CS 103 Computer Programming

Assignment 01

Due Date: 21st, Feb, 2018

ASSIGNMENT SUBMISSION POLICY

- All submissions must be through SLATE. No emailing of assignments.
- All questions should be in separate .cpp files e.g. Q1.cpp, Q2.cpp etc.
- All files zipped into one folder.
- Zipped file should be: section followed by roll number e.g. E_172033.zip
- Corrupt file or uncompliable submission will result in a zero.

Q1. Define a class called Pizza that has member variables to track the type of pizza (either deep dish, hand tossed, or pan) along with th size (either small, medium, or large) and the number of pepperoni or cheese toppings. You can use constants to represent the type and size. Include mutator and accessor functions for your class. Create a void function, outputDescription( ) , that outputs a textual description of the pizza object. Also include a function, computePrice( ) , that computes the cost of the pizza and returns it as a double according to the following rules: Small pizza = $10 + $2 per topping Medium pizza = $14 + $2 per topping Large pizza = $17 + $2 per topping Write a suitable test program that creates and outputs a description and price of various pizza objects.

Q2. Define a class Complex_No that has two member variables; Real and Imaginary. Also include following in the class.

- A parameterized constructor that takes Real and Imaginary values as argument.
- A default constructor that assign zero to Real and Imaginary.
- A copy constructor
- A method Display that shows the value of complex number in appropriate format.
- A method Magnitude that calculates the magnitude of complex number .
- A method Add that adds two complex numbers and return result; take one complex number as argument.

Write a driver program to test your class.

Q3. Define a class Counter having an attribute value. Provide a constructor that initializes value to zero. Also provide following methods:
Increment () : that increment the value by one.
Decrement () : that decrement the value by one.
Define a function Reset that takes a Counter type object as input and resets its value to zero.

Q4. Define a class Student that has following attributes: Name: allocated dynamically by a character pointer. Rollno: an integer. Marks: a double type array of 5 elements. Percentage: a float Include a

constructor that takes values of Name, Rollno and Marks from user as input. Also include following methods: CalculatePercentage: that adds all 5 elements of array Marks and calculate percentage according to formula Percentage = (Total marks/ 500)*100 and stores result in member variable Percentage. Grade: that calls CalculatePercentage method and displays the grade accordingly. Write a driver program to test your class.

Q5. Create a class called Date that includes three pieces of information as data members—a month (type int), a day (type int) and a year (type int). Your class should have a constructor with three parameters that uses the parameters to initialize the three data members. Ensure that the values provided for the year must lie in the range (1-12) and for the day (1-31) and for the month, value is in the range 1–12; if it isn't, set the respective member to 1. Provide a set and a get function for each data member. Provide a member function displayDate that displays the month, day and year separated by forward slashes (/). Write a test program that demonstrates class Date's capabilities.

Q6. Define a class for a type called Fraction . This class is used to represent a ratio of two integers. Include mutator functions that allow the user to set the numerator and the denominator. Also include a member function that returns the value of the numerator divided by the denominator as a double. Include an additional member function that outputs the value of the fraction reduced to lowest terms. For example, instead of outputting 20/60 the function should output 1/3. This will require finding the greatest common divisor for the numerator and denominator, and then dividing both by that number. Embed your class in a test program.