CS 161A: Programming and Problem Solving I

Discussion 1 Algorithmic Design Document

Make a copy before you begin (File -> Make a copy). The sections will expand as you type. When you are finished, download this document as a PDF (File -> Download -> PDF) and submit to D2L.

This document contains an interactive checklist. To mark an item as complete, click on the box.

Planning your program before you start coding is part of the development process. In this document you will:

- Write a detailed description of your program, at least two complete sentences
- If applicable, design a sample run with test input and output
- Identify the program inputs and their data types
- Identify the program outputs and their data types
- Identify any calculations or formulas needed
- Write the algorithmic steps as pseudocode or a flowchart
- Tools for flowchart - Draw.io - Diagrams.net

Program Description

In the box below, describe the purpose of the program. You must include a detailed description with at least two complete sentences.

Program description:
This program will take two files and compare the difference in hours they were modified to find the difference between the edit times. This can be useful for evaluating the length of time needed to iterate between versions for planning and time tracking.

Sample Run

If you are designing your own program, you will start with a sample run. Imagine a user is running your program - what will they see? What inputs do you expect, and what will be the outputs from the given inputs? Choose test data you will use to test your algorithm. Calculate and show the expected outputs. Use the sample run to test your algorithm.

Sample run:
Hello! Welcome to my file modification time comparison tool.

Please enter the hour that File 1 was changed (24hr): **16**

Please enter the hour that File 2 was changed (24hr): **23**

Hour difference from File 1 to File 2 is : **7** hours.

Thank you for using my program!

Algorithmic Design

Before you begin coding, **you must first plan out the logic** and think about what data you will use to test your program for correctness. All programmers plan before coding - this saves a lot of time and frustration! Use the steps below to identify the inputs and outputs, calculations, and steps needed to solve the problem.

Algorithmic design:
a. Identify and list all of the user input and their data types.
file1 as INT file2 as INT fileDif as INT
b. Identify and list all of the user output and their data types.
INPUT file1 INPUT file2 OUTPUT "Hour difference from File 1 to File 2 is: " + fileDif
c. What calculations do you need to do to transform inputs into outputs? List all formulas needed, if applicable. If there are no calculations needed, state there are no calculations for this algorithm.
file1 = INPUT

file2 = INPUT

fileDif = file2 – file1

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d. Design the logic of your program using pseudocode or flowcharts. Here is where you would use conditionals, loops or functions (if applicable) and list the steps in transforming inputs into outputs. Walk through your logic steps with the test data from the assignment document or the sample run above.

START

DECLARE INT file1

DECLARE INT file2

DECLARE INT fileDif

DISPLAY "Hello! Welcome to my file modification time comparison tool."

DISPLAY "Please enter the hour that File 1 was changed (24hr): "

SET file1 = INPUT

DISPLAY "Please enter the hour that File 2 was changed (24hr): "

SET file2 = INPUT

// Assume file 2 was edited after file 1

SET fileDif = file2 – file1

DISPLAY "Hour difference from File 1 to File 2 is : {fileDif} hours."

DISPLAY "Thank you for using my program!"

END