Python Practical's

TASK 7

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Practical 1

Write a python program for creating Student Management System.

```
# Student Management System
class Student():
    def __init__(self,rollNo,name,marks1,marks2):
        self.rollNo=rollNo
        self.name=name
        self.marks1=marks1
        self.marks2=marks2

    def accept(self):
        # Will Add the current Student to list
        ls.append(self)
        print("\n! Student Details Added SuccessFully !\n")

    # display the given Student details
    def display(self,obj):
        print()
        print(f"rollNo : {obj.rollNo}")
        print(f"Name : {obj.name}")
        print(f"Marks 1 : {obj.marks1}")
        print(f"Marks 2: {obj.marks2}")
        print()

    # searches for Student by rollNo
    def search(self,rollNo):
        for i in ls:
            if i.rollNo==rollNo:
                return i

    # Deletes the Student by rollNo
    def delete(self,rollNo):
        obj=self.search(rollNo)
        if obj != None:
            ls.remove(obj)
            print("\nStudent removed Successfully\n")
        else:
            print(f"\nInvalid oldRollNo no Student Found With {rollNo}\n")

    # Updates the Student rollNo with newRollNo
    def update(self,oldNo,newRollNo):
        obj=self.search(oldNo)
        if obj != None:
            obj.rollNo=newRollNo
            print("\nStudent Updated Successfully\n")
        else: print(f"\nInvalid oldRollNo no Student Found With {oldNo}\n")
```

```python
# Global list
ls=[]

# To get the Student Details From User
def getStudentDetails():
    rollNo=int(input("Enter Roll No: "))
    name=input("Enter name: ")
    marks1=int(input("Enter Marks 1: "))
    marks2=int(input("Enter Marks 2: "))
    return rollNo,name,marks1,marks2

# Get Student RollNo
def getRollNo(bool=True):
    if bool:  return int(input("Enter rollNo: "))
    else: return int(input("Enter new rollNo: "))

# Main method
def main():
    obj=Student(0,'',0,0)
    while True:
        print("\n----------------------\n1. Enter Student Details: ")
        print("2. See Available Students: ")
        print("3. Search Student by rollNo: ")
        print("4. Update Student rollno: ")
        print("5. Delete Student: ")
        print("6. exit\n")
        choice=int(input("Enter choice: "))
        match choice:
            case 1:
                rollNo,name,marks1,marks2=getStudentDetails()
                obj=Student(rollNo,name,marks1,marks2)
                obj.accept()
            case 2:
                for i in ls:
                    obj.display(i)
            case 3:
                obj.display(obj.search(getRollNo()))
            case 4:
                obj.update(getRollNo(),getRollNo(False))
            case 5:
                obj.delete(getRollNo())
            case 6:
                break
            case default:
                print("Invalid choice! Try Again")

# Main Calling
main()
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7> py practical1.py

----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 1
Enter Roll No: 101
Enter name: Smit Joshi
Enter Marks 1: 90
Enter Marks 2: 90

! Student Details Added SuccessFully !


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 1
Enter Roll No: 201
Enter name: Switi Patel
Enter Marks 1: 89
Enter Marks 2: 92

! Student Details Added SuccessFully !


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 2
```

```
rollNo : 101
Name : Smit Joshi
Marks 1 : 90
Marks 2: 90


rollNo : 201
Name : Switi Patel
Marks 1 : 89
Marks 2: 92


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 3
Enter rollNo: 101

rollNo : 101
Name : Smit Joshi
Marks 1 : 90
Marks 2: 90


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 4
Enter rollNo: 201
Enter new rollNo: 102

Student Updated Successfully


----------------------
1. Enter Student Details:
```

```
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 2

rollNo : 101
Name : Smit Joshi
Marks 1 : 90
Marks 2: 90


rollNo : 102
Name : Switi Patel
Marks 1 : 89
Marks 2: 92


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 5
Enter rollNo: 101

Student removed Successfully


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 2

rollNo : 102
Name : Switi Patel
Marks 1 : 89
```

```
Marks 2: 92


----------------------
1. Enter Student Details:
2. See Available Students:
3. Search Student by rollNo:
4. Update Student rollno:
5. Delete Student:
6. exit

Enter choice: 6
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7>
```

Practical 2

Write a python program to create an Employee management System.

```python
# Employee management System
class Employee():
    def __init__(self,empId,empName,experiance,salary,designation):
        self.empId=empId
        self.empName=empName
        self.experience=experiance
        self.salary=salary
        self.designation=designation

    # adds Employee To List
    def addEmployee(self):
        employees.append(self)
        print("Employee Added Successfully")

    # removes Employee
    def removeEmployee(self,empId):
        obj=self.search(empId)
        if obj != None:
            employees.remove(obj)
            print("\nEmployee Removed Successfully\n")
        else:  print("\nInvalid Employee Id ca't Delete Employee\n")

    # Updates Employee
    def updateEmployee(self,empId,newEmpId):
        obj=self.search(empId)
        if obj != None:
            obj.empId=newEmpId
            print("\nEmployee Id Updated Successfully\n")
        else:
            print("\nInvalid Employee Id\n")
```

```
    #  Search Employee By empId
    def search(self,empId):
        for i in employees:
            if i.empId==empId:
                return i

    # Disployee Employee Details
    def display(self,employee):
        print()
        print(f"Eployee Id: {employee.empId}")
        print(f"Employee Name: {employee.empName}")
        print(f"Employee Experience: {employee.experience}+ Years")
        print(f"Employee salary: {employee.salary}")
        print(f"Employee Designation: {employee.designation}")
        print()

employees=[]

# To GetEmployeeDetails
def getEmployeeDetails():
    empId=int(input("Enter Employee Id: "))
    empName=input("Enter Employee name: ")
    experience=int(input("Enter Experience in Years: "))
    salary=int(input("Enter Employee Salary: "))
    designation=input("Enter Employee Designation: ")
    return empId,empName,experience,salary,designation


def getEmployeeId(bool=True):
    if bool: return int(input("Enter Employee Id: "))
    else: return int(input("Enter New Id: "))

def main():
    obj=Employee(0,'',0,0,'')
    while True:
        print("\n----------------------\n1. Enter Employee Details: ")
        print("2. See Available Employees: ")
        print("3. Search Employee by Id: ")
        print("4. Update Employee Id: ")
        print("5. Delete Employee: ")
        print("6. exit\n")
        choice=int(input("Enter choice: "))
        match choice:
            case 1:
                empId,empname,experience,salary,designation=getEmployeeDetails()
                obj=Employee(empId,empname,experience,salary,designation)
                obj.addEmployee()
```

```
            case 2:
                for i in employees:
                    obj.display(i)
            case 3:
                obj.display(obj.search(getEmployeeId()))
            case 4:
                obj.updateEmployee(getEmployeeId(),getEmployeeId(False))
            case 5:
                obj.removeEmployee(getEmployeeId())
            case 6:
                break
            case default:
                print("Invalid choice! Try Again")

# Main Calling
main()
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7> py practical2.py

----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 1
Enter Employee Id: 101
Enter Employee name: Smit Joshi
Enter Experience in Years: 9
Enter Employee Salary: 1200000
Enter Employee Designation: Product Manager
Employee Added Successfully

----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 1
Enter Employee Id: 201
```

```
Enter Employee name: Switi Patel
Enter Experience in Years: 2
Enter Employee Salary: 60000
Enter Employee Designation: Software Engineer
Employee Added Successfully

----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 2

Eployee Id: 101
Employee Name: Smit Joshi
Employee Experience: 9+ Years
Employee salary: 1200000
Employee Designation: Product Manager


Eployee Id: 201
Employee Name: Switi Patel
Employee Experience: 2+ Years
Employee salary: 60000
Employee Designation: Software Engineer


----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 3
Enter Employee Id: 101

Eployee Id: 101
Employee Name: Smit Joshi
Employee Experience: 9+ Years
Employee salary: 1200000
Employee Designation: Product Manager
```

```
----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 4
Enter Employee Id: 201
Enter New Id: 102

Employee Id Updated Successfully


----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 2

Eployee Id: 101
Employee Name: Smit Joshi
Employee Experience: 9+ Years
Employee salary: 1200000
Employee Designation: Product Manager


Eployee Id: 102
Employee Name: Switi Patel
Employee Experience: 2+ Years
Employee salary: 60000
Employee Designation: Software Engineer


----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit
```

```
Enter choice: 5
Enter Employee Id: 102

Employee Removed Successfully


----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 2

Eployee Id: 101
Employee Name: Smit Joshi
Employee Experience: 9+ Years
Employee salary: 1200000
Employee Designation: Product Manager


----------------------
1. Enter Employee Details:
2. See Available Employees:
3. Search Employee by Id:
4. Update Employee Id:
5. Delete Employee:
6. exit

Enter choice: 6
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7>
```

Practical 3

Write a python program to demonstrate the concept of lambda function for finding the multiple of 7 from the list and adding 10 to all the members of the list.

```
numbers=[5,2,7, 10,14,67, 21]
# multiples of 7
multiples=list(filter(lambda x:x%7==0,numbers))
print("Multiples Of 7: ",multiples)

numbers=list(map(lambda i:i+10,numbers))
print("Added 10: ",numbers)
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7> py practical3.py
Multiples Of 7:  [7, 14, 21]
Added 10:  [15, 12, 17, 20, 24, 77, 31]
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7>
```

Practical 4

Write a python program to demonstrate the concept of method overloading. Write three functions named surface area() for calculating the surface area of cube, sphere and cylinder.

```
from multipledispatch import dispatch
import math

class Area:

    @dispatch(int)
    def area(self,length):
       print("Area of cube is: ",6*length**2)

    @dispatch(float)
    def area(self,radious):
        print("Area of Shpare is: ",4*math.pi*radious**2)

    @dispatch(float,int)
    def area(self,radious,height):
        print("Area of cylinder is: ",2*math.pi*radious*(radious+height))
```

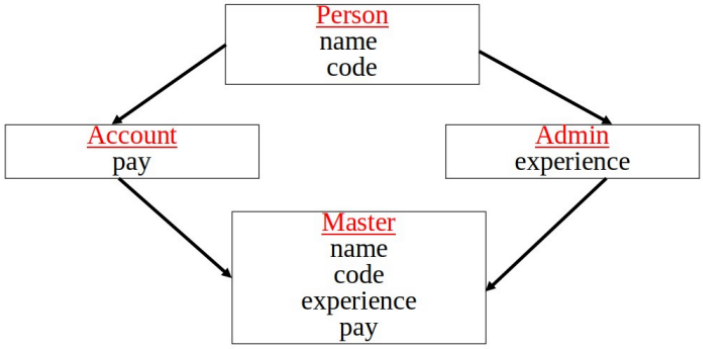
```
obj=Area()
obj.area(10)
obj.area(2.0)
obj.area(2.0,2)
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task7> py practical4.py
Area of cube is:  600
Area of Shpare is:  50.26548245743669
Area of cylinder is:  50.26548245743669
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\task7>
```

Practical 5

Write a python program to implement the following hierarchy.




```
class Person():
    def __init__(self,name,code):
        self.name=name
        self.code=code

class Account(Person):
    def __init__(self, name, code,pay):
        # super().__init__(self,name,code)  -- Error
        Person.__init__(self,name, code)
        self.pay=pay

class Admin(Person):
    def __init__(self,name,code,experience):
        # super().__init(name,code)     -- Error
        Person.__init__(self,name,code)
        self.experience=experience
```

```python
class Master(Account,Admin):
    def __init__(self, name, code, pay,experience):
        # super().__init__(name,code,pay,experience)    --Error
        Account.__init__(self,name,code,pay)
        Admin.__init__(self,name,code,experience)


    def display_details(self):
        print(f"Name: {self.name}")
        print(f"Code: {self.code}")
        print(f"Pay: {self.pay}")
        print(f"Experience: {self.experience}")

master = Master("Joshi Smit", 123, 50000, 5)
master.display_details()
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7> py practical5.py
Name: Joshi Smit
Code: 123
Pay: 50000
Experience: 5
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7>
```

Practical 6

Write a python program for creating class Vehicle with members Model no, type and price. Derive class car and bike from class vehicle. Class car has members engine number, color and fueltype. Class Bike has members as machine CC and mileage. Write proper constructors and display functions to display all the details.

```python
class Vehicle():
    def __init__(self,modelNo,type,price):
        self.modelNo=modelNo
        self.type=type
        self.price=price


    def display(self):
        print()
        print("Model No:",self.modelNo)
        print("Type:",self.type)
        print(f"Price: ₹{self.price}")
```

```
class Car(Vehicle):
    def __init__(self,modelNo,type,price,engineNumber,color,fuelType):
        super().__init__(modelNo,type,price)
        self.engineNumber=engineNumber
        self.color=color
        self.fuelType=fuelType

  def display(self):
        super().display()
        print("Engine Number:",self.engineNumber)
        print("Color:",self.color)
        print("Fuel Type:",self.fuelType)

class Bike(Vehicle):
    def __init__(self, modelNo, type, price,machineCC,mileage):
        super().__init__(modelNo, type, price)
        self.machineCC=machineCC
        self.mileage=mileage

    def display(self):
        super().display()
        print("Machine CC:",self.machineCC)
        print("Mileage:",self.mileage)

# Bike Objects
Hero=Bike("Hero Splendor Plus","Commuter",65000,97.2,65)
Bajaj=Bike("Bajaj Pulsar 180","StreetFighter",120000,178.6,45)

# Car Objects
Sedun=Car(1, 'Sedan', 20000, '1234567890', 'Red', 'Gasoline')
SUV=Car(2, 'SUV', 30000, '9876543210', 'Blue', 'Diesel')
Truck=Car(3, 'Truck', 40000, '0987654321', 'Green', 'Electric')

# printing All The Objects Data
print('\n------HERO------')
Hero.display()

print('\n------BAJAJ------')
Bajaj.display()
print('\n------SEDUN------')
Sedun.display()
print('\n------SUV------')
SUV.display()
print('\n------TRUCK------')
Truck.display()
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7> py practical6.py

------HERO------

Model No: Hero Splendor Plus
Type: Commuter
Price: ₹65000
Machine CC: 97.2
Mileage: 65

------BAJAJ------

Model No: Bajaj Pulsar 180
Type: StreetFighter
Price: ₹120000
Machine CC: 178.6
Mileage: 45

------SEDUN------

Model No: 1
Type: Sedan
Price: ₹20000
Engine Number: 1234567890
Color: Red
Fuel Type: Gasoline

------SUV------

Model No: 2
Type: SUV
Price: ₹30000
Engine Number: 9876543210
Color: Blue
Fuel Type: Diesel

------TRUCK------

Model No: 3
Type: Truck
Price: ₹40000
Engine Number: 0987654321
Color: Green
Fuel Type: Electric
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7>
```

Practical 7

Write a Python program to filter a list of integers using Lambda into positive, negative and zero numbers. (Create three different lists and display)

```
numbers=[10,0,20,-47,-134]
print("Original: ",numbers)

positive=list(filter(lambda x: x > 0, numbers))
negative=list(filter(lambda x: x < 0, numbers))
zero=list(filter(lambda x: x==0 , numbers))

print("Poritive:",positive,"\nNegative:",negative,"\nZero:",zero)
```

Output:

```
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7> py practical7.py
Original:  [10, 0, 20, -47, -134]
Poritive: [10, 20]
Negative: [-47, -134]
Zero: [0]
PS D:\LEARNING\COLLAGE\SAM7\Python\collage\Task7>
```