Image Editor Design Document

**Variables**

* Image: A 2D array of integers “null-terminated” with a value of -1, with each item corresponding to a pixel’s brightness.
* Height: An integer which corresponds with the number of rows which make up the image.
* User Response: A char which stores the user’s interactions in menus.
* File: A pointer which points to the file at which the user is reading or writing image data.

**Functions**

* main():

loop at least once, and until the user’s response is to exit the program

prompt the user for editing, loading, or displaying the image, as well as exiting

get the user’s response

if the user wants to load

run loadImage()

if the user wants to display

run displayImage()

if the user wants to edit

if the user wants to crop

run cropImage()

if the user wants to brighten

run modifyBrightness() with a modifier of 1

if the user wants to darken

run modifyBrightness() with a modifier of -1

if the user wants to exit

do nothing (to avoid printing an error message)

otherwise

print an “invalid response” type error message

* brightToChar():

take a passed integer brightness argument and pass it through a switch statement

to return the corresponding pixel character for that brightness

* saveImage():

for every number between 0 and a passed number of rows (as an argument)

iterate from up from 0 until the index of a -1 in a passed image

for each of those iterations, write the resultant brightness value to the file followed by a space

and end each row in a -1 and anewline

* loadImage():

create a variable for the current row being written to which starts at 0

while values are being read from a passed file argument

write the values to the passed 2D image array at the current row

if a -1 is read

increase the row variable by one

* displayImage():

iterate from 0 up to a passed number of rows (argument)

iterate from up from 0 until the index of a -1 in a passed image

print the current pixel

after every row print a newline

* cropImage():

ask the user for a starting and ending row

ask the user for a starting and ending column

iterate a number of times equal to the height of the new image

set the row at the current index to the row at (the current index + the starting row of the crop)

iterate a number of times equal to the width of the new image

for the row at the current row index (outer loop), set the item at the current item index to the item at (the current item index + the starting column of the crop)

set the item at the width of the new image (end of the cropped row) to -1

set height variable equal to the new cropped image height

* modifyBrightness():

for every pixel of the passed image (2 nested loops, see saveImage())

add to that pixel’s brightness, a passed modifier value, clamping at 0 and 4