**CS 2302 Lab 1**

For our first Lab of CS2302 we were given the choice to select between 3 different labs, I decided to select option B because I saw it as a challenge and seemed to be fun. The problem we were presented was to create a program, in which with the help of an already provided code, we would have to traverse recursively a reddit post, making sure to capture all the comments and replies in this post. From the captured comments and replies we would again use the provided code to know the percentage of neutrality, negativity, and positivity each of the comments and replies had, and in some way separate those pieces of information between 3 lists, positive, negative and neutral. All these aspects had to be kept in mind to produce a good program, the input that would be the reddit post, and the output which would be the lists with the neutral, positive and negative comments, the procedure described next will be explain it in detail.

The way I approached this lab was to think the in small segments, the first task that I proposed myself was to be able to capture all the information from the post, and in this way later evaluate it. It took me a while to come up with the best way to do it, thinking of using a stack, Queue or other different structures, but finally decided that the easiest way to do it and be comprehended by others was to simply use the required recursive approach to solve this problem in the following way. When I first started to implement this, I decided to use and If and Else, where the base case would be when my counter (a parameter in the method) reached the amount of comments in the post, given by the length of the comments in that moment, which was the top comments on the post, the program would terminate. The problem was that by using the “replies” function, which entered the replies of the comment, given by the index (counter value), the length of the comments would change, and create an abrupt termination of my program after just looking to the top comment and the top replies of each of the comments. In this way my first experiment gave me the answer of what I needed to do in order to accomplish the first task. I decided to change the If and Else for a “for loop”, which would start at 0 and end when it reached the quantity of comments in the current depth (using the “replies” function going deeper into the replies), in this way I could make sure to capture all the required information.

The next step after capturing all the comments was to pass each of them through a method which would get the percentage of neutrality, negativity and positivity in each of them, from there the highest percentage would receive the comment, and this comment would be added to the list belonging to that sentiment. I decided that the best way to do this was to create the 3 empty lists outside of the method, and then when each of the results came, send the comment to the appropriate list by appending it, saving memory in the process. Finally, different experiments were conducted to find the posts with a good amount of positive, negative and neutral comments, giving the next results regarding their running times.

<https://www.reddit.com/r/learnprogramming/comments/5w50g5/eli5_what_is_recursion/>

https://www.reddit.com/r/politics/comments/9fl1as/us\_government\_posts\_214\_billion\_deficit\_in\_august/

<https://www.reddit.com/r/politics/comments/9fkb18/brett_kavanaugh_has_a_mysterious_metoo_problem/>

From these charts, the orange portion represent the running time of the program, or in other words the amount of operations it performs depending in the input, and the blue portion represents the big O of the program when all other terms are dropped, which would be big O (n) in this case. Given that 3 operations are performed to check the percentage of neutrality, positivity and negativity for each of the comments, the orange portion is bigger, but when all terms are dropped the big O (n) is the leading term. The last step was to create simple method to print all the comments which were stored in the lists, telling which comment belonged to which list. In conclusion after all the experiments and decision taken to complete this lab, my knowledge of recursive traversals greatly increase, making me more confident to future labs and hoping to have another challenge soon.

<https://github.com/ejescobedo/Lab1/blob/master/Lab_1.py>

I, Edgar Escobedo, certify that this project is entirely my own work. I wrote, debugged, and tested the code being presented, performed the experiments and wrote the report. I also certify that I did not share my code or report or provided inappropriate assistance to any student in the class