Python: Assignment 5 – Class

1) Write a Python class named Circle. The class will have instance vaiable radius and two methods which will compute the area and the perimeter of a circle.
2) Write a Python class, Rectangle. The class will have instance variables length and width and a method which will compute the area of a rectangle. Include the constructor and other required methods to set and get class attributes. Also, include a method isSquare(), which returns a Boolean value indicating if the shape is a square. (Hint: use @property)
3) Define a class named Point that will represent a point on a graph. The class will have two instance variable x and y for coordinates. Create a constructor method that allows you to pass the x and y coordinates as arguments to the constructor. Write a distance method that compute the distance between two points.
4) Write a Python class, Printer, constructed by a string to be printed. The class has two methods; (a) setString() which accepts a string from the user, and (b) printString() which prints the string in upper case or lower case, as per the user choice
5) Write a Python class, Person, constructed by name, surname, birthdate, address, telephone number, email. The class has methods to calculate the age of the person using his birthdate and also to display the details of a person.
6) Create a Vehicle class with max_speed and mileage instance attributes. Create a Bus and Taxi classes that inherit the Vehicle class. Give the capacity argument of Bus. The seating_capacity() for bus and Taxi a default value of 50 and 3 respectively. The default fare charge of any vehicle is seating capacity * 100 per 5km. If Vehicle is Bus instance, we need to add an extra 10% on full fare as a maintenance charge. So total fare for bus instance will become the final amount = total fare + 10% of the total fare. Calculate total fare charges spent by group for picnic if both taxi and bus is used for travelling 100km distance one way
7) Create a class, Triangle. Its __init__() method should take self, angle1, angle2, and angle3 as arguments.
    - Make sure to set these appropriately in the body of the __init__() method.
    - Create a variable named number_of_sides and set it equal to 3.
    - Create a method named check_angles. The sum of a triangle's three angles is It should return True if the sum of self.angle1, self.angle2, and self.angle3 is equal 180, and False otherwise.
    - Create a variable named my_triangle and set it equal to a new instance of your Triangle class. Pass it three angles that sum to 180 (e.g. 90, 30, 60).

- Print out my_triangle.number_of_sides and print out my_triangle.check_angles().

8) Write a Python an abstract class Employee. Employee can be either full-time or hourly. The Employee class have instance members as firstname, lastname and salary. It should have a method that calculates salary. The method for calculating salary should be an abstract method. Hourly employee salary is calculated as working hours * rate / hour. Specify appropriate instance variables for derived classes. (Use property)