

DiamondBOX

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	TITLE : DiamondBOX		
ACTION	NAME	DATE	SIGNATURE
WRITTEN BY	Nikolaj Thygesen	July 31, 2024	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

DiamondBOX

1.1 Welcome to DiamondBOX

D i a m o n d B O X

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About A little tittle thing

People Who did this

What is this? Welcome to DiamondBOX

Tutorial How to begin

Background Some needed reference info

Keyboard abuse Should you use the keyboard?

Setup How to setup the system

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1.2 Intro to DiamondBOX

What have we here?

DiamondBOX is a photo retouching system. It's heavily layer based, but easy going once you get the picture. Let's look at parts of the feature set:

- Fully multithreaded.
 - Internal representation of images always 32-bit.
 - Add as many layers as you want (and have RAM for).
 - Change Layer-Effects on the fly and watch the changes right before your very eyes.
 - Draw with Air Brush, Lines, Shaded Text, Boxes, arcs, Ellipses or even lightnings.
 - Apply textures to Effects for compositions or strange Alpha Channels.
 - Gradiated fills for all shapes and flood fill.
-

- Create your own brushes.
- Print using the TurboPrint saver.
- Save your picture as a C-source CGFX compatible bitmap.
- Different Generators to create sky images or maybe just plain pieces of paper.
- Loads IFF / JPEG / PNG.
- Expandable - write your own Pebbles (Savers / Loaders / Effects...)
- Edit all buttons with DiamondBOX itself.

It is definitely Work-In-Progress, and there's still a long way to go, so don't be too hard on it. Installation is straight forward - unpack the archive to a drawer of your choice. No messy assigns to worry about. This guide was thrown together very fast, so I hope you don't find too many typos. Feel free to report them.

Life's too short to worry about yesterdays technology (funny phrase on an Amiga :o), so you will need the following to try out DiamondBOX:

- A 16/24 bit GfxCard running CGFX 2+
- A 68020 is minimum, but I fear you'll soon come to a crawl when using too many layers.
- 8 Mb RAM should get you goin', but adding at least another 32 Mb will do you good.
- 1 Mb of HD space.

1.3 Tutorial

Tutorial

First, open a picture...

After starting the program, click on the title/about pic to make it go away. Select "Open..." from the ToolBox menu - this opens a standard file requester, from which you should choose an IFF picture of yours.

Second, create a primary layer...

Next thing you select the Layer::Manager window (= LM) and select "New primary layer" from the menu. This pops up a window asking you to select the **effect** to attach to this layer (called an **effect** layer). Choose the "Boing Ball" **effect** which paints a checkered pattern on the picture. Finally you can paint away in the window containing the loaded picture. If you want to apply other **effects** to your picture, go to LM and add a new layer. You can basically add **effects** to your hearts content, but there is a speed penalty to pay somewhere along the line depending on your processor (yes, I know support for PPC would be great, and I do have one, but that'll have to wait).

Third, alter characteristics of the effect...

Some **effects** have parameters changable in the LM window. Selecting an **effect** in the upper list of the window reveals the parameters of the **effect** of that particular layer. Should you want to change the **effect** of the currently selected **effect** layer, this can be done w/ "Change effect" from the LM menu. One **effect** "Mono Filter" has its own drawer in the DB tree, namely the "ColorFilters". Here you'll find a couple of palettes which can be applied to pictures giving you different kinds of monochrome pictures - Weird palettes are possible as well.

Try changing "Boing Ball" to "Painter" - select "Update layers" from the menu to see the changes. Go to the toolbar and open one more picture, then back to LM and select a texture with "Select texture". From the popup select the new picture, and "Update layers". All the stuff you previously painted should now be covered with pixels from your second picture. Not all **effects** accept textures, but they won't tell you. Try it out and see what happens.

Changing Brush characteristics...

The brush used for applying paint can be slightly customized. Go to Toolbar and select "Windows/Brush...". This opens another window showing a little black square in the lower half. This is your brush, and by increasing the size and pressure, you can see how it affects your brush on the black square. The brush is global, so you can go right away to your picture and use it. The upper right icon in the Brush::Manager opens a popup allowing you to select the overall shape of your brush.

Generating new pictures...

Go to toolbar and select "Generate...". Select the desired **generator** from the popup. These are just small programs that generate different kinds of pictures. This is where you'll find the scanner interface in the future. The "Mandelbrot" is just a quick hack based on an old BASIC thing I made years ago. One of the **generators**, called "New Paper" will create a new picture based on the "width" and "height" supplied in the requester. Notice some **generators** require a picture as a parameter, and for these you need to invoke the wanted **generator** from the editor menu with either "Operate frozen" or "Operate active". The first will use the unretouched picture whereas the second will operate on the picture visible in the editor window.

What's in the Toolbar...

The last thing I'll mention in this small but messy tutorial are the buttons of the Toolbar. From there you can select the kind of shape to use when applying **effects** in a layer. Apart from Brush there's a line, square, ellipse, Flood fill, connected lines and a lightning tool. The little star like shape (which was supposed to be a gear - originally) allows you to choose a **generator**, and the two icons containing a diskette are used for loading and saving pictures. The palette button allows you to select what color to use as default for some **effects**. Pretty useless really, but now it's there :o) I guess it might go away one day. The way to exit the palette requester is just to click somewhere else on the screen.

Alpha Channels...

Some **effects** alter the alpha channel instead of the paint of your picture. The alpha channel is just a layer deciding how much you're allowed to paint on individual image pixels in the editors. If the alpha channel is 100% or white the effect will cover the image underneath completely, but an Alpha Channel value of 0% or black will leave the image unchanged. Values in between 0 - 100 corresponding to grey scales will apply more or less of subsequent effects to the image.

What does Activate and freeze mean??

If you don't want to apply anymore paint to a certain layer just select it and choose "Freeze" from the LM menu. From then on you can no longer apply paint to that layer. "Activating" the layer means that the you're reopening it (thawing it - the opposite of freeze). Likewise you can freeze the paint and alpha channel parts of your picture to make your changes permanent. This can't currently be undone! If you have opened the same picture in another editor, these frozen changes will affect that other copy as well, but not until you select the window of that editor.

PHEEW - I hope this has given you an idea of how to work w/ DiamondBOX, otherwise I take the blame. This was basically just meant to get you going, and I hope sure you can figure some stuff out yourselves as you go. In case of real trouble, just ask me - I should know :o)

1.4 Available effects

Available effects

Alpha Channel:

This is a global effect meaning it doesn't need to be painted on. It affects all effects applied after itself. If you leave the slider in Layer::Manager around the middle all subsequent effects will cover only 50%. Applying two Alpha Channels around 50% results in an effective 25% Alpha Channel - they affect each other. Alpha Channels accept textures, so that only brighter parts of the texture will allow application of subsequent effects.

Average filter:

This filter isn't well suited for interactive drawing. For each pixel affected by the effect it assigns the average (mean) value of the pixel itself and it's eight immediate neighbours for each of the R, G and B channels. This removes certain kinds of noise from the picture, but depending on the nature of the noise other filters might be better suited - see "minimum", "maximum", "median" and "convolution matrix".

Balance:

This effect lets you alter the different channels R, G and B independently. Slide the knob of the channel in question to the right to increase the intensity of that channel, and to the left to decrease the intensity. The middle position is neutral.

Another neat feature of Balance, is the way it uses textures. The red channel of the texture will modify the red channel of the image in an additive fashion, such that a red channel value of 127 in the texture leaves the image red channel untouched, whereas smaller texture values decrease the corresponding value of the image, and larger texture values increase values of the image.

The same goes for green and blue channels. This effectively creates a kind of bumpmapping which gives your image a textured feeling. The drawer "BumpMaps" contains a couple of greyscale textures suitable for bump mapping.

Boing Ball:

Actually kind of a joke, but nevertheless it applies a checkered pattern to the image. The size of the checks can be adjusted with the two numeric gadgets in Layer::Manager.

Brightness:

With this little sucker you can change the brightness and contrast of the image. Changing the top slider allows you to increase brightness in a linear fashion. The Gamma slider alters brightness in a more "selective" fashion affecting darker pixels the most. Changing the two contrast sliders you can narrow the amount of colors used in the image effectively increasing contrast. The more adventurous individuals can play around with the bottom ten sliders to be even more selective about it all. All values in between slider values are interpolated.

Chroma Key (Alpha):

This is a global effect changing the alpha channel according to the chrominance (Hue = H) and saturation (S) of the picture. The top color chooser selects the reference Hue. All pixels with a Hue within the range of the reference Hue +/- "H-Range" will be considered fully "paintable" if the saturation of that same pixel is beyond the "S-limit". If this is not the case, but saturation is still at most "S-fade" % below the "S-limit" then the alpha channel will approach 0 at $S = S\text{-limit} - S\text{-fade}$.

The last gadget selects whether the new alpha channel should be "relative" to the one below this effect, or if the calculated alpha should be considered absolute disregarding any changes done to the alpha channel in lower effects (higher up in the "Layer::Manager").

Color Key (Alpha):

This is a global effect changing the alpha channel according to the color of the picture. The top color chooser selects the reference color. All pixels with a distance within the range of the reference Hue +/- "Tolerance" in the color cube will be considered fully "paintable". If this is not the case, but the distance is still at most "tolerance + fade" from the reference color then the alpha channel will approach 0 (=unpaintable).

The last gadget selects whether the new alpha channel should be "relative" to the one below this effect, or if the calculated alpha should be considered absolute disregarding any changes done to the alpha channel in lower effects (higher up in the "Layer::Manager").

Convolution Matrix:

This is a multipurpose effect, which actually isn't that well suited for interactive drawing, since it messes up the display slightly, and to get a real view of what the picture looks like, you may need to refresh the view. Depending on the matrix in question this effect can f.ex. blur, sharpen or edge detect the picture.

Explosion:

When paint is applied with this effect the color chosen will be somewhere between the two colors in Layer::Manager, depending on how much paint is applied. The dark color will be used for smaller amounts of paint whereas larger amounts of paint will draw the color towards the bright color.

Gradient Painter:

This effect allows you to choose two colors to paint with. Depending on the direction of the gradient the applied color will vary either along the horizontal, vertical or one of the two diagonal directions.

Invert Alpha Channel:

Yet another global effect taking no parameters. It will simply invert the current alpha channel, so that parts of the picture previously protected from painting will be allowed to have paint applied, and vice versa.

Logic Operation:

This effect takes the chosen color, and combines it with the picture using an operation selectable with the gadget under the color chooser. This effect also works with textures in which case it combines the two images again using the selected logic operation.

Luma Key:

This is a global effect changing the alpha channel according to the luminance of the picture. The top slider selects the reference luminance. All pixels with a luminance within the range of +/- "tolerance" from the reference luminance will be considered fully

"paintable" in later effects. If the difference between the pixel luminance and ref. lum. is beyond the "tolerance" range, but still within "tolerance + fade" the alpha channel will approach zero the larger the difference, and every pixel outside this range will be unpaintable - so to speak. Man, I hate these alpha explanations :o)

The last gadget selects whether the new alpha channel should be "relative" to the one below this effect, or if the calculated alpha should be considered absolute disregarding any changes done to the alpha channel in lower effects (higher up in the "Layer::Manager").

Maximum filter:

This filter is poorly suited for interactive drawing, which will change in DiamondBOX 2, but for now this will have to do. Each pixel is assigned the value of the maximum of itself and it's surrounding eight pixels. This removes certain kinds of noise from the picture, but depending on the nature of the noise other filters might be better suited - see "Minimum", "Average", "Median" and "Convolution matrix".

Median filter:

This filter is poorly suited for interactive drawing, which will change in DiamondBOX 2, but for now this will have to do. Each pixel is assigned the value of the median of itself and it's surrounding eight pixels. This removes certain kinds of noise from the picture, but depending on the nature of the noise other filters might be better suited - see "Minimum", "Average", "Maximum" and "Convolution matrix".

Minimum filter:

This filter is poorly suited for interactive drawing, which will change in DiamondBOX 2, but for now this will have to do. Each pixel is assigned the value of the minimum of itself and it's surrounding eight pixels. This removes certain kinds of noise from the picture, but depending on the nature of the noise other filters might be better suited - see "Maximum", "Average", "Median" and "Convolution matrix".

Monochrome:

The basic functionality of this effect is to convert color images into monochrome/grey scale. If you press "Select Color Filter", you can select a "filter" (An IFF ILBM w/out a BODY chunk, but a 256 entry palette), which will then work as a filter changing the grey scale values into other intervals. A few of these filters have been provided in the "ColorFilters" drawer.

The weights used to go from color to monochrome can now be set with the top most three sliders. The weights are relative, that is the weight of each channel is relative to the weights of the other two channels. If the weight of "Red" is half the "Blue" weight, then blue will contribute twice as much to the final grey scale value as red. By zeroing out two channels, individual channels can be isolated, but notice that as soon as you touch any of the color controls the filter info will be altered, and you will need to load a grey scale filter to return to the default setup.

Another feature of this effect is the ability to select a color and one of three methods of stuffing that color into the picture. The first method changes the brightest parts of the image into the chosen color. The second method squeezes the selected color into the middle tones, and the last method will replace the darkest tones with the selected color, and make the brightest colors white.

Mosaic:

Selects one pixel from the image and uses it for all pixels in a rectangular block of the image. Select the block size in Layer::Manager

Negative:

This effect negates the part of the image being painted - just like a photographic negative.

Painter:

This is the basic paint effect which accepts textures, making it a composition tool as well. Using the picture itself as a texture this effect can function as a clone effect also.

Paint with brightness:

This effect will paint your image with the selected color, but retain the brightness of the pixel underneath the paint. This effect can prove really useful with textures when composing f.ex. parts of different persons, and the skintones don't match. Select the picture having the wanted skintone as the texture of the picture, and position it with the wanted skintone on top of the modified part of the composition then paint away. This will apply the new skintone to the modifications, but retain the brightness patterns of the underlying picture.

Paint with shadow:

This weird effect is meant to be used when applying line drawing-like figures needing a shadow. When paint is first applied the smaller amounts darkens the background, but when almost reaching the maximum amount of applicable paint the chosen color (or texture) is applied instead. Try this out with the "Text tool".

Posterize:

If you should ever need to decrease the number of possible values of the channels in your picture, then "Posterize" is the right way to go. Select the number of different values you want in the slider, with the rightmost value "Neutral" (255) being the default, and having no effect. The leftmost values have the greatest effect, and staying above 100 can sometimes be hard to see.

Randomize:

Useless experiment I did. I included it just in case anyone might find a use for it.

Reset Alpha:

This global effect allows for absolute setting of alpha channels, meaning that no matter what the previous Alpha Channel was, it will be reset to what ever value is chosen with the Layer::Manager slider.

Saturation:

Increases saturation of the image. Select amount of increase with the slider in Layer::Manager.

Solarize:

This is an extreme brightness thing which tilts past 50% brightness and makes those brightest parts of the image negative.

1.5 Available generators

Available Generators

In the following you'll find a description of the current set of implemented generators. Some of these will expect an argument picture (denoted with an "(arg)"), and in this case you should invoke the generator from the editor menu with "Operate frozen" or "Operate active". The first will use the unretouched picture whereas the second will operate on the picture visible in the editor window.

Alpha => Image: (arg)

To get a picture containing the alpha channel of the current picture invoke this generator. It creates a greyscale picture in which a black pixel means that the corresponding pixel of the source picture is unaffected by paint and a white pixel meaning completely covered by paint. Any grey levels in between indicates different levels of transparency in the source picture. This resulting picture can then be edited, reapplied to the source picture with the "Alpha" or the "Reset Alpha" effect, and then frozen into the original picture from the editor menu.

Rotator: (arg)

This generator will rotate the source image in 90° steps. A more general rotation will be implemented later on, and will accept steps of 1° at a time. From the dialog select the wanted angle of rotation, and accept - Voila!

Cloud generator:

If you should ever need a cloudy backdrop, then just invoke this little goodie, and enter a couple of colors along with the dimensions of your backdrop, and soon you'll have a sky on your screen.

Colored Backdrop:

Will create a backdrop picture in which you setup the dimensions of the picture, and the colors at the four corners. The rest of the picture will then be interpolated between these four colors.

Cool Scaler: (arg)

The new scaler works just like "Scale dimensions", except this one interpolates pixels whereas the latter just finds the nearest neighbour when choosing the color of a new pixel.

Crop Image(Alpha): (arg)

This advanced crop generator uses the alpha channel of the picture to decide which pixels to crop, with 0 meaning source pixel not used, and 255 meaning source pixel used. The values in between will interpolate the source pixel color with the global color selected in the generator dialog. One way of using this generator is by painting some effect onto the picture, and stuffing the canvas into the alpha channel with "Canvas/Canvas => Alpha". Finally invoke, the "cropper" from the picture. Notice, this will alter the frozen Alpha channel, so you should reset the Alpha Channel afterwards if you need to do further editing on the picture.

Flip Left <=> Right: (arg)

This mirrors the source picture around the Y-axis into a new picture.

Flip Top <=> Bottom: (arg)

This mirrors the source picture around the X-axis into a new picture.

Horizon Backdrop:

This generator is a bit complicated to explain. Basically it creates a picture with one color at the top, changing (gradient) into a second color in the middle (which we'll call the horizon), that finally changes (another gradient) into the third color at the bottom. With the "Position" gadget at the bottom of the dialog you can shift the horizon towards the top (left) or the bottom (right) of the resulting picture. The colors will normally be interpolated in a linear fashion, but sliding the "Squeeze" towards the left will give the top and bottom more space, in effect squeezing the horizon into less space, whereas sliding the gadget towards the right will expand the horizon on account of the top and bottom. The last gadget (defaulting to "Full alpha") determines whether the alpha channel of the resulting picture will allow you to paint on the whole picture, only the sky (top) or only the ground (bottom). The alpha channel will be interpolated along with the colors themselves - try it out!

Mandelbrot:

Creates a picture of the mandelbrot set. You enter the dimensions of the picture, and the max number of iterations before a point is considered part of the set. A few seconds later you get a picture of the good old set - no you can't zoom in!!

New paper:

With this little thing you can create a new piece of white digital paper. The dimensions can be entered in the two numerical gadgets.

Random Noise:

Well, I just had to have one, because if I didn't everybody would need it :o) This generator creates a picture containing random noise, which really looks like one big mistake, but who knows if one day you can't live without it!

Scale dimensions: (arg)

Will create a new rescaled picture based on the source picture. Use the slider to quickly change the size gadgets maintaining the aspect ratio. This is the basic scaling of a picture, so if you need a better quality picture try out the newer "Cool Scaler".

Starry night: (arg)

Hi John :o) This generator will create a very simplistic image of a night time sky. Select the color of the sky itself and the color of the stars with the color choosers. Density is the amount of stars on the sky, and the further to the left you position this slider, the fewer stars will appear on the sky. If you slide too far to the right you will get the reverse effect of a little sky in between all the stars.

1.6 Keyboard abuse

Keyboard abuse

As previously stated some things are done w/ the keyboard. These details will be addressed below:

<Shift>:

is used to invert the **effect** of tools on the Canvas - w/out <shift> you can paint w/ LMB, but w/ <shift>-LMB you'll remove paint from the Canvas. In LM <shift> is used for multi selecting layers (removal). When closing an editor, holding down <shift> will close only the changes, but keep the frozen picture.

<Arrow Up/Down>:

are currently only used to move layers up and down in LM - can be done from the menu as well.

<ESC>:

abort dialogs for f.ex. **generators**.

<Return>:

is a real goodie. Apart from accepting dialogs, when used in LM, it tells the current picture to refresh all its layers. This can be done from the LM menu as well, and will also happen automatically when current picture is selected.

1.7 DiamondBOX fundamentals - Nice to know

Background

In the following paragraphs we'll take a look at some of the internals of DiamondBOX.

When you open a picture the following happens: DB opens your picture and stores it in 24 bit along with an alpha channel. Next thing it opens an editor window with a canvas, a reference to the opened picture, but no layers. All manipulations done to the picture in the editor window will be only temporary, and opening a second editor with the same loaded picture ("Project/Edit..." in Toolbar) displays the original picture, but with a different canvas. All painting is done on the canvas of the active window, and this canvas will be attached to the active layer of the current editor. A frozen layer has its own private frozen canvas which can't be altered in any way. When rendering **effects** in the editor the canvases are combined with the alpha channel before applying paint to the picture.

To make changes available to all editors referring to a certain picture, you must freeze the contents of an editor. When done you can close the editor, but the picture is STILL loaded, and can be edited later on, or just left hanging around in case you need it as a texture later on.

You might wanna close all unused editors as they consume quite a lot of RAM. Talking about RAM abuse - printing with the TurboPrint saver allocates a second copy of the picture which can also quite memory consuming.

Useful words to understand:

Picture: Well :o)

Layer: is like a transparent piece of onion skin placed on top of your picture. All modifications will go to this layer allowing you to remove all modifications by simply removing the layers in question.

Canvas: Is the active layer. Only one layer can be active at a time.

Effect: All modifications applied to the canvas are translated through an effect, so that where ever you apply paint to a canvas, the corresponding effect will be applied to that particular part of the picture.

Tool: When modifying the canvas you use tools like "AirBrush" or the Box tool.

Primary Layer: This is a layer having its own reference to the canvas, and an effect as well.

Group Layer: This is a kind of layer which doesn't do anything in itself. It holds a reference to the canvas. but that's all.

Secondary Layer: This kind of "layer" actually only has its own effect, and borrows the physical layer/canvas from the previous Group Layer. This can be useful if a number of effects need to be applied to the same part of a picture. A Secondary Layer can not be activated as it refers to a Group Layer for information on where to paint.

Freeze: Means making changes permanent. Freezing a layer means making it unavailable for further editing. Freezing RGB and/or Alpha Channel means copying those parts of a picture to the unchanged background copy.

Generator: A little program generating pictures maybe based on a set of parameters, and in some cases an argument picture as well.

1.8 Canvas tools

Available Tools

In the following we'll go through the different tools of DiamondBOX. You'll find an icon for most Tools in the Toolbar, and the different settings for the Tools can be changed in "Tool::Manager", but not all settings relate to all tools. Look below to find out how to control the different tools.

After each tool you'll find a word in parenthesis which indicates which settings apply to any given tool. The appropriate settings will be automatically shown in Tool::Manager when a given tool is activated.

All tools allow you to remove paint from the canvas by keeping <shift> depressed while paint/dragging whatever tool you're using across the canvas.

Currently four sets of settings are defined: "Line", "Fill", "Text" and "Color". One of these apply to each of the tools. First we'll go through each of the setting groups and explain what hides behind them, and how they apply to the related tools.

"Line": All tools using this group of settings draw either single brush strokes or complete lines. The "Size" parameter determines the size of the current brush, and it varies between 1 and 100 pixels. "Pressure", again, is a number from 1 to 100 indicating how hard paint is applied to the canvas. A value of 100 covers the background completely.

"Fill": All tools using this group of settings fill regions of a picture with paint. The first parameter "Coverage" works much like the "Pressure" above. When the slider is all the way to the right the background is potentially covered completely. Actually this is only the case when the parameter below is set to "Complete fill". By clicking this button a list pops up allowing you to select a gradient going in one of a number of directions including from center to edge or the other way around in a couple of different fashions. The last option "In Color Range" deserves special mention as it works sort of like flood fill. When you paint with this fill method only colors matching the current color are affected. Actually colors within a certain distance of the current color are affected, and this distance can be altered with the "Full R" slider. The further to the right you drag this slider, the more tolerant the filling is. The "Fade R" slider allows you to increase the tolerance, so that pixels between the "Full R" and "Fade R" ranges are painted less the closer they are to the outer edge of "Fade R". All pixels outside these ranges remain unaffected.

"Text": This group of settings allow you to "Select font" for drawing text. The text to draw is typed right below the font button. The two sliders at the bottom controls the weight of the text shadow and the distance between actual text and it's shadow. The text itself is always fully painted, so if you need to create partly transparent text, create an alpha layer beneath the text layer.

"Color": This group allows you to change the current color either by clicking the color button which pops up a color wheel, or by adjusting the RGB sliders below the color button.

AirBrush (Line): This tool uses the current brush chosen in "Tool::Manager" like an Air Brush to add paint to the Canvas, which in turn adds the effect of the active layer(s) to the picture.

Arc (Line): This tool draws an arced line. First you mark the two end points of the arc, and finally you can drag the peak of the arc with the <LMB> and let go when you're happy with your new found arc.

Color Picker (Color): This tool allows you to change the current color. Some effects adopts the current color as a starting point, and f.ex. the "Paint effect" now lets you fetch the current color at any time. You change the color by clicking anywhere in the active image. This transfers the color under the mouse cursor to the global current color of DiamondBOX. If Tool::Manager is open it'll show a real time view of that color.

Line (Line): With this tool you can add straight lines to the Canvas. The current brush is applied for every point along the line, but it isn't added like with the AirBrush, so when drawing several crossing lines the amount of paint of the intersections will be the same as that of the rest of the lines. The absolute pressure from "Tool::Manager" will be applied to the line, so increasing this value will create denser lines. If keeping <shift> depressed while dragging the line it will remove paint from the Canvas. This removing of paint also takes the currently applied pressure into account, and may take some experiments to get used to :o)

Lightning (Line): This tool behaves exactly like the "Line" tool above except the drawn line will not follow a straight line. Instead it will twist and bend in a random fashion resembling the path of a lightning. Combining this tool with the "Lightning" brush, and a suitable effect - like "Explosion" - can create some neat images.

Text (Text): With this tool you can add text to the Canvas. Notice that text placed on the Canvas can not be edited except by means of the usual painting tools. The Text tool uses the font selected from the Tool::Manager, and produces a shadow below the text. The position of the shadow will be a number a pixels below and to the right of the text itself depending on the "Shadow distance" parameter of Tool::Manager. The larger the value, the further apart text and shadow will be. Also the "Shadow Weight" setting of Tool::Manager decides how noticeable the shadow will be. To completely avoid shadows set pressure to 0 - the far left. Try combining this tool with "Paint with shadow" which was specifically designed to be used with the text tool. It's not directly possible to create partially transparent text, but by combining a text layer with an alpha layer you can simulate this feature.

Ellipse (Fill): Should you ever need to draw an ellipse or a circle, this tool would be the right way to go. After selecting the tool, go to the picture and click the mouse of the upper left corner of the rectangle enclosing the ellipse, then move the mouse to the

lower right corner of said rectangle, and finally let go of the mouse button. This produces an ellipse with a density controlled by the pressure setting of Tool::Manager. The higher the pressure, the denser the ellipse. Keeping <shift> depressed while dragging the mouse pointer will decrease the amount of paint on the Canvas within the new ellipse.

Ellipse Outline (Line): This tool works like the above "Ellipse" except only the perimeter of the circle is drawn with the current brush.

Box (Fill): This tool works exactly like "Ellipse" above, but of course produces a rectangle :o)

Box Outline (Line): This tool works like the above "Box" except only the perimeter of the rectangle is drawn with the current brush.

Polygone (Fill): The polygon tool will create a polygon by connecting a number of lines, and then filling the area between the lines with an amount of paint as indicated by the pressure setting of Tool::Manager. To create a polygon mark the first vertex of the polygon by clicking and holding the LMB, then drag the mouse to the second vertex and let go. For subsequent vertices click, hold, drag and release the LMB. Double clicking a vertex will end the polygon creation.

Polygon Outline (Line): This tool works like the above "Polygon" except only the perimeter of the polygon is drawn with the current brush.

Flood fill (Fill): In some other systems this tool is called a magic wand. When this tool is clicked on a pixel of a picture the color of that particular spot is being set as the current color, and all neighbouring pixels of the same color have their corresponding part of the Canvas filled with paint. The "Full R" and "Fade R" settings of Tool::Manager allows you to include colors varying slightly from the color of the original pixel clicked. The higher the tolerances the more differently colored pixels are painted by "Flood Fill". Please bear in mind that the effect of a flood fill is additive, meaning that each application of the tool on the same area will increase the amount of paint, but since the color finding is based on the already filled picture, the result may not match expectations. This tool may, depending on the size of the picture, need a lot of stack/RAM, and under extreme conditions it might crash the program. Should this happen, you will need to increase the value of the "STACK_SIZE" tool type in the icon. Changing the standard stack size of the icon will NOT make any difference since DiamondBOX consists of a number of separate processes launched by the main process, and their stack size is taken from the tool type at startup.

Tolerance fill (Fill): This tool is related to "Flood fill" in that it affects all pixels within the "Full R" and "Fade R" selected in "Tool::Manager", but it doesn't care whether they actually touch the originally selected pixel. In other words when you click on a pixel in the picture all pixels in the whole picture within the tolerance will be painted no matter if they're in contact with your clicked-on pixel or not. All Fill modes apply.

Texture position: This tool is a little different in that it doesn't draw anything in itself, but allows the user to displace the texture of a layer. Select the tool, click, drag and release LMB to displace the texture. A rectangle will display while dragging to indicate the location of the texture. In case of textures larger than the picture itself will display nothing, because the edges of the texture are "off limits".

1.9 DiamondBOX tool types

Setup

If you wanna avoid a couple of icons in the Toolbar, they can just be dragged from "buttons" drawer into the "storage" drawer from WorkBench. DB needs at least one button in the Toolbar, but I'm sure you can live w/ that.

The "Pebbles" drawer contains all **Effects**, **Generators**, ... If you don't need some of these just move them into the "Storage" drawer before opening the program.

I must admit that I'm not a settings fetichist, so please don't expect stuff like wild config managers and themes. Still the program icon contains a few tooltypes as listed below:

PubScreen: What Public Screen to use (which must be 15/16/24 bit - no builtin public screen manager).

LAYERMAN_X: X-coordinate for Layer::Manager.

LAYERMAN_Y: Y-coordinate for Layer::Manager.

TOOLBAR_X: X-coordinate for ToolBar.

TOOLBAR_Y: Y-coordinate for ToolBar.

TOOLBAR_WIDTH: Width of the ToolBar window.

PICTURE_PATH: The default drawer containing pictures.

BRUSH_NAME: Name of brush to use as a default.

STACK_SIZE: Stack size for all "threads" (pictures, Layer::Manager, ...)

BACKFILL: Full path for backdrop picture (jpeg, png or ILBM)

1.10 Stuff left to do

To do

A lot of things haven't been implemented yet.

If you open a 1000X1000 picture and add 30 layers at once, it might seem like DiamondBOX has gone down, but don't worry, it's just got a lot to do, and should return sooner or later (Maybe I should add a progress bar in that case). A good idea is to add one layer modify it and freeze it, then add another, and so on. This will reduce the number of needed calculations drastically.

Finally i little to-do-thing in order of conception :o)

- Activate/Deactivate layers
- Big upcoming feature - something splinish :o)
- Brush Builder
- Create "Super Cool Resampler".
- Create some REAL documentation :o)
- Add AA to polygon filling.
- Add dither effect.
- Add new GraphArray gadget type.
- Compose effect or generator.
- Add texts to buttons in Toolbar.
- ...

1.11 ***** ERROR *****

Error Back and forward not allowed!

1.12 Who did this?

About involved persons:

I currently work as a systems consultant developing all different kinds of things for different kinds of companies. In case you need to contact me please use one of the e-mail addresses below:

Nikolaj_Thygesen@bigfoot.com // Always linked to current address, but I've had complaints.

nkt@ecsoft.dk // My current company address.

Most buttons (all the good looking ones :o) were done by Martin Merz - thanx alot:

mason@t-online.de

1.13 Everyone's got one - so I want one too!

Use DiamondBOX at your own risk

```
*****
* *
* DISCLAIMER *
* *
* THIS SOFTWARE/INFORMATION IS PROVIDED "AS IS". *
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*****
```

1.14 Release Note

Changes

Release #1.11:

- DiamondBOX now remembers the position and size of the most important windows.
- Added quality-% in jpeg saver.
- Changed all OK/Cancel buttons to use the new Image button type.
- Fixed a bad bug in the PNG-reader which broke palette images.

Changed background handling to NOT use a default.

- Improved line drawing - nicer looking lines and now includes end point.
- Opening Tool::Manager or Info::Manager twice now brings current window to front.
- Added Info::Manager - shows current coordinates.
- Added cross hairs to editor windows.
- Added cross-hair mouse cursor to editor windows.
- Changed handling of picture-window-closing. It will no longer attempt to kill picture.
- Fixed a couple of known internal conflicts.
- Added LightBeam brush.
- Fixed the Tool::Manager to allow for 1 pixel brush.
- Improved internal thread-kernel to handle thread parameters.

(+ a bunch of other structural improvements!!)

- Changed circle tools to anchor at center on first click - works better.
- Added small "Toolbar" to Layer:Manager.

- All Toolbar buttons converted to images - happy now :o) ??

Many thanx go to Martin Merz for the cool new buttons!!

- Added Image-gadget type.
- Fixed a couple of non-reported bugs in gadget-handling.

Release #1.10:

- Fixed a bug which trashed some gadgets in small windows.
 - Added drawer "Convolutions" with a few matrices.
 - Added load option in "Convolution matrix" effect.
 - Added "Average" effect. Faster than using a convolution matrix.
 - Fixed handling of ColorWheel to properly init w/ current color.
 - Changed default values for: "Balance", "Posterize" and "Saturation" effects.
 - Added BACKFILL tooltype - prefers full path.
 - Added backfill picture - very useful :o)
 - Added square brush.
 - Changed two of my excellent icons :o) For some reason some people couldn't tell what they were supposed to look like.
 - Fixed a bug in menu rendering. I realized that Menus have always been invisible. Thanx to Robert Wilson for reporting that one (I use MagicMenu myself).
 - Changed color gadget behaviour. <LMB> now always fetch current color before popping up the color wheel. Edit current color with "Color pick" or Palette.
 - Though not directly related to development of DiamondBOX: Added web-site :o)
 - Added "Paint with brightness" effect.
 - Fixed small bug which included one scanline too many when cropping.
 - Updated ILBM-loader to assume grey-scale when no CMAP.
 - Fixed crash when running out of public pens.
 - Added menu to Tool::Manager.
 - Added Arexx commands:
 - Load Picture (Doesn't open window).
 - Edit Picture.
 - View Picture.
 - Updated guide (again, again...)
 - Added Cool scaling of images (Interpolated == a bit slower).
 - Added a couple of new buttons to the Toolbar - gettin' a little crowded now.
 - Added RGB sliders to "Paint effect".
 - Improved Tool::Manager to handle different tool parameters like Layer::Manager.
 - Added fade parameter to flood fill and tolerance fill.
 - Added arc tool.
 - Various structural changes and improvements.
-

- Added color picker tool.
 - Including Tool::Manager dialog to select color.
 - Added old and the new fill types to flood fill and tolerance fill.
 - Increased the size of most sliders.
 - Added Gradient fills for circles, boxes, polygons... (Slight slowdown:o(
 - Left to right
 - Top to bottom
 - Diagonal
 - Circular from edges towards center
 - Circular from center towards edges
 - Radial from center towards edges
 - Radial from edges towards center
 - Color range fill.
 - Changed the old freeze menu commands (RGB, Alpha and both) to delete all layers after freezing.
- Added three new freeze commands which behave like the old ones (the "Keep L" variant) ie. retains the layers after freezing.

- Added "Delete all layers" to edit windows and Layer::Manager.
- Improved the way "Flood fill" and "Tolerance fill" selects pixels to paint.
- Added "Color Key (Alpha)" effect.
- Added "Chroma Key (Alpha)" effect.
- Fixed a bug in "rotator.generator" which appeared when canceling selection of angle.
- Fixed crashes when saving over locked file with "Targa24.saver" and "PNG.saver".
- <ESC> now aborts popup lists.
- <ESC> now aborts palettes and <RETURN> accepts selected color.
- Sorted effects, generators and savers by name in popup lists.
- Updated internal GUI-engine to handle embedded definitions.
- Gadgets 'n stuff is no longer erased during resizing.
- <ESC> now closes viewer windows and Tool::Manager.
- Made a quite substantial optimization to speed up most effects:
(Removed four divisions per pixel)
- Fixed a little bug allowing some commodities to close Layer::Manager.
- Added "Median filter" effect.
- Fixed a little bug which killed the "Edit", "View" and "Kill" buttons :o/

Pre Release XMAS:

-
- Have a MERRY CHRISTMAS and a HAPPY NEW YEAR!!

- =====

- The next release wont happen for some time now since I have some rather pervasive

changes to do.

- Added "Luma Key (Alpha)" effect.
- Added "Invert Alpha Channel" effect.
- Changed "Box", "Ellipse" and "Polygon" icons.
- Changed Toolbar imagery and icon numbering to allow "Ellipse outline", "Box Outline" and "Polygon Outline" to appear next to the "Box", "Ellipse" and "Polygon" tool icons.
- Added "Polygon Outline" tool.
- Added "Box Outline" tool.
- Added "Ellipse outline" tool.
- Added "Tolerance fill" tool.
- Added "Rotator" generator.
- Added "Starry night" generator.
- Added "Horizon Backdrop" generator.
- Added "Random Noise" generator.
- Ensured a fixed sequence of buttons in Toolbar.

Pre Release #5:

- Added "Fill Canvas" and "Clear Canvas" buttons to ToolBar.
- Added "Maximum filter" effect.
- Added "Minimum filter" effect.
- Added Channel Weights to the "Monochrome" effect.
- Slightly changed rendering of circles to remove annoying pixels around 0°, 90°, 180°, ...
- Added "Update Picture" shortcut to <return> in editor.
- Added "Gradient Painter" effect.
- Updated this rather incomplete guide :o)
- Added "Alpha => Image" generator.
- Added the text to be drawn to Tool::Manager.
- Added "Font selector" dialogue to Tool::Manager menu.
- Added Shaded Text drawing tool!!
- Added "Paint with shadow" effect - check it out with text.
- Improved lines and lightnings to allow for removing of paint as well.
- Improved rectangles, ellipses and polygons to account for the "Pressure" setting in Tool::Manager.

Pre Release #4:

- Added PNG + JPEG support - finally!!! Boy did that cost blood, sweat and tears!!
- Notice that DiamondBOX loads, uses and preserves the alpha channel of PNG's!
DiamondBOX is now in part based on the works of the Independent Jpeg Group.
- Added BumpMaps drawer - check out the "Balance" texture mapping.
-

- Added "Posterize" effect.
 - Added "Edit", "View" and "Kill" buttons on Toolbar.
 - Added single color ranges to "Mono Filter".
 - Improved visuals slightly of a couple of effects.
 - Added "Logic Operation" effect.
 - Added "Balance" effect.
 - Added "Cloud" generator.
 - Stripped NewIcon info from buttons.
 - Added new input method: Textual buttons.
 - Added new input method: Popup buttons.
 - Removed useless "RAW.loader". This should hopefully fix the JPEG crashes.
- This loader should never have been included in the previous release 1.03.
- Fixed a few minor bugs.

Pre Release #3:

- Added tolerance setting for flood fill in Tool::Manager
 - Added Tool Type "STACK_SIZE". Default is 100000. This should suffice for smaller pictures, but flood filling large pictures may kill you. In that case try upping the stack limit. Do *NOT* use the std. WB Stack setting of the icon.
 - Changed behaviour of CLOSE gadget in editors => kill frozen picture as well
- If shift held frozen picture will be kept in RAM.
- Added lightning draw tool - fractal line
 - Added line draw tool
 - Added support for several layer types in Layer::Manager
 - Renamed old type layers => Primary Layers
 - Added "Group layers"
 - Added "Secondary layers"
 - Added effects: "Explosion", "Saturation" and "Convolution Matrix"
- Also added useless experiment "Randomize"
- Added generators: "Flip Left <=> Right" and "Flip Top <=> Bottom"
 - Added saver: "RGB8"
 - Fixed Enforcer hit from Layer::Manager
 - Improved TurboPrinting - still some way to go
 - Added "Position Texture" to the "Picture/Tool menu"
 - Added menus "Picture/Operate frozen + active"
 - A bunch of other improvements and bugs fixed

Pre Pre Release #3

- Nothing recorded
-