

Bitmap Editor

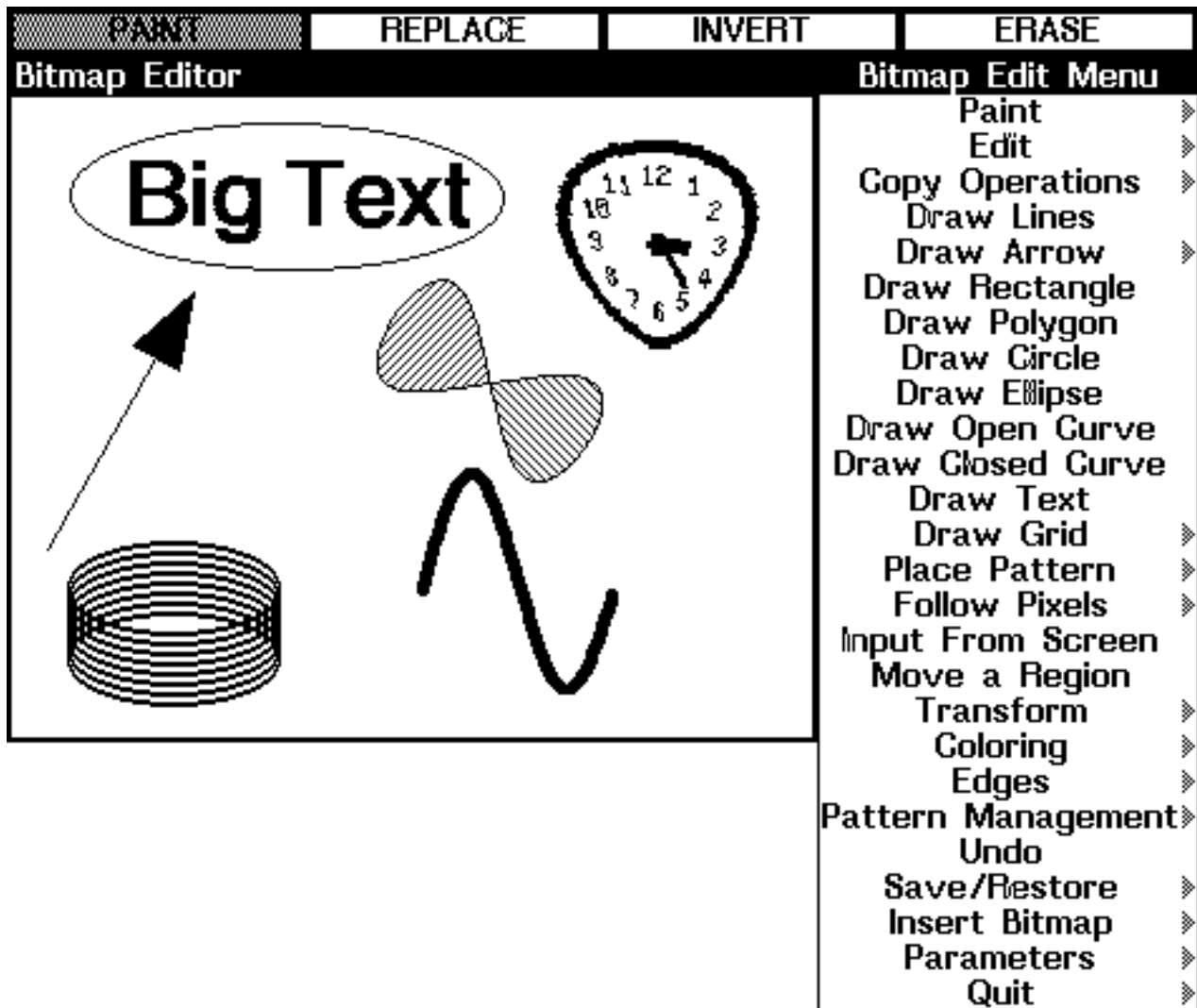
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The bitmap editor is invoked as follows.

(EditBitmap BitmapOrFile Window ...)

If BitmapOrFile is an existing bitmap, the user will be prompted to place a window displaying the existing bitmap. If BitmapOrFile represents a file containing a bitmap in binary form, it will be read from the file and subsequently edited via the window. If BitmapOrFile is non-NIL and Window is given, the bitmap will be edited within the existing window although it may be clipped if the bitmap is larger than the window. Finally, if both BitmapOrFile and Window are NIL, the user will be prompted to sweep out a region on the screen that will define the bitmap. The editing window is then placed as desired.



The four menu items at the top of the editor window set the primary drawing operation. Paint logically ORs the drawing bits with the bitmap bits to give the result. In Replace mode, all drawing bits replace the bitmap bits whether they are on or off. Invert does a logical exclusive OR between the drawing bits and the bitmap bits. Erase performs a

logical AND between the inverse of the drawing bits and the destination bits. The drawing operation may also be changed via Parameter menu subitems.

A brief description of all the menu items follows.

Abort - Error out of the bitmap editor. Equivalent to a control-E.

Add Border - The bitmap is expanded by adding a border with a user specified width and texture.

Add Texture - Adds a user selectable texture to the entire bitmap.

Add Pattern - Allows the user to define a pattern (an independent bitmap) that may be placed in the primary bitmap, used for painting, etc.

Air Brush Size - Sets the size of the air brush.

Air Brush Speed - Sets the speed of the air brush. The affects the density of "spray."

Apply Operation to Copy and Original - Applies the primary bitmap operation (Paint, Replace, Invert, or Erase) to the original bitmap and an independent copy that is created and maintained by the primary editor. The copy may be separately edited.

Arrowhead - Sets the width and height of the arrowhead created by the Draw Arrow command.

Auto-Save File Name - Sets the name of the file to be used for auto-saving of the bitmap.

Auto-Save Interval - Sets the interval between automatic saving of the bitmap.

Auto-Save Status - Displays the current auto-save status, file name, and interval.

Averaging - Applies an averaging matrix to the entire bitmap. The weighted sum of each pixel and its eight neighbors is compared with a threshold. If the sum is greater than the threshold, the pixel is turned on (or left on), else it is turned off. The user may use a default averaging scheme or define her own in a Lisp executive.

Bitmap Editor Paint with Airbrush - Allows painting of the bitmap with an "air brush." The size, shape, and speed of the air brush may be changed via subitems of the Parameters menu item. The operation (Paint, Replace, Invert, or Erase) and the speed may be changed while in this mode by clicking the right mouse button and selecting the appropriate menu item.

Bitmap Editor Paint with Brush - Similar to the standard Interlisp-D paint facility. The size and shape of the brush are modified via subitems of the Parameters menu item. The operation (Paint, Replace, Invert, or Erase) may be changed while in this mode by clicking the right mouse button and selecting the appropriate menu item.

Bitmap Editor Paint with Pattern - Similar to Bitmap Editor Paint with Brush, but paints with a pattern (arbitrary bitmap) instead of a standard brush.

Brush Shape - Sets the brush and air brush shape. The available choices are round, square, horizontal, vertical, and diagonal.

Checkpoint Restore - Resets the bitmap to the state it was in just prior to the last Checkpoint Save.

Checkpoint Save - Saves the current bitmap locally. The saved bitmap is not written to a file, but merely saved as a window property. Each Checkpoint Save destroys the previous saved bitmap.

Clear - Clears the entire bitmap.

Clear All But Region - Clears the entire bitmap except for a region swept out by the user.

Clear Region - Clears a region swept out by the user.

Coloring - Menu subitems change coloring of the bitmap and regions.

Copy Operations - Menu subitems create and edit a copy of the bitmap.

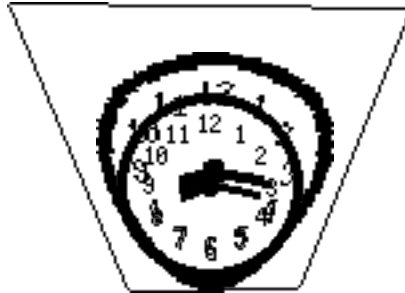
Copy/Edit Pattern - Creates a copy of an existing pattern and opens an edit window on the pattern.

Create New Copy of Bitmap - Creates a copy of the existing bitmap and maintains it separately. The copy may be edited separately.

Dashing - Turns dashing on or off and sets the style. When dashing is on, all line drawing operations will be done with the existing dashing pattern.

Delete Pattern - Allows the deletion of one of the patterns currently defined for the bitmap editor.

Distort Region - Distorts a rectangular region of the bitmap. This operation is time consuming on an 1186 which does not have hardware floating point. The operation operates as follows. A rectangular region is first swept out by the user as in the figure to the left. The vertices are then moved with the left button resulting in a display as in the middle figure. The result is shown in the rightmost figure. Note that if the user wishes to replace the region with the distorted result, the editor must be in the REPLACE mode. Otherwise, the distorted region will be PAINTed over the original region.



Draw Arrow - Draws one or more line segments with an open arrow at the end point. The size of the arrow may be changed by setting the appropriate parameters.

Draw Circle - Draws a circle in the same manner as SKETCH. The circle will be drawn with the current drawing brush size and dashing.

Draw Closed Curve - Draws a closed curve in the same manner as SKETCH. The curve will be drawn with the current drawing brush size and dashing.

Draw Ellipse - Draws an ellipse in the same manner as SKETCH. The ellipse will be drawn with the current drawing brush and dashing.

Draw Filled Arrow - Draws one or more line segments with a filled arrow at the end point. The size of the arrow may be changed by setting the appropriate parameters.

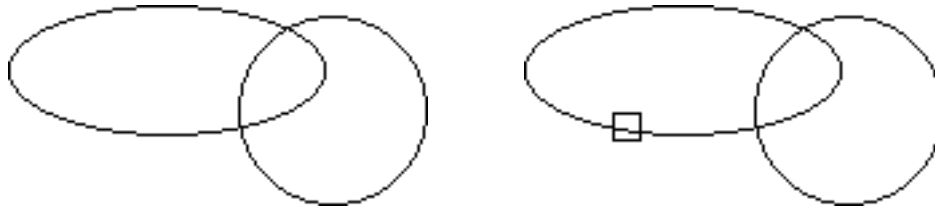
Draw Grid - Draws a grid over the entire bitmap. The width and height of the grid is specified via a number menu. The grid will be drawn with the current drawing brush size and dashing.

Draw Grid in Region - Draws a grid in a specified region. The width and height of the grid is specified via a number menu. The grid will be drawn with the current drawing brush size and dashing.

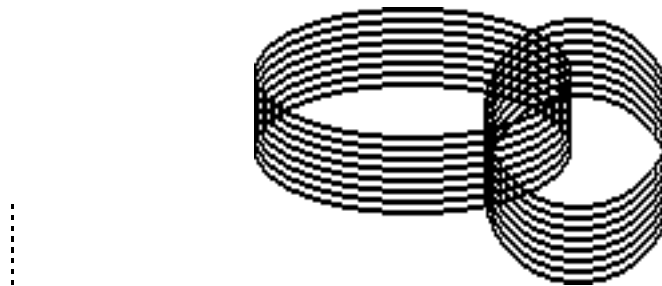
Draw Lines - Draws one or more line segments in the same manner as SKETCH. The lines will be drawn with the current drawing brush size and dashing.

Draw Open Curve - Draws a closed curve in the same manner as SKETCH. The curve will be drawn with the current drawing brush size and dashing.

Draw Over Connected Pixels from Region - Draws over all "connected" pixels starting from one or more pixels in a small region. Drawing may be done with the current drawing brush or a pattern. A pixel is connected to another pixel if it is one of the eight neighbors of the pixel. The operation is as follows. Suppose we have a display as shown to the left. We then select starting pixels by placing the box cursor as shown in the right figure.



Suppose we then select a pattern as shown to the left below. The resulting display will appear as in the figure to the right. Note that the user is requested to select the offset of the drawing brush or pattern.



Draw Over Connected Pixels from Selected Pixel - Similar to Draw Over Connected Pixels from Region, but a single pixel is selected as the starting point. The user places a separate "magnifier" window. When the cursor enters the bitmap editor, it changes to rectangular crosshairs and the surrounding 64 pixels are magnified 8 times and displayed in the magnifier window. When the crosshairs are over the selected pixel, the left button is clicked to specify the starting pixel.

Draw Polygon - Draws a polygon in the same manner as SKETCH. The polygon will be drawn with the current drawing brush size and dashing.

Draw Rectangle - Draws a rectangle in the same manner as SKETCH. The rectangle will be drawn with the current drawing brush size and dashing.

Draw Text - Places text. The font family, size, and style may be changed via Parameters menu subitems. The text is typed into a prompt window and then moved to the desired position with the mouse.

Drawing Brush Size - Sets the size of the drawing brush.

Edges - Menu subitems trim the bitmap and add borders.

Edit - Menu subitems edit regions of the bitmap.

Edit Copy of Bitmap - Opens an edit window on the currently stored copy of the bitmap. See Create New Copy of Bitmap.

Edit Pattern - Opens an edit window on a selected pattern.

Edit Region - Opens an edit window on a selected rectangular region of the bitmap.

Erase Connected Pixels from Region - Erases all "connected" pixels starting from one or more pixels in a small region. A pixel is connected to another pixel if it is one of the eight neighbors of the other pixel.

Erase Connected Pixels from Selected Pixel - Similar to Erase Connected Pixels from Region, but a single pixel is selected as the starting point. The user places a separate "magnifier" window. When the cursor enters the bitmap editor, it changes to rectangular crosshairs and the surrounding 64 pixels are magnified 8 times and displayed in the magnifier window. When the crosshairs are over the selected pixel, the left button is clicked to specify the starting pixel.

Exact Size - Allows changing the size of the current bitmap by explicitly resetting the origin, width, and height in terms of the bitmap coordinates.

Expand - Expands the width and/or height of the bitmap by an integer factor of one to four.

Fill Box - Fills a specified rectangular region with the default texture.

Fill Box with Specified Color - Fills a specified rectangular region with a chosen texture.

Fill Region(s) - Fill one or more closed regions with the default texture.

Fill Region(s) with Specified Color - Fill one or more closed regions with a chosen texture.

Follow Pixels - Menu subitems follow connected pixels and erase or draw over them.

Font - Sets the font family, size, and style for text placement.

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