

PRO-WAM™

Release 2

**Window Controller
and
Application Manager**

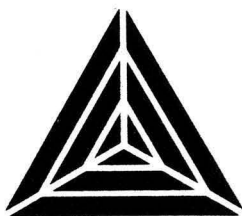


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PRO-WAM™

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and
Application Manager**



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PRO-WAM, Installation and Use

System Requirements

System requirements for installing PRO-WAM and running PRO-WAM applications are 128K RAM TRS-80 Model 4 (or equivalent) and two floppy drives; TRSDOS 6.2 or LS-DOS 6.3 is required. Reverse video support requires a true Model 4.

Credits

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Published by MISOSYS, Inc., PO Box 239, Sterling, VA 22170-0239.

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Customer Support

Customer service information and support on this product may be acquired by contacting MISOSYS, Inc., at the following address:

MISOSYS, Inc.
P.O. Box 239
Sterling, Virginia 22170-0239
703-450-4181

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Warranty

This software program(s) is warranted to perform as documented when used on the specified hardware operating under the specified disk operating system as shown on the accompanying documentation. If within 90 days of the date of purchase the program is found to be defective due to a bug in the code, the publisher will, upon request, provide a patch to correct the bug or will update the program diskette with a corrected copy within a reasonable time period after return of the program diskette to the publisher. If within 90 days of the date of purchase the documentation proves defective due to missing or obliterated pages, the publisher will provide substitutes for the defective pages upon request.

The publisher shall have no liability or responsibility to the purchaser or any other person, company, or entity with respect to any liability, loss, or damage caused or alleged to have been caused by this product, including but not limited to any interruption of service, loss of business and anticipatory profits, or consequential damages resulting from the operation or use of this program.

BACKUP before you begin

All of the files needed to install and use PRO-WAM have been provided on a single 40-track double density LS-DOS 6.3 DATA diskette. This is not a protected disk! Please, before you go any further in doing anything with the diskette supplied, make a BACKUP. Do this in a two-drive system by placing a blank diskette in your top drive and issue the commands,

```
FORMAT :1 (NAME="PROWAM",DDEN,CYL=40)
BACKUP :0 :1 (X)
```

When the system prompts you for the SOURCE disk, remove your SYSTEM disk from the bottom drive and insert the PRO-WAM diskette. Follow the procedures for BACKUP in your DOS manual. When you have completed the BACKUP, keep your PRO-WAM disk in a safe place - it is valuable. Use your BACKUP copy as a working disk; however, since it is not a SYSTEM disk, you cannot use it in drive 0 to operate your computer.

General

The files on the backup copy (you did make a backup copy, didn't you?) of the accompanying DATA diskette may be easily copied to your working SYSTEM disk by means of the LS-DOS COPY utility. There may be a file named "README/TXT" on the disk. If so, this plain text file will contain important information which may not

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appear in the printed documentation. You should read this file by issuing the command,

LIST README

Please do this before attempting to install PRO-WAM into your system.

What is PRO-WAM?

Aside from being one of the most significant products to come along for the 128K TRS-80 Model 4/4P, PRO-WAM happens to be a powerful display window controller and application manager facility. PRO-WAM, therefore, provides two primary functions: the control of the display screen or portions of the screen we term a "window", and a manager of applications programs invoked at the touch of a button.

In PRO-WAM, a window can be of any size from a single row by a single column [a most impractical window size] to the entire screen of 24 rows by 80 columns. Once a window has been opened [we actually term this process, create], a program directs all of its display output to the window.

In a PRO-WAM Programmers' Toolkit (available separately), PRO-WAM provides a SuperVisor Call facility for the assembly language programmer to interface with the window controller. Also provided is a device driver for use with BASIC and other high level programming languages so that you may easily write your own programs which operate with windows. The toolkit also includes a C-language function library for the C programmer to use in writing programs which use the window controller.

When you create a window of given size and position, the current display screen image as well as the library overlay region of the DOS is saved in one of the alternate RAM banks set aside for PRO-WAM's use when PRO-WAM is installed. A box is then drawn surrounding the extremes of the selected window [provided sufficient room exists on the screen]. The window is then blanked and the cursor position is established at row zero, column zero of the window and the cursor is turned OFF. Thereafter, display output directed through the window controller will be displayed within the established window. When you [or the running PRO-WAM application] are finished with the window, it is closed; thus, the previous screen image and library overlay contents are restored as they existed prior to the opening of the window.

PRO-WAM's window controller provides for a maximum of four windows opened consecutively. Notice that this does not infer that the windows are open simultaneously. The difference is that although you can open a second, third, or fourth window, you

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cannot switch between windows. Neither can you direct your display output to a particular window. When a window is opened, it becomes the current window for display purposes. Nothing exists to prevent you from overlapping nested windows. In fact, if you nest four of the applications provided with PRO-WAM, you will most likely find the display with four overlaid windows of varying dimension.

When a window is closed, its entire screen image is lost [actually, one of the applications provided with PRO-WAM can be used to save a screen image into a disk file]. Probably, you will find that any one program which uses windows, uses, at most, one window. However, there is nothing to preclude the nesting of programs written as PRO-WAM applications. Therefore, it is quite practical to provide for up to four window creations, and is, in fact, highly desirable. Later on you will read about data import and export. These operations are highly useful for moving the contents of a window or just a portion of a window from/to a previous window or screen. These functions provide the classic "cut & paste" facility.

Talking about applications touches on the other aspect of PRO-WAM - the application manager. PRO-WAM makes use of the function keys on the keyboard of your computer. By using the <F1>, <F2> and <F3> keys in both their unshifted and shifted positions, PRO-WAM provides keystroke invocation of six applications. The function keys are not "taken over" by PRO-WAM until you activate the application manager via a <CONTROL-P> key request [you have the opportunity of specifying something other than <CONTROL-P> to activate PRO-WAM when it is installed]. Applications are small programs which are designed to run entirely within the library overlay region established by the DOS. When PRO-WAM is installed, four out of the many applications provided with PRO-WAM are loaded into the alternate RAM bank set aside for PRO-WAM's use. Each of those four applications are assigned to one of the six function key positions. Two additional applications which are internal functions of PRO-WAM are assigned to the remaining two function key positions. These are the LIBRARY EXECutive (LIBEXEC) which allows you to invoke a DOS LIBRARY command and the UNIVERSAL function which permits you to invoke applications directly from disk.

Regardless of what program is currently being run on your machine, if it requests a key entry from the standard DOS keyboard input facility, you will be able to temporarily invoke PRO-WAM and request one of the six memory resident applications (or additional ones from disk). When you are finished with that application, you will be returned to the program you were running just as if you never interrupted it. There may be a few exceptions to programs which are incompatible with PRO-WAM. For instance, if you are receiving data from the communications line while running COMM and interrupt it to invoke a PRO-WAM applica-

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tion, it's capture buffer may overflow while you are using the application [see the note on using DIALER with COMM in the section documenting the DIALER application]. There are also a few programs known to bypass the DOS for keyboard input and do their own keyboard scanning. One is Super-SCRIPTSIT sold by Tandy Corp. These two examples highlight a few known programs which either cannot be interrupted by PRO-WAM or should not be.

In order to gain access to the window controller and application manager, PRO-WAM must be installed in your system. If you are going to write or use BASIC language programs which access the window controller, the WINLINK device driver, available with the Programmer's Toolkit, can also be installed. If you would like to establish a Job Control Language procedure to load PRO-WAM and automatically invoke an application - regardless of whether or not the application you desire is one of the four memory resident applications, see the section entitled Automating PRO-WAM Installation and the section on PRUN. Once PRO-WAM is installed, a sophisticated and powerful adjunct to your computer is at your fingertips.

PRO-WAM Diskette Files

The diskette which accompanies this documentation is a standard LS-DOS 6.3 DATA DISK. It contains many files. These files are as follows:

ADDRESS/DAT	A data file for use with the ADDRESS application. This contains our address; it is useful to get you started with your address list.
BUCONV/CMD	This utility program is to be used to convert your old BRINGUP/DAT files used with PRO-WAM release 1.x.
DEFAULTS/CMD	This utility is used to permanently alter the installation parameters of PRO-WAM. You can change the applications assigned to the function keys, change the PRO-WAM activation character (hot key), and change the character value designating the logical <ENTER> for export and import.
DIALER/DAT	A data file for use with the DIALER application. This contains our telephone number; it is useful to get you started with your telephone list.

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DIALER??/???	Various files associated with modifying the DIALER application for use with non-Hayes compatible modems. Consult the DIALER/TXT file for specific information.
HELPP/CMD	This file contains the on-line help facility available from DOS Ready or via the LIBEXEC function of PRO-WAM.
PROWAM/CMD	This is the command which installs the window and application manager resident module.
PRUN/CMD	This utility can invoke an application by a command string from DOS Ready. It is useful for invoking an application within a Job Control Language file.
PSORT/CMD	This utility is used to sort PRO-WAM data files according to the criteria established in the data file header record.
WAMO/APL	This is a library of basic PRO-WAM applications to get you started with minimal free disk space. It is an abbreviated subset of the complete PRO-WAM library.
WAM1/APL	This is the complete library of PRO-WAM supplied applications.
WAMLIB/CMD	This utility is the PRO-WAM application library manager. It is used to create and manage PRO-WAM libraries of applications.
README/TXT	A text file which should be read. It will contain any item of importance which has been discovered too late for insertion into the manual. This file can be read with the LIST DOS command or directed to a printer using the "LIST README (P)" DOS command.

PRO-WAM is NOT copy protected; you may freely make as many copies for your own use as you feel is necessary for working and archival purposes. In fact, we recommend that you do make a few copies so you don't have to go back to use the master disk. You may easily copy the PRO-WAM files appropriate for your needs to another floppy disk or to a hard drive. Your master disk should be kept in a place safe from dirt, dust, and magnetic fields.

If you are going to install PRO-WAM onto a SYSTEM disk, the minimum set of files you need to copy to that disk are WAMO/APL and PROWAM/CMD. If you are going to install PRO-WAM via a Job

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Control Language procedure and want the BRINGUP application invoked during BOOTup, also copy PRUN/CMD to your SYSTEM disk. If you want to start off your address file data with our address information, copy the ADDRESS/DAT file. Add the HELPP/CMD file to gain access to on-line help. If you need access to PRO-WAM applications other than what is contained in WAMO/APL, you can either copy the full application library, WAM1/APL" to your system disk and rename it to WAMO/APL, or extract the desired application modules from WAM1/APL using the library manager, WAMLIB/CMD, then add those modules to the supplied WAMO/APL. In either case, you should probably wait until you gain some experience with PRO-WAM before plunging in and revising your application libraries.

Keyboard Usage Conventions

If an application supports the functions of import or export, they may be requested by depressing <CLEAR LEFT ARROW> or <CLEAR RIGHT ARROW> respectively. Furthermore, any of the supplied applications excluding TERM can be exited by depressing <BREAK>.

The command sets in all of the PRO-WAM applications have been carefully selected to provide a uniform set of command words throughout the entire PRO-WAM package. For instance, NEXT and PREVIOUS will always mean the same thing in each application. Thus you will probably not find yourselves getting confused as to which command letters do what in an application. In addition, each application presents a brief menu of the commands supported by it. In this way, you will find that the collection of applications provided with PRO-WAM form an integrated set of functions. With the capability of moving data easily between applications via the EXPORT and IMPORT functions, the applications work extremely well together.

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Converting from PRO-WAM 1.0

If you are already a user of PRO-WAM 1.0 (it used to be called PRO-NT0), converting to PRO-WAM 2.0 is easily done. All of your existing data files are totally reusable with the exception of your old BRINGUP/DAT file. Your existing BRINGUP/DAT file must be converted by the BUCONV/CMD utility provided. Save a backup copy of your old file before converting it. Your old BRINGUP/DAT file is easily converted to the release 2 structure by invoking the command,

BUCONV

It will locate your "BRINGUP/DAT" file and convert it in place (even though the new file will have a header sector). BUCONV will guard against converting the BRINGUP/DAT file twice - it won't permit it.

If you want to re-use your existing CARD/DAT file with CARDX, then rename it to be CARDx/DAT (with x = 0, 1, ..., 8, or 9); the structure of a CARDX data file is identical to that of a card data file. Note that any character in an existing card record which happens to be a value greater than 7FH (127D) will be displayed as a reverse video character. Alternatively, you can import the card image to a new CARDX file and it will inhibit any "reverse" video character. All other data files are identical under release 2.

CARD/APP is still included with 2.0 for re-use of your existing CARD/DAT file; however, the default for 2.0 is CARDX assigned to <SHIFT-F2>.

REGENBU/BAS supplied with MisterED should not be used under 2.0; the BRINGUP/DAT file is different.

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Installing PRO-WAM

You can easily install the window controller, the application manager, and the four PRO-WAM pre-selected applications simply by entering the command:

PROWAM

PRO-WAM will install itself and load the four applications that have been assigned by the DEFAULTS modification program (see the section entitled "Modifying PRO-WAM Defaults"), or the default applications if you have not selected your own group of four. PRO-WAM always obtains its four memory resident applications from the library identified as "WAMO/APL".

Something similar to the following will be displayed as PRO-WAM installs itself and the four designated applications into memory:

PRO-WAM - Window and Application Manager - Version 2.00b
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Activation character = <Control><P>

Reading application : Calendar
Reading application : Calculator
Reading application : Card Filer
Reading application : Address File

PROWAM installation complete

If one of the "Reading application" messages omits an application name after the colon, that means the default application assigned to the corresponding function key is not available in the WAMO/APL library. You can use DEFAULTS to determine what application is assigned to the function keys and use WAMLIB to determine what applications are contained in a library.

Thereafter, PRO-WAM is activated simply by depressing the <CONTROL> and <P> keys simultaneously (hotkey). You can change the hotkey used to activate PRO-WAM according to your own needs by simply using either the ACTIVE parameter during the installation or by modifying the PROWAM/CMD file with the DEFAULTS utility.

The following section discusses the complete set of PRO-WAM options installable from the command line. There are predetermined defaults for each option which should make the installation of PRO-WAM with no parameters acceptable for most folks. However, you may want to read over the options to familiarize yourself with some of PRO-WAM's features.

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PRO-WAM Installable Options

This box summarizes all of the options configurable during the installation of PRO-WAM. The options are selected by entering parameters on the command line which installs PRO-WAM.

PROWAM [(Active=d,Bank=d,Drive=d,Enter=d,Inverse=N)]

Active - specifies the character code assignment to activate PRO-WAM.

Bank - specifies a particular memory bank which PRO-WAM is to use.

Drive - specifies the drive which contains the WAM0/APL library.

Enter - specifies the logical ENTER character for import/export purposes.

Inverse - specifies that the state of reverse video is to be preserved/not preserved.

Note: All parameters may be abbreviated to one char.

The parameter, "Active=d", is optional. It is used to specify the character code assigned to activate PRO-WAM after installation. If you do not enter the parameter, the default activation code will be 16 (decimal) which is entered from the keyboard as <CONTROL-P>. You can alter the default activation character by changing it with DEFAULTS. This is discussed in the section entitled, Modifying PRO-WAM. You can also enter your selection when you install PRO-WAM via the command noted above. If you choose to enter the parameter, the "ddd" field represents your character code value which must be entered in either decimal format [ddd] or hexadecimal format [X'xx']. For instance, to change the PRO-WAM activation character to <CTRL-W>, install PRO-WAM with the command,

PROWAM (A=23)

The parameter, "Bank=d" is optional. This parameter can be used to specify a particular memory bank in the range 1-max which PRO-WAM is to use. The default is to globally search for the next available bank starting from 1 continuing to 30. Specifying a particular memory bank may be useful in those environments which include an extended memory board (beyond the typical 128K Model 4). You generally will have no need to designate a particular memory bank for PRO-WAM's use in a 128K system.

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The parameter, "Drive=d" is optional. This parameter is used to designate the drive which contains the WAMO/APL library for initializing the four memory-resident application functions. The default is no drive specification; PRO-WAM will perform a global search via the DOS. Note that the disk drive PRO-WAM locates the WAMO/APL library on will be the disk drive automatically accessed for future application invocations unless otherwise specified. This is discussed in the section entitled, Universal

The parameter, "Enter=d", is optional. This parameter is used to override the default logical ENTER character for import/export purposes. The default is 127d (7FH) which can be entered by <CLEAR><SHIFT><ENTER>. The parameter accepts any decimal or hexadecimal value between the range of 0 through 255. A value of zero will effectively eliminate logical ENTER conversions as a NULL character should never be in the screen memory image. The logical ENTER character is tested before the protected character test; thus, values greater than 127 are acceptable for use as a logical ENTER.

The parameter, "Inverse=N" is optional. This parameter has been added to allow those 6.x installations not 100% compatible with Model 4 reverse video (e.g. MAX-80) to disable the inverse video finagling which PRO-WAM does. Of course, any application which is based on REVERSE video such as CARDX/CARDXF will not be usable in the manner documented.

The first PRO-WAM activation saves the state of the system's NETWORK flag, turn's on the "use file open bit" flag (bit-0), then restores the NETWORK flag upon terminating PRO-WAM's activation. Thus, there is no need for you to set bit-0 of the NFLAG\$ to guard against multiple access of PRO-WAM data files through application recursion; it's automatically done for you. The purpose of this action is to ensure that two applications (or one invoked recursively) are not permitted to write to the same data file concurrently.

Note: If for some reason you issue a "RESET *KI" DOS command after installing PRO-WAM, you will lose access to PRO-WAM. This can be corrected simply by issuing the DOS command,

```
FILTER *KI *WM
```

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Automating PRO-WAM Installation

The sophisticated DOS user has been known to SYSGEN all sorts of things for automatic loading when the DOS is BOOTed. PRO-WAM may NOT be one of those things SYSGENed by the DOS SYSGEN command because of PRO-WAM's use of an alternate memory bank. If you wish to have it available when you BOOT your machine, it is suggested that you either AUTO it or provide it as part of a BOOT Job Control Language file.

The AUTO facility of DOS can be used if you are not already using a current AUTOMATIC command. Simply enter the DOS command,

AUTO PROWAM

when your BOOT disk is the SYSTEM drive. That command string will then be invoked when you BOOT your SYSTEM disk. Note that the DOS provides an override to the automatic command. If you hold down the <ENTER> key during the BOOT process (after you enter the date and time), the AUTO command will be temporarily disabled.

If you already have an AUTO command, then you can change it to a "DO" command. As an example, you can create a Job Control Language (JCL) file named "INIT/JCL" with the commands,

```
PROWAM
BASIC YOURPROG/BAS
//STOP
```

and then add the automatic DO command to your DOS by typing,

AUTO DO=INIT

when your BOOT disk is the SYSTEM drive. this procedure would install PRO-WAM (without any options), then run your BASIC program named "YOURPROG/BAS". If you would like "today's" BRINGUP activities automatically appearing when you BOOT your system, simply create the JCL file as,

```
PROWAM
PRUN BRINGUP
//EXIT
```

This would require PRUN/CMD to be available on your SYSTEM drive (or other available disk drive).

Certainly, such an initialization JCL procedure could be enhanced to automatically install other options of your operating environment.

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Installation error messages

As noted previously, PRO-WAM requires certain physical resources from the system. First, PRO-WAM requires TRSDOS version 6.2, LSDOS version 6.3, or later. If PRO-WAM detects that you are trying to install it on an earlier version, it will display the error message,

Can't install on DOS Version x.y

and abort your request. PRO-WAM behaves like a filter and is assigned the device name, "***WM**"; thus, it needs a system Device Control Block field (DCB). Before requesting a spare DCB to use for its assignment, PRO-WAM will check to make sure it has not already been installed. If it has, there is no need to install it again and it will post the error message,

The ***WM** device is already in use!

and abort your request. If a spare DCB field can not be obtained from the system, PRO-WAM advises you of this by posting the message,

No system DCB is available for ***WM**!

and, again, your request will not be fulfilled. PRO-WAM requires the usage of a high memory block of RAM and a small low memory block of RAM. If either of these is unobtainable, PRO-WAM will not be able to install itself and will advise you of this situation by posting one of the following two messages:

Can't alter high memory pointer!

No low memory is available for PRO-WAM!

PRO-WAM also requires one 32K external memory bank for storage of the four applications and the window control features. It will search for one which is available for use. If none can be found, PRO-WAM will post the error message,

No external memory is available for PRO-WAM!

and abort the request.

If you enter any PRO-WAM parameter incorrectly, or enter some other un-supported parameter, the following error message will be displayed and the program will abort.

Parameter error!

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Modifying PRO-WAM Defaults

PRO-WAM requires approximately 2.5K of high memory RAM, a small segment of low memory in the DOS driver region, one 32-K RAM bank, and TRSDOS 6.2 or LS-DOS 6.3. As noted previously, PRO-WAM will load four application programs from disk. Four of the many application programs which are provided with PRO-WAM [these can be identified in the table of contents] have been selected for you with your purchase of PRO-WAM. These are: CALENDAR, AFPCALC, CARDX, and ADDRESS. You are not limited to loading only these four applications. A program called DEFAULTS/CMD is provided so that you can change the four applications loaded by PRO-WAM to those of your choosing. Once you gain familiarity with each of the applications provided with PRO-WAM, you will be in a good position to select which ones you want immediately available at the touch of a function key button. Any other application which is not installed into memory can still be invoked directly from disk from either the PRO-WAM menu via the "UNIVERSAL application invoker" or by using the PRUN facility at "DOS Ready".

If you so desire to change the applications installed with PRO-WAM, invoke the modification program via the command:

DEFAULTS

Any application you wish to have assigned to one of the function keys must be stored in the WAMO/APL library. Use the WAMLIB library manager to accomplish this.

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Invoking DEFAULTS will bring up a screen similar to the following:

```
PRO-WAM DEFAULTS - Version 2.0b
Copyright (c) 1987 MISOSYS, Inc., All rights reserved
Current defaults are:
1) F1      = CAL
2) sF1     = AFPCALC
3) F2      = CARD
4) sF2     = ADDRESS
5) active  = {10H} = <Control><P>
6) ENTER   = {7FH} = <Shift><_>
Change which item <1-6>, <F>file changes, or <D>irectory?
```

Lines 1-4 show you the applications currently assigned to the function keys. These will be identified by function key number [F1, F2, sF1, sF2] along with the current application assigned to the key. The "s" prefix indicates "shift" (e.g. "sF1" indicates "<SHIFT-F1>"). Line 5 shows you the current PRO-WAM activation character; line 6 shows you the current logical ENTER character (used in export and import).

The prompt line (shown highlighted) allows you to alter any of the four application's to be loaded by PRO-WAM by entering a number 1, 2, 3, or 4. If you forget what applications are stored in your WAMO/APL file, just enter a <D> and you will be able to get a display of the applications. The directory subcommand will prompt you for the disk drive you want to check for a WAMO/APL file. Once you have selected your change, all you need do is respond with <ENTER> to select the default, or type in another application's name (note that you are supposed to enter neither the file extension nor the drive specification).

The activation character can be selected by entering a 5; the logical ENTER character by entering a 6. Once you have selected your change, all you need do is respond with <ENTER> to select the default, or depress the keystroke you want for the new value. You do not enter the character value of the keystroke but the keystroke itself. The new value will then be displayed.

Your changes do NOT take effect until you "file changes" by entering the keystroke, <F>. If you wish to abort the DEFAULTS modification procedure, just depress the <BREAK> key.

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Removing PRO-WAM

PRO-WAM may be removed from your system whenever it has been the last module installed into both high and low memory by specifying the following command:

PROWAM (REMOVE)

In general, the closing parenthesis is not required. Also, the parameter, "REMOVE", may be abbreviated to the single letter, "R". The word, "OFF", may also be entered in lieu of "REMOVE" or "R". If you enter this parameter incorrectly, or enter some other un-supported parameter, the following error message will be displayed and the program will abort.

Parameter error!

If PRO-WAM finds that you have requested its removal but it is nowhere to be found in memory, it will inform you of this dilemma by posting the message,

PRO-WAM is not installed!

In order to be able to remove itself once it finds itself in memory, PRO-WAM must have been the most recent module loaded into both high memory and low memory. If some other module has been installed after PRO-WAM, it will not be able to return the memory to the system, so it will not remove itself. This situation is revealed by the message,

Can't reclaim memory - PRO-WAM not removed!

When PRO-WAM does not have these restrictions, it will return the system resources to the system including the low and high memory, the system DCB, and the external memory bank. The informative message,

PRO-WAM is now removed

will be posted to inform you of this operation.

Data EXPORT and IMPORT

The functions of data export and import are a significant feature of the PRO-WAM window controller. They permit you to mark a block of data on the screen and pass it to another application or program. The information which is marked appears to the receiving program exactly like it had been manually typed at the keyboard. What has been eliminated for you is the unnecessary drudgery of re-typing.

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The functions of import or export may be requested by depressing <CLEAR LEFT ARROW> or <CLEAR RIGHT ARROW> respectively. Although the two functions may be easily defined, it may require a little more explanation as to the distinction between export and import. We'll try to expand on the distinction with the following discussion. You have interrupted program ABC or application ABC to invoke application XYZ. Application XYZ is now running and is probably looking for some kind of input. If, by chance, a piece of data needed to be input into XYZ happened to be on the video screen from ABC, you can specify IMPORT. When the import function is requested, the previous screen will be temporarily displayed and you will be able to mark a rectangle of the screen. The marked rectangle may be a single line, a segment of a single line, or more than one line. When you have completed the marking, the XYZ screen will be restored and what you had marked on the ABC screen will be input automatically - one character at a time for each keyboard request.

For an example of this import function, say you are up in ADDRESS and want to dial a phone number stored in the DATA2 field. Since the autodialing function is in DIALER, you invoke DIALER (the XYZ) from ADDRESS (the ABC), go to MANUAL DIAL mode, then import the phone number into DIALER. When the dialing is complete, you exit DIALER and are returned to ADDRESS. For another example of import, see the comments in AFPCALC concerning the preparation of the AFPCALC documentation.

The function of export behaves similarly but is based on a reversal of the reference. You are in program ABC or application ABC awaiting input of some data. You invoke application XYZ to get a display of the data needed by ABC. Once the data is found, you request the export function which gives you the opportunity of marking a rectangle of the XYZ screen. Again, as in the case of import, the marked rectangle may be a single line, a segment of a single line, or more than one line; however, you will be confined to the area within the boundaries of the window. When you have completed the XYZ marking, the XYZ application will close its window and terminate passing control back to ABC. The ABC screen will be restored and what you had marked on the XYZ screen will be input to ABC automatically - one character at a time for each keyboard request.

When import or export has been requested, the data area to be transferred is conceptualized as a rectangle of space on the screen. In either case, there are two ways of controlling what PRO-WAM does at the end of each line imported or exported depending on how you mark the closure of the rectangle. If you close the rectangle via the <ENTER> key, a carriage return will be added to the "input" at the end of each marked line. This carriage return will be appended regardless of whether the marked rectangle is one or more lines. If the rectangle is closed by the depression of <SHIFT ENTER>, then the line is

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input from the beginning mark to the ending mark in a continuous stream; no carriage returns are added by PRO-WAM.

Any character within the defined rectangular export/import area which has a character value greater than 127D will not be output for the export function; neither will it be input during import; i.e. it will be considered a protected character. Most typically this would be a reverse video character; however if reverse video is not in effect, any graphic or special character greater than 127D will still be considered protected and neither exported nor imported.

The rectangle is defined by the two points making up its northwest to southeast diagonal. These two points may be marked in the following manner:

1. Position the cursor to the upper left corner of the rectangle which will contain the information. The four arrow keys, <LEFT>, <RIGHT>, <UP>, and <DOWN>, will move the cursor around the screen.
2. Depress <CONTROL-B> to mark the beginning of the rectangle block. The character under the cursor will be replaced on the screen with a left square bracket which indicates the marked position. Don't worry about the bracket displayed; the correct character will be provided as input.
3. Position the cursor to the lower right corner of this rectangle again using the four arrow keys. This position may be on the same display row as the beginning mark.
4. Depress the <ENTER> or <SHIFT ENTER> key to mark the end of the marked block. This now defines the rectangle. The export or import will commence. The export or import function may be aborted anytime prior to marking the end of the rectangular block simply by depressing the <BREAK> key.

Spend a little time practicing with export and import as the two functions are extremely powerful and quite useful. Besides saving you many thousands of keystrokes, they will also reduce the errors associated with manual typing of data input. You will also get used to the difference in behavior of the ported data stream depending on the key code used to close the data rectangle. The keystroke(s) used will invariably depend on the expectations of the receiving program or application.

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Invoking Applications

Any application may be invoked simply by first activating the PRO-WAM application manager via <CONTROL-P> (or other character which you have specified during the PRO-WAM installation). PRO-WAM will display a menu outlining the applications corresponding to each function key. The menu will look something like this depending on which applications have been installed:

```
+-----+
|  F1 - Calendar  |
| sF1 - Calculator|
|  F2 - Card Filer|
| sF2 - Address File|
|  F3 - Universal |
| sF3 - LIB Exec  |
+-----+
```

All you need do is then depress the FUNCTION KEY associated with the application as shown in the menu. The keys, <F3> and <SHIFT-F3> are always assigned respectively to the UNIVERSAL Application Invocation and LIBRARY EXECutive functions. The remaining four keys [<F1>, <F2>, <sF1>, and <sF2>] may be reassigned by DEFAULTS. Any application which is not assigned to a function key may be invoked directly from disk via the UNIVERSAL application or by PRUN.

If an application supplied with PRO-WAM cannot open a window, or the maximum recursion level has been reached, a beep will be sounded from your computer's internal speaker to let you know that the keystroke was accepted but could not be acted upon. The beeping is controlled entirely by the application and is not an internal part of the window controller. In this way, applications have the capability of controlling the "noise" level of the error condition.

Once PRO-WAM has been activated, the three function keys and their shifted key codes are trapped by PRO-WAM for keystroke invocation of the six functions identified in the menu. Thus, no application can use a function key code for internal purposes as PRO-WAM will automatically invoke the corresponding application when the key is depressed - even if you are within an application! It is this feature which permits you to consecutively invoke four applications.

CAUTION: When you are using any application which opens up a data file, do NOT remove the disk containing the data file until you have exited the application.

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LIB Exec

This is more of an internal function of PRO-WAM as it is an application program. The rationale behind LIB EXEC is this. The DOS provides a Supervisor Call facility, called @CMNDR, to invoke any command from another program and return to the program when the invoked command completes. Since programs utilizing this facility may want to restrict the "commands" to those which operate solely within the library overlay region of the DOS, the facility provides a method to restrict the invocation to DOS library commands only. That's why, for instance, the facility used by BASIC in its "SYSTEM [command]" doesn't permit anything but library commands.

Now most commercial software programs do not provide access to this DOS facility. Either the programmers did not know how to do this or they didn't bother to concern themselves with giving you access to such things as REMOVE, DIR, FREE, FORMS, SETCOM, etc. Because the DOS library commands execute solely within the library overlay region - a region of memory also preserved by PRO-WAM prior to loading PRO-WAM applications, PRO-WAM can provide the DOS Command facility neglected by all of those other programs. PRO-WAM allows you to interrupt programs when they are waiting for a key entry. Thus, function key <SF3> has been provided to prompt you for a DOS library command for its invocation. Any DOS library command may be executed just as if you were at DOS Ready.

When you depress <SHIFT-F3>, the display screen will clear and you will receive the prompt message,

Command?

Simply enter your desired DOS library command and it will be invoked. If you have forgotten which commands they are, just enter "LIB". The DOS LIB command shows you the names of the library commands. At the conclusion of the command's execution, you will again receive the "Command?" prompt so you can enter another command. When you are finished and want to return to the program which you interrupted, just depress the <BREAK> key. The display screen will be restored to its appearance prior to your interrupt and your program will continue.

Although the execution of non-library commands is restricted, any program which will execute entirely in the range of X'2600' through X'2FFF' [which is the DOS library overlay region] may be invoked using the RUN library command. The help facility provided with PRO-WAM falls into this category and can be invoked from other programs via the LIB EXEC feature of PRO-WAM by specifying a command syntax of, for instance:

RUN HELPP(EXPORT)

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LIB EXEC supports both import and export. For example, if you are in a program which is looking for a file specification, you could interrupt it at the point it is awaiting the filespec, activate PRO-WAM and invoke LIB EXEC, do a CAT or DIR command to display the files on a drive, then depress EXPORT to mark the filename to be automatically passed back to the program's input. Alternatively, if there is a command displayed on the program's screen, you can invoke LIB EXEC and IMPORT the command string from the program's display screen.

Universal

Since PRO-WAM supports only four resident applications, you will probably find some of the other applications so useful that you will also want to be able to access them. So long as you keep an applications' disk "on-line", you can invoke any application stored on that disk via the UNIVERSAL function assigned to <F3>. PRO-WAM initially loads its applications from the WAM0/APL library. Thereafter, any UNIVERSAL requests will be satisfied from that library on the drive where the library was found unless overridden by the memberspec (mspec\$) entry described below.

When you activate PRO-WAM and depress <F3>, a window will be opened up on the screen as follows:

```
+-----+
|       |
| Application ? _ |
|       |
+-----+
```

At the "Application?" prompt, enter the "member specification" of the application you wish to invoke. A member specification, "mspec\$" is described as follows:

mspec\$=<lib#>appname\$<drivespec>

lib# is the PRO-WAM application library designation (WAM#/APL); this defaults to 0 implying WAM0/APL if the field is omitted. Acceptable entries are 0, 1, 2, ..., 9; however, the number should correspond to an available application library.

appname is the name of the application member in the designated library (e.g. todo, dialer, bringup, cardx, etc...).

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`drivespec` is the drive that the `WAM#/APL` library is on; this defaults to the drive designation of the drive last used to access a PRO-WAM application (or the drive from which the `WAMO/APL` library was installed, if no other application access has occurred).

Here are some examples of an `"mspec$:`

1. Invoke `CHARSET` from `WAM1/APL` stored on drive 2.

```
1charset:2
```

2. Invoke `CARDXF` from `WAMO/APL` stored on drive 0 immediately after the previous example.

```
0CARDXF:0 or CARDXF:0
```

In most cases, you only need to enter the name of an application since you are probably using, at most, a single application library. PRO-WAM will automatically access the requested application library to search for the application you have requested and attempt to load the application from disk.

If PRO-WAM cannot locate the application requested, a short beep will be emitted from your computer's internal speaker and PRO-WAM will return to what program was interrupted after the display screen is restored. If you do not want to invoke an application after seeing the above window [i.e. you may have inadvertently depressed `<F3>`], just depress the `<BREAK>` key and PRO-WAM will abort your request.

If you wish to import the application name for the prompt from the display screen in effect which you interrupted, just depress `IMPORT` when PRO-WAM is prompting you for the application's name. Remember, `IMPORT` is specified by simultaneous depress of `<CLEAR LEFT ARROW>`.

If you forget the name of the application which you want to invoke, why not just depress `<SHIFT F3>` to request `LIBEXEC` then issue a `"RUN HELPP"` command? The on-line help facility will display a directory of all help modules: every application has a help module.

If you enter a `drivespec`, the new `drivespec` will be again used in subsequent `UNIVERSAL` requests until changed by explicit entries in another `mspec$` (either `UNIVERSAL` or programmed execution). The application library, on the other hand, always defaults to `"0"` unless a `lib#` field value is explicitly entered.

PRUN Facility

PRO-WAM provides you with a keystroke invocation of applications via the menu displayed when PRO-WAM is activated. You can also invoke applications directly from disk via the UNIVERSAL function assigned to <F3>. The one drawback with these methods is that they require physical keystrokes detected by single key requests; thus, you cannot invoke an application from Job Control Language (JCL) using the PRO-WAM activation method as JCL requires keyboard line input.

The PRUN facility has been provided so that an application can be invoked without activation of PRO-WAM. PRUN also makes use of the KEYIN facility provided by the DOS so that it will be equally effective from JCL as well as physical keystrokes. To invoke an application using PRUN, the following example syntax may be used:

PRUN BRINGUP

which will invoke the BRINGUP application. Note that the use of PRUN still requires that PRO-WAM be installed.

A prime use for PRUN is to automatically gain access to an application when you BOOT your system. For example, if the following PROWAM/JCL file was invoked at BOOT time via an "AUTO DO PROWAM" command, when you BOOT your system disk, PRO-WAM will be installed and the BRINGUP application will be invoked:

```
PROWAM
PRUN BRINGUP
//EXIT
```

PRUN has two optional parameters, useful primarily to programmers. You can use PRUN to invoke a standalone application module (i.e. one not in a library) by the command,

PRUN appname[/APP] (A)

The "(A)" parameter is entered to tell PRUN that the application is a single file. Another parameter can be entered to force entry into DEBUG (useful primarily for programmers) after loading the application. This command would be entered as,

PRUN mspec\$ (D)

The "A" and "D" parameters may be used together.

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PSORT Facility

The PSORT utility provides a facility for sorting data files associated with PRO-WAM applications which are designed to be ascending list ordered. PSORT is easily invoked via the command:

```
PSORT [file-specification[/DAT] [Pack]]
```

The "file-specification" identifies the data file which you wish to sort. The option, "Pack", is entered when you want PSORT to physically remove all "deleted" records from the data file. The first letter of "Pack" is shown capitalized. This indicates that you can abbreviate the option entry with the single letter, "P". Note that both "file-specification" and the "Pack" option are optional; however, if you want to enter the "Pack" option on the command line, you must enter the "file-specification" as well.

If you do not enter the specification on the command line, PSORT will prompt you for the information. The "file-specification" is requested via the prompt message:

```
Enter name of file you wish to sort >
```

If you omit the file extension, "/DAT" will be assumed. Next, you will have the opportunity of selecting the pack option by responding to the prompt:

```
Do you wish to pack the file <Y,N> ?
```

Respond with "Y" and any "deleted" records will be removed from the file after it is sorted.

If PSORT cannot open the file which you have identified, it will respond with the error message:

```
Can't open filespec
```

and abort the request.

Data files associated with PRO-WAM applications have information stored in the first sector of the file. This information specifies such things as the number of records in the file, the logical record length of a record, the position of the key field within the record, the length of the key field used for ordering the sort, and the first record in the file which contains data. This information is used by PSORT to control the sorting operation. PSORT will first read this information from the first sector of the file then check the validity of this information. If it detects an error when reading this data, it will respond with the error message,

```
Error in reading filespec
```

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If the number of records appears out of a reasonable range, PSORT will advise you via the message:

Can't sort ddd records

and abort the request. If the logical record length appears invalid, PSORT will advise you of this via the message:

File has invalid logical record length

and abort the request. Since the sort key must be contained entirely within the record, PSORT will make sure that based on the key's length and its relative starting position within the record that it doesn't extend past the end of the record. If it finds this condition, it will display the message:

Sort key extends past end of record

When all of the validity checks have been passed, PSORT will display the statistics of the file [number of records to sort, logical record length, key location within a record, and key length] via the informative message:

Statistics: Nrec=ddd, Lrl=ddd

Key(0): loc=ddd, len=dd, type=string, mask=0000

then proceed to sort the file.

Sorting is broken up into three phases [plus a fourth phase of packing when the pack option is requested]. In the first phase, the key fields of each record are read into memory storage. In the second phase, the keys are placed into ascending alphabetic order. In the third phase, the data file is physically rearranged to match the sorted sequence of the key fields. This three phase process places certain requirements on available memory. There needs to be free memory for holding the key fields of all records as well as an index array to those fields. There also must be memory available for two file buffers. If sufficient memory is not available, PSORT will advise you of this unfortunate situation via the error message:

Can't allocate storage for keys

and abort the request to sort the data file. The solution at your disposal is to make more high memory available. If you invoke the DOS MEMORY command, you will note the value of the high memory pointer shown as HIGH\$. If this is not X'FFFF', then you have modules loaded into high memory. Probably, PRO-WAM is loaded. Most likely, you have other modules loaded. You may have to reboot your system to free up the high memory then retry PSORT. Although PSORT sorts the data file directly from the disk, the key fields must fit into memory.

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Assuming all goes well at this point, PSORT will advise you of the status during each phase via display of the informative messages:

- Reading key fields
- Sorting key fields
- Rearranging data file

If you requested the "Pack" option, a fourth message,

- Packing data file

will appear after the file has been sorted informing you that the packing operation has begun. The pack operation reads the file in reverse and stops when it reaches an active record. Remember that the sorting operation will push all deleted records to the end of the file; thus, reading the file in reverse reads through the deleted records. The number of records (NREC) field in the data file's information sector is also updated to reduce NREC by the number of deleted records which have been removed.

If any error occurs during the file access, one of the following error messages may be displayed:

- Data file read error, record ddd
- Data file write error

The first error message indicates a read error when reading record "ddd" while the second indicates an error during writing. Either error will cause the operation to abort.

Data File Information Sector - Technical Data

This section is provided for the programmer folks who wish to set up their own data files for sorting by the PSORT utility provided with PRO-WAM. It is totally unnecessary to either know or use any of this technical data in order to use any application supplied with PRO-WAM.

The first sector of any data file which can be sorted by PSORT contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). Although this field has a capacity to indicate over 16 million records, PRO-WAM applications certainly are not expected to support more than a few thousand records. Other information is used by PSORT to identify the parameters needed to sort the file.

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The logical record length tells PSORT how big a record is so that the file can be read properly.

The first record treated as data is used so that PSORT can ignore any portion of the file's front end [including the information sector] used to contain data which is not part of the data records. This entry is relative to record zero and is based on the file organized entirely by records of size equal to the logical record length of a record. For example, if LRL is 128 and sector 1 is the first data sector [the information sector is sector 0], FSTDAT must be set to 2. If the LRL is 512 and no additional front end data is used by the application, FSTDAT is 1 and the data starts at sector 2; thus, sector 1 remains unused.

The relative location within each record used as the sort key tells PSORT where the key is located within the record.

The length of the key is used to help establish memory requirements (along with NREC) and what fields of the record are to be compared for the sorting operation. Integer keys will always use a value of "2" regardless of the contents of this field.

The type of key is 00H for a character string and 01H for a 2-byte unsigned integer (values of 0000H-FFFFH represent decimal values 0-65535).

The key mask may be used to mask out certain bits of the key field. The mask is always entered as 2-byte hexadecimal value. For character fields, only the low-order byte is used to mask every character of the key field. Integer fields are masked using the entire 2-byte mask. The mask is ANDed with the key.

The following table summarizes this information. The "names" in square brackets indicate an abbreviated designation for the information items within the information sector of a PRO-WAM data file. The relative byte contents of "16-bit words" are stored in standard low-order high-order format; all relative values are indicated in hexadecimal format.

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Relative	Contents
00H-02H	Number of records in the file [NREC]
10H-11H	Logical Record Length [LRL]
12H-13H	1st record of LRL treated as data [FSTDAT]
14H-15H	Key 1, relative location within each record used as the SORT key [KEYLOC1]
16H	Key 1, length of the SORT key [KEYLEN1]
17H	Key 1, type of key [KEYTYP1]
18H-19H	Key 1, mask [KEYMSK1]
1AH-1BH	Key 2, location [KEYLOC2]
1CH	Key 2, length of sort key [KEYLEN2]
1DH	Key 2, type of key [KEYTYP2]
1EH-1FH	Key 2, mask [KEYMSK2]

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Help Facility

The HELPP facility provides you with brief screens of helpful information which can act as a memory jogger. The HELPP facility does not replace a thorough reading of the PRO-WAM user manual. It can, however, save you from rummaging through the manual in order to locate a particular facet of PRO-WAM's operation.

HELPP must be invoked from DOS Ready; however, it can also be invoked via the "LIBEXEC RUN" operation available from the PRO-WAM activation menu.

If you invoke HELPP by itself, it will provide a list of names covering the topics for which help is available. This will look something like the following:

```
run help:3
```

```
HELP( available on:
```

address	bringup	calendar	afpcalc	rpncalc	cardfile
charset	defaults	dialer	dosave	export	import
libexec	prowam	prun	psort	svcl24	term
typer	universa	window	winlink		

The actual list of names may vary from that shown here.

The information covering a topic is displayed by entering "HELPP(" followed by the topic name. For example, if you want help on EXPORT, enter,

```
HELPP(EXPORT
```

The topic can be abbreviated to as few characters as will differentiate it from all of the other topics. In the example under discussion, the EXPORT topic may be abbreviated to "EX" giving, "HELPP(EX".

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Application Library Manager

This utility has been provided to manage the applications stored in PRO-WAM libraries. WAMLIB provides capabilities to create new libraries, add applications to existing libraries, replace applications with revised or different applications, and extract applications from existing libraries. WAMLIB is easily invoked with the command:

WAMLIB

When WAMLIB takes control, the following command menu will be presented:

```
WAMLIB Version 1.00a - PRO-WAM Library Manager
Copyright 1987 MISOSYS, Inc., All rights reserved

<A>dd a module
<D>elete a module
<E>xtract a module
<L>ist module names
<R>eplace a module
e<X>it to DOS

Select WAM library <0-9>, <BREAK> to exit?
```

As WAMLIB can operate on only one library at a time, it first asks you to select the library number by the prompt which appears at the bottom of the screen. You need only enter the library number (0-9) followed by <ENTER>. WAMLIB will search all your drives for a library file named "WAM#/APL", where "#" represents your entry. If it does not find such a library, it prompts you for a drive where you want that library created. If it does find such a library, it loads in the library's directory then presents a blinking cursor to the left of the group of six commands. Depressing the <BREAK> key in response to this query will cause WAMLIB to exit back to DOS.

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Any of the six commands may be selected by typing the letter enclosed within brackets (e.g. select "add a module" by typing "a"). Alternatively, you can position the blinking cursor to any command with the <UP ARROW> or <DOWN ARROW> keys and select that command by depressing <ENTER>.

The commands are so easy to use, we will present only a brief overview of their function. The add command will copy a standalone application file to the library using the first free directory slot (a library can hold a maximum of 32 application members). The delete command erases the designated application name from the library's directory which frees up that slot for re-use. Extract will make a copy of a library member as a standalone application. The file name will be the member name; the file extension will be ".APP"; and the drivespec will be entered by you in response to a prompt. The replace command is essentially a combination of delete and add; however, the vacated directory slot will be reused even if a free one is available before it. Finally, the list command produces a screen display of all members currently in the library.

When you have completed your library maintenance, use the exit command (selected by an entry of "x"). This function will close the current library file; you will also see the "Select WAM library..." prompt. If you do want to perform maintenance on another library file, exit WAMLIB by depressing the <BREAK> key.

It is easy to operate WAMLIB from a Job Control Language (JCL) file. First, if any invalid command is detected during JCL operation, WAMLIB will automatically abort. This prevents inadvertent problems. Second, since <BREAK> cannot be typed into a JCL file, WAMLIB accepts a pound sign, <#>, as the exit to DOS entry under JCL operation. If you are going to compile your JCL procedure, type two pound signs into the JCL file. The typical user will have a need to use WAMLIB only to customize their WAMO/APL library. By adding only those applications which you actively use extracted from the complete library (WAM1/APL), you will minimize the disk space needed.

ADDRESS Data Base Application

The ADDRESS application will maintain a data file of records containing information useful for keeping a mailing list or Rotating Index File. The data items available within each ADDRESS record are identified in the following table:

Field Identifier	Field Label	Width	Permissible Entries
0	Last	15	20H-7FH
1	First	10	20H-7FH
2	Company	20	20H-7FH
3	Address1	20	20H-7FH
4	Address2	10	20H-7FH
5	City	15	20H-7FH
6	State	8	20H-7FH
7	ZIP	10	20H-7FH
8	Data1	5	20H-7FH
9	Data2	12	20H-7FH
\$	Flags [x]	24	20H, 'A'-'X'

If you are unfamiliar with the hexadecimal entries listed under "Permissible Entries", you can use the CHARSET application provided in WAM/APL to observe the various characters these values represent. That's a good use for CHARSET.

Fields 0-9 are pretty straightforward. They can be used to store the typical items found in any type of address list. The DATA2 field can be used for a telephone number. In fact, by storing a phone number in this field, you can import this number from the DIALER application for automatic dialing when you have a supported modem connected. The flag field contains 24 positions labeled 'A' through 'X' which are in either an OFF state (signified by a space) or an ON state (signified by its label character). The flags may be used to enter binary type events (YES/NO, ON/OFF). ADDRESS makes use of the flags in both the Rotary Index CARD and MAILing label functions which can limit their output to records tagged with a flag label as one of the available options. This may be useful to group ADDRESS records into sub-lists.

ADDRESS has a few commands that display a prompt message and expect a response. The response must be terminated via a depression of the <ENTER> key. During the input of the response, you can backspace over a mistyped character via the <LEFT ARROW> key. You can clear the entire response via <SHIFT LEFT ARROW>. You can cancel the request via the <BREAK> key. Finally, if you wish to IMPORT the response from the display screen present prior to the invocation of ADDRESS, you only need to depress the <CLEAR LEFT ARROW> keys. Import is fully described in the chapter on PRO-WAM operation.

PRO-WAM - Window and Application Manager

When you invoke the ADDRESS application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and ADDRESS will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, ADDRESS will search all disk drives for a file named ADDRESS/DAT. If you want to maintain more than one discrete address list file, just keep each one on a separate floppy disk. When an ADDRESS/DAT file is found, it will be accessed and the first address record, if any, will be displayed. If no file can be found identified as ADDRESS/DAT, you will be prompted to specify the drive which should be used to create an ADDRESS/DAT file via the prompt:

Create ADDRESS/DAT on what drive?

Respond with one of your available drives (0-7). A <BREAK> will terminate the request and cause ADDRESS to exit. If ADDRESS detects a DOS error when attempting to create the data file, you will receive an appropriate error message and ADDRESS will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the ADDRESS window will close and you will be returned to the interrupted application.

Once the ADDRESS/DAT file is created, the displayed window will show the record fields and ADDRESS commands which are available. An example of a filled in record appears as follows:

```
+-----+
| Last [Soltoff      ] First [Roy        ]   Dat1 [85-04] |
| Company [MISOSYS, Inc      ]           Data2 [703-450-4181] |
| Address1 [PO Box 239      ]           Address2 [      ] |
| City [Sterling      ] [ State [VA      ]   Zip [22170-0239] |
|           Flags [ ] [      RS      ] |
+-----+
| This line is used to display messages! |
| ==> Add Card Delete Edit First Last Mail Next Prev Search |
+-----+
```

When ADDRESS is waiting for a command entry, the arrowhead which points to the list of available commands will be blinking. These commands permit a range of operations on the data records. A command is invoked by depressing the letter key noted by the first letter of the command (the letter which appears capitalized). This may be entered in either upper or lower case. You can also invoke EXPORT of data when ADDRESS is waiting for a command. Data export permits you to pass a specified field or block of data from the displayed window to the environment interrupted when you invoked ADDRESS. More information on EXPORT can be found in the section on PRO-WAM operation. Details for each command follow:

ADD a record

When you wish to add a record to your address file, specify this action by depressing the <A> key. You will be presented with a display where the contents of each field are blank. ADDRESS will then automatically enter the EDIT command. Each field can be edited with the entry of data (or editing within a field if you mistype). If you decide that you do not want to add the record, just depress <BREAK>. ADDRESS will abort the addition and display whatever record was on the window at the time that ADD was invoked.

Print a Rotary Index CARD

This command is used to print the contents of a record or the entire data file in a format suitable for 4" wide Rotary Index Cards in continuous forms. You can even specify that the output is to be limited just to records which have a particular flag turned ON (i.e. one of the flags A-X). When you invoke CARD, you will be prompted to select the output option via the prompt:

<A>ll, >C<urrent, or <F>lagged?

If you want the entire data file printed, enter an <A>. If you want the output to be limited to flagged records, enter an <F> followed by the flag letter for which you want to limit the output. For instance, if you want to print CARDS for all records with flag-P set, enter the two letters "FP" followed by <ENTER>. If you just want the current record printed on the "card", enter the letter <C>. If you respond with no entry (by depressing just <ENTER>), the default of CURRENT will be selected. This default is indicated by the reversed angle brackets surrounding the letter "C" in the prompt. If you specify ALL records or FLAGGED records, any that are stored with a "deleted" mark will not be selected for printing.

PRO-WAM - Window and Application Manager

You will then be asked to select the printing format via the query:

Format? >

If you just depress the <ENTER> key, you will select the default format supplied with ADDRESS. This format is:

```
|
|
|LAST----- FIRST----- DATA2
|COMPANY----- DATA1-----
|ADDRESS1----- ADDRESS2--
|CITY----- STATE--- ZIP-----
|FLAGS-----
|
|
|
|
|
|
|
|
|
|
|
```

The vertical lines are not part of the output but are only illustrated here to denote the beginning of a line. Note that there are 13 lines total. This format is tailored to 13 lines per card - the quantity of lines on a Rotary Index Card at six lines per inch. Each line of data will also fit on a card printed at 10 characters per inch.

The format is printed by ADDRESS according to a string of field and printing specifiers. The string corresponding to the default format is:

```
';;0 1 9;2 8;3 4;5 6 7;$;;;;;;;;;' ,CR
```

The contents of a particular field are printed when a string character is one of the field identifiers 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9. The flag field is specified for printing via the dollar sign character, "\$". This field will be printed with a SPACE for each flag that is OFF and the flag label for each flag that is ON. A semicolon is interpreted as a logical carriage return. Any other character is interpreted as a character to print. A carriage return terminates the string without taking any printing action.

If you want to specify some other format, just enter a string of characters in response to the "Format?" prompt. A string of up to 48 characters may be entered. If you are interested in maintaining your own formats, why not keep the "strings" in a record of the CARD application; or use a phrase kept in the PHRASE/TXT file? By doing that, you can IMPORT the string when prompted for "Format ?".

PRO-WAM - Window and Application Manager

If you wish to abort printing at any time, just depress the <BREAK> key. When <BREAK> is detected, ADDRESS will output an immediate carriage return and return to await a command. The window will display the record being output at the time the <BREAK> was detected.

If the printer is not available during the printing operation, ADDRESS will display the error message,

Device not available

and terminate the CARD command. ADDRESS will return to await a new command.

DELETE currently displayed record

This command is used to delete the record currently being displayed. You have to confirm your request by responding to the query:

Delete: <Y> to confirm?

Any response other than the letter <Y> will abort the delete operation and return to the command prompt to await a new command. If you confirm the deletion, it is marked in the following manner. The contents of the LAST name field are shifted right by one position with the 15th character being dropped. A character value of 255D is placed in the first character position and the record is filed. This indicates a "deleted mark". A deleted record is still displayed if you come to it while "scrolling" through the data base; however, it will not be printed during a "CARD" or "MAIL" operation when ALL or FLAGGED records are requested nor will it be matched during a SEARCH. If you examine position 255 in the CHARSET application display, you will be able to note the "deleted" mark character displayed by your computer. Deleted records can be permanently removed from the data file by requesting the "PACK" option during a sort of the data file via the PSORT utility provided with PRO-WAM.

It is perfectly acceptable to "un-delete" a deleted record by editing the LAST field and deleting the "deleted mark". It is not possible to restore a deleted record after a PSORT operation where you have requested the "PACK" option - at least not with any utility provided with PRO-WAM!!!

EDIT the currently displayed record

EDIT is selected to enable you to change any of the data in any field. When EDIT is invoked, the following message is displayed in the bottom portion of the window:

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Edit: ^F to file; BREAK to abort

This is an aid to letting you know that there are two ways of escaping from the edit mode. One way is to enter <CONTROL-F> to file away your edited record. The other way is to depress the <BREAK> key which will abort the editing and return to await a new command. Also, a blinking cursor will appear in the first character position of field zero (LAST). When the cursor is first moved to a field, it can be moved to the next higher field identifier via the <RIGHT ARROW> key or the <DOWN ARROW> key. The cursor can be moved to the next lower field identifier via the <LEFT ARROW> key or the <UP ARROW> key. The FLAG field is considered field ten (10). When advancing towards lower numbered fields, field zero (LAST) wraps to field ten (FLAGS). When advancing towards higher numbered fields, ten wraps to zero.

When you are positioned at the field you want to edit, you can start editing it by one of two methods. If the first character is to be changed, just overstrike it with the correct character; this also begins the field edit mode. If some other character is to be changed, depress the <ENTER> key to enter the field edit mode; thereafter, the <LEFT ARROW> and <RIGHT ARROW> keys will position the cursor left and right respectively within the field.

You can insert a character by first moving the cursor to the insertion position and then depressing <CONTROL-A> (for "add" of a character). The characters extending from that position through to the end of the field will be shifted right and a space will be inserted. To delete a character, depress <CONTROL-D> (for "delete" a character). The character at the cursor position will be deleted and all trailing characters in the field will be shifted left to "take up the slack". When you are finished editing a field, depress the <ENTER> key and the cursor will be advanced to the next higher numbered field. Again, field ten will wrap to field zero.

The flag field is a special case. When the cursor is placed in this field, the flag label corresponding to the cursor position is identified within the square brackets of the field label. This label is a letter in the range 'A', 'B', 'C', ... 'V', 'W', 'X'. A BLANK is displayed anytime the cursor is positioned within one of the other fields 0-9. The entry characters usable are the SPACE which will denote an OFF state and any other printable character which indicates an ON state. When you turn ON a flag, the appropriate flag label will be displayed regardless of what character you enter to turn ON the flag. The <LEFT ARROW> and <RIGHT ARROW> keys will position you left and right accordingly once you enter the field edit mode either by depressing <ENTER> or a character.

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When you have completed your edits, depress <CONTROL-F> to file them away. Don't forget that if you abort the editing by depressing the <BREAK> key, the record will be left as it was prior to invoking EDIT.

Position to FIRST record

This command is used to rapidly position to the first data record of the ADDRESS/DAT data file and display it.

Position to LAST record

This command is used to rapidly position to the last data record of the ADDRESS/DAT data file and display it.

Print a MAILing label

This command is used to print the contents of a record or the entire data file in a format for one-across mailing labels on continuous forms. You can even specify that the output is to be limited just to records which have a particular flag turned ON (i.e. one of the flags A-X). When you invoke MAIL, you will be prompted to select the output option via the prompt:

<A>ll, >C<urrent, or <F>lagged?

If you want the entire data file printed, enter an <A>. If you want the output to be limited to flagged records, enter an <F> followed by the flag letter for which you want to limit the output. For instance, if you want to print mailing labels for all records with flag-P set, enter the two letters "FP" followed by <ENTER>. If you just want the current record printed on the label, enter the letter <C>. If you respond with no entry (by depressing just <ENTER>), the default of CURRENT will be selected. This default is indicated by the reversed angle brackets surrounding the letter "C" in the prompt. If you specify ALL records or FLAGGED records, any that are stored with a "deleted" mark will not be selected for printing.

You will then be asked to select the printing format via the query:

Format? >

If you just depress the <ENTER> key, you will select the default format supplied with ADDRESS. This format is:

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```
|FIRST----- LAST-----  
|COMPANY-----  
|ADDRESS1----- ADDRESS2--  
|CITY----- STATE--- ZIP-----  
|  
|
```

The vertical lines are not part of the output but are only illustrated here to denote the beginning of a line. Note that there are six lines total. This format is tailored to six lines per label - the quantity of lines on a 15/16" high label at six lines per inch. Each line of data will also fit on a 3-1/2" wide label printed at 10 characters per inch.

The format is printed by ADDRESS according to a string of field and printing specifiers. The string corresponding to the default format is:

```
'1 0;2;3 4;5 6 7;;;',CR
```

The contents of a particular field are printed when a string character is one of the field identifiers 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9. The flag field is specified for printing via the dollar sign character, "\$". This field will be printed with a SPACE for each flag that is OFF and the flag label for each flag that is ON. A semicolon is interpreted as a logical carriage return. Any other character is printed. A carriage return terminates the string without taking any printing action. If you want to specify some other format, just enter a string of characters in response to the "Format?" prompt. A string of up to 48 characters may be entered. If you are interested in maintaining your own formats, why not keep the "strings" in a record of the CARD application? By doing that, you can IMPORT the string when prompted for "Format?".

If you wish to abort printing at any time, just depress the <BREAK> key. When <BREAK> is detected, ADDRESS will output an immediate carriage return and return to await a command. The window will display the record being output at the time the <BREAK> was detected.

If the printer is not available during the printing operation, ADDRESS will display the error message,

Device not available

and terminate the MAIL command. ADDRESS will return to await a new command.

Position to NEXT record

This command is used to display the next data record in your address data file. You can also advance to the NEXT record by depressing the <DOWN ARROW> key.

Position to PREVIOUS record

This command is used to display the previous data record in your address data file. You can also position to the previous record by depressing the <UP ARROW> key.

SEARCH for a particular record

The SEARCH command is used to scan the data file starting at the record which follows the current record. The search string is entered in response to the query:

Search for? >

You can enter up to a 24-character string. If you enter a NULL string (i.e. <ENTER> by itself), the previous search string will be reused. The search string is not disturbed by intervening non-SEARCH commands. In this way, repetitive search commands can be invoked to display all records which match a single search string. The search string will be matched against each record until a match is found. The LAST and FIRST fields of the record will be considered as a single 25-character key field. If your search string is a sub-string of the record's key, the search will stop and that record will be displayed. The search will also stop at the last record. If a record cannot be found which matches up with your search string, the message,

Record not found

will be displayed and the current record will remain in the window.

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Sorting your ADDRESS/DAT file

You can sort your data file into ascending order according to the key string composed of the LAST and FIRST fields by invoking the PSORT utility from DOS Ready. This is done via the command:

```
PSORT ADDRESS[/DAT] [pack]
```

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The optional parameter, "pack", is entered when you wish to remove the deleted records from your address file. The square brackets are not entered.

Disk errors

If, by chance, ADDRESS detects an error in reading or writing your address file's records, it will display the DOS error message in the message line at the bottom of the window and then await an entry from the keyboard. This gives you an opportunity to read the error message. After you depress any key, ADDRESS will terminate its operation and return you to the program that was running when you invoked ADDRESS.

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ADDRESS/DAT Technical Specifications

Each record is stored in 128 bytes starting with the second sector of the ADDRESS/DAT data file. The record is composed as follows:

Field Identifier	Field Label	Width	Record Location
0	Last	15	000-014
1	First	10	015-024
2	Company	20	025-044
3	Address1	20	045-064
4	Address2	10	065-074
5	City	15	075-089
6	State	8	090-097
7	ZIP	10	098-107
8	Data1	5	108-112
9	Data2	12	113-124
\$	Flag [xx]	3	125-127

The flags are stored in a 3-byte field - each flag occupying one bit. The low-order bit represents a lower flag letter. Thus, byte 125 bit-0 is flag A while byte 127 bit-7 is flag X.

The first sector of the file contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). Additional information used by PRO-WAM is as follows with the numbers in square brackets indicating the quantities fixed within the ADDRESS/DAT data file (relative byte contents are stored in standard low-order high-order format):

Relative	Contents
10H-11H	Logical Record Length [128D]
12H-13H	1st record of LRL treated as data [02D]
14H-15H	Relative location within each record used as the SORT key [0D]
16H	Length of the SORT key [25D]

Note that if you alter the values of the key field's SORT key, these new values will be used by ADDRESS for it's SEARCH command. This allows you to, for instance, change the SORT key to the COMPANY field; resort the file using PSORT, then search for records by company name rather than "last-first". You could also change the SORT key information to designate the ZIP code field; this would allow you to organize your address data "alphabetically" by ZIP code.

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Algebraic Floating Point Calculator

The AFPCALC application provides a basic four-function (add, subtract, multiply, and divide) floating point calculator. The calculator has a standard register for making entries and displaying the results of a calculation or series of calculations. This register is labeled, "Display". The AFPCALC screen also supports a memory storage register so that you can STORE an entry or result and later RECALL it for use in additional calculations. This register is labeled, "Memory".

When you invoke the AFPCALC application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and AFPCALC will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, you will be greeted by a display which looks like the following screen presentation:

```

+-----+
| Display [          ] |
| Memory  [          ] |
|      * : Mul      7 8 9 |
|      /   Div      4 5 6 |
|      -   Sub      1 2 3 |
|      + ; Add      0 . = |
|      DNARW=STO  UPARW=RCL |
+-----+

```

The register labeled "Display" presents your entries and results within the area bounded by the left and right square brackets "[]". Anytime a number is displayed, it will be presented in one of two forms. Numbers in the range .1000000 through 9999999 will be displayed in decimal notation as shown. Numbers outside of that range are displayed in scientific notation (i.e. [1.234567E+10] with one digit to the left of the decimal point and six digits to the right of the decimal point. The "E" indicates the exponent which will be positive or negative according to the sign which immediately follows the "E". The exponent is a two digit base 10 number. If the value displayed is negative, a minus sign will appear in the first character position (which is shown here as blank). A positive quantity will be indicated by the absence of a minus sign.

The largest possible positive number which can be used is approximately 1.70411E+38. Any calculation which exceeds this amount will result in a flashing display. The flashing display indicates that the result is outside of the range of values acceptable to AFPCALC. The smallest possible positive number is

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approximately [1.162080E-38]. AFPCALC supports 6-7 digits of precision.

The "Memory" may be used to store any figure displayed in the "Display" register - even during an entry. This is done by just depressing the <DOWN ARROW> key. Anytime you wish to use the stored value in a calculation, just recall it by depressing the <UP ARROW> key. If you recall the memory while you are in the process of entering a number but have not yet completed the entry, the recalled number will replace your partial entry.

The calculator window shows the keys associated with the four functions: <*> for multiplication, </> for division, <-> for subtraction, and <+> for addition. Since the <+> key and the <*> key are shifted keys on the keyboard, AFPCALC also lets you use the unshifted keystrokes <:> and <;> respectively, for the ease of entering these two operators. The <ENTER> key is used to indicate an "equals sign" in order to obtain the result. You may also use the <=> key if you so desire.

Entries are made purely algebraically; however, AFPCALC does not support any hierarchy of operators nor the use of parentheses. For example, the calculation:

$$47.36 + 39.24 * 17.22 / 4.76 =$$

will produce the result, [313.2883]. The calculations are performed sequentially with the intermediate results chained to the next entry. It is possible to chain an operator, such as <+>, to be able to raise a number to a power. As an example, the repeated calculation:

$$2 + + + + + + + + + =$$

will produce the results, 2 4 8 16 32, ..., [2048.000].

You may IMPORT an entry or a series of entries. For example, the two previous illustrations were actually calculated by importing the text string from the text file being edited into AFPCALC which was invoked while the AFPCALC documentation was being prepared with. The result was also EXPORTed back to the text editor and automatically input into the text file being edited. This achieved the advantage of 100% accuracy. You can do the same thing - importing a series of numbers to be calculated from some application interrupted by an AFPCALC invocation and having the result exported back to the application. AFPCALC will ignore any character that is not a valid entry character; thus, the imported "string" of values can really be free formatted.

When you are manually keying in a number, you can backspace over a mistake by depressing <LEFT ARROW>. If you wish to "clear" the display register entry, enter the two-key combination, <SHIFT>

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<LEFT ARROW> This will erase the value currently being displayed but it will not effect any pending intermediate result. If entered after an <=> or <ENTER>, the <SHIFT LEFT ARROW> combination will also clear the result so that you can start anew. The entry of a new value will also clear the result; however, if you enter an operator, the previous result will be considered to be a value entry. For example, the chained calculation:

$$47.36 + 39.24 = * 17.22 = / 4.76 =$$

will produce the same result as before, [313.2883].

When you are entering a number, only one decimal point will be permitted. If you enter it in the wrong position, you can backspace over it and get an opportunity to enter it in a different place. Likewise, if you are entering a number in scientific notation, the "E" can only be entered once; however, you can backspace over it and re-enter it in a different position. The "E" must be followed by a plus sign, a minus sign, or a digit <0-9>. Once you enter one of the three, the next plus sign or minus sign will be considered to be an operator (addition or subtraction). You can also backspace over the exponent's sign if you enter the wrong character.

All in all, AFPCALC puts a powerful four-function calculator right at your fingertips available at the touch of a button.

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BRINGUP Tickler File and Appointment Book

BRINGUP maintains a data file of activities to be displayed by date in the application's window. This is sometimes called a "tickler" file. The activities may indicate things that should be done on a particular date or appointments that must be kept at a particular time. The only limit to the number of total activities that can be stored is the allowable disk file size on your disk; however, only a maximum of twelve activities may be stored for any one date. BRINGUP supports a 16-year range of dates [01/01/84 through 12/31/99]. Each data activity record contains the following items:

Field	Description of Intended Use
1 Checkoff	Used to flag the activity as completed;
2 Priority	Used to denote an activity priority <1-4>;
3 Date	Activity's entry date
4 Time	Used to denote the time of the item in hours and quarters of an hour;
5 Text	Describes the record's activity (29 chars)

When you invoke the BRINGUP application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and BRINGUP will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time which is a very rare instance. When the window is opened, BRINGUP checks for a file named, BRINGUP/DAT. If it is found, BRINGUP will use the records in that file. If one is not found, BRINGUP will prompt you for the disk drive number to create the data file via the prompt:

Create BRINGUP/DAT file on what drive?

Respond with one of your available drives (0-7). A <BREAK> will terminate the request and cause BRINGUP to exit. If BRINGUP detects a DOS error when attempting to create the data file, you will receive an appropriate error message and BRINGUP will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the BRINGUP window will close and you will be returned to the interrupted application.

Once the BRINGUP/DAT file is created, BRINGUP will establish the window with "today's" records - "today" being the current system date set at powerup or via the DATE library command. It is required that the system date be set. An alternative method of invoking BRINGUP is from the CALENDAR application. You can use CALENDAR's pointer to establish a BRINGUP date which will be passed to BRINGUP if invoked from CALENDAR. This date then becomes the "current" date rather than today's date. The screen will always show the current date in the lower right portion of the display. BRINGUP will turn on the time-clock feature of the

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DOS. The time clock will normally be displayed in the top window border as illustrated in the window facsimile below. The time will be displayed during the duration of BRINGUP's operation. If you nest to another application from BRINGUP, the time-clock will remain visible until you exit from BRINGUP [note: if the clock was on when BRINGUP was invoked, it will remain on when you exit BRINGUP]. A blinking cursor pointer, ">", will be positioned on the screen pointing to "the current activity". This may be positioned up or down via the <UP ARROW> or <DOWN ARROW> keys.

The format of an activity's entry is PRIORITY, followed by TIME, followed by the text which describes the activity. If the activity has been checked off, a check mark (machine dependent) will appear prior to the priority field. All of the activities for the date displayed will appear in sequential order sorted by time (using a 24-hour clock). BRINGUP does not restrict more than one activity from having the same activity time. In fact, where you have activities that are date sensitive but not time sensitive, you may want to assign such activities to an arbitrary time slot.

```
+-----HH:MM:SS-----+
|>  1 12:00 Jeep payment due      |
|  1 12:00 Pay phone bill         |
|  1 12:00 Pay Exxon bill         |
|  2 13:45 Meet with accountant  |
|  3 16:30 Schedule meeting with Karl |
|                                  |
|                                  |
|                                  |
|-----Wed, Mar 13, 1985-----|
| This line is used to display messages! |
| Add Chk Del Echo File Goto Mov Nxt Prv Xbu |
+-----+
```

Anytime a prompt does not appear in the status line, BRINGUP is awaiting a command. The commands available to you are displayed at the bottom of the window. Two modules constitute the BRINGUP application. One is, of course, BRINGUP. The other is BUP, short for bringup. BUP can be invoked directly from BRINGUP's "Xbu" command. Note that to use any BUP command which requires file updating (e.g. check, delete, file, and remove), BUP must not be invoked from BRINGUP; it must be invoked only when the BRINGUP/DAT data file is not already in use. In the following table, "*" indicates a command available only in BUP while "#" indicates a command available in both BRINGUP and BUP. These commands are:

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Command	Purpose of Command
ADD	Add an activity record to "today"
#CHECK	Check off the "current" activity
#DELETE	Delete the current activity
ECHO	Copy the current activity to another date; useful to propagate a monthly activity
#FILE	Write file activity changes to disk
#GOTO	Switch the window to a different date
MOVE	Move the current activity to another date
#NEXT	Advance to the next consecutive date
#PREV	Step back to "yesterday"
XBU	Gain access to BUP's extended commands
*LIST	Print activities for a range of dates
*REMOVE	Purge activities from a range of dates

Note that the two commands prefixed with an asterisk (LIST and REMOVE) are available only from the extended application, BUP. In addition, <BREAK> will exit the application; <CLEAR> <RIGHT ARROW> will invoke EXPORT of data while <CLEAR> <LEFT ARROW> invokes import of data. The functions of both IMPORT and EXPORT are fully described in the chapter on PRO-WAM operation.

ADD Activity

ADD is the means by which activities are added to your bringup data base. ADD will prompt you first for the priority via the prompt:

Priority <1-4> ?

This may be used by you to indicate how "hot" is the item. It could also be used to note which of four individuals should complete the activity - if you happen to be the boss and delegate certain tasks. The priority is a number from 1 to 4. If you enter any character other than a number in the range 1-4, you will be re-prompted for the entry. A <BREAK> will abort the addition.

Next you will be asked to enter the time of the activity. You may enter an hour and quarter of an hour in response to the prompt:

Time <HH:MM> ?

The "HH" field accepts hours from 00 through 23 (two digits are required). The "MM" field accepts minutes from 00 through 59 (two digits are required) but will truncate downward to the four values: 00, 15, 30, 45 (quarters of an hour). You may enter a

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time of "00:00" by simply entering a NULL string (depress <ENTER> by itself). If you wish to enter a time of "HH:00", you may easily do this by just entering the 2-digit hour immediately followed by <ENTER>. If your entry does not adhere to the syntax illustrated or discussed, you will be re-prompted for a correct entry. As in the priority response, a <BREAK> will abort the addition.

Next you will be asked to enter the text. You can enter a string of up to 29 characters to describe the activity. As before, if you depress <BREAK> in response to the text query, it will abort the addition.

When you complete the addition, the message, "Changes to file", will be displayed to the left of the current date if it hasn't already been displayed from an earlier addition. This message indicates that the addition will not be stored until a FILE command is invoked. Thus if you exit from BRINGUP without filing your changes [you will be prompted if there are changes to be filed], then the additions will not become permanent. Please note, however, that if you MOVE or ECHO to another date, any changes made in the current date will be automatically filed.

CHECK off an Activity

This command will place a check mark on the screen preceding the priority field of the current activity [note: The check mark is displayed via character value 236 (decimal) - See CHARSET for your computer's display]. The message, "Changes to file", will be displayed to the left of the current date. This indicates that the checkoff will not be stored until a FILE command is invoked. If you want to "uncheck" an activity, just "CHECK" it again. The CHECK command toggles the state of the "completed" field.

DELETE an Activity

This command will delete the current activity and remove it from the window screen. The message, "Changes to file", will be displayed to the left of the current date. This indicates that the deletion will not be stored until a FILE command is invoked. If you want to delete a large number of activities, i.e. all activities of a particular date or range of dates, you probably want to use the REMOVE command available in BUP.

ECHO Activity to Another Date

This command will copy the current activity to another date without deleting it from the current date. This type of command

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is useful when you want to propagate a monthly activity across a number of months. Enter the date you wish to copy the activity to in response to the prompt:

Move to date <MM/DD/YY> ?

Note that although the query says "Move to", you will be copying the activity. The system date will automatically be used if you do not enter a date but just depress <ENTER> in response to the query. In this way, once you change the current date from "today", you can easily copy an activity to "today" via "ECHO ... <ENTER>". BRINGUP will save the activity's text field. The activity will not be deleted, changes will be filed, and the echo date will become the current date. The window screen will display any records for the new current date and then go automatically into the ADD command. If, by chance, the echo date already has twelve activities stored, you will not be able to add the moved text. The text will still be stored so that you could GOTO another date. When ADD takes control, it recognizes the saved text and will prompt you for only the PRIORITY and TIME.

FILE Changes

This command will update your bringup file with all changes made to the current date. The message, "Changes to file", will be removed.

GOTO Another Date

This command is used to change the current date to some other date. If there are any changes in the "old" current date, you will be flagged prior to the GOTO via the query:

File your changes <Y,N> ?

If you respond with <Y>, the GOTO will be canceled and changes will be filed. An <N> response will continue the GOTO operation without filing any changes for the current date.

You will be asked to enter a new date via the prompt:

Goto date <MM/DD/YY> ?

The date is entered according to the format illustrated in the prompt. Your entered date will become the new "current" date. If you do not enter a date but just depress <ENTER>, the system date will automatically be used. In this way, once you change the current date from "today", you can easily return to "today"

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via "GOTO <ENTER>". The data file will then be searched to display the activities for the requested date.

MOVE Activity to Another Date

This command will move the current activity to another date. Enter the date you wish to move the activity to in response to the prompt:

Move to date <MM/DD/YY> ?

The system date will automatically be used if you do not enter a date but just depress <ENTER>. In this way, once you change the current date from "today", you can easily move an activity to "today" via "MOVE <ENTER>". BRINGUP will save the activity's text field. The activity will be deleted, changes will be filed, and the move date will become the current date. The window screen will display any records for the new current date and then go automatically into the ADD command. If, by chance, the move date already has twelve activities stored, you will not be able to add the moved text. The text will still be stored so that you could GOTO another date. When ADD takes control, it recognizes the saved text and will prompt you for only the PRIORITY and TIME.

Go to NEXT date

The GOTO command allows you to advance rapidly to any designated date within the range of dates supported by BRINGUP. When you want to look at the activities scheduled for "tomorrow" or the next day after tomorrow, use the NEXT command. It advances the date by one day. The end of the month advances to the first of the next month. The end of the year advances to the first of January of the next year. The last day of the supported dates (December 31, 1999) advances to the first day of the supported dates (January 1, 1984). Each time you go to the NEXT day, the data file will be searched for all of the activities scheduled for that date. Any that are "current" will be sorted and displayed on the window.

Go to PREVIOUS date

The GOTO command allows you to advance rapidly to any designated date within the range of dates supported by BRINGUP. When you want to look at the activities scheduled for "yesterday" or the day before yesterday, use the PREV command. It decrements the date by one day. The first of the month decrements to the last day of the previous month. The first day of the year decrements to December 31st of the previous year. The first day of the sup

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ported dates (January 1, 1984) decrements to the last day of the supported dates (December 31, 1999). Each time you go to the PREV day, the data file will be searched for all of the activities scheduled for that date. Any that are "current" will be sorted and displayed on the window.

LIST Activities

LIST is an extended BRINGUP command available only from the BUP application. It can be used to print all activities within a range of dates. You may wish to sort your BRINGUP data file before printing via the PSORT utility. See the section entitled, Sorting your BRINGUP/DAT file. The LIST command will prompt you to enter the date range via the prompt:

List range ?

This may be answered according to the following syntax table:

Date Syntax	Interpretation of Range
-----	-----
M1/D1/Y1-M2/D2/Y2	from date1 through date2 inclusive.
-MM/DD/YY	from 01/01/84 through date inclusive.
MM/DD/YY-	from date through 12/31/99 inclusive.
MM/DD/YY	activities only on date.

Note that you can substitute a period, ".", in lieu of a date to designate "today's date" in any of the strings mentioned in the table. Furthermore, entering a NULL string will be interpreted as if you had entered today's date.

You will then be asked to select the printing format via the query:

Format? >

If you just depress the <ENTER> key, you will select the default format supplied with BUP. This format is:

[checkoff] date time priority text

The "checkoff" field will print as a "C" if the activity has been checked off; otherwise, it will be blank. The "date" field will be printed in a format of,

dow, mon dd, year

as in "Mon, Jun 22, 1987". The time prints as "hh:mm" using 24-hour time as normally displayed on the BRINGUP screen.

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The format is printed by BUP according to a string of field and printing specifiers. The string corresponding to the default format is:

```
'[1] 3 4 2 5;',CR
```

The contents of a particular field are printed when a string character is one of the field identifiers 1, 2, 3, 4, or 5. A semicolon is interpreted as a logical carriage return. Any other character is interpreted as a character to print. A carriage return terminates the string without taking any printing action. If you want to specify some other format, just enter a string of characters in response to the "Format?" prompt. A string of up to 17 characters may be entered. If you are interested in maintaining your own formats, why not keep the "strings" in a small text file? By doing that, you can interrupt the "Format?" prompt via a LIBEXEC to list your format text file then export the desired format string from the LIST display to CARD to respond to the prompt for "Format ?". Another method would be to store the format strings in your PHRASE/TXT file and use the PHRASE application to access them. In that way, you can assign a 2-character mnemonic for quick access to each format string. You could also use a CARD record and invoke CARD from BUP to export the string back to the "Format?" prompt.

If you wish to abort printing at any time, just depress the <BREAK> key. When <BREAK> is detected, BUP will output an immediate carriage return and return to await a command.

If the printer is not available during the printing operation, BUP will display the error message,

Device not available

and terminate the BUP command. BUP will then return to await a new command.

REMOVE Activities

Remove is an extended BRINGUP command available only from the BUP application. It is also necessary that BUP be directly invoked (i.e. not from BRINGUP's Xbu command) in order to enable the removal of activities.

This command can be used to remove all activities from a range of dates. Normally, activities are removed one at a time via the DELETE command. When you go to a date, the entire data file is searched for activities which "belong" to that date. Thus, if the data file is encumbered by many old activities (obviously which have been completed and checked off), the search time may grow excessive. Therefore, you may find it convenient to purge

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very old activities from your data file so that the space they occupy can be reused by newly added activities. REMOVE is used for this purpose. The REMOVE command will prompt you to enter the date range via the prompt:

Remove range ?

This may be answered according to the following syntax table:

Date Syntax	Interpretation of Range
M1/D1/Y1-M2/D2/Y2	from date1 through date2 inclusive.
-MM/DD/YY	from 01/01/84 through date inclusive.
MM/DD/YY-	from date through 12/31/99 inclusive.
MM/DD/YY	activities only on date.

Note that you can substitute a period, ".", in lieu of a date to designate "today's date" in any of the strings mentioned in the table. Furthermore, entering a NULL string will be interpreted as if you had entered today's date. Only those activities within the date range you specify that have been checked off will be removed. At the conclusion of the removing operation, the window screen will be returned to "today's" date.

Sorting your BRINGUP/DAT file

You can sort your data file into ascending order according to the two key DATE and TIME fields (that's the date and time of each activity) by invoking the PSORT utility from DOS Ready. This is done via the command:

PSORT BRINGUP[/DAT]

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The square brackets are not entered.

Sorting is especially useful if you intend to print a list of activities. A sorted file will always print in ascending date-time order. An unsorted file will print in random order based on where activities were stored in the data file.

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BRINGUP/DAT Technical Specifications

For the technically inclined, the following describes the makeup of activities stored in the data file. It is quite possible to access the file and its records from other programs. Each activity is stored in a 32-byte record. Thus, each sector of the data file can contain eight activities. The record is "fielded" as follows:

Byte/bit	Field Description

Byte 0:	
bits 7-6	- Priority minus one [0-3].
bit 5	- Set to a one if the record is ACTIVE. A zero implies that the record has been DELETED or REMOVED.
bits 4-0	- The day portion of the date [1-31].
Byte 1:	
bits 7-4	- The year portion of the date excess 1984 [0-15].
bits 3-0	- The month portion of the date [1-12].
Byte 2:	
bit 7	- Set to a one if the activity is "checked".
bits 6-2	- The hour portion of the time [0-23].
bits 1-0	- The quarter-hour portion of the time [0-3].
Bytes 3-31:	The text of the activity.

The first sector of the file contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). Additional information used by PRO-WAM is as follows with the numbers in square brackets indicating the quantities fixed within the BRINGUP/DAT data file (relative byte contents are stored in standard low-order high-order format):

Relative	Contents
-----	-----
10H-11H	Logical Record Length [32D]
12H-13H	1st record of LRL treated as data [08D]
14H-15H	Key 1, relative location within each record used as the SORT key [0D]
16H	Key 1, length of the SORT key [02D]
17H	Key 1, type of key [1D = integer]
18H-19H	Key 1, mask [X'FF1F']
1AH-1BH	Key 2, location [02D]
1CH	Key 2, length of sort key [02D]
1DH	Key 2, type of key [1D = integer]
1EH-1FH	Key 2, mask [X'007F']

CALendar Application

The CALendar application can be used to obtain a one month page out of a calendar for any year you choose between 1582 and 4902 inclusive. The application provides you with commands to scroll through month after month after month. CALendar also can pass a selected date to BRINGUP in order to override BRINGUP's default initial presentation of the system date and cause it to present your selected date.

When you invoke the CALendar application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and CALendar will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, CALendar will display the calendar page for the current month. The calendar application will display a month at a glance for just about any month you request. The displayed date can be easily changed via single key commands that adjust the display to the date of your choice. A typical calendar display appears as follows:

Oct 2, 1985				Mar 25, 1985			
Su	Mo	Tu	We	Th	Fr	Sa	
		1	< 2>	3	4	5	
6	* 7	8	9	10	*11	12	
13	14	*15	*16	17	18	19	
20	21	22	23	24	*25	26	
27	28	29	30	31			
Bringup				Goto		Next	
				Next		Prev	

The current day will be marked by a flashing set of angle brackets; "current today" being the current system date set at powerup or via the DATE library command. It is required that the system date be set.

In the example illustrated, the 2nd day of October, 1985 is "marked". At the top left of the display, the selected day is noted as a date string. The upper right portion of the display

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will always display a date string which indicates today's date - today being the system date established at powerup of your computer or via the DATE command. Any day in the month which has at least one active BRINGUP record will be so designated with an asterisk displayed to the left of the day. For example, the dates 10/07/85, 10/11/85, 10/15/85, 10/16/85, and 10/25/85 each have one or more activities active in the BRINGUP/DAT file.

You can position the marker to select any date of your choosing by using the following keys:

Keystroke	Marker movement
-----	-----
<RIGHT ARROW>	- position to next day
<LEFT ARROW>	- position to previous day
<UP ARROW>	- position to previous week
<DOWN ARROW>	- position to next week
N	- position to next month
P	- position to previous month

You can also select a date for display via the GOTO command. If you depress <G>, you will be prompted to enter a date in response to the prompt,

Goto date <MM/DD/YY> ?

Select any date according to the entry syntax shown. The date is assumed to be in the 20th century. To enter a year past 1999 or before 1900, enter a full 4-digit year as in "04/07/2143". If you press <ENTER> without a date, it will default to the system date (i.e. today).

If you set CALENDAR to a particular date and then invoke BRINGUP or BUP, the current date established by BRINGUP or BUP will be the day marked by CALENDAR, rather than "today" - provided the date is in the range of dates acceptable to the BRINGUP application.

BRINGUP may be invoked directly from the CAL command menu provided that the BRINGUP application module resides in the WAMO/APL application library and the default disk drive for "mspec\$" contains WAMO/APL. See the discussion concerning "mspec\$" in the PRO-WAM section on the UNIVERSAL command.

CARD Filer Application

The CARD filer and notepad application maintains a data file of records - each record containing up to 480 characters of textual data. Three additional fields provide a means of identifying the text with an ID name as well as a date/time stamp as to when the card was last changed. The text is organized as 12 rows of 40 columns in width. This format is suitable for printing on continuous form 3 x 5 cards. The data items available within each CARD record are identified in the following table:

Field Identifier	Field Label	Width	Permissible Entries
1	TEXT	40 x 12	>= 20H
2	Number	0	n/a
3	ID	8	20H-7FH
4	Date	8	n/a
5	Time	8	n/a
6	reserved	8	n/a

CARD has a few commands that display a prompt message and expect a response. The response must be terminated via a depression of the <ENTER> key. During the input of the response, you can backspace over a mistyped character via the <LEFT ARROW> key. You can clear the entire response via <SHIFT> <LEFT ARROW>. You can cancel the request via the <BREAK> key. Finally, if you wish to IMPORT the response from the display screen present prior to the invocation of CARD, you only need to depress the <CLEAR> <LEFT ARROW> keys. Export is fully described in the chapter on PRO-WAM operation.

When you invoke the CARD application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and CARD will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, CARD will search all disk drives for a file named CARD/DAT. If you want to maintain more than one discrete card file, just keep each one on a separate floppy disk, or use CARDX. When a CARD/DAT file is found, it will be accessed and the first card record, if any, will be displayed. If no file can be found identified as CARD/DAT, you will be prompted to specify the drive which should be used to create a CARD/DAT file via the prompt:

Create CARD/DAT on what drive?

Respond with one of your available drives (0-7). A <BREAK> will terminate the request and cause CARD to exit. If CARD detects a DOS error when attempting to create the data file, you will

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receive an appropriate error message and CARD will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the CARD window will close and you will be returned to the interrupted application.

Once the CARD/DAT file is created, the displayed window will show the record fields of the first record in the file, if any, and the CARD commands which are available. When CARD is waiting for a command entry, the cursor which is at the beginning of the list of available commands will be blinking [this cursor is shown as an underline "_" in the illustration which follows]. A filled in record appears as follows:

```
+-----+
|Thursday, February 28th, 1985|
|    Today Stacey, by herself, went to |
|the silverware drawer and got a spoon to|
|eat the yogurt with that I gave her  |
|for lunch.                            |
|                                     |
|                                     |
|                                     |
|-----|
|[STACEY ] [02/28/85 14:28:37] [ 1]|
| This line is used to display messages!|
| _ Add Card Delete Edit First Goto |
|  Id  Last Next   Prev  Search  |
+-----+
```

The commands permit a range of operations on the data records. A command is invoked by depressing the letter key noted by the first letter of the command word (the letter which appears capitalized). This may be entered in either upper or lower case. You can also invoke EXPORT of data when CARD is waiting for a command. Data export permits you to pass a specified field or block of data from the displayed window to the environment interrupted when you invoked CARD. More information on EXPORT can be found in the chapter on PRO-WAM operation. Details for each command follow:

ADD a record

When you wish to add a record to your card file, specify this action by depressing the <A> key. You will be presented with a window display where the contents of each field are blank. CARD will then automatically enter the EDIT command. The text field is the only field which can be edited with the entry of data.

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The ID field is managed via the <I>d command. The DATE and TIME fields are automatically handled by CARD. If you decide that you do not want to add the record, just depress <BREAK>. CARD will abort the addition and display whatever record was on the window at the time that ADD was invoked.

Rather than duplicate the procedures for entering your text, you are referred to the section entitled, "EDIT the currently displayed record".

Print a 3 x 5 Index CARD

This command is used to print the contents of a record or the entire data file in a format suitable for 3" high by 5" wide Index Cards in continuous forms. When you invoke CARD, you will be prompted to select the output option via the prompt:

<A>ll, or <C>urrent?

If you want the entire data file printed, enter an <A>. If you want just the current record printed on the "card", enter the letter <C>. If you respond with no entry (by depressing just <ENTER>), the default of CURRENT will be selected. This default is indicated by the reversed angle brackets surrounding the letter "C" in the prompt. If you specify ALL records, any that have been marked with a "deleted" flag will not be printed.

You will then be asked to select the printing format via the query:

Format? >

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If you just depress the <ENTER> key, you will select the default format supplied with CARD. This format is:

```
|
|Text line 1-----
|Text line 2-----
|Text line 3-----
|Text line 4-----
|Text line 5-----
|Text line 6-----
|Text line 7-----
|Text line 8-----
|Text line 9-----
|Text line 10-----
|Text line 11-----
|Text line 12-----
|
|[ID-----] [Date---- Time----] [Rec #]
```

The vertical lines are not part of the output but are only illustrated here to denote the beginning of a line. Note that there are 18 lines total. This format is tailored to 18 lines per card - the quantity of lines on a 3 x 5 Index Card at six lines per inch. Each line of data will also fit on a card printed at 10 characters per inch.

The format is printed by CARD according to a string of field and printing specifiers. The string corresponding to the default format is:

```
';;1;[3] [4 5] [2];;','CR
```

The contents of a particular field are printed when a string character is one of the field identifiers 1, 2, 3, 4, 5, or 6 [note, field 6 is currently unused]. A semicolon is interpreted as a logical carriage return. Any other character is interpreted as a character to print. A carriage return terminates the string without taking any printing action.

The text field [field 1] will always be output as 40-character rows terminated by a carriage return. There will be 12 rows output. If you want to specify some other format, just enter a string of characters in response to the "Format?" prompt. A string of up to 48 characters may be entered. If you are interested in maintaining your own formats, why not keep the "strings" in a small text file? By doing that, you can interrupt the "Format?" prompt via a LIBEXEC to list your format text file then export the desired format string from the LIST display to CARD to respond to the prompt for "Format ?". Another method

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would be to store the format strings in your PHRASE/TXT file and use the PHRASE application to access them. In that way, you can assign a 2-character mnemonic for quick access to each format string. You could also use a CARD record and invoke another CARD window to export the string back to the "Format?" prompt. Another example of nested CARD invocations shows up in the EDIT command documentation.

If you wish to abort printing at any time, just depress the <BREAK> key. When <BREAK> is detected, CARD will output an immediate carriage return and return to await a command. The window will display the record being output at the time the <BREAK> was detected.

If the printer is not available during the printing operation, CARD will display the error message,

Device not available

and terminate the CARD command. CARD will then return to await a new command.

DELETE currently displayed record

This command is used to delete the record currently being displayed. You have to confirm your request by responding to the query:

Delete: <Y> to confirm?

Any response other than the letter <Y> will abort the delete operation and return to the command prompt to await a new command. If you confirm the deletion, it is marked by placing a character value of 255D in the first character position of the ID field. This indicates a "deleted mark". A record deleted in this manner is still displayed if you come to it while "scrolling" through the card file; however, it will not be printed during a "CARD" operation when ALL records are requested nor will it be matched during a SEARCH. If you examine position 255 in the CHARSET application display, you will be able to note the "deleted" mark character displayed by your computer. Deleted records can be permanently removed from the data file by requesting the "PACK" option during a sort of the data file via the PSORT utility provided with PRO-WAM.

It is perfectly acceptable to "un-delete" a deleted record by editing the ID field and replacing the "deleted mark" with an ID character. It is not possible to restore a deleted record after a PSORT operation where you have requested the "PACK" option - at least not with any utility provided with PRO-WAM!!!

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EDIT the currently displayed record

EDIT is selected to enable you to enter additional text or modify the existing text of the current record. When EDIT is invoked, the following message is displayed in the bottom portion of the window:

Edit: ^F to file; BREAK to abort

This is an aid to letting you know that there are two ways of escaping from the edit mode. One way is to enter <CONTROL-F> to file away your edited record. The other way is to depress the <BREAK> key which will abort the editing and return to await a new command. Also, a blinking cursor will appear in the first character position of the text area. All text is entered in what is termed overstrike mode. Any ASCII non-control character will overwrite the character beneath the cursor and cause the cursor to advance by one position. The following edit commands are available for your use:

Keystroke	Editing operation
<UP ARROW>	Move the cursor up one line.
<DOWN ARROW>	Move the cursor down one line.
<LEFT ARROW>	Move the cursor left one column.
<RIGHT ARROW>	Move the cursor right one column.
<SHIFT LEFT ARROW>	Move to the start of the line.
<SHIFT RIGHT ARROW>	Move to the end of the line.
<CONTROL-A>	Add [insert] a space and push the rest of the line right.
<CONTROL-C>	Concatenate the next line to overstrike the position of the cursor.
<CONTROL-D>	Delete the character under the cursor and move the trailing portion of the line left.
<CONTROL-F>	File the changes.
<CONTROL-S>	Split this line at the cursor and move the trailing text to a NEW next line.
<BREAK>	Cancel the changes.
<CLEAR LEFT ARROW>	Import data.
<ENTER>	Move the cursor to the beginning of the next line.

You can insert a character by first moving the cursor to the insertion position and then depressing <CONTROL-A> (for "add" of a character). The characters extending from that position through to the end of the line will be shifted right and a space will be inserted. You can then overstrike the space with the desired character. To delete a character, depress <CONTROL-D> (for "delete" a character). The character at the cursor position

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will be deleted and all trailing characters in the line will be shifted left to "take up the slack".

The line concatenate operation invoked by <CONTROL-C> will overstrike the characters from the cursor to the end of the line with the next line. The entire next line will be deleted and all lines to the bottom of the text will be bumped up by one line. If the next line is longer than the character positions remaining, the "overflowed" characters will be dropped. If you are aware that a concatenation of the next line will overflow and you do not want this to happen, you may want to split the next line into two pieces. See the split command, <CONTROL-S>.

The split-a-line operation invoked by <CONTROL-S> will divide up the current line into two lines. This is done by first moving all lines following the current line down by one line which opens up a blank line. Next, all of the characters from the cursor through to the end of the current line are shifted to the new blank line. The old last line of the text will be dropped.

When you have completed your edits, depress <CONTROL-F> to file them away. The DATE and TIME fields will automatically be updated to reflect "today's" system date and the current system "time". These two values are initialized by you when you power up your computer or otherwise change them via the system's DATE and TIME library commands. Don't forget that if you abort the editing by depressing the <BREAK> key, the record will be left as it was prior to invoking EDIT.

As a side note, the functions of cut and paste between records or within the same record may be easily achieved by a small sequence of steps. Open up the needed space via the split command - don't worry if the text that was to be cut and pasted has been dropped. Next, invoke the CARD application recursively from the edit mode you are in. This will bring up a new invocation of card. Go to the record where the text is that you want to cut and paste. Invoke EXPORT and mark the block. This is the "cut" operation. It will be exported back to the prior CARD session into the space you have opened. Of course, you must have opened up enough space to "paste" the exported text.

Position to FIRST record

This command is used to rapidly position to the first data record of the CARD/DAT data file and display it.

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GOTO a designated card

This command is provided to enable you rapid access to a card by its card number. Depress the <G> key and you will be prompted for the record number via the message,

Goto record?

Enter the decimal number of the card record you wish to display. The card numbers are displayed in the right hand portion of the card status line.

Alter the ID field

The ID field can be changed by depressing the <I> key. You will see the prompt to enter the new ID field which is:

ID ?

You can enter up to eight characters. The BACKSPACE key [<LEFT ARROW>] can be used during your entry. Any lowercase alphabetic characters will be capitalized when your entry is stored. This is to minimize field matching problems with external processing. When you terminate the ID with <ENTER>, it will update the ID field displayed in the window and automatically update the record's disk ID field as well. Note that <BREAK> will abort any changes.

Position to LAST record

This command is used to rapidly position to the last data record of the CARD/DAT data file and display it.

Position to NEXT record

This command is used to display the next data record in your card file. You can also advance to the NEXT record by depressing the <DOWN ARROW> key.

Position to PREVIOUS record

This command is used to display the previous data record in your card file. You can also position to the previous record by depressing the <UP ARROW> key.

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SEARCH for a particular card

The SEARCH command is used to scan the data file starting at the record which follows the current record. The search string is entered in response to the query:

Search for? >

You can enter up to an 8-character string. If you enter a NULL string (i.e. <ENTER> by itself), the previous search string will be reused. The search string is not disturbed by intervening non-SEARCH commands. In this way, repetitive search commands can be invoked to display all records which match a single search string. The search string will be matched against each record until a match is found. The search is case insensitive. Both the text portion and the ID field will be compared to the search string. If your search string is a sub-string of the ID or text, the search will stop and that record will be displayed. The search will also stop at the last record.

If the string which you are searching is not located in any record, the message,

String not found

will be displayed. At this point, you need to depress the <ENTER> key to resume the operation of CARD.

Sorting your CARD/DAT file

You can sort your data file into ascending order according to the key string composed of the ID, DATE, and TIME fields by invoking the PSORT utility from DOS Ready. This is done via the command:

PSORT CARD[/DAT] [pack]

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The optional parameter, "pack", is entered when you wish to remove the deleted records from your card file. The square brackets are not entered.

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Disk errors

If, by chance, CARD detects an error in reading or writing your card file's records, it will display the DOS error message in the message line at the bottom of the window and then await an entry from the keyboard. This gives you an opportunity to read the error message. After you depress any key, CARD will terminate its operation and return you to the program that was running when you invoked CARD.

CARD/DAT Technical Specifications

Each record is stored in 512 bytes starting with the third sector of the CARD/DAT data file. The number of the record will be the logical record number of the record based on its LRL and is not a piece of data stored in the record. The record is fielded as follows:

Field Identifier	Field Label	Width	Record Location
2	Number	0	n/a
1	TEXT	480	020-1FF
3	ID	8	000-007
4	Date [YY/MM/DD]	8	008-00F
5	Time [HH:MM:SS]	8	010-017
6	reserved	8	018-01F

The first sector of the file contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). Other information used by PRO-WAM is as follows with the numbers in square brackets indicating the quantities fixed within the CARD/DAT data file (relative byte contents are stored in standard low-order high-order format):

Relative	Contents
10H-11H	Logical Record Length [512D]
12H-13H	1st record of LRL treated as data [01D]
14H-15H	Relative location within each record used as the SORT key [0D]
16H	Length of the SORT key [24D]

Note: The DATE field is stored in year-month-day sequence as it is part of the sort key. In this way, ascending ordering is performed properly. The date is displayed in month-day-year sequence in the window.

CARDX Filer Application

The CARDX filer and notepad application is very similar to the CARD application. The primary difference is that CARDX supports the use of reverse video for "protected fields" and allows selection of ten different card data files. Thus, even though much of the documentation in this section is redundant, it is provided in its entirety to assure you continuity and it saves you from jumping to two different sections of this manual when you want to get information on the CARDX application.

CARDX maintains up to ten data files of records - each record containing up to 480 characters of textual data. Three additional fields provide a means of identifying the text with an ID name as well as a date/time stamp as to when the card was last changed. The text is organized as 12 rows of 40 columns in width. This format is suitable for printing on continuous form 3 x 5 cards. The data items available within each CARDX record are identified in the following table:

Field Identifier	Field Label	Width	Permissible Entries
1	TEXT	40 x 12	>= 20H
2	Number	0	n/a
3	ID	8	20H-7FH
4	Date	8	n/a
5	Time	8	n/a
6	reserved	8	n/a

CARDX has a few commands that display a prompt message and expect a response. The response must be terminated via a depression of the <ENTER> key. During the input of the response, you can backspace over a mistyped character via the <LEFT ARROW> key. You can clear the entire response via <SHIFT LEFT ARROW>. You can cancel the request via the <BREAK> key. Finally, if you wish to IMPORT the response from the display screen present prior to the invocation of CARDX, you only need to depress the <CLEAR LEFT ARROW> keys. Export is fully described in the chapter on PRO-WAM operation.

When you invoke the CARDX application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and CARDX will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, CARDX will prompt you to select the data file via the message:

What cardfile <0-9> ?

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Your response, as noted, should be a number in the range 0-9. CARDX will search all disk drives for a file named CARD#/DAT (where "#" indicates your selection). When a CARD#/DAT file is found, it will be accessed and the first CARDX record, if any, will be displayed. If no file can be found identified as CARD#/DAT, you will be prompted to specify the drive which should be used to create a CARD#/DAT file via the prompt:

Create CARD#/DAT on what drive?

Respond with one of your available drives (0-7). A <BREAK> will terminate the request and cause CARDX to exit. If CARDX detects a DOS error when attempting to create the data file, you will receive an appropriate error message and CARDX will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the CARDX window will close and you will be returned to the interrupted application.

Once the CARD#/DAT file is created, the displayed window will show the record fields of the first record in the file, if any, and the CARDX commands which are available. When CARDX is waiting for a command entry, the cursor which is at the beginning of the list of available commands will be blinking [this cursor is shown as an underline "_" in the illustration which follows]. A filled in record appears as follows:

```
+-----+
|Thursday, February 28th, 1985|
|    Today Stacey, by herself, went to    |
|the silverware drawer and got a spoon to|
|eat the yogurt with that I gave her    |
|for lunch.                             |
|                                         |
|                                         |
|                                         |
|-----|
|[STACEY ] [02/28/85 14:28:37] [ 1]|
| This line is used to display messages!|
|   Add Card Delete Edit First Goto   |
| - Id  Last  Next  Prev  Search      |
+-----+
```

The commands permit a range of operations on the data records. A command is invoked by depressing the letter key noted by the first letter of the command word (the letter which appears capitalized). This may be entered in either upper or lower case. You can also invoke EXPORT of data when CARDX is waiting for a command. Data export permits you to pass a specified field or block

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of data from the displayed window to the environment interrupted when you invoked CARDX. More information on EXPORT can be found in the chapter on PRO-WAM operation. Details for each command follow:

Using prepared forms

It is easy to use CARDX as a small free-form data base; just enter your data onto the electronic cards. On the other hand, if you are interested in using CARDX to "fill in the blanks", then you can create a form with the CARDXF application and populate your CARDX data file with the prepared form.

Since CARDX makes use of reverse video character strings to protect them from editing, you can enter all field names and intervening spaces in reverse video except where you want the information placed during editing. Complete information on the preparation of such forms is included in the documentation on the CARDXF application.

ADD a record

If you are using CARDXF prepared forms and you have already prepared a "CARDFORM", CARDX will disable the ADD command. Under this circumstance, CARDX will display the message,

Function inhibited

Any keystroke will return you to the CARDX command menu. Use CARDXF's ADD command to add additional records. This ensures that the added records are initialized with the CARDFORM.

When you wish to add a record to your card file, specify this action by depressing the <A> key. You will be presented with a window display where the contents of each field are blank. CARDX will then automatically enter the EDIT command. The text field is the only field which can be edited with the entry of data. The ID field is managed via the <I>d command. The DATE and TIME fields are automatically handled by CARDX. If you decide that you do not want to add the record, just depress <BREAK>. CARDX will abort the addition and display whatever record was on the window at the time that ADD was invoked.

Rather than duplicate the procedures for entering your text, you are referred to the section entitled, "EDIT the currently displayed record".

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Print a 3 x 5 Index CARD

This command is used to print the contents of a record or the entire data file in a format suitable for 3" high by 5" wide Index Cards in continuous forms. When you invoke CARDX, you will be prompted to select the output option via the prompt:

<A>11, or >C<urrent?

If you want the entire data file printed, enter an <A>. If you want just the current record printed on the "card", enter the letter <C>. If you respond with no entry (by depressing just <ENTER>), the default of "Currently displayed card" will be selected. This default is indicated by the reversed angle brackets surrounding the letter "C" in the prompt. If you specify ALL records, any that have been marked with a "deleted" flag will not be printed; neither will a CARDFORM be printed, if it is present.

You will then be asked to select the printing format via the query:

Format? >

If you just depress the <ENTER> key, you will select the default format supplied with CARDX. This format is:

```
|
|
|Text line 1-----
|Text line 2-----
|Text line 3-----
|Text line 4-----
|Text line 5-----
|Text line 6-----
|Text line 7-----
|Text line 8-----
|Text line 9-----
|Text line 10-----
|Text line 11-----
|Text line 12-----
|
|[ID-----] [Date---- Time----] [Rec #]
```

The vertical lines are not part of the output but are only illustrated here to denote the beginning of a line. Note that there are 18 lines total. This format is tailored to 18 lines per card - the quantity of lines on a 3 x 5 Index Card at six lines per inch. Each line of data will also fit on a card printed at 10 characters per inch.

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The format is printed by CARDX according to a string of field and printing specifiers. The string corresponding to the default format is:

```
';;1;[3] [4 5] [2];;','CR
```

The contents of a particular field are printed when a string character is one of the field identifiers 1, 2, 3, 4, 5, or 6 [note, field 6 is currently unused]. A semicolon is interpreted as a logical carriage return. Any other character is interpreted as a character to print. A carriage return terminates the string without taking any printing action.

The text field [field 1] will always be output as 40-character rows terminated by a carriage return. There will be 12 rows output. Any protected character (i.e. one in reverse video) will not be printed; only the unprotected fields will be sent to the printer.

If you want to specify some other format, just enter a string of characters in response to the "Format?" prompt. A string of up to 48 characters may be entered. If you are interested in maintaining your own formats, why not keep the "strings" in a small text file? By doing that, you can interrupt the "Format?" prompt via a LIBEXEC to list your format text file then export the desired format string from the LIST display to CARDX to respond to the prompt for "Format ?". Another method would be to store the format strings in your PHRASE/TXT file and use the PHRASE application to access them. In that way, you can assign a 2-character mnemonic for quick access to each format string. You could also use a CARDX record and invoke a second CARDX window to export the string back to the "Format?" prompt. Another example of nested CARDX invocations shows up in the EDIT command documentation.

If you wish to abort printing at any time, just depress the <BREAK> key. When <BREAK> is detected, CARDX will output an immediate carriage return and return to await a command. The window will display the record being output at the time the <BREAK> was detected.

If the printer is not available during the printing operation, CARDX will display the error message,

Device not available

and terminate the CARDX command. CARDX will then return to await a new command.

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DELETE currently displayed record

This command is used to delete the record currently being displayed. If you are using CARDXF prepared forms and you are currently displaying the "CARDFORM", CARDX will disable the DELETE command. Under this circumstance, CARDX will display the message,

Function inhibited

Any keystroke will return you to the CARDX command menu. Use CARDXF's DELETE command to eliminate the CARDFORM (if that's what you want to do). This ensures that the CARDFORM form is not disturbed by CARDX.

You have to confirm your request by responding to the query:

Delete: <Y> to confirm?

Any response other than the letter <Y> will abort the delete operation and return to the command prompt to await a new command. If you confirm the deletion, it is marked by placing a character value of 255D in the first character position of the ID field. This indicates a "deleted mark". A record deleted in this manner is still displayed if you come to it while "scrolling" through the card file; however, it will not be printed during a "CARD" operation when ALL records are requested nor will it be matched during a SEARCH. If you examine position 255 in the CHARSET application display, you will be able to note the "deleted" mark character displayed by your computer. Deleted records can be permanently removed from the data file by requesting the "PACK" option during a sort of the data file via the PSORT utility provided with PRO-WAM.

It is perfectly acceptable to "un-delete" a deleted record by editing the ID field and replacing the "deleted mark" with an ID character. It is not possible to restore a deleted record after a PSORT operation where you have requested the "PACK" option - at least not with any utility provided with PRO-WAM!!!

EDIT the currently displayed record

EDIT is selected to enable you to enter additional text or modify the existing text of the current record. If you are using CARDXF prepared forms and you are currently displaying the "CARDFORM", CARDX will disable the EDIT command. Under this circumstance, CARDX will display the message,

Function inhibited

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Any keystroke will return you to the CARDX command menu. Use CARDXF's EDIT command to modify the CARDFORM (if that's what you want to do). This ensures that the CARDFORM form is not disturbed by CARDX.

When EDIT is invoked, the following message is displayed in the bottom portion of the window:

Edit: ^F to file; BREAK to abort

This is an aid to letting you know that there are two ways of escaping from the edit mode. One way is to enter <CONTROL-F> to file away your edited record. The other way is the depress the <BREAK> key which will abort the editing and return to await a new command. Also, a blinking cursor will appear in the first character position of the text area. All text is entered in what is termed overstrike mode. Any ASCII non-control character will overtype the character beneath the cursor and cause the cursor to advance by one position. The cursor will automatically skip over any character or string of characters displayed in reverse video. Such a string would have been prepared by the CARDXF application used to construct "forms". The following edit commands are available for your use:

Keystroke	Editing operation
<UP ARROW>	Move the cursor up one line
<DOWN ARROW>	Move the cursor down one line
<LEFT ARROW>	Move the cursor left one column
<RIGHT ARROW>	Move the cursor right one column
<SHIFT LEFT ARROW>	Move to the start of the line
<SHIFT RIGHT ARROW>	Move to the end of the line
<CONTROL-A>	Add [insert] a space and push the rest of the line right
<CONTROL-C>	Concatenate the next line to overstrike the position of the cursor
<CONTROL-D>	Delete the character under the cursor and move the trailing portion of the line left
<CONTROL-F>	File the changes
<CONTROL-S>	Split this line at the cursor and move the trailing text to a NEW next line
<BREAK>	Cancel the changes
<CLEAR LEFT ARROW>	Import data
<ENTER>	Move the cursor to the beginning of the next line

You can insert a character by first moving the cursor to the insertion position and then depressing <CONTROL-A> (for "add" of a character). The characters extending from that position through to the end of the line will be shifted right and a space

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will be inserted. You can then overstrike the space with the desired character. To delete a character, depress <CONTROL-D> (for "delete" a character). The character at the cursor position will be deleted and all trailing characters in the line will be shifted left to "take up the slack".

The line concatenate operation invoked by <CONTROL-C> will overstrike the characters from the cursor to the end of the line with the next line. The entire next line will be deleted and all lines to the bottom of the text will be bumped up by one line. If the next line is longer than the character positions remaining, the "overflowed" characters will be dropped. If you are aware that a concatenation of the next line will overflow and you do not want this to happen, you may want to split the next line into two pieces. See the split command, <CONTROL-S>.

The split-a-line operation invoked by <CONTROL-S> will divide up the current line into two lines. This is done by first moving all lines following the current line down by one line which opens up a blank line. Next, all of the characters from the cursor through to the end of the current line are shifted to the new blank line. The old last line of the text will be dropped.

When you have completed your edits, depress <CONTROL-F> to file them away. The DATE and TIME fields will automatically be updated to reflect "today's" system date and the current system "time". These two values are initialized by you when you power up your computer or otherwise change them via the system's DATE and TIME library commands. Don't forget that if you abort the editing by depressing the <BREAK> key, the record will be left as it was prior to invoking EDIT.

As a side note, the functions of cut and paste between records or within the same record may be easily achieved by a small sequence of steps. Open up the needed space via the split command - don't worry if the text that was to be cut and pasted has been dropped. Next, invoke the CARDX application recursively from the current edit mode. This will bring up a new invocation of card. Go to the record where the text is that you want to cut and paste. Invoke EXPORT and mark the block. This is the "cut" operation. It will be exported back to the prior CARDX session into the space you have opened. Of course, you must have opened up enough space to "paste" the exported text.

Position to FIRST record

This command is used to rapidly position to the first data record of the CARD#/DAT data file and display it.

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GOTO a designated card

This command is provided to enable you rapid access to a card by its card number. Depress the <G> key and you will be prompted for the record number via the message,

Goto record?

Enter the decimal number of the card record you wish to display. The card numbers are displayed in the right hand portion of the card status line.

Alter the ID field

If you are using CARDXF prepared forms and you are currently displaying the "CARDFORM", CARDX will disable the ID command. Under this circumstance, CARDX will display the message,

Function inhibited

Any keystroke will return you to the CARDX command menu. The ID field is used by CARDX and CARDXF to identify the form; it cannot be changed. This ensures that the CARDFORM form is not disturbed by CARDX.

The ID field can be changed by depressing the <I> key. You will see the prompt to enter the new ID field which is:

ID ?

You can enter up to eight characters. The BACKSPACE key [<LEFT ARROW>] can be used during your entry. Any lower case alphabetic characters will be capitalized when your entry is stored. This is to minimize field matching problems with external processing. When you terminate the ID with <ENTER>, it will update the ID field displayed in the window and automatically update the record's disk ID field as well. Note that <BREAK> will abort any changes.

Position to LAST record

This command is used to rapidly position to the last data record of the CARD#/DAT data file and display it.

Position to NEXT record

This command is used to display the next data record in your card file. You can also advance to the NEXT record by depressing the <DOWN ARROW> key.

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Position to PREVIOUS record

This command is used to display the previous data record in your card file. You can also position to the previous record by depressing the <UP ARROW> key.

SEARCH for a particular card

The SEARCH command is used to scan the data file starting at the record which follows the current record. The search string is entered in response to the query:

Search for? >

You can enter up to an 8-character string. If you enter a NULL string (i.e. <ENTER> by itself), the previous search string will be reused. The search string is not disturbed by intervening non-SEARCH commands. In this way, repetitive search commands can be invoked to display all records which match a single search string. The search string will be matched against each record until a match is found. The search is case insensitive. Both the text portion and the ID field will be compared to the search string. If your search string is a sub-string of the ID or text, the search will stop and that record will be displayed. The search will also stop at the last record.

If the string which you are searching is not located in any record, the message,

String not found

will be displayed. At this point, you need to depress the <ENTER> key to resume the operation of CARDX.

Sorting your CARD#/DAT file

You can sort your data file into ascending order according to the key string composed of the ID, DATE, and TIME fields by invoking the PSORT utility from DOS Ready. This is done via the command:

PSORT CARD#[/DAT] [pack]

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The optional parameter, "pack", is entered when you wish to remove the deleted records from your card file. The square brackets are not entered.

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Disk errors

If, by chance, CARDX detects an error in reading or writing your card file's records, it will display the DOS error message in the message line at the bottom of the window and then await an entry from the keyboard. This gives you an opportunity to read the error message. After you depress any key, CARDX will terminate its operation and return you to the program that was running when you invoked CARDX.

CARD#/DAT Technical Specifications

Each record is stored in 512 bytes starting with the third sector of the CARD#/DAT data file. The number of the record will be the logical record number of the record based on its LRL and is not a piece of data stored in the record. The record is fielded as follows:

Field Identifier	Field Label	Width	Record Location
2	Number	0	n/a
1	TEXT	480	020-1FF
3	ID	8	000-007
4	Date [YY/MM/DD]	8	008-00F
5	Time [HH:MM:SS]	8	010-017
6	reserved	8	018-01F

The first sector of the file contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). Other information used by PRO-WAM is as follows with the numbers in square brackets indicating the quantities fixed within the CARD#/DAT data file (relative byte contents are stored in standard low-order high-order format):

Relative	Contents
10H-11H	Logical Record Length [512D]
12H-13H	1st record of LRL treated as data [01D]
14H-15H	Relative location within each record used as the SORT key [0D]
16H	Length of the SORT key [24D]
17H	Type of key [0 = string]
18H-19H	Key mask [X'0000' = no mask]
FOH	Flag indicating ADD inhibit [0 or 1]

Note: The DATE field is stored in year-month-day sequence as it is part of the sort key. In this way, ascending ordering is performed properly. The date is displayed in month-day-year sequence in the window.

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CARDXF Forms Application

The CARDXF application is an adjunct to the CARDX filer and notepad application. CARDX was designed to provide a free-format text space of up to 480 characters of textual data. With CARDXF, you can turn that free-format text space into a fixed format field structured text screen. CARDXF allows you to prepare a form template and then populate a CARDX file with that designated "form". If you enter all non-field space in reverse video, CARDXF will automatically skip to the "fields" designated by the "form".

If you invoke CARDXF while you are actively in the CARD application and attempt to access the same CARD#/DAT data file, CARDXF will display the error message,

File already open

and pause awaiting a keystroke. Any response will abort CARDXF. The key point is that once a data file is open for access by a PRO-WAM application, other applications can concurrently access that data file but they are given only READ access privileges. Since all CARDXF's functions require writing or updating of the data file, this access would not be available. If you are currently operating CARDX and wish to add a few more records using the fixed format template, you must exit CARDX and then invoke CARDXF. Likewise, you probably should not invoke CARDX from CARDXF. If you wish to use CARDXF to prepare or edit a CARDFORM template in another data file not currently open to CARDX, you can do that without any restrictions.

When you invoke the CARDXF application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and CARDXF will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, CARDXF will prompt you to select the data file via the message:

What cardfile <0-9> ?

Your response, as noted, should be a number in the range 0-9. A <BREAK> will terminate the request and cause CARDXF to exit. CARDXF will search all disk drives for a file named CARD#/DAT (where "#" indicates your selection). If CARDXF detects a DOS error when attempting to open an existing CARD#/DAT data file, you will receive an appropriate error message and CARDXF will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the CARDXF window will close and you will be returned to the interrupted application.

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When a usable CARD#/DAT file is found, it will be accessed. CARDXF will then scan through the data file until it locates a record with the ID field of "CARDFORM". If such a record is not found, it will be automatically created; CARDXF will commence the edit mode.

If no file can be found identified as CARD#/DAT, you will be prompted to specify the drive which should be used to create a CARD#/DAT file via the prompt:

Create CARD#/DAT on what drive?

Respond with one of your available drives (0-7). A <BREAK> will terminate the request and cause CARDXF to return to the "What cardfile..." prompt. If CARDXF detects a DOS error when attempting to create the data file, you will receive an appropriate error message and CARDXF will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the CARDXF window will close and you will be returned to the interrupted application.

Once the CARD#/DAT file is created, a CARDFORM record will be automatically added; CARDXF will commence the edit mode.

The displayed window will show the current CARDFORM and the CARDXF commands which are available. A sample CARDXF screen appears as follows:

```
+-----+
|Name:   |
|Address:|
|Telephone:|
|Product:|
|        |
|        |
|        |
|        |
|        |
|        |
|        |
|-----|
|[CARDFORM] [06/17/87 09:05:35] [ 1]
|_Add_form Del_form Edit_form Keep-ADD
|  CARDXF: Copyright 1987 MISOSYS, Inc. |
+-----+
```

When CARDXF is waiting for a command entry, the cursor which is at the beginning of the commands list will be blinking [this cursor is shown as an underline "_" in the preceding illustration].

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There are four commands: one which permits you to populate the CARDX/DAT file with the displayed form template; another allows you to edit the current CARDFORM; two additional commands perform maintenance functions. A command is invoked by depressing the letter key noted by the first letter of the command word (e.g. the letter "A" which appears capitalized). This may be entered in either upper or lower case.

EDIT the currently displayed record

EDIT is selected to enable you to enter additional text or modify the existing text of the CARDFORM record. When EDIT is invoked, the following message is displayed in the bottom portion of the window:

Edit: ^F to file; BREAK to abort

This is an aid to letting you know that there are two ways of escaping from the edit mode. One way is to enter <CONTROL-F> to file away your edited record. The other way is the depress the <BREAK> key which will abort the editing and return to await a new command. Also, a blinking cursor will appear in the first character position of the text area. All text is entered in what is termed overstrike mode. Any ASCII non-control character will overtype the character beneath the cursor and cause the cursor to advance by one position. The following edit commands are available for your use:

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Keystroke	Editing operation
<UP ARROW>	Move the cursor up one line
<DOWN ARROW>	Move the cursor down one line
<LEFT ARROW>	Move the cursor left one column
<RIGHT ARROW>	Move the cursor right one column
<SHIFT LEFT ARROW>	Move to the start of the line
<SHIFT RIGHT ARROW>	Move to the end of the line
<CONTROL-A>	Add [insert] a space and push the rest of line right
<CONTROL-C>	Concatenate the next line to overstrike the position of the cursor
<CONTROL-D>	Delete the character under the cursor and move the trailing portion of the line left
<CONTROL-F>	File the changes
<CONTROL-R>	Toggle the state of reverse video
<CONTROL-S>	Split this line at the cursor and move the trailing text to a NEW next line
<BREAK>	Cancel the changes
<CLEAR LEFT ARROW>	Import data
<ENTER>	Move the cursor to the beginning of the next line

If you wish to enter characters protected from CARDX editing, simply toggle ON reverse video with <CONTROL-R>. The current state of reverse video will be displayed above the ID field. If reverse video is OFF, you will see the unbroken line of dashes. If reverse video is toggled ON, the word "REVERSE" will appear in reverse video. The <CONTROL-R> edit command is a toggle; if reverse is ON, <CONTROL-R> turns it OFF. Likewise, if reverse video is ON, <CONTROL-R> turns it OFF.

You can insert a character by moving the cursor to the insertion position and depressing <CONTROL-A> (for "add" of a character). The characters extending from that position through to the end of the line will be shifted right and a space will be inserted. You can then overstrike the space with the desired character. To delete a character, depress <CONTROL-D> (for "delete" a character). The character at the cursor position will be deleted and all trailing characters in the line will be shifted left to "take up the slack".

The line concatenate operation invoked by <CONTROL-C> will overstrike the characters from the cursor to the end of the line with the next line. The entire next line will be deleted and all lines to the bottom of the text will be bumped up by one line. If the next line is longer than the character positions remaining, the "overflowed" characters will be dropped. If you are aware that a concatenation of the next line will overflow

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and you do not want this to happen, you may want to split the next line into two pieces. See the split command, <CONTROL-S>.

The split-a-line operation invoked by <CONTROL-S> will divide up the current line into two lines. This is done by first moving all lines following the current line down by one line which opens up a blank line. Next, all of the characters from the cursor through to the end of the current line are shifted to the new blank line. The old last line of the text will be dropped.

When you have completed your edits, depress <CONTROL-F> to file them away. The DATE and TIME fields will automatically be updated to reflect "today's" system date and the current system "time". These two values are initialized by you when you power up your computer or otherwise change them via the system's DATE and TIME library commands. When you file the CARDFORM record, CARDXF sets a flag in the data file. CARDX will inhibit its ADD command if the flag is turned ON. This ensures that only CARDXF's ADD command is used to populate the data file with the form. You can remove this restriction with the KEEP_ADD command. Don't forget that if you abort the editing by depressing the <BREAK> key, the record will be left as it was prior to invoking EDIT.

ADD a form record

When you wish to add one or more records to your card file and also initialize the added record(s) with the cardform, specify this action by depressing the <A> key. You will be asked how many records you wish added by the prompt,

Add how many?

You may enter up to a three-digit decimal number. Terminate your entry with the <ENTER> key. After you have made your entry, CARDXF will automatically add that many records and fill each record with the form. The DATE and TIME fields are automatically handled by CARDXF which fills all added records with the current date and time. The ID field of the added records is left blank. If you decide that you do not want to add any records, just depress <BREAK>. CARDXF will abort the addition and then await another command.

Please note that there is no way to go back to an existing record and merge in the form. CARDXF can only insert the form into new records which it adds to the data file.

Creating a CARD form record.

It is easy to create a form to be used by CARDXF. Just invoke the edit facility and compose your form in the text window of the CARDFORM card. That's all there is to it.

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Since you may want to employ the concept of protected strings to construct a form template, let's look at a brief example. We can't print this screen in reverse video; we will indicate reverse video by characters in boldface. Here's a sample screen:

```
+-----+
|Name:   [                               ] |
|Address: [                               ] |
|Telephone: [   -   -   ]                |
|Product:  [                               ] |
|          [                               ] |
|          [                               ] |
|          [                               ] |
|          [                               ] |
|          [                               ] |
|          [                               ] |
|-----+
|[CARDFORM] [06/17/87 09:05:35] [   1] |
|_Add_form Del_form Edit_form Keep-ADD |
|_CARDXF: Copyright 1987 MISOSYS, Inc. |
+-----+
```

In addition to reverse video characters shown in boldface, if you also leave reverse ON while you enter spaces for all positions external to the bracketed fields, CARDX will automatically position to the next field position during editing. Note that this example places a single field on screen line. This has the advantage when editing a populated card with CARDX, that an <ENTER> will move the cursor to the next field. Alternatively, moving the cursor past the last position of a field will also advance to the next field. A little playing with these concepts should prove invaluable.

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Deleting a CARDFORM

If you wish to eliminate the CARDFORM record, CARDXF allows this with the DELETE command. You have to confirm your request by responding to the query:

Delete: <Y> to confirm?

Any response other than the letter <Y> will abort the delete operation and return to the command prompt to await a new command. If you confirm the deletion, it is marked by placing a character value of 255D in the first character position of the ID field. This indicates a "deleted mark". The second character position is also changed so that CARDX will no longer flag the record as a CARDFORM. A record deleted in this manner is still displayed if you come to it while "scrolling" through the card file; however, it will not be printed during a "CARD" operation when ALL records are requested nor will it be matched during a SEARCH. If you examine position 255 in the CHARSET application display, you will be able to note the "deleted" mark character displayed by your computer. Deleted records can be permanently removed from the data file by requesting the "PACK" option during a sort of the data file via the PSORT utility provided with PRO-WAM.

It is perfectly acceptable to "un-delete" a deleted record by editing the ID field and replacing the "deleted mark" with an ID character; however, you cannot convert the record back into a CARDFORM. It is not possible to restore a deleted record after a PSORT operation where you have requested the "PACK" option - at least not with any utility provided with PRO-WAM!!!

Keep CARDX's ADD command

The normal ADD operation when you are using a CARDFORM form prepared with CARDXF, is to populate your data file with form images only with the Add-form function. If you desire to be able to add records also with the ADD command of CARDX, use the KEEP command provided. This command will reset the "inhibit ADD command" flag. You will be prompted to confirm your request via the prompt,

Enter <Y> to keep CARDX's ADD

The affirmative response may be entered in either upper or lower case. If you respond in the affirmative, CARDXF will turn off the inhibit flag and then terminate.

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Computer Character Application

The CHARSET application saves you from having to resort to the computer documentation manual to determine the value of a particular displayed character. CHARSET displays the entire character set - all 256 different characters - right on the screen in its own window. You can build a string of characters while within CHARSET and have it output to the printer device. Of course CHARSET doesn't have bit-mapped printer support to enable your printer to display the special characters and graphics; however, you can take the string which you have built up and EXPORT it back to a program. This gives you the perfect convenience of writing, for instance, a BASIC program and getting the special characters into a PRINT string from CHARSET, rather than from digging in your manual. CHARSET works great also to just be able to convert one-byte hexadecimal numbers to their decimal equivalent, and vice versa.

When you invoke the CHARSET application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and CHARSET will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. Usually when you invoke CHARSET, the window is opened and you will be presented with a window display that looks something like this:

```

+-----+
| 0 1 2 3 4 5 6 7 8 9 A B C D E F |
| 0 ! " # $ % & ' ( ) * + , - . / 0 |
| 1 ¨ ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º |
| 2 ¡ ¢ £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² |
| 3 º ¹ º ¹ º ¹ º ¹ º ¹ º ¹ º ¹ º ¹ º |
| 4 º º º º º º º º º º º º º º º º |
| 5 P Q R S T U V W X Y Z [ \ ] ^ _ ` |
| 6 º º º º º º º º º º º º º º º º |
| 7 º º º º º º º º º º º º º º º º |
| 8 º º º º º º º º º º º º º º º º |
| 9 º º º º º º º º º º º º º º º º |
| A º º º º º º º º º º º º º º º º |
| B º º º º º º º º º º º º º º º º |
| C º º º º º º º º º º º º º º º º |
| D º º º º º º º º º º º º º º º º |
| E º º º º º º º º º º º º º º º º |
| F º º º º º º º º º º º º º º º º |
| 0 1 2 3 4 5 6 7 8 9 A B C D E F |
| => r 72 114 <= [ ] |
| ENTER Clear Delete Print Toggle |
+-----+

```

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CHARSET will have two blinking underline cursors. One will be positioned at the character position of value 0. The other will be positioned at the start of the "string" area which is at the bottom right of the window enclosed by square brackets "[]". The character cursor may be positioned throughout the screen via the arrow keys. <LEFT ARROW> will move it left one position with the first column wrapping around to the last column. The <RIGHT ARROW> key moves the character cursor to the right by one position with the last column wrapping to the first column. The <UP ARROW> will move the character cursor up one row with the top row wrapping to the bottom row. The <DOWN ARROW> will move the cursor down one row with the bottom row wrapping to the top row. You can move to the first or last column via the <SHIFT> <LEFT ARROW> and the <SHIFT> <RIGHT ARROW> keys. <SHIFT> <UP ARROW> will position you to character value zero while <SHIFT> <DOWN ARROW> will position you to character value 255.

Wherever the cursor is positioned is considered to be the "current" character. The bottom portion of the screen being pointed to by the arrowhead will duplicate the current character blinking with the cursor. The character will be displayed along with its character value in hexadecimal followed by its value in decimal. The current character can be added to the character "string" simply by depressing the <ENTER> key. The string cursor will then be advanced by one position. The string may contain up to eighteen characters. You can print the string (output to the printer device) by depressing the letter, <P>. The string can be cleared by depressing the letter, <C>. You can delete the last string character entered by depressing the letter, <D>. Repeated deletes will continue to delete string characters until no more remain (the same as <C>lear). Don't forget that you can EXPORT the string (or anything else on the window) back to the program environment which was interrupted when you invoked CHARSET. In this way, you can "build" up a string for use in a BASIC program PRINT statement or a C-program's PUTS() display function.

CHARSET allows you to toggle the display to the alternate character set by depressing the <T> key. This function actually switches your machine to the alternate set by sending a character value of 22 (decimal) to the display device. Note that all special characters currently displayed on the screen will be toggled to their alternate character display - even any in the string field.

DIALER Application

The DIALER application will maintain a small data file of records containing information useful for keeping a telephone list. The data items available within each DIALER record are identified in the following table:

Field Identifier	Field Label	Width	Permissible Entries
0	ID	8	20H-7FH
1	Telephone #	16	20H-7FH
2	Description	40	20H-7FH

The ID field is used to specify a key string for searching and sorting the records. The Telephone # is the string which specifies what is sent to the modem for autodialing purposes. This would, of course, also be the telephone number of the individual or entity identified by the record. The Description field gives you up to forty character positions for adding any note you need to maintain with the telephone record.

DIALER has a few commands that display a prompt message and expect a response. The response must be terminated via a depression of the <ENTER> key. During the input of the response, you can backspace over a mistyped character via the <LEFT ARROW> key. You can clear the entire response via <SHIFT LEFT ARROW>. You can cancel the request via the <BREAK> key. Finally, if you wish to IMPORT the response from the display screen present prior to the invocation of DIALER, you only need to depress the <CLEAR LEFT ARROW> keys. Export is fully described in the chapter on PRO-WAM operation.

When you invoke the DIALER application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and DIALER will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance.

When the window is opened, DIALER will next make sure that the COM/DVR serial driver is installed as this is required for autodialing purposes. If COM is not available, DIALER will beep twice then set an internal flag to inhibit dialing commands [Dial, Manual, and Prime]. This double beep is short. You may continue to use DIALER as a telephone list even though COM is unavailable. COM is a DOS facility which can be installed from "DOS Ready" by typing the command,

```
SET *CL COM/DVR
```

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Operating parameters of the serial port are altered by using the SETCOM command. Please consult your DOS manual for additional information. Remember, the *CL device must be active before DIALER will permit autodialing.

DIALER will search all disk drives for a file named DIALER/DAT which is used to contain the telephone list records. If you want to maintain more than one discrete telephone list file, just keep each one on a separate floppy disk. When a DIALER/DAT file is found, it will be accessed and the first four dialer records, if any, will be displayed. If no file can be found identified as DIALER/DAT, you will be prompted to specify the drive which should be used to create a DIALER/DAT file via the prompt:

Create DIALER/DAT on what drive?

Respond with one of your available drives (0-7). If DIALER detects a DOS error when attempting to create the data file, you will receive an appropriate error message and DIALER will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the DIALER window will close and you will be returned to the interrupted application.

Once the DIALER/DAT file is created, the displayed window will show the record fields and DIALER commands which are available.

When DIALER is invoked, it will send an initialization command string to your modem. The string consists of the modem's attention command followed by the "% " macro string. This initialization sequence may also be commanded any time you are in DIALER with the "Prime" command. The use of macros is discussed in the section entitled Concept of Autodialing which follows.

The autodialer application will support the automatic dialing of a number from any Hayes compatible modem. Your PRO-WAM disk also includes patch files (???????/FIX) which modify DIALER to support other modems. The README/TXT file should be consulted for information on these patches.

DIALER also provides a complement of commands which are used to maintain the telephone list(s). It will display a window such as the following sample window when DIALER opens the DIALER/DAT file and is ready for use:

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[ID]	[Phone Number]	[Description]
==>MISOSYS	703-450-4181	MISOSYS, Inc. Sterling, VA
COMPU	352-7500	Compuserve

Add Call Delete Edit First Input Last Macro Prime Search

The current record is identified by the arrow pointer "==">. Use the <UP ARROW> and <DOWN ARROW> keys to reposition this pointer to different records. When DIALER is waiting for a command entry, a cursor is blinking in the bottom portion of the window which displays the list of available commands. This cursor is noted in the illustration by the underline "_" to the left of "Add". The following commands are supported:

Command	Purpose of command
Add	Add a new entry
Call	Call the current entry
Delete	Delete the current entry
Edit	Edit the current entry
First	Position to first entry
Input	Input a number manually to call
Last	Position to last entry
Macro	Edit macro storage strings
Prime	Resend @ Macro sequence
Search	Search for a particular ID

These commands permit a range of operations on the data records. A command is invoked by depressing the letter key noted by the first letter of the command (the letter which appears capitalized in the menu). This may be entered in either upper or lower case. You can also invoke EXPORT of data when DIALER is waiting for a command. Data export permits you to pass a specified field or block of data from the displayed window to the environment interrupted when you invoked DIALER. More information on EXPORT can be found in the chapter on PRO-WAM operation.

Concept of Autodialing

Before we go in to the details on each command, it is best to provide an overview of the concepts associated with autodialing and the type of support offered by DIALER. To begin with, you may have noticed that DIALER provides a maximum field length of 16 characters for the telephone number. If you are using a long distance service or a PBX service which requires the entry of extra digits, you may not appreciate having only 16 positions for the storage of the telephone number. Well, we did not want to leave you out in the cold. DIALER supports 15 macro keys designated A, B, C, ... M, N, O. Each macro key can have up to 16

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characters associated with it. Thus, constant sequences of digits and codes can be stored as macros. For instance, you may be using a service which requires a local access number [i.e. 555-1234] to be followed up with a six-digit access code [i.e. 123456] after the second dial tone is detected. This can be coded, for instance, as macro-A using the string, "5551234,T123456". The comma happens to be the code used by the Hayes modem to wait for a second dial tone. The "T" indicates that tone dialing is to commence from that point on. Then prefix each record number using this service with "A".

If, by chance, you happen to be using a Hayes-compatible modem which uses a function letter or letters the same as a macro letter, just reserve a macro to have as its string, the letter needed by the modem. Say, for instance, that the letter "D" is needed. You could just edit macro-D to be the letter "D". Any letter that is part of a macro is transmitted to the modem. This means that macros do not nest.

One other operation that is significant is the initialization of your modem. When DIALER sends a character to the modem to initiate a call, it prefixes it with the three characters, "ATD". DIALER provides one additional macro that will always be sent to your modem whenever DIALER is invoked. Note that it is NOT sent to the modem each time a call is placed but ONLY when DIALER is invoked. This macro is designated as macro-@ for the purposes of editing; however, it never is entered into a telephone number string. Macro-@ could be used to set up the "P" required by pulse only telephone lines. It could also be used to set the wait-for-dial-tone time [i.e. S6=5]. We have provided the Prime command to send the macro-@ string to your modem at your discretion. This may be used, for instance, after you have entered or edited the macro string. For additional details concerning the dialing strings needed by your modem, consult your modem's owner's manual.

ADD a record

When you wish to add a record to your telephone file, specify this action by depressing the <A> key. You will be presented with a display where the arrowhead pointer is pointing to a blank record. The record is free form and the three field entries are treated as one long string. Just enter the proper information into the field positions marked by the descriptions within square brackets. You can use the same editing keys described for the Edit command. If you decide that you do not want to add the record, just depress <BREAK>. DIALER will abort the addition. When you are finished typing in the record, depress <CONTROL-F> to file away your addition. Note that depression of the <ENTER> key will also file the record.

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CALL the current entry

This command is used to autodial the record currently being pointed to by the arrow pointer. The message,

Dial complete, <H> to hangup

will be displayed as the number is dialed. As soon as you hear the ringing from the modem's speaker, you can lift the telephone receiver off hook and depress the "H" key to "hangup" the modem. Receipt of the <H> causes DIALER to send a RETURN to the modem; this causes a Hayes compatible modem to disconnect.

Note that if the COM driver (*CL device) is not available when you invoke DIALER, this command will be ignored. A beep will be emitted to remind you of this.

DELETE currently displayed record

This command is used to delete the record currently being displayed. You have to confirm your request by responding to the query:

Delete: <Y> to confirm?

Any response other than the letter <Y> will abort the delete operation and return to the command prompt to await a new command. If you confirm the deletion, it is marked in the following manner. A character value of 255D is placed in the first character position of the ID field and the record is filed. This indicates a "deleted mark". A deleted record is still displayed if you come to it while "scrolling" through the telephone list; however, a deleted record will not be matched during a SEARCH. If you examine position 255 in the CHARSET application display, you will be able to note the "deleted" mark character displayed by your computer. Deleted records can be permanently removed from the data file by requesting the "PACK" option during a sort of the data file via the PSORT utility provided with PRO-WAM.

It is perfectly acceptable to "un-delete" a deleted record by editing the 1st position and deleting the "deleted mark". It is not possible to restore a deleted record after a PSORT operation where you have requested the "PACK" option - at least not with any utility provided with PRO-WAM!!!

EDIT the currently displayed record

EDIT is selected to enable you to change any of the data in any field. When EDIT is invoked, the following message is displayed in the bottom portion of the window:

Edit: ^F to file; BREAK to abort

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This is an aid to letting you know that there are two ways of escaping from the edit mode. One way is to enter <CONTROL-F> to file away your edited record. The other way is the depress the <BREAK> key which will abort the editing and return to await a new command. Also, a blinking cursor will appear in the first character position of field zero (ID). All text is entered in what is termed overstrike mode. Any ASCII non-control character will overtype the character beneath the cursor and cause the cursor to advance by one position. The following edit commands are available for your use:

Keystroke	Editing operation
<LEFT ARROW>	Move the cursor left one column.
<RIGHT ARROW>	Move the cursor right one column.
<SHIFT LEFT ARROW>	Move to the start of the line.
<SHIFT RIGHT ARROW>	Move to the end of the line.
<CONTROL-A>	Add [insert] a space and push the rest of line right.
<CONTROL-D>	Delete the character under the cursor and move the trailing portion of the line left by one column.
<CONTROL-F>	File the changes.
<BREAK>	Cancel the changes.
<CLEAR LEFT ARROW>	Import data.
<ENTER>	Same as <CONTROL-F>

You can insert a character by first moving the cursor to the insertion position and then depressing <CONTROL-A> (for "add" of a character). The characters extending from that position through to the end of the line will be shifted right and a space will be inserted. You can then overstrike the space with the desired character. To delete a character, depress <CONTROL-D> (for "delete" a character). The character at the cursor position will be deleted and all trailing characters in the line will be shifted left to "take up the slack". The <LEFT ARROW> and <RIGHT ARROW> keys will reposition the cursor across the record.

When you have completed your edits, depress <CONTROL-F> to file them away. Don't forget that if you abort the editing by depressing the <BREAK> key, the record will be left as it was prior to invoking EDIT.

INPUT a number manually to call

This command will allow you to use the modem's dialing facility to dial a number which you manually type in (or import from a previous screen). DIALER will prompt you for the number via the message:

Number to dial ?

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You can enter up to a maximum of 16 characters. Macro keys are acceptable as part of the input. Note that if the COM driver (*CL device) is not available when you invoke DIALER, this command will be ignored and a beep will be emitted.

Position to FIRST record

This command is used to rapidly position to the first data record of the DIALER/DAT data file and display it.

Position to LAST record

This command is used to rapidly position to the last data record of the DIALER/DAT data file and display it.

MACRO key editing

When you want to change the contents of a macro key or keys, use this command. It will display the prompt,

Edit macro < @ - 0 > ?

If you want to edit the string which is always output to the modem each time DIALER is invoked, enter the "@". The string will be presented for your editing convenience. You can select any of the other 15 macros for editing by depressing the appropriate letter key, "A" through "O". The string is edited via overstrike; however, you can move the cursor to each position via the <LEFT ARROW> or <RIGHT ARROW> keys. You can also move to the extremes of the code name field via the <SHIFT> <LEFT ARROW> and <SHIFT> <RIGHT ARROW> keys. File changes via <ENTER> or <CONTROL-F>. A <BREAK> will abort any changes and return you to the DIALER command mode.

Position to next record

This command is used to display the next data record in your telephone list file. You advance to the NEXT record by depressing the <DOWN ARROW> key.

Position to previous record

This command is used to display the previous data record in your telephone list file. You position to the previous record by depressing the <UP ARROW> key.

Prime the modem

This command can be used to resend the "@" macro string to the modem. It is useful if you wish to re-initialize the modem after altering the macro-@ text string. Note that if the COM driver

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(*CL device) is not available when you invoke DIALER, this command will be ignored; but you will not receive a beep.

SEARCH for a particular record

The SEARCH command is used to scan the data file starting at the record which follows the current record. The search string is entered in response to the query:

Search for? >

You can enter up to an 8-character string. If you enter a NULL string (i.e. <ENTER> by itself), the previous search string will be reused. The search string is not disturbed by intervening non-SEARCH commands. In this way, repetitive search commands can be invoked to display all records which match a single search string. The search string will be matched against each record until a match is found. The ID field of the record is a single 8-character key field. If your n-character search string matches the first n characters of the ID field, the search will stop and that record will be displayed. The search will also stop at the last record.

Sorting your DIALER/DAT file

You can sort your data file into ascending order according to the key string ID field by invoking the PSORT utility from DOS Ready. This is done via the command:

PSORT DIALER[/DAT] [Pack]

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The optional parameter, "Pack", is entered when you wish to remove the deleted records from your dialer file. The square brackets are not entered.

Disk errors

If, by chance, DIALER detects an error in reading or writing your dialer file's records, it will display the DOS error message in the message line at the bottom of the window and then await an entry from the keyboard. This gives you an opportunity to read the error message. After you depress any key, DIALER will terminate its operation and return you to the program that was running when you invoked DIALER.

DIALER/DAT Technical Specifications

Each record is stored in 64 bytes starting with the third sector of the DIALER/DAT data file. The record is composed as follows:

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Field Identifier	Field Label	Width	Record Location
0	ID	8	000-007
1	Telephone #	16	008-017
2	Description	40	018-03F

The second file sector stores the 16-byte macro strings. The first file sector contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). Other information used by PRO-WAM is as follows with the numbers in square brackets indicating the quantities fixed within the DIALER/DAT data file (relative byte contents are stored in standard low-order high-order format):

Relative	Contents
10H-11H	Logical Record Length [64D]
12H-13H	1st record of LRL treated as data [08D]
14H-15H	Relative location within each record used as the SORT key [0D]
16H	Length of the SORT key [08D]
17H	Type of key [0 = integer]
18H-19H	Key mask [X'0000' = no mask]

Note: DIALER can be invoked from the COMM program provided with your DOS; however, if you do this while you are receiving a character string from the communications line, any characters received by the modem while you are in DIALER will be lost. Thus, DIALER should be used from COMM only when you get into COMM and want to dial a communications link number.

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DOLOAD Application

The DOLOAD application will allow you to load a previously saved video screen display from a disk file into the video screen. Such a file may have been generated as 24 80-byte strings, each terminated by a carriage return, by the DOSAVE application. Why would you want to do such a thing? Well, the best reason would be to directly gain access to a video screen file which was previously saved by either the DOSAVE or VED applications (VED is part of the Mister ED application pac). After access is easily achieved, the image or a portion of the image could be exported back to the application or program interrupted when DOLOAD was invoked.

When you invoke the DOLOAD application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and DOLOAD will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, DOLOAD will prompt you to enter a file specification via the prompt,

Filespec?

The screen image that was saved in the disk file will be copied to the video screen. DOLOAD will then automatically terminate and enter the EXPORT mode of PRO-WAM. Thus, you then can conveniently mark a rectangular area of the display for export back to the interrupted program. Don't forget that if you abort the export mode by depressing the <BREAK> key, PRO-WAM will return to the previously interrupted program as if export had not been invoked.

There are two ways of controlling what PRO-WAM does at the end of each exported line depending on how you mark the closure of the rectangle. If you close the rectangle via the <ENTER> key, a carriage return will be added to the "input" at the end of each marked line. This carriage return will be appended regardless of whether the marked rectangle is one or more lines. If the rectangle is closed by the depression of <SHIFT ENTER>, then the line is input from the beginning mark to the ending mark in a continuous stream; no carriage returns are added by PRO-WAM.

The rectangle is defined by the two points making up its northwest to southeast diagonal. These two points may be marked in the following manner:

1. Position the cursor to the upper left corner of the rectangle which will contain the information. The four arrow keys, <LEFT>, <RIGHT>, <UP>, and <DOWN>, will move the cursor around the screen.

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2. Depress <CONTROL B> to mark the beginning of the rectangle block. The character under the cursor will be replaced on the screen with a left square bracket which indicates the marked position. Don't worry about the bracket displayed; the correct character will be provided as input.
3. Position the cursor to the lower right corner of this rectangle again using the four arrow keys. This position may be on the same display row as the beginning mark.
4. Depress the <ENTER> or <SHIFT ENTER> key to mark the end of the marked block. This now defines the rectangle. The export will commence. The export function may be aborted anytime prior to marking the end of the rectangular block simply by depressing the <BREAK> key.

DOSAVE Application

The DOSAVE application will allow you to save the 80 column by 24 row video screen display into a disk file as 24 80-byte strings, each terminated by a carriage return.

When you invoke the DOSAVE application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and DOSAVE will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, DOSAVE will prompt you to enter a file specification via the prompt,

Filespec?

The screen image that existed prior to the display of the DOSAVE window will be copied to the disk file which was specified in response to the prompt.

Although the DOSAVE application may appear simplistic, it is nevertheless useful in certain situations. If you think about it, it could be useful to capture a large screenful of data from one application for input to another. The disk file would then be used as a temporary holding file. These saved screen images can be restored to a window by the DOLOAD application. Combining both the functions of DOSAVE and DOLOAD as well as the facilities of export, the combination serves well as the familiar cut and paste operation between programs.

Address Heading Application

The HEAD application accesses the ADDRESS/DAT data file and presents selected information from the address record in a format more useful for exporting to a word processor being used to prepare a letter. HEAD provides no data maintenance functions; it provides commands only to move about the data file and search for designated records.

HEAD has a few commands that display a prompt message and expect a response. The response must be terminated via a depression of the <ENTER> key. During the input of the response, you can backspace over a mistyped character via the <LEFT ARROW> key. You can clear the entire response via <SHIFT LEFT ARROW>. You can cancel the request via the <BREAK> key. Finally, if you wish to IMPORT the response from the display screen present prior to the invocation of HEAD, you only need to depress the <CLEAR LEFT ARROW> keys. Import is fully described in the chapter on PRO-WAM operation.

When you invoke the HEAD application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and HEAD will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, HEAD will search all disk drives for a file named ADDRESS/DAT. If you want to maintain more than one discrete address list file, just keep each one on a separate floppy disk. When an ADDRESS/DAT file is found, it will be accessed and the first address record, if any, will be displayed. If no file can be found identified as ADDRESS/DAT, HEAD will display the error message,

File not in directory

and pause, awaiting a keystroke. This gives you an opportunity to read the error message. Depress <ENTER> and HEAD will terminate and return to the interrupted program.

Once the HEAD/DAT file is accessed, the displayed window will show the record fields and HEAD commands which are available. The screen will display five lines. The first line will display the Company field entry, if any. The second line will display The First and Last name fields, eliminating any trailing blanks in excess of one. The third line displays the address1 field. If a address2 field is non-blank, it will become the fourth displayed line and the City-State-ZIP fields will be the fifth line; otherwise they will be the fourth line. This keeps the actual data lines contiguous for useful automatic export. An example of a filled in record appears as follows:

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```
+-----+
| MISOSYS, Inc
| Roy Soltoff
| PO Box 239
| Sterling, VA 22170-0239
|-----+
| This line is used to display messages!
| ==> ENTER First Last Next Prev Search
|-----+
```

When HEAD is waiting for a command entry, the arrowhead which points to the list of available commands will be blinking. These commands permit a range of operations on the data records. A command is invoked by depressing the letter key noted by the first letter of the command (the letter which appears capitalized). This may be entered in either upper or lower case. You can also invoke EXPORT of data when HEAD is waiting for a command. Data export permits you to pass a specified field or block of data from the displayed window to the environment interrupted when you invoked HEAD. More information on EXPORT can be found in the section on PRO-WAM operation. Details for each command follow:

ENTER automatic export

The <ENTER> key is used to automatically export the address heading displayed in the window. HEAD will calculate the northwest corner for export purposes; this will be the first character of the row displaying text data. The southeast corner will be calculated as the last row which contains data and the rightmost column of the five rows which contain data. Export will be activated as if you had manually entered the export mode, positioned the start and end cursors accordingly, and then depressed <ENTER>.

All rows which contain data will be export. If you want to delimit the rectangular array of data to export yourself, you can always explicitly enter the export mode via <CLEAR RIGHT ARROW>.

Position to FIRST record

This command is used to rapidly position to the first data record of the ADDRESS/DAT data file and display it.

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Position to LAST record

This command is used to rapidly position to the last data record of the ADDRESS/DAT data file and display it.

Position to NEXT record

This command is used to display the next data record in your address data file. You can also advance to the NEXT record by depressing the <DOWN ARROW> key.

Position to PREVIOUS record

This command is used to display the previous data record in your address data file. You can also position to the previous record by depressing the <UP ARROW> key.

SEARCH for a particular record

The SEARCH command is used to scan the data file starting at the record which follows the current record. The search string is entered in response to the query:

Search for? >

You can enter up to a 24-character string. If you enter a NULL string (i.e. <ENTER> by itself), the previous search string will be reused. The search string is not disturbed by intervening non-SEARCH commands. In this way, repetitive search commands can be invoked to display all records which match a single search string. The search string will be matched against each record until a match is found. The LAST and FIRST fields of the record will be considered as a single 25-character key field. If your search string is a sub-string of the record's key, the search will stop and that record will be displayed. The search will also stop at the last record. If a record cannot be found which matches up with your search string, the message,

Record not found

will be displayed and the current record will remain in the window.

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Sorting your ADDRESS/DAT file

You can sort your data file into ascending order according to the key string composed of the LAST and FIRST fields by invoking the PSORT utility from DOS Ready. This is done via the command:

```
PSORT ADDRESS[/DAT] [pack]
```

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The optional parameter, "pack", is entered when you wish to remove the deleted records from your address file. The square brackets are not entered.

Note that if you alter the values of the key field's SORT key, these new values will be used by HEAD for it's SEARCH command. This allows you to, for instance, change the SORT key to the COMPANY field, then search for records by company name rather than "last-first". You could also change the SORT key information to designate the ZIP code field; this would allow you to organize your address data "alphabetically" by ZIP code, assuming you re-sorted the file. Information on the key field's location is discussed in the ADDRESS Application section.

Disk errors

If, by chance, HEAD detects an error in reading your address file's records, it will display the DOS error message in the message line at the bottom of the window and then await an entry from the keyboard. This gives you an opportunity to read the error message. After you depress <ENTER>, HEAD will terminate its operation and return you to the program that was running when you invoked HEAD.

PHRASE Application

The Key Stroke Multiplication (KSM) feature of your DOS provides a facility whereby pre-assigned character strings may be substituted for the single keystroke combination of <CLEAR SHIFT ?>, where "?" represents any of the twenty six characters <a-z>. KSM is a powerful macro facility; but it has its drawbacks. It provides for only twenty six distinct macro strings; it takes up resident memory space. On the other hand, since it resides in memory, it's quite fast.

PHRASE is a compromise between speed and flexibility. It allows you to gain access to hundreds of macro strings stored in a text file. You assign a unique 2-character mnemonic to each string which is used to speed up the operation of fetching the macro. On the other hand, since the strings are stored on disk, the access will certainly be slower than KSM. Of course, since the strings are stored in a plain text file (which may be edited by our TED application available in the Mister ED application pac), you have the potential for being able to easily alter the macro strings - even while you use them.

When you invoke the PHRASE application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and PHRASE will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, PHRASE will search all disk drives for a file named PHRASE/TXT. When a PHRASE/TXT file is found, it will be accessed and the first macro string, if any, will be displayed. If no file can be found identified as PHRASE/TXT, PHRASE will display the error message,

File not in directory

and pause, awaiting a keystroke. This gives you an opportunity to read the error message. Depress <ENTER> and PHRASE will terminate and return to the interrupted program.

The PHRASE window will show a single phrase and the 2-character mnemonic you assigned. Here's an example of this window:

```
|This is in response to your letter of      |
|re      -                                  |
+-----+
```

PHRASE is very terse on commands. You can manually scroll through the file of phrases using the <UP ARROW> and <DOWN ARROW> keys. The first and last phrases may be displayed by depressing the <SHIFT UP ARROW> or <SHIFT DOWN ARROW> keys respectively. All other control codes (except backspace) will be ignored. Any other keystroke will be interpreted as either the

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first or second letter of a phrase mnemonic. The <LEFT ARROW> key can be used to backspace and delete a keystroke entered as the first character of a mnemonic. Finally, <ENTER> will automatically export the phrase displayed in the window. Here's a table which summarizes these commands:

Keystroke	Command function
<UP ARROW>	scroll to previous phrase
<DOWN ARROW>	scroll to next phrase
<SHIFT UP ARROW>	position to first phrase
<SHIFT DOWN ARROW>	position to last phrase
<ENTER>	export the displayed phrase
<non-control>	mnemonic character

Format of PHRASE/TXT file

The phrase file is a plain text file composed of any number of phrases. Each phrase consists of a 2-character mnemonic followed by a text string of from one to seventy eight characters. The phrase is terminated by a <ENTER> (character code 13 decimal). This is symbolized as follows:

[2-character mnemonic][text 1-78 characters][<ENTER>]

PHRASE uses a period, ".", which occupies the first position of a mnemonic to indicate the end of the file. This character must be present or PHRASE will display garbage for the LAST macro string.

Speeding of PHRASE access

Here's a hint to give you easier access to PHRASE. Why not set aside one of your KSM strings to invoke PHRASE. All you need do is establish the KSM string as,

<CTRL-P><F3>PHRASE;

where "<CTRL-P>" is your PRO-WAM activation code, <F3> is the 83H value of the function key, and the semicolon, ";", is the logical ENTER character for the DOS keystroke multiplication feature. KSM must be installed prior to PRO-WAM in the keyboard device. Since the first two characters are not ASCII, you will need to use a text editor such as LS-LED or PRO-SAID to create the KSM text. An experienced DOS user should be able to find other methods of preparing such a KSM file.

Phrase macro strings

The phrase macro strings may be longer than seventy eight characters; however, only the first 78 will be displayed and exported for phrase strings longer than 78. Since PRO-WAM supports the use of a logical carriage return for export, you may make use of this capability when preparing your macro strings to have your phrase export as multiple lines. For example, assuming that the backslash character is used as the logical ENTER character, the phrase,

```
"\Sincerely,\\\\\\Roy Soltoff\"
```

will be exported as seven lines depicted as follows (a vertical bar, "|", indicates the start of each line):

```
|
|Sincerely,
|
|
|
|
|Roy Soltoff
```

Any character value greater than or equal to SPACE may be usable as either character of a mnemonic. This includes SPACE; special characters such as "@", "\$", "*", and "?"; alphanumerics "A-Z", "a-z", "0-9"; as well as extended characters (non-ASCII values). Since a period is reserved to indicate the end of the phrases, you cannot use a "." as the first character of a mnemonic. This permits a wide latitude in the assignment of mnemonics so that you can assign one which is meaningful for the phrase to which it associates. However, it is recommended that you avoid using non-ASCII characters since their screen display varies with the state of the DOS video driver: compressed spaces versus special characters; special characters versus extended characters; reverse video versus normal video.

Exporting a phrase

PHRASE will always be displaying a phrase in its window. The phrase, up to the last non-blank character displayed, is easily exported simply by pressing the <ENTER> key. If you wish to export only a piece of the phrase, you can manually invoke the EXPORT mode via <CLEAR RIGHT ARROW>. Then perform the export as you would normally. Remember that EXPORT does not add an <ENTER> to the phrase if the export is terminated with <SHIFT ENTER>. This is the approach used by PHRASE for its automatic export when you press <ENTER>.

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RPN Calculator Application

The RPNALC application provides a standard four-function (add, subtract, multiply, and divide) reverse polish notation 16-bit "programmer's calculator with three additional logical operators. You can calculate in decimal, in hexadecimal, in octal, or in binary. The calculator provides you with a string field for making entries and another for displaying the results of a calculation or series of calculations.

When you invoke the RPNALC application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and RPNALC will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, you will be greeted by a display which looks like the following screen presentation:

```

+-----+
| [ this is for your entry string ] |
|                                     |
| [ your result is displayed here ] |
|   * : Mul      & And      C D E F |
|   /  Div      | Or      8 9 A B |
|   + ; Add      ^ Xor      4 5 6 7 |
|   -   Sub      0 1 2 3 |
+-----+

```

The RPN calculator supports the following four types of numbers:

Syntax	Number type
bbbbB	binary
ooooO	octal
ddddD	decimal (default)
xxxxH	hexadecimal

The seven operators at your disposal are selected by entry of the following single keystrokes:

Key	Mathematical operation
*	Multiplication
/	Division
+	Addition
-	Subtraction (negation is not supported)
&	Bitwise AND
	Bitwise OR
^	Bitwise XOR

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You may enter the multiplication operator in lower case [i.e. the colon] or the addition operator in lower case [i.e. the semi-colon].

The result is obtained by entry of an equals sign "=" which must be entered with the <SHIFT> key as the unshifted keystroke is a minus sign. The entry string is terminated with an <ENTER>. The default output base will be decimal. If you wish to output the answer in any base other than decimal, follow the "=" with a "b", "o", or an "h" to specify binary, octal or hexadecimal respectively. Any numeric entry can also be entered in something other than decimal by appending the base suffix to the number string [i.e. 1a9h]. Entering a period will cause the last result to be substituted.

The calculator fully supports both EXPORT and IMPORT. Thus, your input string could be imported from some other program or application with the result being exported back to the program.

Examples

The following examples illustrate sample calculations.

Example 1:

Multiply the hexadecimal number 22 by the binary number 1111, add the decimal number 2, then output the result in octal.

22h 1111b * 2 + =o<enter>

The result will be shown as "001000" in the result field.

Example 2:

Output the result of example 1 but in binary:

. =b

The result will be shown as, "00000010 00000000".

A Mini-Terminal

The terminal application is a very simple terminal program. It requires the use of the COM/DVR serial driver installed as the "*CL" device. The only input filtering performed is the conversion of a form feed [X'OC'] into a clear screen function. The only output filtering is the conversion of the <BREAK> key to a modem break.

When you invoke the TERM application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and TERM will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, TERM will next make sure that the COM/DVR serial driver is installed as the "*CL" device as this is required for communications purposes. If COM is not available, TERM will beep twice then abort.

COM is a DOS facility which can be installed from "DOS Ready" by typing the command,

```
SET *CL COM/DVR
```

Operating parameters of the serial port are altered by using the SETCOM command. Please consult your DOS manual for additional information. Remember, the *CL device must be active before TERM can be utilized.

TERM is the only application supplied with PRO-WAM that does not use the <BREAK> key to exit the application. That's to permit <BREAK> to emit a modem break to the communications line. TERM will only respond to a command of <CLEAR SHIFT => to exit. This is the same keystroke combination as used in the COMM communications program supplied with your DOS.

Since TERM is a PRO-WAM application, it can be used from practically any program; thus, you have terminal communications capability available at the touch of a button.

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Things TODO Tickler File

TODO maintains a data file of things to be done by up to 15 different people. The TODO window is essentially an electronic scratch pad where things to be done can be entered and displayed in the application's window. This is sometimes called a "tickler" file. However, in contrast to the sensitivity of display-by-date supported in the BRINGUP application, TODO is conceptualized as one master list which you can scroll through. The only limit to the number of total things that can be stored is the allowable disk file size on your disk. TODO does attach the system date to an entry so you can determine the age of an entry and supports a 16-year range of dates [01/01/84 through 12/31/99]. Each thing to do entry contains the following items:

Field	Description of Intended Use
Priority	Used to denote a todo priority <1-8>
Who	Used to indicate who does the thing <0-15>
Date	The current date automatically added
Text	Describes the record's activity (29 chars)

When you invoke the TODO application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and TODO will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time which is a very rare instance. When the window is opened, TODO checks for a file named, TODO/DAT. If it is found, TODO will use the records in that file. If one is not found, TODO will prompt you for the disk drive number to create the data file via the prompt:

Create TODO/DAT file on what drive?

Respond with one of your available drives (0-7). A <BREAK> will terminate the request and cause TODO to exit. If TODO detects a DOS error when attempting to create the data file, you will receive an appropriate error message and TODO will pause awaiting an <ENTER>. This lets you read the error message. After depressing <ENTER>, the TODO window will close and you will be returned to the interrupted application.

Once the TODO/DAT file is created, TODO will present its standard display screen. The screen will always show the current date in the lower right portion of the display. TODO will turn on the time-clock feature of the DOS. The time clock will normally be displayed in the top window border as illustrated in the window facsimile below. The time will be displayed during the duration of TODO's operation. If you nest to another application from TODO, the time-clock will remain visible until you exit from TODO [note: if the clock was on when TODO was invoked, it will remain on when you exit TODO]. A blinking cursor

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pointer, ">", will be positioned on the screen pointing to "the current thing". This may be positioned up or down via the <UP ARROW> or <DOWN ARROW> keys. In addition, the status line will display the code name assigned to the "who does it" field of the current thing to do assuming a code name has been entered and stored with the CODE command.

The format of a thing's display is PRIORITY, followed by WHEN it was done, followed by the DATE that the thing was entered (so you can tell how long it's been on your list) followed by the TEXT which describes the thing. All of the things for the record displayed will appear in the exact position they were entered unless the data file has been sorted. The following is a replica of the TODO display window.

```
-----HH:MM:SS-----  
> 1 01 01 06/26/87 TMQ statements for LB  
  
  
  
  
  
  
  
  
-----Wed, Mar 13, 1985-----  
This line is used to display messages!  
Add Code Done File List Next Prev
```

Anytime a prompt does not appear in the status line, `TODO` is awaiting a command. The commands available to you are displayed at the bottom of the window. These commands are:

Command	Purpose of Command
ADD	Add an item to do
CODE	Edit the name associated with a "who" code
DONE	Delete the current thing
FILE	Write todo list record changes to disk
NEXT	Advance to the next display record
PREV	Step back to previous display record
LIST	Print someone's or all things to do

In addition, <BREAK> will exit the application. <CLEAR RIGHT ARROW> will invoke EXPORT of data while <CLEAR LEFT ARROW> invokes import of data. The functions of both IMPORT and EXPORT are fully described in the chapter on PRO-WAL operation.

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ADD Thing To Do

ADD is the means by which things to do are added to your todo data file. If the window cursor is positioned to a blank row, the thing will be added in that position; otherwise, the thing will be added to the first blank row of the current screen record. If all eight rows of the window screen are filled, TODO will automatically add the thing to do entry to the first unused position in the data file.

ADD will prompt you first for the priority via the prompt:

Priority <1-8> ?

This may be used by you to indicate how "hot" is the item. You may use the field as you see fit. The priority is a number from 1 to 8. If you enter any character other than a number in the range 1 to 8, you will be reprompted for the entry. A <BREAK> will abort the addition.

Next you will be asked to enter a code which designates who should be doing the item. This prompt is,

Who for <0-15> ?

As shown, you have a range of 16; however, a code of "0" is a special case; it is used to indicate that the thing to do entry belongs to everyone. This "who" code provides one file the capability of maintaining 15 separate todo lists. The LIST command, used for printing the todo list, has the capability of printing all things to do or just those assigned to a single code [1-15]. Code 0 things to do will always print along with each other code when a single code selection is made. If you enter any character other than a number in the range 0 to 15, you will be reprompted for the entry. As in the priority response, a <BREAK> will abort the addition.

Next you will be asked to enter the text associated with the thing to do. You can enter a string of up to 29 characters to describe the thing to do. As before, if you depress <BREAK> in response to the text query, it will abort the addition.

When you complete the addition, the message, "Changes to file", will be displayed to the left of the current date if it hasn't already been displayed from an earlier addition. This message indicates that the addition will not be stored until a FILE command is invoked. Thus if you exit from TODO without filing your changes [you will be prompted if there are changes to be filed], then the additions will not become permanent. Please note, however, that if you attempt to scroll to another todo screen record via NEXT or PREV, you will be prompted to file your changes via the prompt,

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File your changes <Y,N> ?

A "y" response indicates that changes made to the current record display will be filed; the scroll command will be aborted. If you respond with "N", any changes you have made to the record display will be eliminated and the scroll command will be performed.

CODE a To Do Name

TODO provides 15 distinct code numbers for you to designate who is supposed to do a particular item. This command allows you to associate a 16-character string with each code number. You also can assign a character string for code 0. These strings are termed "code names".

When you invoke the CODE command, it will ask you for the code number you want to assign a code name with the prompt,

Who for <0-15> ?

After you enter a number in the range requested, the existing code name string will be displayed to the right of your response. The string is edited via overstrike; however, you can move the cursor to each position via the <LEFT ARROW> or <RIGHT ARROW> keys. You can also move to the extremes of the code name field via the <SHIFT LEFT ARROW> and <SHIFT RIGHT ARROW> keys. File changes via <ENTER> or <CONTROL-F>. A <BREAK> will abort any changes and return you to the TODO command mode.

DONE a thing to do

When you have completed the thing you were to do, use this command to delete that thing. You must position the window cursor to point to the thing you wish to eliminate by NEXT/PREV commands and/or ARROW commands; then use the DONE command to remove it from the window screen. The message, "Changes to file", will be displayed to the left of the current date. This indicates that the deletion will not be stored until a FILE command is invoked. Note that nothing prevents you from deleting a thing which you haven't yet done; honesty is the best policy.

FILE Changes

This command will update your bringup file with all changes made to the current screen record. The message, "Changes to file", will be removed.

LIST Activities

LIST can be used to print all todo things or just those associated with a particular "who" code. You can further limit the printing to just those things displayed in the current screen. The LIST command will prompt you for your print screen selection and the "who" range via the prompt:

List <Aww>ll or >Cww<current?

Although the prompt may appear garbled, its intent is to convey all of the selection options. Actually, a little description will eliminate the apparent garble. If you want the entire data file printed, enter an <A>. If you want the output to be limited to all things corresponding to a particular "who" code, enter an <A> followed by the two-digit code for whom you want to limit the output. For instance, if you want to print things to do for all screen records associated with code 3, enter the three characters "A03" followed by <ENTER>. If you just want the current screen record printed, enter the letter <C>. If you respond with no entry (by depressing just <ENTER>), the default of CURRENT and "who = all" will be selected. This default is indicated by the reversed angle brackets surrounding the letters "Cww" in the prompt.

Here's some more examples of list entries:

Entry	Interpretation of Entry
-----	-----
c00	All things from current screen
C	All things from current screen
A02	All things for code 00 and 02
A	All things from all records

If you have not restricted the listing to a particular code (i.e. by not entering a non-zero "ww" field, the code name associated with the "who does it" field of a listed thing to do will precede the data associated with the listing. Thus, a "global" listing will include the code names you have assigned with the CODE command. If you have restricted the listing to a particular "who does it", the code name corresponding to that who does it code will be listed first and succeeding lines listed will include only the to do data.

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Sorting your TODO/DAT file

You can sort your data file into ascending order according to the key string DATE field (that's the date each thing to do was entered) by invoking the PSORT utility from DOS Ready. This is done via the command:

```
PSORT TODO[/DAT]
```

The "/DAT" file extension is optional; if omitted, it will be automatically added to your entry. The square brackets are not entered.

Disk errors

If, by chance, TODO detects an error in reading or writing your todo file's records, it will display the DOS error message in the message line at the bottom of the window and then await an entry from the keyboard. This gives you an opportunity to read the error message. After you depress any key, TODO will terminate its operation and return you to the program that was running when you invoked TODO.

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TODO/DAT Technical Specifications

For the technically inclined, the following describes the makeup of activities stored in the data file. It is quite possible to access the file and its sub-records from other programs. Each thing to do is stored in a 32-byte sub-record starting with the third sector of the TODO/DAT data file. Thus, each sector of the data file can contain eight things to do. The record is "fielded" as follows:

Byte/bit	Field Description

Byte 0:	
bits 7-5	- Priority minus one [0-7].
bit 4	- Set to a one if the record is ACTIVE. A zero implies that the record has been DELETED (i.e. DONE).
bits 4-0	- The "who does it" code [0-15].
Byte 1:	
bits 4-0	- The day portion of the entry date [1-31].
Byte 2:	
bits 7-4	- The year portion of the date excess 1984 [0-15].
bits 3-0	- The month portion of the date [1-12].
Bytes 3-31:	The text of the activity.

The first sector of the file contains information according to the PRO-WAM general data file format. Relative bytes 0-2 contain the number of data records contained in the file (0=HSB, 1=MSB, 2=LSB). The second sector of the file stores the 16-byte strings associated with the who does it code names. Additional information used by PRO-WAM is as follows with the numbers in square brackets indicating the quantities fixed within the TODO/DAT data file (relative byte contents are stored in standard low-order high-order format):

Relative	Contents

10H-11H	Logical Record Length [32D]
12H-13H	1st record of LRL treated as data [16D]
14H-15H	Key 1, relative location within each record used as the SORT key [1D]
16H	Key 1, length of the SORT key [02D]
17H	Key 1, type of key [1D = integer]
18H-19H	Key 1, mask [X'FF1F']

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Typewriter

The TYPER application has been provided as a small example of what can be easily done with PRO-WAM. TYPER, however, can be a useful little tool to give you the capability of typing directly to your printer - with visual line buffering on the video display so you can see what you are typing.

When you invoke the TYPER application, it will request PRO-WAM to open a window. If a window cannot be opened, a short beep will sound from your computer's internal speaker and TYPER will terminate. This happens when you have exceeded the maximum number of windows that can be open at one time. That's a rare instance. When the window is opened, TYPER provides you with a two-line 80-character window where you can type characters a line at a time. When you depress the <ENTER> key, the line which you have typed will be sent to your on-line printer. You then can continue to enter lines which will be sent to your printer until you depress the <BREAK> key.

While you are inputting a line, you can BACKSPACE over a mistake by using the <LEFT ARROW> key. You can "power-delete" the entire line via <SHIFT LEFT ARROW>. You can also use IMPORT [<CLEAR LEFT ARROW>] to obtain a line or lines of "keystrokes" from the video screen which was displayed prior to entering TYPER.

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Glossary

ABORT	Terminate an operation, usually with the <BREAK> key
ADDRESS	An application provided with PRO-WAM; maintains a small file useful for names and addresses. Generates mailing labels and rotating index cards.
AFPCALC	An application provided with PRO-WAM; supports a four-function floating point calculator.
ALPHABETIC	Any of the ASCII lower case characters "a" through "z" or upper case "A" through "Z".
ALPHANUMERICS	Any of the ASCII characters including "alphabetic" and numeric, "0" through "9".
APL	A file extension for PRO-WAM libraries; an acronym for "A PRO-WAM Library".
APP	A file extension used to indicate a PRO-WAM application module stored as a stand-alone file.
APPLICATION	A PRO-WAM supplied program custom designed to execute entirely within the library overlay region of the operating system and stored in a special manner for access by the PRO-WAM application loader.
APPNAME	The name assigned to a PRO-WAM application; may be from one to eight characters in length. The first must be alphabetic; the subsequent characters may be alphanumeric.
ARROW	A general term used to specify any of the four keyboard keys: <LEFT ARROW>, <RIGHT ARROW>, <UP ARROW>, and <DOWN ARROW>.
ASCENDING	A sorted order indicating an arrangement of items from lowest value to highest value. Sorted alphabetically, the arrangement would proceed from "AAAAA" through "ZZZZZ".
ASCII	An acronym for the American Standard Code for Information Interchange. This standard describes the character set ranging from a value of 0 (decimal) through 127 (decimal).

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AUTO	A command provided in your operating system to schedule the automatic operation of a command line when your computer is started or restarted.
BACKSPACE	The keystroke used to back up and erase the character you previously typed. A standard Model 4 keyboard uses the <LEFT ARROW> key for backspace; model 4D computers have a <BKSP> key which duplicates the <LEFT ARROW>.
BACKUP	An operating system command used to make a duplicate copy of a diskette or group of files.
BANK	A term which refers to a portion of the extended memory of your computer. A "bank" represents 32,768 (32K) characters of storage.
BAS	A file extension used to designate a program written in the BASIC language.
BASIC	The computer language supplied with your disk operating system.
BEEP	A tone produced from the auxiliary sound port of your model 4 computer; used by PRO-WAM to indicate some error.
BINARY	A number system consisting entirely of 0's and 1's; an environment which can exist in either of two states (usually ON or OFF).
BIT	The smallest unit contained in a byte which is composed of eight bits.
BOLDFACE	Words appearing darker in this manual are printed in either a thicker type face or overprinted to give the appearance of being thicker. This effect is termed "boldface" and is used to provide emphasis to the word or phrase.
BOOT	The action of starting up your computer by turning on its power, inserting a system disk into the floppy drive numbered 0, closing the drive door, and possibly depressing the RESET switch.

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BREAK	A key labeled as such on your keyboard; this key is used by PRO-WAM applications to either abort a command operation or exit from the application.
BRINGUP	A PRO-WAM application used to maintain a date and time sensitive list of activities.
BUCONV	A utility program provided with PRO-WAM which is used to convert Release 1.x BRINGUP/DAT data files to Release 2.x specifications.
BUG	A malfunction of a computer program caused by an error in the program code. We hope there are none of these critters in PRO-WAM.
BUP	An extended application module associated with BRINGUP; its primary purpose is to provide printing capability for the data items.
BYTE	The smallest storage unit in your computer. A byte can contain a number value of from zero through 255; a character is usually represented by a byte value. A byte contains eight bits.
CAL	An application supplied with PRO-WAM; it is used to present a monthly calendar page.
CARD	An application supplied with PRO-WAM; used to maintain an electronic 3 by 5 card file.
CARDFORM	The name assigned to the CARDX record which contains your pre-established form. The name is stored in reverse video for purposes internal to CARDX and CARDXF.
CARDX	An application supplied with PRO-WAM; used to maintain up to ten card files capable of using fixed-format forms.
CARDXF	An application supplied with PRO-WAM; used to prepare and maintain the fixed-format CARDFORM associated with the CARDX application.
CAT	A library command provided in TRSDOS 6.2 which performs the equivalent of "DIR (A=N)".

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CHARACTER	A term applied to the symbols which make up the language we use to communicate with our computer and with which it communicates to us. These symbols may be alphanumerics, special characters (!@#\$\$%^&*()-+=...), or non-printing control characters.
CHARSET	An application provided with PRO-WAM which can be used to observe the symbols which the computer uses for each character value when displayed on the video screen.
CLEAR	A key on your keyboard used to provide alternate functions when pressed in combination with another key or keys.
COM	A driver program provided with your operating system used to "connect" the DOS to your hardware serial port (RS-232C).
COMM	A utility program provided with your DOS to perform communications with another computer.
COMMAND	The general term applied to the many functions available in each application. The list of commands supported by a given application is usually displayed as a menu in the bottom portion of the application window.
CONTROL	The term applied to a character value, usually in the range 0 through 31, which performs some special operation on a device or program.
CR	An abbreviation for the term "carriage return". This is an ASCII character value 13 decimal; it is entered on your keyboard via the key labeled, <ENTER>.
CTRL	This is the mnemonic on the keyboard key used to enter control characters; it is used in combination with another key.
CURRENT	The record which is displayed in a PRO-WAM window is termed the "current" record.
CURSOR	Anytime your computer is waiting for you to enter a keystroke, its position on the video screen is usually marked with a special character. This character may be an underline, a block, or a right angle bracket. The character is termed the "cursor". The position of the cursor may be controllable via the ARROW keys.

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DAT	A file extension of files usually containing data. This is the extension used by all PRO-WAM applications in the naming of their data files.
DATA	Information usually stored in a disk file.
DCB	An acronym for Device Control Block; it is a system memory storage space associated with character devices (video, keyboard, printer, serial port, etc.).
DDEN	An acronym for double density formatting associated with floppy diskettes.
DEFAULT	A particular operation or configuration which is installed or designated without any specific action by you.
DEVICE	A term applied to a peripheral component of your computer usually associated with character input/output (e.g. keyboard device, video device, printer device, etc.).
DIAL	An action undertaken by an intelligent modem connected directly to a telephone line to initiate a telephone call without need of a telephone.
DIALER	An application supplied with PRO-WAM to maintain and use a telephone list; it includes programming to communicate with certain intelligent modems to utilize their dialing facility.
DIGIT	One of the characters of a numbering system. Binary digits are the two characters 0 and 1; octal digits are the eight characters 0, 1, 2, 3, 4, 5, 6, and 7; decimal digits are the ten characters 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9; and hexadecimal digits are the sixteen characters 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F.
DIR	An operating system library command used to display the names and other storage details of the files stored on a floppy or hard disk.
DIRECTORY	A special file on a floppy or hard disk which contains the location and other pertinent details of all files stored on that disk.

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DISKETTE	A shorthand way of saying "floppy diskette", the flexible recording medium used by your computer's disk drives to store files.
DISPLAY	A shorthand way of referring to the video display screen of your computer.
DNARW	A mnemonic designating the <DOWN ARROW> key on your keyboard.
DO	An operating system command used to initiate the commands stored in a Job Control Language file (JCL).
DOLOAD	An application supplied with PRO-WAM used to load a video image file generated with the DOSAVE application.
DOS	An acronym for Disk Operating System. This is the system supplied with your computer which manages the files stored on diskettes and provides an operating environment for programs.
DOSAVE	An application provided with PRO-WAM used to save an image of the video screen contents into a disk file for subsequent use.
DRIVER	A special computer program connecting a hardware device to the DOS (e.g. COM/DVR).
DRIVESPEC	The disk drive identifier field of the file specification. This is indicated by a colon followed by a number in the range 0-7.
EXPORT	The term applied to the automatic transfer of characters appearing within a marked area of the current video screen window to a program interrupted by a PRO-WAM application's invocation.
FIELD	One particular item in a group of data making up a record.
FILE	A collection of data records stored on disk.
FILENAME	The name field of a file specification.
FILESPEC	An abbreviation for file specification: the entire character string which identifies a particular file. It is composed of a file name, a file extension, a password, and a drivespec.

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FILTER	A special program inserted logically into a device stream for the purpose of altering the behavior of input/output.
FLAG	A data field used to store a particular environment state. Flags are usually binary (e.g. ON/OFF, YES/NO, TRUE/FALSE).
FLOATING POINT	A term applied to real numbers (in the mathematical sense). Floating point number will mostly always contain fractional values.
FORM	A pre-determined layout of fields positioned on the video display screen or on paper.
FORMAT	An operating system utility used to prepare a blank diskette before files can be stored on it, or other diskettes backed up to it.
HEAD	An application provided with PRO-WAM which uses the ADDRESS/DAT data file to present its records in a format suitable for export to a text editor being used to prepare a letter.
HEADER	The term applied to the first sector of a PRO-WAM data file. The header record contains data associated with the specification of records contained in the file.
HELPP	A utility provided with PRO-WAM; it contains the on-line help facility.
HEXADECIMAL	A base-16 character value; hexadecimal digits are the sixteen characters 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F.
HOTKEY	The term applied to the combination keystroke used to activate PRO-WAM once it is installed into memory.
HSB	An acronym for "high-order significant byte"; this is the highest storage portion of a three-byte value.
IMPORT	The term applied to the automatic transfer of characters appearing within a marked area of the previous video screen to a PRO-WAM application.
INSERT	The action of adding a character into a screen position by shifting all characters from the cursor position one place to the right.

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INTEGER	A whole number, sometimes referred to as a counting number. Integer numbers have no fractional part.
INVERSE	Another term for "reverse" associated with the video display screen. Normal displayed characters are white foreground on a black background. Inverse, or reverse, video characters are black foreground on a white background.
INVOKE	The name applied to the function of gaining run access to a PRO-WAM application.
JCL	An acronym for Job Control Language. This is a DOS facility to execute a predetermined set of command lines.
KEY	One of the keys on your keyboard; sometimes used to refer to the computer action of scanning the keyboard to see if a key is depressed.
KEYIN	The acronym for "keyboard line input"; a DOS function used to obtain a line of keystrokes.
KEYSTROKE	The result of depressing one or more keyboard keys to generate a particular character value
KI	The name associated with the keyboard input device; designated as "**KI" when entering device specification.
KSM	An acronym for KeyStroke Multiplication; a filter provided with your DOS which lets you generate a string of characters by depressing a single keystroke.
LANGUAGE	The words, structure, and symbols constituting a particular programming environment. Typical programming languages are ASSEMBLER, BASIC, C, FORTRAN, and PASCAL.
LIBEXEC	A facility resident in PRO-WAM and assigned to the shifted <F3> key. This is used to access DOS library commands.
LIBRARY	A set of application modules stored together in one file and which contains an internal directory. Also the general term of many DOS commands identified by issuing a LIB command.

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LOGICAL	The term applied to an event which is simulated rather than physical. A character value of 127 decimal may be interpreted as a carriage return for export purposes; since 127 is not physically a 13 decimal, it is termed, in this case, a logical carriage return.
LOWERCASE	Any of the alphabetic characters "a" through "z" entered normally by not depressing the <SHIFT> key nor by engaging <CAPS>.
LRL	An acronym for Logical Record Length; it represents the length of a record in bytes. Since the record length is not a physical phenomena, it is termed logical.
LSB	An acronym for "low-order significant byte"; this is the lowest storage portion of a three-byte value.
MACRO	The term applied to string of characters automatically generated from a single character. This is similar in theory to KSM.
MASK	A character or characters overlaying another character or characters in a special manner as to eliminate certain bit positions of the result.
MEMBER	One of the applications stored in a library.
MEMBERSPEC	The specification of a library member which denotes its file name, its application name, and the disk drive on which the library file is stored.
MEMORY	The storage area for characters and programs internal to your machine (in contrast to disk storage).
MENU	The list of commands supported by an application which appear at the bottom of the application's window.
MESSAGE	A phrase or sentence used to inform you of some event. It may apprise you of an error or prompt you for a particular response.
MNEMONIC	An abbreviation or label for an entity; specifically, the two-character label you assign to a PHRASE text string.

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MODEM	A hardware peripheral device used to communicate with another computer over a telephone or data line.
MODULE	Another name meaning "member".
MSB	An acronym for "mid-order significant byte"; this is the middle storage portion of a three-byte value.
MSPEC	An abbreviation for "memberspec".
NREC	An acronym for "number of records".
OCTAL	A base 8 numbering system; octal digits are the eight characters 0, 1, 2, 3, 4, 5, 6, and 7.
OVERLAY	A region of the DOS used for swapping in different processes.
OVERSTRIKE	The action of typing one character over another; the second replacing the first.
PACK	The function in PSORT used to eliminate deleted records.
PARAMETER	An option, usually entered on the command line, which alters the behavior of a program.
PHRASE	An application provided with PRO-WAM which performs a KSM-type of function directly from a disk file.
PORT	A physical interface of your computer used to connect a peripheral piece of equipment (e.g. printer port, RS-232 serial port).
PRECISION	The amount of significance contained in a floating point number. The best illustration is to conceptualize a bulls-eye target's shot pattern. A tight cluster of shots some distance from the bulls eye would have a high degree of precision but little accuracy.
PROGRAM	A predetermined sequence of machine instructions which together support some reasonably complex operations.
PROMPT	A displayed message which expects a usable response.

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PRO-WAM	The trademarked name applied to the window controller and application manager published by MISOSYS.
PRUN	A utility program supplied with PRO-WAM used to invoke an application via a DOS command string in contrast to a function key.
PSORT	A utility program supplied with PRO-WAM used to sort the data files associated with PRO-WAM applications.
RAM	A type of memory storage which provides both read and write capabilities.
README/TXT	A plain text file included on your PRO-WAM diskette which contains last minute information not printed in this manual.
RECORD	A collection of data fields associated with a particular key field or fields.
RECTANGULAR	The shape of a video display screen area marked for export or import.
REGENBU	A utility provided with the Mister ED application pack and used to compress a release 1.0 BRINGUP/DAT file.
REGISTER	A very fast memory storage location located within the Central Processing Unit (CPU) of your computer.
RESIDENT	The term applied to a program which stays in the memory region of your computer after control is passed back to the DOS. The memory resident module usually embellishes, and is an extension to, the DOS.
RESPONSE	The entry you input into a program after viewing a particular message prompt.
RETURN	Short for "carriage return"; see "CR".
REVERSE	Another term for "inverse" associated with the video display screen. Normal displayed characters are white foreground on a black background. Reverse, or inverse, video characters are black foreground on a white background.

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RPN	An acronym for Reverse Polish Notation, commonly referred to as "infix". It relates to the syntax of entering numbers and operators for mathematical calculations.
RPN CALC	An application supplied with PRO-WAM which performs mathematical calculations using RPN syntax.
RUN	The action of initiating program execution.
SCIENTIFIC	A format associated with the presentation of floating point numbers in fraction and exponent form.
SCREEN	Short for the video display screen.
SCROLL	The action of shifting the entire text display of the screen or a window of the screen either vertically upward or downward.
SEARCH	The action of looking throughout a set of data records to find one which matches a key string.
SECTOR	A physical storage unit of a floppy diskette or hard disk drive.
SERIAL	A type of device where the character bytes are passed bit-wise; this contrasts with parallel where character bytes are passed as a full byte.
SETCOM	A library command provided with your DOS used to alter the parameters associated with the serial driver (COM/DVR).
SORT	The operation of placing a list of items into some designated order; PSORT organizes a data file in ascending order.
SPEC	Short for "file specification".
STRING	A series of character values, usually denoted on paper by enclosing in quotation marks (e.g. "this is a string").
SVC	An acronym for "SuperVisor Call"; a facility of the DOS used to communicate with it at the program level in contrast to the command level.

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SYNTAX	A particular requirement for the entering of information.
SYSGEN	A command of the DOS used to store the current operating environment to the CONFIG/SYS file.
TED	A text editor application included with the Mister ED application pac; also bundled with LS-DOS 6.3 as a stand alone command.
TEMPLATE	An outline or "form" used to organize a set of data.
TERM	An application supplied with PRO-WAM which can be used as a dumb terminal program.
TODAY	In PRO-WAM, references the date entered as the system date on BOOT or via the DATE command.
TODO	An application supplied with PRO-WAM used to maintain a list of things to do.
TOGGLE	Switch a binary device from its current state to its opposite state.
TXT	A file extension used to designate a plain text file.
TYPED	An application supplied with PRO-WAM which allows you to type directly to your printer.
UNIVERSAL	A PRO-WAM facility assigned to the <F3> function key used to invoke applications which are not resident in alternate memory.
UPARW	A mnemonic for the <UP ARROW> key.
USER	Someone who operates computer programs but does no or little computer programming.
UTILITY	A computer program designed to do some maintenance operation.
VED	An application supplied with the Mister ED application pac designed to support video screen editing.
VIDEO	Short for the video display screen.
WAMLIB	A utility provided with PRO-WAM used to organize and maintain application libraries.

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WINDOW	A portion of the video display screen controlled by PRO-WAM and sized according to the needs of the application creating the window.
WINLINK	A device driver supplied with the PRO-WAM programmer's toolkit used to interface the window control SVC with high level languages such as BASIC.
WM	The device name assigned to the resident PRO-WAM module
WORD	In the mathematical sense, the term applied to a 16-bit value which will occupy a two-byte storage region. Also is the name of the word processor used to prepare this documentation.

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