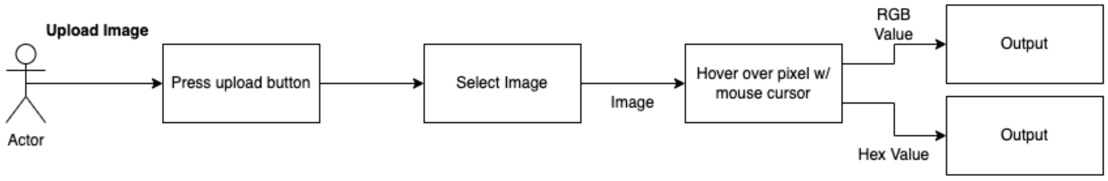
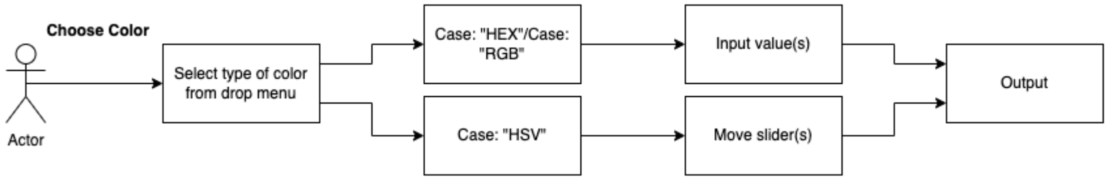
Project Summary

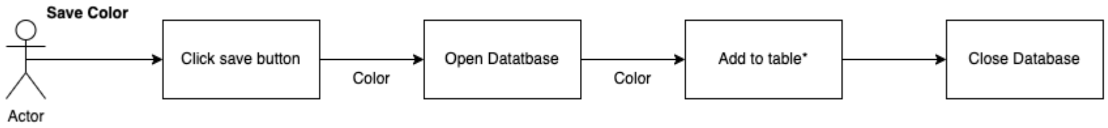
- CS Paint (Like MS Paint but w/ Computer Science)
- A simple Java app that will consist of two main GUI the color picker will use sliders adjusting hue and light to produce a color, features include a cursor that will drag on an uploaded image and return a hex value and rgb value(s). Using a custom color the user will be able to make and a new file that they can draw or write with a writing Utensil(Polymorphism), they can also save or delete the created image
- The intended user is anyone who needs to gather basic information for a certain color
- This project doesn't really have a "problem", but it will be useful in extracting color info from an image or producing a color
- I will be using the Java programming language for my GUI, and either Arraylists or Stacks with I/O for data management, a png file will be included for the icon of my GUI

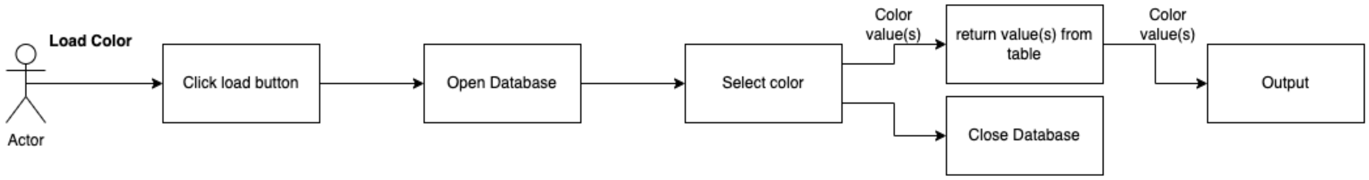
Use Case Analysis

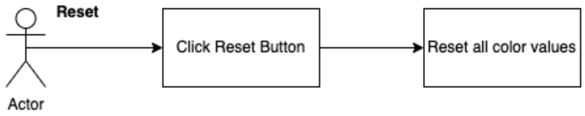
My program will only be used by one type of user, there are no screens for admins or other types. The program will allow the user to manipulate color values to produce a color or to upload an image to view the color data of a pixel from that image, depending on wherever the user has their cursor on the image. The user can also create a document to do whatever they would like just like a microsoft paint application.











Data Design

- I would say that my data is really about the manipulation of Colors (rgb values, hues, saturation levels, light levels, and etc)
- The best way to represent a color would be as an object, it could be Color(r,g,b) , Color (h,s,v), or just as a hex or string like Color(hex). I am probably going to want to store multiple colors somewhere I could make use of an arraylist of serialized objects. I will have three types of colors I need to differentiate between, and depending on the type of color the user wants to save it will be stored in one of the according tables:

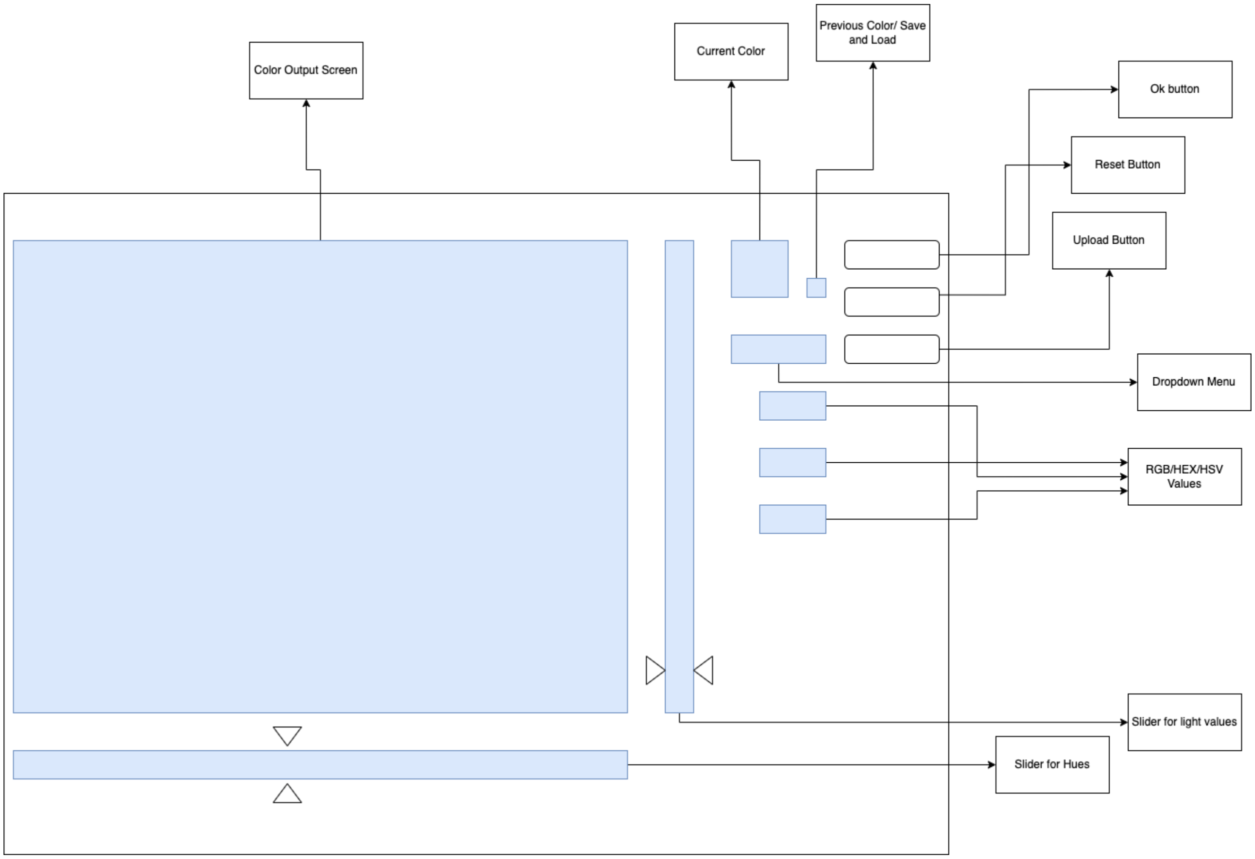
  HSV
  Id

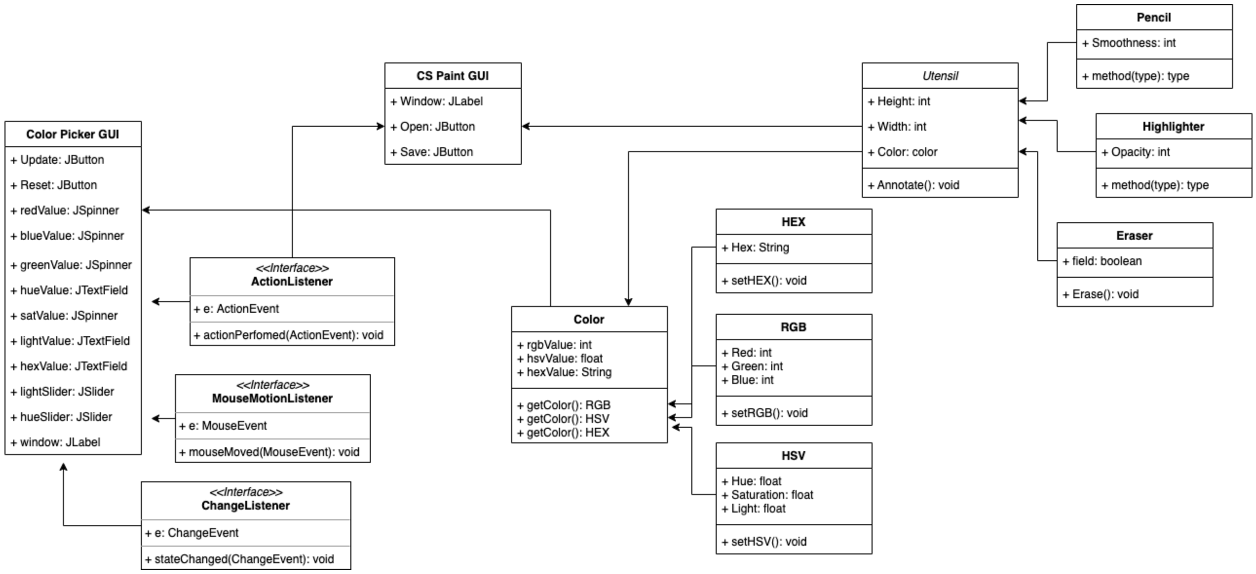
Hue
Saturation
Value

RGB
Id
Red
Green
Blue

HEX
hexValue

UI Design





Algorithm

- Key data elements are:
  - Hue
  - Saturation
  - Light
  - Red
  - Green
  - Blue
  - Utensil
  - Pencil
  - Highlighter
  - Eraser

- These data members will have default values based on the color White, meaning the RGB values will all be set to 255, Saturation will be set to 0 and light will be set to 100, the hue does not matter here so I just kept it at 120 (green) since it will look white at this state regardless. The hex value automatically adjusts according to the RGB so I do not need to physically do anything

- I will need methods to:
  - Upload an image
  - Choose a color
  - Save / Load a color
  - Reset all values / states

Upload

- This method will show an image on the output window, and return color values of a pixel
- Input will be a user selected image
- Output will be the image, the color, and color values

- Steps
    - Click Upload button
    - Select an image file
    - Image is shown in window
    - Use mouse cursor to hover over image
    - Color values returned based on cursors positioning
    - Color of a smaller window will change based on the values

Choose

- This method simply outputs the color on the output screen
- Inputs are Color values
- Output is a certain color determined by values
- Steps
    - Either manipulate the sliders or input numeric values
    - Color of output window will change based on the position of the sliders or inputted values

Save/Load

- The goal of this method is to either save a color or load one up from a database
- Inputs are the values of selected color, depending on the state of the dropdown menu the values will either be HEX, RGB, or HSV
- The Output will be the selected color
- Steps
    - Click on previous color box
    - Database Opens
    - If there is a Color in the output window it is saved/ If there is not, a window to select a color will show
        - Value(s) of selected color is loaded into designated areas resulting in the color being shown on the output window
    - Database closed

Reset

- This method is meant to return all values to their default state, meaning the GUI will look the same as when it was first opened
- It may be a stretch but I suppose the input will be the “click” of the Reset Button
- The output will be the GUI in a base state
- Steps
    - Click Reset Button
    - All changed values will be set to their default state