FOENIX SPRITE EDITOR

Foenix C256U / c256U+ / FMX

https://github.com/econtrerasd/Foenix-Sprite-Editor

Table of content

REQUIREMENTS

The Sprite Editor requires the following to operate:

1. Foenix U, Foenix U+ or Foenix FMX computer
2. PS/2 Mouse to operate
3. SD card or Hard Disk if you want to save your creations

You need to have three files for executing the Sprite Editor, you can get them from:

https://github.com/econtrerasd/Foenix-Sprite-Editor/releases/tag/v1.0

1. SPREDIT.BAS
2. SPREDIT.ML
3. ICONS.SPR

While most of the program is in BASIC a few Machine Language Routines are required for speed, like drawing the Sprite representation on the bitmap grid & mirroring sprites.

The BASIC program automatically loads the Machine Language routines from SPREDIT.ML when you execute the program as part of its initialization.

DESCRIPTION

SPREDIT is a simple sprite editor written in BASIC for the Foenix Series of Computers by Stefany Allaire, check her website for more information

https://c256foenix.com/

The Motivations to create this program were:

1. Investigate the capabilities of BASIC in the Foenix
2. Explore the Hardware capabilities of the Foenix computer itself
3. Learn some 65816 Assembler and banking
4. Provide Native tools in the Computer itself to break some dependency from external tools

The Program is mouse driven and operates on the 320x240 graphical screen mode; this resolution allows the users to see a reasonable sized representation of the current sprite you are working on.

The editor divides the screen in various sections:

- Menu Icons
- Tools Icons
- 256 Color Palette
- Sprite Editor Grid
- Sprite Representation

The program operation will be discussed as we review each one of the sections of the screen

FUNCTION ICONS

The Function Icons allow you to handle the main operations needed to administer your Sprites:

The default icons are as follows:

Function	ICON DESCRIPTION
SAVE	3.5 Disc with incoming arrow
LOAD	3.5 Disc with outgoing arrow
ADD SPRITE	Space Invader with '+' sign
DELETE SPRITE	Space Invader with 'x' sign
MOVE TO NEXT SPRITE	-> arrow
MOVE TO PREVIOUS SPRITE	<- arrow
EXIT PROGRAM	Exit Sign

SAVE

Clicking this ICON allows you to save all your sprites, a prompt appears at the top of the screen asking for a filename*. Consider that a default extension (.SPR) is added to your file.

The filename must be a name of up to 8 characters, extra characters will be truncated

If you type a filename already in use the program will validate and report an error, if you want to save with a different filename you need to click the save ICON again

LOAD

Clicking this ICON allows you to load all sprites from an existing sprite file (.SPR extension). A prompt is shown to request the file to load, type a filename (without the extension) and press ENTER

If the file is located the file is loaded and the first sprite is shown

If the file doesn´t exist a File doesn´t exist message is displayed, if you want to try again press the LOAD ICON again to try again

ADD SPRITE

When you first enter the Sprite editor there is only one sprite to edit, if you press the MOVE TO NEXT SPRITE or MOVE TO PREVIOUS SPRITE nothing will happen

To Add an additional sprite, click the ADD SPRITE ICON, which will cause an sprite to be added **after the last sprite** and moving to the last sprite.

DELETE SPRITE

When you Click this Icon **the last sprite of the set is deleted,** and you are positioned at the new last sprite

If you only have one sprite a prompt will remind you that you can't delete your last sprite

MOVE TO NEXT SPRITE

When you have many sprites, this ICON allows you to navigate to the next sprite, the grid automatically changes and reflects the sprite definition of your next sprite

If you click continuously, the sprites change fast enough to do some rudimentary animation testing

MOVE TO PREVIOUS SPRITE

When you have many sprites, this ICON allows you to navigate to the previous sprite, the grid automatically changes and reflects the sprite definition of your next sprite

If you click continuously, the sprites change fast enough to do some rudimentary animation testing

Modifying the Default Icons

All the Icons (Function Icons and Drawing tool Icons) are contained in a sprite file named 'ICONS.SPR'. This file can be loaded with the sprite editor and edited to change the look of the icons in the program!

If you choose to do so, follow the next steps.

Example:

1. Load file ICONS in the sprite editor (the extension .SPR is added by default)
2. Save your Edited Icons with a name, for example: NEWICONS
3. Exit the program
4. Rename the Default ICONS.SPR file with the RENAME command, i.e.

```
RENAME “ICONS.SPR”,”DEFICONS.SPR”
```

5. Rename your saved file as ICONS.SPR

```
RENAME “NEWICONS.SPR”,”ICONS.SPR”
```

6. Run the program and see your new icons!

Filesystem considerations

When saving keep in mind that the current filesystem allows only names with 8 characters, consider this when saving your sprite files.

An extension (.SPR) will be appended automatically to the name you provided; this extension doesn’t count as part of the 8 characters in the name

Validations on filenames are performed (through calling Kernel functions) when saving and loading functions are executed so a warning is shown if you either try to load a non-existing file or save a file with a filename already in use.

Much more importantly -the program doesn't crash- when this happens, without this improvement the program would stop when a filesystem error occurred, and you wouldn’t be able to recover your work

SPRITE EDITOR GRID

Once you have selected a color, just left click on any square on the grid to assign the current color to the pixel, you can hold the mouse button and drag the mouse around to draw faster

SPRITE REPRESENTATION

As you Edit the sprite in the grid an actual sprite on the right side of the grid is updated in real time, so yeah, no guessing!

COLOR PALETTE

The color palette includes a pre-selection of color Gradients, this color palette is currently hardcoded in the Editor.

Picking a Color from the Palette

Left Clicking on any color on the palette will change the brush color to the selected color, a rectangle will show the currently selected color on the palette for easy identification of the current color

Transparent Color

The top left color of the Grid is the transparent color, or better said the background color, this is denoted by an X symbol over this color

Picking a Color directly from the GRID

When you are editing a Sprite and change colors is easy to forget which color you were using on another section (yes even with a limited palette of 256 colors things can get confusing!) and hunting down for the right color on the palette can consume precious time.

To improve the color selection workflow, a color pickup function was added to the right mouse button, when you click it, you'll pick up the color under the mouse*, this helps a lot in getting a previous selected color faster!

**Some validations are made to prevent you from picking the grid color*

Editing New colors

A new section at the bottom of the screen shows the color components (RGB) of the current selected color with handles on the corresponding bar relating to the value of each component (RGB). Moving the handles with the mouse modifies the current color Value

Icons at the rightmost part of the Drawing tools Bar allow you to either load a palette from disk or save a palette to disk.

Filesystem considerations

An extension (.PAL) will be appended automatically to the name you provided; this extension doesn't count as part of the 8 characters in the name

When saving keep in mind that the current filesystem allows only names with 8 characters, consider this when saving your sprite files.

Default Palette Color Credits

- The initial color palette is borrowed from the following page

  (https://lospec.com/palette-list/duel)

  Although it has a few modifications to add true black, true white and other slight color adjustments

- Credits to the creation of this palette are due to ARILYN@ARILYNART

  https://t.co/3Kxr6ZPzmu

DRAWING TOOLS ICONS

The Drawing tools contains tools that help you in drawing your sprites (description of the icon in parenthesis):

Tool	Icon Description
BRUSH SIZE	Three pencils of increasing point size
COPY	Copy Icon with space invader inside
PASTE	Board with space invader
CLEAR	Empty space with CLR letters)
GRIDLINES	Ruler with guidelines
MIRROR X	Ball reflected in Standing Mirror
MIRROR Y	Ball reflected in Flat Mirror

BRUSH SIZE

Using the BRUSH SIZE Tool will change how many pixels are drawn on the SPRITE EDITOR GRID.

The default brush size is 1 pixel, but available options are 2x2 pixels and 3x3 pixels*.

Every time you click in the BRUSH SIZE icon the BRUSH SIZE toggles to the next option.

If you click enough times the option wraps around to go back to the default pixel size (1).

**Please note that when the BRUSH SIZE is 3x3 pixels it lays down more pixels, but the responsiveness is somewhat reduced*

COPY

When you are editing sprites, chances are that you are animating something and having the option to copy an already completed sprite into a new frame of animation is essential.

What did I just Copy?

When you click the COPY Icon a representation of the current sprite is copied into memory, you might continue to edit your current sprite and choose to paste* the untouched copy latter.

To make it easier to remember what you copied into memory the sprite you copied appears in the bottom right corner of the screen under the "Buffer" section, so you can see what is in the buffer.

**Please consider that once you paste the sprite the buffer clears!*

PASTE

When you click PASTE the current sprite in the buffer replaces whatever is in your current sprite.

**Please consider that once you paste the sprite the buffer clears!*

CLEAR

When you click this icon -not surprisingly- the current sprite is wiped clean, yeah sometimes is better starting from scratch and erasing a 32x32 sprite pixel by pixel takes a while...

GRIDLINES

Clicking this ICON will show a color grid on your sprites, the grid toggles sizes with each click between 4x4, 8x8, 16x16 and removing the gridlines

I have used this function to align or center my sprites, calculate height, plan displacement in animation frames.

MIRROR X

Clicking this ICONS flips your sprite from left to right.

MIRROR Y

Clicking this ICONS flips your sprite from top to bottom.

SPRITE FILE STRUCTURE

The Save file structure is very simple*

First byte - number of sprites in file Sprite data - blocks of 1024 bytes for each sprite in the file

**The file structure might change in the future if more features are introduced, but if this happens, I'll take care to maintain compatibility with the current file structure*

LOADING A SPRITE FROM BASIC

Loading a Sprite File is simple, using BLOAD to load the sprite file into memory, for example:

```
BLOAD "SPRFILE.SPR", &H100000
```

This example loads the sprite file into RAM beginning at Address $100000

-The first byte at $100000 will contain the number of sprites in the file -After figuring out how many sprites use a MEMCOPY command to transfer the adequate number of sprites to VRAM Memory*

For example, if you only have one sprite you would use the following command to transfer sprites to VRAM, in this example to $C00000

```
MEMCOPY LINEAR &H100001,1024 to LINEAR &HC00000,1024
```

the BLOAD command can't load data directly into VRAM memory, that's the reason you need to load the sprites into regular RAM first

LIMITATIONS & KNOWN ISSUES

- Theoretically the sprite editor is limited to editing 255 sprites (not that I have tried to define that many sprites... yet)