North South University

Department of Electrical and Computer Engineering

CSE 215L: Programming Language II Lab

Lab – 8: Classes and Objects

Learning Objectives:

- to learn how to convert a case study into the UML diagram
- to learn the relationship among classes: association, aggregation, composition

Lab Task:

1. Design a class named Rectangle to represent a rectangle. The class contains:
    - Two double data fields named width and height that specify the width and height of the rectangle. The default values are 1 for both width and height.
    - A no-arg constructor that creates a default rectangle.
    - A constructor that creates a rectangle with the specified width and height.
    - A method named getArea() that returns the area of this rectangle.
    - A method named getPerimeter() that returns the perimeter.

Draw the UML diagram for the class and then implement the class. Write a test program that creates two Rectangle objects: one with width 4 and height 40 and the other with width 3.5 and height 35.9. Display the width, height, area, and perimeter of each rectangle in this order.

2. Implement the following classes, each on a separate file and complete the tasks listed below.

Point
- x: int - y: int
+ Point() + Point(x: int, y: int) + getX(): int + getY(): int + setX(x: int): void + setY(y: int): void + distance(point: Point): double + toString(): String

Line
- start: Point - end: Point
+ Line(start: Point, end: Point) + Line(x1: int, y1: int, x2: int, y2: int) + getStart(): Point + getEnd(): Point + setStart(start: Point): void + setEnd(end: Point): void + length(): double

i) Create two instances of Point class and use them to initialize a Line instance.

ii) Find out the length of that Line instance.