**Definition**

For our project, we are creating an image manipulator. The image manipulator supports image filters, meme generation, color enhancement, and graphics interchange format manipulation. The system is important because it will allow the user to easily create custom images, gifs, and memes.

**Analysis**

**Input:**

* **Image or GIF file to be manipulated**
  + **File extensions accepted (.png, .jpeg, .gif)**
* **Effects to be applied to the image**
  + **Accepted effects (image filter, meme creation, color enhancement)**
* **Name for the newly generated image**

**Output:**

* **Manipulated Image**
  + **Same file extension as the input image**

**Flow:**

**Design**

The project will consist of three modules. The first module is the UI module. This module consists of the main method and all the iostream methods, essentially the view the user will interact with. The second module will consist of the image class and its methods, creating a model for the image data. The third module will control the data manipulation including the algorithms for applying effects to the image.

The main method uses an argument for an image path to instantiate an Image object. From there, there will be a do-while loop which repeatedly asks the user for input and applies an effect to the image. When the user is done manipulating the image, they enter a command which saves the manipulated image to a path. When the user is done with the application, they enter a command which breaks the loop and terminates the program.

**Enumerations**

enum Filter { Tint, Grayscale, Other };

enum Color { Red, Blue, Green };

**Classes**

Image

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+ int \*data[]

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- Image(string path)

- Image(int \*data[])

- void setData(int \*data[])

- void createMeme(string topText, string bottomText)

- void applyFilter()

- void applyBorder(int width, Color color)- void writeToPath(string path, string name)

Gif

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+ Image \*frames[]

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- Gif(string path)

- Gif(Image \*frames[])

// The following functions perform the same the function on each image frame

- void setData(int \*data[])

- void createMeme(string topText, string bottomText)

- void applyFilter()

- void applyBorder(int width, Color color)

- void writeToPath(string path, string name)

**Execution Plan**

The 6 member team will be divided into 3 subgroups, and each subgroup will be assigned 2 assignments and consequent deadlines.

**Schedule**

|  |  |  |
| --- | --- | --- |
| **Subgroup #:** | **Deadline #1: April 5** | **Deadline #2: April 12** |
| 1 | Write image filter functions | Develop UI for program |
| 2 | Write meme generator functions | Interface gif class with image class |
| 3 | Write color selection functions | Write functions to save created images to file structure |

In the week between deadline #2 and Project Milestone #3 all six members of the team will work on program testing, debugging, and cleaning code.

**Example makefile**

ImageManipulator: MainUI.cpp Image.h Gif.h

gcc –Wall –o ImageManipulator MainUI.cpp Image.h Gif.h