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15-112 Section J

Project Proposal

Project Description:

- *Name*: Inkfinity
- *Description*: An application that allows for the user to paint and design on a blank canvas or on existing images, such as coloring book pages. Its different functionalities include a magic wand for image placement, a blending tool for drawing, the ability to mirror images, importing images from the web or from the user's local system, and a wide color palette.

Competitive Analysis:

A similar application is Procreate, an iOS app that mimics realistic drawing and painting with different textures. It has a variety of textures to draw with, ranging from the basic inking and sketching to paint splatters and raindrops. It allows the user to crop and change canvas sizes, choose from a variety of both premade and custom color palettes, and allow the user to draw on/combine different image layers. One of the best parts of Procreate, in my opinion, is how the colors blend with each other when they're layered. You have the option to have transparent colors which, when colored on top of other colors, form a perfect intermediate color. Inkfinity will be an "express" version of Procreate -- Inkfinity will be more simple and intuitive to use with the smooth functionality of Procreate. In addition, Inkfinity will allow the user to import images and draw over them, as well as color over self-generated coloring book image (intended after achieving MVP status).

Another similar application is Photoshop Express, a mobile photo-editing application that allows the user to crop, filter, remove "blemishes", and add text to imported images. Because its main purpose is to edit images, it does not have drawing capabilities nor does it allow the user to directly change the content of the picture, such as with a magic wand in Inkfinity. My app, while it will also have image-importing capabilities, will focus on the content-creation aspect of design.

Structural Plan:

There will be a main project file that utilizes the 15-112 graphics package. The application will be object-oriented and utilize many classes, which will all be in their own files.

Class	**Attributes**	**Main Functions**
Board	board backgroundColor rows	clearBoard fillBackgroundColor draw

	cols	clearCanvas
Brush	color texture (pen, brush) cx cy r	draw changeColor changeSize changeTexture
Blending Tool	cx cy	blendColors
Eraser	brushSize cx cy r	erase changeSize
Magic Wand	isEnclosed selectedArea	selectArea moveArea mirrorSelectedArea draw
drawApp		KeyPressed MouseDragged MousePressed drawAll

Algorithmic Plan:

Magic Wand Object

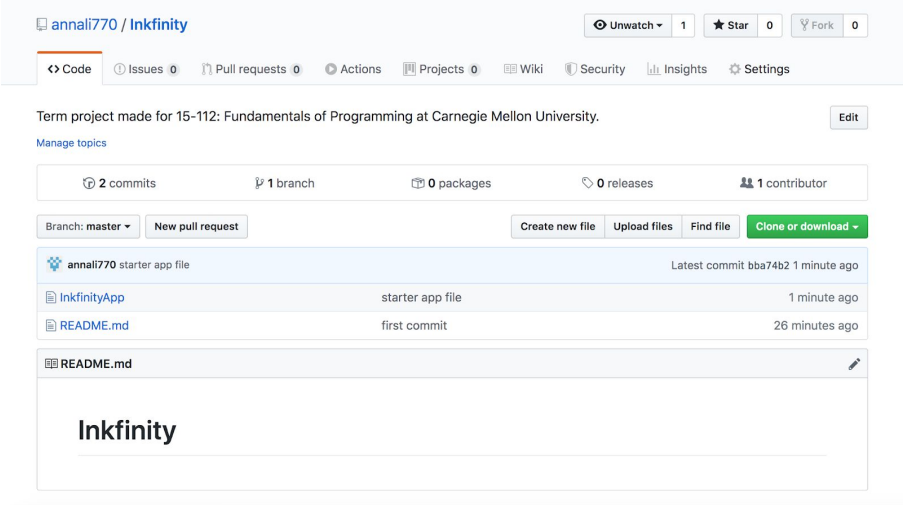
1. selectArea
    a. When mousePressed and mouseDragged, store coordinates of area outlined and draw faint outline
    b. The area is declared enclosed once a point within the outline is repeated (means it's intersecting)
    c. Add all points in between the outline to a list of selected coordinates (for row in rows, area.append(max(cols)-min(cols))
2. moveArea
    a. If mouse pressed and mousedragged within the selectedArea, then move each point in the selectedArea the distance that the mouse is moved
    b. When mousePressed a location outside the area of the selectedArea, then draw the selectedArea onto the canvas and clear the selectedArea

Timeline Plan:

- November 20: construct working canvas, paintbrush, and eraser
- November 23: construct magic wand, mirror function, and import photo/search function
- November 26: finish debugging, make sure all fundamental features work, submit TP2
- November 27 - December 1: spend time with family and friends, no coding allowed :-)
- December 4: implement openCV to create automatically generated coloring pages

Version Control Plan:

Create Github repository and push changes every time I make a change



Module List:

After I achieve MVP status, my intention is to use the OpenCV module. It would be used to draw outlines on the main components of an imported image and turn any image into a coloring page with only black outlines.