How to (manually) create or edit a GIMP palette file.

A basic understanding of number systems, file and folder structures is necessary to successfully make your own palette files and getting them to work in Inkscape. If you need a refresher see appendix at the end of this document before continuing.

The making of the palette file.

We will use Inkscapes Stroke and Fill dialog. In that dialog there are five tabs labeled RGB – HSL - CMYK - Wheel – CMS. For brief explanation – see appendix)

To get the "mixture ratio" of the colors we will use the RGB – tab but you can easily "design" your color using one of the other tabs and switch to the RGB tab to read the RGB values.

Now on to the actual "design" of your "personalized palette".

Open your favorite text editor – Notepad will do if you are on Windows although it's easier to use Notepad++ or something similar where you can have two (or more) edit windows open simultaneously. On Linux use whatever you are most comfortable with – I will not add fuel to the fire in the vim – emacs war!

Use the editor's – "File open" and navigate to the
"`/installdir/Inkscape/share/palettes`" directory and open the file "`inkscape.gpl`"

(On windows Inkscape can normally be found in "C:\Program Files" - on Linux "usr/share/iinkscape)

The first few lines of the file will look like this;

```
GIMP Palette
Name: Inkscape default
Columns: 3
# generated by PaletteGen.py
  0   0   0  Black
 26  26  26  90% Gray
 51  51  51  80% Gray
 77  77  77  70% Gray
```

Change the text "`Inkscape Default`" in the second line to a name you will recognize for the palette – eg "`Flamingored`" if you are making a specialty palette for drawing flamingos. The name you insert here is the name that will show up in Inkscape's palette dialog.
You can change the "`# generated by PaletteGen.py`" to something like
"`# Hand made with love and care by Me`" - remember to keep the # hash sign as it's used to tell Inkscape that the line is just a comment.
In order not to "damage" the original "`inkscape.gpl`" palette file it's now time to save the file with a different name - remember the .gpl extension - like "`my_flamingored.gpl`".

When saving it is recommended to save in Inkscape's "user" palette directory – (On Windows –

user\appdata\inkscape\share\palettes or similar, On Linux – user/.config/inkscape/palettes)

As I like to include the grays and the standard web colors in my palettes I keep the first part of the file as is, your preferences might be different – adjust the file to your liking.

If you like to keep the "black & white", the "grey's" and the "web colors" - navigate down to line 31; the line looks like this; "43 0 0 #2B0000" – delete everything from here to the end of file.

We are going to use Inkscape's stroke & fill dialog to design the colors – other applications containing a color dialog with RGB (Red-Green-Blue) can be used as well.

Open up Inkscape and rearrange the windows on your desktop to show both the Inkscape and text editor window.
Make a object on your canvas – with the object selected open the stroke & fill dialog.

We will first make a spread of different red colors in the range from dark red (almost black) to light pink – in the color dialog in Inkscape drag the red slider all the way to the right, the green and blue sliders all the way to the left – if you then look at the numeric value to the right of the sliders they will show 255 - 0 - 0 for the red-green and blue respectively.
Add these values to the end of the file in notepad being careful to keep the alignment of values as in the first part of the file.
After the blue value you can add a descriptive name for the color – I like to keep the hexadecimal value found in the Inkscape dialog RGBA in this description as this is the value that will show up in the SVG document. Just copy & paste the value from the the Inkscape dialog and delete the two last letters - which is used for the opacity value.
My line for the first red will then be 255 0 0   #ff0000 – Pure red
Move the sliders in the color dialog in Inkscape again until you get to the next wanted color. Repeat until you have a nice range of colors.
Repeat the above procedure for blue and green colors as well if you like.

Save the file , close and restart Inkscape as the palette directories are read only when starting the program.

If everything was successful you will now see your palette in the palette listing in Inkscape.
(If not see the troubleshooting guide in the appendix.)

To get the palette listing; Click on the small triangle at the end of the palette colors as shown;
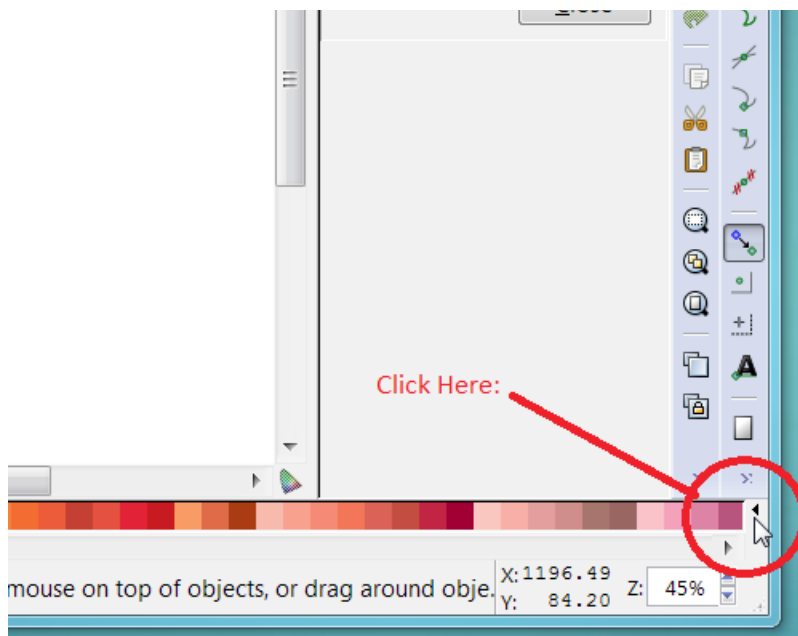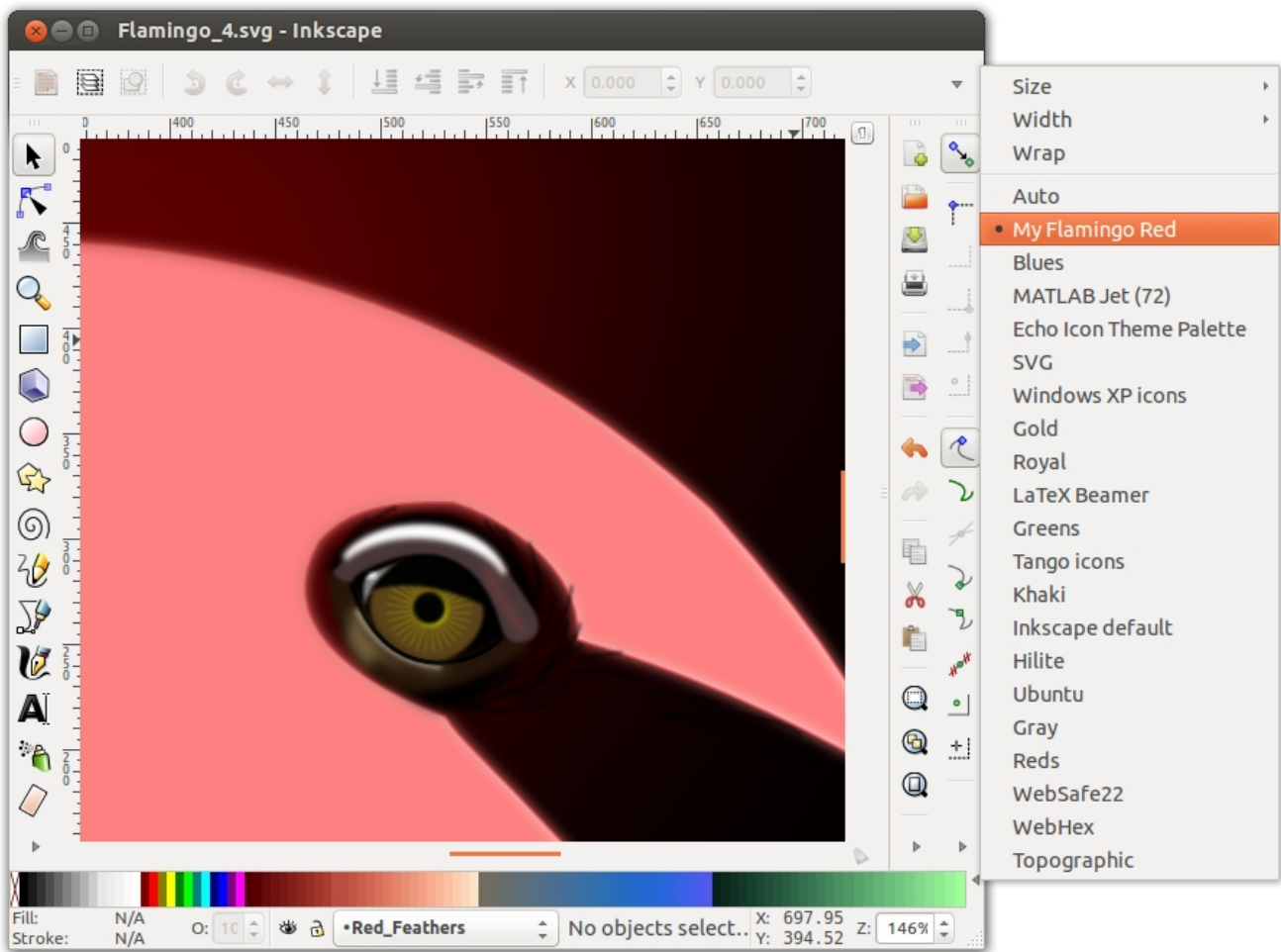
How to make a the colors a smooth gradient.

The theory behind a smooth gradient will be beyond the scope of this guide. The easiest way to make a gradient is to use an online gradient editor. For an example see this page;
http://www.strangeplanet.fr/work/gradient-generator/index.php

Unfortunately this generator does not generate RGB values directly, to get RGB values the hex values will have to be input in the RGBA field in the Stroke & Fill dialog in Inkscape.

Appendix.

RGB colors and number systems.

Any color can be represented by a mixture or the tree **primary** colors, red green and blue. If we "mix" these red, green and blue in different ratios we can get the color we want to use in the Inkscape Palette. Inkscape uses Palette Files to represent easy selectable "preset colors". In the Inkscape palette files each individual color in the palette is represented by one line, the line have three numerical values – one each for the red, green and blue – in that order. The values are always between 0 and 255. The reason for the "strange" range is the way the computers represent numbers. Most humans count using the decimal system which is based on the number ten. To help us count we can use the fingers which we normally have ten of. This number system is called base 10 system – a number written in base 10 will be represented as "number$_{(10)}$" by computer engineers to distinguish it from other base systems. Digital Computers uses numbers which consists of either a zero or a one. This system is called binary and is represented as "number$_{(2)}$". This is in a computer are represented by groups of either 1 and 0's – where each digit is called a bit, a group of eight bits is called a "Byte". As an example the number two will be represented as "0000 0010" by the computer. To aid in making the binary numbers easily readable by humans several different schemes exists. In the above example the byte have been split into groups of four bits – these four bits are called a "nibble" (small byte). A nibble can then again be represented as a "hexadecimal" number with the base 16 - "number$_{(16)}$". As the hexadecimal numbers range from 0 to 15 what to do when the value of the number exceeds 9? We just substitute the number by a letter starting with the first letter of the alphabet. The number ten in hexadecimal will then be 'a', eleven will be 'b' and so on until we reach the number 15 represented by 'f'. Hexadecimal numbers are normally prefixed with the hash sign - '#' -in order to avoid using subscripts which is difficult to represent in normal text files – like Inkscape palette files.

Below is a small table of numbers in the range 0 to 15 represented by the different number system covered.
This also represents all the values a 'nibble' can hold.

Decimal	Binary	Hexadecimal
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	a
11	1011	b
12	1100	c
13	1101	d
14	1110	e
15	1111	f

To represent a full byte we use two 'nibbles', the maximum value for a full byte will then be 255.

The first and last part of above table going all the way to 255;
(The whole table is boring reading – it's not printed here to save space)

Decimal	Binary	Hexadecimal
0	0000	0
1	0001	1
~	~	~
253	11111101	fd
254	11111110	fe
255	11111111	ff

There are other conventions used to represent colors.

If interested follow the links below for a detailed explanation;

From the Stroke and Fill dialog tabs in Inkscape you can see the following:

HSL – CMYK – Wheel – CMS

HSL;

Hue, Saturation and Luminousity.
Different representation method.
http://en.wikipedia.org/wiki/HSL_and_HSV

CMYK;
Cyan, Magenta, Yellow, and Key.
Used in printing for further expalnatio refer to Wikipedia
http://en.wikipedia.org/wiki/CMYK_color_model

Wheel
Color wheel – often used in graphics applications to select colors.
http://en.wikipedia.org/wiki/Color_wheel

CMS
http://en.wikipedia.org/wiki/LittleCMS

File structures used by Inkscape.

Windows;

Installation directory – Normally either "C:\Program Files" or "C:\Program Files (x86)"
but can be different as well depending on your choices when installing the program.

User Directories;
For a user called Dee on windows;
C:\Users\Dee*\AppData\Roaming\inkscape

Tree Diagram;

```
C:\USERS\DEE\APPDATA\ROAMING\INKSCAPE
    extension-errors.log
    preferences.xml

    ────extensions
        grid_cartesian_color.inx
        grid_cartesian_color.py
        swap_palettes.inx
        swap_palettes.py

        ────nikitakit-svg2sif-stable-0-g0221e90
            └────nikitakit-svg2sif-0221e90
────icons
────keys
────palettes
```

```
        CoolWarm.gpl
        My_Flamingored.gpl
        Nature_flowers.gpl
        Nature_Grass.gpl
        Nature_stones.gpl
        Nature_Water_Sky.gpl
        Nature_wood.gpl
        Vilde_Skin_FG-to-BG-(RGB).gpl

    ───templates
      default.svg
      Egg_Bot_600.svg
```

Palette directories;
C:\Program Files*\Inkscape\share\palettes
or user directory;
C:\Users\Appdata\Roaming\inkscape\palettes\

In windows the APPDATA folder will be "hidden" by default.

Linux;

Inkscape Install directory:
root/usr/bin/inkscape

User directories:
home/user/.config/inkscape

Tree diagram;

```
home/ragnar/.config/inkscape
    ├── config
    │   ├── inkplot.cfg
    │   └── inkplotrc
    ├── extensions
    │   ├── inkplot.inx
    │   ├── inkplot.py
    │   ├── swap_palettes.inx
    │   └── swap_palettes.py
    ├── icons
    ├── keys
    ├── palettes
    │   └── My_Flamingored.gpl
    ├── preferences.xml
    └── templates
```

Troubeshooting ans FAQ.

I have saved the palette as a gpl file in the correct directory – the palette does not show up in Inkscape's palette dialog, what to do?

Your palettes will not show up if Inkscape experiences an error reading them, just an extra space at end of a line or some other un-wanted characters in the file will make Inkscape "throw the palette out the window" and carry on to reading the next one.
Pay attention to the columns as well, if it doesn't look "tidy" in your editor Inkscape will refuse to show the palette.