Design Document
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Erinstagram

Data:

Image- A 2D array to store the pixel values of the image
Metadata or image dimensions width and height
File pointers to read from and write to image files
User menu choice- char
Crop- int
Dim/Brighten- void
Rotation- int
Save Image- bool

Overview:

This project allows users to perform various operations on grayscale images stored as numerical values in files. A main menu will appear, offering image options like: loading an image, displaying it, editing it, saving it, or exiting the program. The editing capabilities include: cropping, adjusting brightness, and rotating the image. Users can also save the modified image to a new file.

Functions:

main()
Data: Pointer to a 2D array representing the image. Buffer to store the filename provided by the user. Variable to store the user's menu selection.
Functionality: Entry to the program. Displays a menu of options to the user. Processes user input and calls corresponding functions. Continues to loop until the user chooses to exit. Handles loading, displaying, editing, and saving images. Ensures proper memory storage by freeing memory for the image before exiting.

getImage()
Input parameters: char filename, int image
Returned output: bool
Functionality: Open the file specified by filename for reading. Read the brightness values from the file and store them in the image array. Close the file.

cropImage()
Input parameters: int image 2D array, int column, int row, int width, int height
Returned output: int
Functionality: Creates a new array to store the cropped image. Copies the pixels from the specified region of the original image to the new array. Returns a pointer to the cropped image array.

brightImage()
Input parameters: int image
Returned output: void
Functionality: Increases the brightness level of each pixel in the image array by one step. Modifies the original image array. Does not return any value.

dimImage()
Input parameters: int image
Returned output: void
Functionality: Decreases the brightness level of each pixel in the image array by one step. Modifies the original image array. Does not return any value.

rotateImage90()
Input parameters: int image 2D array
Returned output: int
Functionality: Creates a new array to store the rotated image. Rotates each pixel in the image array by 90 degrees. Returns a pointer to the rotated image array.

saveToFile()
Input parameters: char filename, int image
Returned output: bool
Functionality: Opens the file specified by filename for writing. Writes the brightness values from the image array to the file. Returns true if the image was successfully saved to the file, otherwise false.