Artificial Intelligence

Lab 05 Tasks

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Task1

Solution:

```
roll_number = int(input("Enter roll number:"))
present_students = [101,102,103,105]
def check_attendance(roll_number):  1 usage
    if roll_number in present_students:
        print("present")
    else:
        print("absent")
(check_attendance(roll_number))
```

```
Enter roll number:46484
absent
```

Task2

Solution:

```
class Car:  2 usages
    def __init__(self, brand, model, price):
        self.brand = brand
        self.model = model
        self.price = price
    def display_info(self):  2 usages
        print(f"Brand: {self.brand}, Model: {self.model}, Price: {self.price}")
car1 = Car( brand: "Toyota",  model: "Corolla",  price: 25000)
car2 = Car( brand: "Honda",  model: "Civic",  price: 27000)
print(car1.model)
print(car2.brand)
car1.price = 26000
car2.model = "Accord"
car1.display_info()
car2.display_info()
```

```
Corolla
Honda
Brand: Toyota, Model: Corolla, Price: 26000
Brand: Honda, Model: Accord, Price: 27000
```

Task3

Solution:

```python
class Student:  2 usages
    def __init__(self, name, age, grades=None):
        self.name = name
        self.age = age
        self.grades = grades
    def average_grade(self):  1 usage
        return sum(self.grades)
    def display_info(self):  2 usages
        print(f"Student: {self.name}, Age: {self.age}, Average Grade: {self.average_grade
student1 = Student( name: "Ali", age: 20, grades: [85,90,78,92])
student2 = Student( name: "Sara", age: 22, grades: [30,23,40,89])
student1.display_info()
student2.display_info()
```

```
Student: Ali, Age: 20, Average Grade: 345
Student: Sara, Age: 22, Average Grade: 182
```

Task4

Solution:

```python
class Employee:  2 usages
    def __init__(self, name, salary):
        self.name = name
        self.salary = salary
    def display_details(self):
        print(f"Employee Name: {self.name} | Salary: ${self.salary}")
class Manager(Employee):  1 usage
    def __init__(self, name, salary, department):
        super().__init__(name, salary)
        self.department = department
    def display_details(self):  1 usage
        print(f"Manager Name: {self.name} | Salary: ${self.salary} | Department: {self.department}")
```

```python
class Developer(Employee):  1 usage
    def __init__(self, name, salary, programming_language):
        super().__init__(name, salary)
        self.programming_language = programming_language

    def display_details(self):  1 usage
        print(f"Developer Name: {self.name} | Salary: ${self.salary} | Language: {self.programming_language}")

manager1 = Manager( name: "Ali",  salary: 90000,  department: "HR")
developer1 = Developer( name: "Sara",  salary: 75000,  programming_language: "Python")

manager1.display_details()
developer1.display_details()
```

```
Manager Name: Ali | Salary: $90000 | Department: HR
Developer Name: Sara | Salary: $75000 | Language: Python

Process finished with exit code 0
```

Task5

Solution:

```python
class Shape:  3 usages
    def area(self):
        pass
class Circle(Shape):  2 usages
    def __init__(self, radius):
        self.radius = radius

    def area(self):  1 usage
        return 3.1416 * self.radius ** 2  # as we know the value of pi
class Rectangle(Shape):  2 usages
    def __init__(self, length, width):
        self.length = length
        self.width = width
    def area(self):  1 usage
        return self.length * self.width
```

```python
class Triangle(Shape):  2 usages
    def __init__(self, base, height):
        self.base = base
        self.height = height
    def area(self):  1 usage
        return 0.5 * self.base * self.height
shapes = [
    Circle(6),
    Rectangle( length: 9,  width: 9),
    Triangle( base: 6,  height: 5)
]
print("Circle Area:", Circle(5).area())
print("Rectangle Area:", Rectangle( length: 4,  width: 6).area())
print("Triangle Area:", Triangle( base: 3,  height: 8).area())
```

```
C:\Users\DELL\PycharmProjects\PythonProject\.venv\Scripts\python.exe C:\Users\DELL\Pycha
Circle Area: 78.53999999999999
Rectangle Area: 24
Triangle Area: 12.0
```