65
2-435	BACK SHEET IIB	6	0	6	5	10	$17.95
3-404	SIDE CAP	13	0	13	5	10	$6.80
3-408	T SUPPORT	4	0	4	5	10	$13.65
3-435	BACK SHEET IIB	3	0	3	5	10	$17.95

NUMBER OF ITEMS IN REPORT = 13

2. Columnar report - (general format)
generated by MENU selection # 17

GROUP NAME : ALLITEMS   FINANCIAL SUMMARY REPORT   02/15/83
GROUP TITLE :ALL ITEMS IN SUNSHINE   PAGE   1
CREATED :   02/12/83

WH/PART#	DESC.	QOH	LIST PRICE	LAST ACT	YTD #	YTD SALES	YTD COST
1-400	SIDE FRAME	11	$11.50	01/16/82	6	$69.00	$43.35
1-403	END FRAME	5	$17.85	01/16/82	7	$124.95	$86.45
1-404	SIDE CAP	9	$6.80	01/16/82	6	$40.80	$15.51
1-408	T SUPPORT	10	$13.65	01/14/82	0	$0.00	$0.00
1-435	BACK SHEET IIB	8	$17.95	10/16/82	3	$53.85	$20.86
2-400	SIDE FRAME	3	$11.50	01/16/82	2	$23.00	$12.97
2-403	END FRAME	14	$17.85	01/16/82	6	$107.10	$75.00
2-404	SIDE CAP	15	$6.80	01/14/82	0	$0.00	$0.00
2-408	T SUPPORT	2	$13.65	01/16/82	1	$13.65	$8.11
2-435	BACK SHEET IIB	6	$17.95	01/14/82	0	$0.00	$0.00
3-404	SIDE CAP	13	$6.80	01/16/82	12	$81.60	$31.20
3-408	T SUPPORT	4	$13.65	10/14/82	0	$0.00	$0.00
3-435	BACK SHEET IIB	3	$17.95	01/16/82	3	$53.85	$21.87

NUMBER OF ITEMS IN REPORT = 13

3. Columnar report - (variation
   in format specification)
   generated by MENU selection # 17

GROUP NAME : ALLITEMS
GROUP TITLE :ALL ITEMS IN SUNSHINE
CREATED :   02/12/83

WH/PART#	DESCRIPTION	VEND#	QOH	ALLOC	AVBL	ROPT	ROQTY	LIST PRICE	
1-400	SIDE FRAME		23	11	2	9	5	10	$11.50
									QUANTITY ORDERED ----------
1-403	END FRAME		23	5	0	5	5	10	$17.85
									QUANTITY ORDERED ----------
1-404	SIDE CAP		17	9	0	9	9	10	$6.80
									QUANTITY ORDERED ----------
1-408	T SUPPORT		5	10	0	10	5	10	$13.65
									QUANTITY ORDERED ----------
1-435	BACK SHEET IIB		13	8	0	8	5	10	$17.95
									QUANTITY ORDERED ----------
2-400	SIDE FRAME		23	3	0	3	5	10	$11.50
									QUANTITY ORDERED ----------
2-403	END FRAME		23	14	0	14	5	10	$17.85
									QUANTITY ORDERED ----------
2-404	SIDE CAP		17	15	0	15	5	10	$6.80
									QUANTITY ORDERED ----------
2-408	T SUPPORT		5	2	0	2	5	10	$13.65
									QUANTITY ORDERED ----------
2-435	BACK SHEET IIB		12	6	0	6	5	10	$17.95
									QUANTITY ORDERED ----------
3-404	SIDE CAP		17	13	0	13	5	10	$6.80
									QUANTITY ORDERED ----------
3-408	T SUPPORT		22	4	0	4	5	10	$13.65
									QUANTITY ORDERED ----------
3-435	BACK SHEET IIB		12	3	0	3	5	10	$17.95
									QUANTITY ORDERED ----------

NUMBER OF ITEMS IN REPORT = 13

4. Columnar report - (variation
   in format specification)
   generated by MENU selection # 17

DESCRIPTIVE HEADER LINE :
GROUP FILENAME EXTENSION : /GSU
REPORT FILENAME EXTENSION: /RSU

ITEM DESCRIPTION	TYPE	LENGTH
‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡	‡‡‡‡	‡‡‡‡‡‡‡‡‡‡‡‡
0.WH/PART#:	STRING	8
1.DESC.:	STRING	20
2.CODE:	STRING	5
3.CLASS:	STRING	5
4.UNITS:	STRING	5
5.VEND#:	INTEGER	#####
6.QOH:	INTEGER	#####
7.ALLOC:	INTEGER	#####
8.AVBL:	INTEGER	#####
9.ROPT:	INTEGER	#####
10.ROQTY:	INTEGER	#####
11.LIST PRICE:	MONEY	$######,.##
12.TOT. COST HDWR:	MONEY	$######,.##
13.TOT. COST MISC:	MONEY	$######,.##
14.GROSS MARGIN :	MONEY	$######,.##
15.YTD QTD SOLD :	INTEGER	#####
16.YTD SALES :	MONEY	$######,.##
17.YTD COST :	MONEY	$######,.##
18.YR. START. QOH:	INTEGER	#####
19.LAST ACTIVITY :	DATE	MO/DY/YR

5. List of field specifications
for the Sunshine database
generated by MENU selection # 9

```
                    TOTAL ITEMS ON FILE:   13


          ITEM          I.D. NUMBER      FILE RECORD #
           1            1-400            2
           2            1-403            3
           3            1-404            4
           4            1-408            5
           5            1-435            6
           6            2-400            7
           7            2-403            8
           8            2-404            9
           9            2-408            10
          10            2-435            11
          11            3-404            12
          12            3-408            13
          13            3-435            14
```

6. Dump of the Master Index File
   The I.D. NO. is maintained
   in sorted order. Generated
   by MENU selection #9

```
 1    0.WH/PART#: 1-400    1.DESC.: SIDE FRAME        6.QOH:   11  11.LIST PRICE:    $11.50
 2    0.WH/PART#: 1-403    1.DESC.: END FRAME         6.QOH:    5  11.LIST PRICE:    $17.85
 3    0.WH/PART#: 1-404    1.DESC.: SIDE CAP          6.QOH:    9  11.LIST PRICE:     $6.80
 4    0.WH/PART#: 1-408    1.DESC.: T SUPPORT         6.QOH:   10  11.LIST PRICE:    $13.65
 5    0.WH/PART#: 1-435    1.DESC.: BACK SHEET IIB    6.QOH:    8  11.LIST PRICE:    $17.95
 6    0.WH/PART#: 2-400    1.DESC.: SIDE FRAME        6.QOH:    3  11.LIST PRICE:    $11.50
 7    0.WH/PART#: 2-403    1.DESC.: END FRAME         6.QOH:   14  11.LIST PRICE:    $17.85
 8    0.WH/PART#: 2-404    1.DESC.: SIDE CAP          6.QOH:   15  11.LIST PRICE:     $6.80
 9    0.WH/PART#: 2-408    1.DESC.: T SUPPORT         6.QOH:    2  11.LIST PRICE:    $13.65
10    0.WH/PART#: 2-435    1.DESC.: BACK SHEET IIB    6.QOH:    6  11.LIST PRICE:    $17.95
11    0.WH/PART#: 3-404    1.DESC.: SIDE CAP          6.QOH:   13  11.LIST PRICE:     $6.80
12    0.WH/PART#: 3-408    1.DESC.: T SUPPORT         6.QOH:    4  11.LIST PRICE:    $13.65
13    0.WH/PART#: 3-435    1.DESC.: BACK SHEET IIB    6.QOH:    3  11.LIST PRICE:    $17.95
```

7. Dump of pre-selected fields for the
group ALLITEMS. Generated by MENU
selection #6. The fields were sel-
ected during the definition phase.

```
LEFT MARGIN                                = 3
RIGHT MARGIN                               = 0
PAGE LENGTH (66, 88 lines)                 = 66
TOTAL LINE LENGTH ACROSS                   = 132
PRINT DENSITY (0=Stand., 1=Compr.)         = 1
MULTIPLE SPACING (1,2,etc)                 = 0
DO BREAK TOTALS (0=NO, 1=YES)              = 0
GRAND TOTALS (0=NO, 1=YES)                 = 0
ITEM COUNT (0=NO, 1=YES)                   = 0
```

LINES OF OUTPUT

ITEM	TYPE	FIELD	TAB COL	OUTPUT APPEARANCE COLUMN TITLE
1	1	0	6	XXXXXXX WH/PART#
2	1	1	17	XXXXXXXXXXXXXXXXXXX DESCRIPTION
3	1	5	40	0 VEND#
4	1	6	48	0 QOH
5	1	7	56	0 ALLOC
6	1	8	64	0 AVBL
7	1	9	72	0 ROPT
8	1	10	80	0 ROQTY
9	1	11	88	$0.00 LIST PRICE
10	2		88	XXXXXXXXXXXXXXXXXXX

CUSTOM TITLE LINES SECTION

```
TYPE CODES:   1=STRING,   2=CENTERED STRING,   3=GROUP FILENAME
              4=GROUP DATE,   5=GROUP TITLE,   6=GROUP ITEMS
              7=CURRENT DATE,   8=PAGE NO,   9=BLANK LINE
```

LINE	TYPE	TAB COL	OUTPUT APPEARANCE
1	2		SUNSHINE, INC. INVENTORY SYSTEM
2	1	3	GROUP NAME :
2	3	16	FILENAME
2	2		LOW ORDER POINT SUMMARY
2	7	118	02/15/83
3	1	3	GROUP TITLE :
3	5	16	GROUP FILE TITLE LINE
3	1	118	PAGE
3	8	124	PAGE NO.
4	1	3	CREATED :
4	4	16	MO/DY/YR

8. Columnar report specifications for the report LOWORDER generated by the MENU selection # 14

FILE ITEM: 1
0.WH/PART#: 1-400
1.DESC.: SIDE FRAME
2.CODE: ..... 3.CLASS: .....
4.UNITS: ..... 5.VEND#:   23
6.QOH: 11 7.ALLOC: 2
8.AVBL: 9 9.ROPT: 5
10.ROQTY: 10
11.LIST PRICE: $11.50

12.TOT. COST HDWR: $88.12
13.TOT. COST MISC: $23.00
14.GROSS MARGIN : $38.38
15.YTD QTD SOLD :   6
16.YTD SALES   : $69.00
17.YTD COST   : $43.35
18.YR. START. QOH: 0
19.LAST ACTIVITY : 01/16/82

FILE ITEM: 2
0.WH/PART#: 1-403
1.DESC.: END FRAME
2.CODE: ..... 3.CLASS: .....
4.UNITS: ..... 5.VEND#:   23
6.QOH: 5 7.ALLOC: 0
8.AVBL: 5 9.ROPT: 5
10.ROQTY: 10
11.LIST PRICE: $17.85

12.TOT. COST HDWR: $61.75
13.TOT. COST MISC: $0.00
14.GROSS MARGIN : $27.50
15.YTD QTD SOLD :   7
16.YTD SALES   : $124.95
17.YTD COST   : $86.45
18.YR. START. QOH: 0
19.LAST ACTIVITY : 01/16/82

FILE ITEM: 3
0.WH/PART#: 1-404
1.DESC.: SIDE CAP
2.CODE: ..... 3.CLASS: .....
4.UNITS: ..... 5.VEND#:   17
6.QOH: 9 7.ALLOC: 0
8.AVBL: 9 9.ROPT: 9
10.ROQTY: 10
11.LIST PRICE: $6.80

12.TOT. COST HDWR: $23.27
13.TOT. COST MISC: $1.28
14.GROSS MARGIN : $37.93
15.YTD QTD SOLD :   6

9. Dump of the MASTER
   file, generated by
   MENU selection # 9

16.YTD SALES   : $40.80
17.YTD COST   : $15.51
18.YR. START. QOH: 0
19.LAST ACTIVITY : 01/16/82

DATABASE: SUNSHINE

FILENAME: ALLITEMS   02/19/83   P. 1

‡‡‡

DESC.	SUMMARY	TOTALS	ITEMS		AVERAGE		MINIMUM		MAXIMUM
BACK SHEET IIB	TOT. COST HDWR$	126.94	3	$	42.31	$	21.87	$	62.59
	TOT. COST MISC$	15.20	3	$	5.07	$	1.25	$	11.95
	YTD QTD SOLD	6.00	3		2.00		0.00		3.00
	YTD SALES $	107.70	3	$	35.90	$	0.00	$	53.85
	YTD COST $	42.73	3	$	14.24	$	0.00	$	21.87
END FRAME	TOT. COST HDWR$	236.75	2	$	118.38	$	61.75	$	175.00
	TOT. COST MISC$	0.00	2	$	0.00	$	0.00	$	0.00
	YTD QTD SOLD	13.00	2		6.50		6.00		7.00
	YTD SALES $	232.05	2	$	116.03	$	107.10	$	124.95
	YTD COST $	161.45	2	$	80.73	$	75.00	$	86.45
SIDE CAP	TOT. COST HDWR$	123.08	3	$	41.03	$	23.27	$	66.01
	TOT. COST MISC$	3.29	3	$	1.10	$	0.00	$	2.01
	YTD QTD SOLD	18.00	3		6.00		0.00		12.00
	YTD SALES $	122.40	3	$	40.80	$	0.00	$	81.60
	YTD COST $	46.71	3	$	15.57	$	0.00	$	31.20
SIDE FRAME	TOT. COST HDWR$	107.58	2	$	53.79	$	19.46	$	88.12
	TOT. COST MISC$	25.43	2	$	12.72	$	2.43	$	23.00
	YTD QTD SOLD	8.00	2		4.00		2.00		6.00
	YTD SALES $	92.00	2	$	46.00	$	23.00	$	69.00
	YTD COST $	56.32	2	$	28.16	$	12.97	$	43.35
T SUPPORT	TOT. COST HDWR$	128.13	3	$	42.71	$	16.23	$	77.34
	TOT. COST MISC$	8.24	3	$	2.75	$	1.34	$	4.56
	YTD QTD SOLD	1.00	3		0.33		0.00		1.00
	YTD SALES $	13.65	3	$	4.55	$	0.00	$	13.65
	YTD COST $	8.11	3	$	2.70	$	0.00	$	8.11

‡‡‡

GRAND TOTALS FOR 5 DIFFERENT 'DESC.' FIELDS

	TOTALS	ITEMS		AVERAGE		MINIMUM		MAXIMUM
TOT. COST HDWR$	722.48	13	$	55.58	$	16.23	$	175.00
TOT. COST MISC$	52.16	13	$	4.01	$	0.00	$	23.00
YTD QTD SOLD	46.00	13		3.54		0.00		12.00
YTD SALES $	567.80	13	$	43.68	$	0.00	$	124.95
YTD COST $	315.32	13	$	24.26	$	0.00	$	86.45

10. Statistical report - generated
by MENU selection # 16

```
WH/PART#: 2-435                     WH/PART#: 3-435                     WH/PART#: 1-435
DESCRIPTION: BACK SHEET IIB         DESCRIPTION: BACK SHEET IIB         DESCRIPTION: BACK SHEET IIB
LIST PRICE:      $17.95             LIST PRICE:      $17.95             LIST PRICE:      $17.95


WH/PART#: 1-403                     WH/PART#: 2-403                     WH/PART#: 3-404
DESCRIPTION: END FRAME              DESCRIPTION: END FRAME              DESCRIPTION: SIDE CAP
LIST PRICE:      $17.85             LIST PRICE:      $17.85             LIST PRICE:      $6.80


WH/PART#: 1-404                     WH/PART#: 2-404                     WH/PART#: 1-400
DESCRIPTION: SIDE CAP               DESCRIPTION: SIDE CAP               DESCRIPTION: SIDE FRAME
LIST PRICE:      $6.80              LIST PRICE:      $6.80              LIST PRICE:      $11.50


WH/PART#: 2-400                     WH/PART#: 2-408                     WH/PART#: 3-408
DESCRIPTION: SIDE FRAME             DESCRIPTION: T SUPPORT              DESCRIPTION: T SUPPORT
LIST PRICE:      $11.50             LIST PRICE:      $13.65             LIST PRICE:      $13.65


WH/PART#: 1-409                     WH/PART#: ........                 WH/PART#: ........
DESCRIPTION: T SUPPORT              DESCRIPTION: ................      DESCRIPTION: ................
LIST PRICE:      $13.65             LIST PRICE:      $0.00             LIST PRICE:      $0.00
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11. Modular report - (shelf labels)
    generated by MENU selection # 15
    The page can be set up with this
    function to fill out pre-printed
    forms.

MAINTENANCE AGREEMENT OFFER

Great Plains Computer Co. offers a one year maintenance program for their full line of software products. This is a very inexpensive way to receive a multitude of benefits, including any program updates for one full year.

This maintenance agreement includes:

        1. Updates and corrections in documentation
        2. Any updated versions of the software including enhancements
        3. Technical support by phone (soon to be a toll free number)
        4. Shipping charges paid by Great Plains
        5. Quarterly Newsletter

To be eligible for this maintenance agreement, Great Plains Computer Company requires the attached enduser registration card to be sent in promptly.

The extent of maintenance provided shall be strictly at the discretion of Great Plains Computer Co. This agreement does not guarantee that problems will necessarily be resolved immediately. However, every reasonable effort will be made to correct problems as they arise.

Procedure for Software Updates:

        1. Notice of updates will be mailed to the customer
        2. Customer will return disk to Great Plains for update
        3. Great Plains will return updated version to customer
            at no additional charge.

Maintenance Fee Schedule:

Great Plains Computer Company charges an initial maintenance fee of $100.00 per year for the first program. Any additional programs that you purchase are added on at a nominal fee of $25.00 per program for each year.   A customer must carry maintenance on all programs purchased or none at all.

For example: if you purchase Stylograph and Mail Merge the first year, the cost is $100.00 + &25.00 = $125.00 for the first year.
Sometime in the first year you also decide to buy the Spelling Checker Program. Upon renewing the Maintenance Agreement you now will add on another $25.00 for the addition of Spelling Checker to the maintenance agreement. The total cost for the second year is $150.00.

The following is a list of programs currently maintained by Great Plains Computer Company.

Stylograph	GPC General Ledger
Mail Merge	GPC Accounts Receivable
Spelling Checker	GPC Accounts Payable
Infomag	Crossbac
Gypsy	RRMAC

MAINTENANCE AGREEMENT

Person to whom updates should be sent: _____

Business Address: Shipping Address:

_____   _____

_____   _____

_____   _____

_____   _____

Telephone _____   _____

     Authorized Signature _____

     Date: _____

Check which programs this agreement pertains to:

Stylograph_____	Serial #_____	Version	_____
Spelling Ck____	_____		_____
Mail Merge_____	_____		_____
Infomag _____	_____		_____
GPC G/L _____	_____		_____
GPC A/R _____	_____		_____
GPC A/P _____	_____		_____
RRMAC _____	_____		_____
Other _____	_____		_____

Operating System:_____   Disk size _____

Description of Hardware: _____

Maintenance Starts: _____

Maintenance Ends: _____

Annual Cost _____

Maintenance Number

_____

GREAT PLAINS COMPUTER CO., INC.
P.O. Box 916
Idaho Falls, ID 83402

SOFTWARE PROBLEM REPORT

| Program Name: | Serial #: |
| | Version #: |

| Hardware Configuration: | Operating System (Flex,OS9,etc) |

Menu Selection:

Complete Description of Problem (In detail)

Error Message(s) displayed and what action taken:

Reported by:
   Name _____   Date_____

   Address_____

   _____   Phone_____

   _____