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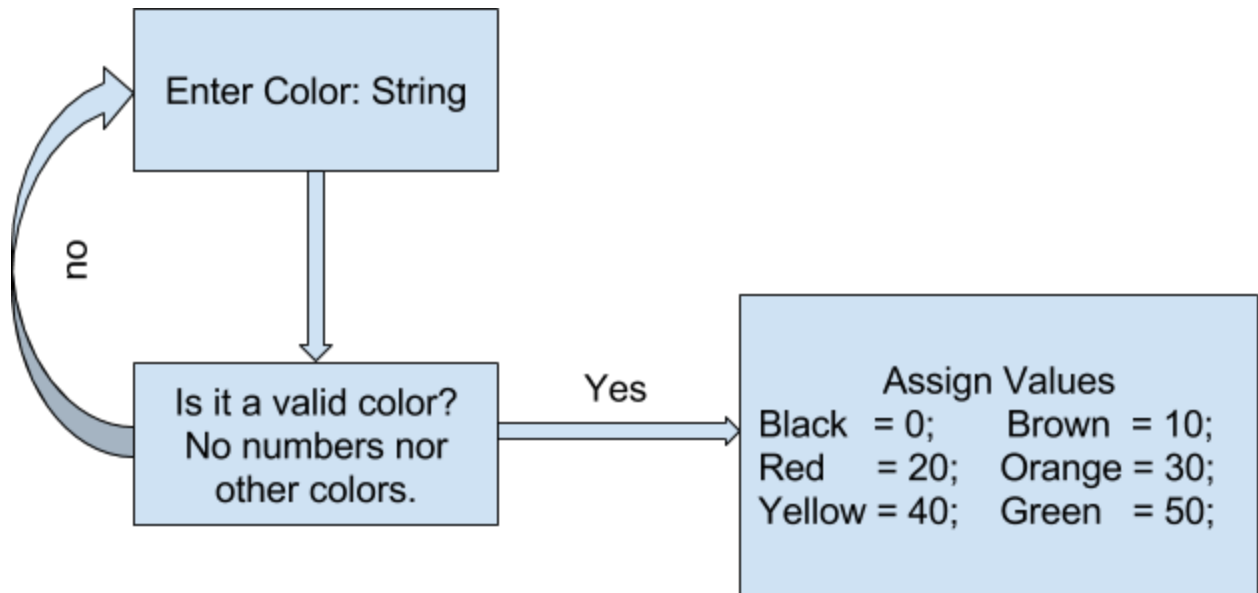
CS111 homework_1

Program Architecture

- Prompt the user to enter three colors(band color one, two and three).

- Input color(color options black, brown, red, yellow, orange and green).

- Input color validation(input error conditions).

- Assigning value for each respective band color.

- Calculation of resistor value(output error conditions).

- Loop back to beginning.

The resistor calculator program is an user designed program to calculate the value of a given resistor. The program makes this possible by translating the resistor color code into a resistor denomination value. The pseudocode of this program is divided into 4 blocks or sub-pseudocode. Three of this blocks are user interaction and prompts the user to enter each band color of the resistor. Every block has error check in case the user enters a not valid color, number or character. Each block checks for the inputted color and if the statements are not met, the program will not continue by simply looping the user back to the current block so a valid color can be re-entered. If the color entered is a valid color, an integer value will be assigned according to the color entered by the user in each respective block. After all colors are entered and all values assigned by color, all data will be calculated in the fourth block. This last block will gather all data and make the calculations to decode the color code resistor. Two things will happened in the calculation segment. First, it will check if the first value entered is black so the program can make a decision to whether or not use the first value, this way the final value of the resistor will not display a zero as the first digit. Second, if and only if the first color is not black, the program will add the assigned values of first color and the second color and then multiply it time the third color. Final step will be displaying the the output, resistor value, and reset the program for future resistor calculations.

First color input (band color 1)

Enter Color: String

no

Is it a valid color?
No numbers nor
other colors.

Yes

Assign Values
Black   = 0;   Brown = 10;
Red   = 20;   Orange = 30;
Yellow = 40;   Green   = 50;

Pseudocode

//Ask user to enter color for band 1
Enter color 1 please(user input: String) //options are black, brown, red, orange, yellow, green
While the entered color is a valid color//No numbers, other colors nor typos.
color_1 = user input //Assign user input to string type variable color_1.
//Check for color validation and assign a value to int type variable color_value_1.
if color is black color_value_1 is 0
        if color is brown color_value_1 is 10
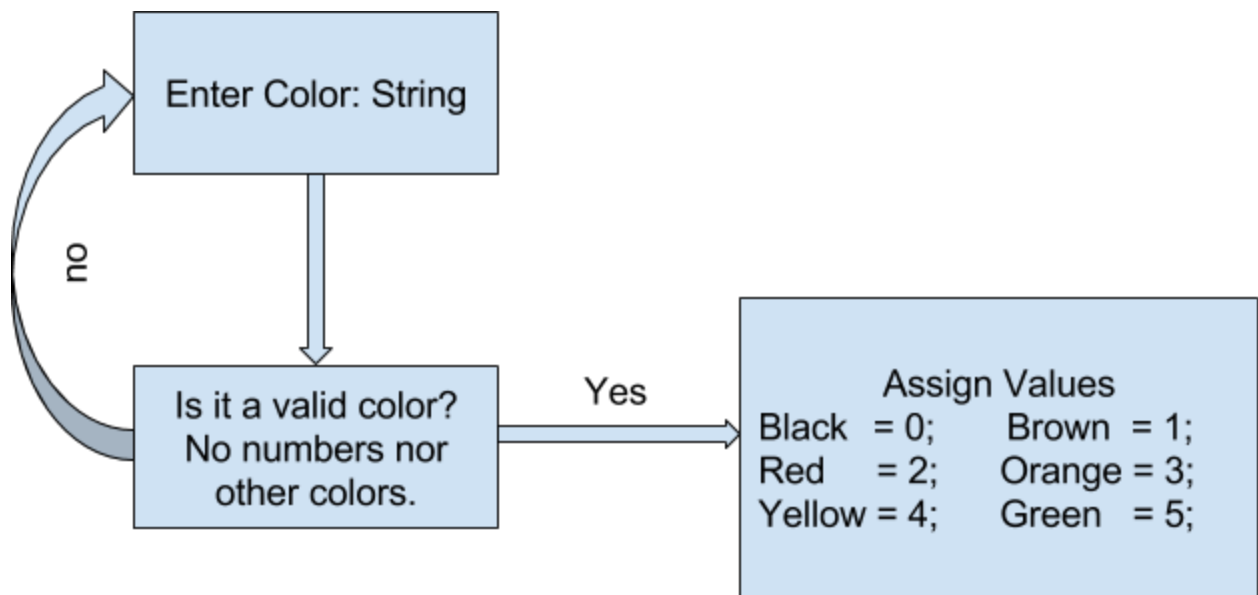   if color is red color_value_1 is 20
                        if color is orange color_value_1 is 30
                                If color is yellow color_value_1 is 40
                                        If color is green color_value_1 is 50
Else please enter a valid color //If entered color is not a valid color loop back to reenter color.

Second color input (band color 2).

Enter Color: String

no

Is it a valid color?
No numbers nor
other colors.

Yes

Assign Values
Black = 0;   Brown = 1;
Red = 2;   Orange = 3;
Yellow = 4;   Green = 5;

Pseudocode

//Ask user to enter color for band 2
Enter color 2 please(user input: String) //options are black, brown, red, orange, yellow, green
While the entered color is a valid color//No numbers, other colors nor typos.
bandColor_2 = user input //Assign user input to String type variable bandColor_2
//Check for color validation and assign a value to int type variable color_value_2
if color is black color_value_2 is 0
        if color is brown color_value_2 is 1
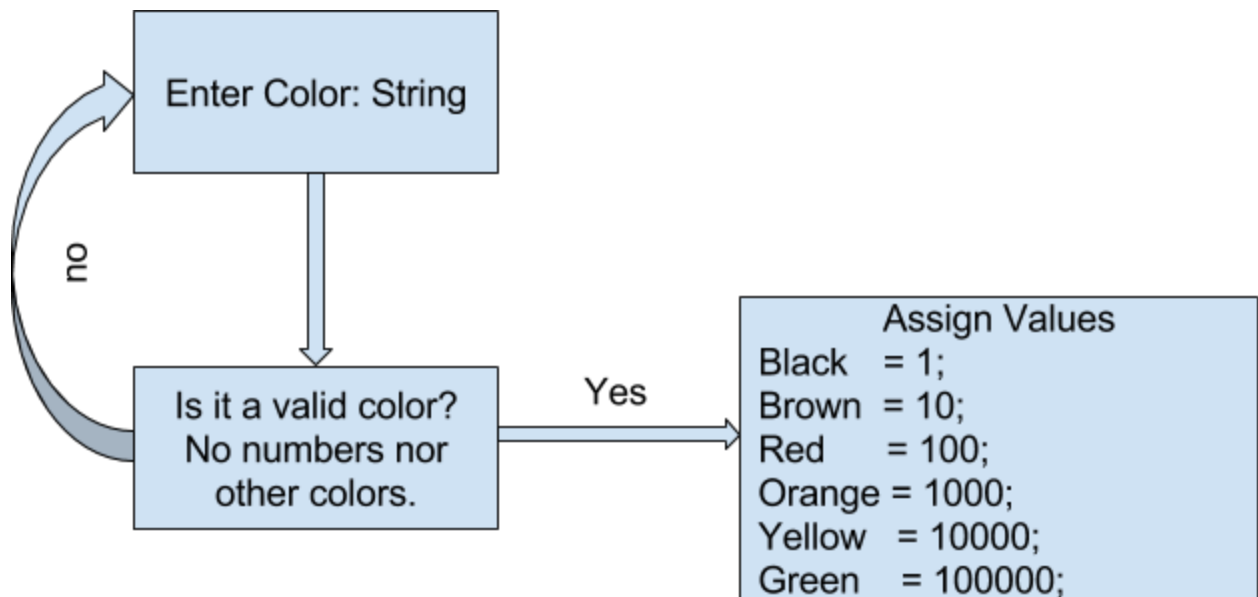   if color is red color_value_2 is 2
                        if color is orange color_value_2 is 3
                                If color is yellow color_value_2 is 4
                                        If color is green color_value_2 is 5
Else please enter a valid color //If entered color is not a valid color loop back to reenter color.

Third and last color input (band color 3).

Pseudocode

//Ask user to enter color for band 3
Enter color 3 please(user input: String) //options are black, brown, red, orange, yellow, green
While the entered color is a valid color//No numbers, other colors nor typos.
bandColor_3 = user input //Assign user input to string type variable bandColor_3
//Check for color validation and assign a value to int type variable color_value_3
if color is black color_value_3 is 1
        if color is brown color_value_3 is 10
                if color is red color_value_3 is 100
                        if color is orange color_value_3 is 1000
                                If color is yellow color_value_3 is 10000
                                        If color is green color_value_3 is 100000
Else please enter a valid color //If entered color is not a valid color loop back to reenter color.

Resistor Value Calculation Pseudocode

//calculate the value of the resistor and assign it to int type variable resitorValue

//i.e color 1, 2 and 3 are red,red,red respectively, then resitorValue = 30+3(100)= 3300 ohms

If first band color is black //Eliminate the zero as the first digit of resistor value

      Then resistorValue = color_value_2* color_value_3

           Otherwise resistorValue = (color_value_1+color_value_2)* color_value_3

Print resistorValue in ohms

Loop back to beginning. //After value been displayed reset program to calculate new resistors.

Program flow chart