default
weighted
value =1

if input != null,
use default
(unweighted)

Launch
Color Palette Mixer
(color alchemy)

- ○ active color
- ○ selected color(s)
- ○ average colors
  - ○ weighted average
- ○ toggle attributes

Launch
Color Palette Modifier
(direct control)

- ⊕ active color
- ⊕ rgb modifier
- ⊕ hsb modifier
- ⊕ palette visual
  - ○ centered

When click calculate
↳ check status of selected checkboxes
↳ add index values to selected colors array
↳ perform given calculation (send to color mixer class)
↳ Assign new color value to active color slot

Stretch goal:
- ○ choose # of colors w/ max
- ○ add + remove colors from palette
- ○ color slider in place of hsb text boxes

When change active color
↳ check selection box of new active color
↳ uncheck selection box of old active color
↳ update activeColor int

~~Brightness auto-snap to max not working~~

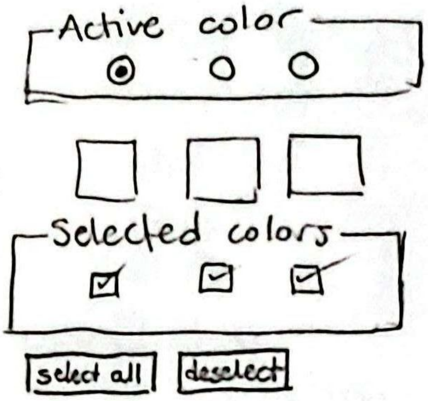
Make it impossible to uncheck active color

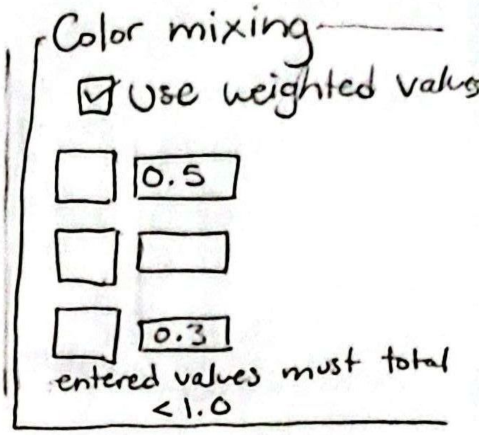
12/10/24

⊕ int activeColor

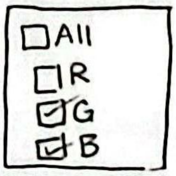
○ int[] selectedColors
  ○ select all ○ deselect buttons

⊖ value modification (direct)
  ⊕ RGB — ⊕set ⊕shift ⦶scale   ⊖ Calculate changes +update
  ○ HSB — ○set ○shift ○scale (SB only)



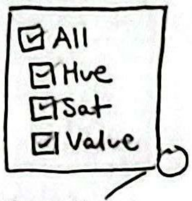


○ Color mixing
  ○ RGB
    ○ average — mathematical average for R,G,B values $\left(\frac{a+x+y+z}{n}\right)$
    ○ weighted combinations
    ○ toggle R,G,B fields



Direct modification
● Only active
○ Active & Selected

  ○ HSB
    ○ average
    ○ weighted combinations
    ○ toggle H,S,B fields



○ Center palette on page
  ↳ ○ Allow multiple palette sizes — ○ add JRadioButtons to HashMap based on palette size — should be able to access based on index

○ Create seporate listeners for buttons (probably good idea to create new classes)
  ○ Access activeColor using getter (non-static)

## Get values

- ⊖ Color
- ⊕ R
- ⊕ G
- ⊕ B
- ⊕ Hue
- ⊕ Saturation
- ⊕ Brightness

## Set Values w/ restriction of range

(0-255)
(0.0-1.0)

- ⊕ Color
- ⊕ R
- ⊕ G
- ⊕ B
- ⊕ Hue
- ⊕ Saturation
- ⊕ Brightness

## Shift Values

- ⊕ R
- ⊕ G
- ⊕ B
- test { ⊕ Hue
- ⊕ Saturation
- ⊕ Brightness }
- ⊕ Warmth
- ⊕ Value (RGB)

## Select colors

- *⊕ single active color
- ○ entire palette
- ○ active colors

int[] ArrayList (indexes)

(less priority)

## Compare values

- return Color Object of greater value/ return index?

input Objects or index?

- ○ Hue
- ○ Saturation
- ○ Brightness
- ○ Warmth - closeness to arbitrary warm hue value (abs value diff) (255, 200, 0)
- ⊖ R
- ○ G
- ○ B

Wait to see needed function

- ○ Color (equals())?

## Scale values

- ⊕ R
- ⊕ G
- ⊕ B
- ○ ~~Hue~~
- ⊕ Saturation
- ⊕ Brightness
- ○

## Visuals /Quality

- ⊖ appealing layout
- *○ javadoc comments
- ○ Combine colors $\left(\frac{r_1+r_2+\dots+r_n}{n}, \frac{g_1+g_2+\dots g_n}{n}, \frac{b_1+b_2\dots}{n}\right)$

## Buttons/Controls

- ⊖ select Color(s)
- ⊕ decide which modifiers to show
- ⊕ decide visual layout
- ⊕ ~~Buttons/incremental change~~ or *text boxes for num values
  easier start

## Alchemy

- ○ Select colors to combine, ~~slot~~ ~~to assign new color~~
- ○ Select active color, then other colors to add (can be weighted or restricted to certain attributes)

Strength of other colors to add: (out of 100)
Attributes to modify:
□ Hue
□ Saturation
□ Brightness

Future: Which color added to A most closely matches B?

When is it significant to use this.method()
as opposed to method() inside of a class?
is it only needed when accessing attributes?

# Color Theory "Game"

○ not started
⊖ in progress
⊕ Complete
? Stretch goals / unsure of implementation

## Base Functions

⊕ Color Storage (singular)
⊕ Attributes RGB
⊕ Color Palette storage

⊕ Adjusting color values
○ Adjusting palette

⊕ Draw simple objects of given color —

ArrayList ActiveColors <Color>
forEach ... colorAction()
repaint visuals()
Buttons/visuals

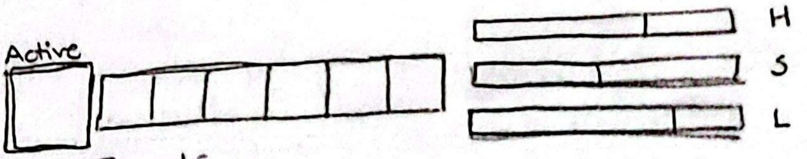
- ⊕ Select single color ⊕
- ○ Select color palette ○
- ○ Select multiple colors ○
- ?○ Combine colors $(\frac{r1+r2}{2}, \frac{g1+g2}{2}, \frac{b1+b2}{2})$ ○
- ⊕ add lightness / darkness (all RGB) ○
- ⊕ increase / dec saturation difference between low + high R, G, and B values ○
- ⊕ shift hue convert HSV? ○
- ⊕ Warmth Red/Blue relationship ○

⊕ Visuals for palette
⊕ update visuals @ user input (repaint)

○ Export palette ○

○ Color Analysis → ○ Comparison of two colors

- ⊕ Saturation difference between lowest + highest RGB values
- ⊕ Value adjust all RGB values at once
- ⊕ Hue easiest in HSV space
- ⊖ Warmth balance between Red and Blue



## Stretch Goals / Extended Functions

○ Color in context, ask user to
- ○ choose 'most' or 'least' ____ object
- ○ choose color that best fits in context
- ☆○ adjust color to fit in context
- ○ choose complementary color / color palette questions

○ Color palette prompts, user can shift individual colors or entire palette until satisfied

○ Simple color wheel