CASEVision™ Environment Guide

Introduction

The CASEVision™ family of products from Silicon Graphics® provides a wide spectrum of computer−aided software engineering (CASE) tools, ranging from individual productivity tools to tools for managing teams of programmers.

All tools in the CASEVision product line share a common environment. The tools are UNIX®−based and run in the X Window System™ with an OSF/Motif™ user interface. They use standard Motif elements such as the File Browser (used to save and load files) and offer easily set X defaults.

The CASEVision environment also offers a comprehensive on−line help system with context−sensitive access. You can ask for the working details of any single feature within a tool, for overall information about a window or tool, or you can browse through a hierarchy of help topics.

All CASEVision tools provide access to source code through a common text editor called Source View. Source View provides a window displaying lines of text in a source code file. It can display line numbers and special annotations associated with a particular CASEVision tool., such as debugger trap icons or performance analysis metrics. Source View also offers simple text editing features and the ability to fork other text editors such as *vi* or *gnuemacs*.

Many CASEVision tools provide graphical representations of code, such as function call trees or class hierarchies. These have common features for manipulating the presentation so that you can focus on the data of specific interest or get a larger overview.

Using This Guide

This user's guide to the CASEVision environment contains:

- **Chapter 1, "Setting Color Schemes and Font Size"**
- **Chapter 2, "Using On−line Help"**
- **Chapter 3, "Using the File Browser and Keyboard Accelerators"**
- **Chapter 4, "Using Source View"**
- **Chapter 5, "Graphical Views in the CASEVision Environment"**

Conventions

In text descriptions, button names, filenames, applications, variables, directory pathnames, and new terms are shown in *italics*. Command syntax descriptions, screen displays, and examples are shown in `fixed−width font`. User entries and keyboard commands are shown in **`bold fixed−width font`**.

Chapter 1

Setting Color Schemes and Font Size

One of the advantages of working in the X Window System environment on a Silicon Graphics workstation is the wide choice of screen colors you have to work with. It can also be a disadvantage if you consider the number of color choices combined with the 500 plus customizable resources available in Motif. The CASEVision environment provides a number of predefined color and font collections for the tool windows referred to as schemes. The scheme approach e liminates the endless details involved with specifying resources. By making the single choice of a scheme, you can easily change the tones of all your CASEVision windows. You also have a choice of two font sizes for text appearing in the windows. Together, these options help make the CASEVision tools easy to view and the text within them easy to read.

This chapter covers the following topics:

- **"Available Color Schemes"**

- **"Setting Color Schemes"**
- **"Font Size"**

Available Color Schemes

The CASEVision schemes have been designed for specific purposes. They take into account preference for light or dark text, color intensity, red–green color–blind users, and monochrome displays. CASEVision offers twelve different color schemes for CASEVision tool windows, as shown in **Table 1–1** .

Table 1–1 CASEVision Color Schemes

Scheme name	Text / Background	Comments
Leonardo	Dark on light	Low intensity colors
Lascaux	Light on dark	Silicon Graphics look, used as default scheme
Whistler	Light on dark	Darkest scheme
Turner	Light on dark	Bright, contemporary colors
Sargent	Light on dark	Conservative, darker colors
VanGogh	Light on dark	Purple–base
Titian	Dark on light	Same as Lascaux but with a peach cast
Gainsborough	Light on dark	Good for color–blindness, no red / green contrasts
Rembrandt	Light on dark	Greens and browns
Willis	Dark on light	For black–and–white terminals, with fewer fonts
Monet	Light on dark	Pastels
Print	Dark on light	Gray–scale for printing black–and–white screen captures

These color schemes are shown in **Figure 1–1** through **Figure 1–12** .

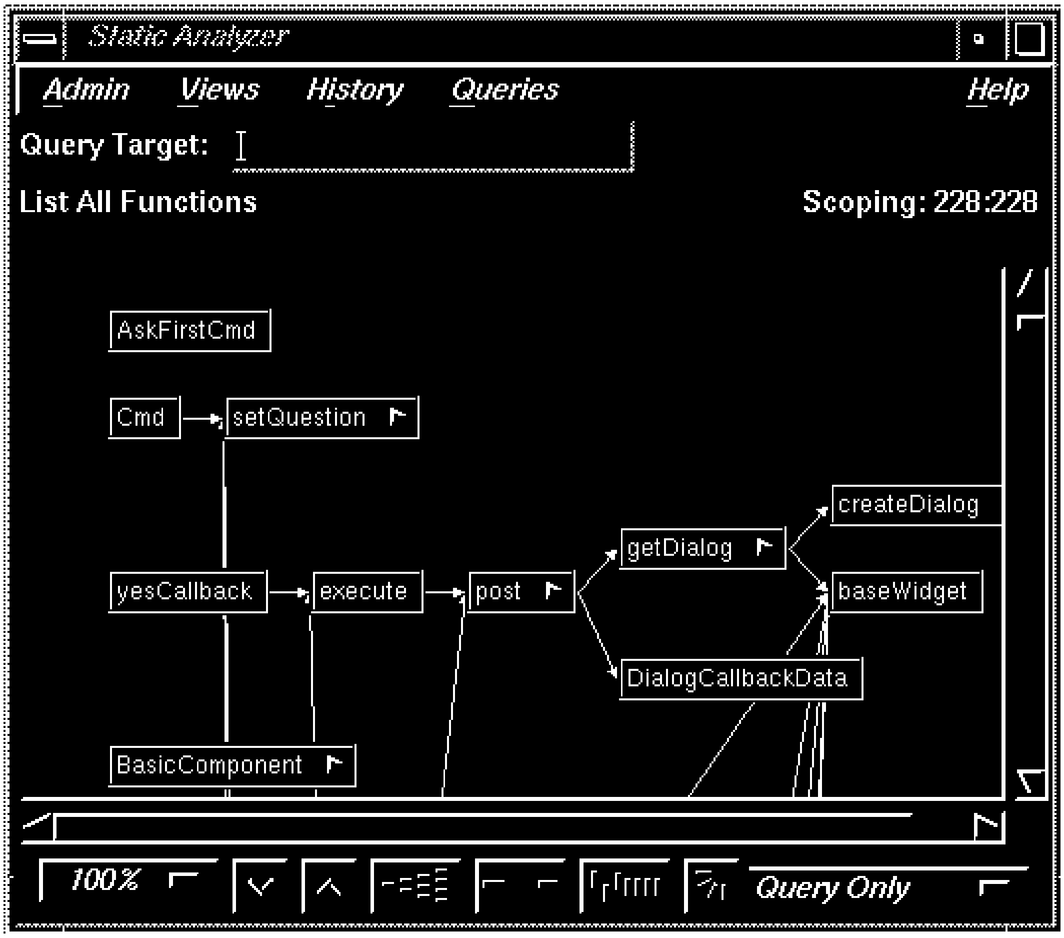

Figure 1–1 Leonardo Color Scheme Example

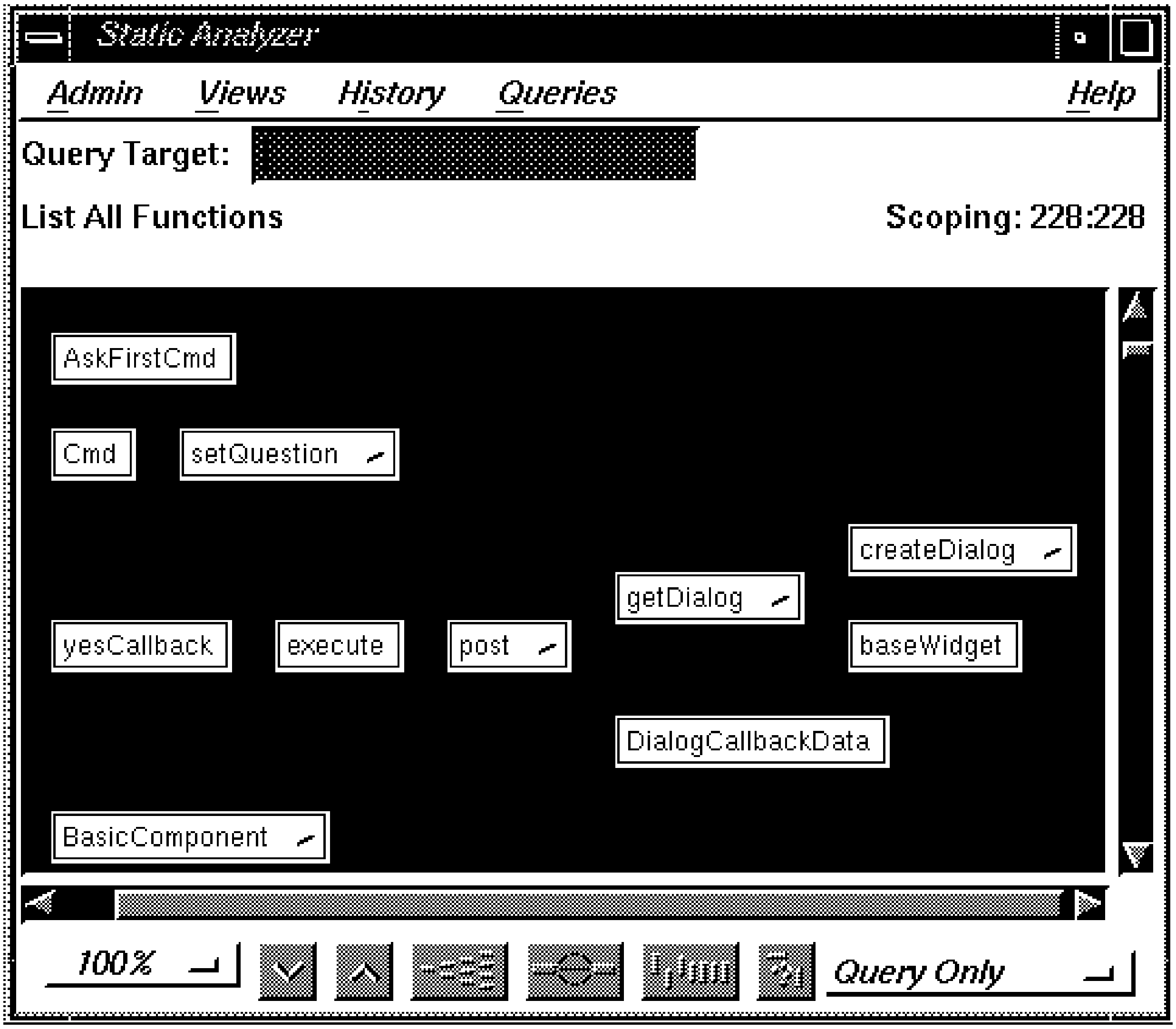

Figure 1–2 Lascaux Color Scheme Example

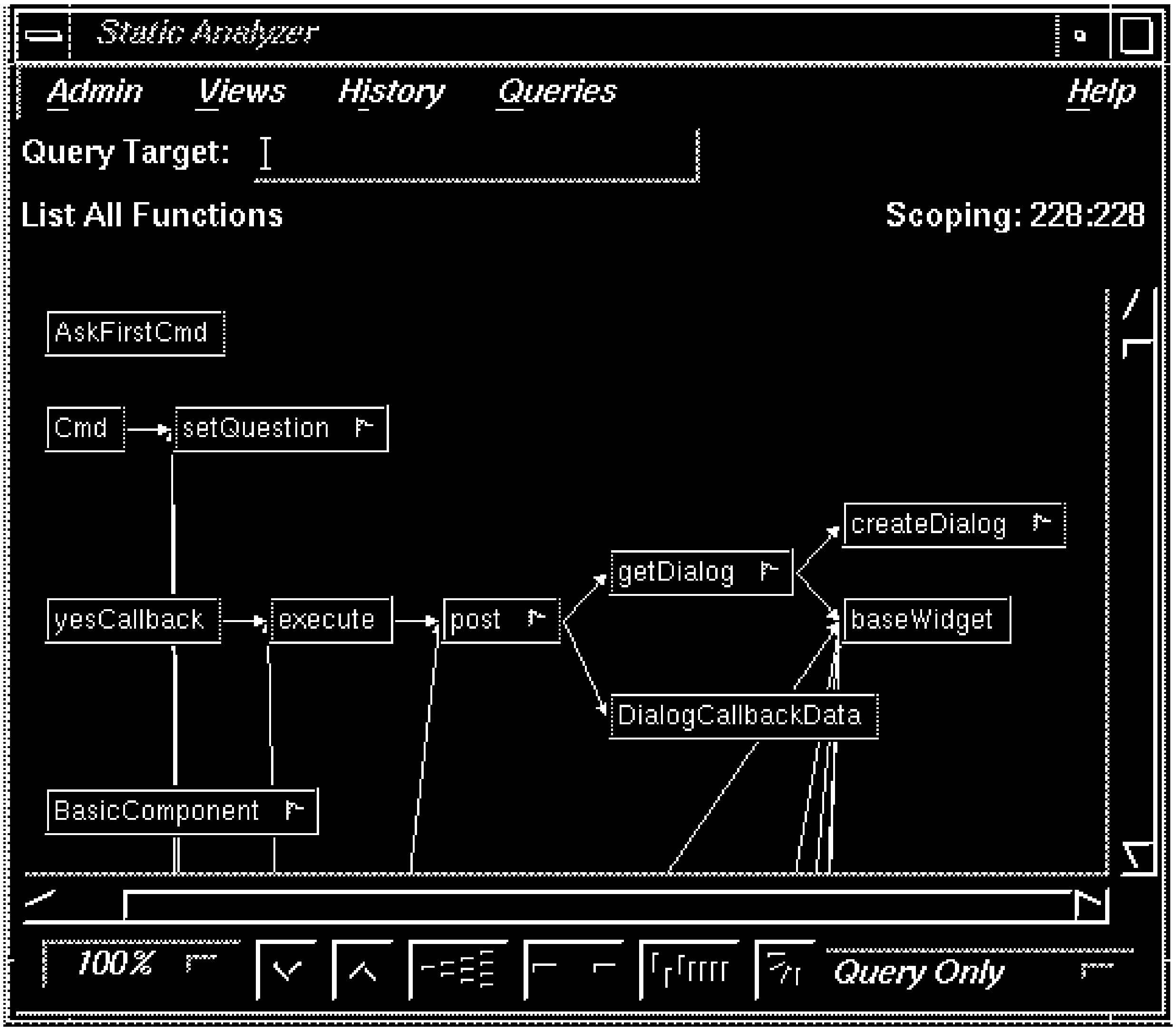

Figure 1–3 Whistler Color Scheme Example

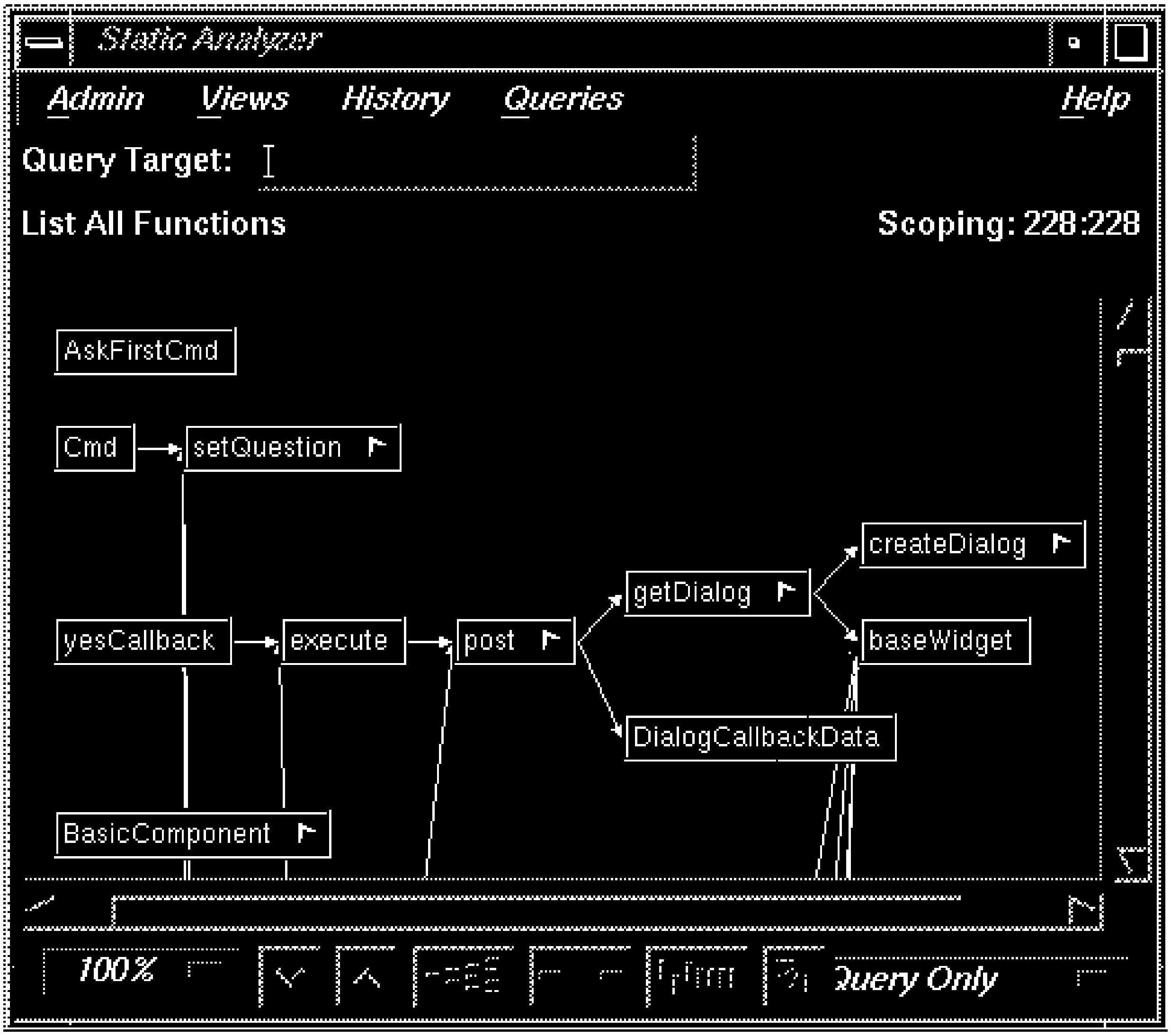

Figure 1–4 Turner Color Scheme Example

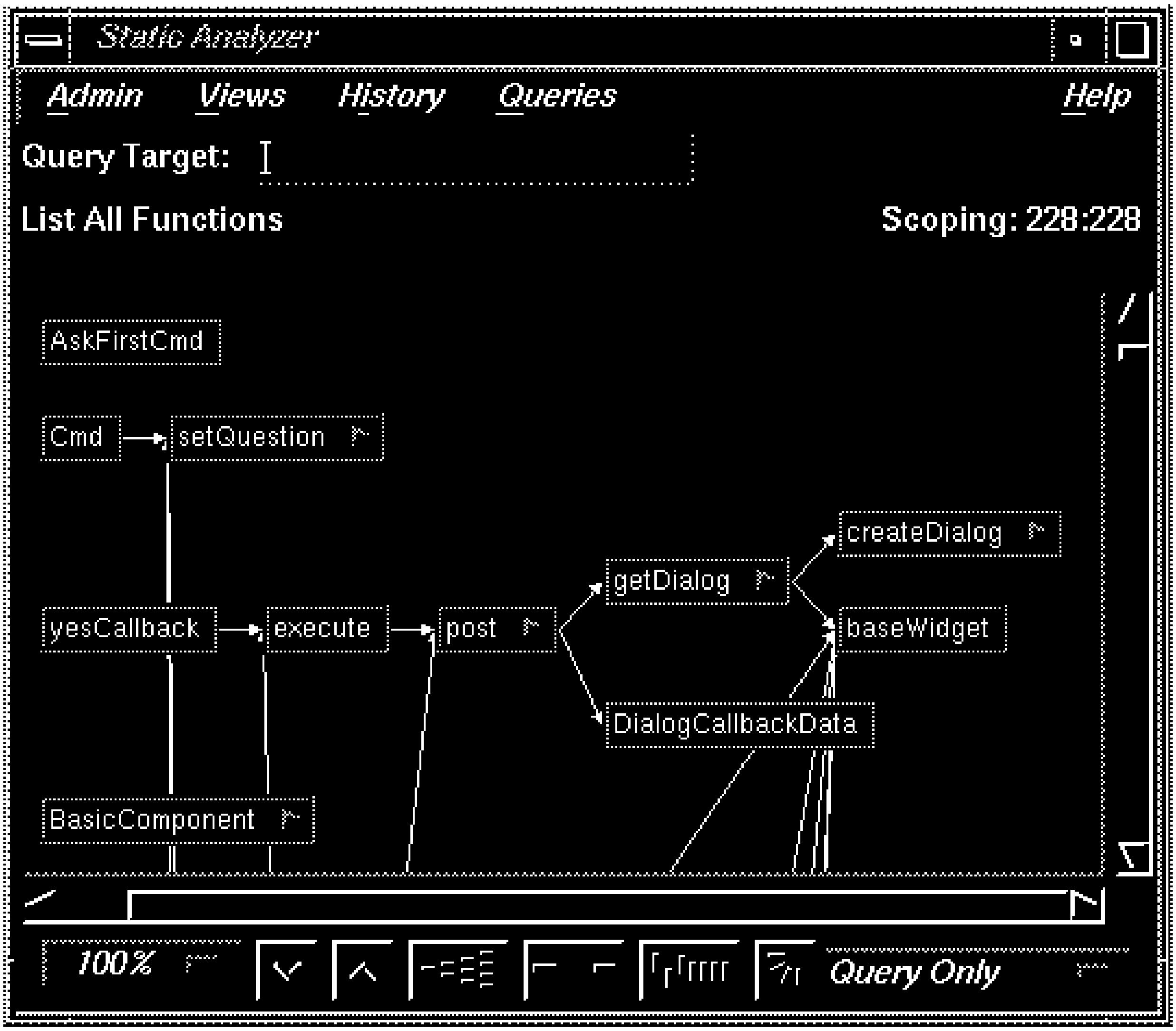

Figure 1–5 Sargent Color Scheme Example

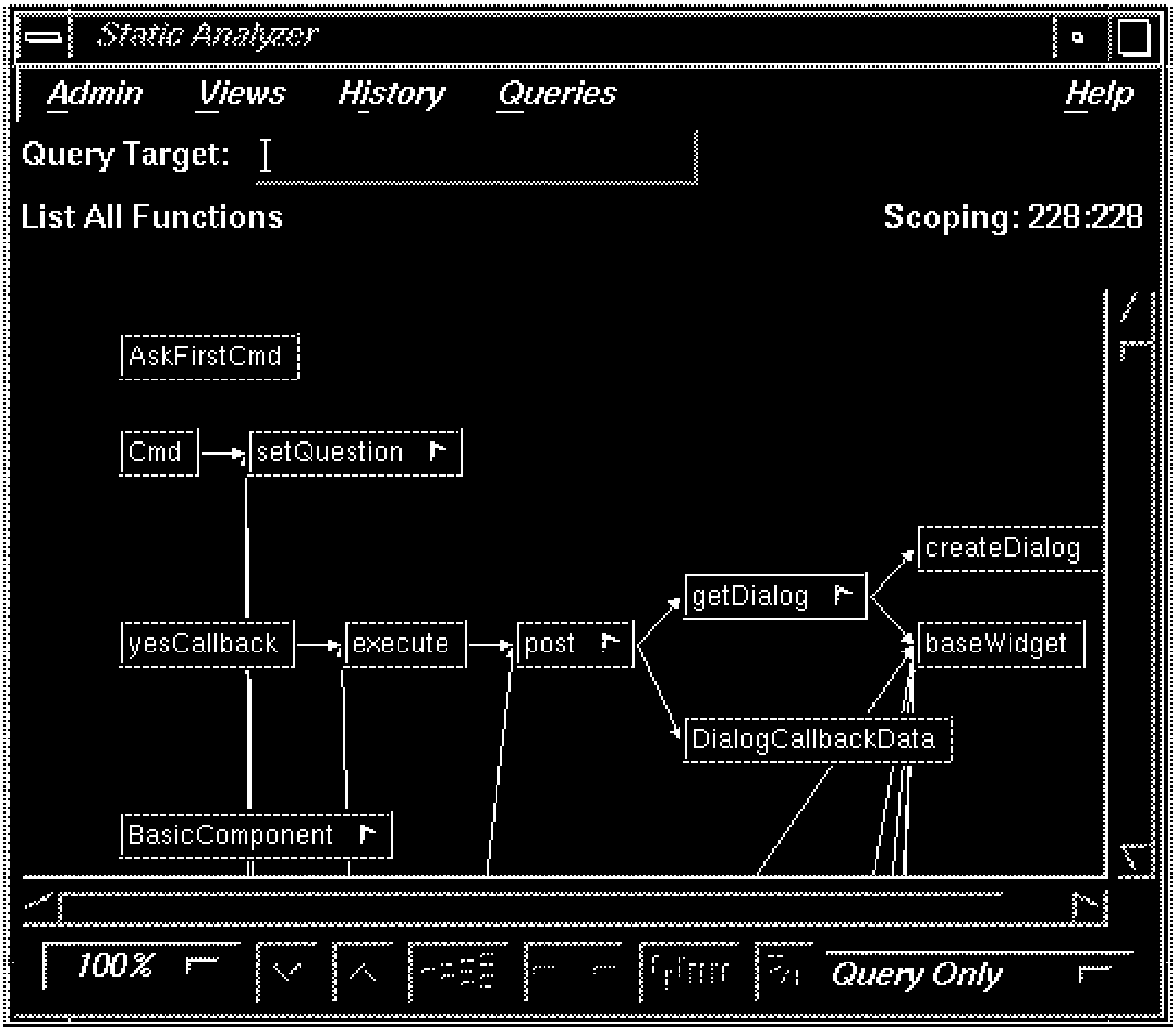

Figure 1–6 VanGogh Color Scheme Example

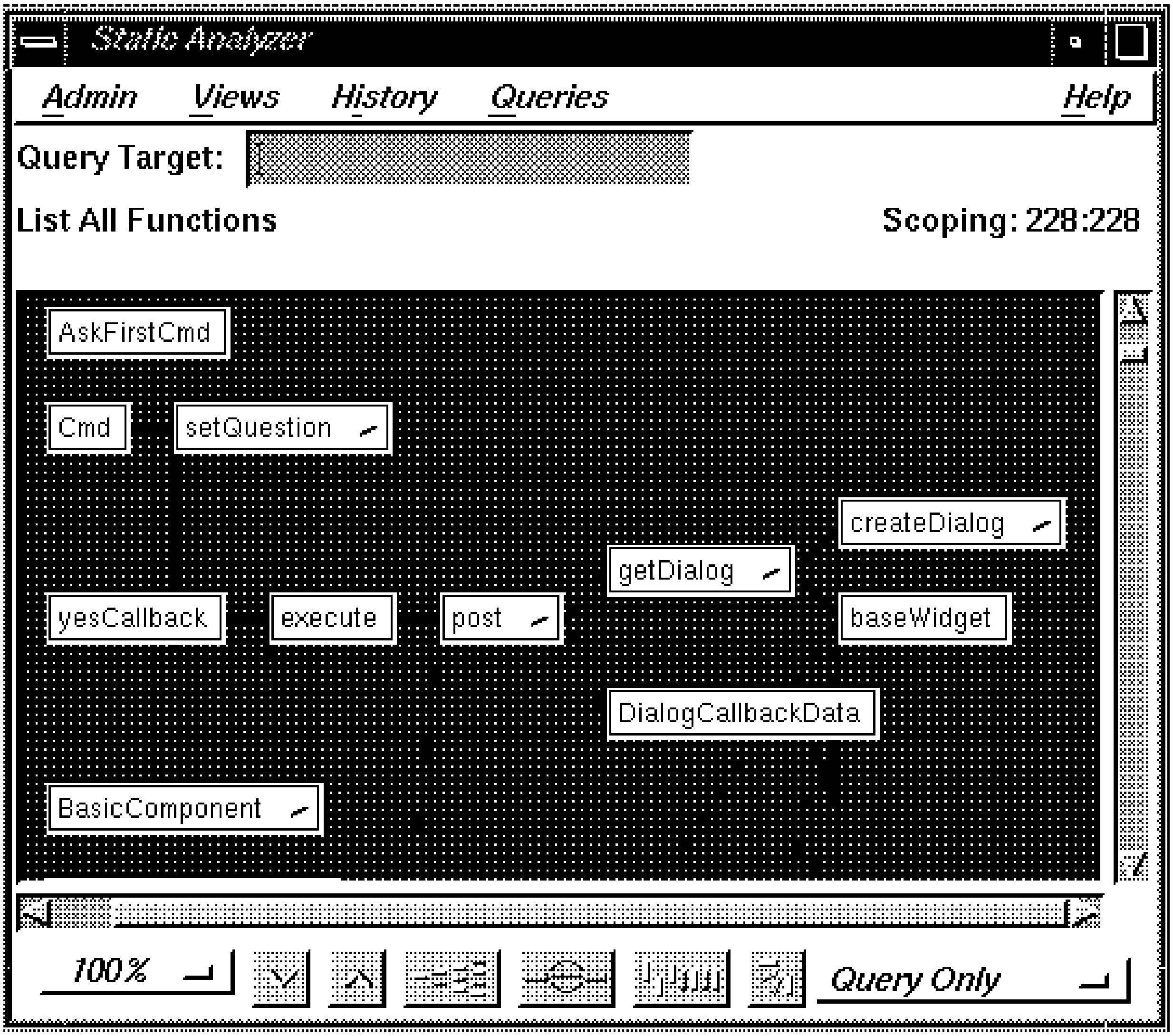

Figure 1–7 Titian Color Scheme Example

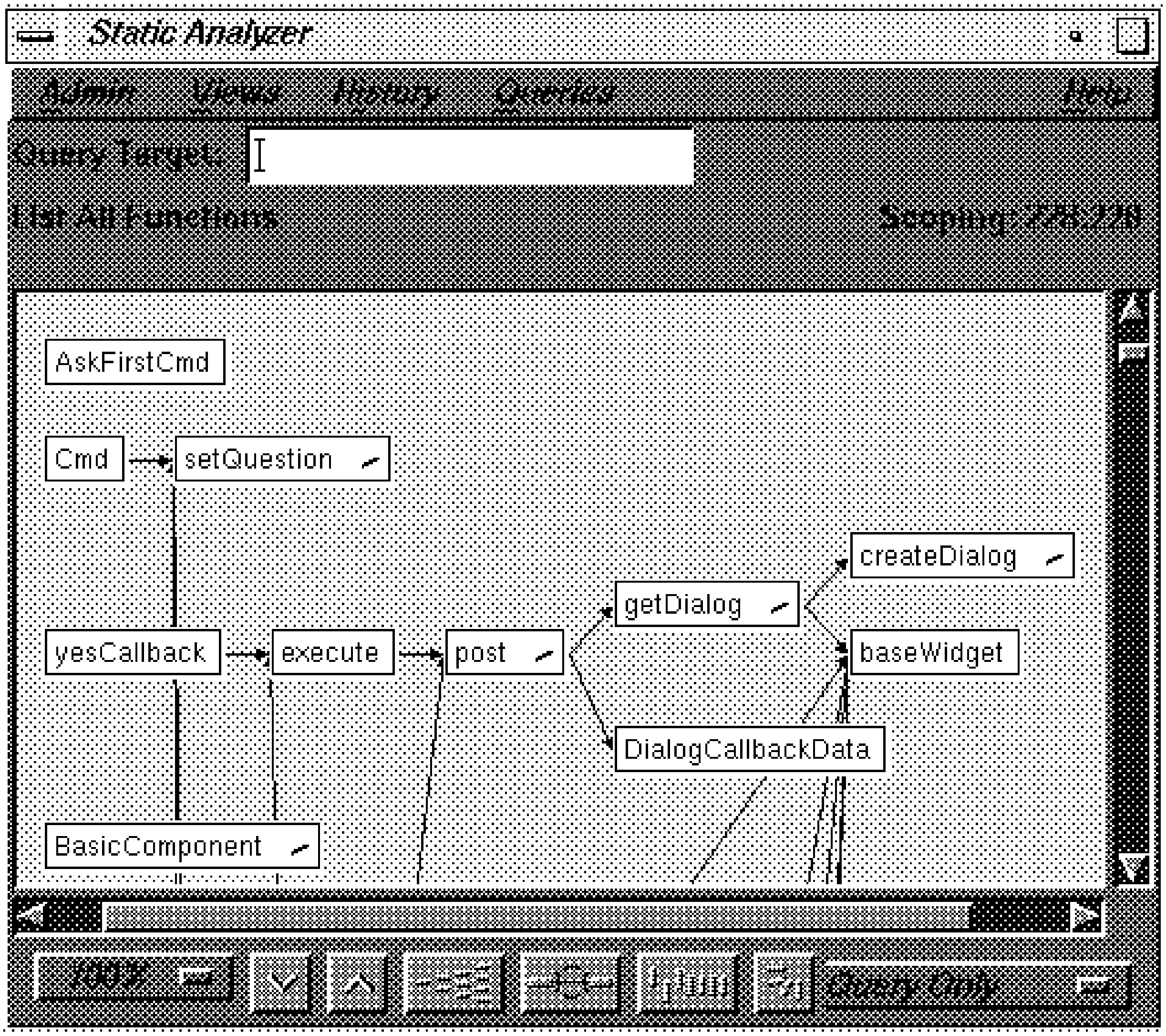

Figure 1–8 Gainsborough Color Scheme Example

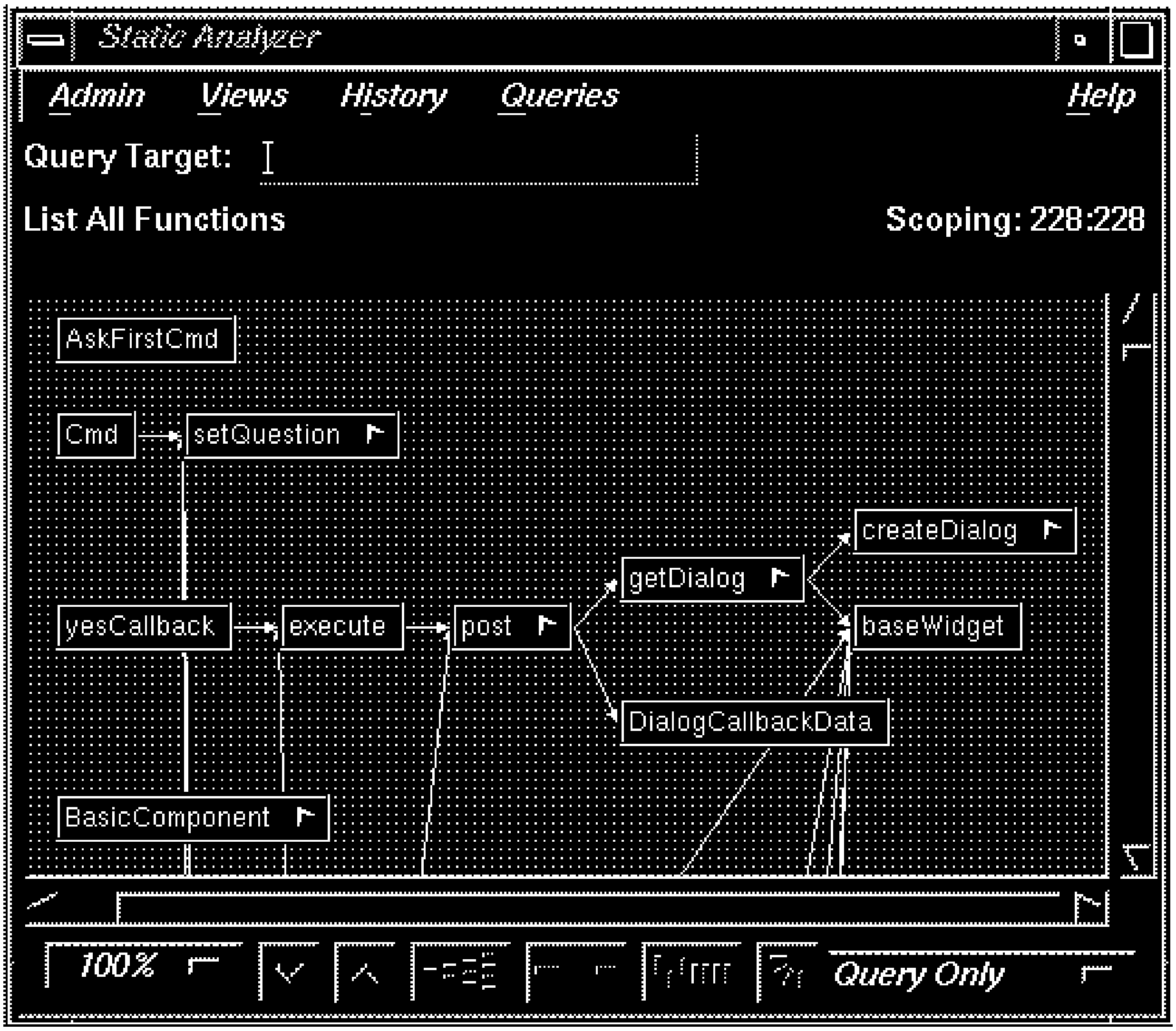

Figure 1–9 Rembrandt Color Scheme Example

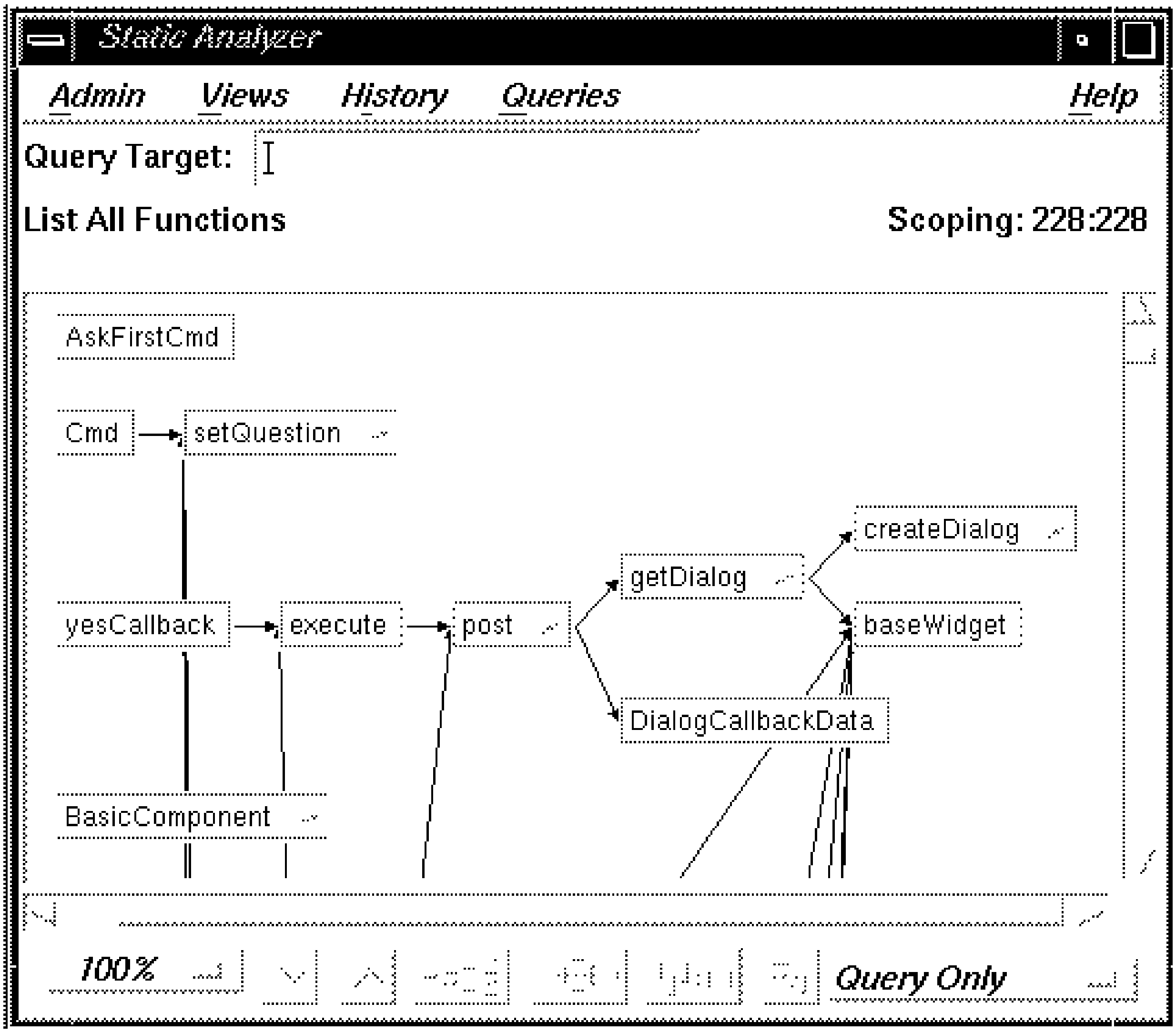

Figure 1–10 Willis Color Scheme Example

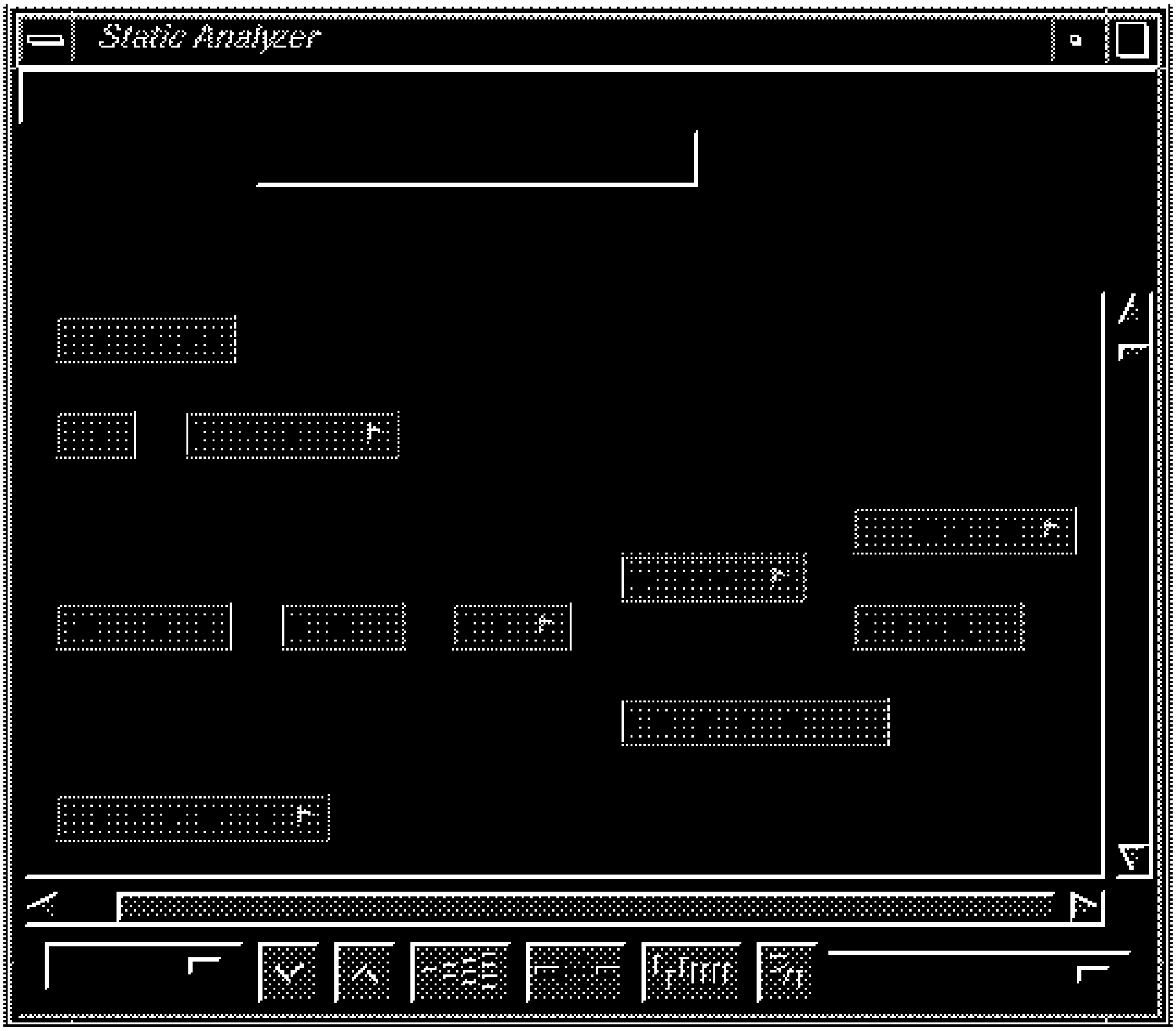

Figure 1–11 Monet Color Scheme Example

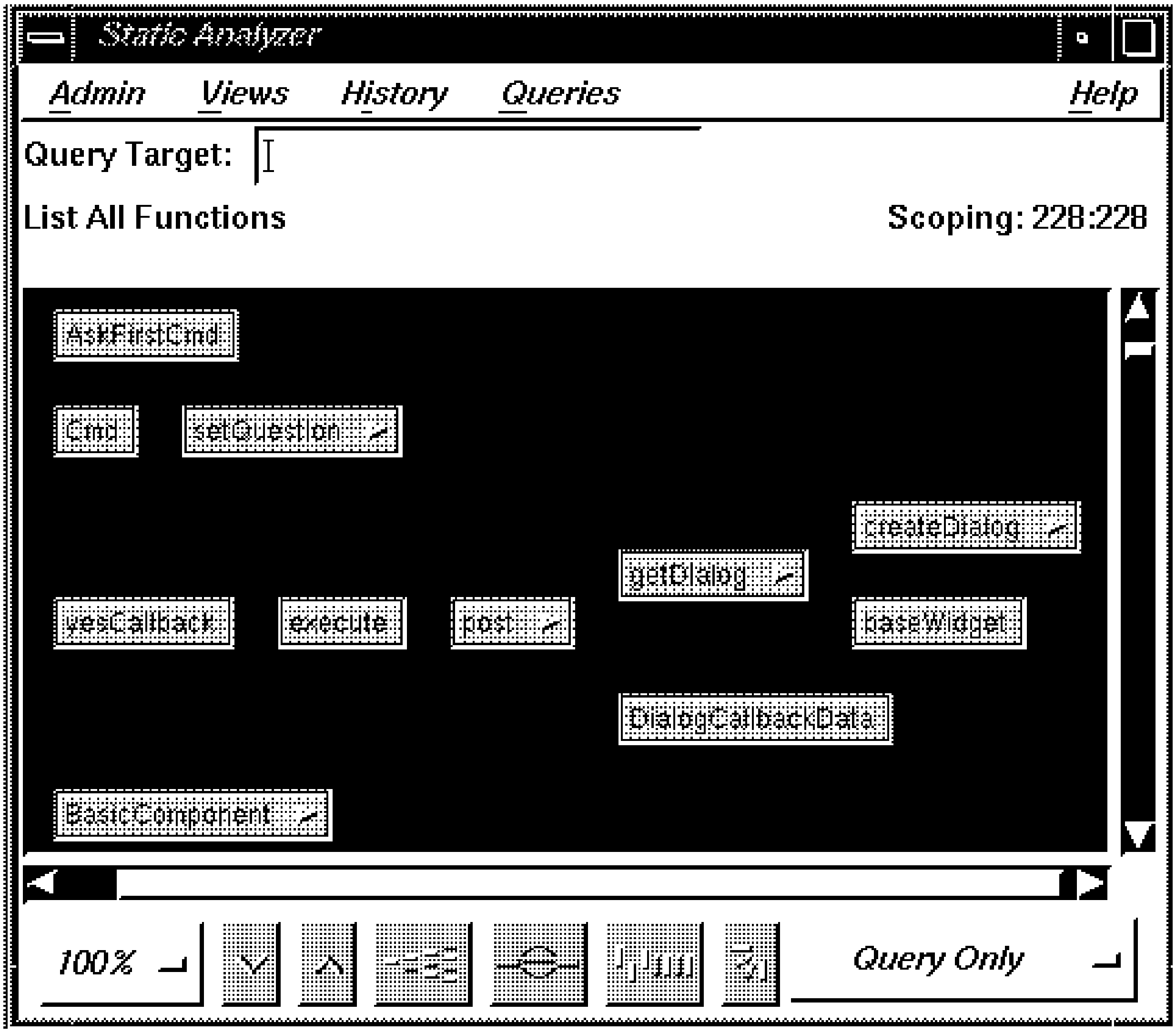

Figure 1–12 Print Color Scheme Example

Setting Color Schemes

When you start any of the tools in a UNIX shell, you can choose one of these color schemes by adding the option `–scheme <color>` in the command line. `<color>` is the name of the color scheme you want to use. For example, to start the Static Analyzer using the Whistler color scheme, you use the command:

`cvstatic –scheme Whistler`

When you start a tool without specifying a color scheme, the tool appears in the default color scheme, which is set initially to Lascaux. To set a different default color scheme, add this line to your *.Xdefaults* file:

`*scheme: <color>`

where `<color>` is the name of the color scheme you want. The *.Xdefaults* file is located in your home directory. If you don't have an *.Xdefaults* file, you can create one to hold the color scheme line. For example, the line

`*scheme: Leonardo`

in the *.Xdefaults* file sets the default color scheme to Leonardo. If you're using only *.Xdefaults*, then the next CASEVision tool you start will be in the new color scheme. If you're using *xrdb*, then you need to reload the database by typing

```
xrdb -load -/.xdefaults
```

For more information on setting X defaults, consult X *Window System User's Guide, OSF Motif Edition (Volume III)* by Tim O'Reilly, Valerie Quercia, and Linda Lamb–O'Reilly and Associates, ISBN 0–937175–61–7.

Font Size

CASEVision offers two font sizes for text displayed in its tools: large and small. When you start a tool, CASEVision tests the resolution of the monitor you're using to see if it offers high or low resolution.

If you're using a high–resolution screen, CASEVision defaults to a large font size to make text easily readable. On the other hand, the small font enables you to see more text on the screen at one time. You can switch to small font if you prefer by adding the following line to your *.Xdefaults* file:

```
*useSmallFonts: True
```

This causes all subsequent CASEVision tools to use the small font size. To return to the large font size, either delete the line from *.Xdefaults* or change `True` to `False`.

If you're using a low–resolution screen, CASEVision defaults to the small font size because windows with the large font are too big for the screen. You can't override the default small font size if you have a low–resolution monitor.

Chapter 2

Using On–line Help

All applications in the CASEVision environment provide assistance through the On–Line Help facility. On–Line Help information is organized into a hierarchical tree made up of *help cards.* A help card provides information on a specific topic, such as a feature in a window or a command. You read help cards in the *Help Viewer* window. You can peruse the Help topics available in the *Help Browser* window, arranged in the Help hierarchy, by alphabetical index, or graphically.

This chapter covers the following topics:

- **"Requesting Help"**
- **"Using the Help Viewer"**
- **"Using the Help Browser"**
- **"On–Line Help Tutorial"**

Requesting Help

If you need help in an application in the CASEVision, you have three options for requesting it:

- Use the Help menu (located at the far right of the menu bar in CASEVision tools)
- Click the *Help* button (in windows where there is no Help menu)
- Press the **`<F1>`** key while the cursor rests on the area of a CASEVision window for which you want information

When you ask for help directly, the Help Viewer window appears displaying text explaining a feature or overview of a tool. If you ask for the Help index, the Help Browser window appears, showing the full structure of available help so you can navigate easily through Help topics to the information you need.

After requesting help about a subject, you can navigate up or down the hierarchy to adjacent topics for additional information. Since the On–Line Help utility is intended to complement paper documentation, you should also refer to the appropriate user's guide.

The Help Menu

Figure 2–1 Help Menu in CASEVision Environment

The Help menu in a CASEVision tool has four commands, as shown in **Figure 2–1** . The menu provides these options:

"On Version..."
: provides general copyright and version number information on the current tool.

"On Window..."
: displays the Help Viewer with an overview of the current window's usage. **Figure 2–2** shows the Help Viewer with typical window information.

"On Context..."
: lets you select a feature with the cursor and display the Help Viewer describing that feature. An example is shown in **Figure 2–3** . Note that "On Context..." cannot be applied to menu items.

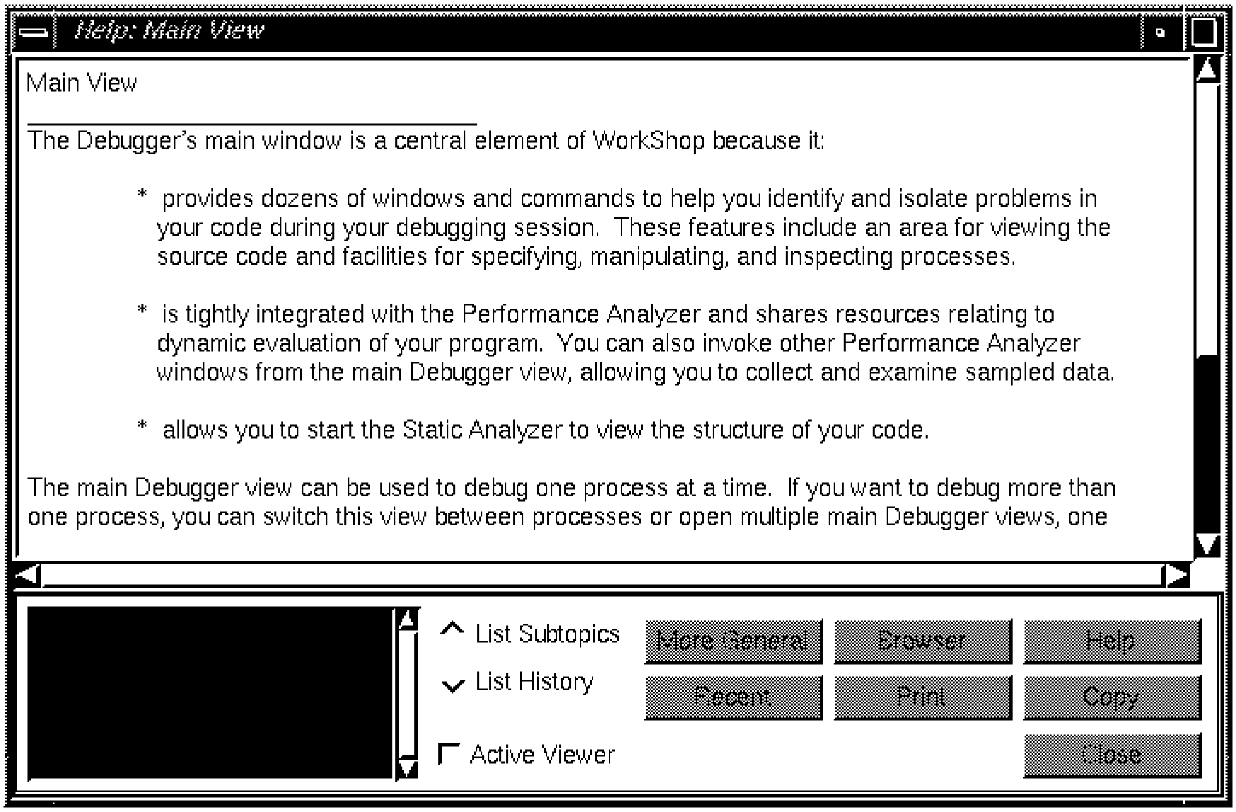

Figure 2–2 The Help Viewer with Typical Window Information

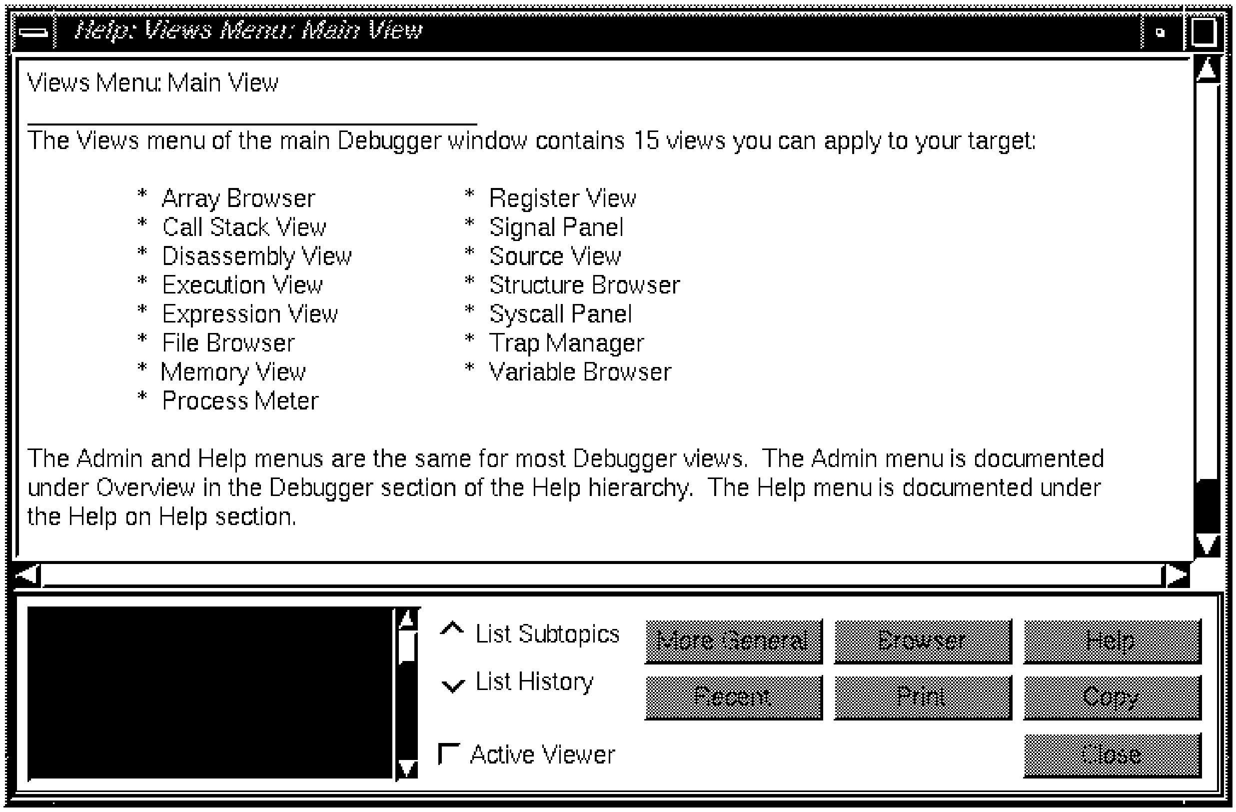

Figure 2–3 The Help Viewer with Typical Context Information

"Index..."

displays the Help Browser, which lets you browse a list (partial or entire) of Help topics, alphabetically, hierarchically, or graphically, and make a request. The Help Browser appears in **Figure 2–4** .

The first selection, "On Version...", doesn't start On–Line Help but instead opens a small dialog box that gives information about the program name and version. The other three commands do start On–Line Help.

As a general rule, select "On Window..." if you are new to the use of this window. It brings you into the Help system at the window overview level. Use "On Context" if you have a general idea of the window's purpose, but are not familiar with a particular feature. Use "Index..." if you want to view the list of topics prior to making your selection.

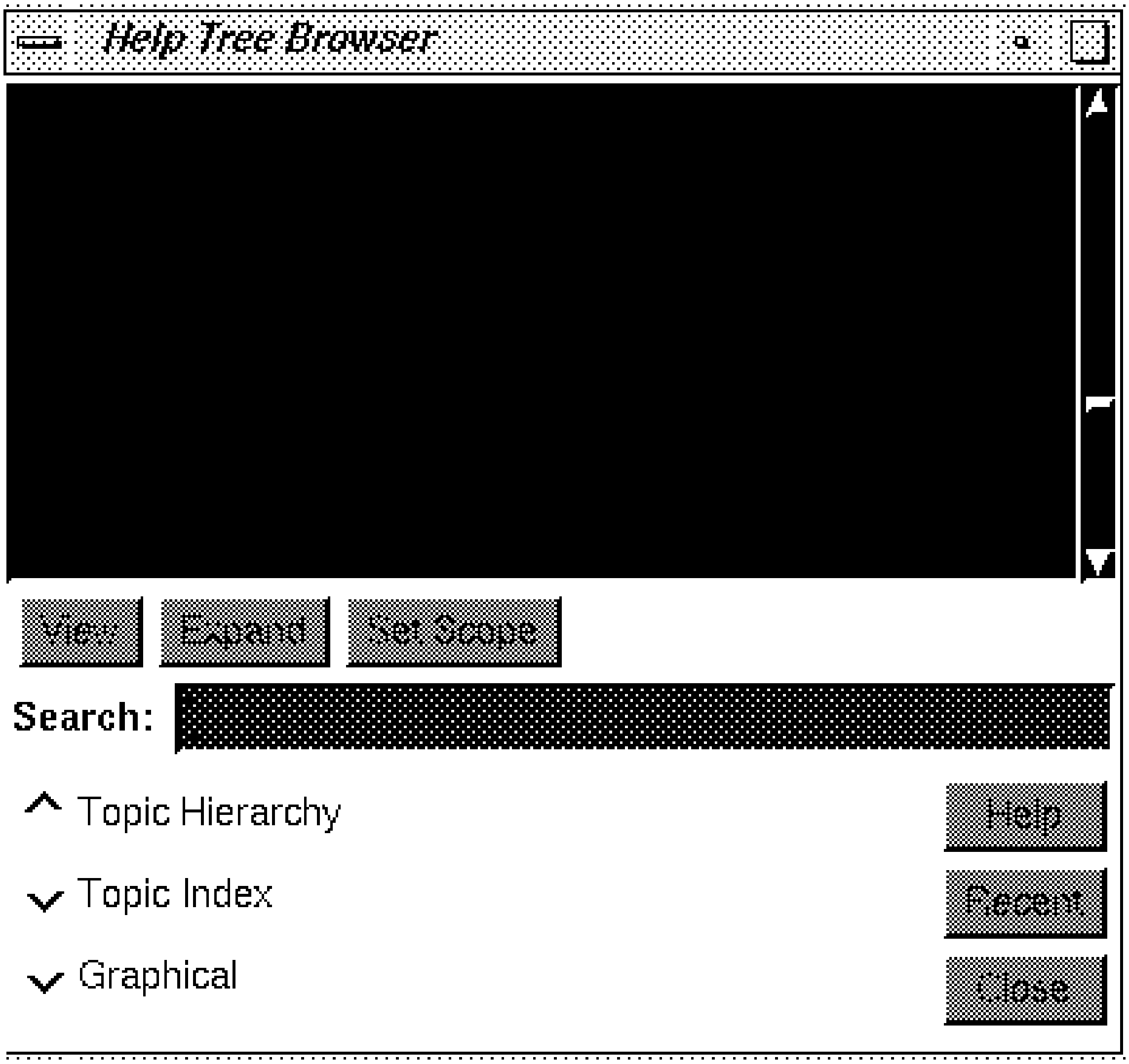

Figure 2–4 The Help Browser in Hierarchical Mode

The Help Button

Certain CASEVision dialog boxes and windows (such as File Browsers or the Help Viewer itself) have no menu bar and *offer* help through a *Help* button instead. Clicking the *Help* button opens a Help Viewer with window–level information displayed.

The <F1> Key

Like the "On Context" command of the Help menu, the <F1> key offers context–sensitive help; in addition, it provides information about menu commands. To use it, move the cursor over any feature for which you want information; then press the <F1> key. A help Viewer opens (if none is already open) with information about that feature. The <F1> key is an excellent way to get information about menu items: click once on a menu to open it, then move the cursor over the menu item you want, and press <F1> to see information about it.

Using the Help Viewer

The Help Viewer window displays information in help cards, which appear one per topic. A typical Help

Viewer appears in **Figure 2−5** .

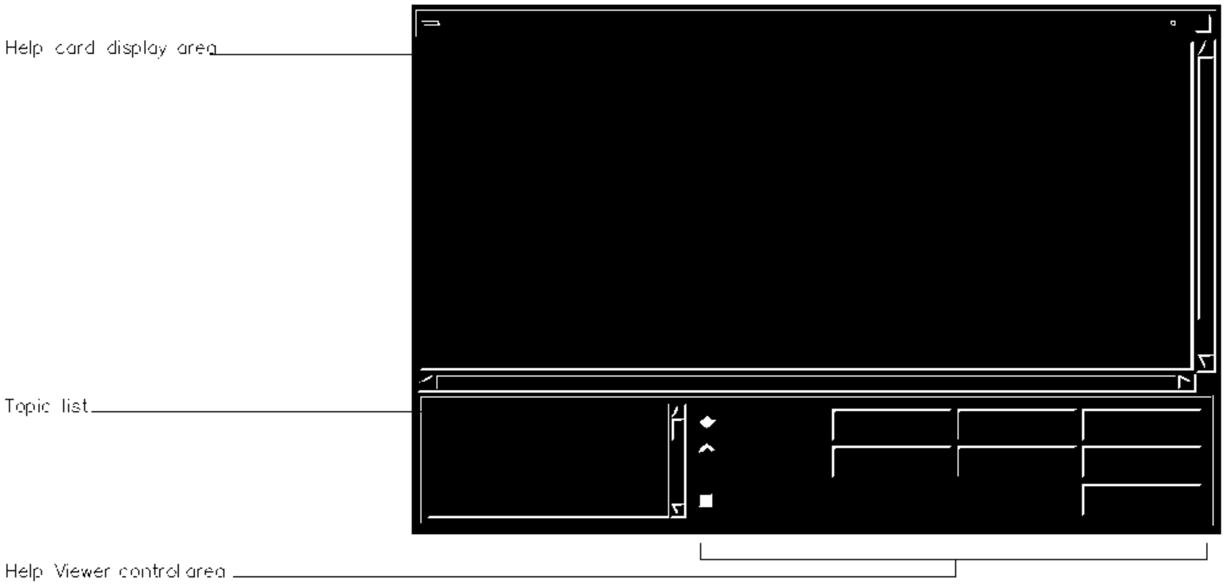

Figure 2−5 Typical Help Viewer

The Help Viewer has three major areas:

- Help card display area
- Topic list
- Help Viewer control area

The *help card display area* presents the information on the selected topic. If you can't see the full text of a card in the window, you can use the scroll bars to reveal the missing text.

The *topic list* displays either the immediate subtopics below the current card or the previous help cards you have accessed, depending on whether the *List subtopics* button or *List history* button is toggled. You can access topics from the list by double−clicking them.

The *Help Viewer control area* provides these controls:

List subtopics
: changes the topic list to display the subtopics of the current Help topic. You can switch to one of these topics by double−clicking.

List history
: changes the topic list to display the previous help cards you have accessed. You can then return to a prior topic by double−clicking.

Active Viewer
: toggles the current Help Viewer status between active and inactive when you have more than one Help Viewer up at the same time.

More general
: displays the parent topic to the current help card.

Recent
: re−displays the previous Help topic.

Browser
: displays the Help Browser window.

Print
: sends the text information displayed in the Viewer window to your default line printer.

Help
: provides information on how to use the On−Line Help system.

Copy
: displays a duplicate Help Viewer. This is a useful technique for keeping an important help card visible as you browse through other Help topics.

Close

closes the Help Viewer.

When the Help Viewer is displayed, pressing **<F1>** changes the Viewer to the new topic selected.

Using Multiple Help Viewers

You can open more than one Help Viewer by clicking the *Copy* button in a Help Viewer window. This opens a copy of the current Help Viewer window that displays the same Help topic. You can then look for new Help information in one window while the other window displays the initial information – a useful way to keep an important help card constantly visible as you browse through other Help topics.

When you open multiple Help Viewers, only one Viewer at a time can be the active Viewer. The active Viewer is the one that responds to outside requests for a new topic such as pressing <F1> in another window. You can tell which Viewer is active: the *Active Viewer* button next to the topic list is turned on, and the controls at the bottom of the window are outlined in red. Inactive Viewers have controls outlined in blue, and the *Active Viewer* button is turned off. (Note: if you do not Lascaux, the default color scheme, these two colors may be different.)

To change an inactive Viewer to the active Viewer, click its *Active Viewer* button to turn it on. Simply moving to an inactive Viewer and changing topics internally with its topic list won't activate the Viewer.

Using the Help Browser

If you want to browse through topics in On–Line Help, use the *Help Browser. Y*ou can open the Browser by choosing "Index..." from the Help menu in a CASEVision tool or by clicking the *Browser* button in any Help Viewer window. The Browser's display area shows the hierarchy of Help topics available for CASEVision, which you can look at in any one of three views:

- *Topic Hierarchy* shows the Help topics in outline form; higher level topics appear closer to the left side of the display, subtopics are indented to the right under their parent topics. See **Figure 2–6** .
- *Topic Index* lists Help topics in alphabetical order beneath each tool. See **Figure 2–7** .
- *Graphical* presents Help topics in a branching tree as shown in **Figure 2–8** . Each Help topic is a node in the tree, and each connection between a topic and a subtopic is an *arc.*

To choose a view, click the appropriate button in the bottom left corner of the Browser window. Use the vertical scroll bar to scroll up and down through the topics in all three views. Use the horizontal scroll bar to scroll left and right through the topic tree.

Each mode has a topic display area, a Help Browser control area (for switching modes), and a display control area specific to the mode.

You can request a Help Card from the Help Browser by double–clicking it or by selecting it and clicking the *View* button.(Note that there is no *View* button in Graphical mode.) This displays the information in the active Viewer or displays a new Viewer if none is available. The active/inactive status of any concurrent Help Viewers is indicated in the Help Browser. The Help Browser displays the active Viewer in red; any inactive Viewers are shown in blue.

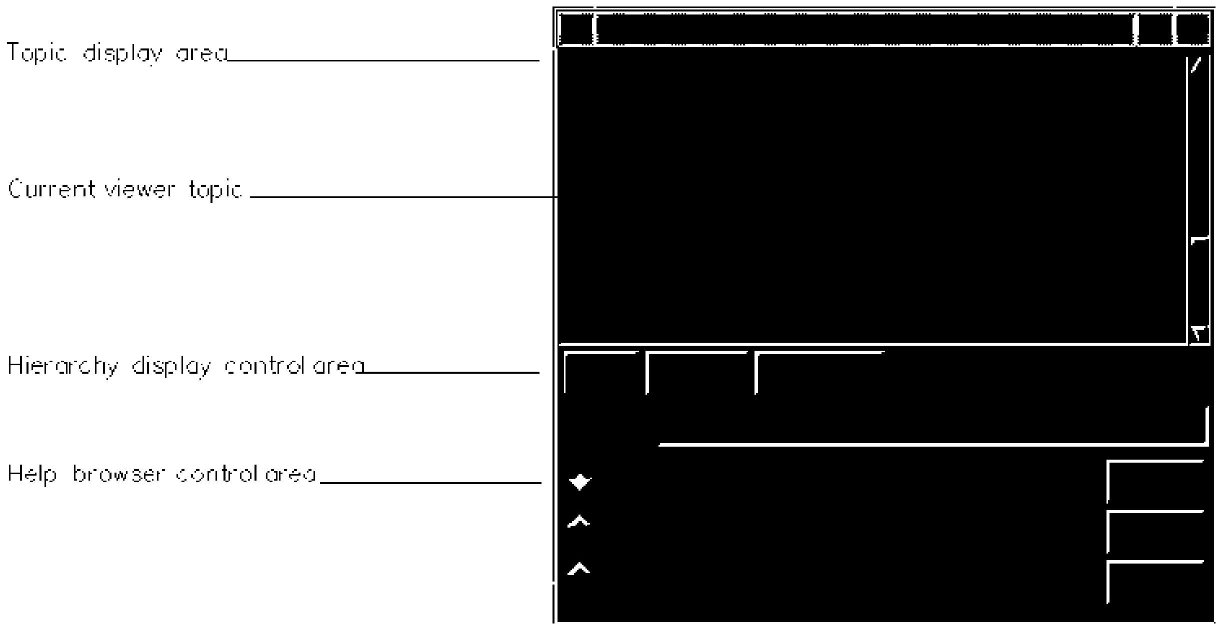

Figure 2–6 Help Browser Topic Hierarchy List

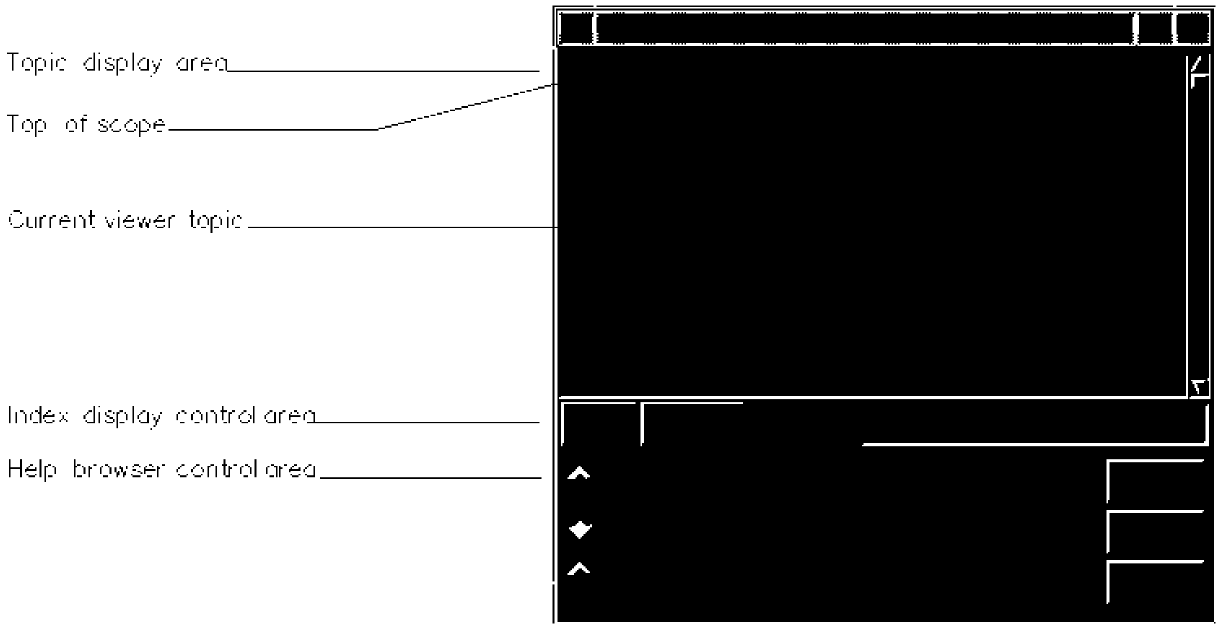

Figure 2–7 Help Browser Topic Index List

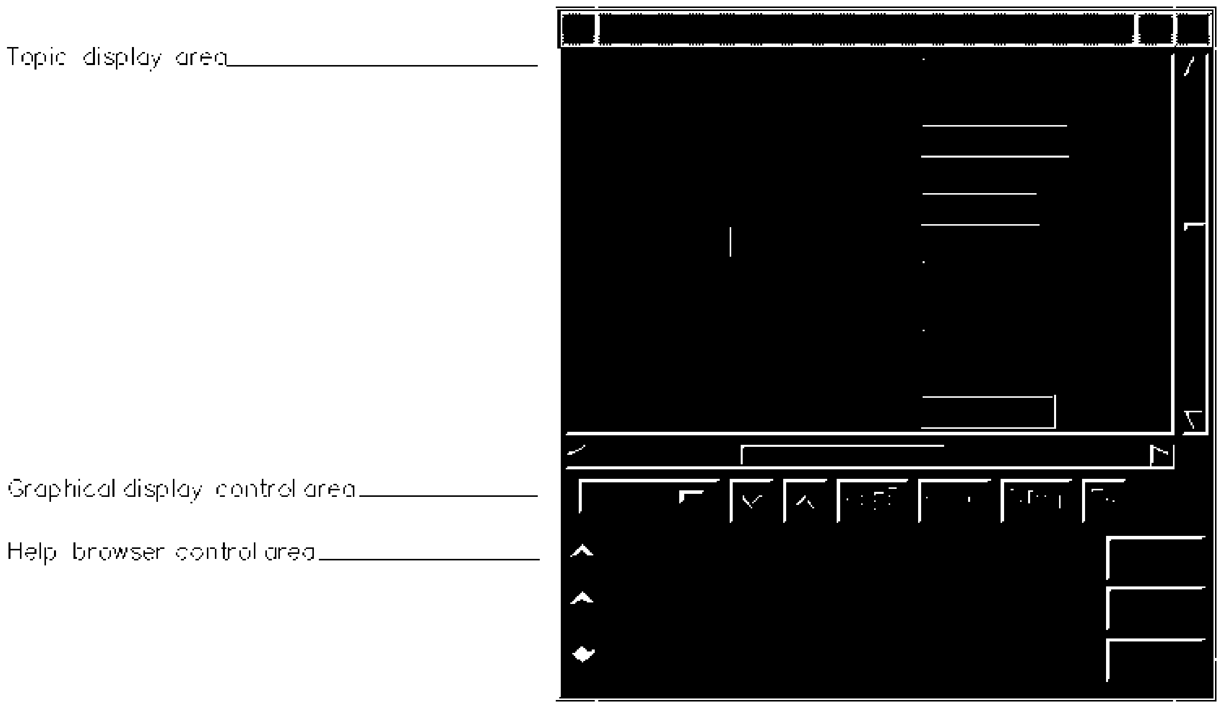

Figure 2−8 Help Browser Graphical Display

Searching for a Topic

In either of the two text views (Topic Hierarchy or Topic Index), you can search for a topic by entering a search string in the *Search* field below the display area. The *Search* field uses an incremental search; as you enter characters, the Browser searches the list of topics from the top to bottom to match what you've typed so far. It selects the topic where it finds the match and scrolls the display area to show the topic. Each time you press **`<Enter>`** after you've typed search text, the Browser moves on to the next topic containing the search text. To view the found topic, double−click it or click the *View* button.

Setting Scope in Topic Hierarchy View

If you want to view only a restricted set of subtopics in the Topic Hierarchy view, you can set the scope of the view: Click on the general topic you want to view, then click the *Set Scope* button below the display area. The topic at the top of the scope is displayed in purple, as shown in **Figure 2−7** . The Browser restricts the scope of the hierarchy to the selected topic, its subtopics, and subtopics below that. This feature is useful for viewing information limited to a specific tool or window, for example.

To set the scope farther back up the topic hierarchy, click the *Expand* button; The scope moves up to the parent topic of the highest level topic in the display area and displays the subtopics of the parent topic.

Using Graphical View

The Browser's graphical view of topics and graph controls (see **Figure 2−8**) are used in other CASEVision applications. Because these are standard controls common to the other CASEVision tools, two of the buttons (*Multiple Arcs* and *Realign*) are not functional here, since they don't apply to the topic tree in the Browser. For more information, see **Chapter 5, "Graphical Views in the CASEVision Environment."**

On−Line Help Tutorial

This tutorial starts by getting help from the Help menu in any CASEVision tool and takes you through a series of exercises highlighting the major features of On−line Help.

1. Start any CASEVision tool and select "On Version..." from the Help menu

   A dialog box displays identifying the application, operating system, and release information.

2. Click OK to close the Version dialog box.

3. Select "On Window..." from the Help menu.

   The Help Viewer displays, containing a summary description of the current window.

4. Select "On Context" from the Help menu, position the cursor (now in the form of a question mark) over some feature in the window, and click.

   The Help Viewer topic display switches to the feature you have selected.

5. Select "Index..." from the Help menu.

   The Help Browser window displays. This demonstrates how to access Help Browser from the Help menu. Let’s close the Help Browser for now and re−open later from the Help Viewer.

6. Click the *Close* button in Help Browser.

7. Click the *Help* button in the Help Viewer.

   The Help Viewer displays the Help on Help topic, which is appropriate for this demonstration. **Figure 2−9** .

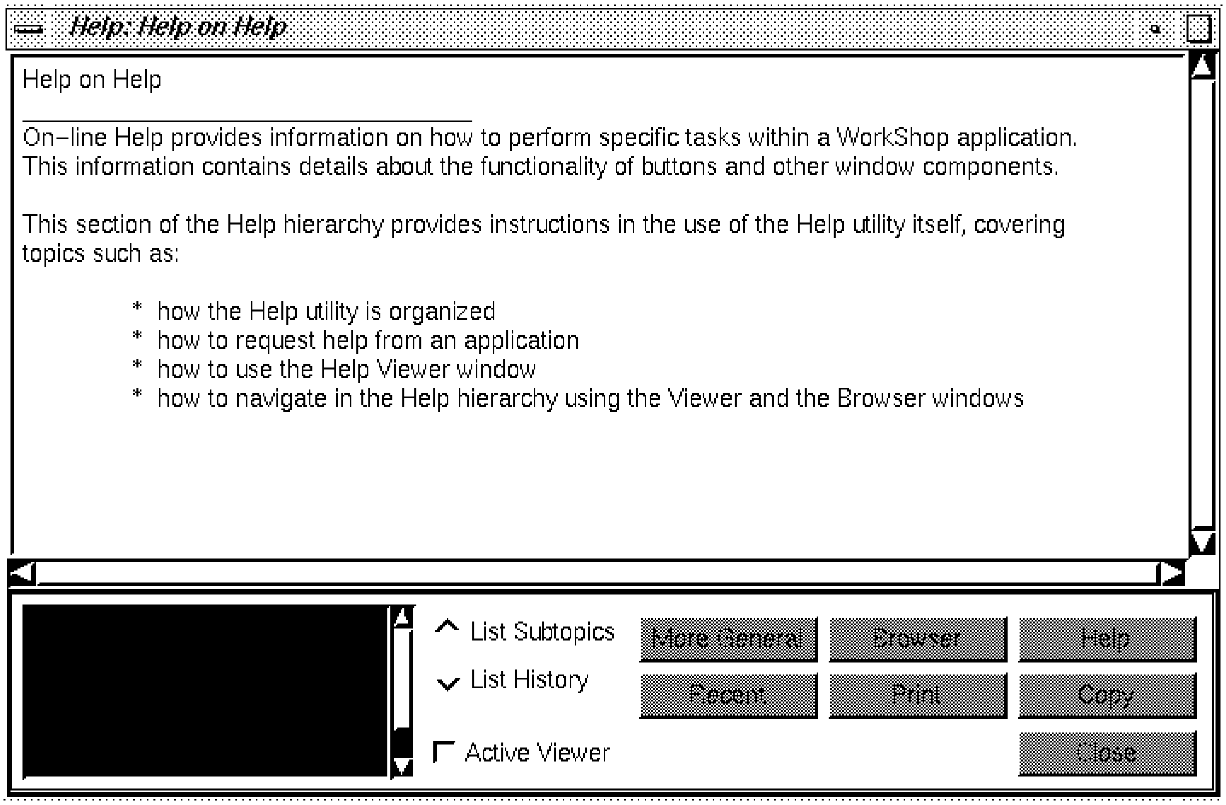

Figure 2−9 Help Viewer Displaying Help on Help

8. Click *List History.*

   The previous topics you accessed are listed in the topic list area at the lower left of the Help Viewer. This is useful if you need to return to a previously accessed topic. You can also click the *Recent* button to return to a prior topic.

9. Click *List Subtopics*.

The topics subordinate to the current help card display.

10. Double−click the topic called Requesting Help in the topic display.

    The text for this topic displays in the Help Viewer. Its only subtopic, Help Menu, appears in the topic display.

11. Click the *Browser* button

    The Help Browser window displays in hierarchy mode with Requesting Help in red because it is the active Viewer topic. See **Figure 2−10** .

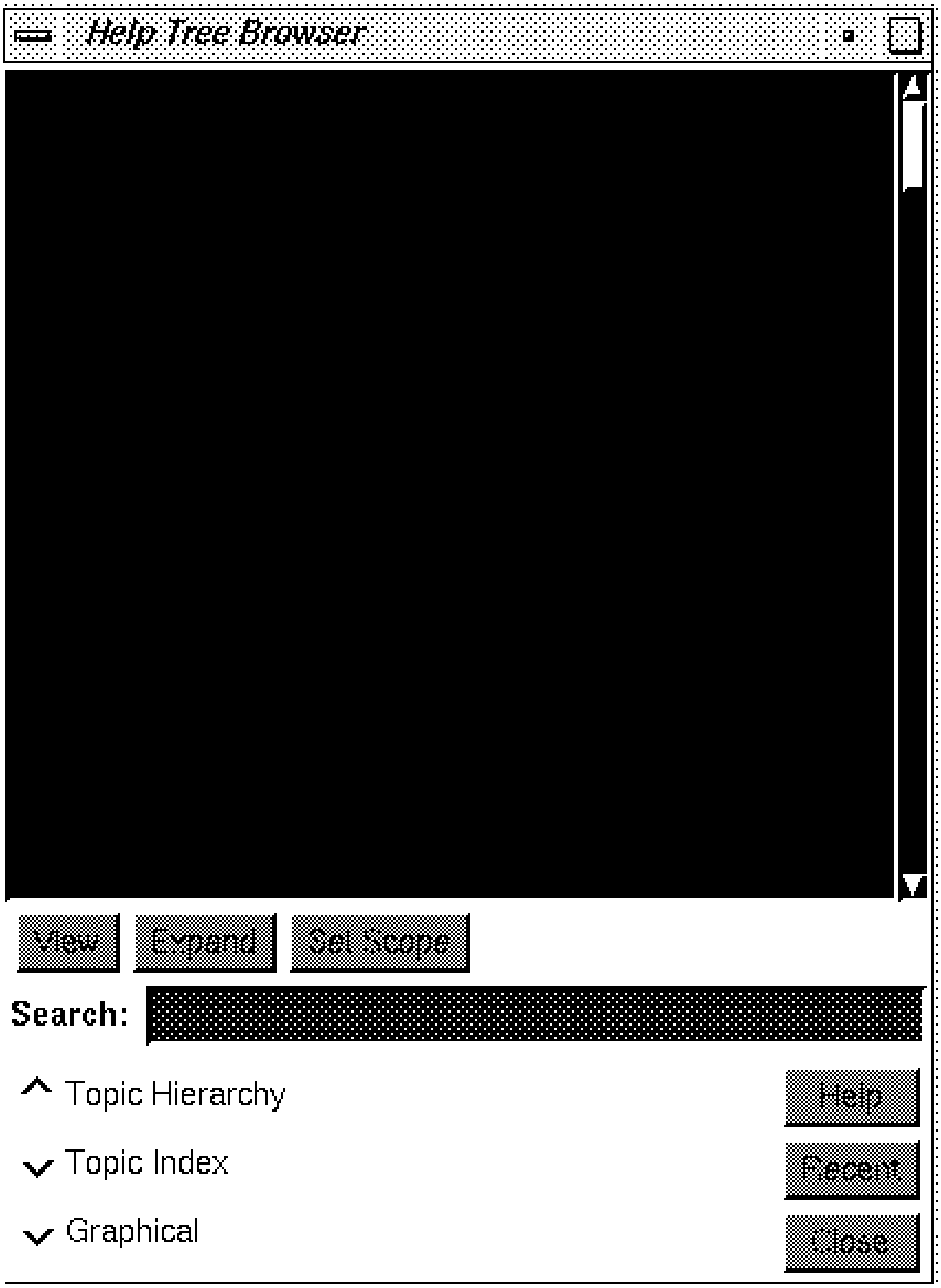

Figure 2−10 Help Browser with Requesting Help Active

12. Click the *Graphical* button in the Help Browser.

    The topic display changes to graphical mode with topics shown as labeled rectangles in a hierarchy. You can experiment with the graph controls to see the effects. Remember that *Multiple Arcs* and *Realign*, the fourth and fifth buttons from the left, are not enabled in Help Browser.

13. Click the *Copy* button in Help Viewer.

    A duplicate Help Viewer is created displaying the same topic.

14. Double−click any subtopic in the Help Viewer topic display.

    The selected topic displays. This is a useful technique for keeping a topic displayed while examining new topics. The blue−highlighted Help Viewer is inactive; the red one is active.

15. Click the *Close* button in each of the open Help windows to end this tutorial.

Chapter 3
Using the File Browser and Keyboard Accelerators

The CASEVision tools are designed to be conform with OSF/Motif standards. They typically use the standard Motif File Browser to save and load files. Command mnemonics and keyboard accelerators have been designed into the tools to provide quick access to menu items.

This chapter covers:

- **"Using Motif File Browsers"**
- **"Keyboard Shortcuts"**

Using Motif File Browsers

Most of the CASEVision commands that save or load files use the standard Motif File Browser or a close variation (See **Figure 3−1**). You can use the Motif File Browser to change directories, view directory contents, select files, and enter filenames.

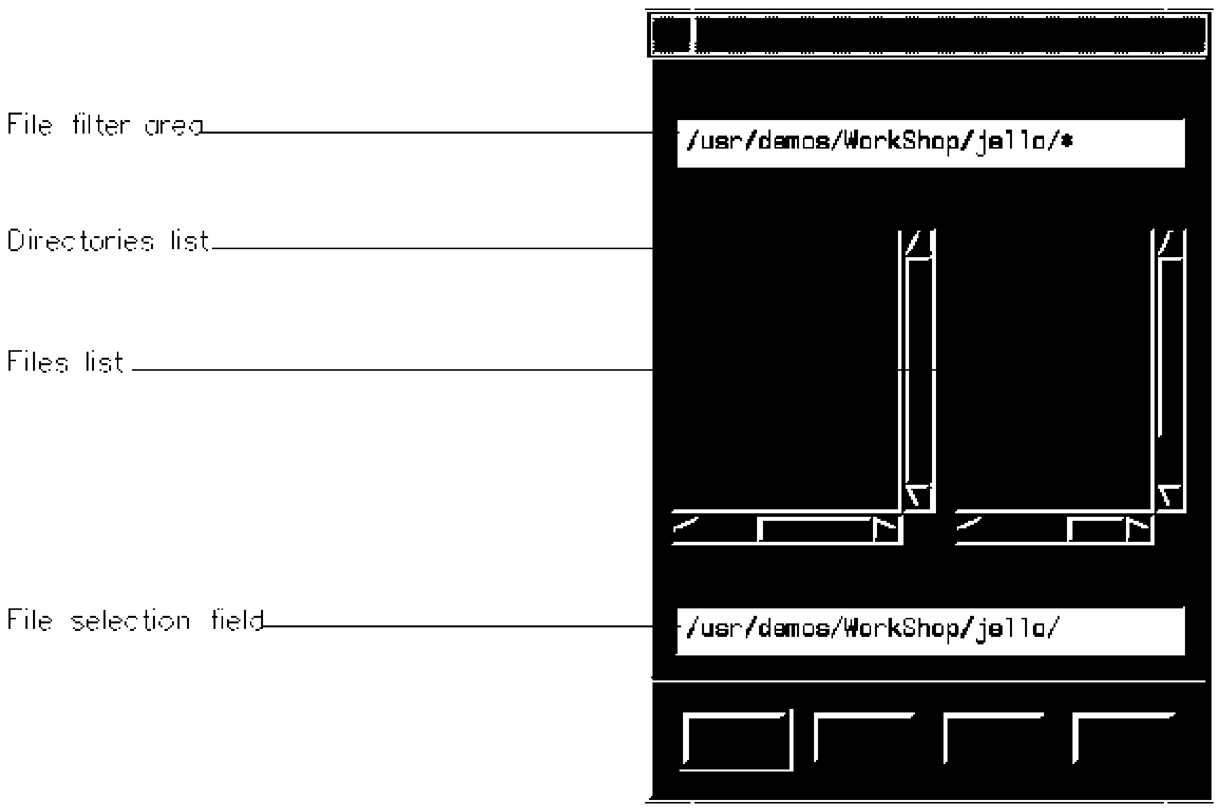

Figure 3–1 Motif File Browser

Note: The WorkShop debugger has a view called File Browser which is different. It accesses source files for the current executable.

Viewing Directory Contents

To view the contents of a directory, you need to specify the directory, either through a filter or by explicit selection from a list. The *files list* then shows files found in the current directory with any filtering applied.

You enter filters in the *file filter area* at the top of the Browser. Initially, the current directory displays, followed by a wildcard (*) to include all files in the directory. You can modify the filter by moving the cursor in to the file filter area, making the change, and pressing **<Enter>** or clicking the *Filter* button at the bottom of the Browser window. A new set of files displays. Use other shell metacharacters to filter specific subsets of files in the directory. You can also use the file filter area to change the current directory by changing the pathname to a new directory.

The *directories list* below the file filter area lists the subdirectories of the current directory. To move to a subdirectory, double–click the directory name. To move up a directory, double–click the "." entry, which is the second name in the list.

As an alternative, you can type the pathname directly in the *file selection field*. This is useful if you know the pathname and file, and prefer to avoid navigation with the mouse.

Loading a File

Many CASEVision application windows provide a Load File dialog window based on the standard Motif File Browser. To lad a file from the files list in this window, double–click the filename. The File Browser closes and the file loads. You can also load a file by clicking the filename to select it and then clicking the *OK* button at the bottom of the Browser window.

If you prefer to type, move the pointer into the selection field, type in the file's full pathname, and then press **`<Enter>`** or click the *OK* button. The window closes and, if the file exists, the file loads.

Saving a File

The Save File dialog window is a variation of the standard Motif File Browser. To save a file in this window, navigate to the directory where you want to save the file, then move the cursor into the file selection area, and enter the filename to be saved at the end of the pathname there. Press **`<Enter>`** or click the *OK* button. The File Browser window closes, and the file is saved under the filename.

You can also save under an existing filename by finding a filename in the Files list and double−clicking it. The File Browser window closes, and the file is saved under the existing filename, overwriting any previous file contents.

Exiting the File Browser

To exit the File Browser without completing the file request, click the *Cancel* button.

Keyboard Shortcuts

The CASEVision environment provides keyboard shortcuts as alternatives to selecting menu items with the mouse. The standard procedure for making selections with the mouse is to click the menu title to display the menu and then click the desired menu item. Alternatively, you can execute menu commands from the keyboard using one of two methods: mnemonics or keyboard accelerators (see **Figure 3−2**).

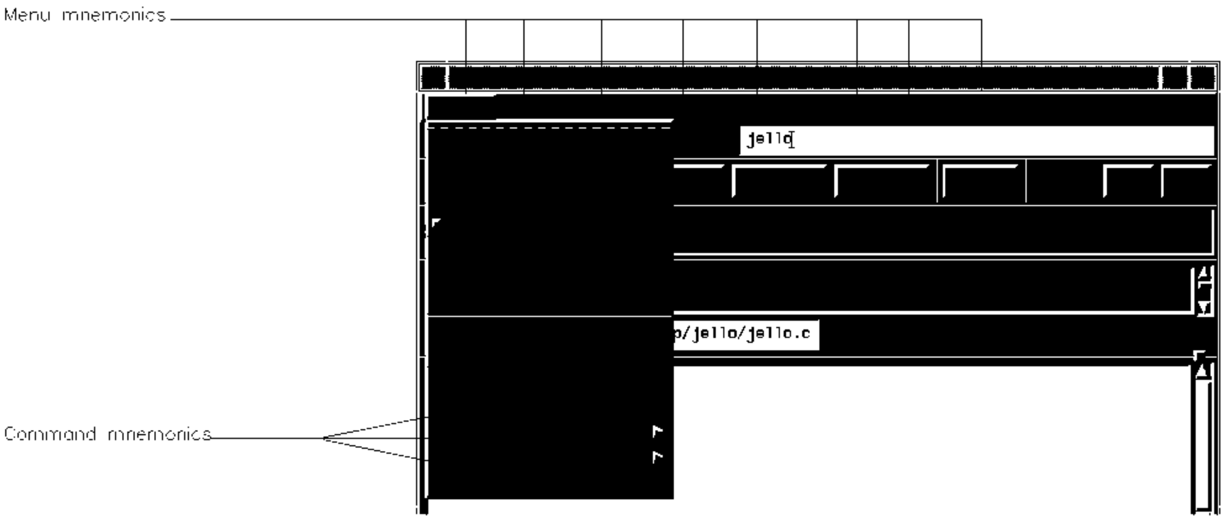

Figure 3−2 Command Mnemonics and Keyboard Accelerators

Mnemonics let you open a main menu by pressing the **`<Alt>`** key and the lowercase of the underlined letter in the menu title. You then select a command or submenu by releasing the **`<Alt>`** key and pressing the lowercase of the letter that is underlined in that menu item. For example, you can select "Iconify" from the Admin menu in **Figure 3−2** , by pressing **`<Alt>−m i`**. You can continue to use the selection process recursively through submenus without pressing the **`<Alt>`** key simultaneously.

Keyboard accelerators let you execute certain commands without opening the menu through a combination of keys. These key combinations are displayed in the menus next to the applicable commands. To execute these commands, simultaneously press the lowercase of the letter and the **`<Alt>`** or **`<Ctrl>`** key as defined. For example, to select the "Search..." command from the Source menu in **Figure 3−3** , you would press **`<Ctrl>−s`**.

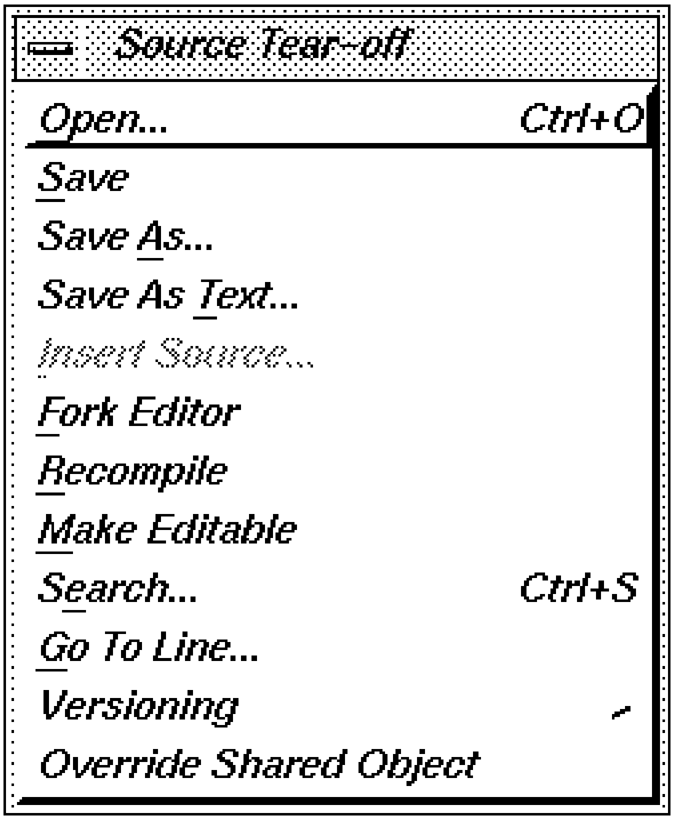

Figure 3–3 Source Menu in Workshop Debugger Main View

Chapter 4

Using Source View

Source View is a simple text editor supplied in the CASEVision environment that displays the lines of text in a source code file. You can start Source View from most CASEVision tools by choosing the appropriate menu command, usually "Source View." In some tools, you can double–click icons representing source code to start Source View. Source View displays the source code, scrolled to the appropriate place.

This chapter covers these topics:

- **"Source View Window and Menus"**
- **"Source View Usage"**

Source View Window and Menus

The basic Source View window is shown in **Figure 4–1** with its two standard menus displayed and major areas indicated.

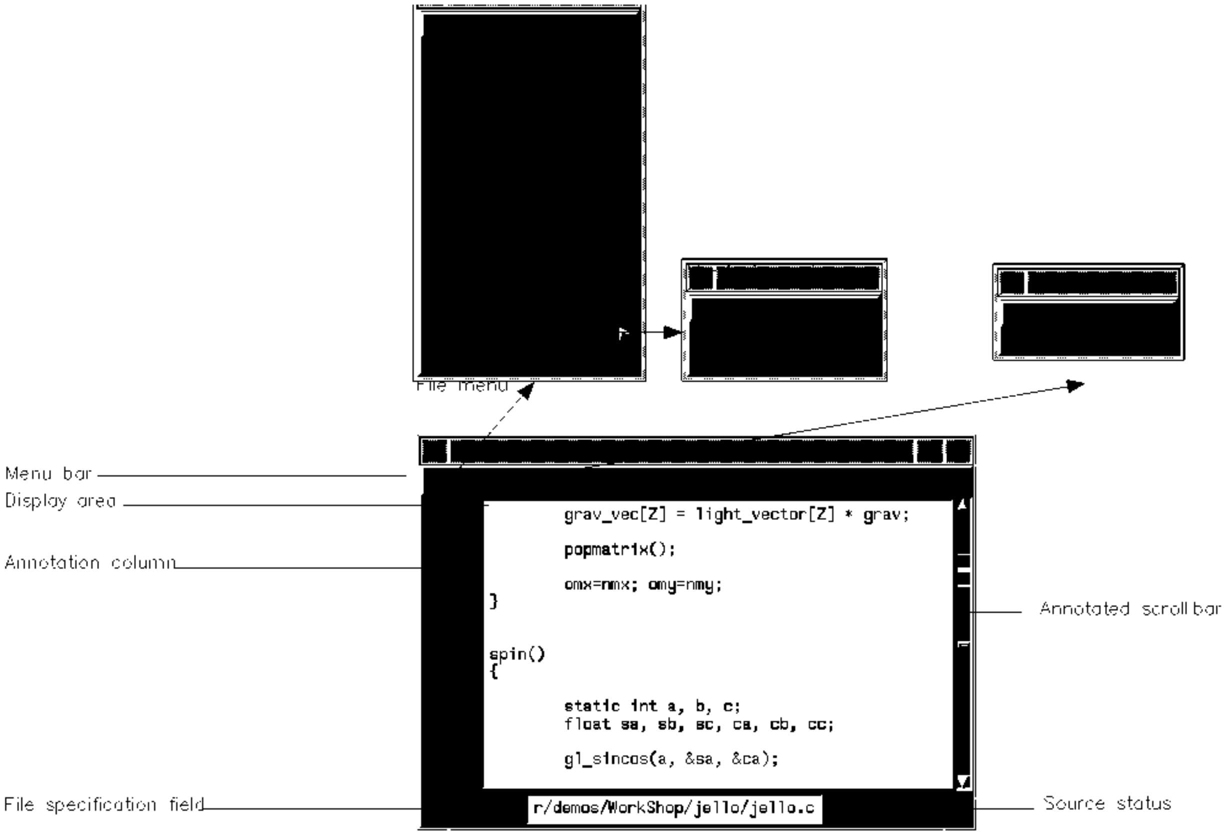

Figure 4–1 The Source View Window

All Source View windows have these components:

menu bar
: always contains the File and Display menus.

display area
: contains the source code to be edited.

annotation column
: displays line numbers (if requested) and icons specific to particular CASEVision tools.

annotated scroll bar
: is different from a standard scroll bar in that it indicates all occurrences of a target string during a search and lets you scroll to an occurrence by clicking its indicator.

file specification field
: displays the current file and lets you change files.

source status indicator
: indicates Read Only, Editable, or Modified status.

The Source View menus and annotation margin icons vary depending on the tool from which Source View is accessed. For example, the Source View window executed from the CASEVision/WorkShop Debugger has margin annotations for traps and a program counter. and two additional menus: Traps and PC. The Source View window from Profiling View in the WorkShop Performance Analyzer displays usage statistics in the annotation margin.

File Menu

Figure 4−2 File Menu

The File menu (see **Figure 4−2**) provides these selections to deal with source code files:

"Open..."
: loads a source file.

"Save"
: records changes made to the source file. If the file comes up Read Only, you must first select the "Make Editable" item, also from this menu.

"Save As..."
: records changes made to the source file under a different filename.

"Save As Text..."
: records the information in the display area and annotation margin (including line numbers and performance statistics if displayed) as a text file.

"Open Separate..."
: lets you select another file from a file browser and opens a new Source View window containing that file.

"Insert File..."
: inserts the text of a file within your current file. By default, this selection is inactive (grayed−out) in the File menu when the buffer is Read Only. "Insert File..." is enabled when you click the "Make Editable" command.

"Clone"
: opens a duplicate Source View window containing the same file, in the same location as the original window.

"Fork Editor"
: starts your default editor on the current file. The default editor is determined by the editorCommand resource in the app−defaults file. The value of this resource defaults

line. If the editor lets you specify a starting line, enter **%d** in the resource to indicate the new line number.

"Recompile"

is functional only if you have installed CASEVision/WorkShop. It starts the Build Manager, a WorkShop tool that lets you compile the source code associated with the current executable.

"Make Editable"/"Make Read Only"

toggles the source code displayed between writable and read–only states so that you can edit your code. "Make Editable" is the default selection because the source code is initially Read Only.

"Search..."

searches for a literal or regular expression. Each instance of the target is marked by a search target indicator in the scroll trough area. Clicking an indicator with the middle mouse button scrolls Main View to the point.

"Go To Line..."

lets you scroll to a position in the source code by specifying a line number or moving a slider. "Go To Line..." brings up a dialog box similar to the one shown in **Figure 4–3**.

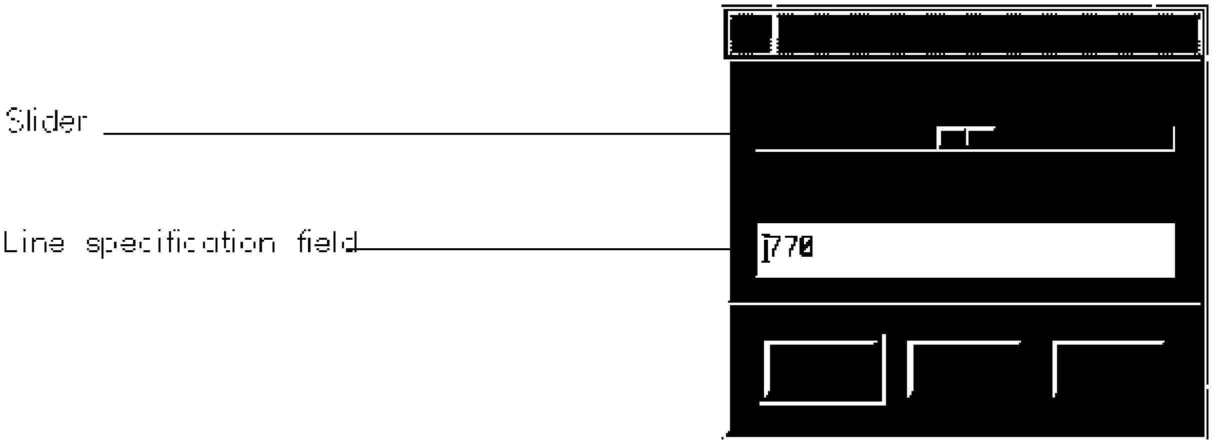

Figure 4–3 Go To Line Dialog Box

You can enter a line number or use the slider at the top of the box to select a line number. You do not have to display line numbers to use this feature.

"Versioning"

provides access to the configuration management tool, if you have designated one. The *cvconfig* script lets you designate CASEVision/ClearCase from SGI, RCS or SCCS. Simply type:

cvconfig [clearcase | rcs | sccs]

Figure 4–4 "Versioning" Submenu

The "Versioning" submenu appears in **Figure 4–4**.
Selecting any of these options displays a shell in which you can access the configuration management tool. The selections in the submenu are:

"Versioning":"CheckIn"
: saves the source file and checks it into the database as a new version.

"Versioning":"CheckOut"
: recalls the source file from the tool's database if you have the proper authority, locks it, and makes it editable.

"Versioning":"UncheckOut"
: cancels the checkout, with no changes registered.

"Close"
: closes the Source View window.

Display Menu

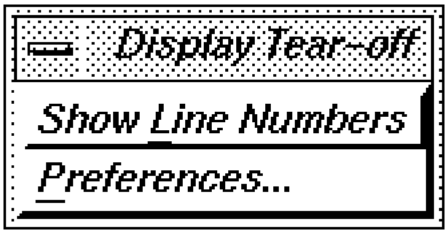

Figure 4–5 Display menu

The Display menu in Main View (see **Figure 4–5**) provides these selections to annotate the source code

Figure 4–5 Display menu

The Display menu in Main View (see **Figure 4–5**) provides these selections to annotate the source code displayed:

"Show Line Numbers"/"Hide Line Numbers"
: displays or hides line numbers corresponding to the source code to the left of the display area.

"Preferences..."
: displays a dialog box (see **Figure 4–6**) that shows or hides the icons from the other CASEVision tools: Parallel Analyzer (*Loops* button), Performance Analyzer (*Performance* button), and Tester (*Test* button).

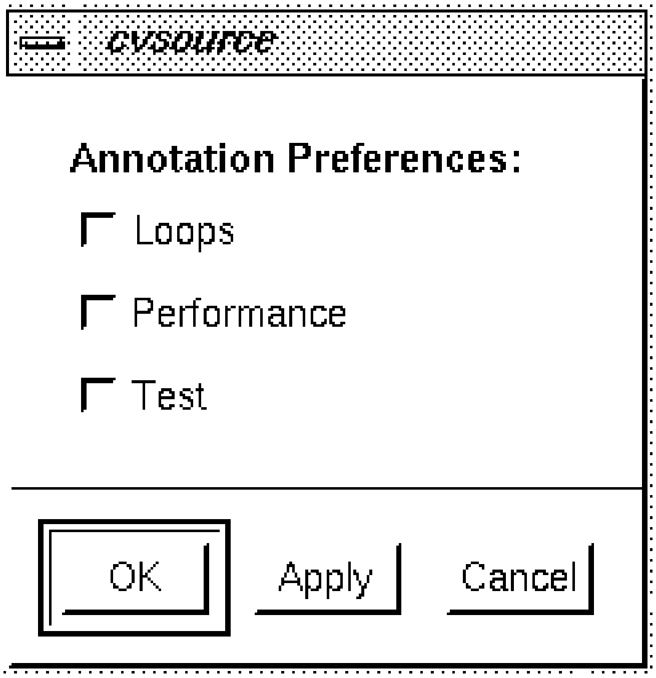

Figure 4–6 Display Preferences Dialog Box

Source View Usage

To start Source View, choose "Source View" from the Views menu (if your current CASEVision tool does not have a Views menu, consult the appropriate user guide to find out how to access Source View). In most CASEVision graphical views, double–clicking a node (rectangle) displays a Source View window containing the selected code.

Some alternative methods for starting Source View from the CASEVision WorkShop tool are:

- In the Performance Analyzer, clicking the *Source* button in the main window, double–clicking a node in Call Graph View, or double–clicking a call stack in Heap View all display Source View.
- In the Static Analyzer, choosing "Edit Selected Item" from the Admin menu, or double–clicking an element in the Static Analyzer's main display brings up Source View.

Opening a Different File

When you start the Source View window from a CASEVision tool, Source View displays the source code selected from the parent tool. To access a different source code file, choose "Open..." from the File menu and make a selection from the File Browser.

You can also open a new file using the file specification field in the bottom left corner of the Source View window. Move the cursor into the area, type the new file's pathname, and press **<Enter>**. If you enter a filename that doesn't already exist, Source View creates a new file using that filename.

Viewing Source Code

The Source View window displays source code in its display area, the central area of the window. Use the scroll bar at the right to scroll through the lines of text. To see the full length of each line of code, drag any corner of the window out to increase the window width. If you're working with exceptionally long lines of code, or want to keep the Source View window small, you can add a horizontal scroll bar to the Source View window by adding the line

```
*textEdit.scrollHorizontal: True
```

to your *.Xdefaults* file before you start Source View. Deleting the line from *.Xdefaults* or changing `True` to `False` removes the horizontal scroll bar the next time you start Source View.

To view a specific line of code in Source View, choose "Go To Line..." from the File menu to open the Go To Line dialog box shown in **Figure 4–3** .

You can enter the line number in either of two ways:

- Drag the slider in the top of the window to the desired line number.
- Move the cursor into the *Go to line* field and type the line number you want.

Once you set the line number, either click the *OK* button or press **<Enter>** to close the window and jump to the line number in Source View's display area. If you click the *Cancel* button, you close the Go To Line dialog box without scrolling the text in the display area.

Using the Annotation Column

Source View can display more than just the text of a source code file. It displays additional information in its *annotation margin*, which you control through Display menu commands. If you choose "Show Line Numbers," you'll see icons specific to the CASEVision tool. For example, **Figure 4–7** shows a program counter at a stop trap, a stop trap, and a sample trap in a WorkShop Debugger Source View window.

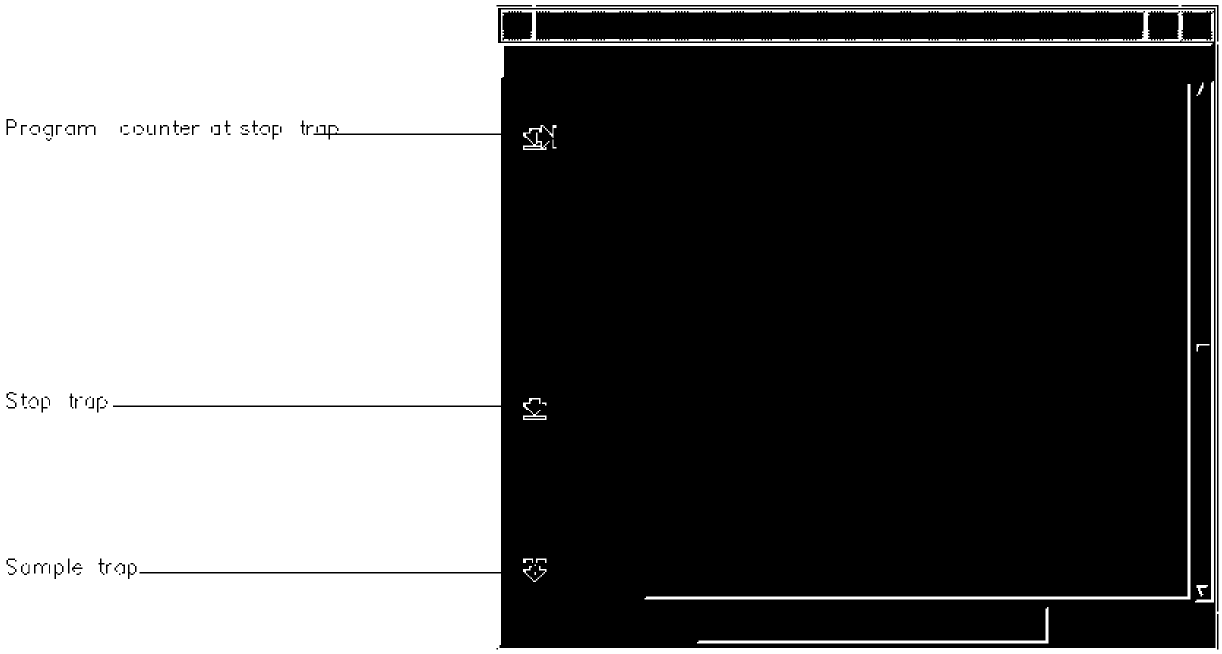

Figure 4−7 Icons in the WorkShop Debugger Source View Window

By default, the annotation margin automatically shows icons. To hide the icons or the line numbers, choose either "Hide Icons" or "Hide Line Numbers" from the Display menu.

Searching for Text

To search for text in a source code file, choose "Search" from the File menu, which opens the Search dialog box (shown in **Figure 4−8**).

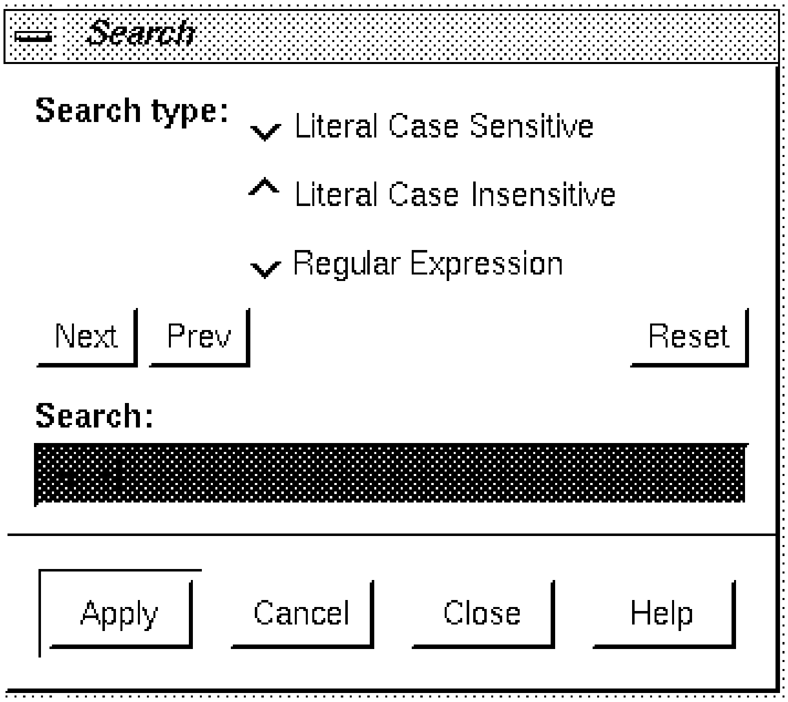

Figure 4−8 The Search Dialog Box

The Search dialog box provides a *Search* field where you can enter a target string. It also has a set of buttons that offers three search types:

Literal Case Sensitive
: finds all text that literally matches the search text and treats upper− and lowercase characters as different characters. For example, it matches "new" with "new", but not with "New" or "NEW."

Literal Case Insensitive
: finds all text that matches the search text literally and without regard to case. For example, it matches "new" with "New", "new", or "NEw."

Regular Expression
: interprets the search text as a regular expression and finds text to match the expression. Regular expressions use special characters such as "*" and "[" to construct wildcard strings for matching a range of text. You can find information about regular expression syntax in the man pages for *ed;* you'll find the same description in the On−Line Help card for *Regular Expression*.

To search for text, move the cursor into the Search field and enter the search text; then click the search option you want if it's not already set. Press **`<Enter>`** or click the *Apply* button to start the search. Source View searches through the entire file for matching text and indicates matches by highlighting the text where they occur. To show you where matches occur throughout the file, Source View displays *search target indicators* along the length of the scroll bar as shown in **Figure 4−8** . To scroll to a match, either click the indicator with the middle mouse button or drag the scroll handle to it. If a search is unsuccessful, no search target indicators appear on the scroll bar.

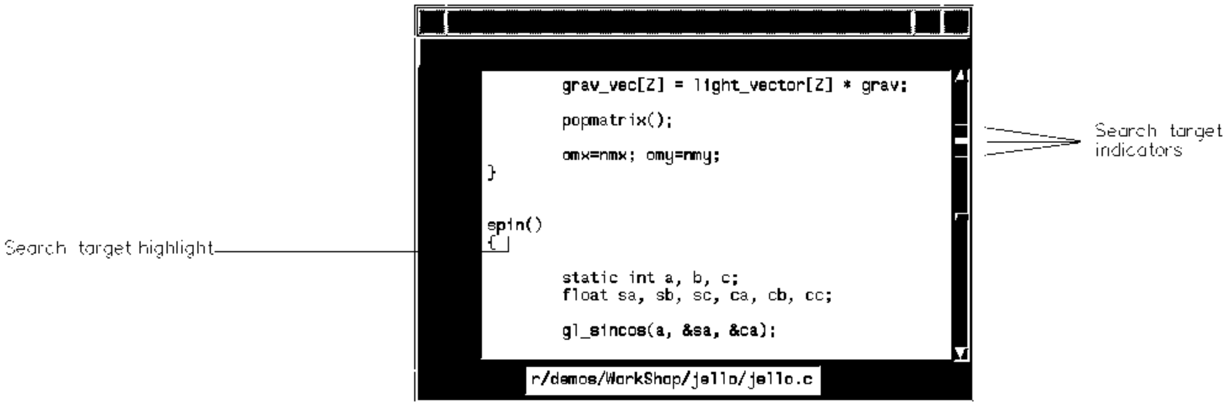

Figure 4−9 Search Target Indicators

Each time you press **`<Enter>`** or click *Apply*, Source View removes any existing search highlighting and indicators and adds new highlighting and indicators as the result of the new search. To clear highlights and indicators without starting a new search, click the *Reset* button, which clears the search text from the Search text area and removes highlights and indicators.

To close the Search window, click on either the *Cancel* or the *Close* button. *Cancel* closes the window and removes any highlighting and indicators left in the display area by the last search. *Close* closes the window and leaves highlighting and indicators in place.

Editing Text

A source code file viewed in Source View has one of the two modifiable statuses: *Read Only* or *Editable*. When the status is Read Only, you can't edit the source code file. When the status is *Editable*, you can edit text and make changes to the source code file. The source status indicator, located below the display area on the right side of the window, shows the status of the current source code file. It also displays *Modified* if you've made changes to the source code that haven't yet been saved

Generally, when you start Source View from a CASEVision tool, it displays the source code involved in the session, set to *Read Only*. To change the write status, choose "Make Editable" from the File menu. To change a file from *Editable* back to *Read Only*, choose "Make Read Only" from the File menu.

Editing text in an editable file follows typical text editing conventions. To select a block of text, drag from the beginning to the end of the text you want. To select a word, double−click the word. To select a line, triple−click the line.

Once you've selected text, you can delete it by pressing **`<Back Space>`**. If you type new characters while text is selected, you replace the selected text with the new text. To copy selected text to another location, move the cursor to the new location and middle−click. As long as the original text is selected, you can keep middle−clicking to insert copies of it into new locations.

To insert new text in the display area, click at the insertion point, then type new text. You can press the **`<Back Space>`** key to delete characters to the left of the insertion point.

If you want to insert an entire file as new text, click on the point where you want to insert, then choose "Insert File..." from the File menu. A file browser opens, where you can choose the file you want to insert. When you click *OK* to close the browser and load the file, Source View inserts the text of the file at the insertion point in the existing file.

Saving a Modified File

Once you've made changes to a source code file, you can save them using any of three commands in the File menu:

"Save"
: saves the modified file to the filename displayed in the file specification field in the bottom left corner of the Source View window.

"Save As..."
: opens a File Browser which lets you enter a new filename and save the modified file under that name.

"Save As Text..."
: also opens a File Browser in which you can enter a new filename and save the modified file under that name. The difference between this command and "Save As..." is that "Save As Text..." also saves line numbers if they're displayed and any text in the annotation margin of the display area, such as Performance Analyzer statistics.

Using an Alternate Text Editor

If you'd rather edit a source code file using a text editor other than Source View, choose "Fork Editor" from the File menu. By default, this command opens a new shell that runs *vi* and works on the file in Source View. To set up Source View so that it uses a different editor when you choose "Fork Editor," add a line to the *.Xdefaults* file:

```
*editorCommand: <editor>
```

where `<editor>` is the text editor you wish to start. The default is

```
*editorCommand: xwsh −e vi +%d
```

which opens an X shell, executes *vi* using the current file as its target, and scrolls to the line number supplied after `%d` if there is one. You might try

```
*editorCommand: gnuemacs +%d
```

or even

```
*editorCommand: jot
```

if you want to edit using either *gnuemacs* or *jot*.

Working with Multiple Source View Windows

Source View allows you to open other Source View windows by choosing either "Clone" or "Open

Source View allows you to open other Source View windows by choosing either "Clone" or "Open Separate..." in the File menu. "Clone" opens a Source View window that displays the same file in the same location that you're viewing in the original window. "Open Separate..." opens a file browser where you can choose another source code file, and then opens a Source View window that displays the newly chosen file.

If you've started Source View from another CASEVision tool, such as the WorkShop Debugger or Static Analyzer, then it may display traps or search target indicators created by the parent tool. When you clone a Source View window showing this additional information, the information also appears in the cloned Source View window. Whenever you change a trap or work with the program counter in one of the cloned Source View windows, the trap and PC icons in the other Source View windows are updated to match.

Editing changes or viewpoint changes in one cloned Source View window aren't reflected, however, in other clones. When you scroll to a new location or change the text in one window, those changes don't appear in the other windows. Source View does provide a safeguard, though, and announces changes made to a file by one window with messages about the change that appear in the cloned windows.

Quitting Source View

To quit Source View, choose "Close" from the File menu.

Chapter 5

Graphical Views in the CASEVision Environment

Many tools in the CASEVision environment provide graphical views. The CASEVision graphical view is a useful device for depicting relationships. This appendix covers these topics:

- **"General Graphical View Characteristics"**
- **"Manipulating the Display"**
- **"Filtering Nodes and Arcs"**

General Graphical View Characteristics

The purpose of a graphical view is to provide an overview that shows relationships between entities and a means of accessing the detail information. In a graphical view, entities are shown as rectangles (or *nodes*) and relationships as connecting arrows (or *arcs*). When entities represent source code, double−clicking a node will bring up Source View with the corresponding code available for editing.

A typical graphical view appears in **Figure 5−1** . Graphical views have a display area with a row of controls underneath it. If the graph is larger than the viewing area, scroll bars will be enabled.

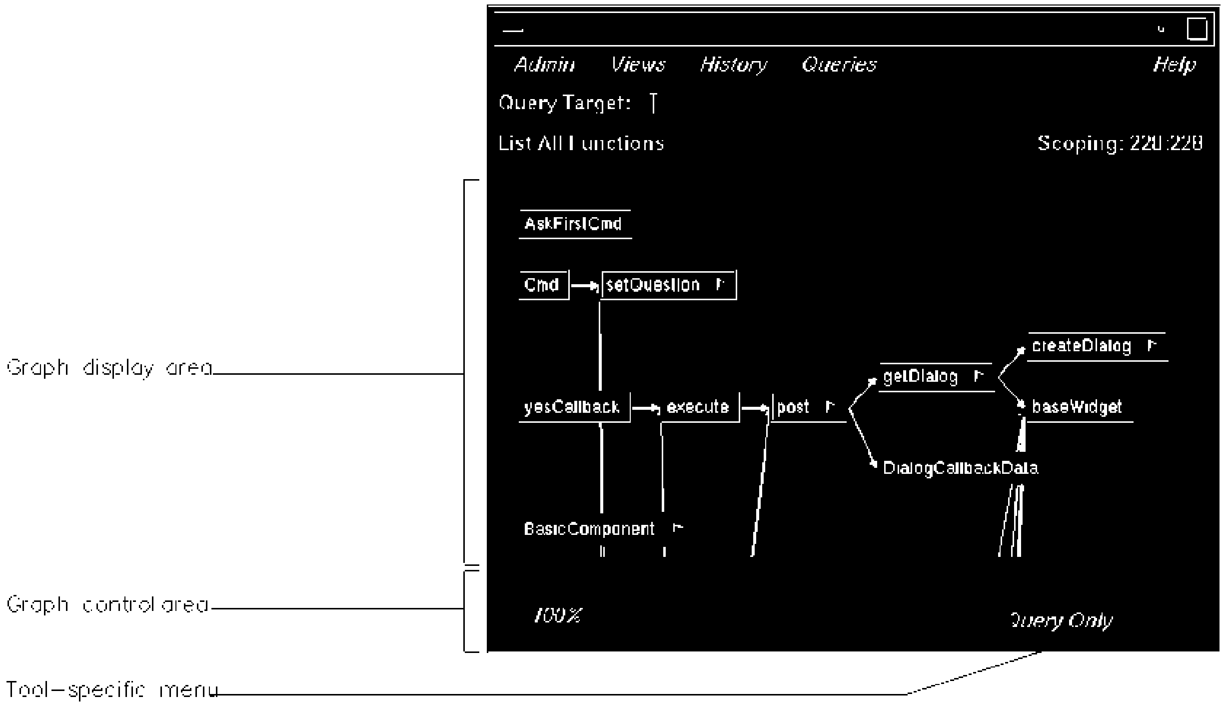

Figure 5–1 Typical Graphical View

Since an overwhelming amount of information can be displayed in a graphical view, a number of methods are provided for simplifying the display. They fall into two categories: those that manipulate the display without changing the current contents and those that let you filter nodes and arcs from the display.

Manipulating the Display

This section covers those methods that change the display without altering the contents.

Graph Control Area

All graphical views have a control area containing a row of graph controls as shown in **Figure 5–2** .

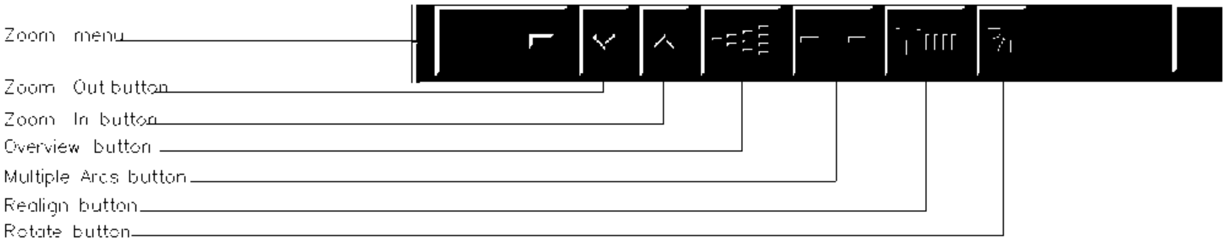

Figure 5–2 Graph Display Controls

Note: In some cases, the *Multiple Arcs* button may be disabled. This is appropriate where there can only be one arc between nodes.

These graphical view controls are:

Zoom menu

shows the current scale of the graph. If clicked on, a pop–up menu appears displaying other available scales. The scaling range is between 15% and 300% of the normal (100%) size.

Zoom Out button

resets the scale of the graph to the next available smaller size in the range.

Zoom In button

resets the scale of the graph to the next available larger size in the range.

Note: If you reposition the nodes by dragging and then use one of the *Zoom* buttons, the configuration will return to the initial position.

Overview button

invokes the overview pop–up display, which shows a scaled–down representation of the graph. The nodes appear in the analogous places on the overview pop–up, and a white outline may be used to position the main graph relative to the pop–up. Alternatively, the main graph may be repositioned with its scroll bars. See the following section.

Multiple Arcs button

toggles between single and multiple arc mode. Multiple arc mode is extremely useful for the "List Arcs" query, because it indicates graphically how many of the paths between two functions were actually used.

Realign button

redraws the graph, restoring the positions of any nodes that were repositioned.

Rotate button

flips the orientation of the graph between horizontal (calling nodes at the left) and vertical (calling nodes at the top).

Note: If you reposition the nodes by dragging and then change orientation, the nodes will return to the initial positioning relative to each other.

Overview Window

The Overview window lets you view the entire graph at a reduced scale. To display the Overview window, you click the *overview* button (see **Figure 5–2**).

Figure 5–4 shows a typical Overview window with the resulting graph. The Overview window has a movable viewport that lets you select the portion of the graph displayed in the main window. Special nodes and arcs are highlighted for easy detection.

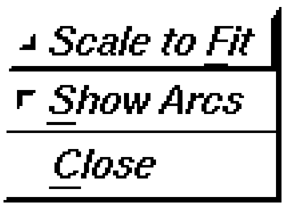

Figure 5–3 Admin Menu in the Overview Window

The Overview window has an Admin menu (see **Figure 5–3**) with these three selections:

"Scale to Fit"

scales the graph to match the aspect ratio of the overview window.

"Show Arcs"

displays or hides the arcs between the nodes.

"Close"

closes the Overview window.

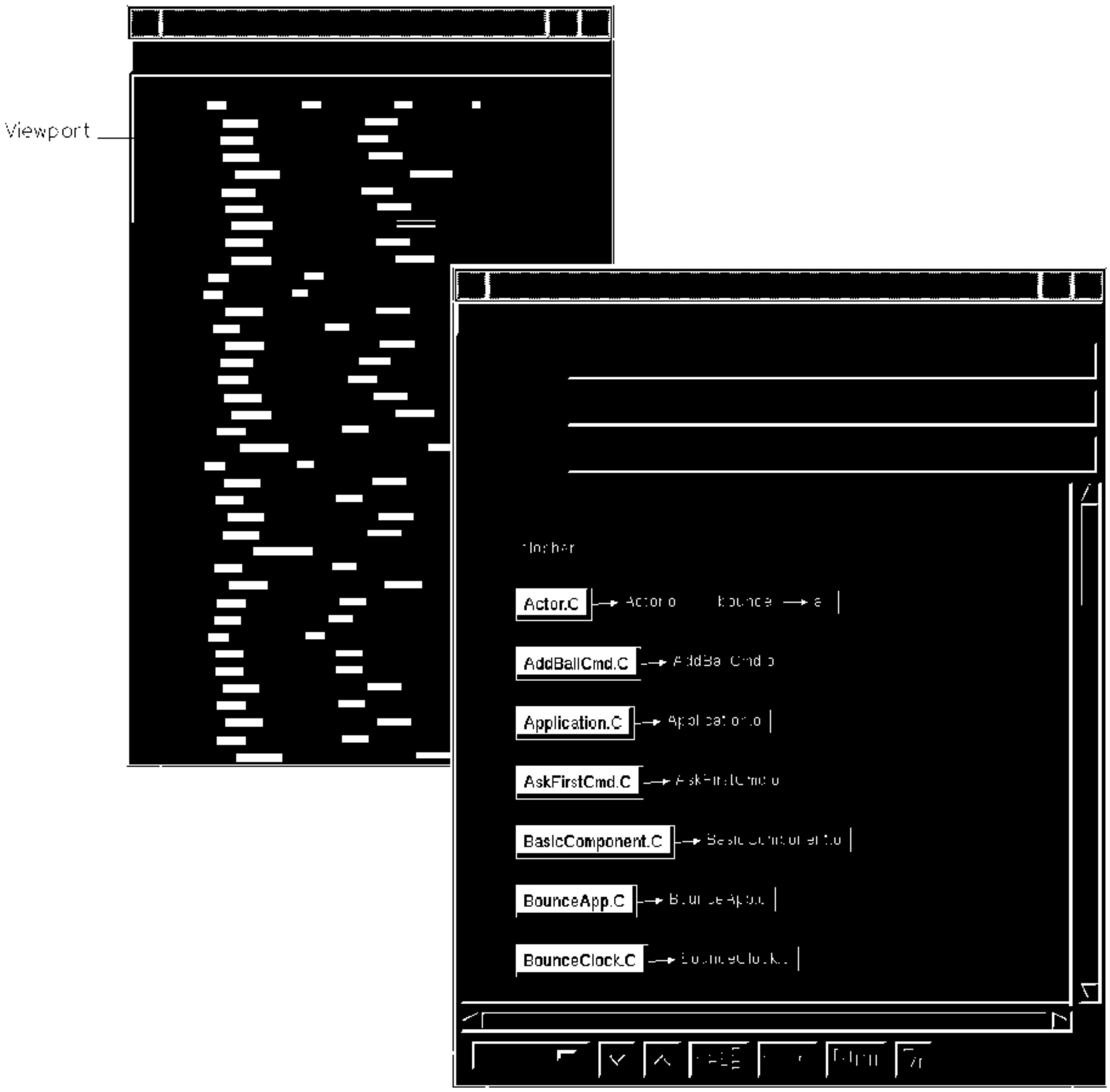

Figure 5–4 Overview Window with Resulting Graph

Using the Mouse in a Graph

You can move an individual node in a graph by dragging it with the middle mouse button. This can help reveal obscured arc annotations.

You can select multiple nodes by dragging a selection rectangle around them. You can Ctrl–click to add a single node to the group. Shift–clicking a node adds it to the group along with all the nodes that it calls. Once you have selected a group of nodes, you can move them as a group with the middle mouse button or perform other operations on them.

Selecting Nodes from outside the Graph

Often you can specify a node from a text view, search field, or dialog box and it will be highlighted in the graph.

Filtering Nodes and Arcs

Another approach to simplifying a graph is to reduce the number of nodes and arcs. Different tools have different filtering options. All graphs have two types of node menus (accessed by holding the right mouse button) for filtering nodes: the Node menu and the Selected Nodes menu. Both menus are shown in **Figure 5−5** .

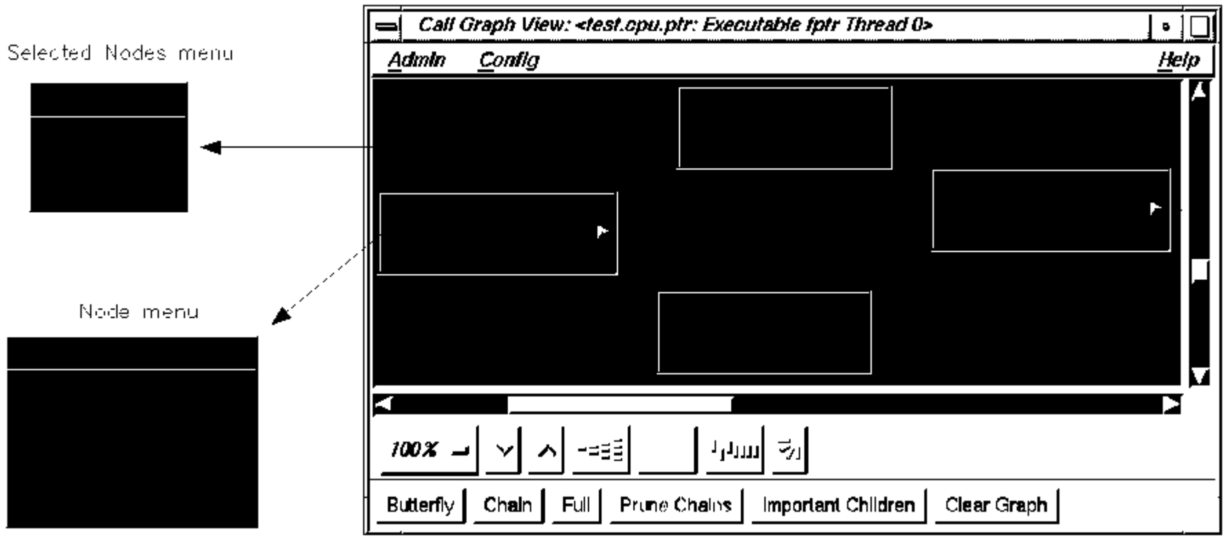

Figure 5−5 Node Pop−up Menus

Node Menu

The Node menu lets you filter a single node. It is displayed by holding the right mouse button down while the cursor is over the node. The name of the selected node appears at the top of the menu. The Node menu selections are:

"Hide Node"
: removes the selected node from the graph display.

"Collapse Subgraph"
: removes the nodes called by the selected node (and subsequently called nodes) from the graph display.

"Show Immediate Children"
: displays the functions called by the selected node.

"Show Parents"
: displays all the functions that call the selected node.

"Show All Children"
: displays all the functions (descendants) called by the selected node.

Selected Nodes Menu

The Selected Nodes menu lets you filter multiple nodes. You can select multiple nodes by dragging a selection rectangle around them. You can also Shift−click a node and it will be selected along with all the nodes that it calls. Holding down the right mouse button anywhere in the graph displays the Selected Nodes menu. The Selected Nodes menu items are:

"Hide"
: removes the selected nodes from the graph display.

"Collapse"
: removes the nodes called by the selected nodes (and descendant nodes) from the graph display.

"Expand"