Worksheet – 3.2

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Branch: BE-CSE (LEET)
Section/Group: 809/A
Semester: 4th
Date of Performance: 02/05/2022
Subject Name: Programming in Python Lab
Subject Code: 20CSP-259

1. Aim/Overview of the practical:

I. Write a Python class named Student with two attributes student_id, student_name. Add a new attribute student_class and display the entire attribute and their values of the said class. Now remove the student_name attribute and display the entire attribute with values.
II. Write a Python class to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number.
III. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.
IV. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
V. Write a Python program to create two empty classes, Student and Marks. Now create some instances and check whether they are instances of the said classes or not. Also, check whether the said classes are subclasses of the built-in object class or not.

2. Task to be done/ Which logistics used:

I. Write a Python class named Student with two attributes student_id, student_name. Add a new attribute student_class and display the entire attribute and their values of the said class. Now remove the student_name attribute and display the entire attribute with values.
II. Write a Python class to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number.
III. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.
IV. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
V. Write a Python program to create two empty classes, Student and Marks. Now create some instances and check whether they are instances of the said classes or not. Also, check whether the said classes are subclasses of the built-in object class or not.

3. Steps for experiment/practical/Code:

I. Write a Python class named Student with two attributes student_id, student_name. Add a new attribute student_class and display the entire attribute and their values of the said class. Now remove the student_name attribute and display the entire attribute with values.

```
class Student:
    student_id = '21BCS8129'
    student_name = 'Vivek Kaumar'

print("Original attributes and their values of the Student class:")
for attr, value in Student.__dict__.items():
    if not attr.startswith('_'):
        print(f'{attr} -> {value}')

print("\nAfter adding the student_class, attributes and their values with the said class:")
Student.student_class = 'Vnj'
for attr, value in Student.__dict__.items():
    if not attr.startswith('_'):
        print(f'{attr} -> {value}')

print("\nAfter removing the student_name, attributes and their values from the said class:")
del Student.student_name
for attr, value in Student.__dict__.items():
    if not attr.startswith('_'):
        print(f'{attr} -> {value}')
```

II. Write a Python class to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number.

```
def search(a, b):
    for d in b:
        if a == d:
            m = True
            break
        else:
            m = False
    return m

list1 = []
n = int(input('Enter the Size of the List: '))
for i in range(0, n):
    ele = int(input())
    list1.append(ele)

target = int(input("Enter the target: "))
```

```
for i in list1:
    if i < target:
        pair = int(target)-int(i)
        in2 = search(pair, list1)
        if in2 == True:
            print("the first number= %d the second number %d" % (i, pair))
            break
```

III. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.

```
class Rectangle():
    def __init__(self, a, b):
        self.length = a
        self.breadth = b

    def rectangle_area(self):
        return self.length*self.breadth

length = int(input('Enter the Length: '))
breadth=int(input('Enter the Breadth: '))
newRectangle = Rectangle(length,breadth)
area = newRectangle.rectangle_area()
print("Area of Ractangle is: ", area)
```

IV. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.

```
class Circle():
    def __init__(self, r):
        self.radius = r

    def area(self):
        return 3.14*self.radius**2

    def perimeter(self):
        return 2*3.14*self.radius

r = int(input('Enter the Radious: '))
NewCircle = Circle(r)
print("Area : ", NewCircle.area())
print("Perimeter : ", NewCircle.perimeter())
```

V. Write a Python program to create two empty classes, Student and Marks. Now create some instances and check whether they are instances of the said classes or not. Also, check whether the said classes are subclasses of the built-in object class or not.

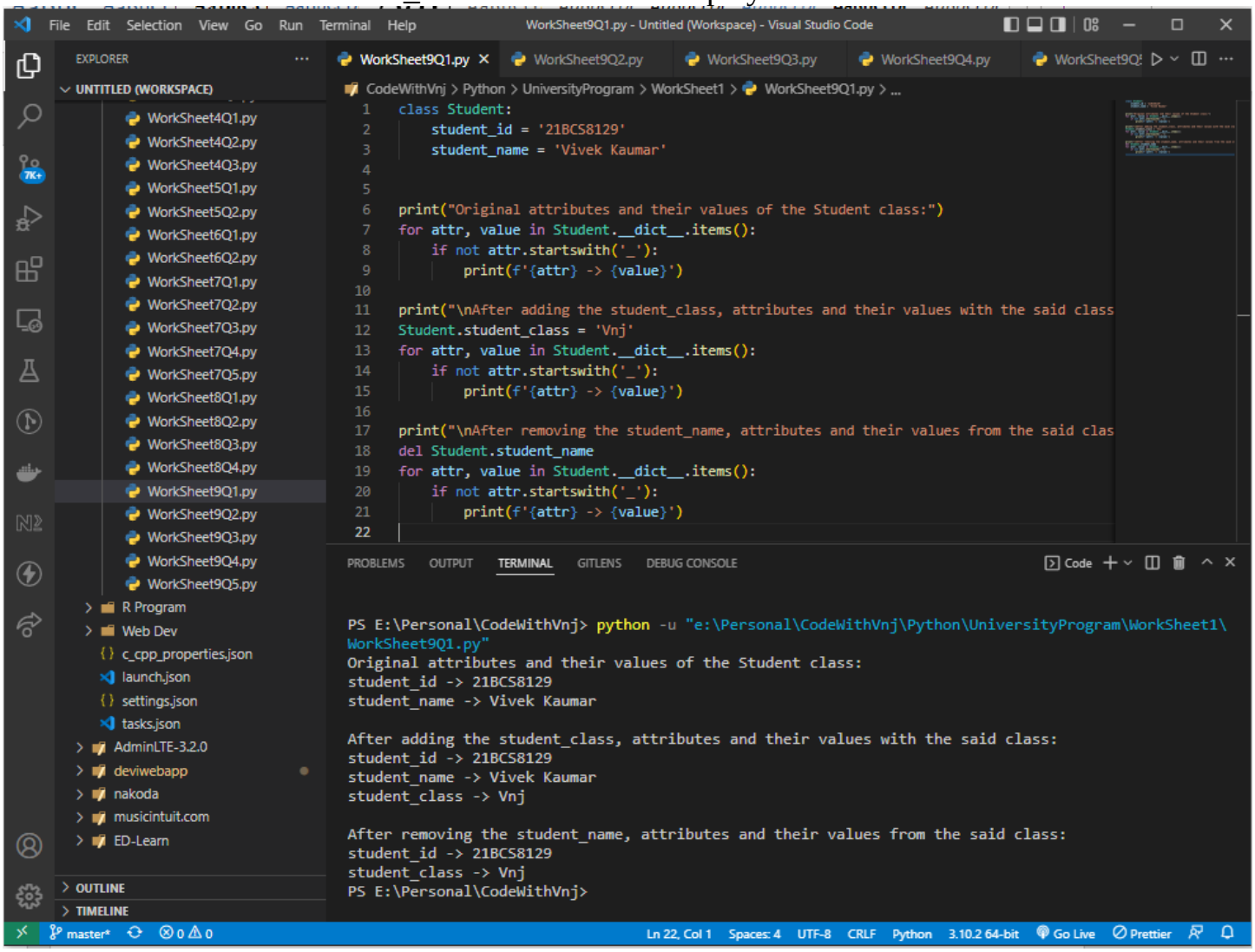
```
class Student:
    pass

class Marks:
    pass

student1 = Student()
marks1 = Marks()
print(isinstance(student1, Student))
print(isinstance(marks1, Student))
print(isinstance(marks1, Marks))
print(isinstance(student1, Marks))
print("Check whether the said classes are subclasses of the built-in object class or not.")
print(issubclass(Student, object))
print(issubclass(Marks, object))
```

4. Result/Output/Writing Summary:

I. Write a Python class named Student with two attributes student_id, student_name. Add a new attribute student_class and display the entire attribute and their values of the said class. Now remove the student_name attribute and display the entire attribute with values.



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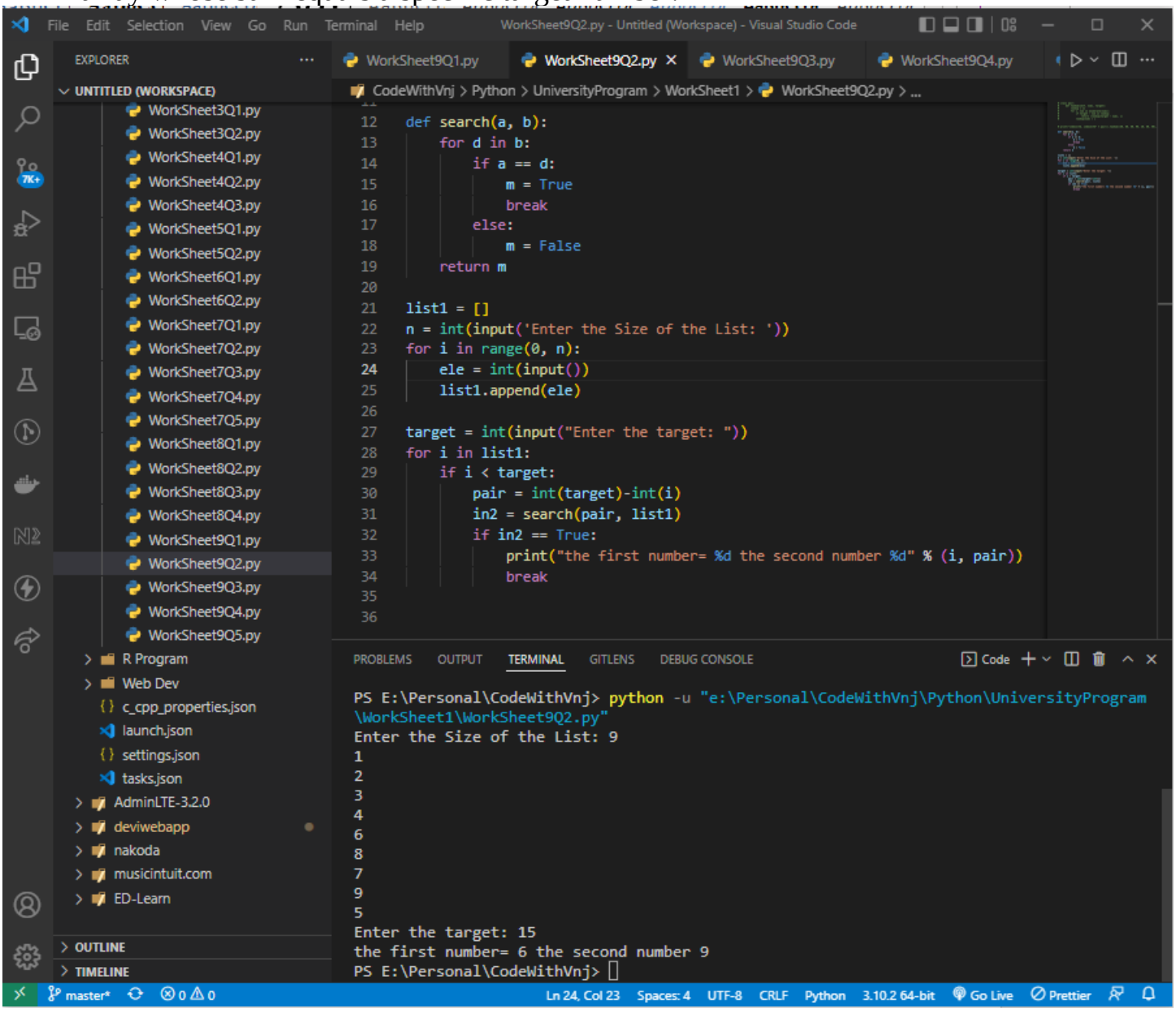

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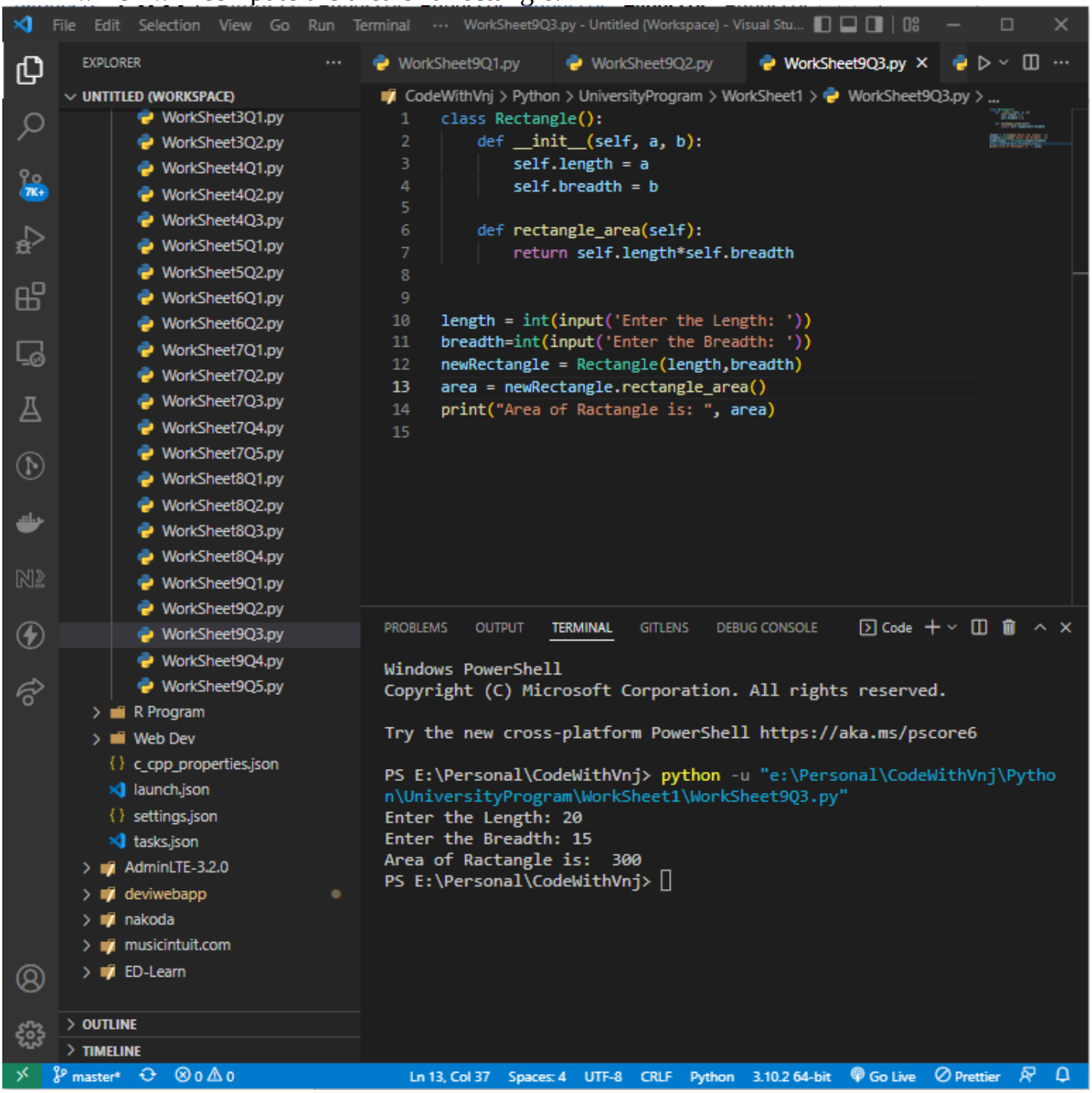

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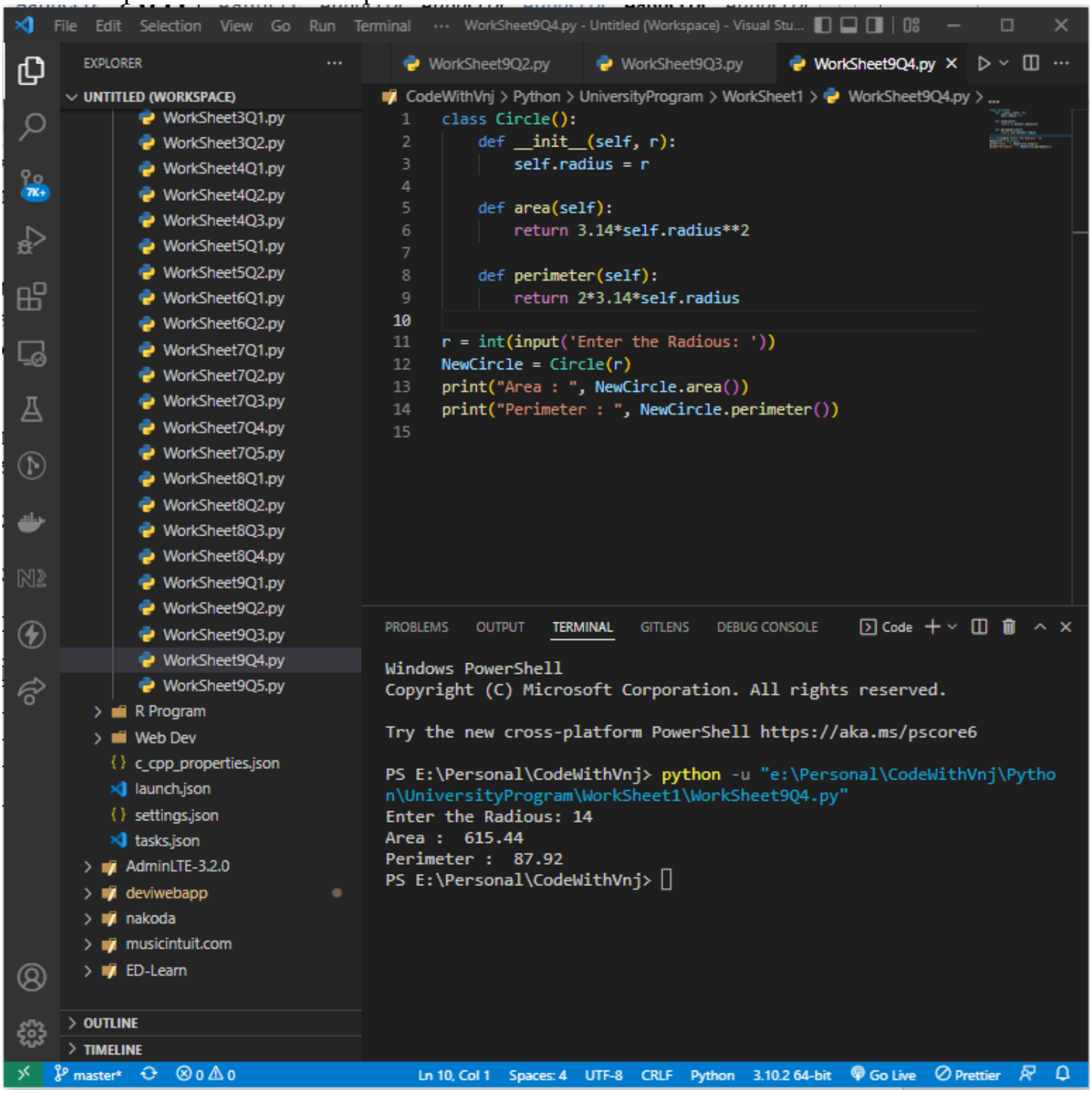

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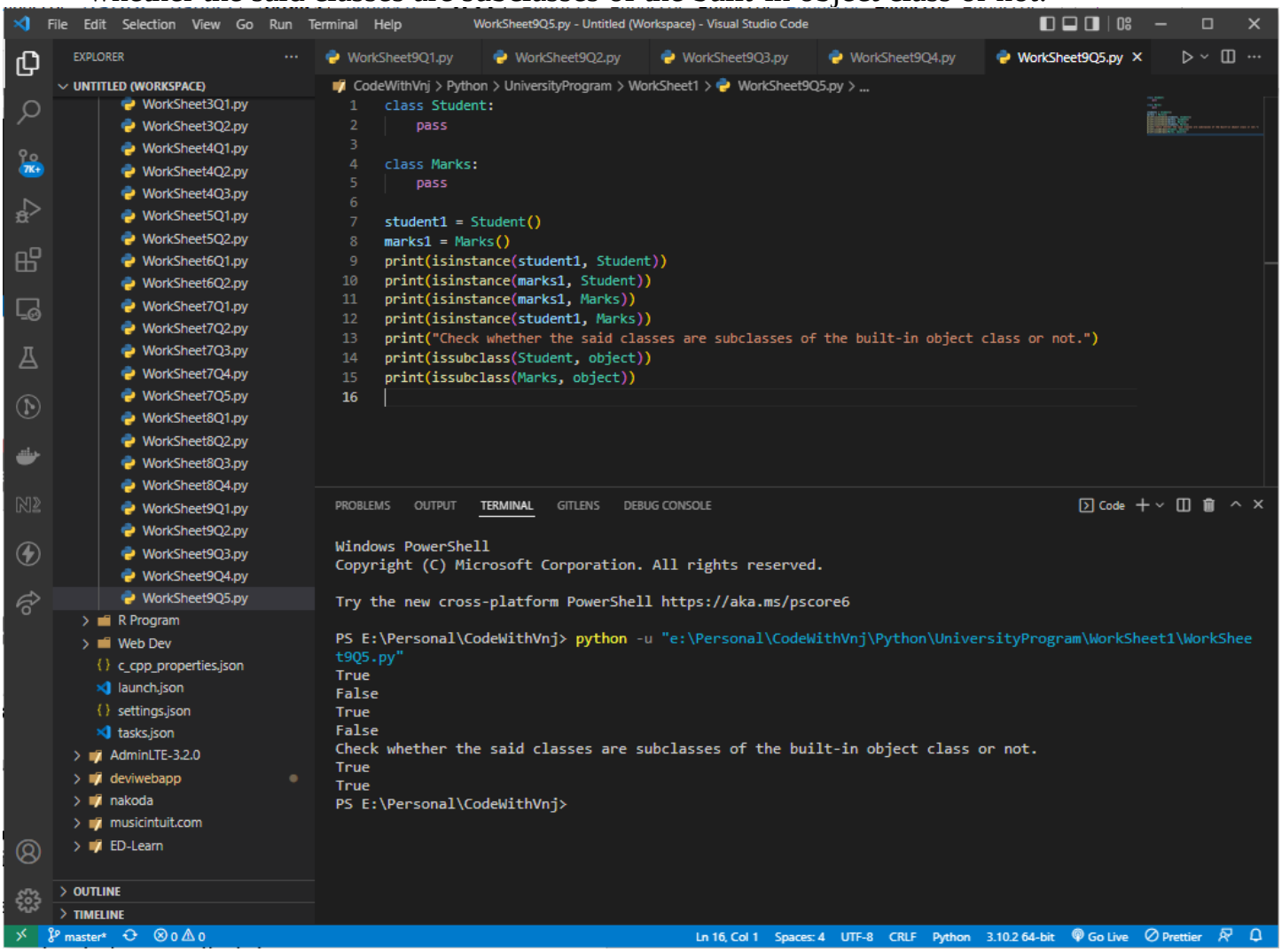

Learning outcomes (What I have learnt):

1. I have learnt, how to create the and manipulate the Classes.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			
4.			