COURSE OUTCOME 4

DATE : 07/11/2024

1. **Create Rectangle class with attributes length and breadth and methods to find area and perimeter. Compare two Rectangle objects by their area.**

PROGRAM

```
class Rectangle:
    def __init__(self,length,breadth):
        self.length=length
        self.breadth=breadth

    def area(self):
        return self.length * self.breadth

    def perimeter(self):
        return 2*(self.length + self.breadth)

length=int(input("Enter length of Rectangle 1:"))
breadth=int(input("Enter breadth of Rectangle 1:"))
Rectangle1=Rectangle(length,breadth)
area1=Rectangle1.area()
print("Area of Rectangle 1:",area1)
print("Perimeter of Rectangle 1:",Rectangle1.perimeter())

length=int(input("Enter length of Rectangle 2:"))
breadth=int(input("Enter breadth of Rectangle 2:"))
Rectangle2=Rectangle(length,breadth)
area2=Rectangle2.area()
print("Area of Rectangle 2:",area2)
print("Perimeter of Rectangle 2:",Rectangle2.perimeter())

if area1 > area2:
    print("Rectangle 1 have greater area")
    print("Area of Rectangle 1:",Rectangle1.area())
elif area1 < area2:
    print("Rectangle 2 have greater")
    print("Area of Rectangle 2:",Rectangle2.area())
else:
    print("Both rectangles have same area")
```

OUTPUT

Enter length of Rectangle 1:2
Enter breadth of Rectangle 1:3
Area of Rectangle 1: 6
Perimeter of Rectangle 1: 10
Enter length of Rectangle 2:5
Enter breadth of Rectangle 2:6
Area of Rectangle 2: 30
Perimeter of Rectangle 2: 22
Rectangle 2 have greater
Area of Rectangle 2: 30

Enter length of Rectangle 1:20
Enter breadth of Rectangle 1:30
Area of Rectangle 1: 600
Perimeter of Rectangle 1: 100
Enter length of Rectangle 2:15
Enter breadth of Rectangle 2:10
Area of Rectangle 2: 150
Perimeter of Rectangle 2: 50
Rectangle 1 have greater area
Area of Rectangle 1: 600

DATE : 07/11/2024

2. **Create a Bank account with members account number, name, type of account and balance. Write constructor and methods to deposit at the bank and withdraw an amount from the bank.**

PROGRAM

```
class bank:
    def __init__(self):
        self.accno=int(input("Enter account number: "))
        self.accname=input("Enter account name: ")
        self.acctype=input("Enter ifsc: ")
        self.accbal=0
    def depo(self):
        money=int(input("enter amount to be deposited: "))
        self.accbal=self.accbal+money
    def dispdetails(self):
        print("acc number: ",self.accno)
        print("acc name: ",self.accname)
        print("acc type: ",self.acctype)
        print("acc balance: ",self.accbal)
    def withdraw(self):
        amount=int(input("enter amount to be withdrawn: "))
        if amount>self.accbal:
            print("Balance not sufficient")
        elif self.accbal==0:
            print("Account balance is empty")
        else:
            print("money withdrawn!!")
            self.accbal=self.accbal-amount
            print("Money withdrawn is ",amount)
b1=bank()
while(True):
    print("\n1.Deposit\n2.withdraw\n3.display details\n4.exit\n")
    ch=int(input("Enter your choice: "))
    if ch==1:
        b1.depo()
    elif ch==2:
        b1.withdraw()
    elif ch==3:
        b1.dispdetails()
    elif ch==4:
        print("Thank you ..exiting..")
        break;
```

```
        else:
                print("Invalid choice..")
```

OUTPUT

```
Enter Account number : 6789
Enter Name : Ann Ziphah Ralph
Enter Account Type : Savings
Enter Balance : Rs. 1000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:1
Enter the amount to be deposited : Rs.1000
Successfully Deposited : Rs. 1000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:2
Enter the amount to be withdrawn : Rs.500
Successfully withdrawn : Rs. 500
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:3
Current Balance : Rs. 1500
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:4
Account Number :  6789
Account Name :  Ann Ziphah Ralph
Account Type :  Savings
```

Account Balance : 1500
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:5

Enter Account number : 4241
Enter Name : Alex
Enter Account Type : Savings
Enter Balance : Rs. 20000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:1
Enter the amount to be deposited : Rs.30000
Successfully Deposited : Rs. 30000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:2
Enter the amount to be withdrawn : Rs.10000
Successfully withdrawn : Rs. 10000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:3
Current Balance : Rs. 40000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit

Enter your choice:4
Account Number : 4241
Account Name : Alex
Account Type : Savings
Account Balance : 40000
Menu
 1.Deposit
 2.Withdraw
 3.Current Balance
 4.View Details
 5.Exit
Enter your choice:5

DATE : 13/11/2024

3. **Create a class Rectangle with private attributes length and width. Overload '<' operator to compare the area of 2 rectangles**

PROGRAM

```
class Rectangle:
    def __init__(self,length,width):
        self.length=length
        self.width=width
    def area(self):
        return self.length * self.width
    def __lt__(self,other):
        return self.area() < other.area()


length=int(input("Enter length of Rectangle 1 : "))
width=int(input("Enter width of Rectangle 1 :"))
Rectangle1=Rectangle(length,width)
area1=Rectangle1.area()
print("Area of Rectangle 1:",area1)

length=int(input("\nEnter length of Rectangle 2 : "))
width=int(input("Enter width of Rectangle 2 :"))
Rectangle2=Rectangle(length,width)
area2=Rectangle2.area()
print("Area of Rectangle 2:",area2)

if Rectangle1<Rectangle2:
    print("\nArea of Rectangle 1 is smaller than area of Rectangle 2")
elif Rectangle1>Rectangle2:
    print("\nArea of Rectangle 1 is larger than area of Rectangle 2")
else:
    print("\nBoth rectangles have same area")
```

OUTPUT

```
Enter length of Rectangle 1 : 4
Enter width of Rectangle 1 :2
Area of Rectangle 1: 8


Enter length of Rectangle 2 : 8
```

Enter width of Rectangle 2 :6
Area of Rectangle 2: 48

Area of Rectangle 1 is smaller than area of Rectangle 2

Enter length of Rectangle 1 : 12
Enter width of Rectangle 1 :10
Area of Rectangle 1: 120

Enter length of Rectangle 2 : 6
Enter width of Rectangle 2 :4
Area of Rectangle 2: 24

Area of Rectangle 1 is larger than area of Rectangle 2

DATE : 26/11/2024

4. **Create a class Time with private attributes hour, minute and second. Overload '+' operator to find sum of 2 time**

PROGRAM

```
class time():
 __hour=0
 __min=0
 __sec=0
 def __init__(self,__hour,__min,__sec):
        self.__hour=__hour
        self.__min=__min
        self.__sec=__sec
        self.normalise()
 def normalise(self):
        if self.__sec>=60:
                self.__min+=self.__sec//60
                self.__sec=self.__sec%60
        if self.__min>=60:
                self.__hour+=self.__min//60
                self.__min=self.__min%60

 def __str__(self):
        return f"{self.__hour:02} hours :{self.__min:02} minutes :{self.__sec:02}
seconds "

 def __add__(self,other):
         newhr=self.__hour+other.__hour
         newmin=self.__min+other.__min
         newsec=self.__sec+other.__sec
         return time(newhr,newmin,newsec)

hr=int(input("Enter hour: "))
mint=int(input("Enter minute: "))
sec=int(input("Enter seconds: "))
t1=time(hr,mint,sec)
print("Time is ",hr," hours ",mint," minutes ",sec," seconds")
print()

hr=int(input("Enter hour: "))
mint=int(input("Enter minute: "))
```

```
sec=int(input("Enter seconds: "))
t2=time(hr,mint,sec)
print("Time is ",hr," hours ",mint," minutes ",sec," seconds")
print()

t3 = t1 + t2
print("Combined times is ",t3)
```

OUTPUT

```
Enter hour: 4
Enter minute: 30
Enter seconds: 20
Time is  4  hours  30  minutes  20  seconds

Enter hour: 3
Enter minute: 20
Enter seconds: 10
Time is  3  hours  20  minutes  10  seconds

Combined times is  07 hours :50 minutes :30 seconds

Enter hour: 6
Enter minute: 70
Enter seconds: 20
Time is  6  hours  70  minutes  20  seconds

Enter hour: 5
Enter minute: 20
Enter seconds: 20
Time is  5  hours  20  minutes  20  seconds

Combined times is  12 hours :30 minutes :40 seconds
```

DATE : 26/11/2024

5. **Create a class Publisher (name). Derive class Book from Publisher with attributes title and author. Derive class Python from Book with attributes price and no_of_pages. Write a program that displays information about a Python book. Use base class constructor invocation and method overriding.**

PROGRAM

```
class Publisher:
    def __init__(self,name):
        self.name=name
    def display():
        pass

class Book(Publisher):
    def __init__(self,name,title,author):
        super(). __init__(name) #invoking base class Publisher
        self.title=title
        self.author=author
    def display():
        pass

class Python(Book):
    def __init__(self,name,title,author,price,no_of_pages): #invoking parent classes
        super(). __init__(name,title,author)
        self.price=price
        self.no_of_pages=no_of_pages
    def display(self):
        print("\nBook Details  \n")
        print("Name : ",self.name)
        print("Title : ",self.title)
        print("Author : ",self.author)
        print("Price : ",self.price)
        print("No of pages : ",self.no_of_pages)

title=input("Enter Title of Book : ")
author=input("Enter Name of Author : ")
name=input("Enter Name of Publisher : ")
price=int(input("Enter Price : "))
no_of_pages=int(input("Enter number of pages : "))

b=Python(name,title,author,price,no_of_pages)
b.display()
```

OUTPUT

```
Enter Title of Book : Twilight
Enter Name of Author : Stephenie Meyer
Enter Name of Publisher : Little, Brown and Company
Enter Price : 499
Enter number of pages : 544

Book Details

Name :  Little, Brown and Company
Title :  Twilight
Author :  Stephenie Meyer
Price :  499
No of pages :  544


Enter Title of Book : My Fault
Enter Name of Author : Mercedes Ron
Enter Name of Publisher : Penguin Publishers
Enter Price : 999
Enter number of pages : 416

Book Details

Name :  Penguin Publishers
Title :  My Fault
Author :  Mercedes Ron
Price :  999
No of pages :  416
```