CS135 – Final Project Design Document – 1106 Team 2
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Image Processing

Data

- Image – char 2D array
- File Name – char string
- Row and Column Counts, user input variables – int
- File pointer - FILE*
- Max String and Array – MACROS

Main Function

declare char 2D image array and filename string, both with max value macros
declare int row and column counts, user input variable
declare file pointer

do while loop(while input is not 5)
    display main menu function
    get user input

    switch selection for input 1:
        if input is 1:
            get file name function
            open filename stream in read mode
            if pointer is null
                display failure message
                return 0
            else
                read file function
                close file stream

        if input is 2:
            display image function

        if input is 3:
            display edit menu function
            get user input

            switch selection for input:

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                        if input is 1:
                            crop image function
                        if input is 2:
                            dim/brighten image funct w/ parameter var 1
                        if input is 3:
                            dim/brighten image funct w/ parameter var -1
                if input is 4:
                    get file name function
                    open filename stream in write mode
                    if pointer is null
                        display failure message
                    else
                        display image function (edited image, filename
                        pointer)
                if input is 5:
                    do nothing
(end loop)
```

Functions

Display Main Menu
Input Parameters: none
Returned Output: void
Algorithm:
display option 1: Load new image
display option 2: Display Image
display option 3: Edit image
display option 4: Save Image

Display Edit Menu
Input Parameters: none
Returned Output: void
Algorithm:
display option 1: Crop image
display option 2: Brighten Image
display option 3: Dim image

Get File Name

Input Parameters: char filename string
Returned Output: void
Algorithm:
    display prompt for filename
    fgets filename string

    loop: if filename string index (from 0) is not \0
        if indexed filename element is the newline character
            filename element is set to \0

Read File

Input Parameters: int max rows, int max strings, int 2D Array,int* row count, FILE* pointer
Returned Output: column count
Algorithm:
    loop: if row index (starting at 0) is less than max rows value
        fgets string of digits from the file pointer
        increment row index
//counting rows and columns:
    nested for loops: (indexes are incremented)
        outer: if row index (=0) is less than row max
            inner: if array[row index],[string index (=0)] is not \0
                *row count equal to row index+1
                column count equal to index-1
    return column count

Display Image

Input Parameters: int max rows, int max strings, char 2D Array, file pointer
Returned Output: void
Algorithm:
    nested for loops: (indexes are incremented)
        outer: if row index (=0) is less than row max
            inner: if array[row index],[string index (=0)] is not \0
                switch selection array[row index,string index]:
                    if entry is 0:
                        replace entry with [space]
                        fprintf entry

if entry is 1:
replace entry with .
fprintf entry
if entry is 2:
replace entry with o
fprintf entry

if entry is 3:
replace entry with O
fprintf entry
if entry is 4:
replace entry with 0
fprintf entry
default:
fprintf(\n)

Crop Image
Input Parameters: int max rows, int max string, char image 2D Array
Returned Output: void
Algorithm:
declare side and pixel variables
Display Crop Menu
scanf pixel input
nested for loops: (indexes are incremented)
outer: if row index (=0) is less than row max
inner: if array[row index],[string index (=0)] is not \0
image array is equal to the saved input image with the saved image indexes adjusted according to the pixel and side choices. connect this to the row and column size variables to lessen index errors.

Crop Menu
Input Parameters: none
Returned Output: char side input
Algorithm:
display prompt: “choose reference side”
display option 1: Top
display option 2: Bottom

display option 3: Left
display option 4: Right
get side input
display prompt: “choose crop amount”
display option 1: 1 pixel
display option 2: 5 pixels
display option 3: 10 pixels
display option 4: 20 pixels
return side input

Dim/Brighten Image

Input Parameters: int max rows, int max strings, char 2D Array, dim/brighten variable

Returned Output: none

Algorithm:

nested for loops: (indexes are incremented)
outer: if row index (=0) is less than row max
inner: if array[row index],[string index (=0)] is not \0
switch selection array[row index,string index]:
if else entry is 0 and dim/brighten variable is less than 0
do nothing
if else entry is 4 and dim/brighten variable is greater than 0
do nothing
if else entry is \n
do nothing
else
replace entry with entry plus brighten/dim variable