

Practical no :-22

Practical title :-Implement a python program to demonstrate 1. Method Overloading 2. Method Overriding

CO4 - Apply object-oriented approach to solve given problem using python.

1)Write a Python program to create a class to print the area of a square and a rectangle. The class has two methods with the same name but different number of parameters. The method for printing area of rectangle has two parameters which are length and breadth respectively while the other method for printing area of square has one parameter which is side of square.(Method Overloading)

```
C: > Users > hp > Desktop > python > pr22.py > ...
1  class Calculator:
2      # We set breadth to 0 by default to make it optional
3      def calculate_area(self, length, breadth=0):
4          if breadth == 0:
5              # If only one number is given, it's a square
6              area = length * length
7              print(f"Square Area: {area}")
8          else:
9              # If two numbers are given, it's a rectangle
10             area = length * breadth
11             print(f"Rectangle Area: {area}")
12
13     # --- Testing the code ---
14     calc = Calculator()
15
16     # Square: only 1 parameter
17     calc.calculate_area(5)
18
19     # Rectangle: 2 parameters
20     calc.calculate_area(10, 4)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\hp> & C:/Python311/python.exe c:/Users/hp/Desktop/python/pr22.py
Square Area: 25
Rectangle Area: 40
PS C:\Users\hp>
```

2)Write a Python program to create a class 'Degree' having a method 'getDegree' that prints "I got a degree". It has two subclasses namely 'Undergraduate' and 'Postgraduate' each having a method with the same name that prints "I am an Undergraduate" and "I am a Postgraduate" respectively. Call the method by creating an object of each of the three classes

```
C: > Users > hp > Desktop > python > 22.2.py > ...
1  # The Parent class
2  class Degree:
3      def getDegree(self):
4          print("I got a degree")
5
6  # The first child class
7  class Undergraduate(Degree):
8      def getDegree(self):
9          print("I am an Undergraduate")
10
11 # The second child class
12 class Postgraduate(Degree):
13     def getDegree(self):
14         print("I am a Postgraduate")
15
16 # --- Creating the objects ---
17 basic_degree = Degree()
18 ug_student = Undergraduate()
19 pg_student = Postgraduate()
20
21 # --- Calling the methods ---
22 basic_degree.getDegree() # Prints parent message
23 ug_student.getDegree()  # Prints UG message
24 pg_student.getDegree()  # Prints PG message
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\hp> & C:/Python311/python.exe c:/Users/hp/Desktop/python/22.2.py
I got a degree
I am an Undergraduate
I am a Postgraduate
PS C:\Users\hp>
```