

الاسم / اسلام السيد رمزي الغرباوي

سيكشن / 1

CHAPTER 5

#Problem 1

```
class Rectangle:
```

```
def init_(self, width, height):
```

```
    self.width = width
```

```
    self.height = height
```

```
def area(self):
```

```
    return self.width * self.height
```

```
def perimeter(self):
```

```
    return 2 * (self.width + self.height)
```

```
rect1 = Rectangle(5, 10)

print("Rectangle 1 Area:", rect1.area())

print("Rectangle 1 Perimeter:", rect1.perimeter())
```

#Problem 2

```
class Employee:

    def __init__(self, name, employee_id, salary):

        self.name = name

        self.employee_id = employee_id

        self.salary = salary

    def display_employee_info(self):

        print(f"Name: {self.name}")

        print(f"ID: {self.employee_id}")

        print(f"Salary: {self.salary}")
```

```
emp1 = Employee("John Doe", "E123", 50000)
emp1.display_employee_info()
```

#Problem 3

```
class Vehicle:

    def move(self):

        print("Vehicle is moving")
```

```
class Car(Vehicle):

    def move(self):

        print("Car is driving")
```

```
class Bike(Vehicle):

    def move(self):

        print("Bike is cycling")
```

```
vehicle = Vehicle()

car = Car()

bike = Bike()

listOfObjs = [vehicle, car, bike]

for obj in listOfObjs:

    obj.move()
```

#Problem 4

```
class Vector:

    def init_(self , x , y):

        self.x = x

        self.y = y


    def sub(self , other):

        return f"Vector({self.x - other.x} , {self.y - other.y})"
```

```
def _mul_(self , other):  
    return self.x * other.x + self.y * other.y
```

```
v1 = Vector(3 , 4)
```

```
v2 = Vector(2 , 1)
```

```
print(v1 - v2)
```

```
print(v1 * v2)
```

#Problem 5

```
import math
```

```
class Shape:
```

```
    def area(self):
```

```
        return 0
```

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

```
def area(self):  
    return math.pi * self.radius ** 2
```

```
class Rectangle(Shape):  
    def __init__(self , width , height):  
        self.width = width  
        self.height = height
```

```
def area(self):  
    return self.width * self.height
```

```
def print_shape_area(shape : Shape):  
    print(f"The area of the shape is: {shape.area()}")  
  
shapes = [Shape() , Circle(5) , Rectangle(2 , 10)]
```

```
for shape in shapes:
```

```
    print_shape_area(shape)
```