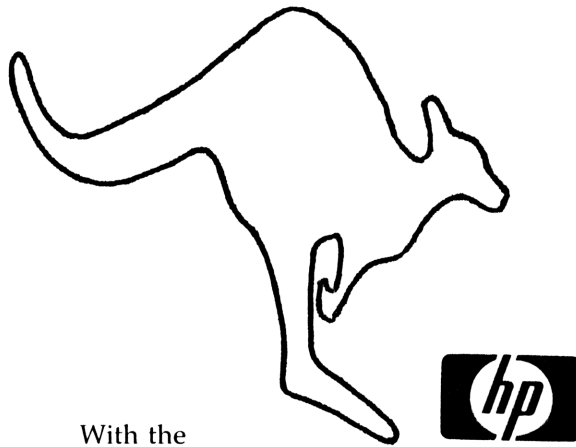# File Management Applications

With the

HP-75 Portable Computer

and
VisiCalc®
00075-15014

VisiCalc® is a registered trademark of VisiCorp.

by

RICHARD E. HARVEY

FILE MANAGEMENT APPLICATIONS

WITH THE

HP-75 PORTABLE COMPUTER

by
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SYSTEM OVERVIEW

These programs are tools for setting up and maintaining a personal filing system on the HP-75 Portable Computer. Required for implementation is the 00075-15014 VisiCalc(R) module. They were developed more because of interest in portable computing, and Hewlett-Packard's philosophies than for monetary reward.

Hopefully one of the first things you will notice is the compactness of the programs. The idea is to require little program code in memory at a time, keeping most of memory free for files. It has been said that it is harder to write a short program (or letter) than a long one. Throughout the continuing development, the programs have been as much as three times as large as presented here. Some compromises have, of necessity been made. There is no help file in each program, you will have to refer this booklet for information. If you make an illogical response, the program will beep and ask you the same question again.

Each program is designed to be self-supporting. On some occasions, it will be necessary to enter VisiCalc. As an example, when you are running the Edit program, to Alphabetize or search for a string to edit, you can enter VisiCalc from that program, do your work, then when you exit VisiCalc, the Edit program will continue from where you left it. To add these functions to the Edit program would have required it to be nearly three times as large, and you would still have to maintain the VisiCalc versions of the functions in memory.

The programs were designed for a single line display. The Edit program will Provide a full screen editor if a monitor is available, but will not cause a jumbled display without one. It may seem contradictory to what most programs require, but these actually work better with 0 DELAY rate.

One of the main design goals was compatability with the 00075-15019 Text Formatter Module. Files are usually maintained in VisiCalc format, then converted line for line, using the Swap program, or with specific paramaters, using the Index program. As an example, you can maintain a mailing list in VisiCalc, organize it with the Edit program, then convert it to Text. Or use VisiCalc as a full screen editor, then convert the file to Text for printing.

While not based on any Data Base Managment system available, you will find most advanced Data Base functions supported. You may insert, delete, replicate, move, or any of the VisiCalc functions, with the modified VISICM1 program (furnished) you may sort, clear, or fetch specific strings to edit. The Index program gives you the option to search for up to 12 strings, in different fields if desired. Make them all required to be true, or exclusive, and search from the beginning, end or any place within each string. You may also search for a dozen strings (different fields again) that you wish to not use. For instance, give me a list of everyone in California, unless they owe me money. Another group of options is greater or less than. You can specify everyone with a ZIP code between 90000-91000 unless they like spinach. You may specify any of these conditions together, twelve of each kind, separate field for each if you wish. Another interesting option is that you can specify a group of Worksheets to look for, and they don't have to be in main memory. The maximum absolute size for a file is the size of one Mass storage medium.

After reading this booklet, the VisiCalc and HP-75 manuals, you should be able to create a list of any complexity needed. When the guy with the 10 megabyte hard disk, 500k RAM, 32bit computer, and dBase II starts talking, ask him if he can take it with him to the beach.

IMPLEMENTATION

The HP-75 with VisiCalc is a powerful package. A portable package like this can be made even more usable by the addition of the VISICM1 program furnished with it. Take it one step further and you can see that the addition of file managment to the machine will add much greater versatility.

These programs are hooks allowing conversion between VisiCalc and Text format, searching, and maintaining what can be, in effect, files as large as the capacity of a mass storage medium.

The format for data storage is usually VisiCalc files. Each row (horizontal) is a single item. Each column (vertical) represents fields within the item. An item may be a list of business associates, fields could be Name, City, Birthday, or hat size. We can build as many fields as we might someday want to sort by. So, the row may contain the persons name in the first column, where he works in the second, and so on.

We have specific ways of building files, and since data entry is 30-50% of our costs, we want to keep the listings as general as possible, that we may not later be restricted by lack of forethought. After some planning, VisiCalc and these programs can be used to list almost anything. Extra fields may be used that are never seen in any listing. They may be used to determine which items will be sorted out elsewhere in the file.

CONVENTIONS

It is generally accepted that you need a lot of memory to maintain a data base. With these programs, it is not really necessary. The most any of the programs require is aproximately 3600 bytes. Add the overhead of VisiCalc and the computers operating system, and you have nine or ten k(1024 bytes per kilobyte). If you keep each individual Worksheet to, perhaps, 3-4 k, there will still be 4-5 k left for data to be collected in when using a 16k machine. More memory means larger individual Worksheets may be used, and some time will be saved in searching, but the ultimate size of the file is no greater. The Index program can search for as many as 36 different fields in as many worksheets as will fit on a single Cassette or Disk. Output is done in sections as large as the available memory of the machine. Your file is actually limited only by the amount of mass storage, not by the available memory.

Data can be entered using VisiCalc or the Edit program.

The Edit program gives an easy to understand format, and automatically increments to the next field when you have entered your data.

The Swap program gives you the opportunity to move data between Worksheet and Text files in any manner needed. With some planning, it is much easier to move data than re-enter.

The power is in the Index program. It is used to search for data in catagories as specific as you wish, and build a Text file with it's findings.

If you use multiple columns in the Worksheet, the Text version will have those fields separated by the accent grave character ('). This is the character recognized by the Text Formatter Module for separating fields for a Distribution list. If you transfer a single column from VisiCalc to Text, It is in the same format as used in regular Text editing. By setting column and header width judiciously, VisiCalc can be used as a full screen editor for Text files. All of the VisiCalc commands like Move, Insert, Delete can be used on your soon-to-be Text file. You could maintain notes in one column and write your letter in another. If you write a very large piece, it may be in multiple columns, or multiple Worksheets.

Included with the programs are several utility programs. By themselves, they are quite useful. The main reason for their inclusion is as stimulation to create your own solutions to little problems we always run into. One program is actually a modification to the VISICM1 to give it searching capabilities. With a large Worksheet, or when using the LCD display, you can use it to quickly find a specific entry.
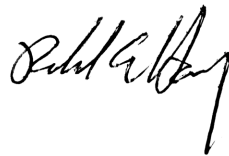
OBSERVATIONS

These programs are not a "turnkey" package. You will have to do some work. They are made as flexible as possible to make your job managable.

As an aside, I have spent days at a time to save 50 or 100 bytes in a program, use those bytes well.

Were there enough interest, a ROM could be produced. The Edit program could be used for control, calling the others from it's extended menu. The Edit window could be a window on a file as large as one mass storage medium. Extension Commands for plotting and moving to another segment of that virtual window while in VisiCalc could be added. When fast, economical, mass storage becomes available. I will Upgrade this system for it. If we had some Ham, we could have some Ham and Eggs. If we had some Eggs.

These programs work, don't find fault with them. They are your tools, you are the sculptor. We should be thankful to Hewlett-Packard for giving us these tools.

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"EDIT" PROGRAM

This program provides an alternate TEXT input format using VisiCalc files. It's purpose is to work as a list manager.

DATA FORMAT

A maximum of 9 fields and 255 rows may be used. Any fields over 9, that is, Columns J through IU, are not altered in any way, they are ignored. All data is entered and reviewed as text. any formulas or numbers in the WORKSHEET are computed and the results used as text. Columns are specified with user or default labels. A maximum of 255 Items, in rows, can be input. For simplicity, we will call one Row with up to 9 columns a window. Only one window is viewed at a time. VisiCalc has three levels, Top, Edit, and Command. This program has only two levels, Edit and Command. All Top level commands, such as moving the window, are performed in Edit level.

INSTRUCTIONS

Load the program. It is both tracks on a single card. Type RUN "EDIT", then press RTN. After a short delay, the screen will clear and show the prompt: Enter worksheet name: . If there is a currently active WORKSHEET in memory, it's name will follow the prompt, and will have the flashing cursor over it's first character. Press CLR if you do not wish to use that file. If the Prompt was blank, or if you have cleared it, enter any Valid or New WORKSHEET name. You may exit the program at this time by pressing any of the edit keys. If the name is of the wrong type, or is not a proper name, the prompt will again return, with the improper name following it for you to edit. If the WORKSHEET is not available, the next prompt will be: _____ not found. Create Y/N. Press Y if you wish to create a new file with that name, Press any other key if you do not.

The Next prompt is "Cols:A,I". You may use any or all columns between A and I. It is not necessary to begin with column A, and you may edit only one column if you wish by using, for instance, D,D You may use default headers, or USER headers, Providing you place them in brackets, and spell them right. Valid input can be: A,[Zip] or [NAME],D or any other logical choice. You must use two inputs, separated by a comma. It is not important whether you use upper or lower case.

The display format will depend on if you are using a monitor, or the LCD display. The display format is determined by what display device you used the last time you ran VisiCalc. If you have changed HP-IL display assignments, either OFFIO'ed or RESTORE IO'ed, the program will need to be made aware of it. We will discuss command level later, but for now, Press any one of these keys: TIME APPT EDIT FET. The display will change to: "Line Vc Cont Head Goto New NNNNN". Press V and VisiCalc will run. It is not necessary to do anything in VisiCalc at this point. Exit VisiCalc as you normally would, by pressing SHIFT & ATTN. The display will act a little more civally now.

Most of the time you will be in the Edit level. You may input data, move to another window, change data, or end the program there. It is necessary to use the RTN key only to move the cursor to the next column in the same window, or, if you are at the last column, it will take you to the first column in the next window. Any key that terminates input, including ATTN, when you exit the program, also enters the current line you are editing.

The Command level can be entered by pressing TIME APPT EDIT FET. The slash ("/") key does not get you into Command level, it is used to enter a "/" into a line. Command level is used for functions other than data input and review.

"EDIT" PROGRAM EDIT LEVEL

When you have entered the program, and have the Worksheet assigned, you are in Edit mode. On the left of the LCD is the current column label followed by an asterisk (*). The flashing cursor is placed over the first character in the edit string.

With this mode, you can review, alter, input or delete data. Any data you enter will be placed in the WORKSHEET at the current location. Besides RTN, there are several other keys which terminate data entry in a particular cell. If you do not want to change the file, do not change the displayed line.

In this mode, you can end the program, move to another window, move to another cell, or enter Command level. All of the Text editing keys are operable. All of these keys, in addition to their specific function, terminate data entry in the current cell, and enter the data into the Worksheet:
ATTN, TIME, APPT, EDIT, UP ARROW, SHIFT UP ARROW, DOWN ARROW, SHIFT DOWN ARROW, FET, RTN and RUN.

Edit level commands include:

ATTN
Clears the prompt from the display and ends the program.
TIME APPT EDIT FET
Press any one of these keys and you enter Command level.
UP ARROW
Moves to the next window up (smaller numbered row). If you are at row 1 will remain there.
SHIFT UP ARROW
Moves to the first window, even if there is no data there.
DOWN ARROW
Moves to the next window down whether there is data there or not. If you are currently on row 255, will move to Command level.
SHIFT DOWN ARROW
Moves to the last window with data or any format in it. If you are currently beyond the last window with data, will move back up to it.
RTN and RUN
Terminate input on the current edit line. Moves cursor to the next column in the current row. If the last row has been reached, moves cursor to first row in the next window. It is not necessary to press RTN or RUN to terminate entry unless you wish to move to the other next line down.

The other edit keys work as they do when directly editing a line of text.

--+--

Notes

While it is possible to use any character in a line, it is advisable to limit use to ASCII standard characters. Basically, any character that can be displayed with the HP 82163A Video Interface can be used. You should experiment with any escape sequences, such as those required by a printer, before entering them with abandon.

Since it takes some time to build each window on a display device, it is advisable to limit the number of columns to be displayed to those that will actually be used. Columns not displayed are not lost, just forgotten.

If you reach row 255, you will notice that it is not possible to move the cursor down. Most attempts to move around will be met with a return to the Command level. Press G in command level and specify row 1, then press RTN. This will reset the row counter and again allow you to move anywhere in the file.

It will take a while for the cursor to return with the next edit window when you add data to a large WORKSHEET in a column which has not had any data entered in it. This is because VisiCalc is taking time to re-orgainze the data. If this is repeatedly a problem for you, move to a row considerably below the area you are working in, and enter a temporary string in the last column you will be using. Remember to delete the temporary string when you are done with data entry.

"EDIT" PROGRAM COMMAND LEVEL

Press TIME APPT EDIT or FET, the display will show: "Line Vc Cont Head Goto New NNNNN". The NNNNN represents currently free memory. You may see how much memory is available by entering Command level. Entering Command level is the equavalant to RTN then / in VisiCalc. The only keys active are ATTN and Character keys: L V C H G N.

LEN
You may find the maximum row length by pressing L. The count will include character positions occupied by an equivalent TEXT file. It assumes a space after the line number, and one character separating each field. It does not count the spaces required for the line number. The display will show "Working", then "Len NN ,Row NNN". NN refers to the maximum row length found, NNN refers to the first row with that number of characters. If there are other lines with that number of characters, the first occurance will be shown. The main reason for this function is to warn you when line length approaches 96 characters, the maximum you may edit directly if you convert the data to a TEXT file. The other reason for this function is that the Text Formatter Module will have problems with lines longer than 96 characters. The prompt will remain in the display, but you will be able to use any of the Command level functions. If you want to see the function labels, press a key that does not have a function connected with it, such as the SPACE BAR, the Command prompt will return.

VC
To enter VisiCalc, Press V. VisiCalc display format and cursor position are not altered by Edit, so you may, in effect use both programs at the same time as two alternate windows. In the effort to keep the program as compact and easy to use as possible, funtions available in VisiCalc are not available in the Edit program, and vice versa. It may be necessary to enter VisiCalc from time to time. It is easy to transfer execution back and forth. To keep from getting confused about where you are, remember, VisiCalc uses column and row headers and a ":". The Edit program uses only column headers and a asterisk "*". If you inadvertently press the / to enter command level in the Edit program, it will be necessary to correct the character before continuing. You may use VisiCalc as you normally would. Extended command functions, such as Sort and Fetch are very helpful. You may run the Edit program, run VisiCalc from the Edit program, and then in turn, run Basic programs while in VisiCalc. When you exit VisiCalc, the Edit program will continue from the first column of the same row you were editing when you left it.

CONT
Cont is used to get back to where you were without doing anything. To see how much memory you have, or return top of the current window, go to Command level then press C.

HEAD
Column headers may be edited by pressing H in Command level. You may review and change them as you need. To get back to the first header after you have viewed some of them, enter Command level, then press C. If you press the UP ARROW key, the window will move to row 1. Avoid using characters in the headers that are not standard ASCII characters, VisiCalc uses many of them for control purposes, and you can make a nearly useless WORKSHEET by using your favorite non-standard character.

GOTO
To Goto a specific row, press G the prompt will be "Goto:NNN", the NNN representing the current row. Input a valid row between 1 and 255 and press RTN. You may not review the Headers by entering 0. If you use an illogical line number the program will beep and return with the prompt and the number -1. You may terminate the program at this point by pressing any of the edit keys, For instance, TIME will get you to TIME display mode.

NEW
To Change to another worksheet or change the columns displayed, press N. This will return you to the "Enter worksheet Name:" prompt.

"INDEX" PROGRAM

Searches and provides a TEXT file from user determined specifications in VisiCalc WORKSHEETS.

DATA FORMAT
Any number of columns in the Worksheet may be used. For Text Formatter compatability, it is suggested to specify a maximum of 9 fields for output. Data is entered using VisiCalc or a Data entry program. This program creates a TEXT file as it's output.

INSTRUCTIONS
Load the program. It is on two magnetic cards. Type RUN "INDEX". The prgram begins with: "Enter worksheet name:". Use any valid worksheet name, press RTN.

To search more than one file, at the "Enter worksheet name:" prompt input a Text file with "VCFILE" in it's name. VCFILE, VCFILE1, MYVCFILE are all valid names. It is not important how the lines are numbered. There MUST NOT be a space between the line number and the data. The first line MUST be the name of the mass storage device on which the files will be found. An example would be 1:ca the 1 is the line number, :ca is the device ID. If no mass storage will be used, that is all of the files are in RAM, you still need something there. How about using your mother's maiden name? On each following line enter a file name you wish to search. It may be in RAM or mass storage, in any order. If a file is not found, the computer will skip to the next name. *The only requirement about sequence is that the first file name must be in RAM. It may be empty, but it must be there. Remember, no space after the line number, and only one file name per line.

Files loaded by the program will be deleted as it runs. Any files found in RAM will be left there. You might keep the VCFILE TEXT file at the beginning of your mass storage medium, updating it as you add more files. The result of all of this is that you search a lot of files without having to enter their names each time.

Since the program finds the column position to be searched from the first file, make sure, if you specify [Zip], it is the same column position on each worksheet. The program does not check positions in subsequent files. To conserve memory, you might have the first file empty, with just headers, and have all of the other files fairly small and on mass media. They will be loaded, computed and deleted when they are no longer needed, leaving more room for the results file.

OUTPUT FILE
The next prompt is "Output file:". Enter a Valid TEXT file name, or a new name. Data will be appended to the end of the file if some already exists.

OUTPUT COLUMNS
The prompt is "Output Cols:A,I" If there are user defined headers for either column A or I, the user header will be shown. You may change the range to any other columns. You must specify two columns. If you wish to use only one column, specify the same label for the whole range, for instance D,D. The second column must either be further to the right on the WORKSHEET than first one, or the same column. You may use either default or user headers. Valid input can be: A,[zip] or [NamE],D or whatever providing you spell them right and place user headers in [brackets].

SEARCH STRINGS
Search for up to 12 different strings, each may be in a different column. Data may be entered in upper or lower case. Comparisons are made in upper case. Beginning spaces are taken literally, spaces at the end of the string are ignored. The maximum length of the string is 8 characters, including any control codes. The program will look for the position of your string within the cell, it may be in any position in the cell. As an example, if you specify [zip] as the column, ~~the~~ the number 9, any zip code with a 9 will be found.

Specifi contents then column

SEARCH OPTIONS
To specify the search from the beginning or end of a field, begin the string with the accent grave `. This is the same character used to separate fields in TEXT. The character is not physically in the WORKSHEET. So, if you wish to find those ZIP codes beginning with 9, use the combination `9.

if First File is Not in Ram it will be loaded by PGm before continuing Input

To specify comparison from the end of the string, specify, for instance, 123` and it will search for the position from the end of the string. It is not necessary to enter the whole name, a significant portion, enough to insure that it does not look like another is enough. For instance, to find Los Angeles, you may wish to enter LOS AN, or perhaps OS ANGEL. Odds are that there aren't other cities similar to OS ANGEL. If there are, you can eliminate them by specifying Exceptions (more later).

SEARCH STRING SPECIFICATIONS

The Search strings do not need to be in the range of cells you output to the Results file. You may use numbers and the results from formulas for comparisons as well as Text. Numbers will be compared as they are formatted in the display.

Comparing results from formulas is another thing altogether. If the local or global format is I (integer) they will be seen that way. In any other case, they will be compared (and output) rounded to two decimal places. If the results round to only one decimal place, then they will be formatted with only one place, no trailing zero is added. Regardless of display format, if the result is an Integer, it will be compared without a decimal place. The formula re-computed for the comparison. If, for instance, the cell contains the function TIME, the time will be different than when you last recalculated it.

SEARCH COLUMNS

The prompt with "Col:A" will show the last column used, you may press RTN and use that column or enter a new column label. If this is the first string input, or the last input you used HEADERS as the search column, the prompt will default to column A, otherwise with the column last used. You may search the row headers for the string by specifying HEADERS, without brackets. The same rules for column labels apply in specifying the range of columns in a result file, however, only one column label is used. To search more than one column for the same string, it is necessary to use the same string again as a new string, and specifing the next column to be searched.

QUALIFYING STRINGS

If you have input more than one search string, the next prompt is "All strings MANDATORY Y/N" If all specified strings MUST be present in ALL search fields, press Y, all other times, press N.

When you have entered the last search string, press RTN without any input. If you press RTN without specifying any strings, it will be assumed that you wish to search all columns for exception strings. Pressing RTN without any search strings is saying "I want to use all of the data EXCEPT what I am about to tell you"

(OR) COMPARISONS

Less than and greater than comparisons are next. If you don't wish to use them, press RTN without any input, and the program will move on. Less than and greater than comparisons compare strings to each other. You may compare numbers, but remember they are strings. -1 is smaller than 10, because we are comparing ASCII character codes. Numbers may only be compared accurately if they have the same number of characters. <STRING means if the cell contents are smaller than the STRING. >STRING is the opposite. Strings are compared with the same number of characters. If your search string has five characters and the cell has eight, only the first five will be compared. If the cell has two characters and your string has five, only two will be compared. The comparison is always made starting on the left of the string. You may use up to eight characters, but the first character must be either (or) or the comparison will not be made. Up to twelve different comparisons may be made.

The second prompt for each comparison is "Col:", enter any valid column name.

EXCEPTION COMPARISONS

Using Exception strings is the same as search strings, except, of course, if the program finds the string, it will not copy the specified row to the result file.

You may use up to 12 exception strings, they may be very specific to eliminate small groups from the result file. For example, you may wish list everyone with 9 in the beginning of their ZIP code EXCEPT if they live in the San Francisco area. You would use `9 as the search string and `94 as the exception.

NOTES

* If no search strings are specified, it will be assumed that you want to only look for exceptions.

* If no search, (or), or exception strings are specified, then all fields in the specified range will be coppied. This is very helpful if you wish to use VisiCalc as a Screen Editor, and use more than one column for entry. You can specify a particular column to be output.

* The program will stop if it runs out of memory.

* The source worksheet is not changed in any way.

* To change the results file back to a WORKSHEET, use the Swap program.

* If I/O is not active or the name for the mass storage device is not correct, the program will not find the files. You are responsible for setting up device ID's and making sure that they match the name in the VCFILE file.

* Make sure you have a enough battery power.

* Execution time will vary considerably. for a single search of a small WORKSHEET, expect results in a few seconds. If you are searching for a large variety of things in a single worksheet of about 4k perhaps a minute is fair. If you are searching a lot of worksheets for a lot of things, perhaps 100k of data, you should plan your lunch break around it.

* It sounds contradictory, but if you are going to search a large data base, keep each file very small, perhaps 2k-3k. Since the program takes about 3600 bytes (including variables), you will have between 8k and 16k for the results file. If you know that the output will be quite large, process it in batches that will not exceed the available memory.

* If your results file is large there will be no easy way to turn it back into a WORKSHEET.

* If you should run out of memory, the last file worked on will be in the display between the start and finish times. That file may have been only partially processed, or not at all. Any files in your list beyond that one weren't even looked at.

* This program will may create TEXT lines as long as 255 characters.

* If you stop the program while it is searching a WORKSHEET, it may leave an extra column in the WORKSHEET.

"SWAP" PROGRAM

DATA FORMAT Conversion can be from TEXT to WORKSHEET, WORKSHEET to TEXT, TEXT to TEXT, or WORKSHEET to WORKSHEET.

INSTRUCTIONS

Load the program. It is both tracks on a single card. type RUN "SWAP" then press RTN. After a short delay, the screen will show the prompt: "Source file:", if there is a currently active WORKSHEET, it's name will follow the prompt. Input any valid TEXT or WORKSHEET file which is in RAM, then press RTN. If the file does not exist, or is of the wrong type, the program will again ask for the Source file name.

If the source file is a WORKSHEET, the next prompts will ask how you wish that file to be interpreted. If the source file is a TEXT file, these prompts will not be displayed. The next prompt is "Destination ". Input a name of a TEXT or WORKSHEET file. or "Ignore formulas Y/N" is shown next. Press Y if you would like formulas to be computed and their results to be placed in the destination file (un-formatted). Press N if there are no formulas in the targeted portion of the WORKSHEET, or you wish the formulas to be ignored, a blank cell will be transferred. "Cols:A,I". You will be asked for the range of columns you would like to translate to the destination file. Any User defined column header or default header may be input. If you wish to translate only one column, specify the same column for both extremes.

You will next be asked for "Destination:". Input the name of a TEXT or WORKSHEET. If the file does not exist, it will be created. If it does exist, it will have the data appended after it's last entry. After RTN, the prompt will be: "Copy to Worksheet Text". Press either "W" or "T", no other keystroke will work, not even ATTN. If the destination file exists, the type must match your input or the program will return with the "Destination:" prompt. It is not necessary to press RTN after the "W" or "T". The program will display the time that file conversion begins on the left of the display. When file conversion is completed,the computer will beep. The finish time will be displayed at the right of the display, to help you judge execution time the next time you run the program. If you are unsure of how to load the card, or any other operating proceedures, please refer to the excellent manual provided with the HP-75.

OPERATION

The Source file must be in RAM and can be of either format. The destination file will have the data appended to it if it exists. If the destination file does not exist, it will be created.

You may specify any range of columns for conversion. In the TEXT version, each field is separated by a "`". You may create a multi-column file in the TEXT format by leaving a space at the beginning of the line (AUTO line numbering does this automatically), and separating the fields with the "`". when the file is translated to a WORKSHEET, each "`" will be interpreted as the beginning of a new cell. Empty cells are allowed. The character is displayed using [CTL] & [7].

Numbers and text are converted between formats as text. You have the option of having formulas computed and the results included in the destination, or having formulas ignored, being interpreted as an empty field. Numbers are copied as text, and are not available for math functions in the destination file. If you specify the same file for both source and destination, it will append itself until the HP-75 runs out of memory. If you run out of memory while the program is running, the program will stop.

SORTING

The sort routines supplied with the VisiCalc Module will sort the ASCII converted numbers as TEXT, placing them in order, Numbers first, Text afterwords.

TEXT FORMATTER MODULE COMPATABILITY

TEXT files are compatible with the format used in the Text Formatter Module. If you use several columns, they may be

utilized by the ^dl function, VisiCalc providing a covenient way to manage the list.

 If you transfer ONLY ONE COLUMN, the file will be translated to TEXT without the "`" at the end of the line. This format is the same as entering the text directly into a TEXT File. The Hewlett-Packard Text Formatter Module, or other formatting program will treat it like any other TEXT file.

 You can use any of the Formatter commands while editing the file in VisiCalc. Suppress the default headers, set the row header width to zero, column width to one less than your Video Interface can display, and you can use VisiCalc as a full screen text editor. All of the move, replicate, insert, delete, etc. commands of the VisiCalc Module are available.

NOTES
 A general yardstick for figuring execution time, would be: ten seconds per Kilobyte. Execution speed is a function of how many fields are coppied, Conversion using just TEXT files is the fastest, from WORKSHEET to WORKSHEET takes the most time. The source file is not changed in any way.

 A TEXT file will take from 10% to 30% less memory than a WORKSHEET, depending on the cell contents. Estimate memory requirements before running the program. If the HP-75 runs out of memory, the program will stop. The program is aproximately 1300 bytes, and requires 561 bytes for variables while it is running. Each file requires 15 bytes for the catalog entry, and a WORKSHEET requires an additional 22 bytes, even if empty. Make sure that you have enough memory for the copy to coexist in RAM with it. A safe maximum file size is 5500 bytes for a 16k machine, if you have more memory, assume only about half of the additional memory is available.

 Avoid using control characters in files to be translated to WORKSHEET format. Many of these characters will alter the display format in VisiCalc.

 The program is capable of generating TEXT file lines as long as 255 characters. If you try to edit these lines directly, only those characters that are actually in the display will be in the file when you press RTN, the end of the lines will be lost. It is a good practice to only edit these long lines in the WORKSHEET format. The Formatter Module will not function properly with lines longer than 96 characters.
 Enclosed are short programs to determine the maximum length of lines in a text file, and to temporarly Down load the Formatter program and modify it to handle the long lines. The only time you will run into this problem is when using distribution lists. Easiest solution might be to go back to the WORKSHEET and shorten the line.

SUBROUTINES

These utility programs are a sample of what you can do with a little time.

VISICM1

This is a modification to the VISICM1 program furnished with VisiCalc. Line 500 is changed from the original. Lines 3000-3510 are new lines to add. You must also modify the VISIMSGS file as noted to use Fetch. For simplicity, it only looks for strings, formulas are ignored.

LEN

You can use this program to find the maximum line length in a TEXT file. You can only directly edit lines with up to 96 characters. This includes the line number. The Text Formatter Module will handle 96 characters without counting the line number. The space at the beginning of the line counts. Use this program to find out if you are over 96 characters.

LONGFORM

If you find yourself with lines in a Text file longer than 96 characters, the Text Formatter Module will have a fit. This program actually downloads the Formatter program to RAM and changes it so that it will handle the long strings. When it is done running, it will delete the FORMAT75 clone from RAM. Be sure you enter the program correctly. Lower case letters have been used to make sure I l 1 all look different. Be aware that you need about 11k to make it work.

T2D

If you prefer to work with BASIC DATA files instead of Text files, T2D (Text to Data) will change the Text file to Basic. A copy is not made, the original file is changed. Note that the file will take more memory as a Basic file than as Text. Fields are split up into separate Data fields.

ADATE

A simple example of a VisiCalc function. If you enter +ADATE while in VisiCalc, the current date will be returned in the format MM.DDYY as a number. It requires no parameters. If you run the program outside of VisiCalc, all you will get is an unwanted Data file.

VCNUMBER

To change the Text numbers in a Worksheet to real numbers, run this program. If necessary, you can then use the numbers in mathematical expressions. Run this program while not in VisiCalc.

VCTEXT

If you enter VisiCalc using this program, the column width will be set to 31 and headers will be eliminated. An interesting side feature is that the LCD display will show no column header, and any entry will be treated as Text. You can't enter a number even by accident. Command level is still available though, and if you re-enter VisiCalc without using this program, numbers will work normally. Use this program while not in VisiCalc.

```
5 ! T2D converts Text to Data file.
10 DIM K$[256],Q$[256]
20 INPUT "Text file name:"; T$ @ IF INCAT(T$,"T")#2 THEN 20
30 ON ERROR DISP "Rename or purge workfile" @ END
40 EDIT T$ @ ON ERROR GOTO 110
50 ASSIGN # 1 TO T$ @ RENUMBER 1,1 @ FOR L=1 TO INF
60 READ # 1,L ; K$ @ Q$='DATA"'
70 IF K$[1,1]=" " AND LEN(K$)>1 THEN K$=K$[2,LEN(K$)]
80 Q=POS(K$,"`") @ IF NOT Q THEN 100
90 Q$=Q$&K$[1,Q-1]&'","' @ K$=K$[Q+1,LEN(K$)] @ GOTO 80
100 Q$=Q$&K$&'"' @ PRINT # 1,L ; Q$ @ NEXT L
110 ASSIGN # 1 TO * @ IF ERRN=34 THEN TRANSFORM INTO BASIC
@ CAT @ BEEP
```

SUBROUTINES

```
1 ! "VCNUMBER" Converts TEXT numbers to real numbers
4 ! 211 bytes  255 bytes variables
10 DIM Q$[96]
20 INPUT "WORKSHEET ",ACTIVE$; W$ @ WORKSHEET W$ @ ON ERROR GOTO
 80
29 ! set-up loop
30 FOR R=1 TO MAXROW @ FOR C=1 TO MAXCOL
39 ! only use cells with labels
40 IF CELLTYPE(C,R)#4 THEN 80
50 Q$=GETLABEL$(C,R)
60 Q=PARSE("0") @ Q=PARSE(Q$)
70 IF INTERP$=UPRC$(Q$) THEN PUTVALUE C,R,Q$
80 NEXT C @ NEXT R
```

```
1 ! "LEN" finds maximum line length in TEXT file
4 ! 139 bytes  317 bytes variables
10 DIM Q$[256]
20 INPUT "file name "; Q$ @ ASSIGN # 1 TO Q$ @ ON ERROR GOTO 50
30 L=0
40 READ # 1 ; Q$ @ L=MAX(L,LEN(Q$)) @ GOTO 40
50 DISP "Max line length:";L
```

```
1 ! "LONGFORM" converts FORMAT75 for long TEXT lines
2 ! especially useful for distribution lists
4 ! 380 bytes  10500 bytes variables (!)
10 IF MEM<10500 THEN BEEP @ DISP "ERROR: not enough memory" @ EN
D
20 ON ERROR DISP "FORMAT75 already in RAM" @ END
30 COPY "FORMAT75" TO ".FO"
40 ON ERROR DISP "Rename workfile, CONT [RTN]" @ STOP
50 EDIT ".F",TEXT @ ASSIGN # 1 TO ".F"
60 PRINT # 1,20 ; "dimi$[256],w$[256],o$[270],r$[256],a1$[32],01
$[133],L$[133]"
70 PRINT # 1,30 ; "dimp$[256],v1$[1],r1$[1],L5$[2],a$[32],t$[256
],s$[5]"
80 TRANSFORM  INTO BASIC
90 EDIT ".FO" @ DELETE 20,30 @ MERGE ".F" @ PURGE ".F"
100 CALL ".FO" @ PURGE
```

```
1 ! "ADATE" VisiCalc Extension Function
2 ! returns date in format :  MM.DDYY
4 ! 105 bytes
10 ASSIGN # 255 TO "VISIDATA" @ D$=DATE$
20 PRINT # 255,0 ; VAL(D$[7,8]&D$[1,2])/10000+VAL(D$[4,5])
```

VISICM1 'Fetch string' modifications

```
500 M1=70 @ GOSUB 8795 @ ON K GOTO 1000,1610,3000

3000 M$="Fetch string" @ B0$="" @ GOSUB 9115 @ T$=UPRC$(B0$) @ I
F L=1 THEN 3000
3010 M$=MESSAGE$(93) @ B0$=COORD$(C,0,1) @ GOSUB 9115 @ X=COL(B0
$) @ IF NOT X THEN 3010
3030 M$=MESSAGE$(96) @ B0$=COORD$(0,R,1) @ GOSUB 9115 @ K8=ROW(B
0$) @ IF NOT K8 THEN 3030
3040 GOSUB 9982
3500 FOR Y=K8 TO MAXROW @ IF POS(UPRC$(GETLABEL$(X,Y)),T$) THEN
C=X @ R=Y @ GOTO 1040
3510 NEXT Y @ BEEP @ GOTO 1040
```

VISIMSGS 'Fetch string' modifications

71Clear Sort Fetch

All programs vary from specified by:
- when asking for # cols in the worksheet will ask for 4 and
  the number last used or I$ which ever is smaller

–

Swap
- if the destination file is a worksheet, and only one entry long
  must have something
  in the first or second cell (A1 or A2) or the entry may be overwritten

–

Edit is different by:
- is on 2 cards
- allows full movement around worksheet after editing Row 255
- supports multiple worksheets via the "VCFile" method
  the same as "Index". the first worksheet in the list
  must be a valid name but does not have to be in RAM
- ~~only each~~ ~~if you~~ each time you go to a different worksheet
  on the list, if the previous one came from cassette, it will be
  copied to the cassette and then deleted from Ram
- when exiting the program, the last worksheet used will only
  be saved if you exit from command or edit mode, if you
  exit during a "Enter worksheet:" or "Cols AB" it will not be updated.
  will not update if ~~pgm~~ stopped while calling another pgm

Command mode now has 3 levels. second level will only be
available if you have at last 3000Bytes of Ram.
First level is as specified except pressing * gets you
to second level. Pressing + (not shown on display) specifies a
new worksheet from the VCFILE LIST.

Continued

, iF the next entry from VCFILE isNot available, will
not do anything . IF the computer beeps when you press +
it means there are no more files available in the list
+ will get you back to the "ENTER WORKSHEET" prompt, but
with the next worksheet in the display in the prompt

Second Command level:
- Press * while in command level the prompt will change to
Swap_Index_Vc Format 75 Pgm * +
- pressing S or I will call those programs and return to the worksheet when done
    , iF they are not in Ram, will attempt to load from cassette
V gets you to visicalc
F calls "Format 75" from the Text formatter module as a subroutine.
P allows you to specify any Basic program in Ram as a Subroutine
    iF your Basic program does not end with STOP, execution will return
    to the EDIT pgm. iF you press ATTN in the called pgm, everything will stop
* returns you to other command menu
+ increments to next worksheet
ATTN - saves current worksheet (if not from Ram) ends pgm

aside - WaitKey$ in VisiCalc does not intercept APPTs from
    Sounding
- SWAP should be the first pgm in the booklet - more descriptive
- only "EDIT" Restricts you to the first 9 cols. you may specify
    any other columns in Index or Swap

you cannot exit -Edit with Goto. prompt in display - won't work
    ~~will return you to command level~~ will Return you just like RTN would

HP-75 VisiCalc

HP-75 VisiCalc is a 32k ROM which plugs into one of the ports in the front of the computer. Consisting of 21k of machine coded commands and an 11k Basic language control program.

FEATURES:

* Multiple worksheets may be in RAM.
* Cells may contain refrences to other worksheets.
* Memory efficient:
    20k holds the equavalent of 31k on the HP-86/87
    An empty worksheet is 22 Bytes
* User defined commands and functions.
* Basic language and Math Pac functions may be used in formulas.
* Worksheets may be created or modified from Basic programs
* User controlable Printout and Display format
* All entry is done on the single line LCD
* User definable Column and Row headers:
    Makes it easier to locate cells when using LCD Display
* Usable with 32 or 80 column Video Interface
* 255 columns by 255 rows possible
* LCD can display:
    Default or User headers
    Input prompts
    Formulas or results
    Worksheet and Machine status

-Operating Levels-

TOP_LEVEL:

- View cell contents.
- Exit VisiCalc
- Set LCD display format
- View Status - memory, global formats, etc.

EDIT_LEVEL:

- Entered when data is input, overwrites cell contents
- Determines type of entry by first character entered
- modify exiting cell contents by pressing EDIT

COMMAND_LEVEL:

- Entered by pressing the slash key "/"
- Displays "DFGHIMPRVW-"
- All other keys except ATTN are locked out
/D= Delete   /F= Format (local)
/G= Global Status   /H= User and Default headers
/I= Insert column or row   /M= Move col or row
/P= Print worksheet/formula   /R= Replicate cell
/V= Toggle on or off Video   /W= Individual col width
/-= Repeating label
- User defined commands may be added

EXTENDING FUNCTIONS AND COMMANDS

Sample VisiCalc User defined functions

```
1 ! VISICM1 FETCH
2 ! add to program supplied with HP-75 VisiCalc
3 ! 309 Bytes
4 ! Find string in specified column-header included
5 ! Moves cursor to specified string.
6 ! If header search, moves cursor to column A
7 ! If string not found, does not move cursor.
8 ! Do not renumber pgm     !  Use variable names shown.
9 ! Requires modified VISIMSGS file
```

```
500 M1=70 @ GOSUB 8795 @ ON K GOTO 1000,1610,3000
3000 M$="Fetch" @ B0$="" @ GOSUB 9115 @ T$=B0$ @ IF L=1 THEN 3000
3010 M$=MESSAGE$(93) @ B0$=COORD$(C,0,1) @ GOSUB 9115 @ X=COL(B0$)
3020 IF NOT X AND B0$#"HEADERS" THEN 3010
3030 M$=MESSAGE$(96) @ B0$=COORD$(0,R,1) @ GOSUB 9115 @ K8=ROW(B0$) @ IF NOT K8
THEN 3030
3500 GOSUB 9982 @ FOR Y=K8 TO MAXROW
3510 IF POS(UPRC$(GETLABEL$(X,Y)),T$) THEN C=MAX(X,1) @ R=Y @ GOTO 1040
3520 NEXT Y @ BEEP @ GOTO 1040
```

Change VISIMSGS to:

```
71Clear Sort Fetch
```

Don't add a space after the line number
Must be line 71
The C S F must be underlied

--+--


```
1 ! ADATE    VisiCalc Function
2 ! Returns current date in format:  MM.DDYY
3 ! 105 Bytes
```

```
10 ASSIGN # 255 TO "VISIDATA" @ D$=DATE$
20 PRINT # 255,0 ; VAL(D$[7,8]&D$[1,2])/10000+VAL(D$[4,5])
```