

Design Document

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“Erinstagram” Image Editor

Data:

Menu Selection – Integer Selection with four possible outcomes (load, display, edit, exit)

Edit Menu Selection – Integer selection with four possible outcomes (crop, dim, brighten, or exit to main menu)

Original Image – 2D array in which the image is stored for display/editing (will be in grayscale and produced by file I/O)

Edited (Grayscale) Image – The edited image

Save Image – Integer value, to determine whether to produce an outputted file

Brightness Value – integer, from 1 – 4 how much the user wants to brighten the image

Dimness Value – integer, from 1 – 4, reflective of how much the user wants to dim the image (1 – light dim, 4 max dim)

Cropping Length – integer value that determines the length they would like to crop the image to (by amount of pixels)

Cropping Width – integer value that determines the width they would like to crop the image to (by amount of pixels)

Cropping Position – integer value that determines whether the user wants to move left, right, up or down along the selected image

How the Program Works:

The user is first encountered with a menu. The menu allows the user to either upload an image, display an image, edit an image, or exit. This menu should keep prompting the user for choices until the user decides to exit. If the user chooses to upload, the program reads and stores the image for further use. The image will be uploaded in greyscale. If the user chooses to display the image, the stored image should simply be displayed. If the user chooses to edit the image, they will be directed to a sub menu with the choice to either brighten, dim, or crop a certain section of the image. This menu should repeat until the user decides to exit back out to the original menu. If the user decides to brighten the image, depending on how much the user wants to brighten the image, determined by a certain image value, the image will be brightened and re-stored as the brightened image. If the user decides to dim the image, depending on how much the user wants to dim the image, determined by a certain integer value, the image will be dimmed and re-stored as the dimmed image. If the user wants to crop, the user will use two values to determine the length (up and down) and width (left and right) they would like to crop the image to. Once the user is done with all edits

and has displayed and selects, they will be prompted to save the file before exiting. If they choose to save the file, a file will be written containing the edited image. If they choose not to save the file, the program will stop without saving or producing any file whatsoever.

Functions (eight):

mainMenu()

Input Parameters: user selection (integer)

Output (return): none, so this function will be a void

Functionality: Evaluates the user's choice to either upload, display, or edit an image, or exit the program. Directs to the user's function of choice, uploadImage, displayImage, and editImage (another menu). This menu will repeat until the user decides to exit the program.

uploadImage()

Input Parameters: file pointer to user's inputted image, array for storage of all pixels within image (Will be known now as the 2D Array of Image)

Output (return): none, so this function will be a void

Functionality: Reads from the user's file and stores the image that was uploaded from the user. Essentially, converts an image to data that may be able to be used by this program. This image will SIMPLY BE STORED. Nothing further whatsoever. The only differentiation is that the image will be stored in grayscale from the original image.

displayImage()

Input Parameters: 2D Array of Image

Output (return): none, so this function will be a void

Functionality: Simply displays the image, whether edited or original. JUST DISPLAYS the current state of the image.

editImage()

Input Parameters: 2D Array of Image, user selection (integer)

Output (return): none, so this function will be a void

Functionality: Evaluates the user's choice to either brighten, dim, or crop the image, or exit back to the main menu. Directs to the user's function of choice, brightenImage, dimImage, and cropImage. This menu will repeat until the user decides to exit back to the main menu.

brightenImage()

Input Parameters: Brightness Value, 2D Array of Image

Output (return): Edited Image, 2D array (since this array involves both integers and characters stored in each 'block', this returned 2D array will be a char)

Functionality: Brightens the greyscale image by increasing the size of the character within the pixel (ex. . becomes o if user selects brighten by 1), dependent on the user's selection. The function will then store this new image in a new array returned by the function.

cropImage()

Input Parameters: Cropping Length, Cropping Width, Cropping Position, 2D Array of Image

Output (return): Edited Image, 2D array (since this array involves both integers and characters stored in each 'block', this returned 2D array will be a char)

Functionality: Crops the image dependent on the user's selection in regards to desired width and length. The user also has the ability to move along the image any amount they desire by

dimImage()

Input Parameters: Dimness Value, 2D Array of Image

Output (return): Edited Image, 2D array (since this array involves both integers and characters stored in each 'block', this returned 2D array will be a char)

Functionality: Dims the greyscale image by decreasing the size of the character within the pixel (ex. o becomes . if user selects dim by 1), dependent on the user's selection. The function will then store and output this new image in a new array returned by the function.

saveImage()

Input Parameters: Save Image (integer value), 2D array of Image

Output (return): none, so this will be a void function

Functionality: Whenever a user chooses to save, whatever the image (2D array) is that enters this function will be saved in a separate file using file I/O.