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Project 2 Report

SUMMARY

This project contains 3 tasks. Basically all tasks are about how we can achieve if…else… function in an optimal way, which is to use simplest codes to solve some conditional judgments. The comparison is mainly about comparing numbers and strings.

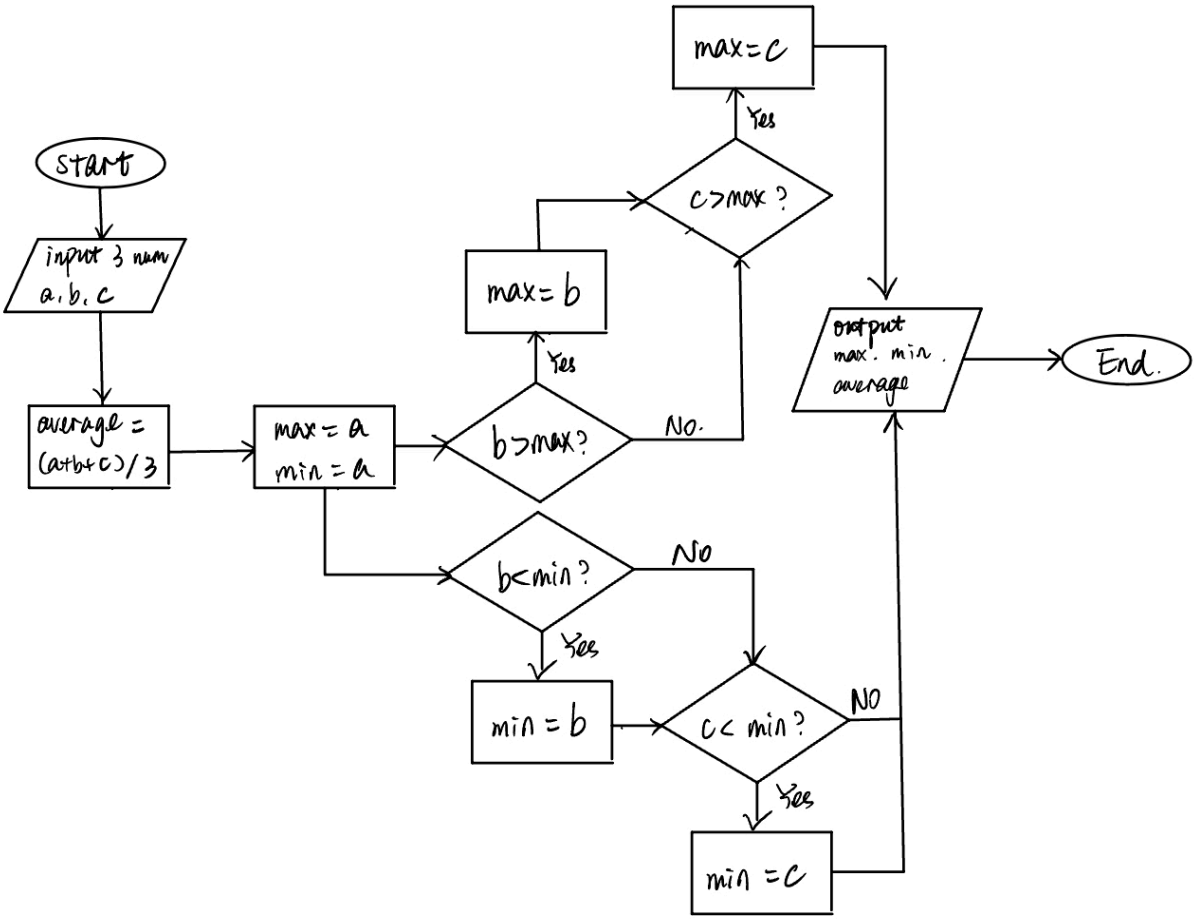
The following parts are organized by tasks, each contains a brief problem description, a flowchart of the algorithm, a reflection, and an acknowledgment if applicable.

TASK 1:

This task takes in 3 numbers and then returns the largest, smallest and the average of the 3 numbers.

The algorithm is to use 2 separate pointers to store the maximum and minimum. After comparing each number to the maximum and minimum, update the 2 pointers if new max/min appears.

The flowchart is as follows:



In this program, I used 1 single function to find and print all three outcomes, because the underlying logic flow is almost the same. So if separate into 3 functions, the code will be more complicated. Another finding is that a number can only be larger than max or smaller than min, so a if…elif… condition could be adopt to simplify the code.

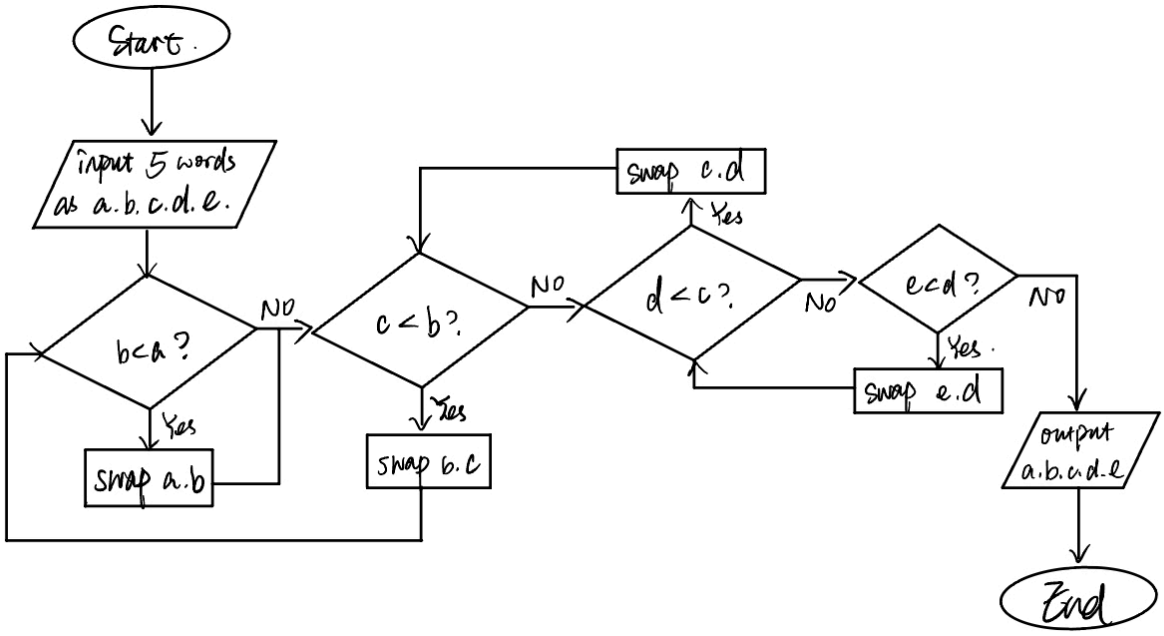
Acknowledgment:
None.

TASK 2:

This task takes in 5 strings and print them in alphabetical sequence.

The algorithm is to screen the input string 1 by 1, and organize them. Next time when screening a new string, just to compare it with the existing organized list and find the correct place to put it.

The flowchart is as follows:



In this program, the algorithm of screening strings 1 by 1 is the most simple way that I came up with by only using if…else… function. It doesn't need to discuss the sequence of all 5 string at the same time, which has 120 situations. Another finding is that the code is repeating itself. So when we later learned for loop, the code could be further simplified.

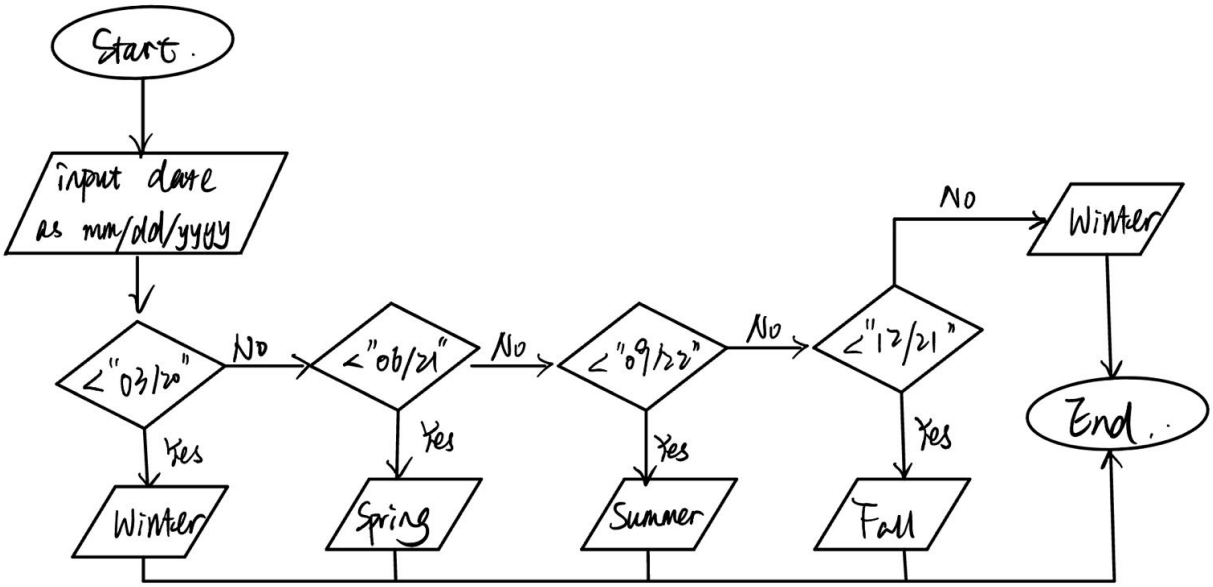
Acknowledgment:
Princeton Algorithms I, week 2's course:
https://www.coursera.org/learn/algorithms-part1/home/week/2

TASK 3:

This task takes in 1 date then return which season this date locates in. based on its month.

The algorithm is to compare the date with the corresponding threshold to generate the result.

The flowchart is as follows:



One of the interesting things is that the comparison between strings is done digit by digit, until it finds 2 digits that are not equal. The remaining digits will be ignored. Base on this finding, we could ask the client to input the date in the format of mm/dd/yyyy. And we compare only the mm/dd. The year in this case will be ignored by string comparisons.

Acknowledgement:
Discussion with Zihan Zheng.