Assignment 07 Algorithmic Design Document

Make a copy before you begin (File -> Make a copy). Add the Assignment # above and complete the sections below BEFORE you begin to code and submit with your Assignment to D2L (File -> Download -> PDF). The sections will expand as you type.

zyBooks

Add your zyBooks screenshots for the % and assigned zyLabs completions below. Required percentages: all assigned zyLabs, Challenge Activity with at least 70%, and Participation Activity with at least 80%.

zyLabs, Challenge, and Participation % Screenshot:


Assigned zyLabs completion Screenshot:

Assignment

Program description:
Access weather report from .txt file and output to console

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 all of the user input. What are the data types of the inputs? Define the input variables.
`` string dayOfWeek; int highTemp = 0; int lowTemp = 0; double percChanceRain = 0.0; ```
b. Describe the program output. What is displayed to the user? What are the data types of the output? Define the output variables.

Displayed to the user:

a) Welcome message
b) 7 day forecast
c) Average high temperature for the week
d) Average low temperature for the week
e) Average rainfall per day
f) Hottest day of the week
g) Coolest day of the week
h) Final message

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.

Average high temp: Add all highTemps, divide by “count” variable to get average.
Average low temp: Add all lowTemps, divide by “count” variable to get average.
Average rainfall: add all percChanceRain, divide by “count” variable to get average
Hottest Day: track highest integer value among highTemp variable with “>=” conditional
Coolest Day: track lowest integer value among lowTemp variable with “<=” conditional

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

Program will open file.
Program will read values into the given variables.
Program will make calculatiions stated in section “c”.
Program will output data to the console.

e. Include 2 Sample Program Runs for your program using your own set of data. This data set must be different from my Sample Runs in the Assignment document. This process is similar to Unit Testing and will help you test your program better.

Sample Program Run 1:

Weather report for Los Angeles

Here is your 7 day Forecast:
Monday 80 63 0.05
Tuesday 85 66 0.05
Wednesday 87 67 0.03
Thursday 88 67 0.02
Friday 88 68 0.03
Saturday 90 70 0.03
Sunday 89 70 0.04

The average High temperature for the week is 86 degrees.

The average Low temperature for the week is 67 degrees.

The average rain fall per day, in inches will be 0.04".

The hottest day of the week will be Saturday with a high of 90 degrees.

The coolest day of the week will be Monday with a low of 63 degrees.

Have fun in the sun!

Sample Program Run 2:

Weather report for Los Angeles

Here is your 7 day Forecast:
Monday 70 61 0.04
Tuesday 55 62 0.03
Wednesday 77 68 0.02
Thursday 64 67 0.01
Friday 78 64 0.05
Saturday 76 65 0.02
Sunday 83 72 0.03

The average High temperature for the week is 71 degrees.

The average Low temperature for the week is 65 degrees.

The average rain fall per day, in inches will be 0.03".

The hottest day of the week will be Sunday with a high of 83 degrees.

The coolest day of the week will be Monday with a low of 61 degrees.