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Programming HW#4 Design

Program Name: ColorSort.c

**Step 1: Analyze the Problem**

**Output**: Displays color names and their decimal & hexadecimal value

**Input**: Reading two arrays from text file

**Step 2: Design (Structure Chart, Pseudo code, Algorithmic pattern, Modular Specs)**

**Step 3: Main Pseudocode:**

CALL openFile(prompt,mode)

WHILE(openFile does not equal NULL)

CALL assignArray(sudokuArray)

CALL readArray(sudokufile, sudokuArray)

CALL playPuzzle(sudokuArray)

CALL openFile(prompt,mode)

END main (when WHILE loop is exited)

**Step 4: Logic of program**:

**Step 5: Module Specs**

**1. openFile**

Return Value: FILE\*

Receives: prompt(string), mode(string)

Reference Parameters: prompt(string), mode(string)

Preconditions: None

Logic: Prompts user to provide the file’s name. The function will then read the file name into a local string. If the name of the file is QUIT, then the function returns NULL and the program quits. Otherwise, the function will open this file with the received by the mode(string) and return the file as a FILE\*

**2. readInputColor**

Return Value: numElemt(int)

Receives: colorName(char\* array), colorValue(int array)

Reference Parameters: colorName,colorValue

Preconditions: colorName, colorValue have been pre-declared

Logic: This function will call openFile to open a file. If it is opened, the function will read each line into a local string and allocate memory for the color name. The name in the local string will then be copied into colorName array. Following each color name will be the color’s value as well which will be read into colorValue array. The function will return # of elements or 0 if file failed to open.

**3. colorSort**

Return Value: size(int)

Receives: file, 2-dim array

Reference Parameters: file, 2-dim array

Preconditions: File must be opened, 2-dim array has been initialized

Logic: The function obtains the size of the first line in an input file and then uses the size-1 to read the file into a 2-dim array. The size is then returned.

**4. displayArray**

Return Value: void

Receives: colorName(char\*array),colorValue(int array)

Reference Parameters: colorName,colorValue

Preconditions: colorName,colorValue have been pre-declared and initialized

Logic: This function will print headers and the name, decimal and hexadecimal value of the colors in an organized fashion.

**5. freeMem**

Return Value: void

Receives: mem(void\*)

Reference Parameters: mem(void\*)

Preconditions: mem has been declared and initialized

Logic: This function will free the dynamically allocated memory of its parameter.

**6. strCompare**

Return Value: compare(int)

Receives: str1(string),str2(string)

Reference Parameters: str1,str2

Preconditions: str1, str2 are pre-declared and initialized

Logic: This function will compare 2 strings with strlcmp which ignores the case and will return an int back based on if str1 and str2 equal each other or if one is greater or less than the other.