ildaGen

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ildaGen is an affordable ILDA file creator and editor. It is currently in beta, and have versions for Windows, and Web (HTML5).

The official site for downloading and purchasing ildaGen can be found on BitLasers.com here.

To get the most out of ildaGen, it is recommended to read through this manual.

If you have any questions, bug reports or feature suggestions, please don't hesitate to contact me at gitlem@gmail.com .

Table of Contents

List of Keyboard Controls

Mouse) Selects drawing tool and draws
Enter) Remakes object, finalizes curve, or presses OK
Left/Right Arrow) Cycles frames
Up/Down Arrow) Cycles selected object
Delete) Deletes currently selected object
Space) Changes previewing mode between 2D and 3D (simulated scanner)
Shift) Forces straight lines/angles when drawing
Q) Snaps cursor to nearest ending or starting position of any object.
Alt) Snaps cursor to ending position of last placed object for chaining.
Ctrl+Alt) Snaps cursor to *starting* position of last placed object for chaining.

S) Shows/snaps to square grid. Double click to toggle.
R) Shows radial grid. Double click to toggle.
Z) Zooms in around the cursor for extra precision.
A) Shows symmetry/alignment guidelines of objects. Green lines mark the center of the screen. Gray lines mark the ending and starting points of objects, red lines are symmetrical to gray lines.

E) Clones the color that the cursor is pointing at, for example from a background image or a previously placed object. Left click the mouse while holding E to clone the color.

Ctrl) Moves all color sliders, or centers symmetrical sliders
Backspace) Cancels object placing (used with curve tool)
Ctrl+Z) Undo
0) Jumps to the first frame

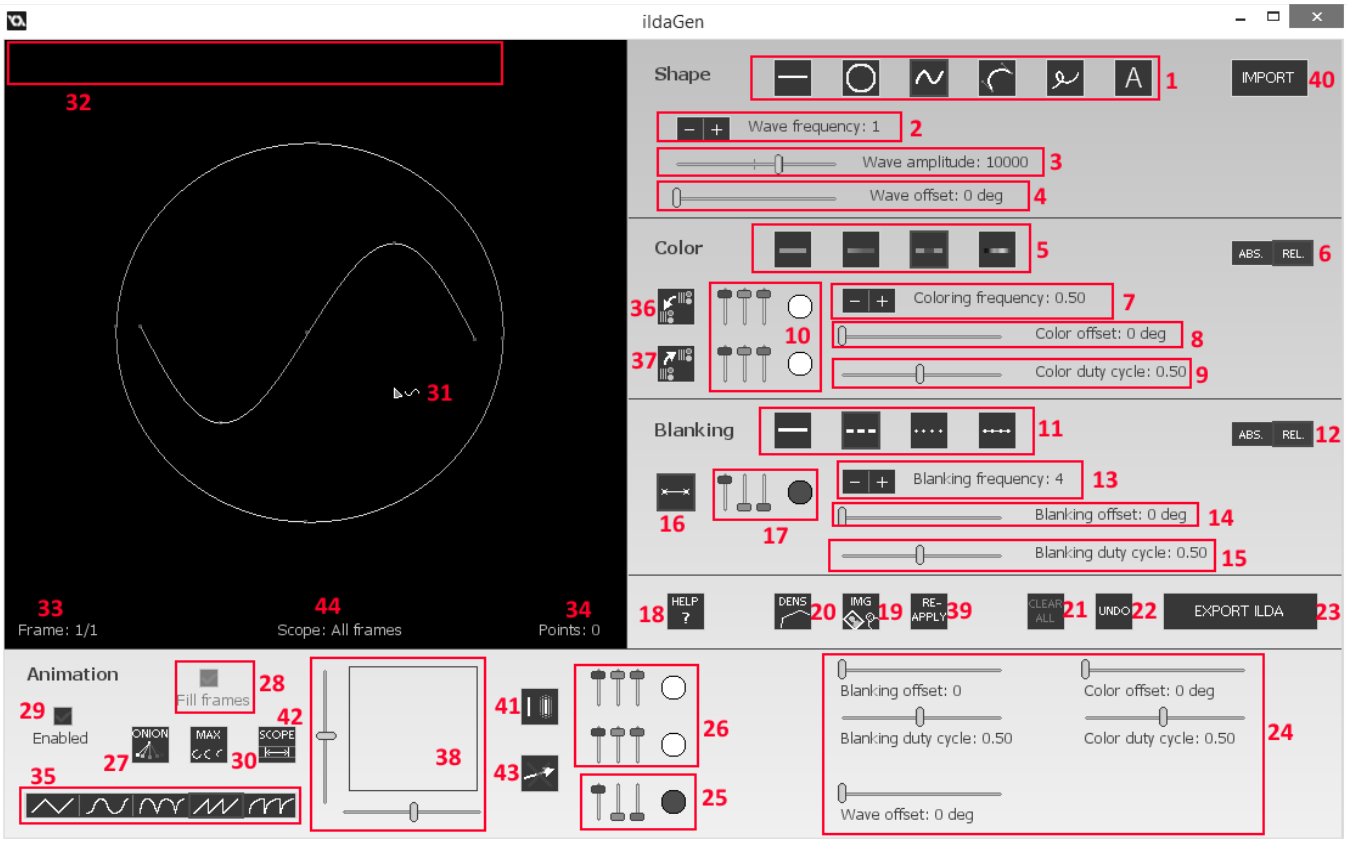
Mouse wheel) Adjusts wave amplitude
Ctrl+Mouse wheel) Adjusts wave frequency

N) Resets window aspect ratio
M) Resets window size
F11) Toggle fullscreen

If you forget the keyboard controls, you can hover the mouse cursor over the HELP button to display a list.

User interface and buttons

When starting ildaGen, you will be met with this window:



Button tips and tricks

Some of the sliders and selectors in the screenshot above may not appear to you, this is because they are only visible when the relevant drawing mode is selected. For example, the wave settings (numbered 2, 3 and 4) are only visible if you have selected the wave drawing tool.

Some buttons have drop-down menus with additional settings that can be accessed by right-clicking on them. Pay attention to the tooltip in the corner which will inform you of this.

By holding down CTRL and using sliders, you can control them in alternative ways. Colors sliders will move both the red, green and blue channel at the same time, and sliders with a neutral center point will snap back there. On some sliders you can right-click to enter a specific value.

Toggleable buttons will be marked with a red outline when they are enabled.

Drawing and preview area

The large black square is the drawing and preview area. Your ILDA file in progress is shown here. To make additions, select a drawing tool (see below), and click or drag your mouse anywhere in this area.

On the screenshot above the drawing area have the following numbered items:

31) This is your mouse cursor.

32) In this corner you will see tooltips when hovering your mouse over the different items/tools on screen.

33) This shows you which frame you are viewing, and the total number of frames in the animation. Use your arrow keys to cycle between them.

34) This shows you the number of data points in the current frame.

44) This tells you the current editing scope, in other words what frames the editing you do will affect. For example, if your scope is 5-10 and you place an animated object, the object will be placed and animated from frame 5 to 10, and not in the frames before or after. This affects both creating new elements and reapplying properties. You can edit the scope with button 42).

The shape area

This area contains the drawing tools selectors, and various settings related to the shape of the drawing.

On the screenshot above the shape area have the following numbered items:

1) This is the drawing tools selector. As of v0.9.6 you can choose between a line tool, circle tool, wave tool, curve tool, free drawing and text. Click the buttons to select them.

   The line, circle, wave and free drawing tool will be created just as they are previewed at the time you release the mouse button.

   However, when the curve tool is selected and you release the button, you will enter adjustment mode. Two green bars will appear next to the curve. By dragging the tips of those bars with your mouse, you can manipulate how the curve looks. When you are done, click the enter button to finalize and create the object. If you wish to cancel while in adjustment mode, press delete or backspace.

   In the text mode, you must first load a font to use. You can do this by right clicking on the text button and pressing Load. ildaGen comes with Arial, but you can find many other fonts by installing LaserBoy. Read more about this in the relevant chapter on page 12 in this document. To place text, click on the desired point of origin (bottom left of the text) and enter the text.

2) The + and - button lets you increase or decrease the wave frequency.

3) The slider lets you adjust the wave amplitude (height). Negative values are possible, and inverts the wave.

4) This slider lets you adjust the offset of the wave, from 0 (no offset) to 360 (one full period offset)

40) This button lets you import an existing ILDA file for editing. NB: Only ILDA format 4 or 5 is supported as of now. The amount of frames will extend to fit the entire ilda file into the project. You can use button 39) to edit the imported frames and apply effects like blanking and coloring.

The color area

This area contains settings related to the coloring of objects.

On the screenshot above the color area have the following numbered items:

5) This is the color tools selector. As of v0.9.1 you can choose between one solid color, two-color gradient, and two-color alternating (dashed)

6) This lets you switch between absolute and relative interval length when using the dashed og gradient color tool. When relative is selected, the number of intervals per drawn object is constant, and when absolute is selected, the length of the interval is constant.

7) This lets you choose the frequency (number of intervals per object) of the dashed or gradient coloring. When relative mode is selected (see 6), this is switched with a slider that lets you adjust the length of the intervals.

8) Here you can change the offset of the dashed or gradient coloring, from 0 (no offset) to 360 (one full period offset)

9) Here you can change the duty cycle (ratio of color 1 to color 2) of the dashed coloring. The higher the duty cycle, the shorter the intervals of color 2.

10) These are the color selectors. The top selector is for the primary color and the bottom is for the secondary color, used when in for example gradient or dashed color modes. When solid coloring mode is selected, only the selector for color 1 is visible. The selectors have three sliders each, for red, green and blue. They are blended additively, like laser light, so for example red at max, green at max and blue at zero creates the color yellow.

36) This button lets you copy the animation end colors (numbered 26 and 25) over to the main colors (numbered 10 and 17).

37) Opposite of 36), this lets you copy the main colors over to the animation end colors.

The blanking area

This area contains settings related to the blanking (on/off modulation) of objects.

On the screenshot above the blanking area have the following numbered items:

11) These are the blanking tools. As of now you can choose between no blanking, dashed blanking (intervals), dotted blanking and no blanking but with dots added periodically.

12) Similar to 6), this lets you choose between absolute and relative blanking interval lengths.

13) Similar to 7), this lets you adjust the frequency or length of the blanking intervals.

14) Similar to 8), this lets you adjust the blanking offset.

15) Similar to 9), this lets you adjust the blanking duty cycle.

16) This toggles dotted ends, meaning that a dot is placed at the start and end of blanking intervals.

17) This color selector lets you choose the color of the dots at the end of blanking intervals, as explained in 16), or the colors of the dots in the "no blanking but with periodic dots" blanking mode.

Misc buttons

Between the blanking and animation areas, you will find some miscellaneous buttons that does not belong to any category:

18) This button downloads this manual, or shows tells you the keyboard controls when hovering over it.

19) This buttons lets you load a PNG image from your computer to get superimposed on the screen, allowing you to trace the outlines when drawing the frame. Clicking it a second time will disable the image.

20) This button lets you select the point density/resolution (detail level) of the points in the ilda frame. The lower number the smoother the curves and color fading becomes, but the file size and bandwidth requirements increases and program performance drops. At the standard value of 256, points are about 2 pixels on the screen apart. This varies linearly, so for example a value of 512 makes the points separated by about 4 pixels. The start and ending points are constant, so if you are drawing straight single-colored lines, you might want to increase this value very high so that the line only consists of two points. When animating blanking, or using gradient coloring, it is recommended to select a low value for best accuracy, for example 128.

21) This button discards your work and clears all objects in every frame. Not undoable, so be careful.

22) This button lets you undo your last action. You can also press Ctrl+Z. As of now only drawing an object and clicking the DENS or MAX buttons counts as undoable actions.

23) This button exports your work into an ILDA file. If you have not yet entered a registration serial code, it will ask you for one. You must remember to end the name of the file in ".ild", or the program creates a file with no extension and you need to rename it to be able to open it with other programs.

39) This button remakes the selected object (you can select objects by using the up/down arrow keys). In other words it reapplies new properties such as blanking and coloring to the object. The shape of the object stays the same, however. A shortcut for this button is the Enter key. You can edit various settings or select which types of properties (color, blanking, displacement, etc) should be reapplied by right-clicking on the button.
See the chapter on page 11 for more info.

The animation area

This area contains tools to automatically animate your objects. By default animation is disabled, and most settings in this area is hidden. If animation is enabled, the objects you draw, will transition from the main settings (in the shape, color and blanking areas), to the settings in this animation area, over the course of the frames inside the animation scope (see item number 42).

On the screenshot above the animation area have the following numbered items:

24) These sliders are the end-of-animation equivalents of some of the sliders explained above. They let you animate their values. If you for example set the main "blanking offset" slider to

0 degrees, and the second "blanking offset" slider in this area to 360 degrees, the object will be animated, starting with a blanking offset of 0, and transitioning to 360 over the course of the animation.

25) Same as 24), except with the dotted ends color.

26) Same as 24), except with the color 1 and color 2 selectors, from left to right respectively.

27) This button toggles onion skinning. It superimposes the previous frames over the current one, to let you manually draw animated frames easier.

28) This checkbox toggles filling all the frames with the current object. If this is selected, an object, even if animation is disabled, will be copied to all the frames rather than just the active one. Also, this decides whether the last frame will be copied to the rest when using button 19) to extend the number of frames.

When loading external ilda files, this button decides whether or not the ilda file loops after reaching the end if the number of frames is lower than that of the ildagen project. For example, when this button is checked and you load a 10 frame long file into a project that currently have 30 frames, the loaded file will loop three times.

29) This checkbox enables or disables animation. If this is unchecked, the objects you place will be unchanging in all frames.

30) This button lets you adjust the number of total frames in the current ilda file.

35) This is the animation mode selector. It lets you choose the animation function, in other words how the transition over time looks, and whether or not the animation loops seamlessly.

38) This is the displacement animator. It lets you move the objects you place from their original location to another location over the course of the animation. The horizontal and vertical sliders decide horizontal and vertical displacement. The arrow in the middle lets you preview the combined movement of the object.

41)This button toggles shaking. It will shift the object slightly in a random direction for every frame.

42) This is the editing scope button. It lets you edit the starting and ending frame of the editing scope, in other words what frames the editing you do will affect. For example, if your scope is 5-10 and you place an animated object, the object will be placed and animated

from frame 5 to 10, and not in the frames before or after. This affects both creating new elements and reapplying properties.

43) This button resets all the displacement/movement animation. It copies the x and y coordinated of the object in the first frame, to all other frames.

More on features

Reapplying

The REAPPLY button is a very useful tool. To use it you must first select an object you have placed by using the up and down arrow keys. Once selected, if you click REAPPLY or the keyboard shortcut Enter, the object is remade with all the properties like color, blanking and displacement that is currently set. Only the shape of the object stays the same. For example, if you have a plain solid line, and reapply it while the blanking mode in the sidebar is set to dashed, and the color set to rainbow, the plain line changed into a dashed line with rainbow coloring.

By right clicking on the button, you can edit various settings. For example, you can enable or disable the types of properties to reapply, for example you can choose to only reapply the color and ignore the blanking settings.

There are also some other settings:

- Remove overlapping points, which will cause all overlapping points in the object, like dots, to be removed and transformed into a single point and smooth segment.

- Preserve blanking, which will keep blanked areas blanked. This is very useful to layer several types of blanking on top of each other. For example, by combining these two settings:

You can get this:

The reapplying tool abides the scope settings. See the explanation for button 42) earlier in this document. This means you can choose to only change the object for certain frames.

More settings for the reapplying tool is planned for future versions.

LaserBoy

Included with the Windows version of ildaGen is the open-source project LaserBoy, by James Lehman, Extra Stimulus Inc. james@akrobiz.com, © GPL v3 2003...2014. http://laserboy.org

LaserBoy is a great supplement to ildaGen as you can do further editing of ILDA files exported, like manipulating individual points, and converting to additional formats like ILDA version 0 and 1, wave files for playing on sound card DACs and more.

LaserBoy can be installed by unzipping the zip file found in the installation folder of ildaGen. You can also always find the newest version here: http://laserboy.org/forum/index.php?topic=10.0

To start LaserBoy, first check out its README.txt file and set its window size in LaserBoy.bat, then double-click on LaserBoy.bat.

Fonts

IldaGen uses ILDA font files in much the same way as they were originally designed to work in LaserBoy. IldaGen comes with font_arial.ild by permission of James from the LaserBoy distribution. There is a nice collection of other font files included in the LaserBoy distribution, inside of the ild folder, all starting with the name font_(name).ild

The following glyphs are available:

!"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

This is the Latin Alphabet, digits, punctuation and other symbols from the standard ASCII text table symbols 33 to 126 in the same order. The space character, ASCII 32, is an implied part of the available characters but is not visible.

Each single glyph is a frame in a standard type 1 ILDA file, in the exact order as listed above. The coordinate location (0,0), also known as the origin, is the baseline for each glyph. Each glyph is mostly in the all positive quadrant of coordinate space but some glyphs my descend into negative Y space (in case you want to make your own font files). You can open and examine any of the LaserBoy font_(name).ild files as you would open any other ILDA file.

Loading files into LaserBoy

To load and edit ILDA files in LaserBoy, they must first be moved or copied into the ild sub-folder inside the LaserBoy folder.

With your ILDA files in place, press the "i"-key to input or import a file and then the "1"-key for type ILDA. Type the name of the file you want to load and press [Enter]. Now select what you want from the options on the screen, for example press "1" to replace everything with the loaded file. You should now be back to the main menu, with the file loaded. You can use the left and right arrow keys to preview all the frames in the file, one frame per key tap or the "`"-key (below the ~) to show the frames as a continuous animation (any key to stop).

Optimizing and converting to other formats

While in the main menu of LaserBoy, press "x", this brings you to a menu where you can adjust various on-off settings of the application's behavior. You can see all the options with their keys listed in the window.

If you plan to use LaserBoy for optimizing your frames it is imperative that you turn option "a" off before you save your ILDA file! Otherwise your optimizations will be stripped out (minimized) in the resulting file.

Use option "b" to toggle exporting to legacy ILDA format 0/1 (off), or 4/5 (on).

NOTE: If you turn option "b" off and your vector art uses any palettes other than the "Default_" palette of 63 colors, LaserBoy will save that palette as an ILDA file section 2 in front of all the frames that use it. This is not widely compatible with other laser applications, even though it is a standard part of the ILDA file format specification. If any or all of your frames are "-24-bit-" (possibly from importing formats 4 or 5), then LaserBoy will save a section 3, RGB color table in front of every 24-bit frame, which is no longer part of the ILDA file specification.

When you are finished, press [Esc] to go back to the main menu.

If you want to save any settings you have changed, from the main menu, hit "o" to output a file, "6" for type wtf and simply hit [Enter] for the default file name of "LaserBoy.wtf". This will save all settings. When LaserBoy starts it reads this file and adopts these settings. You can also save wtf files of different names and load them by name any time the application is running.

If you want your frames to be saved as the most common and widely compatible formats 0 or 1, then you can match all of your colors to the standard "Default_" palette by hitting "p" from the main menu to go into the palette transforms menu. From there you will see two palettes side-by-side. The one closest to your art will be the current palette for the frame in the view (possibly "-24-bit-"

no palette). Use the up and down arrow keys to find the "Default_" palette in the target palette position. Hit "B" (capital B) to do a best color match for all frames to the target palette. Now when you save your frames they will be either format 0 (3D) or 1 (2D) standard ILDA files with no palette saved in the file.

To export the file, simply press "o" to output while in the main menu. Then select the desired file format, for example "1" for ILDA. Now press "3" to export the whole file, or one of the other options on the screen. Now give your file a name, for example "test", and press Enter. Your file will now have been created in the same folder as the file you loaded.

System Requirements

Minimum:

- Windows XP, Vista, 7 or 8 with DirectX (windows version)
- Modern browser with HTML5 support (web version)
- 512MB RAM
- 128MB graphics

Recommended:

- Windows Vista, 7 or 8 (windows version)
- 2GB RAM
- Modern graphics card with at least 256MB memory
- For the web version, a relatively powerful processor