COMP 1405B2 (Thursday)
Introduction to Computer Science I
Midterm #3 – November 21st, 2019

Part 1 [15 marks]

Write the code for this part in the part1.py file. Write a function called **frequency_sort** that takes a list L as an input argument. The function must return a new list that contains each unique value from L. Additionally, the entries in the returned list must be sorted in order of increasing frequency of appearance in the original list L. That is, the least frequent number in the list L will be the first item in the returned list, the second most frequent number in L will be the second item in the returned list, and so on. For example, if the input list L is [5, 2, 5, 2, 3, 2, 2], the returned list should be [3, 5, 2] since 3 occurs once, 5 occurs twice, and 2 occurs four times. The included part1-tester.py file can be used to test your function.

Part 2 [10 marks]

Write the code for this part in the part2.py file. Write a function called **is_palindrome** that accepts a single string argument. The function must return True or False to indicate whether the string is a palindrome (True) or not (False). A palindrome is a string that is identical forwards and backwards. For example, "mom", "dad", "racecar", "kayak", "reviver", and "abcdefedcba" are all palindromes. You can assume the string will have no spaces. The included part2-tester.py file can be used to test the correctness of your function implementation.

Part 3 [15 marks]

Write the code for this part in the part3.py file. Write a function called **most_frequent** that accepts a single string input argument, which will represent the name of a file. The function must open the specified file, which will contain data from a classification problem, and return the most frequent classification in the file. You can assume each classification entry will be a string. The file will contain at least one line. Each line of the file represents one classification and will have the following structure:

Picture_ID, Width, Height, Classification, Submitter_Name

The included part3-tester.py file can be used to test the correctness of your function using the provided example files.