**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:**

1. 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.
2. 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.
3. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.
4. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
5. 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:**

1. 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.
2. 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.
3. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.
4. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
5. 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:**

1. 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}')

1. 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

1. 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)

1. 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())

1. 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))

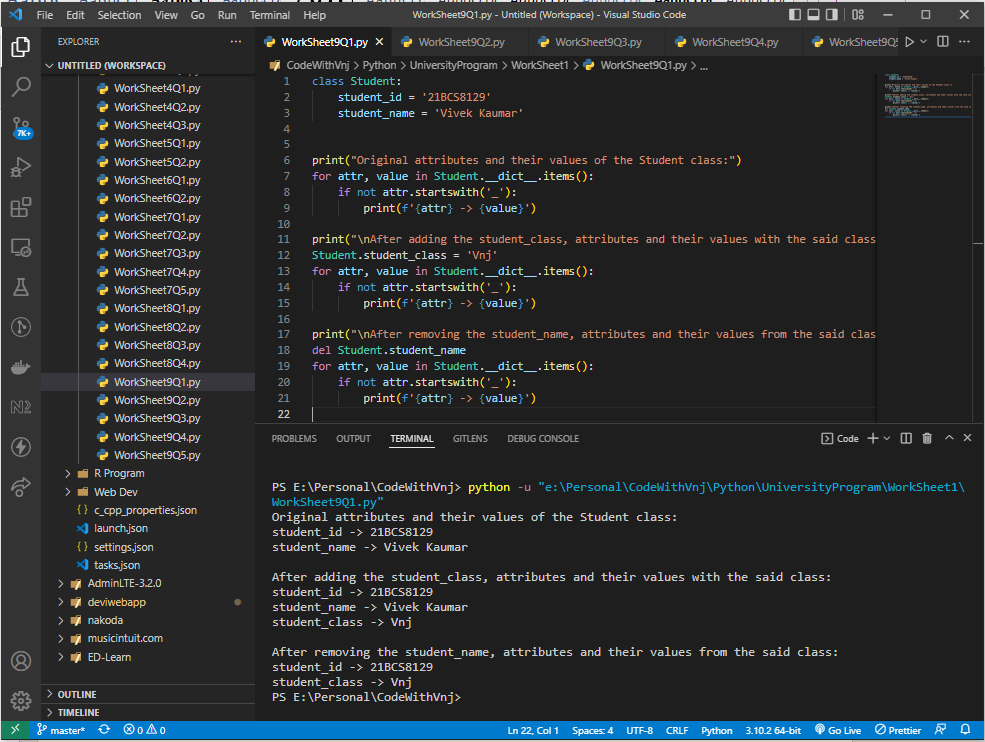
print("Check whether the said classes are subclasses of the built-in object class or not.")

print(issubclass(Student, object))

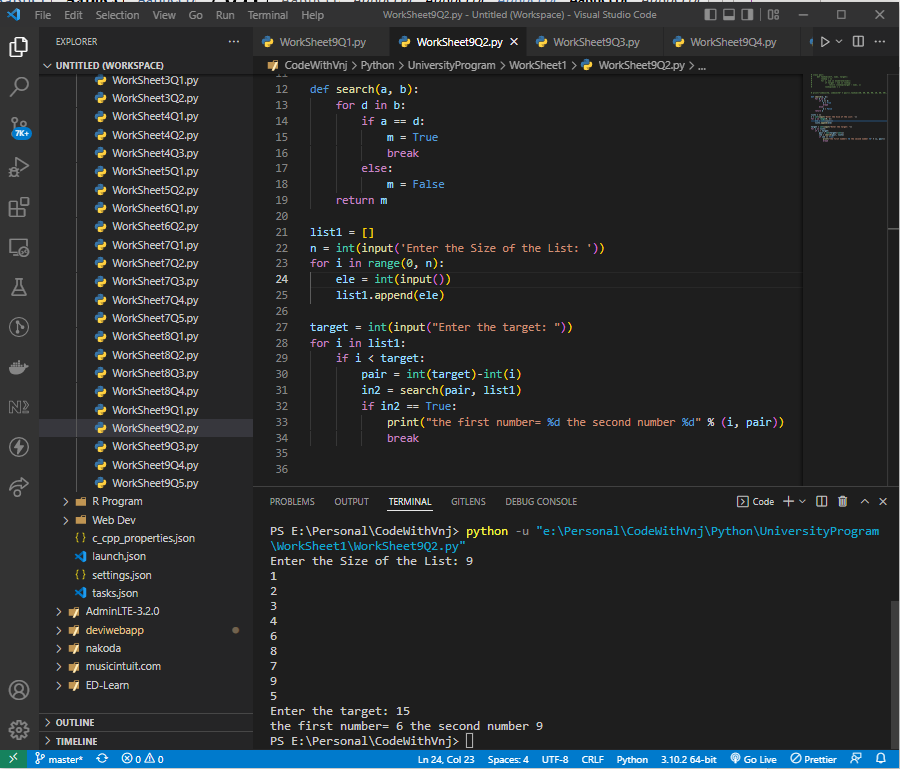
print(issubclass(Marks, object))

**4. Result/Output/Writing Summary:**

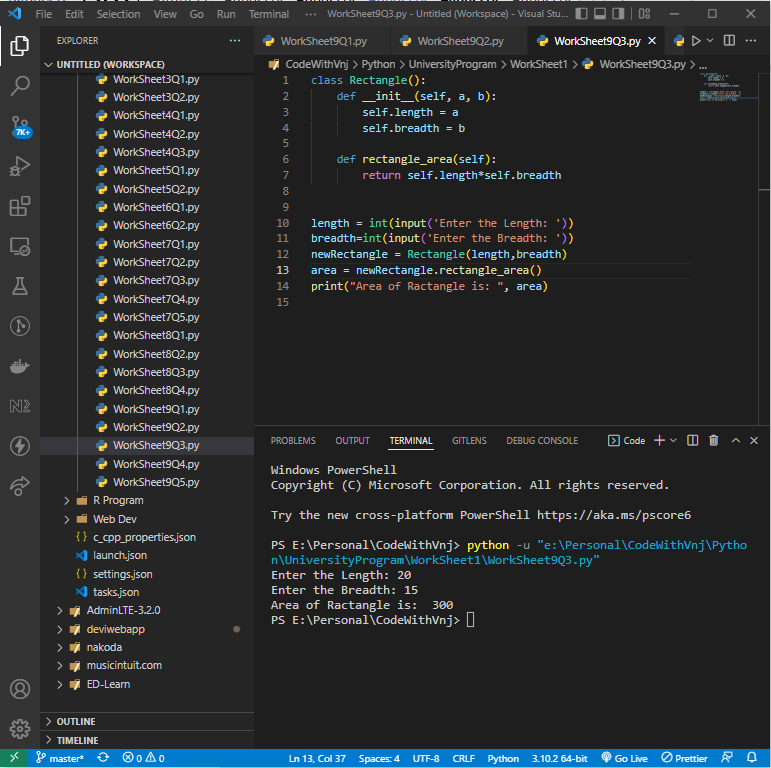
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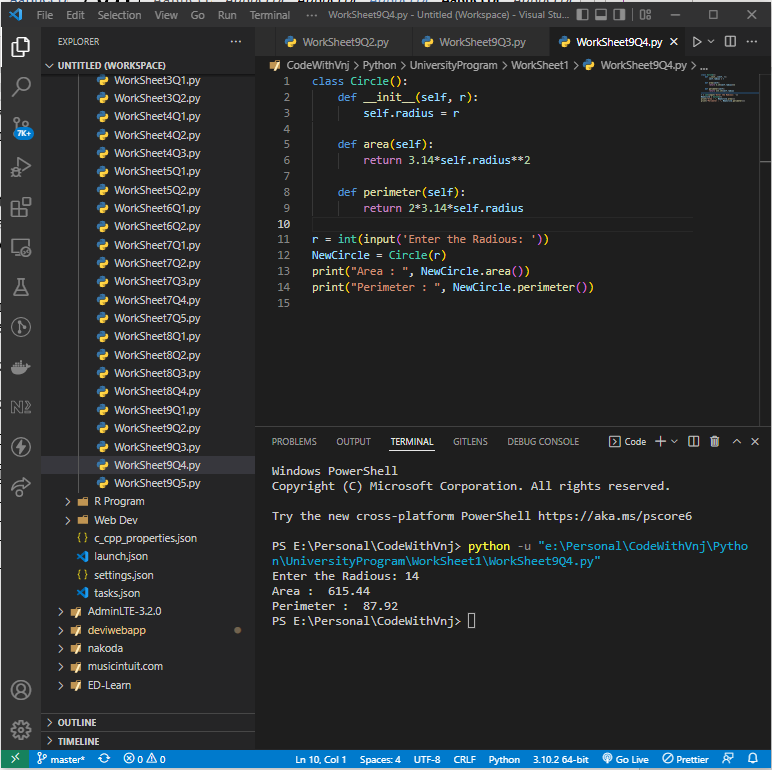
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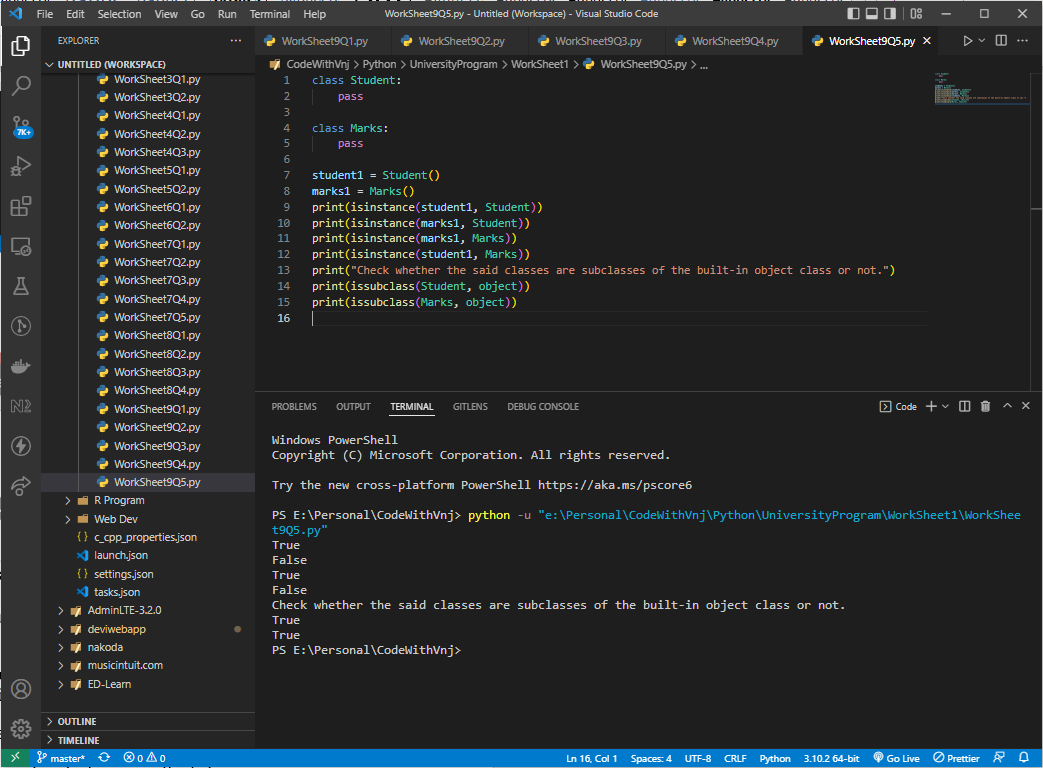
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1. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.



1. 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.



**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. |  |  |  |