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

<u>Data</u>

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

<u>Main Function</u>

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:

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

Dates:

    By Saturday

        Dominic –

            Dim/Brighten Function

            Menus

        Nathan —

            Read

            Display