Data Structures and Algorithms

Comp 200

Fall 2022

Department of Computer Science

Forman Christian College University

Lab 2
Revision: Programming II (Part 2)

DESCRIPTION	MARKS ALLOCATED
Attendance	25%
Task Completion	35%
Viva	35%
Submission	15%

Marks will be deducted in case if students have not completed the assigned task.

Note that these marks are max in each category. We may assign less than the given percentage of marks in case students have not successfully completed all the requirements.

This lab is time constrained. Please note that you must finish and submit your work within given time.

Question 1: [Weightage: 20%]

Write a Python program that inputs a list of words, separated by whitespace, and outputs how many times each word appears in the list.

Question 2: [Weightage: 30%]

You simulate a car dealership where you create a Car class that has three instance variables for holding values of car_make, car_model, car_model_year, purchase_year, meter_reading, car_color, car_price, registration_number, owner_name. Let's imitate a scenario where a customer A visits the dealership to buy a car. The customer buys a Grey Volvo S60 2010. After using the car for a couple of years, he decides to sell his car back to the same dealership. Now a customer B wants to buy the same car customer A sold on different price, meter_reading and in some different year. You are supposed to write a python program that transfers the same car from customer A to B. Use appropriate getter and setter methods to perform the required task in main/driver class.

Question 3: [Weightage: 50%]

Develop an inheritance hierarchy based upon a Polygon class that has abstract methods area( ) and perimeter( ). Implement classes Triangle, Quadrilateral, Pentagon, Hexagon, and Octagon that extend this base class, with the obvious meanings for the area( ) and perimeter( ) methods. Also implement classes, IsoscelesTriangle, EquilateralTriangle, Rectangle, and Square, that have the appropriate inheritance relationships. Finally, write a simple program that allows users to create polygons of the various types and input their geometric dimensions, and the program then outputs their area and perimeter