CS5001 Project 2 Report

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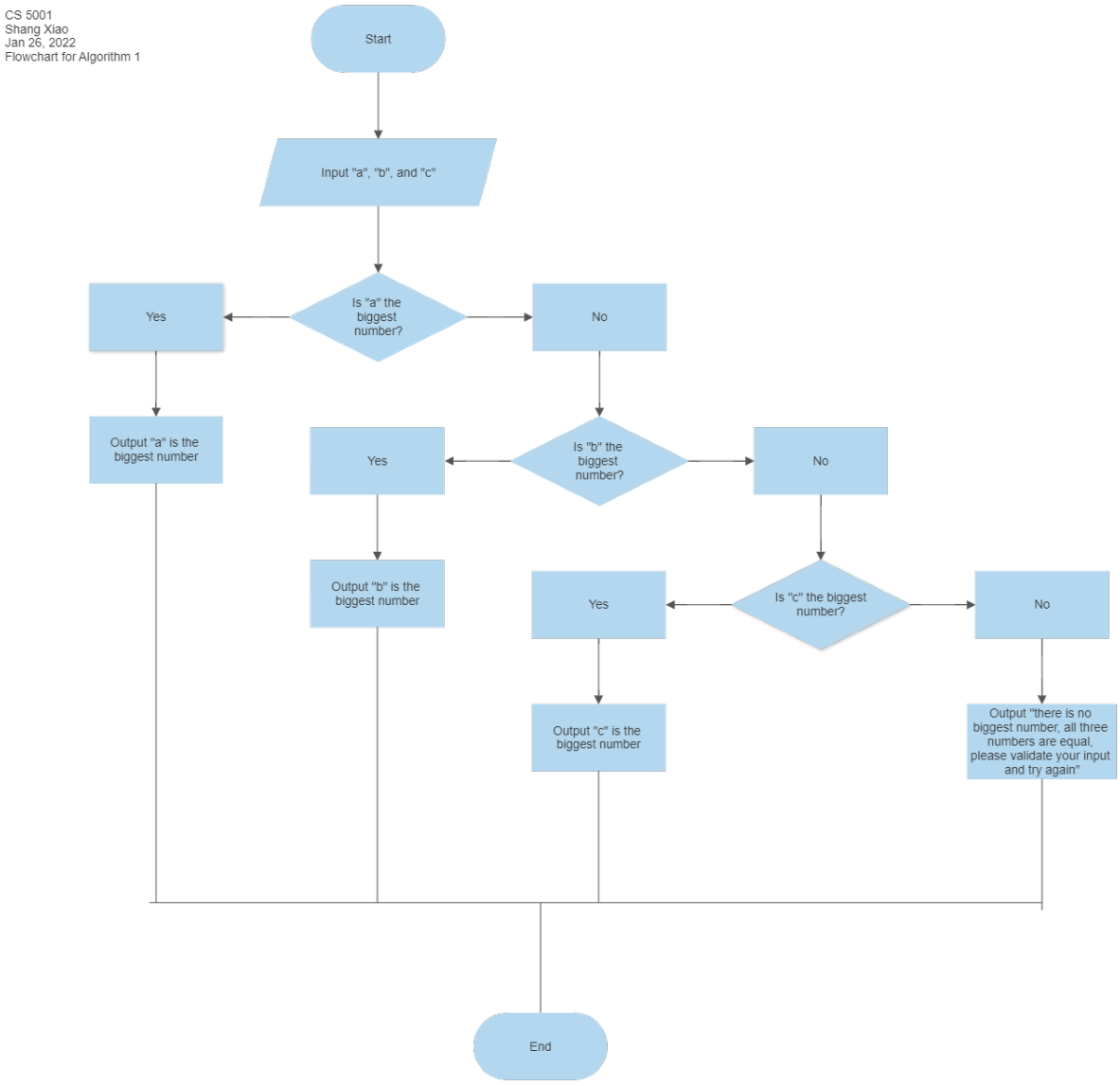
1 Problem Description

1.1 Project 2 tests our knowledge taught in Canvas module 2 for Variables and Conditionals for python. Project 2 allows us to demonstrate what we have learned in the past week by writing codes for three programs through application problems. The first program finds the biggest, smallest, and average of three integer inputs from the user. The second program automatically ranks the user's five word/(string type) input alphabetically. And the third program automatically computes the season at any given date the user inputs.

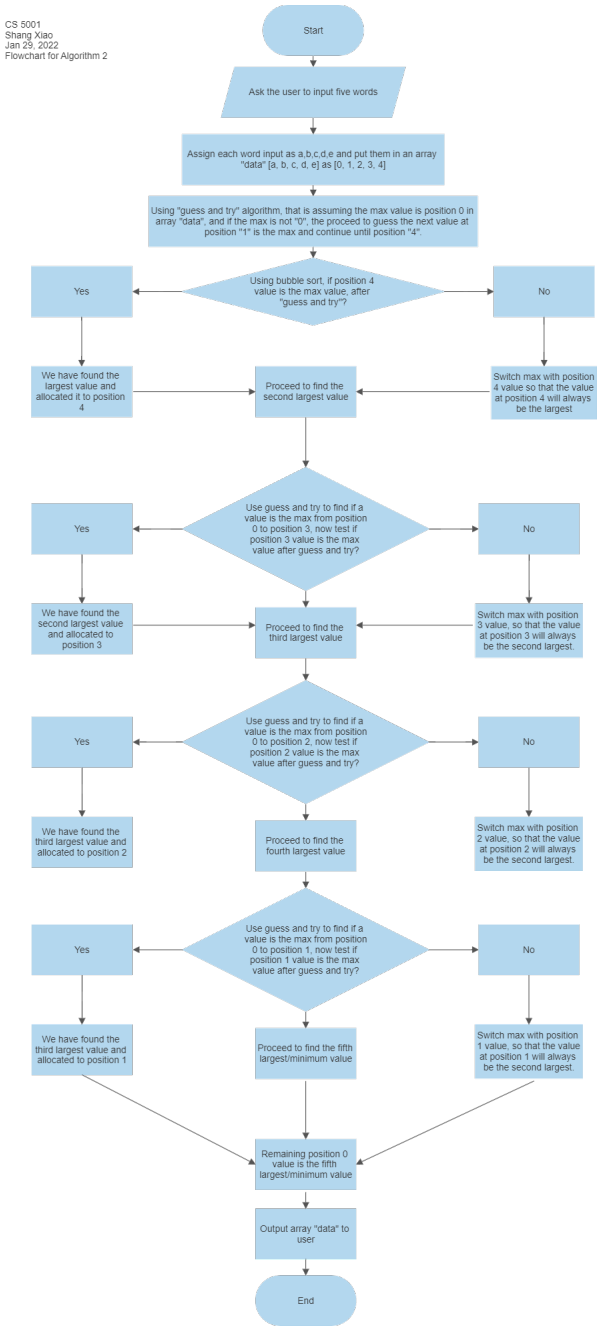
2 Activity Diagrams

2.1 The first program finds the biggest, smallest, and average of three integer inputs from the user. We first ask the user for inputs a, b, c; then we use the "guess and try" algorithm to see if a is the biggest number, if a is not the biggest number, then we test b; if b is not the biggest number, then we test c. By the end of this algorithm process, we would have found the biggest number. Using the same idea, we may find the smallest number. Lastly, we find the average number by using (a+b+c)/3.



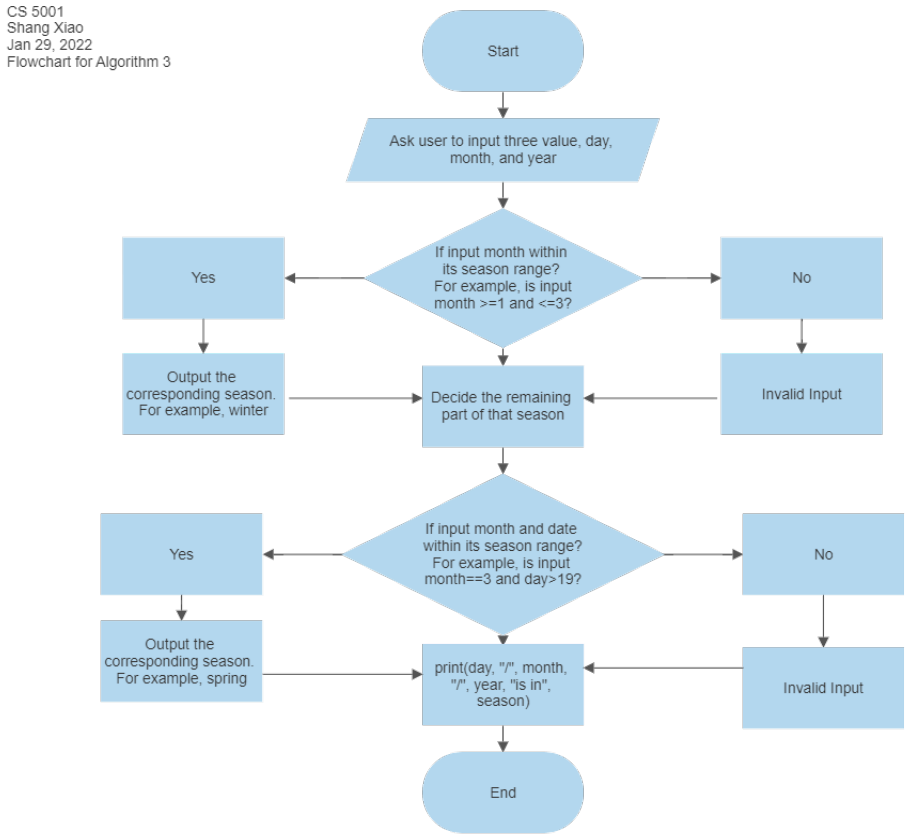
Flowchart for Algorithm 1

2.2 The second program ranks any random five words alphabetically. I used both "guess and try" and "bubble sort" algorithms when solving this problem. Similar to the description in the first program, I first use guess and try to find the max value, and then use bubble sort to allocate the max value to the last position. I can then find the second-largest value, third-largest value, and so on.



Flowchart for Algorithm 2

2.3 The third program translates any given month and date into its corresponding season, entered in numerical format. I first use if and elif statements to translate the month into the season, and then add another set of if and elif statements to translate the remaining days that has not been translated yet. Lastly, the program prints the final output to the user.



Flowchart for Algorithm 3

3 Reflection

3.1 There are three main takeaways from this project.

To start with, when dealing with the "season" question, I had a hard time finding a solution that can combine both the month and the date together. For example, spring is from March 20 to June 20, it is easy to write a set of if and elif statements for months; however, the next question was, how do I also include the remaining 20 days in June and exclude the first 9 days in March? It turned out that if one if and elif set was not enough, I shall write another set to include

the remaining days as well. During this process I have learned to reuse what I have wrote in the first place and expand the condition for a more precise scope.

In addition, when dealing with the largest/smallest/average of the three question. I quickly recalled the guess and try method from module 2. This was because I have done my online learning regularly, and thanks to this exposure, I could solve this problem immediately. It is always essential to keep up with these online learning modules.

Lastly, I hit a hard block when solving the five-word problem. Although I could figure out how to find the maximum value, I struggled to find the second largest and the third-largest. This time, Google became my best friend. I searched significantly and finally found the bubble sorting method, which always allocates the maximum value to the last position in an array.

4 Acknowledgements

4.1 I wanted to thank our TA. For the purpose of grading, I choose not to include names here. I booked a 15 min tutorial. Surprisingly, other than the five-word problem hint gathering, I was also recommended for a series of good websites and books for my leisure learning.

4.2 Website consulted (lecture notes and documentations can be found in these links):
https://www.geeksforgeeks.org/
https://northeastern.instructure.com/courses/102943
https://greenteapress.com/thinkpython2/html/index.html

4.3 Website used for flowchart:
https://www.smartdraw.com/flowchart/flowchart-maker.htm