Programming Exercise 9A

NOTE: All programs that you write must have comments at the top with 1) the program name, 2) your name, and 3) a sentence describing what the program does.

1. Write a program named **Lab9A1** that will use classes and objects to calculate the distance between two points on a graph.
    a) Create a class named **DistanceCalculator**. It should have the following:
        i. 5 float instance variables to represent:
            1. x from the first point
            2. y from the first point
            3. x from the second point
            4. y from the second point
            5. the distance between the points (which will be calculated in one of our methods)
        ii. A constructor (**__init__**) that will receive 4 float variables as parameters for the x & y values for both points. It should set the instance variables equal to the input parameters. (DO NOT give your parameters the same name as your instance variables – this just leads to confusion and errors.)
        iii. A method that will use the x & y instance variables for each point and calculate the value of the distance. (Place that result in the distance instance variable.) The formula is:

$$\sqrt{(x2 - x1)^2 + (y2 - y1)^2}$$

        iv. An **__str__** method that will return a string with all the instance variables and appropriate labels for each. (Only print 2 decimal places for each value.)
    b) Outside of the class create a main function that will:
        i. Ask the user to input values for the x & y for both points (so they'll be entering 4 values.)
        ii. Instantiate an object of type **DistanceCalculator** (you choose the variable name for it.)
        iii. Call the method to calculate the distance
        iv. Use the __str__ method to print all the values of the object.

    (Here are a couple of test cases with values you can input to make sure your program works.)
    X1: 1, Y1: 1, X2: 2, Y2: 1 → the distance will be 1.00
    X1: 1, Y1: 1, X2: -2, Y2: 2 → the distance will be 3.16

2. Create a program named **Lab9A2** that will create an **EmployeeData** class and objects.
    a) Create a class named **EmployeeData** with the following:
        i. 4 instance variables to hold the employee name (string), job title (string), salary (float), and years (int)
        ii. A constructor that receives four parameters (with the same types as the instance variables) and sets the instance variables equal to them.
        iii. A method that returns the employee name.

iv. A method that returns the employee salary
v. A method that returns the employee title
vi. A method that returns the employee years
vii. A method that gives the employee a raise. It should receive a float parameter that represents a percent value and set the employee salary to itself * (1 + percent value)

b) Outside of the class, write a main function that will do the following:
i. Create an employee object sending the parameters (“Helen Calder”, “Analyst”, 45000, 5)
ii. Create another employee object sending the parameters (“Fred Aramis”, “Accountant”, 67000, 3)
iii. Call the method that gives a raise for Helen and send 0.20 as the parameter.
iv. Call the method that gives a raise for Fred and send 0.15 as the parameter.
v. Call the three methods to get the name, salary and title object for Helen and then print that data. (Don’t forget to add labels.)
vi. Do the same thing for Fred.