Assignment 1

Graphics Program

Description

https://github.com/Rupertofly/CompProto-GraphicsProgram

For this project I worked on coding together a graphics “paint” like program for creating images, it includes a colour mixer, custom swatches, and custom brushes. With more time I would of liked to implement a slider to change the size of the brush, clean up the code a bit to be more readable and consistent, allow for the final image to be saved, place an overlay of the brush over the mouse, and incorporate a sound input in to the design.

I wanted to work with classes for this project as hadn’t really in the past. last year I slightly used classes within javascript, but they worked quite differently and I didn’t quite understand what I was doing so I wanted to develop a better understanding.

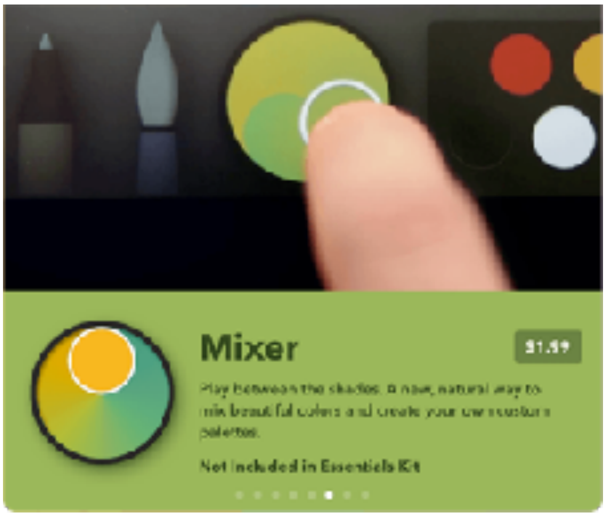
My code begins by importing all the java components I needed in order to load and copy images to the data folder. Next it initialises all the various variables, beginning with the graphics buffers holding the various elements of the program and GUI, then the two shaders, one to recolour the brush and one to create the gradient for the colour mixer. Then comes a set of constant 2 dimensional int arrays containing the x, y, width, and height properties of the various elements, then 2 constant arrays holding the default colours, and the colours used by the GUI. next comes the variables holding the current colour, and the two colours used to mix. Then it’s location strings, array lists of buttons for swatches and brushes, default image and splash screen, logic booleans to control loading and the splash, array for default colour buttons, save buttons, mixer, RGB sliders, brush updater, and finally the shape objects.

Setup function sets up all the default objects, and creates all the graphic assets, generates buttons and mixer, sliders, buttons, and the brush, it then draws the splash screen, until spacebar is pressed, after that the draw function is responsible for drawing all the buffers to the screen. When the mouse is clicked, the code cycles through the mixer and button classes to see if they were clicked. When the mouse is dragged it checks the sliders, mixer, and if it’s over the canvas, draws the brush image to the canvas. same with when the mouse is just pressed, except it also updates the brush then.

Classes; I have a few. Firstly the button class stores the colour or brush value that it is linked with along with local x and y coords (relative to the containing buffer) absolute x and y coords (relevant to sketch, for checking against mouse pos), width, height, and a boolean defining wether it’s a brush or swatch, they also contain functions for drawing themselves, setting the image or colour they contain, extracting that data, and two functions for use with the save buttons to create brush and colour swatches. Next the sliders, contain x, y, width, height, absolute positions, high and low colours and default positions. sliders contain functions to set their values, get their values, and adjust their values if clicked or dragged.

Mix class contains the standard x, y, width, height params, as well as the two starting colours, the shader used, and a shape for the set buttons. it contains functions to update the shaders parameters and draw the shader to the buffer, as well as the set buttons, as well as get the colour based on the mouses position and the two input colours. shader works similarly except outputs the colour based on the pixels position between the two input colours. After that comes the brush class which is public because it needs to be to do the input for some reason. this class contains the functions to change the brush to match the chosen colour and brush image, as well as the functions to load new images into the data folder using the native file loader. Brush shader works by extracting the alpha channel from the png and applying the chosen colour to the image and passing that to a new buffer.

the Mixer was inspired by the one used in 53s paper.



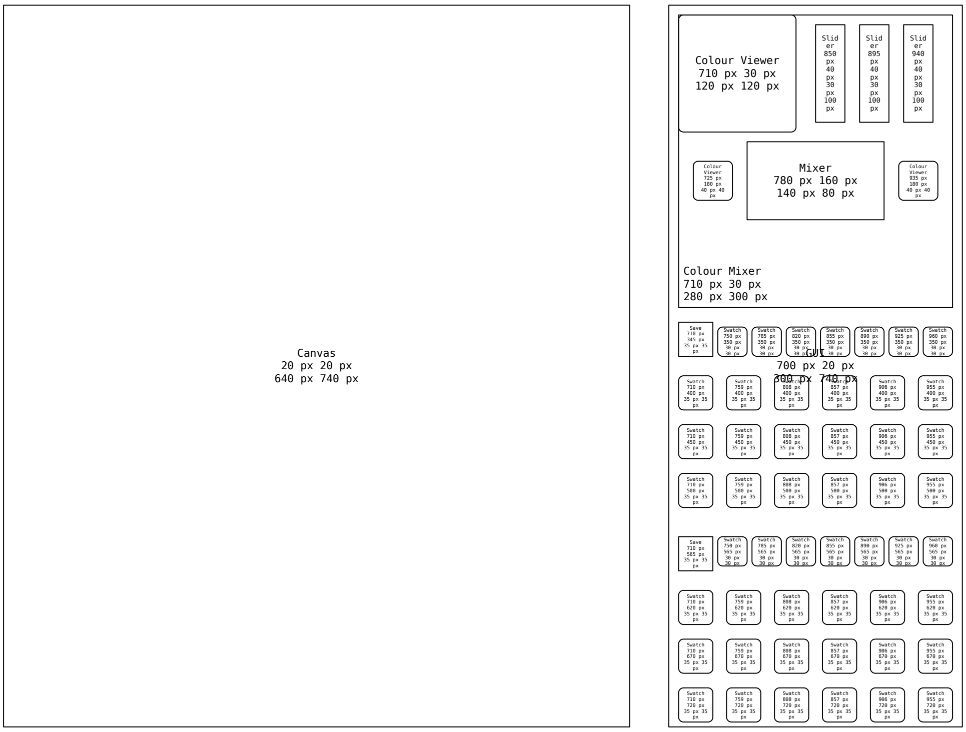
Mixer

$1.99

Play between the shades: a new, natural way to mix beautiful colors and create your own custom palettes.

Not included in Essentials Kit

I also used this diagram that I made to help me a lot.


Canvas 20 px 20 px 640 px 740 px
Colour Viewer 710 px 30 px 120 px 120 px
Slider 850 px 40 px 30 px 100 px
Slider 895 px 40 px 30 px 100 px
Slider 940 px 40 px 30 px 100 px
Colour Viewer 725 px 180 px 40 px 40 px
Mixer 780 px 160 px 140 px 80 px
Colour Viewer 935 px 180 px 40 px 40 px
Colour Mixer 710 px 30 px 280 px 300 px
Save 710 px 345 px 35 px 35 px
Swatch 750 px 350 px 30 px 30 px
Swatch 785 px 350 px 30 px 30 px
Swatch 820 px 350 px 30 px 30 px
Swatch 855 px 350 px 30 px 30 px
Swatch 890 px 350 px 30 px 30 px
Swatch 925 px 350 px 30 px 30 px
Swatch 960 px 350 px 30 px 30 px
GUI 700 px 20 px 300 px 740 px
Swatch 710 px 400 px 35 px 35 px
Swatch 759 px 400 px 35 px 35 px
Swatch 808 px 400 px 35 px 35 px
Swatch 857 px 400 px 35 px 35 px
Swatch 906 px 400 px 35 px 35 px
Swatch 955 px 400 px 35 px 35 px
Swatch 710 px 450 px 35 px 35 px
Swatch 759 px 450 px 35 px 35 px
Swatch 808 px 450 px 35 px 35 px
Swatch 857 px 450 px 35 px 35 px
Swatch 906 px 450 px 35 px 35 px
Swatch 955 px 450 px 35 px 35 px
Swatch 710 px 500 px 35 px 35 px
Swatch 759 px 500 px 35 px 35 px
Swatch 808 px 500 px 35 px 35 px
Swatch 857 px 500 px 35 px 35 px
Swatch 906 px 500 px 35 px 35 px
Swatch 955 px 500 px 35 px 35 px
Save 710 px 565 px 35 px 35 px
Swatch 750 px 565 px 30 px 30 px
Swatch 785 px 565 px 30 px 30 px
Swatch 820 px 565 px 30 px 30 px
Swatch 855 px 565 px 30 px 30 px
Swatch 890 px 565 px 30 px 30 px
Swatch 925 px 565 px 30 px 30 px
Swatch 960 px 565 px 30 px 30 px
Swatch 710 px 620 px 35 px 35 px
Swatch 759 px 620 px 35 px 35 px
Swatch 808 px 620 px 35 px 35 px
Swatch 857 px 620 px 35 px 35 px
Swatch 906 px 620 px 35 px 35 px
Swatch 955 px 620 px 35 px 35 px
Swatch 710 px 670 px 35 px 35 px
Swatch 759 px 670 px 35 px 35 px
Swatch 808 px 670 px 35 px 35 px
Swatch 857 px 670 px 35 px 35 px
Swatch 906 px 670 px 35 px 35 px
Swatch 955 px 670 px 35 px 35 px
Swatch 710 px 720 px 35 px 35 px
Swatch 759 px 720 px 35 px 35 px
Swatch 808 px 720 px 35 px 35 px
Swatch 857 px 720 px 35 px 35 px
Swatch 906 px 720 px 35 px 35 px
Swatch 955 px 720 px 35 px 35 px