

Microsoft® Programmer's Library

User's Guide

Microsoft®

Microsoft® Programmer's Library Version 1.1 User's Guide

*A Microsoft CD-ROM Library Product
for IBM® Personal Computers
and Compatibles*

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About This Guide

This guide introduces you to Microsoft Programmer's Library and provides instructions for using the references and sample code included in the application. Before moving on, please take a minute to see how the instructions and examples in this guide are arranged.

"Introducing Programmer's Library" lists each reference included in Programmer's Library and tells you what you need to get started.

"Using Programmer's Library" provides step-by-step instructions for performing basic tasks and gives examples of how to use commands.

"Programmer's Library Reference" includes summary information about keyboard and mouse functions, menus, and commands.

Appendix A, "Technical Information," provides additional information about Programmer's Library, including error messages, Setup program information, and details about searching.

Microsoft products are updated regularly to keep information as current and accurate as possible. To ensure that you're notified when an update becomes available, send in the registration card that's included in your Programmer's Library package. As a registered owner, you'll be eligible for special update prices for future versions of the product.

NOTE: A file named README.DOC is included on your Programmer's Library disc. Be sure to read this file (using any of the supported program editors or word processing applications) for additional information that became available after this guide was printed.

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09761/986299

6C%109601100

771207812179

50H2025TH303

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01EIRS311FIUS

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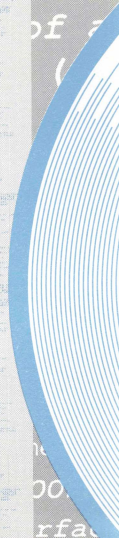
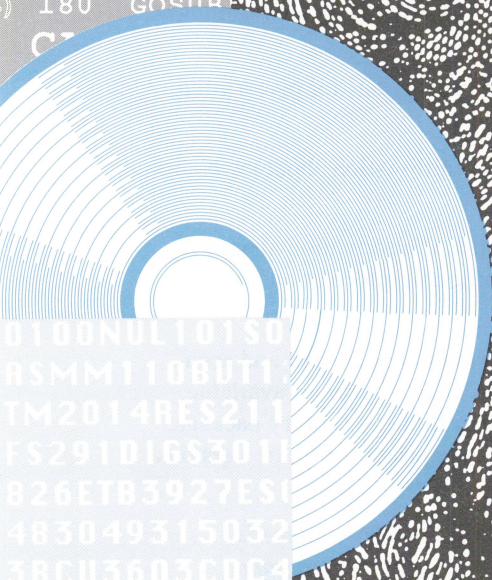
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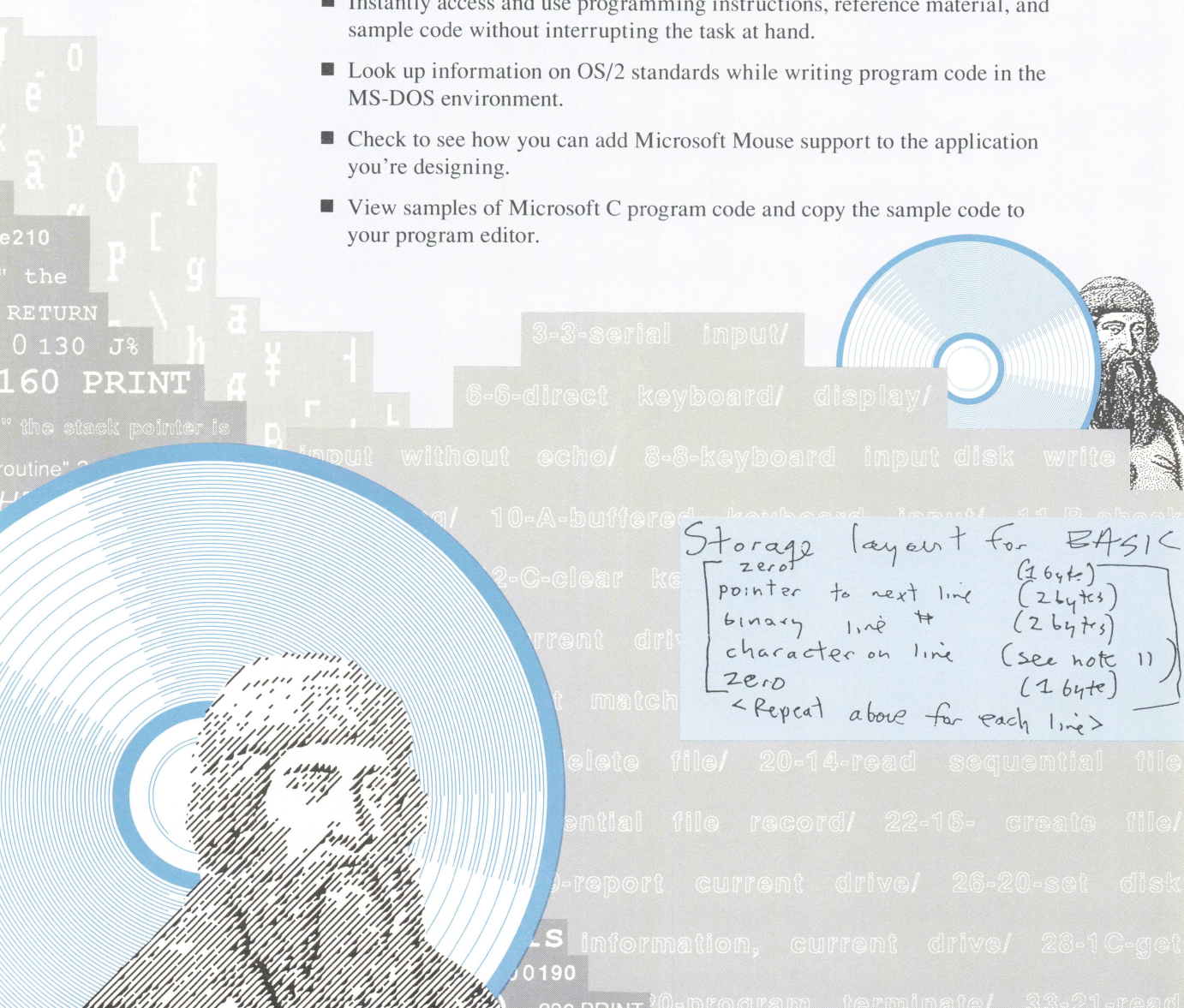
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Introducing Programmer's Library

Programmer's Library puts a world of technical information right where you need it—on your computer screen. You can use Programmer's Library to perform tasks such as these:

- Instantly access and use programming instructions, reference material, and sample code without interrupting the task at hand.
- Look up information on OS/2 standards while writing program code in the MS-DOS environment.
- Check to see how you can add Microsoft Mouse support to the application you're designing.
- View samples of Microsoft C program code and copy the sample code to your program editor.



Storage layout for BASIC

zero	(1 byte)
pointer to next line	(2 bytes)
binary line #	(2 bytes)
character on line	(see note 11)
zero	(1 byte)

< Repeat above for each line >

About Programmer's Library

Programmer's Library is a comprehensive collection of useful reference information for programmers using MS-DOS, Windows, and OS/2 environments. With Programmer's Library you can instantly get authoritative information about programming from books, manuals, and sample code in any of the following reference categories:

Microsoft OS/2

Includes the complete programming documentation for Microsoft OS/2 and Presentation Manager, comprising the OS/2 Software Development Kit manuals covering the OS/2 kernel, OS/2 device drivers, Presentation Manager, and more. Also includes "Inside OS/2" by Gordon Letwin, "Advanced OS/2" by Ray Duncan, and "Programming Presentation Manager" by Charles Petzold.

Microsoft Windows

Includes the complete documentation for programming in Microsoft Windows 2.1, comprising the Microsoft Windows Software Development Kit manuals (complete) and "Programming Microsoft Windows" by Charles Petzold.

Network

Includes the complete programming documentation for the SQL Server and Microsoft OS/2 LAN Manager.

MS-DOS

Includes the complete documentation for Microsoft MS-DOS version 4.0, as well as "Advanced MS-DOS" by Ray Duncan, "The New Peter Norton Programmer's Guide to the IBM PC and PS/2" by Peter Norton and Richard Wilton, and "The MS-DOS Encyclopedia."

Microsoft Systems Journal

Includes the full text of Microsoft Systems Journal, volumes 1-4, covering 1986-February 1989.

Hardware

Includes documentation for the Microsoft Mouse, Microsoft MS-DOS CD-ROM 2.1 Extensions, Intel documentation for the 80286 and 80386 microprocessors, and "Programmer's Guide to PC and PS/2 Video Systems" by Richard Wilton.

Microsoft C Language

Includes the complete documentation for the Microsoft C Optimizing Compiler, as well as Microsoft QuickC documentation, "Proficient C" by Augie Hansen, and "Microsoft QuickC Programming" by The Waite Group.

Microsoft Macro Assembler

Includes the complete documentation for Microsoft Macro Assembler.

Microsoft BASIC Language

Includes the complete documentation for the Microsoft BASIC Optimizing Compiler and "Microsoft QuickBASIC Programmer's Toolbox" by John Clark Craig.

Microsoft Pascal Language

Includes the complete documentation for the Microsoft Pascal compiler.

Microsoft FORTRAN Language

Includes the complete documentation for the Microsoft FORTRAN compiler.

You can display a list of the reference categories or access these categories by using the Library command. For more information, see "Changing the Reference Category or Disc" later in this manual.

Notational Conventions

Programmer's Library uses notational conventions that make it easy for you to read on-line text and program examples. These are listed near the beginning of the on-line book or manual under the heading "Notational Conventions." To locate this information in a book or manual, choose Contents from the Main menu bar, select a reference, and scroll forward from the title page.

Graphics

Programmer's Library uses character-based graphics. Wherever possible, a graphic from a printed book or manual has been represented on-screen by a character-based drawing. In the place of any graphic that is not included on the disc, Programmer's Library displays a cross-reference to the location of the graphic in the printed book or manual.

The Microsoft CD-ROM Library

Programmer's Library is part of a family of Microsoft CD-ROM Library products. Each of the products in this family uses the MS Library (msl) software. For information on using Programmer's Library with other Microsoft CD-ROM Library products, see "Changing the Reference Category or Disc" later in this guide.

What You Need

To use Programmer's Library you need:

- An IBM PC, PC/XT, PC/AT, or 100% compatible, or an IBM PS/2 Series computer
- At least 256K total system memory to use Programmer's Library by itself, as a stand-alone application
- At least 640K total system memory (512K required for systems with hard disks) to use Programmer's Library as a memory-resident application
- MS-DOS version 3.1, 3.2, or 3.3 (MS-DOS 4.0 is supported by MS-DOS CD-ROM Extensions version 2.1 only)
- Two double-sided disk drives or one double-sided disk drive and a hard disk
- A CD-ROM disc drive and interface card
- Microsoft MS-DOS CD-ROM Extensions provided with the CD-ROM disc drive (version 2.0 or higher if you plan to use Programmer's Library with other Microsoft Library products)

You may find that the following items, although not required, increase your efficiency when using Programmer's Library:

- A hard disk drive
- A mouse
- A RAM drive
- Lotus/Intel/Microsoft (LIM) version 3.2 expanded memory

Programmer's Library is designed to be used either by itself or as a memory-resident application, sometimes referred to as a "TSR" ("terminate and stay resident") application. As a TSR application, Programmer's Library resides in your computer's memory and remains available while you're using another application.

As a stand-alone application, Programmer's Library can be called up by accessing DOS from any program editor or word processing application. More than 256K of memory is usually required to run an editor or word processor while using Programmer's Library in stand-alone mode. See "Using Programmer's Library in Stand-alone Mode" later in this guide for specific instructions.

Support for Program Editors and Word Processing Applications

Programmer's Library can be used in stand-alone mode with any program editor or word processor. When used as a TSR application, it supports interactive operation with the following program editors and word processors in their default configurations.

Program Editors

- BRIEF versions 2.0 and 2.1
- Epsilon Editor version 3.21
- ME Text Editor version 2.0
- Microsoft Editor version 1.0
- Microsoft QuickBASIC Editor versions 4.0 and 4.5
- Microsoft QuickC Editor versions 1.0 and 2.0
- Multi-Edit version 3.02a
- The Norton Editor version 1.3C
- Turbo Pascal Editor versions 4.0 and 5.0
- Turbo C Editor versions 1.5 and 2.0
- VEDIT PLUS versions 2.03F and 3.0

Word Processing Applications

- DisplayWrite version 1.0
- Microsoft Word version 2.0 and later*
- Microsoft Works versions 1.0 and 1.05
- MultiMate Advantage I (MultiMate version 3.6), II
- PC Write versions 2.71 and 3.02

- Professional Write version 1.0
- Q&A Write version 1.0
- Volkswriter 3 version 1.0
- WordPerfect versions 4.2 and 5.0
- WordStar Professional versions 4.0 and 5.0
- XyWrite versions III and III+

*Programmer's Library supports the graphics mode of Microsoft Word version 4.0. It supports the text mode of Microsoft Word versions 2.0, 3.0, 3.1, and 5.0. If you're using one of these versions of Word, you'll need to start Word in character (nongraphics) mode. To do so, type *word/c* at the DOS prompt.

NOTE: For special instructions on using Programmer's Library with program editors and word processors, see "Using Programmer's Library in Stand-alone Mode" later in this guide.

Getting Started

Getting started with Programmer's Library requires a brief setup process. In addition, you must have installed your CD-ROM drive and the MS-DOS CD-ROM Extensions. Following are step-by-step instructions for setting up, loading, starting, and exiting Programmer's Library.

Installing the CD-ROM Drive

Before you set up and use Programmer's Library, be sure that you've carefully followed the installation instructions provided with your CD-ROM drive. A summary of the installation steps is provided here.

To install your CD-ROM drive:

1. Be sure that both the computer and the CD-ROM drive are turned off.
2. Check to see that the proper dip switch on the CD-ROM interface card is turned on. (Some interface cards do not have dip switches. See manufacturer's specifications and documentation.)
3. Set the CD-ROM interface card in an extension slot in your host computer.
4. Connect the cable to the interface card in the computer and connect the other end to the CD-ROM drive.

Setting Up MS-DOS CD-ROM Extensions

A software disk with the Microsoft MS-DOS CD-ROM Extensions should have accompanied your CD-ROM drive. When you install the extensions provided on this disk, your AUTOEXEC.BAT and CONFIG.SYS files are modified to work with the CD-ROM drive.

To set up MS-DOS CD-ROM Extensions on a hard drive:

1. Insert the MS-DOS CD-ROM Extensions disk into drive A:.
2. Type *a:setup* and press Enter.

At this point, the setup program will ask for your drive type. (Note that some drives are also marketed under private labels. Please check with the manufacturer if you don't know your drive type.)

3. Follow the screen prompts for the setup program.

To set up MS-DOS CD-ROM Extensions on a one- or two-drive system:

1. Make a copy of your MS-DOS (version 3.1, 3.2, or 3.3) disk. You can use MS-DOS version 4.0 with MS-DOS CD-ROM Extensions version 2.1 only.
2. Place the MS-DOS CD-ROM Extensions disk in drive A:.
3. At the A prompt, type *setup* and press Enter.
4. If you're using one drive, place the copy of your MS-DOS disk in drive A: when the setup program asks for the disk for drive B:.
5. When finished, label the new MS-DOS disk "MS-DOS with CD-ROM."

NOTE: The setup program will set the CD-ROM drive as the next drive letter on your system. For example, in a system with floppy A:, floppy B:, and hard drive C:, the setup program would make the CD-ROM drive D:. To change the drive specification, the *CONFIG.SYS* file on the MS-DOS disk must be edited.

Using the Setup Program

Before you use Programmer's Library for the first time, you need to run the Setup program, which installs Programmer's Library files to fit your specific computer environment. The Setup program leads you through each step of installation, displaying prompts when you need to provide information or make decisions. For example, you're given the choice of installing all of the reference categories in one step or selecting reference categories one at a time. For each reference category installed, Programmer's Library sets up a small file (200K-300K) on your hard disk.

To set up Programmer's Library:

1. Turn on your computer and boot the system (if booting with a floppy, use the "MS-DOS with CD-ROM" disk). The system with MS-DOS CD-ROM

Extensions will recognize the CD-ROM drive and treat it as a read-only hard drive. There is no need to manually boot the MS-DOS CD-ROM Extensions each time you use your drive, since Extensions is present in your AUTOEXEC.BAT file.

2. Insert the Programmer's Library disc into the CD-ROM drive.
3. Make the CD-ROM drive (D:) the active drive.
4. At the DOS prompt, type *setup* and press Enter.
5. Follow the instructions that appear on your screen.

For more information on the Setup program, see "Setup Information" in Appendix A. For manual setup instructions, see the README.DOC file located on the Programmer's Library disc.

Starting Programmer's Library

When you've completed the setup procedure, you can run Programmer's Library in stand-alone mode or load it into your computer's memory. Stand-alone mode can be used with program editors by following the instructions in "Using Programmer's Library in Stand-alone Mode."

To start Programmer's Library in stand-alone mode:

1. Make the hard disk (C:) the active drive.
2. Use the MS-DOS command *cd* to change to the directory on the hard disk where you installed Microsoft Programmer's Library. (MSLIB is the default directory.)
3. Type *msl* at the DOS prompt and press Enter. (The Programmer's Library disc must be in the CD-ROM drive.)

The Programmer's Library title bar and Main menu bar appear at the top of your screen.

To load Programmer's Library into memory as a TSR application:

If you plan to use Programmer's Library with a program editor or a word processing application, you'll want to load Programmer's Library into memory.

1. Make the hard disk (C:) the active drive.
2. Use the MS-DOS command `cd` to change to the directory on the hard disk where you installed Microsoft Programmer's Library. (MSLIB is the default directory.)
3. Type `msl /t` at the DOS prompt and press Enter. (The Programmer's Library disc must be in the CD-ROM drive.)

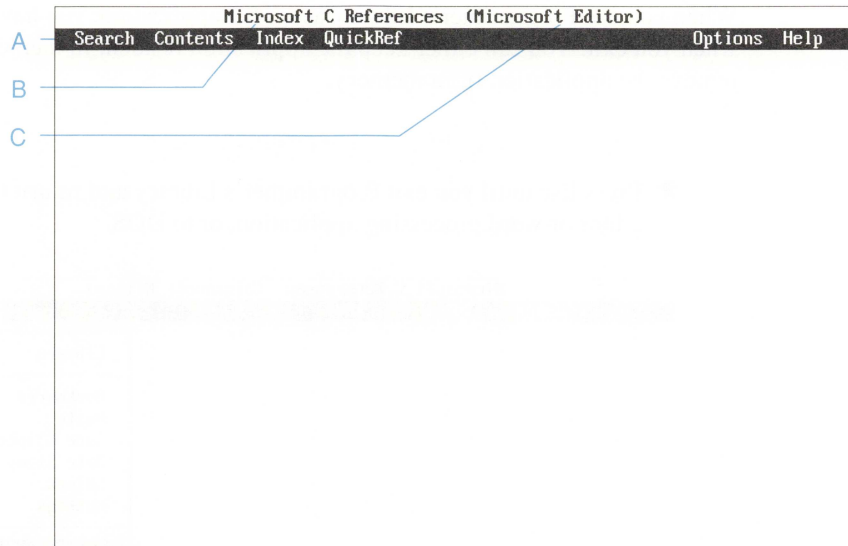
A brief message appears, letting you know that Programmer's Library is now loaded into memory.

4. Press Alt+left Shift (hold down the Alt key, then press the left Shift key) to start Programmer's Library.

The Programmer's Library title bar and Main menu bar appear at the top of your screen.

Once Programmer's Library is loaded into memory, you'll need to reload it only if you've used the Unload command to remove it from memory or if you've turned off or rebooted your computer.

NOTE: Be sure to use the left Shift key with the Alt key (Alt+left Shift) when initially starting Programmer's Library. For information on changing the startup key combination, see "Changing the Startup Keys" later in this manual.



- A. *This is the Main menu bar.*
- B. *This is the reference category in use when you first start Programmer's Library.*
- C. *This is the name of the program editor or word processing application you're using.*

Exiting Programmer's Library

When you are finished using Programmer's Library, you can remove it from the screen (if you're working in stand-alone mode) or from memory (if you loaded it into memory).

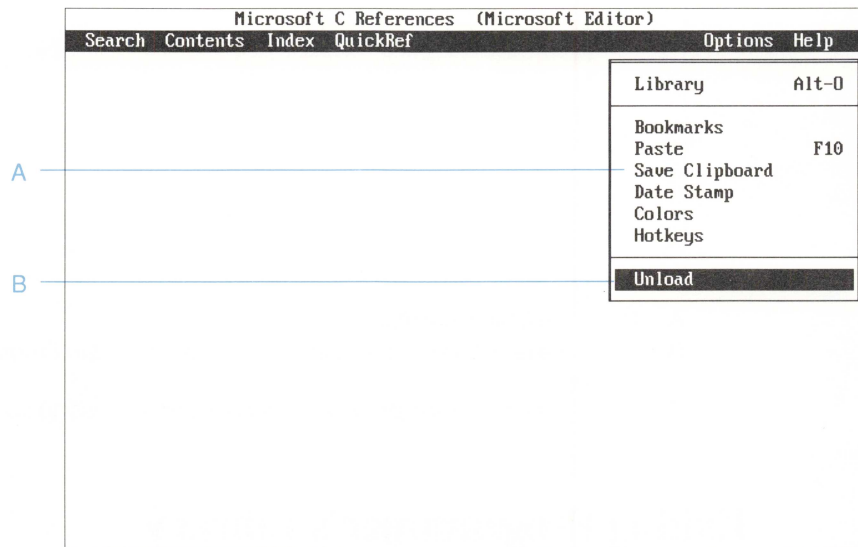
To exit Programmer's Library when it is loaded in stand-alone mode:

1. Press Esc until the Exit dialog box appears.
2. Choose the OK button by pressing Enter.

When you use Programmer's Library as a TSR application, you have two options when you exit: You can either keep the application resident in memory as you exit or remove the application from memory.

To keep Programmer's Library memory-resident:

- Press Esc until you exit Programmer's Library and return to your program editor or word processing application, or to DOS.



- A. Choose *Save Clipboard* to save the contents of the Programmer's Library Clipboard before exiting.
- B. Choose *Unload* to remove Programmer's Library from memory while exiting the application.

To remove Programmer's Library from memory as a TSR application:

1. Choose the Options menu from the Main menu bar.
2. Choose Unload from the Options menu.
3. Select the OK button.

In summary, press O (Options), U (Unload), then press Enter twice to unload Programmer's Library.

Programmer's Library is now removed from your computer's memory.

NOTE: If you want to save the contents of the Clipboard before exiting Programmer's Library, choose Save Clipboard from the Options menu (Main menu bar). The Clipboard contents are saved in a text file which can be used with a program editor or word processor. For more information about the Clipboard, see "Copying, Appending, and Pasting" later in this guide.

Using Programmer's Library

Locating and gathering information with Programmer's Library is easy and quick. This part of the manual gives you the essentials you need to look up, view, copy, and save information.

To get a general idea of how to move around within Programmer's Library, read the instructions and examples that follow. As you read, try out the interface by experimenting with the quick reference, searching, and browsing techniques shown here.



Let's give the Boss had no parity bit - missed routine to do it. They didn't need parity! *to figure a smaller routine?*

- ; Compute parity.
- ; Enter with number in [A]
- ; on exit [A]≠0 and all others preserved.
- Carry is set depending on [A]'s parity
- ; enter at oddpar for carry bit to mean
- ; odd parity

```
60DPAR: ADD A ; move 1st into carry
          RZ ; if all bits added, return
          JNC 00DPAR ; if no bit carry, rotate more
```

; enter at ~~odd~~ EVNPAR for carry to mean even parity

```
EVNPAR: ADDI 200 ; complement parity of existing
          THE 00DPAR ; exit to main
```


The Basics

Programmer's Library provides a variety of ways to locate information. For example, you can search a reference category for a word or phrase, find a string of characters in a reference, or display and read a chapter from a reference. This section describes the menu bars, dialog boxes, scrolling techniques, and other tools that assist you in using the application.

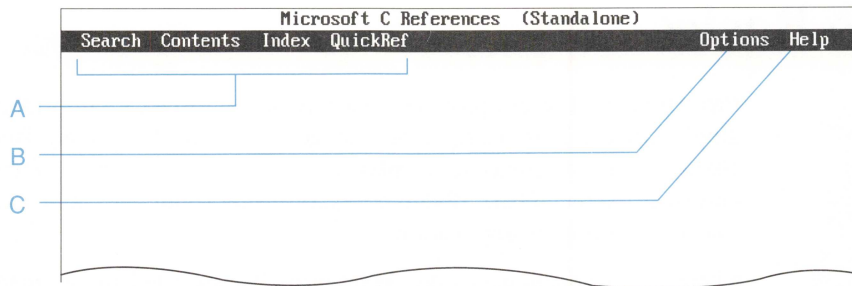
There are two menu bars—the Main menu bar and the Browser menu bar—featuring commands and options for looking up, displaying, and copying programming information. Each menu bar uses only the top few lines of your screen, leaving the rest of the screen for Programmer's Library reference information or displaying text from your program editor or word processing application.

The Main Menu Bar

When you first start Programmer's Library, you see the Main menu bar at the top of your screen. This menu bar includes menus with lists of references and commands that allow you to work with any of the Programmer's Library reference categories. From the Main menu bar you can choose commands to search a reference, to display tables of contents and indexes, to view quick reference manuals, to use a variety of special options, and to get help instructions.

To return to the Main menu bar from the Browser menu bar at any time, press Esc.

When you see the Main menu bar for the first time, it displays the default reference category— Microsoft C Language References. The following illustration shows the Main menu bar.



- A. Choose commands from these menus to look for information in the reference category you're using.
- B. Choose *Library* from this menu to change the reference category or the Microsoft CD-ROM Library disc in use.
- C. Choose commands from the *Help* menu to view instructions on performing tasks with Programmer's Library.

To display any of the menus listed on the Main menu bar:

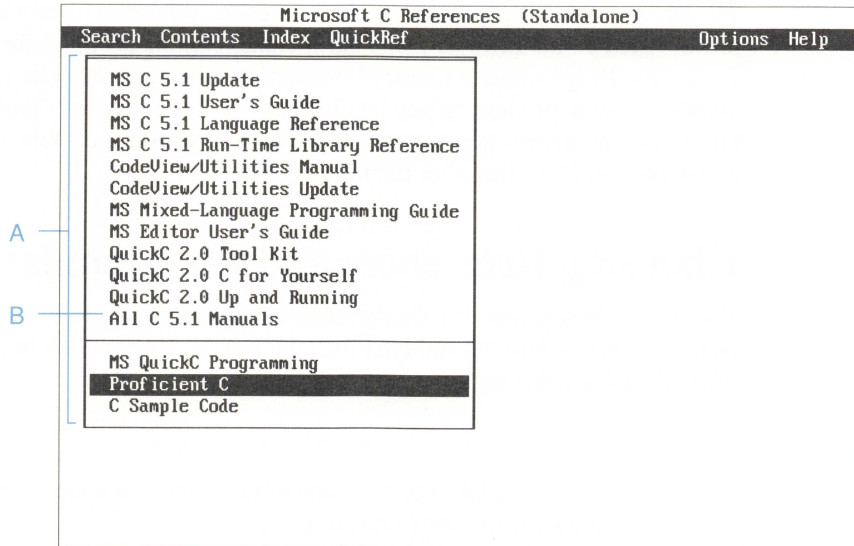


- When using the keyboard, press the first letter of the menu name, or use the Right or Left key to position your cursor on the menu name.



- When using the mouse, move the mouse pointer to the name of the menu you want to use and click the left mouse button.

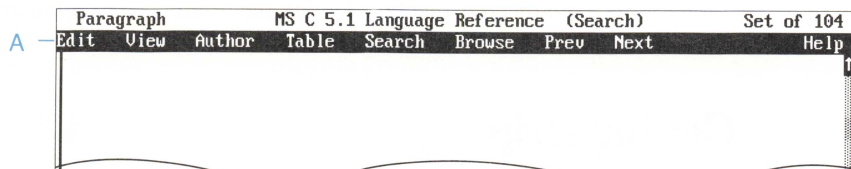
Once a menu is displayed, you can use the keyboard or the mouse to select a reference or command listed on the menu. To remove the menu that is displayed, press Esc. For more information, see "Choosing References and Commands" later in this section.



- A. Use the keyboard or the mouse to select a reference or command listed on a menu.
- B. A group of references is available for searching and browsing in all reference categories.

The Browser Menu Bar

Once you choose one of the references from a menu, Programmer's Library displays the Browser menu bar.



- A. Browser menu bar

The Browser menu bar provides tools for viewing reference information. Each of the menus listed on the Browser menu bar includes commands that help you view and work with Programmer's Library information. The same Browser menu bar commands are used for viewing any text in Programmer's Library. Once you've learned how to use the Browser commands in one reference, you'll be able to use the same techniques for all of the other references.

Choosing References and Commands

You choose Programmer's Library references and commands by pressing keys on your keyboard or moving and clicking your mouse. Here are the basic steps to follow when choosing references and commands.



To choose a reference or command with the keyboard:

1. Press the first letter of the name of the menu you want to use, or use the Left or Right key to select a menu title.
2. Press the Down key to select a reference or command listed on the menu, or press the first letter of the reference or command name.
3. Press Enter to view the reference or carry out the command. (You can also press Esc at any time to cancel the command.)

When a menu or list of references appears, the first reference or command is highlighted. To use that reference or command, press Enter.



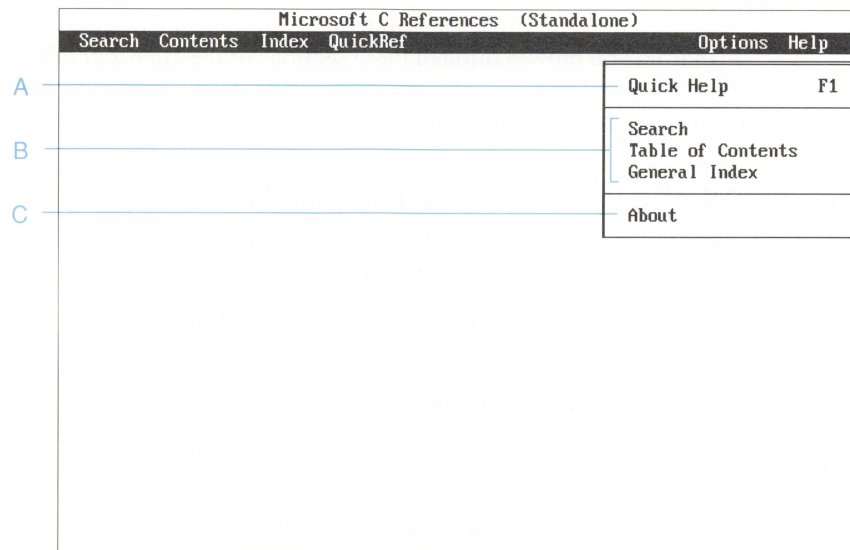
To choose a reference or command with the mouse:

1. Click the title of the menu you want to use.
2. Once the menu is displayed, click the reference or command you want to use.

Getting Help

Choose commands from the Help menu on the Main menu bar or choose the Help command from the Browser menu bar to display instructions on using the Programmer's Library commands. The Help menu (Main menu bar) provides commands for

getting Quick Help and for browsing and searching the *Microsoft Programmer's Library User's Guide*.



- A. Press F1 to display instructions about the task at hand.
- B. Choose these commands to display information from the *Microsoft Programmer's Library User's Guide*.
- C. Choose this command to display copyright information.

To view instructions while performing a task:

1. Press F1 or click Help (Browser menu bar).
Help instructions appear, replacing the current *Programmer's Library* screen.
2. Press Enter to exit Quick Help and return to your task.

NOTE: When a *Programmer's Library* dialog box is displayed, you can use the F1 key to get Help, but you cannot get assistance from the Help menu (Main menu bar).

Getting Help on a Specific Topic

You can choose a command from the Help menu to search the *Microsoft Programmer's Library User's Guide* for information specific to what you're doing. The Search command initiates a search; the Table of Contents and General Index commands let you browse through these sections of the *Microsoft Programmer's Library User's Guide*. For more information on using these commands, see “Browsing, Searching, and Finding” later in this section.

To get Help using the Search command

The Search command provides a dialog box in which you enter the word or phrase you want to search for in the manual.

1. Choose Search from the Help menu (Main menu bar).
2. In the Search dialog box that appears, type a word or phrase for which you need Help instructions.
3. Press Enter or choose the Start Search button.

To get Help using the Table of Contents or General Index command

The Table of Contents command lets you browse the table of contents, select a topic, and then view the text related to that topic. The General Index command lets you browse the index, select an entry, and then view the text related to that entry.

1. Choose Table of Contents or General Index from the Help menu (Main menu bar).
2. Select the topic (Table of Contents) or cross-reference (General Index) you want to view.
3. Press Enter or double-click the selection to display its text.

Scrolling Techniques

If you're a keyboard user, you can use the direction keys and PgUp and PgDn to move forward and backward through Programmer's Library text.

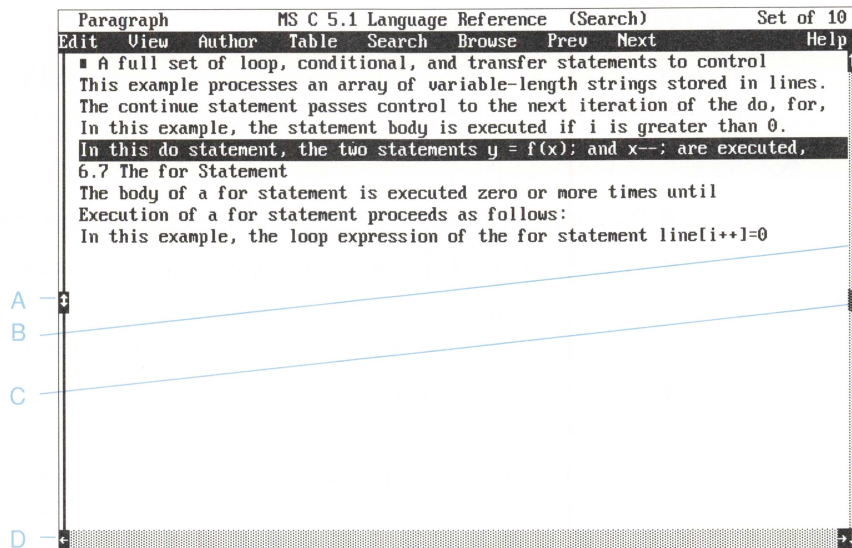


To scroll with the keyboard:

- Press a direction key to move the cursor one line or one character at a time.
- Press PgUp or PgDn to move up or down one screen at a time.
- Press Ctrl+PgUp to go to the beginning of the text in the reference you're viewing, or press Ctrl+PgDn to go to the end of the text in that reference.
- Press Ctrl+Right or Ctrl+Left to move one word at a time in either direction across the screen.
- Press Home to move to the left edge of the screen on the current line of text. Press End to move to the last character on the current line.
- Press Ctrl+Home or Ctrl+End to move the cursor to either the upper-left or lower-left corner of the screen.

NOTE: Be sure that NumLock is turned off on your keyboard when you use the direction keys.

Programmer's Library provides three scrolling tools for mouse users: a right-hand vertical scroll bar, a left-hand scroll elevator, and a horizontal scroll bar. You can use these scrolling features to move through text whenever the information you're viewing is too wide or too long to fit onto a single screen.



- A. Use the left-hand scroll elevator to move up and down within a 20-page range.
- B. Use the right-hand vertical scroll bar to move up and down.
- C. Drag the scroll box along the scroll bar in the direction in which you want to move.
- D. Use the horizontal scroll bar to move left and right within a table. When viewing tables, use the scroll box that appears in this bar.

You'll see scroll bars whenever you're viewing the text of a Programmer's Library reference. Certain list boxes within dialog boxes also provide a right-hand vertical scroll bar.



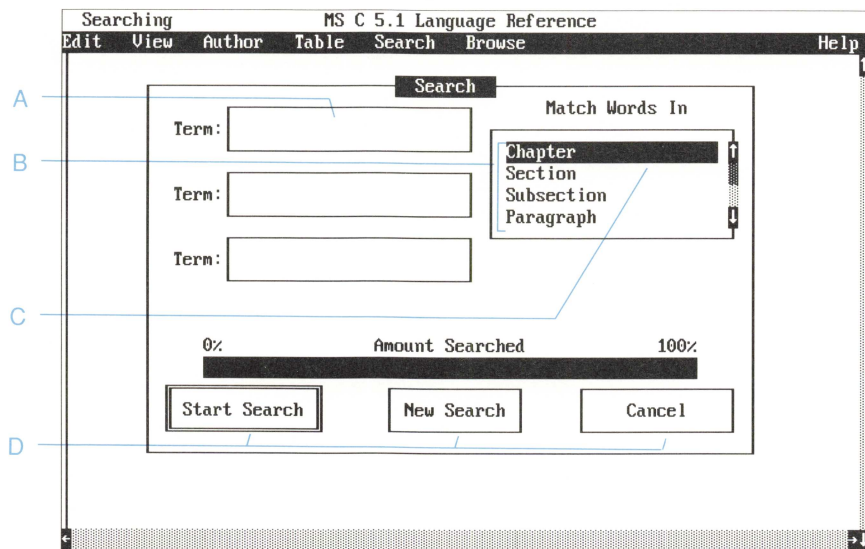
To scroll with the mouse:

- Click one of the scroll arrows on the right-hand vertical scroll bar to move one line at a time in the direction indicated by the arrow. Or point to one of the scroll arrows and hold down the left mouse button to drag the arrow in the direction in which you want to move.
- Click above or below the scroll box on the right-hand vertical scroll bar to move up or down one screen at a time.

- Drag the left-hand scroll elevator up or down to an approximate location within a 20-page range. By dragging the elevator up about 1/4 the length of the screen, you'll move about five pages backward in the reference you're viewing.
- In text, click one of the scroll arrows in the horizontal scroll bar to move five characters in the direction indicated by the arrow.
- When viewing tables wider than your screen, use the scroll box in the horizontal scroll bar to bring portions of a table into view. This scroll box is active only when you're viewing tables.

Using Dialog Boxes

Programmer's Library uses dialog boxes to prompt you for more information or to ask you to confirm an action.



- A. Enter text here.
- B. List box with scroll bar. Select from these items.
- C. Preselected item (default). Press Enter or double-click the left mouse button to carry out the action of a double-lined command button.
- D. Command buttons.

Here are a few general guidelines for making selections in dialog boxes:

- A list box presents several options, from which you can select one. If there are more options in the box than those displayed, you can move up or down the list by using the scroll bar or the Up and Down keys. For information on scrolling within a list box, see “Scrolling Techniques” earlier in this section.
- Press Tab to move forward between items in a dialog box. Press Shift+Tab to move backward.
- To make a selection in a list box and carry out the default action of a double-lined command button, position your cursor or mouse pointer on the desired list box option and then press Enter or double-click that option.
- To choose an action, tab to its command button and press Enter to carry out the action. Or double-click a command button with a mouse.
- To remove the dialog box and cancel the task in process, press Esc or choose the Cancel button.

Changing the Reference Category or Disc

When you display the Main menu bar for the first time, the reference category that is automatically loaded for you is Microsoft C Language References. You can change to any of the other Programmer's Library reference categories by choosing the Library command from the Options menu. The Library command not only lets you choose a new reference category, but it also gives you the option of accessing another previously installed Microsoft CD-ROM Library disc.

Whenever you exit Programmer's Library, the application remembers which reference category was in use when you exited. The next time you use Programmer's Library, the reference category you used most recently will be selected automatically.

To select another Programmer's Library reference category:

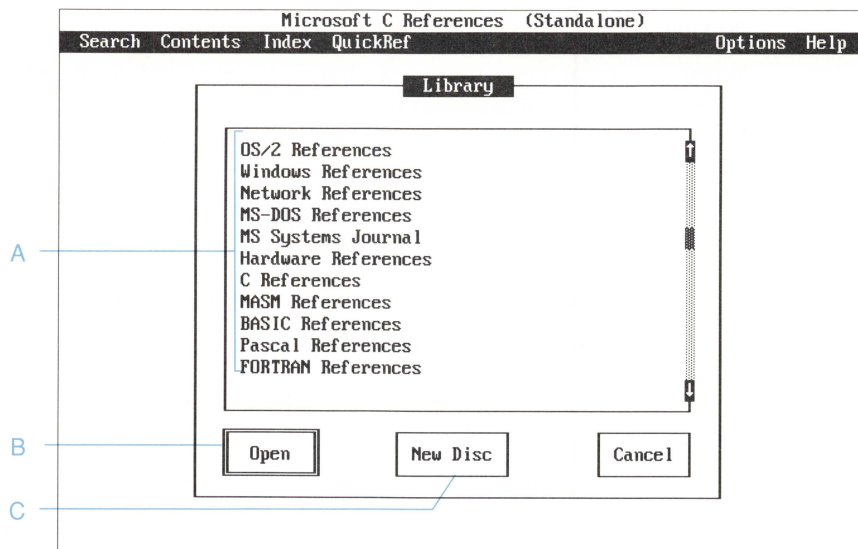
1. Choose Library from the Options menu (Main menu bar).
2. Select the reference category you want from those listed in the list box.
3. Press Enter, double-click the selection, or choose the Open button in the dialog box.

To change to another Microsoft CD-ROM Library disc:

1. Choose Library from the Options menu (Main menu bar).
2. Insert the Microsoft CD-ROM Library disc you want to use into your CD-ROM drive.
3. Choose the New Disc button in the dialog box that appears.
4. Select the product you want to load from those listed in the Library list box.

5. Press Enter, double-click the selection, or choose the Open button in the dialog box.

NOTE: You must have Microsoft MS-DOS CD-ROM Extensions version 2.0 or higher to be able to use the Library command to change to another Microsoft CD-ROM Library disc. Contact your CD-ROM supplier for more information.



- A. Select a reference category or disc from those listed here.
- B. Choose this button to load the reference category or disc you selected.
- C. Choose this button when you want to load a new Microsoft CD-ROM Library disc.

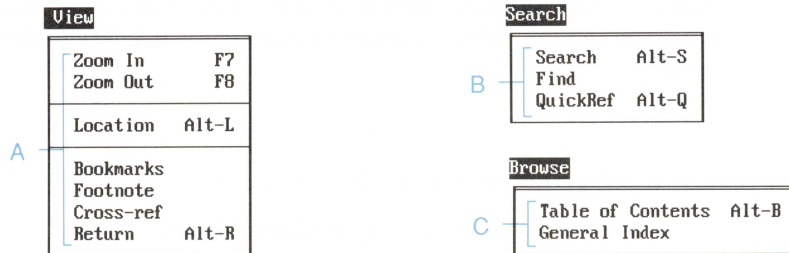
Browsing, Searching, and Finding

Three of the tasks you'll perform most often with Programmer's Library are:

- Browsing a reference to see what it includes
- Searching an entire reference or group of references for information
- Finding a specific word or character in part of a reference

You'll use the menus on either the Main menu bar (Search, Contents, Index, QuickRef) or the Browser menu bar (View, Search, Browse) to accomplish all three of these tasks. Commands listed on the View, Search, and Browse menus allow you to perform any type of search you wish, from casual browsing of an index or table of contents to Boolean (and/or) searches of an entire reference or group of references. A group of references is available for searching and browsing in all reference categories.

NOTE: To return to the Main menu bar from the Browser menu bar, press Esc.



- A. Use commands on the View menu to zoom to a level within the reference you're viewing, to check your current location, to see a list of bookmarks, to display a footnote, or to go to a cross-reference.
- B. Use commands on the Search menu to look for a specific topic, to find a word or character, or to look up quick reference information.
- C. Use commands on the Browse menu to browse the table of contents or the index of the reference you're using.

Browsing

There are a variety of ways that you can view information within Programmer's Library. You can browse through lists of titles within a category, lists of chapters within a reference, or text within a reference chapter or section.

To browse within a selected category:

1. Choose Contents or Index from the Main menu bar.
2. Select a reference or group of references from the list of titles that is displayed.
3. Press Enter or click the mouse to display the list of titles for a group of references, or to display the table of contents or index for the selected reference.
4. Select the title, chapter, or cross-reference you want to display.
5. Press Enter or double-click the mouse to display your selection.

Choose commands from the Browse menu on the Browser menu bar to view the list of chapter titles within the table of contents or the index of the reference you're using. You can then select a chapter or index entry and display the text of your selection.

To begin browsing within a selected reference:

1. Select Browse from the Browser menu bar.
2. Choose Table of Contents or General Index.
3. Use the direction keys or PgUp and PgDn to move through the entries listed.
4. Select the topic (from Table of Contents) or cross-reference (from General Index) you want to view.
5. Press Enter or double-click the selection title to display the text of the selection.

Viewing Levels

Programmer's Library references are arranged in a number of levels that correspond to equivalent levels in the printed version of the reference (Chapter, Section, Subsection, and Paragraph). The Programmer's Library sample code references have three levels to reflect the hierarchical arrangement of the code on disc (Directory, File, and Function). Sometimes a reference does not include all these levels.

Choose the Zoom commands from the View menu to move through the list of titles contained in each level within a reference or a sample code selection. For example, while viewing a table of contents, you can choose Zoom In from the View menu to move from a list of chapter titles to a list of section titles within one of the chapters listed. If you select a section title from the list and then choose Zoom In a second time, you'll display a list of subsection titles within the section you selected. For more information on viewing at different levels, see "Selecting Viewing Options" later in this section.

Searching

Use Search on the Main menu bar to select and search a reference or group of references for information. Use commands on the Search menu (Browser menu bar) to search the reference or group of references you're currently using for information. The Search menu provides three commands: Search, Find, and QuickRef.

Follow these general guidelines when deciding which command to use:

- Use the Search command when you want to search an entire reference or group of references for all occurrences of the word or words you specify. For example, you might search the *Microsoft C Optimizing Compiler 5.1 Language Reference* for all occurrences of the word "slash."
- Use the Find command when you want to find occurrences of a string of characters within a chapter, a table of contents, or an index. Find scans the text sequentially for this string. For example, you might use Find to locate occurrences of the string "slash" in one chapter of the *Microsoft C Optimizing Compiler 5.1 Language Reference*. Occurrences of words that contain this string (for example, "backslash") are found, and the substring ("slash") is highlighted.

- Use the QuickRef command to look up definitions related to the word or phrase you specify. The QuickRef command is available only when you're using one of the references listed on the QuickRef menu (Main menu bar). Only terms with dictionary-style explanations are indexed for access by the QuickRef command.

Using the Search Command

Use the Search command to locate all instances of your search words throughout an entire reference or group of references. You can start a search through a single reference or group of references from either the Main menu bar or the Browser menu bar.

To start a search from the Main menu bar:

1. Choose Library from the Options menu (Main menu bar) to select the reference category you want to use.
2. Choose Search from the Main menu bar.
A list of references in the current category is displayed.
3. Choose the reference or group of references you want to search.
The Search dialog box appears.

To start a search from the Browser menu bar:

1. Choose the Search menu from the Browser menu bar.
2. Choose Search from the Search menu.
The Search dialog box appears.

The Search Dialog Box

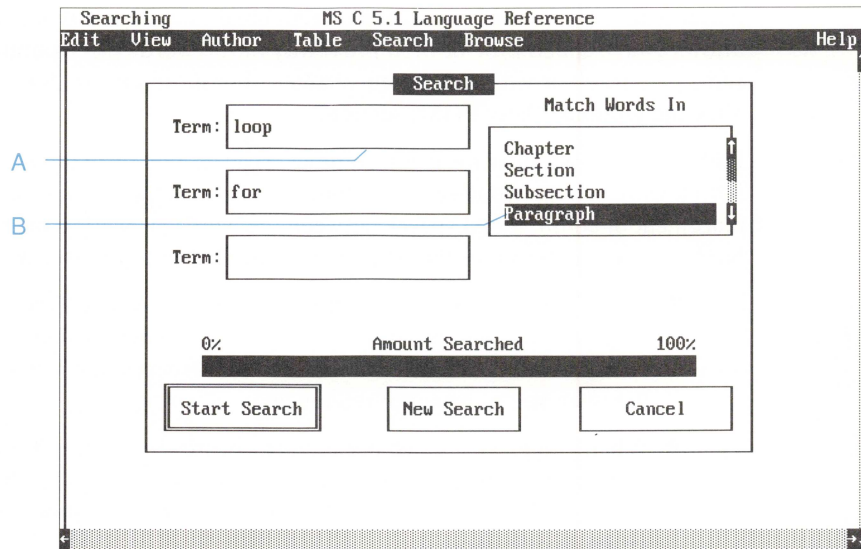
The Search dialog box contains Term boxes in which you can enter one or more words. Press Tab to move forward between Term boxes; press Shift+Tab to move backward. The Match Words In list box allows you to specify the viewing level of your search occurrences. If you're searching for more than one word and you've

placed your search words in separate Term boxes, the Match Words In list box also allows you to specify the desired proximity of the words (for example, within the same paragraph or within the same chapter). For more information, see “Selecting Viewing Options” later in this section.

Follow these guidelines for using commas, spaces, and Term boxes when specifying search words. When you type more than one word as the basis for a search, your placement of commas and spaces between the words, as well as the number of Term boxes you use, determines the way Programmer's Library performs the search.

- When you place a comma between words in a single Term box (for example, “program, programming”), Programmer's Library treats your comma as an “or” and searches for occurrences of either word throughout the reference or group of references.
- When you place a space between two words in a single Term box (for example, “operating system”), Programmer's Library searches for occurrences of the two words together, in sequence, throughout the reference or group of references.
- When you type words in separate Term boxes, Programmer's Library searches for occurrences of each word within the level or proximity (Chapter, Section, Subsection, Paragraph) you've specified in the Match Words In list box. For example, if you type “serial port” in one box and “mouse” in another and select the section level, Programmer's Library searches the reference for sections that contain the words from both Term boxes. Your search results in a list of sections, each of which contains occurrences of both “serial port” and “mouse.”

NOTE: In TSR mode, if your cursor is located on or immediately adjacent to a word in the text of your program editor or word processing application, that word automatically appears in the first Term box of the Search dialog box when you choose the Search command. If you press the F6 key or use your mouse to select a word from the text of Programmer's Library before choosing the Search command, that word automatically appears in the first Term box of the Search dialog box. There must be a space before and after the word you select.



- A. Enter the search words here. You can type up to 80 characters in a single Term box.
- B. Specify a viewing level within the reference. Search results are displayed at this level.

To carry out a search:

1. Type your search word(s) in one or more Term boxes.
2. Press Tab to go to the Match Words In list box. Then select a viewing level from those listed.

For information on how the search level you specify affects your search when you use more than one Term box, see “The Search Dialog Box” earlier in this section.

3. Press Enter or click the Start Search button in the dialog box.

A moving rectangular symbol in the upper-left corner of your screen indicates that the search is in progress. When the search is finished, you'll see a list of titles that contain occurrences of your search word(s). Depending on

the level you selected from the Match Words In list box, this list contains either chapter titles, section or subsection titles, or the first line of each paragraph retrieved. If you're searching sample code, this list contains either directory names, filenames, or function names.

Viewing Search Results

Each time the Search command is used, a list or a set of selections that contains occurrences of your search word(s) is displayed on your screen. In the upper-left corner of your screen, the viewing level you specified in the Match Words In list box is displayed (for example, Section).

To view a selection:

1. Move your cursor to a selection in the list.
2. Press Enter or double-click the selection to display the text of that selection.

When the selected text appears, one or more occurrences of your search word(s) are highlighted on your screen. Your first search word, followed by an ellipsis, is now displayed in the upper-left corner of your screen.

The number in the upper-right corner of your screen indicates how many occurrences your search found. These occurrences are contained in the list of selections on your screen. For example, a search done at the chapter level may result in 25 occurrences of your search word(s), all located within the 10 chapters listed at the completion of the search. As you move through the occurrences found in your search, the number in the upper-right corner of your screen changes to identify the occurrence you're viewing (for example, 5 of 25).

If your search results in a very large number of occurrences, choose the Search command again from the Browser menu bar. The same search word(s) will appear in the dialog box. Add additional words to narrow the scope of the search and select the Start Search button.

For information on commands you can use when viewing search occurrences, see "Selecting Viewing Options" later in this section.

Using the Find Command

Use the Find command when you want to find occurrences of a string of characters within a chapter, table of contents, or index.

When you choose the Find command, Programmer's Library scans the text you're currently viewing and looks for the next occurrence of the string you specify. The Find command begins scanning text on the line below your current cursor position and stops at the end of the current chapter (or at the end of the table of contents or the index).

To find a string of characters within a chapter, table of contents, or index:

1. Choose Find from the Search menu (Browser menu bar).
2. In the dialog box that appears, type the string of characters that you want to find.
3. Press Enter or click the Next command button.

Programmer's Library scans the text for the next occurrence of the string of characters you specified, beginning on the line below the current cursor location. When Programmer's Library finds an occurrence of the string, it is displayed on your screen.

4. Press Enter or click the Next command button again to move to the next occurrence.

NOTE: When using the Find command to scan an entire chapter, table of contents, or index, position your cursor below the title of that section and above the first line of text.

Using the QuickRef Command

The QuickRef menu provides access to definitions of terms and concepts. References listed on the QuickRef menu contain dictionary-style definition sections or glossaries. Each reference on the QuickRef menu has been prepared to provide fast access to these definitions and to allow you to move easily from definition to definition.

Unlike the Search command, which searches a reference for all occurrences of your search word(s), the QuickRef command uses the word(s) you place in the Term box

to quickly locate a related definition in the reference you've selected. For example, if you want to review the features of "printf" in the *Microsoft C Optimizing Compiler Run-Time Library Reference*, QuickRef takes you to the definition page rather than showing you every occurrence of "printf" in the reference (570 occurrences).

The following Programmer's Library references are available through QuickRef:

- *Microsoft QuickBASIC/BASIC Language Reference*
- Microsoft C Optimizing Compiler Run-Time Library Reference
- Microsoft Mouse Programmer's Reference
- Microsoft FORTRAN Language Reference
- Microsoft Macro Assembler Reference
- MS-DOS Programmer's Reference
- The MS-DOS Encyclopedia
- Advanced MS-DOS
- Microsoft OS/2 Programmer's Reference
- Microsoft OS/2 User's Reference
- Microsoft Pascal Reference Manual
- Microsoft Windows Programmer's Reference

The QuickRef command is available on both the QuickRef menu (Main menu bar) and the Search menu (Browser menu bar). To use the QuickRef command on the Browser menu bar, you must first select a QuickRef reference from the Main menu bar.

To use the QuickRef command on the Main menu bar:

1. Choose QuickRef from the Main menu bar.
2. Choose a reference from the QuickRef menu.
3. In the Term box that appears, type the word or phrase you want to locate.
4. Press Enter or click the Lookup button.

The first definition related to your quick reference term is displayed on the screen, and your cursor is positioned adjacent to the term. The number in the upper-right corner of your screen indicates how many occurrences of your quick reference term were found. For example, 1 of 3 indicates that you're looking at the first of three occurrences of your quick reference term. Use the Previous and Next commands to display each occurrence. For more information, see "Selecting Viewing Options" later in this section.

Using Context-sensitive QuickRef

If you're running Programmer's Library as a TSR, you can use QuickRef to look up any word in the text of your program editor or word processing application. QuickRef will search for the word where your cursor is currently located.

To use the QuickRef command from your program editor or word processing application:

1. Position your cursor on the word you want to look up. (There must be a space before and after the word.)
2. Press Alt+left Shift to start Programmer's Library.
3. Press Alt+Q to look up the word you selected.

To use the QuickRef command while in a QuickRef reference:

You can also use the F6 key to look up a word in the QuickRef reference you're currently using.

1. Position your cursor on the word you want to look up. (There must be a space before and after the word.)
2. Press F6.
3. Press Alt+Q to look up the word you selected.

Selecting Viewing Options

Choose commands from the Browser menu bar to view:

- Search and QuickRef results
- Multiple cross-references associated with a word
- Levels within a reference

Using the Previous and Next Commands

Choose the Previous and Next commands (Browser menu bar) to view Search and QuickRef results and to view multiple cross-references associated with a word. For information on viewing cross-references, see “Viewing Cross-References and Footnotes” later in this guide.

- Choose Previous to display the occurrence or cross-reference immediately preceding any appearing on your screen.
- Choose Next to display the occurrence or cross-reference immediately following any appearing on your screen.

The number in the upper-right corner of your screen initially reflects the total number of occurrences or cross-references (for example, Set of 5). When you use Previous or Next, this number changes to identify the occurrence or cross-reference currently displayed (for example, 3 of 5). When the first or last occurrence or cross-reference is displayed, Previous and Next are disabled, respectively.

To go to the previous occurrence or cross-reference:

- Choose Previous from the Browser menu bar or use one of the shortcut key combinations that follow.

To go to the next occurrence or cross-reference:

- Choose Next from the Browser menu bar or use one of the shortcut key combinations that follow.

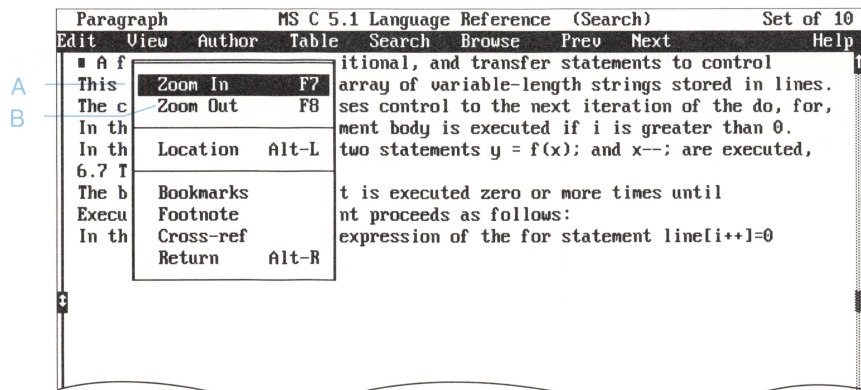
Shortcut Keys

You can use the following shortcut key combinations to move through Search and QuickRef results and cross-references:

<i>To do this</i>	<i>Use this key combination</i>
Go to the previous occurrence or cross-reference	Alt+P or Alt+Left
Go to the next occurrence or cross-reference	Alt+N or Alt+Right
Go to the first occurrence or cross-reference	Alt+Home
Go to the last occurrence or cross-reference	Alt+End

Zooming In and Out

The Zoom In and Zoom Out commands on the View menu let you quickly go to another level within a selected reference. These two commands are particularly useful when you want to move step by step through the viewing levels in a reference. For example, you might use Zoom In to go from the list of chapters in a book to the list of sections within a chapter and then to a subsection within a particular section.



- A. Choose *Zoom In* to go to the full text of the paragraph you've selected.
- B. Choose *Zoom Out* to return to the list of first lines of paragraphs.

<i>This level</i>	<i>Displays this on your screen</i>
Chapter	List of chapter titles within a reference or reference titles within a group of references
Section	List of section titles within a chapter
Subsection	List of subsection titles within a section
Paragraph	List of first lines of paragraphs within a subsection

NOTE: Sometimes a reference does not include all of these levels. For example, a short section of a reference may not have subsections. In this case, when you choose the Zoom In command while viewing a list of section titles, the section title you selected continues to be displayed. Choosing Zoom In again will display the first lines of paragraphs within the section. As you zoom in and zoom out, the level currently displayed is identified in the upper-left corner of your screen.

To zoom to a lower level within the reference you're using:

- Choose Zoom In from the View menu or press F7 or click the right mouse button to zoom in on a selected item.

NOTE: When viewing a list of titles, you can zoom in directly to the text by pressing Enter or by double-clicking on a title.

To zoom to a higher level within the reference you're using:

- Choose Zoom Out from the View menu or press F8.

Copying, Appending, and Pasting

Programmer's Library has its own Clipboard, which is a temporary holding area for text or sample code you want to copy to your program editor or word processing application. Use the Copy command or the Append command to temporarily store text from any of the Programmer's Library references in the Clipboard. You can then paste the text into your program editor or word processing application.

Copying Information to the Clipboard

To copy text to the Clipboard:

1. Place your cursor at the beginning of the text you want to copy.
2. Hold down Shift while pressing a direction key to highlight the text you want to copy, or drag the mouse to highlight the text you want to select.

You can use the Insert key as an "anchor" when selecting text. Press Insert when the cursor is positioned at the beginning of the text you want to copy. Then press Up or Down to select text. If you press Insert again, the anchor point moves to your current cursor location.

3. Choose Copy from the Edit menu or press Del.

The Copy command replaces the current contents of the Clipboard with the text you've selected. You can copy up to 200 lines of text into the Clipboard each time you use Copy.

NOTE: Before copying table headings to the Clipboard, be sure that the Lock Titles command is turned off.

Appending Information to the Clipboard

After copying something to the Clipboard, you can add other text or sample code to it using the Append command. You can append up to 200 lines of text to the Clipboard each time you use Append. There is no limit to the number of lines of sample code you can append.

To add text to the Clipboard:

1. Place your cursor at the beginning of the text you want to append.
2. Hold down Shift while pressing a direction key to highlight the text you want to append, or drag the mouse to highlight the text you want to select.
3. Choose Append from the Edit menu.

Pasting Information into Your Program Editor or Word Processor

The Paste command is available only when Programmer's Library is loaded into memory as a TSR application. (For information about stand-alone operation, see "Saving the Clipboard" later in this section.) Two menus contain the Paste command—the Options menu on the Main menu bar and the Edit menu on the Browser menu bar. Paste always works in the same way, regardless of which menu you use. When you choose Paste, the entire contents of the Clipboard are copied to the location you specify.

If your program editor or word processor cursor is already in the right location, you can choose Paste from the Edit menu without leaving Programmer's Library.

You can press Esc at any time to interrupt and cancel a paste operation. Clipboard contents that have already been pasted cannot be cancelled.

To paste the contents of the Clipboard into your document:

1. Be sure that the cursor in your program editor or word processing application is positioned where you want text to be inserted.

To do this, press Esc until you return to your program editor or word processor. Position the cursor where you want the text to be inserted. Then press Alt+left Shift to return to Programmer's Library.

2. Choose Paste from either the Options menu (Main menu bar) or the Edit menu (Browser menu bar). Pressing F10 or Shift+Insert will paste the Clipboard contents as well.

NOTE: If your program editor or word processing application is performing a task or displaying a dialog box while you are attempting to paste, Programmer's Library cannot complete the paste operation. If you have a color monitor, Programmer's Library tells you that Paste is disabled by displaying the name of your program editor in red on the title bar. You cannot use the Paste command when running Programmer's Library in stand-alone mode.

Saving the Clipboard

Use the Save Clipboard command on the Options menu to save the contents of the Clipboard. When you choose Save Clipboard, your text is saved in a file whose filename and directory you specify.

You can load this file into your program editor or word processor to create programs or documents. This allows you to copy information from Programmer's Library to another application if you normally use Programmer's Library in stand-alone mode.

To add the contents of the Clipboard to a file:

1. Choose Save Clipboard from the Options menu (Main menu bar).
2. Type the drive, directory, and filename where you want to store the Clipboard contents.
3. Choose the Append button.

To replace the contents of a file with the Clipboard contents:

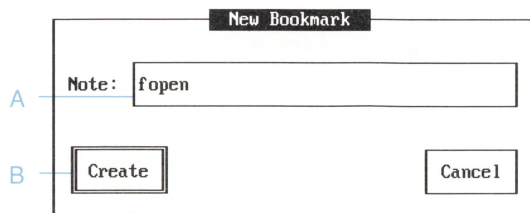
1. Choose Save Clipboard from the Options menu (Main menu bar).
2. Type the drive, directory, and filename where you want to store the Clipboard contents.
3. Choose the Copy button.

NOTE: If you save the Clipboard contents, you cannot use Programmer's Library to open and view the contents of that file. You must use your program editor or word processor.

Using Bookmarks

Creating Bookmarks

You can use the Create Bookmark command on the Author menu (Browser menu bar) to mark your place within the text you're viewing. When you create a bookmark, you place an invisible marker at the current location of your cursor. Use the Bookmarks command on the Options menu (Main menu bar) or the View menu (Browser menu bar) to return to the location you've marked. Programmer's Library allows you to keep up to 80 bookmarks on file.



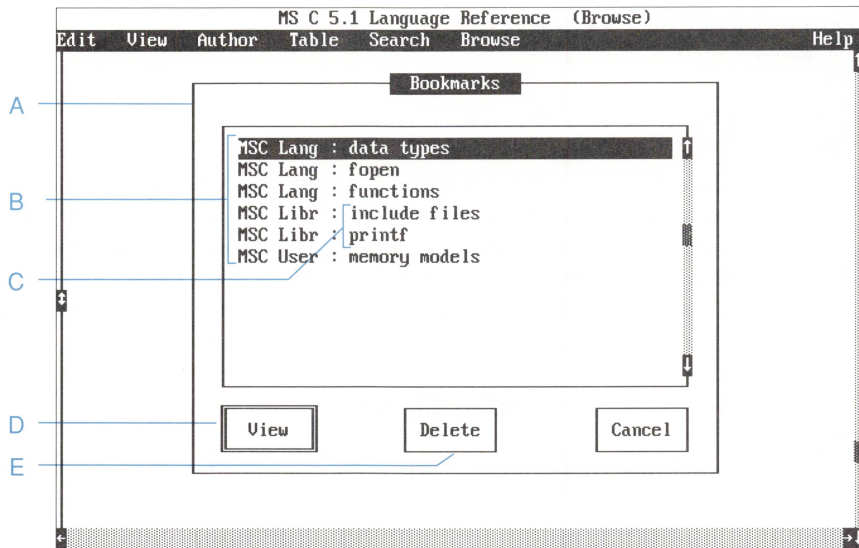
- A. *Type a phrase here to describe the bookmark.*
- B. *Press Enter or click this button to carry out the command.*

To create a bookmark:

1. Position your cursor at the location where you want to place the bookmark.
2. Choose Create Bookmark from the Author menu.
 - A dialog box appears, prompting you for information about the bookmark.
3. Type a single line of text to describe the bookmark.
4. Press Enter or click the Create button.

Viewing Bookmarks

The Bookmarks command, listed on both the Options menu (Main menu bar) and the View menu (Browser menu bar), lets you display a list of the bookmarks you've created.



- A. When you choose Bookmarks from either the View menu (Browser menu bar) or the Options menu (Main menu bar), this dialog box appears.
- B. Bookmarks for the reference category in use appear at the top of the list.
- C. Bookmarks are listed alphabetically within each reference.
- D. Choose the View button to go to the selected bookmark.
- E. Choose the Delete button to delete the selected bookmark.

To view or delete a bookmark:

1. Choose Bookmarks from either the Options menu (Main menu bar) or the View menu (Browser menu bar).

A dialog box appears, showing a list of the bookmarks you've created. The bookmarks for the reference category in use appear at the top of the list, followed by bookmarks set within other reference categories and other Microsoft CD-ROM Library products. Bookmarks are listed alphabetically within each reference.

2. Use the direction keys or the scroll bar to move to the bookmark you want.

3. Choose the View button in the dialog box to display the text of the bookmark you've selected. Choose the Delete button to remove the bookmark from the list.

NOTE: Choosing the Bookmarks command from either the Main menu bar or the Browser menu bar lets you go to another reference category by selecting a bookmark from that category.

Accessing Sample Code

```

while                                     C Sample Code (Search)          40 of 42
A Edit  View  Author  Table  Search  Browse  Prev  Next  Help
main(argc, argv)
int  argc;
char  **argv;
{
    long  atol(); /* Alpha string to long int conversion */

    if (argc == 1) /* No command-line argument */
        forever = 1; /* So run forever */
    else
        repeat = atol(argv[1]); /* Else, run given number */
B  init_lifex();
    do {
        more_rounds = 0;
        init_bufx();
        draw_boxx(attrib);
        init_matx();
        rand_dist(density/100.0);
        pause = 0;
        while (forever || repeat--) {
            proc_key();
            if (!pause) {
                if (speed < 10)

```

- A. Choose commands from these menus to search and display the code.
- B. Sample code written in the Microsoft C language.

The Programmer's Library disc includes a directory of sample program code you can display and copy into your own programs. You can access this sample code through the DOS directory where it is stored or by choosing it from one of the Programmer's Library menus. When you access the code through a menu, you can use any of the Programmer's Library commands and tools to display and search the code.

When viewing sample code through Programmer's Library, you'll notice that each sample code file is preceded by a heading line that gives the full pathname of the ASCII file on the disc. For example, while browsing source code in Chapter 6 of *Programming Windows*, you'll see this line at the start of the digital clock program:

```
\SAMP\CODE\PROGWIND\CHAP06\DIGCLOCK.C
```

This line tells you exactly where to find the “digclock.c” program on the Programmer's Library disc. You can then load the file directly, using your program editor.

To access the sample code while using Programmer's Library:

1. Choose Library from the Options menu (Main menu bar). Then select the reference category you want to use.
2. Choose the sample code selection from the Search menu (Main menu bar).
3. When the dialog box is displayed, enter the appropriate search terms in the term boxes.
4. In the Match Words In list box, choose the level at which you want to view search results—directory, file, or function.
5. Choose the Start Search button.

You will see all of the directories, files, or functions that include occurrences of your terms in the code.

6. Use the direction keys to select the entry you want. Use the Previous and Next commands to move through the search occurrences.

Once you've found the sample code you want, you can use the Copy command to copy the code you want to use in your program. For more information, see “Copying, Appending, and Pasting” earlier in this guide.

To access the sample code from a DOS directory:

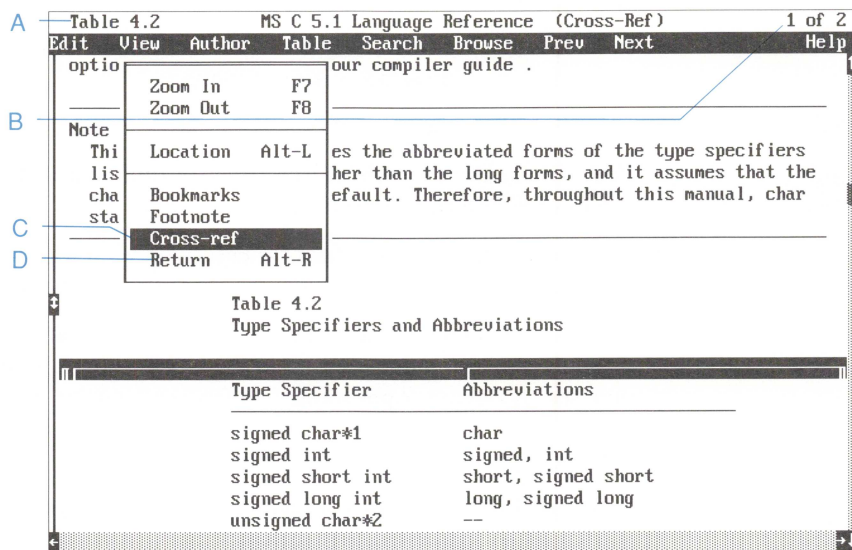
1. Be sure the DOS directory or CD-ROM drive that includes the Programmer's Library sample code is active.
2. Type *dir* to display a list of the sample code files in the directory.
3. Use your program editor or word processing application to load a sample code file directly from the CD-ROM drive. Be sure to specify the complete pathname.

Viewing Cross-References and Footnotes

Many of the references in Programmer's Library contain cross-references and footnotes. When the text you're viewing contains a cross-reference or a footnote, you'll see one of these special symbols:

△ indicates a cross-reference

✱ indicates a footnote



- The word associated with the selected cross-reference appears in the upper-left corner of the screen.
- The number of cross-references associated with the word appears in the upper-right corner of your screen. As you go to these cross-references, the number in the upper-right corner changes to identify the cross-reference you're viewing.
- Choose Cross-ref from the View menu to view a cross-reference.
- Choose Return to return through the cross-references you've viewed.

To view a cross-reference:

1. Place your cursor or mouse pointer on the cross-reference symbol in the text you're viewing.
2. Press Enter, double-click the cross-reference symbol, or choose Cross-ref from the View menu.

When you select a cross-reference, you move to the location of the associated text. If a word has several cross-reference symbols, use the Previous and Next commands to go to these cross-references.

To return to the text you were viewing:

You can go to up to 18 successive cross-reference locations.

- Choose Return from the View menu or press Alt+R to return through the sequence of locations.
- Press Alt+Up to return to the original text where you started displaying cross-references.

NOTE: See "Selecting Viewing Options" in the previous section for more information about viewing cross-references.

To display footnote text:

1. Place your cursor or mouse pointer on the footnote symbol that appears in the text you're viewing.
2. Press Enter, double-click the footnote symbol, or choose Footnote from the View menu.

When you select a footnote, the associated text is displayed in a box at the bottom of your screen.

To remove a footnote from the screen:

- Press Enter, double-click the left mouse button, or choose a new command.

Checking Your Location

Whenever you're viewing text or sample code, you can choose the Location command from the View menu to quickly find out where you are within the reference you're using. When you choose Location while viewing a reference, a box appears at the bottom of your screen listing the chapter, section, subsection, and paragraph. When you choose Location while viewing sample code, the box lists the directory, file, and function.

```

C Sample Code (Browse)
Edit View Author Table Search Browse Prev Next Help
int main( argc, argv )
    int argc;
    char *argv[];
{
    int c;
    if ( argc < 2 )
    {
        printf( "usage: cflow [-v][-r][-d] filelist" );
    }
    else
    {
        initstatemachineo();
        while ( --argc > 0 )
        {
            /* for all fl
            ++argv;
  
```

A — Directory : \SAMP\CODE\MISC\EXAMPLE
 File : \SAMP\CODE\MISC\EXAMPLE\CFLOW.C
 Function : main

- A. The Location box tells you where you are within the reference or sample code you're using.

To check your location while viewing text:

- Choose Location from the View menu.

You can also use the following keyboard shortcut to display location information while viewing text:

- Press Alt+L

NOTE: Sometimes a reference may not include a chapter, section, subsection, or paragraph level. In these instances the Location box repeats the title from the preceding level.

Working with Tables

When viewing information in any Programmer's Library reference, you may occasionally encounter tables that are too wide or too long to be fully displayed on your screen. Programmer's Library provides several options for viewing and working with such tables. These options include scrolling, hiding and revealing columns, and locking and unlocking columns.

Scrolling Within Tables

Scrolling within tables works in much the same way as scrolling elsewhere in Programmer's Library. You can use the direction keys or PgUp and PgDn to move text into view horizontally or vertically. If you are using a mouse, you can use any of the three scrolling features (scroll bar, scroll box, and scroll elevator) to move text into view.

Type	Storage	Range of Values (Internal)
char	1 byte	-128 to 127
int	implementation defined	
short	2 bytes	-32,768 to 32,767
long	4 bytes	-2,147,483,648 to 2,147,483,647
unsigned char	1 byte	0 to 255
unsigned	implementation defined	
unsigned short	2 bytes	0 to 65,535

- A. Use the ruler to mark the location of a column you want to hide or reveal.
 B. Use the scroll bars or the direction keys to bring more of a table into view.

The Home and End keys provide additional viewing options when working with tables:

- When your cursor is in the table ruler, press Home or End to bring the first or last column of a table into view, respectively.
- When your cursor is in the table text, press Home to move your cursor to the left edge of the screen on the current line of text. Press End to move your cursor to the last character on the current line of text.

For more information on scrolling, see “Scrolling Techniques” earlier in this guide.

Hiding and Revealing Columns

The Hide Column and Reveal Column commands can be used to compare nonadjacent columns in a table. By choosing Hide Column from the Table menu, you can temporarily hide a column so that another part of the table can be brought into view. For example, by hiding columns you can place the data in column one of a table beside the data in column six of the same table.

You can hide only one column at a time, but you can use the Hide Column command as many times as you like within a single table.

To hide a column:

1. If your cursor is within the table, use Ctrl+Home and the direction keys to move your cursor to the ruler. Or, click inside the ruler.
2. Place your cursor or mouse pointer on the symbol that indicates the beginning of the column you want to hide.
3. Choose Hide Column from the Table menu or double-click the symbol.

The ruler displays a special symbol () to represent a hidden column.

To bring a hidden column back into view:

1. If your cursor is within the table, use Ctrl+Home and the direction keys to move your cursor to the ruler. Or, click inside the ruler.

2. Move your cursor or mouse pointer to the symbol that indicates where the column is hidden.
3. Choose Reveal Column from the Table menu or double-click the symbol.

Locking and Unlocking Columns

Use the Lock Column and Unlock Column commands on the Table menu when a table is too wide to view on a single screen. Lock Column temporarily freezes the position of the leftmost column of the table while you scroll more of the table into view. Unlock Column unfreezes this column, allowing it to be scrolled with the rest of the table.

To lock the leftmost column of a table:

1. If your cursor is within the table, use Ctrl+Home and the direction keys to move your cursor to the ruler. Or, click inside the ruler.
2. Press Home to move your cursor to the symbol that indicates the beginning of the leftmost column of the table.
3. Choose Lock Column from the Table menu.

The leftmost column is locked into place. By scrolling to the right, you can bring other columns into view. The ruler displays a special symbol to indicate that the column is locked.

To unlock the leftmost column of a table:

1. If your cursor is within the table, use Ctrl+Home and the direction keys to move your cursor to the ruler. Or, click inside the ruler.
2. Press Home to move your cursor to the symbol that indicates the beginning of the leftmost column of the table.
3. Choose Unlock Column from the Table menu.

Locking Titles

Programmer's Library provides another feature to assist you in viewing large tables. When working with tables that are too long to fit onto a single screen, Programmer's Library automatically freezes the table headings at the top of your screen so that the headings remain visible as you scroll more of the table into view. The ruler remains locked whenever a table is displayed.

To use the Lock Titles command:

- Choose Lock Titles from the Table menu to toggle between locked and unlocked table headings.

A check mark to the left of the command indicates that table headings are locked.

Adding a Date Stamp

If Programmer's Library is used as a TSR application, you can paste today's date and time into a document in your program editor or word processing application.

To add a date stamp:

1. Position your cursor where you want the date stamp to be inserted in your document.
2. Choose Date Stamp from the Options menu.

NOTE: The date stamp will be accurate only if your computer's system clock is accurate.

Customizing Programmer's Library

Changing the Startup Keys

The Hotkeys command on the Options menu allows you to choose the key combination used to start Programmer's Library as a TSR. The default startup key combination is Alt+left Shift, but you can change this by making selections in the Hotkeys dialog box. You might want to change the startup key combination for your own typing convenience or because you're using another program that conflicts with the Alt+left Shift key combination.

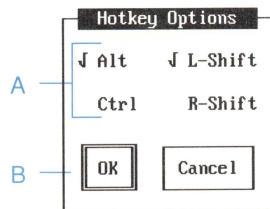
To change the startup key combination:

1. Choose Hotkeys from the Options menu (Main menu bar).

A dialog box appears containing a list of the keys you can use to start Programmer's Library. Check marks appear to the left of the keys currently selected.

2. Press Tab to move to the key you want to toggle on or off.
3. Press Spacebar to toggle a key on or off.
4. When you've finished indicating your preferences, press Enter.

NOTE: The current startup key combination is displayed on the screen when the MS Library software is loaded into memory.



- A. Press Tab to go to the keys you want to use as startup keys. Then press Spacebar to toggle between hotkey options.
- B. Press Enter or click OK after you've indicated your preferences.

Changing the Screen Colors

If you're using Programmer's Library with a color display adapter and monitor, you can change the standard colors used by the application.

To adjust the colors displayed on Programmer's Library screens:

1. Choose Colors from the Options menu (Main menu bar).

Programmer's Library displays a color selection screen. The right side shows the colors currently in use and the left side shows the available color choices.

2. Use Up and Down to move within the list of choices. Use Left and Right to change the color selections.

As you make color choices, you'll see your selections displayed on the right side of your screen.

3. When you've finished making choices, press Enter to save your new selections. Or, if you want to cancel your changes or go back to the original color selections, press Tab to move to the Cancel button or the Original button.

Configuring Memory

Using Base Memory

If you run Programmer's Library as a TSR application, you can allocate one additional 64K block of base memory (not extended or expanded memory). This extra memory will make the MS Library software run faster, but the 64K block will not be available for use by text editors or other applications that run while the MS Library software is loaded.

To load Programmer's Library and allocate one additional 64K base memory block:

- At the DOS prompt, type *misl/x*.

Using Expanded Memory

The MS Library software can take advantage of one 64K block of expanded memory. This will make an extra 64K of base memory available for use by program editors or other applications that run while the MS Library software is loaded. You can take advantage of this feature if:

- You have an expanded memory board that conforms to the Lotus-Intel-Microsoft (LIM) 3.2 standard, and
- You have at least 64K of expanded memory available, or
- You are running LIM 3.2 emulator software on an 80386-based system.

To load Programmer's Library and allocate one 64K block of expanded memory:

- At the DOS prompt, type *misl/l* to load Programmer's Library into memory as a stand-alone application, or

- At the DOS prompt, type *msl /lt* to load Programmer's Library into memory as a memory-resident application.

NOTE: If you are using LIM 4.0, you must have a LIM 3.2 compatible page frame. For more information, refer to the manual that came with your expanded memory board.

Programmer's Library Quick Reference

This section provides summary information about Programmer's Library. Use this information as a quick reference resource for keyboard and mouse functions, as well as menus and commands.

Using the Keyboard and the Mouse

Here are the basic keyboard and mouse operations you'll use frequently with Programmer's Library.

<i>To do this</i>	<i>With the mouse</i>	<i>With the keyboard</i>
Load Programmer's Library in stand-alone mode	(no mouse option)	Type <i>msl</i>
Load Programmer's Library as a memory-resident program	(no mouse option)	Type <i>msl /t</i>
Start Programmer's Library as a memory-resident program	(no mouse option)	Press Alt+left Shift
Return to the Main menu bar from the Browser menu bar	Double-click right mouse button	Press Esc
Return to your program editor or word processor from the Browser menu bar (TSR mode)	Double-click right mouse button	Press Esc twice
View a menu	Point to the menu title and click the left mouse button	Use the direction keys to select the menu title or press the first letter of the menu title
Cancel a menu	Click outside the menu or double-click the right mouse button	Press Esc
Choose a command	Click the command name	Use the direction keys to select the command and press Enter to carry it out; or press the first letter of the command name and press Enter
Cancel a command	Click the Cancel button in a dialog box or double-click the right mouse button	Tab to the Cancel button in a dialog box and press either Enter or Esc

(continued)

<i>To do this</i>	<i>With the mouse</i>	<i>With the keyboard</i>
Move around in a dialog box	Move the mouse pointer to the place you want and click the left mouse button	Press Tab to move forward between items; press Shift+Tab to move backward
Select an option in a dialog box	Point to the option and double-click the left mouse button	Tab to the option (using Tab or Shift+Tab) and press Enter
Scroll	Click a scroll arrow or click above or below the scroll box in one of the scroll bars to move in the direction you want	Use the direction keys to move in the direction you want
Get Quick Help	Click Help on the Browser menu bar	Press F1
End the use of a reference, reference category, or Programmer's Library	Double-click the right mouse button until you return to the menu you want, to your program editor, or to DOS	Press Esc until you return to the menu you want, to your program editor, or to DOS
Remove Programmer's Library from memory	Click Options on the Main menu bar, click Unload, and click the OK button	Press O, U, Enter, Enter

Using Keyboard Shortcuts

You can use certain keys and key combinations as shortcuts when carrying out basic tasks with Programmer's Library. Here's a look at the shortcuts you'll use most often.

<i>To do this</i>	<i>Use this</i>
Start Programmer's Library as a memory-resident program	Alt+left Shift
Remove Programmer's Library from memory	Press O, U, Enter, Enter
Carry out a selected action or command	Enter
Cancel the current task or move backward through levels of Programmer's Library; press Esc repeatedly from within a reference to exit Programmer's Library	Esc
Move forward through options in a dialog box	Tab
Move backward through options in a dialog box	Shift+Tab
Provide an anchor key, or starting point, when selecting a block of text	Insert
Copy selected text to the Clipboard	Delete
Paste a selected block of text	Shift+Insert
Display Quick Help for the task at hand	F1
Display a document in your program editor or word processing application for viewing only; press F2 to view the document you're working on, then press any key to return to Programmer's Library; the view mode does not allow editing	F2
Select a word in Programmer's Library text and insert the word in the first Term box of the Search dialog box	F6
Zoom in	F7
Zoom out	F8
Append selected text to the Clipboard	F9
Paste the contents of the Clipboard into your program editor or word processing application	F10
Create a bookmark	Alt+A

(continued)

<i>To do this</i>	<i>Use this</i>
Display the list of chapters (table of contents) for the reference in use	Alt+B
Display the Location box which describes your current location within a reference	Alt+L
Choose Library from the Options menu to select another reference category or another Microsoft CD-ROM Library disc	Alt+O
Start a QuickRef lookup in the QuickRef manual you're currently using	Alt+Q
Start a search	Alt+S
Hide a column in a table	Alt+T

Use the following shortcut key combinations to go to occurrences found by the Search and QuickRef commands and to go to cross-references:

<i>To do this</i>	<i>Use this</i>
Go to the previous occurrence or cross-reference	Alt+P or Alt+Left
Go to the next occurrence or cross-reference	Alt+N or Alt+Right
Go to the first occurrence or cross-reference	Alt+Home
Go to the last occurrence or cross-reference	Alt+End
Go to the previous cross-reference, or, if you've viewed only one cross-reference, to go to your original location	Alt+R
Go to your original location when you've viewed multiple cross-references	Alt+Up

Use the following shortcut key combinations to move within Programmer's Library text and tables:

<i>To do this</i>	<i>Use this</i>
Move one character in the corresponding direction	Left, Right, Up, Down
Move one word in the corresponding direction	Ctrl+Left, Ctrl+Right
Move one screen in the corresponding direction	PgUp, PgDn
Move the cursor to the beginning or the end of the reference in use, respectively	Ctrl+PgUp, Ctrl+PgDn
In text, move to the left edge of your screen on the current line; in the table ruler, move the first column of a table into view	Home
In text, move to the last character on the current line; in the table ruler, move the last column of a table into view	End
Move the cursor to either the upper-left or lower-left corner of your text screen, respectively	Ctrl+Home, Ctrl+End

Quick Reference: Menus and Commands

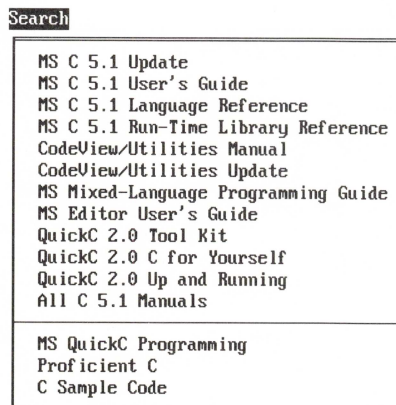
The following list provides a brief description of all of the menus and commands available in Programmer's Library.

Main Menu Bar

Menu:

Search

This menu lists the references and sample code available in the Programmer's Library reference category you're currently using. Choose one of the references or a group of references to start a search for a specific word or phrase.



Menu:

Contents

This menu lists the references and sample code in the current category. Choose one of the references or a group of references to display the Browser menu bar.

Contents

MS C 5.1 Update MS C 5.1 User's Guide MS C 5.1 Language Reference MS C 5.1 Run-Time Library Reference CodeView/Utilities Manual CodeView/Utilities Update MS Mixed-Language Programming Guide MS Editor User's Guide QuickC 2.0 Tool Kit QuickC 2.0 C For Yourself QuickC 2.0 Up and Running All C 5.1 Manuals
MS QuickC Programming Proficient C C Sample Code

Menu:

Index

This menu lists the references in the current category that contain indexes. Choose one of the references to display the Browser menu bar.

Index

MS C 5.1 User's Guide MS C 5.1 Language Reference MS C 5.1 Run-Time Library Reference CodeView/Utilities Manual MS Mixed-Language Programming Guide MS Editor User's Guide QuickC 2.0 Tool Kit QuickC 2.0 C For Yourself
MS QuickC Programming Proficient C

Menu:

QuickRef

This menu lists the references in which you can look up definitions. Choose one of the listed references to search for the definition of a specific term.

QuickRef

MS C 5.1 Run-Time Library Reference Alt-Q

Menu:

Options

This menu lists commands that allow you to customize Programmer's Library, start other Microsoft CD-ROM Library products, change reference categories, and perform other special tasks.

Options

Library	Alt-Q
Bookmarks	
Paste	F10
Save Clipboard	
Date Stamp	
Colors	
Hotkeys	
Unload	

Library allows you to select another Programmer's Library reference category or to open any of the Microsoft CD-ROM Library products you've set up.

Bookmarks allows you to view all of the bookmarks you've created in any of the Microsoft CD-ROM Library products you've set up. You can delete any bookmarks you've created in Programmer's Library.

Paste allows you to insert information you've copied from Programmer's Library into your program editor or word processing application.

Save Clipboard saves information copied to the Clipboard in a file specified by you.

Date Stamp inserts the current date and time into your word processing document.

Colors allows you to change the colors displayed on Programmer's Library screens.

Hotkeys allows you to change the key combination used to start Programmer's Library.

Unload removes the MS Library software from your computer's memory.

Menu:

Help

This menu lists commands that provide access to help information concerning Programmer's Library.

Help	
Quick Help	F1
Search	
Table of Contents	
General Index	
About	

Quick Help displays help information for the task you're currently performing; it is activated by pressing F1.

Search allows you to search the User's Guide for a specific term or topic.

Table of Contents displays the User's Guide table of contents. You can select a topic from the list for viewing.

General Index displays the User's Guide index. You can select a cross-reference from the index for viewing.

About displays copyright information for Programmer's Library.

Browser Menu Bar

Menu:

Edit

This menu lists commands that allow you to work with the Clipboard.

Edit	
Append	F9
Copy	Del
Paste	F10

Append adds the selected text to the contents of the Clipboard.

Copy places the selected text in the Clipboard and overwrites any existing text in the Clipboard.

Paste copies the contents of the Clipboard to your program editor or word processor if you're running Programmer's Library as a TSR application.

Menu:

View

This menu provides tools that allow you to control the way information is displayed in Programmer's Library.

View	
Zoom In	F7
Zoom Out	F8
Location	Alt-L
Bookmarks	
Footnote	
Cross-ref	
Return	Alt-R

Zoom In displays the next lower level in the reference you're viewing.

Zoom Out displays the next higher level in the reference you're viewing.

Location displays a box which indicates where you are in the reference or sample code you're currently viewing.

Bookmarks allows you to view all of the bookmarks you've created in any of the MS Library products you've set up. You can delete any bookmarks you've created in Programmer's Library.

Footnote displays the text of a footnote associated with a reference.

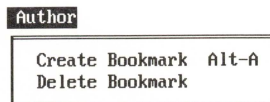
Cross-ref goes to the text of a cross-reference associated with a word in a reference, table of contents, or index.

Return goes to the cross-reference you were last viewing or, if you've viewed only one cross-reference, to your original location.

Menu:

Author

This menu allows you to create and delete bookmarks in a Programmer's Library reference.



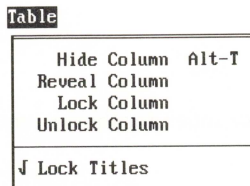
Create Bookmark marks your place within the text you're viewing.

Delete Bookmark removes a bookmark you've created.

Menu:

Table

This menu allows you to change the way tables are displayed on your screen.



Hide Column temporarily hides a column so that another part of a wide table can be brought into view or so that nonadjacent columns can be viewed next to each other.

Reveal Column displays a column that has been hidden.

Lock Column freezes the leftmost column (the row labels) in a table. You can then scroll other parts of the table into view.

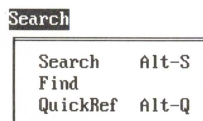
Unlock Column unlocks the leftmost column in a table.

Lock Titles is a toggle that locks and unlocks the table headings or titles. When locked, table headings remain visible while scrolling up or down in a long table. Locked titles is the default.

Menu:

Search

This menu allows you to locate a specific word or phrase within the current reference or group of references.



Search allows you to locate all of the occurrences of a word or phrase within the current reference or group of references.

Find allows you to locate the next occurrence of a word or phrase within a chapter, a table of contents, or an index.

QuickRef allows you to locate the definition of a term within the current reference. To use this command, you must be using one of the QuickRef references.

Menu:

Browse

This menu displays the table of contents or index for the current reference.



Table of Contents displays the list of chapter titles for the current reference.

General Index displays the index for the current reference.

Command:

Prev

This command displays the previous Search or QuickRef occurrence or cross-reference (when multiple cross-references are associated with a word).

Command:

Next

This command displays the next Search or QuickRef occurrence or cross-reference (when multiple cross-references are associated with a word).

Command:

Help

This command displays Quick Help for the task you're performing. You can also get Quick Help by pressing F1.

Using Programmer's Library in Stand-alone Mode

Programmer's Library can be used effectively as a stand-alone application in conjunction with most program editors and word processing applications. You simply access DOS from your program editor or word processor, type *msl* to start Programmer's Library, and find the information or code you need. To return to your program editor or word processor, press Esc repeatedly to return to the Main menu bar and display the Exit dialog box, and then press Enter. More than 256K of memory is usually required to run an editor or word processor while using Programmer's Library in stand-alone mode. For more information, see "Starting Programmer's Library" earlier in this guide or see the text relating to the specific program editor you're using later in this section.

You can also copy code from Programmer's Library into your program editor or word processing application while running in stand-alone mode. From within Programmer's Library, use the Copy command to copy the code to the Clipboard. Save the code in a file using the Save Clipboard command. Then use your editor or word processor to load this file and insert the code you've saved. From outside Programmer's Library, you can copy the ASCII file of code from the CD-ROM disc using your editor and specifying the source driver (for example, D:) and the pathname. For more information, see "Copying, Appending, and Pasting" earlier in this guide.

The following sections describe how to use Programmer's Library as a stand-alone application with some of the most popular program editors and with Microsoft Word. Further instructions for using program editors with Programmer's Library in stand-alone mode may be in the README.DOC file.

BRIEF Editor

To load BRIEF:

- At the DOS prompt, type
b -M20

To start Programmer's Library from within BRIEF:

1. Press ALT+Z.
2. Type *m**s**l*, or *m**s**l* //, if you're using expanded memory. Specify the complete pathname, as appropriate.

To exit Programmer's Library and return to BRIEF:

1. Press Esc and then press Enter.
2. Type *e**x**i**t* to return to BRIEF.

NOTE: If you're using Programmer's Library as a TSR with the BRIEF Editor, see the special instructions in Appendix A.

VEDIT Editor

To Start Programmer's Library from within VEDIT:

1. Press Esc.
2. Highlight *C**o**m**m**a**n**d* *m**o**d**e* and press Enter.
3. Type *o**c* *c*:\m*s**l*. Specify the complete pathname, as appropriate.

To exit Programmer's Library and return to VEDIT:

1. Press Esc and then press Enter.
2. Press V and then press Enter.

Epsilon version 3.21

To Start Programmer's Library from within Epsilon:

1. Press Ctrl+X.
2. Press Ctrl+E.
3. Type *m**s**l*. Specify the complete pathname, as appropriate.

To exit Programmer's Library and return to Epsilon:

1. Press Esc and then press Enter.
2. Type *exit*.

Turbo Pascal version 4.0

To Start Programmer's Library from within Turbo Pascal:

1. Press F10.
2. Press F.
3. Press O.
4. Type *msl*. Specify the complete pathname, as appropriate.

NOTE: You can also execute these commands with a mouse by choosing the OS shell command from the File menu.

To exit Programmer's Library and return to Turbo Pascal:

1. Press Esc and then press Enter.
2. Type *exit*.

Microsoft QuickC versions 1.0 and 2.0

To Start Programmer's Library from within Microsoft QuickC:

1. Press Alt.
2. Press F.
3. Press D.
4. Type *msl*. Specify the complete pathname, as appropriate.

NOTE: You can also execute these commands with a mouse by displaying the File menu and clicking the DOS Shell command.

To exit Programmer's Library and return to Microsoft QuickC:

1. Press Esc and then press Enter.
2. Type *exit*.

Microsoft QuickBASIC version 4.5

To Start Programmer's Library from within QuickBASIC:

1. Press Alt.
2. Press F.
3. Press D.
4. Type *msl*. Specify the complete pathname, as appropriate.

NOTE: You can also execute these commands with a mouse by displaying the File menu and clicking the DOS Shell command.

To exit Programmer's Library and return to QuickBASIC:

1. Press Esc and then press Enter.
2. Type *exit*.

Norton Editor version 1.3C

To Start Programmer's Library from within Norton Editor:

1. Press F9.
2. Type *msl*. Specify the complete pathname, as appropriate.

To exit Programmer's Library and return to Norton Editor:

1. Press Esc and then press Enter.
2. Press Enter again.

Turbo C version 1.5

To Start Programmer's Library from within Turbo C:

1. Press F10.
2. Press F.
3. Press O.
4. Type *msl*. Specify the complete pathname, as appropriate.

NOTE: You can also execute these commands with a mouse by choosing the OS shell command from the File menu.

To exit Programmer's Library and return to Turbo C:

1. Press Esc and then press Enter.
2. Type *exit*.

Microsoft Editor version 1.0

To start Programmer's Library from within Microsoft Editor version 1.0:

1. Press Alt+A.
2. Type *msl*. Specify the complete pathname, as appropriate.
3. Press Shift+F9.

To exit Programmer's Library and return to Microsoft Editor version 1.0:

1. Press Esc until the Exit dialog box appears.
2. Choose the OK button by pressing Enter or by clicking the button with the mouse.

Microsoft Word

To start Programmer's Library from within Microsoft Word:

1. Press Esc.
2. Select the Library menu.
3. Choose the Run command.
4. Type *msl*. Specify the complete pathname, as appropriate.

Programmer's Library is now running in stand-alone mode on your computer. Microsoft Word is the inactive application.

To exit Programmer's Library and return to Microsoft Word:

1. Press Esc until the Exit dialog box appears.
2. Choose the OK button by pressing Enter or clicking it with the mouse.
3. Press any key to return to Microsoft Word.

Programmer's Library is removed from memory, and Microsoft Word is now the active application.

Appendix A: Technical Information

This section provides reference information about Programmer's Library, including error messages, Setup program information, and details about searching.

Error Messages

The following error messages may appear as you set up and use Programmer's Library. Messages are listed in alphabetic order, with a brief explanation of how to respond to each message.

<i>If you see this message</i>	<i>Do this</i>
CDR101:Read Failed Abort, Retry, Ignore	Check to see that there is a disc in your CD-ROM drive and that the drive door is closed. Type <i>R</i> to retry access to Programmer's Library.
CDR103: Disc in drive is not High Sierra	The MS-DOS CD-ROM Extensions will work only with compact disc files that are in the High Sierra format (ISO 9660). Be sure that the disc in your drive is the Programmer's Library disc.
Couldn't read virtual memory file	Programmer's Library cannot write to either the TMP environment variable directory or the Programmer's Library executable directory. The directories may be specified as "read only."
DOS error	The disk operating system (DOS) is not functioning properly. Save any documents that are open in other applications, then reboot your computer and start Programmer's Library again.
Error reading resource file encountered	Your computer encountered a disk error while trying to read from the Programmer's Library resource files or the MSL.RES file. Rerun the Setup program or refer to the instructions for manual setup in the README.DOC file.
Expanded memory not available	Programmer's Library is unable to use LIM 3.2 or higher expanded memory because LIM is not present or is not properly installed.
Internal MS Library error	Press any key to exit Programmer's Library when you receive an Internal MS Library error message (numbered 1,000 or higher). Save any documents that are open in other applications, then reboot your computer and start Programmer's Library again.
Invalid drive specification	Be sure that the drive letter and the directory correspond to the location you specified when running the Setup program.
MS Library not correctly installed; run Setup	Rerun the Setup program or refer to the instructions for manual setup in the README.DOC file.

(continued)

<i>If you see this message</i>	<i>Do this</i>
MS Library product is already loaded	Programmer's Library or another Microsoft CD-ROM Library product is already memory-resident. Press the defined hotkey sequence (Alt+left Shift is the default sequence) to display the Main menu bar.
Not enough disk space for virtual memory file	The 300K required for the virtual memory file is not available on the disk that holds the TMP environment variable directory or the Programmer's Library executable directory. Follow these instructions to avoid any possible damage to your system: <ol style="list-style-type: none"> 1. Unload Programmer's Library by choosing the Unload command from the Options menu (Main menu bar). 2. Check to see if either the TMP environment variable directory or the Programmer's Library executable directory contains the BOOKVIRT.MEM file. If this file is found, delete it to free up additional disk space.
<i>Warning: Never delete the BOOKVIRT.MEM file while Programmer's Library or any other Microsoft CD-ROM Library product is loaded in memory. Doing so may corrupt your hard disk. If you should delete the file accidentally, reboot your computer immediately.</i>	
Not enough memory	Not enough memory is available to run Programmer's Library. Unloading other memory-resident applications may release the memory required to run Programmer's Library. If you're using LIM 3.2 or higher, try loading Programmer's Library by typing <i>m sl /l</i> at the DOS prompt. If you normally have sufficient memory to run Programmer's Library, reboot your computer to reclaim any memory that was lost.
Not enough memory to run resident; try <i>m sl</i>	Not enough memory is available to run Programmer's Library as a memory-resident program, but it may be possible to run it in stand-alone mode. Try loading Programmer's Library by typing <i>m sl</i> at the DOS prompt.
Runs only DOS 3.1, 3.2, or 3.3	Programmer's Library requires DOS 3.1, 3.2, or 3.3. You can use DOS 4.0 if you're using MS-DOS CD-ROM Extensions 2.1.
Usage: <i>m sl /tx/lf/b</i>	An invalid DOS parameter has been specified. You can load Programmer's Library without parameters or with any of the following parameters: <ul style="list-style-type: none"> <i>/t</i> memory-resident program <i>/x</i> use extra base memory <i>/l</i> use LIM 3.2 or later memory <i>/f</i> increase the size of the virtual memory file <i>/b</i> black-and-white display

Setup Information

The Microsoft CD-ROM Library

Programmer's Library is part of a family of Microsoft CD-ROM Library products. Each product in this family uses the same MS Library software. Whenever you obtain a new Microsoft CD-ROM Library product, be sure to run the Setup program provided with the product. By using the current Setup program, you ensure that all Microsoft CD-ROM Library products in use are updated to take advantage of new software features.

The Library Directory

Before Programmer's Library can be used, a directory called the Library directory must be created by the Setup program that resides on the CD-ROM disc. Your Library directory (for example, C:\MSLIB) will contain the MS Library software (used by all Microsoft CD-ROM Library products) as well as software specifically designed for Programmer's Library.

The following steps are performed by the Setup program:

1. Setup creates your Library directory, if you don't already have one. If you use more than one Microsoft CD-ROM Library disc, all of the discs should use the same Library directory if you want all of the discs to be listed in the Library dialog box.
2. Setup copies the MS Library software from your Programmer's Library disc to your Library directory, unless your Library directory contains a more recent version of the software. Each Microsoft CD-ROM Library disc contains a version of the MS Library software; Setup will never replace a version of software with another, older version.
3. Setup copies the Programmer's Library software from your CD-ROM disc to your Library directory.
4. Setup creates a file named MSL.INI in your Library directory, unless this file already exists. The format of this file is described later in this section.

5. If Programmer's Library is the first Microsoft CD-ROM Library disc that was set up in your Library directory, Setup will optionally modify your CONFIG.SYS file to increase the number specified by the "FILES=" line, to ensure that the MS Library software will operate properly while a program editor or word processing application is being loaded.

Temporary Magnetic Disk Space Used by the MS Library Software

Each time the MS Library software is run, it creates a file called BOOKVIRT.MEM, which is about 300 kilobytes in size and is used for temporary storage. If you do very large searches, you can increase the size of BOOKVIRT.MEM by loading the MS Library software with the */f* parameter. Type *msl /f* followed by a number greater than 300.

This file is created in the directory specified by the TMP environment variable. (Many programming tools, including the Microsoft C Optimizing Compiler, also examine the TMP environment variable to determine where to create temporary files.) To set TMP to the name of a directory on your hard disk or floppy disk, edit your AUTOEXEC.BAT file and reboot your computer. For example, type:

```
set tmp=c:\temp
```

This example specifies the directory *c:\temp* as the directory that will contain temporary files.

NOTE: For more information about the TMP environment variable and the AUTOEXEC.BAT file, see your DOS manual.

NOTE: Never delete the BOOKVIRT.MEM file while the MS Library software is loaded.

Using a RAM Disk

The MS Library software will operate faster if the directory specified by the TMP variable is located on a RAM disk that has at least 300K of free disk space. To use a RAM disk with MS Library software, set the TMP environment variable in your AUTOEXEC.BAT file to specify a directory on your RAM disk.

For example, to specify the root of drive E (where drive E is a RAM drive) as the directory that will contain temporary files, type:

```
set tmp=e:\
```

Format of the MSL.INI File

The MSL.INI file in your Library directory is read by the MS Library software each time it is loaded. This file contains information about each reference category or each Microsoft CD-ROM Library product you've set up in your Library directory. You will not normally need to modify the contents of MSL.INI, since the Setup program automatically updates MSL.INI. However, if you choose to arrange your files in a nonstandard way, you may need to know how the MS Library software interprets the information in the MSL.INI file. A typical MSL.INI file looks like this:

```
[msl]
OS2,      OS/2 References,      D:\BOOKS, 1011
WINDOWS,  Windows References,     D:\BOOKS, 1012
NET,      Network References,   D:\BOOKS, 1013
MSDOS,    MS-DOS References,    D:\BOOKS, 1014
MSJ,      MS Systems Journal,   D:\BOOKS, 1015
HW,       Hardware References,  D:\BOOKS, 1016
C,        C References,         D:\BOOKS, 1017
MASM,     MASM References,      D:\BOOKS, 1018
BASIC,    BASIC References,     D:\BOOKS, 1019
PASCAL,   Pascal References,    D:\BOOKS, 1020
FORTRAN,  FORTRAN References,   D:\BOOKS, 1021
```

Each MSL.INI file starts with a line containing “[msl].” The following lines each contain information about a single reference category. Each line contains the following four fields, separated by commas:

- The first field is the short name of the reference category (for example, MSDOS) and is used internally by the MS Library software. The names of the software files used by a reference category (for example, MS-DOS References) will be listed in a file located in your Library directory. The name of this file is the reference category's short name with the extension “.FLS” (for example, “MSDOS.FLS”). The names of the files used by the MS Library software itself are listed in the MSL.FLS file.

- The second field is the long name of the reference category. This is the name that is shown in the Library dialog box on the Options menu.
- The third field contains the name of one or more directories. Multiple directory names must be separated by semicolons (;), with no intervening spaces (just like the PATH environment variable in MS-DOS). Whenever the MS Library software tries to locate a file used by a reference category, it looks in each of the directories specified in the third field after first looking at the directory specified by the TMP environment variable and your Library directory.
- The fourth field is the reference category number, which is used internally by the MS Library software. This number should never be changed.

Details About Searching

Each Microsoft CD-ROM Library product or reference category has an associated search index which lists the locations of all occurrences of almost every word contained in the product or reference category. When you construct a query using the Search dialog box, the MS Library software consults the search index to quickly locate all of the places in the reference category that satisfy your query. Since the MS Library software takes care of all of the details of searching, you normally need not be concerned about the contents of search indexes. However, certain common words, punctuation, and other characters are not indexed. You may therefore find it useful to know exactly what has been indexed and what has not.

All reference category search indexes include words that meet all of the following criteria:

- The word must be a sequence of characters including only the following, in any combination:
 - Upper-case letters (A to Z)
 - Lower-case letters (a to z)
 - Certain foreign-language letters in the PC extended character set (character codes 128 to 154, inclusive, and 160 to 165, inclusive)
 - Digits (0 to 9)
 - The underscore character (_)
 - Apostrophe (' or `)
 - Period (.) surrounded by letters or digits
- The word must contain at least one letter, unless the word is a 4-digit or 5-digit word (for example, 1980, 8086, or 80386).
- The word must be more than one character in length.

- The word must not be included in the following list:

an	from	she
and	have	that
as	he	the
at	in	they
be	it	this
but	not	to
by	of	we
do	on	with
for	or	you

If you type a word in the Search dialog box that is not indexed, the dialog box will report that zero occurrences were found.

The Search dialog box is not sensitive to upper-case or lower-case; searching for "MOV" would find any occurrences of "mov" or "MOV." Words containing underscores, apostrophes, and periods are specially indexed to make searches as useful as possible. For example, searching for "NY" would find any occurrences of "N.Y." or "NY." Searches for "text" would find any occurrences of "TEXT" or "text."

Using Programmer's Library as a TSR with the BRIEF Editor

When you're using Programmer's Library as a TSR with the BRIEF editor, your cursor may disappear when you start BRIEF. This is caused by an incompatibility between Programmer's Library and the multiple video display pages used by BRIEF. When used with Programmer's Library, BRIEF uses the second video display page to display your text and reserves the first video display page for your DOS screen.

Use the "-p" option to tell BRIEF to use the first video display page instead of the second. This will ensure that your BRIEF cursor is displayed properly.

Follow these instructions when loading BRIEF for use with Programmer's Library.

To load a BRIEF file:

- At the DOS prompt, in lower-case letters, type:

```
b -p -c1,1,3,3 {filename}
```

Here, *b* refers to the B.EXE file (BRIEF), *-p* and *-c1* refer to parameters, and *filename* is the name of the BRIEF file you want to edit.

You can also store the parameters (*-p* and *-c1,1,3,3*) as an environment variable so that they are entered automatically each time you load a BRIEF file. Use the Set command to create the environment variable.

To create an environment variable:

1. At the DOS prompt, type
set BFLAGS=-p -c1,1,3,3
2. Press Enter.

To load a BRIEF file after creating the environment variable:

- At the DOS prompt, type:

```
b {filename}
```

where *filename* is the name of the BRIEF file you want to edit.

Running Programmer's Library Under Microsoft Windows 386

You can run Programmer's Library under Microsoft Windows 386 as a virtual machine. To do so, you must create a .PIF file to describe the requirements of the software.

Use the PIFEDIT program supplied with Microsoft Windows 386 to create the .PIF file. A screen is displayed which allows you to enter the following information:

Name of program: msl.exe

Default directory: c:\mslib or the name you supplied during Setup

Parameters: /t if you plan to run Programmer's Library as a memory-resident application

Required memory: At least 140K if you plan to run Programmer's Library as a stand-alone application; at least 200K if you plan to run Programmer's Library as a memory-resident application

Screen exchange: Disabled

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Microsoft Corporation
16011 NE 36th Way
Box 97017
Redmond, WA 98073-9717

Microsoft®