**CL-217: Object-oriented Programming Lab  
Session: Spring 2019**

**Lab 3 Exercises**

**Activity 1:**

Create a class Rectangle with attributes length and width. Provide member functions that calculate the perimeter and the area of the rectangle. Also, provide set and get functions for the length and width attributes. The set functions should verify that length and width are each floating-point numbers larger than 0.0 and less than 20.0.

**Activity 2:**

Create a class called Employee that includes three pieces of information as data members—a first name (type string), a last name (type string) and a monthly salary (type int). Your class should have a setter function that initializes the three data members. Provide a getter function for each data member. If the monthly salary is not positive, set it to 0.Write a test program that demonstrates class Employee’s capabilities. Create two Employee objects and display each object’s yearly salary. Then give each Employee a 10 percent raise and display each Employee’s yearly salary again. Identify and add any other related functions to achieve the said goal.

**Activity 3:**

While exercising, you can use a heart-rate monitor to sepe that your heart rate stays within a safe range suggested by your trainers and doctors. The formula for calculating your maximum heart rate in beats per minute is 220 minus your age in years. Your target heart rate is a range that is 50–85% of your maximum heart rate. Create a class called HeartRates. The class attributes should include the person’s first name, last name and date of birth (consisting of separate attributes for the month, day and year of birth). For each attribute provide set and get functions. The class also should include a function that calculates and returns the person’s age (in years), a function that calculates and returns the person’s maximum heart rate and a function that calculates and returns the person’s target heart rate. Since you do not yet know how to obtain the current date from the computer, function should prompt the user to enter the current month, day and year before calculating the person’s age. Write a program that prompts for the person’s information, instantiates an object of class HeartRates and prints the information from that object— including the person’s first name, last name and date of birth—then calculates and prints the person’s age in (years), maximum heart rate and target-heart-rate range.