**Module 07: Lab Project**

Algenis A. Romero

Cybersecurity Workforce Certification Training (CWCT)

Ivy Tech Community College

CWCT 140 - Introduction to Python for Cyber Security

Instructor David Lieberman

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**Module 7 Lab Project   
CWCT140  
Python Essentials**

The programming exercise for this week is to design a Rectangle class, create a rectangle object and write a program to test the object. The steps are:

1. Create a class Rectangle that includes private/restricted data members: length (int) and width (int).
2. Create a constructor for the class that receives the length and width. The constructor should set the attributes with the values provided. Your class should also have public member functions:
3. Create Mutator methods setLength, and setWidth that allow the attributes of the rectangle to be changed.
4. Create a getArea method that will return the area of the rectangle (area = length\*width).
5. Override the \_\_str\_\_ method to display the rectangle’s information (length, width and area).
6. Create a main program that utilizes the Rectangle class
   1. Prompt the user for the length and width of a rectangle
   2. Create an object for the Rectangle.
   3. Using the \_\_str\_\_ Method, display the rectangle’s information (length, width and area).
   4. Allow the user to change/set the length and width
   5. Display the rectangle’s attributes (print the rectangle) after the rectangle has been changed using the appropriate methods.

Deliverables:

- Screen snapshot(s) illustrating program functionality

- .py file with class and main program

class Rectangle:

    def \_\_init\_\_(self, len, width) -> None:

        #save the length and width attributes

self.\_length = len

self.\_width = width

    def setLength(self, len):

        #set the length attribute

self.\_length = len

    def setWidth(self, width):

        #set the width attribute

self.\_width = width

    def getArea(self):

        #return the area

return self.\_length \* self.\_width

    def \_\_str\_\_(self) -> str:

        #return a string describing length, width and area

return "Length: " + str(self.\_length) + "\nWidth: " + str(self.\_width) + "\nArea: " + str(self.getArea())

# Main Program

myRectangle = Rectangle(10, 12)

print(myRectangle)

print("Changing length to 15")

myRectangle.setLength(15)

print(myRectangle)

print("Changing width to 20")

myRectangle.setWidth(20)

print(myRectangle)

print("The area of my rectangle = " + str(myRectangle.getArea()))

newlen = int(input("Enter a new length: "))

newwidth = int(input("Enter a new width: "))

myRectangle.setLength(newlen)

myRectangle.setWidth(newwidth)

print(myRectangle)

**Paste Snapshot of Successful Unit Test Here**

<snapshot>