

CS 240: Data Structure

Problem Set 3

Due: 03/25/2018

Instructions:

Please follow the instruction given at each problem for submission. The deadline of each assignment is 11:59 pm on the due date, unless otherwise specified. It is important that your code/solution is straight forward, not cumbersome. At the beginning of each cpp file, you must include the following:

- 1. Description:** description of the program (later we will elaborate this more, but for now, just describe what the program does)
- 2. Author:** the person who writes this program
- 3. Date:** the very last date/time the program is modified

First Name:

Last Name:

Score: /90

Problem 1 Class: Ex.11 in chapter 4

Write and test a class for a **Line**, described by its slope and a point on the line, with functions that

- (a) Find the point-slope equation of the line
- (b) Find the slope-intercept equation of the line

Problem 2 File I/O: Ex. 2 in chapter 5

Write a program that reads a text file and counts the characters in each line. The program should write out the line number and the length of the shortest and longest lines in the file, as well as the average number of characters per line. For instance, the output file should have the following format: (TA will prepare a standard test text (simply just words, no special characters), and your write out file should be name PS3-2-out.txt)

Longest Line: Line 9 with length 20

Shortest Line: Line 5 with length 3

Average number of characters: 7.43

Problem 3 Run Vehicle Class

Please use the vehicle class provided in class and add the constructors (with and without parameters). Let say you have an instance of vehicle, let us call it X. What happens when you try to display the vehicle's mileage by using `cout << X.mileage`? What is causing the problem? And how would you solve it?