Manual Submissions

Assignment - In progress

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Title	Assignment 1 - Spring 2017
Due	Feb 10, 2017 5:00 pm
Number of resubmissions allowed	Unlimited
Accept Resubmission Until	Feb 11, 2017 12:00 am
Status	Not Started
Grade Scale	Points (max 10.0)

Instructions

Assignment 1

Overview

For this assignment, you will develop programs (expressed as flowcharts OR pseudocode) to solve several problems. You must show your **problem analysis (inputs/outputs/errorconditions), the flowchart describing your algorithm, and the test cases** needed to test your program thoroughly.

Since your submission may include diagrams/drawings of flowcharts, you must submit your answers in a **PDF file (Portable Document Format)** called assign1.pdf OR a text file as assign1.txt. We recommend that you use PowerPoint or a similar presentation application (such as the free software OpenOffice), as this will make it easy to draw the flowcharts and also to combine them with text for the problem analysis and test cases. As you are working on the assignment, you can save your work as a normal PowerPoint file (.ppt or .pptx). Before submitting the assignment, choose the "Export to PDF" option and submit the resulting .pdf file. **You MAY draw your flowcharts on paper and scan them.**

Each problem will list the set of operations that may be used in your program. You MAY NOT use operations other than these, even if you have seen them in some existing programming language. You may, however, create procedures for sequences of operations that you perform repeatedly in your algorithm. You must draw the flowchart for each such procedure, or write pseudocode for each procedure.

We will not be picky about the exact wording you use for the steps in your algorithm. For example, you may write

```
let the user type a number and store it into the variable x
```

instead of

```
read x
```

Any clear, understandable form is acceptable. However, your statements must follow these rules:

- They must be **precise**: all information and variables manipulated at each step of your algorithm must be specified explicitly. For example, "add everything up" is not acceptable, since it does not explicitly specify what values are to be added, and also because it does not state where the result is to be stored.
- They must be **organized**: The flow of control in your program must be absolutely clear.
- They must only use operations from the permitted set.

Problems

Problem 1

Resistor are a integral part of electronics. A resistor's value is encoded in colored bands painted around the component itself. Write a program to calculate the resistance value (in ohms) of a three band resistor, given the following rules :

- The first 2 bands may be of any of the following colors - black, brown, red, orange, yellow, green.
- Each of the colors above correspond to the digits 0-5 respectively (i.e. black = 0, green = 5)
- The third band may be of any color from the above list from black to violet
- The third band's color represents the multiplier and goes from 1 = black to 100,000 = green with each progressive color being 10 x more of a multiplier

For example, a resistor with three bands of the following colors: Red, Red, Green would have the following calculation: 2(red) 2(red) x 100,000(green) = 2,200,000 ohms.

Your program may use the following operations:

- Output information (text, numbers, etc.)
- Input a real number, integer, or boolean value, or color
- Store a numeric, color, or boolean value into a variable
- Perform arithmetic operations: add, subtract, multiply, divide, integer quotient, integer remainder
- Perform numeric comparisons: equals, does not equal, less than (or equal to), greater than (or equal to)
- Perform boolean operations: and, or, not
- Make decisions
- Loop (go back to an earlier point in the program)

Submission Attachments

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