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Chapter Nine
INTRODUCTION TO DRAW MODE

Draw Mode provides the tools you need to create a layout (background graphics) for your animation. You can choose Draw Mode at any time from the **Mode** menu.

When you choose Draw Mode, the Draw Mode toolbar appears, as shown in Figure 9-1:

Figure 9-1. The Draw Mode Toolbar

Before we describe each Draw Mode tool in a detailed way in Chapter 10, we'll cover a few basics of Draw Mode.

Common Editing Tools

The following toolbar icons to perform general editing operations in Draw Mode:

 Select "snap-to" options

 Initiate trimming of unwanted portions of lines and arcs

 Perform "box edit" operations (manipulate a group of elements)

 Undo the most recent editing operation

The snap-to options are described below, in the discussion of drawing grids, and in Chapter 15. Trimming and box edit are described in Chapter 10.

Adding New Elements

You use the following toolbar icons to add new elements to a layout:

 Add a fillet (an Arc that rounds off corners)

 Add a Line

 Add a polyline (Lines that are connected)

 Add an Arc

 Add static Text

 Add a Message (text that changes at run-time)

 Add a Bar (for displaying bar graphs)

 Add a layout Object

 Add a Plot

 Add an area fill

The tools shown above are described in detail in Chapters 10, 13, and 14.

You must choose the tool you would like to use by clicking on it. *There are no keyboard equivalents for Draw Mode toolbar icons.* Once you have chosen a tool for adding elements, a dialog box will appear. The caption of the dialog box will contain the word "New," *e.g.* "New Line" when creating a line.

When you add an element, you will do most of your manipulations with the mouse. However, it is possible, and in some cases, helpful to modify the properties of an element from the keyboard. For numeric properties, this is simply a matter of selecting the dialog field and typing in a new number.

Editing Existing Elements

To select a layout element for editing, click the mouse on or very near the element. Small red, square "handles" (for Lines, Arcs, Plots, or Bars) or a modified red crosshair (for Text, Messages, or Objects) highlights the element, and a dialog box will appear. This is the same dialog box that appears when you initially draw the element, except that the dialog box already contains the element's current attributes, and the caption of the dialog box contains the word

"Edit," *e.g.* "Edit Line."

To delete an element, select it with the mouse and click on the **Delete** button in the element's dialog box.

You use the **Box Edit** tool is to manipulate more than one element simultaneously. Box Edit is described in detail in Chapter 10.

Choosing a Pen Color

In Draw Mode, one color is the active "pen" color. Everything you draw will appear in the active pen color.

The initial pen color in a new Proof layout file is red. As you draw, the pen color will change to the color of the Object most recently added, edited or deleted. To change the active pen color, click on the colored box near the bottom of the dialog box of the element you are currently working on, then click on the color of choice in the Color Palette that appears.

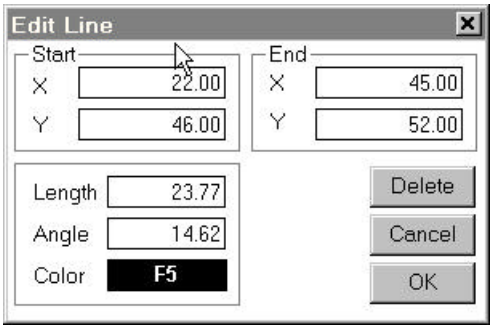

*Figure 9-2. Changing the active pen color or an element's color (*F5 *in this example)*

To change the color of a single existing Line, Arc, Text, Message, Bar, or Plot, the procedure is the same as changing the active pen color. Click on or near the element to select it. The end points (or text cursor) of the selected element will be highlighted in red. Then click on the colored box shown in the element's dialog box, select a color from the Color Palette that appears, and the element changes to your newly selected color. If you choose the Backdrop color as the active pen color, Proof in Draw Mode will display the results in blue so the element will be visible against the backdrop. In Run Mode, however, these elements will be invisible. You should choose the Backdrop color for elements you are planning to use as the basis for invisible Paths.

Although it is always possible to change the color of an already existing element, it is a good

idea to think first about what colors you want your elements to be. Proof is not intended to have the same features as a CAD program (such as logical layers into which you can organize your elements for later modification).

Saving a Layout

Any changes or additions you make to your layout file are only temporary until you have saved the file using the **File** menu or by clicking on the  **Save** toolbar icon. Proof will always warn you if you attempt to exit without saving the layout file (unless you are running a run-only version of Proof, in which case you are instead warned before you try to edit). Select **Save Layout** from the **File** menu, and a standard Windows file save dialog boxwill appear. Type in your filename and press **<Enter>** or click **Save**. You do not need to include the .LAY file extension, which is the default extension for saving layout files. If a layout file by that name already exists, Proof will rename the old version as *filename*.zzz as a backup.

Saved layout files include more than just Lines, Arcs, Text, Fill points, Message, Bar and Plot definitions. They also include all Path, Class and View definitions that are part of your layout, and a color palette.

You can see for yourself what is saved by default by starting Proof with no file names, saving your "empty" layout, exiting, and examining the layout file with a text editor.

The Grid

You will probably want to use the coordinate grid to help you draw. You can use the grid merely as a visual reference, or you can cause the cursor to "snap to" the grid while you are drawing.

The tools for manipulating the coordinate grid are accessed by choosing **View, Active Window Properties**, or by typing **<Ctrl-W>**. These tools are described in Chapter 4.

Grid Visibility in Draw Mode

The grid "visibility" status for Draw, Class, and Path Modes (animation development modes) is maintained and saved separately from the status for Run and Debug Modes (run-time modes). By default, the grid is visible in development modes and hidden in run-time modes. You can toggle grid settings in the Active Window Properties dialog.

Using the Grid As a Drawing Tool

For precision when drawing Lines and Arcs, you can use  **Snap Options** (which produces

the dialog shown in Figure 9-3) to select the Snap-to-Grid feature. Snap-to-Grid is "on" by default, but you can toggle it off.

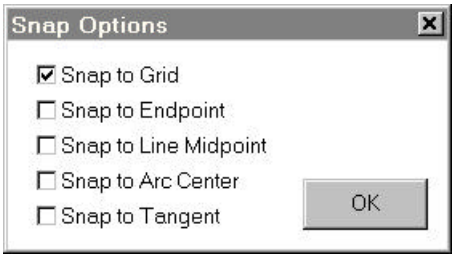

Figure 9-3. The Snap Options dialog

When Snap-to-Grid is turned on, the mouse cursor will visibly "jump" from grid point to grid point, and elements will snap to the nearest grid point as you draw or edit them.

When the Snap-to-Grid feature is off, you can position the mouse cursor anywhere on the layout, even between grid points. You may find it useful to disable Snap-to-Grid when positioning Text or Messages.

Note that Snap-to-Grid uses the *current* dot spacing of the coordinate grid to determine snap-to points. (There is no absolute "snap grid" as there is with some other drawing programs.) The dot spacing, along with the size of the major grid lines, can change as you zoom in or out. This can catch you off guard if you are working on a detailed part of your drawing.

Remember that you can set the grid size and dot spacing manually as described in Chapter 4, Exercise 4-3. However, the manual setting is not permanent. If your manual setting gets overridden due to a zoom, you can re-set it and/or pick a zoom factor that works for you and stick with it. (Tip: Once you have settled on a zoom factor with the "right" dot spacing, use **View, Out+Back** to navigate around a large, complicated drawing. This will preserve your grid size and dot spacing.)

Snap options in addition to Snap-to-Grid are described in Chapter 15.