Design Document

Bella Picasso-Kennedy

Erinstagram!

Data

Image - 2D array
Macro - Rows and Columns (for max image size)
File Name - String
User Input - Char or Int (depending on menu layout choice)
Menu One - Switch with 4 cases, excluding default
Menu Two (*Edit Image*) - Switch with 4 cases, again excluding default

How the Program Should Execute

The user should be able to choose from a menu that includes the options to load a new image, display the current image, edit the current image, or exit the program. If the user chooses to edit the current image, they should be able to choose from another menu that includes the following options, with the new version of the image being displayed each time. The user can crop, dim, brighten, or rotate the image 90 degrees. After completing one of the previously listed options the user should be prompted to save their edited image to a file. If they agree, they should be prompted for a file name and returned to the first menu once it saves.

Functions

Total Number of Functions (Excluding Main): 9

main()
Data: char / int menuChoice
Functionality: Loop expression based on return output from the userMenuChoice function. Have a switch statement that can execute each of the menu options, and continue to prompt the user until they choose to exit the program.

userMenuChoice()
Input Parameters: None
Returned Output: Int or char (depending on how you decide to make the menu layout)
Functionality: Prompt the user with several menu options; load a new image, display the current image, edit the current image, or exit the program. Return the user's choice into the body of the main function.

loadImage()
Input Paramters: char *filename (file pointer), int *rows, int *columns, int array[][COLUMNS]
Returned Output: Void
Functionality: Read the number of rows and columns in the previously chosen image. Also, assign each index of the columns and rows to an array to be able to reference in other functions.

displayImage()
Input Paramters: int array[][COLUMNS], int rows, int columns
Returned Output: Void
Functionality: Display the current image to the user.

editImageMenu()
Input Parameters: None
Returned Output: Void
Functionality: If the user chooses to edit the current image, then editImage presents a new menu of options for the user. The choices presented are to crop, dim, brighten, or rotate the image. These options are then executed by calling other functions inside the current function.

dimImage()
Input Parameters: int rows, int columns, int array[][COLUMNS]
Returned Output: Void
Functionality: Bring down the brightness of the current image by ‘ one step ‘ that the user is editing, after the brightness is dimmed present the newly edited image to the user.

brightenImage()
Input Paramters: int rows, int columns, int array[][COLUMNS]
Returned Output: Void
Functionality: Bring up the brightness of the current image that the user is editing, after the brightness is increased present the new version of the image to the user.

cropImage()
Input Paramters: int *rows, int *columns, int array[][COLUMNS]
Returned Output: Void
Functionality: Allow the user to specify which smaller section of the original image they would like to use to create an edited image. One potential way to accomplish this would be to have the pixels (indexes) of the array labeled so that the user can pick which column and array index to start and end at for cropping. They would need to give four different coordinates.

rotateImage()
Input Paramters: int *rows, int *columns, int array[][COLUMNS]
Returned Output: Void
Functionality: Create the illusion of rotating the image 90 degrees by moving every pixel of the image to a different position on the 2D Array

saveImage()
Input Parameters: int rows, int columns, int array[][COLUMNS]
Returned Output: Void
Functionality: If the user decides to save their newly edited image, this function will prompt the user as to what they want to new the file and then save it. It will transfer the image into the file by utilizing a nested for loop to print each index of the 2D array. Once it has completed this it will close the file.