Assignment - II
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Retail Billing Software

Aim

To Write a Python program for a Retail Billing Machine

Explanation

A retail billing software should mainly have features such as to maintain the list of available products and to generate a bill on entering the Items bought.

So to facilitate the maintenance of the list of available products an option to add and remove products is given on the main menu.

Under addition of products one can add the products in the shop at the start of the program it facilitates the addition of the name of the product and price per unit product

Under the Removal of products we can remove a single product or a list of products by giving their numbers separated by commas

Therefore this is a fully functional Billing Software

Program

```python
import os

def cls():
    os.system('cls')
    #nl(5)

def nl(n):
    print('\n'*(n-1))

def conc():
    nl(2)
    input("Press ENTER to continue")
    cls()

class shop:

    items = []
    rates = []
    bill = {}

    def addItems(self):
        cls()

        print("ADD ITEMS")
        nl(2)
        n = int(input("Enter Number of Items to add : "))

        nl(2)
        for i in range(1,n+1):
            print("Item ",i)
            name = input("Enter Item Name : ")
            rate = int(input("Enter Item Rate : "))
            self.items.append(name)
            self.rates.append(rate)
            nl(1)
        nl(2)
        print(n,"Item(s) added")
```

```python
        conc()

    def display(self):
        print("ITEMS")
        nl(2)
        print("Sno\tItems\trate")
        for i in range(len(self.items)):
            print(f"{i+1}\t{self.items[i]}\t{self.rates[i]}")
        print("0\tExit")
        nl(2)

    def removeItems(self):
        cls()
        print("REMOVE ITEMS")
        nl(2)
        self.display()
        inp = eval(input("Enter Item numbers to remove : "))
        if type(inp) == int:
            self.items.pop(rem)
            self.rates.pop(rem)
        else:
            rem = list(inp)
            rem.sort()
            for i in range(len(rem)):
                del self.items[rem[i] - i - 1]
                del self.rates[rem[i] - i - 1]
        nl(1)
        print("Items Removed")
        conc()

    def billDisplay(self):
        total = 0
        for j,i in enumerate(self.bill.keys()):
            total+=self.rates[i] * self.bill[i]

print(f"{j+1}\t{self.items[i]}\t{self.rates[i]}\t{self.bill[i]}\
t{self.rates[i] * self.bill[i]}")
        print("\nTOTAL : ",total)

    def billing(self):
        cls()
```

```python
        self.bill = {}
        while True:
            self.display()
            print("CART")
            self.billDisplay()
            nl(2)
            ch = int(input("Enter Item Number : "))
            if ch == 0:
                break
            amt = int(input("Amount : "))
            self.bill[ch-1] = amt
            cls()
        cls()
        print("BILL")
        self.billDisplay()
        conc()


#================== MAIN PROGRAM =========================


a = shop()
while True:
    print("RETAIL BILLING MACHINE")
    nl(1)
    print("1.Billing\n2.Add items\n3.Remove Items\n0.Exit")
    ch = int(input("Enter your choice : "))
    if ch == 1:
        a.billing()
    elif ch == 2:
        a.addItems()
    elif ch == 3:
        a.removeItems()
    elif ch == 0:
        print("\n\nBye.......")
        conc()
        break
```

Output

RETAIL BILLING MACHINE

1.Billing
2.Add items
3.Remove Items
0.Exit
Enter your choice : 2

ADD ITEMS

Enter Number of Items to add : 6

Item 1
Enter Item Name : Rice
Enter Item Rate : 60

Item 2
Enter Item Name : Wheet
Enter Item Rate : 40

Item 3
Enter Item Name : Oil
Enter Item Rate : 60

Item 4
Enter Item Name : Soap
Enter Item Rate : 30

Item 5
Enter Item Name : toothpaste
Enter Item Rate : 60

Item 6
Enter Item Name : Chips
Enter Item Rate : 10

6 Item(s) added

Press ENTER to continue

RETAIL BILLING MACHINE

1.Billing
2.Add items
3.Remove Items
0.Exit
Enter your choice : 3

REMOVE ITEMS

ITEMS

Sno	Items	rate
1	Rice	60
2	Wheet	40
3	Oil	60
4	Soap	30
5	toothpaste	60
6	Chips	10
0	Exit	

Enter Item numbers to remove : 2,5

Items Removed

Press ENTER to continue

RETAIL BILLING MACHINE

1.Billing
2.Add items
3.Remove Items
0.Exit
Enter your choice : 1

ITEMS

Sno	Itemsrate	
1	Rice	60
2	Oil	60
3	Soap	30
4	Chips	10
0	Exit	

CART

TOTAL : 0

Enter Item Number : 1
Amount : 5

ITEMS

Sno	Items	rate
1	Rice	60
2	Oil	60
3	Soap	30
4	Chips	10
0	Exit	

CART

1	Rice	60	5	300

TOTAL : 300

Enter Item Number : 2
Amount : 2

ITEMS

Sno	Items	rate		
1	Rice	60		
2	Oil	60		
3	Soap	30		
4	Chips		10	
0	Exit			

CART

1	Rice	60	5	300
2	Oil	60	2	120

TOTAL : 420

Enter Item Number : 4
Amount : 5

ITEMS

Sno   Items   rate

1	Rice	60		
2	Oil	60		
3	Soap	30		
4	Chips	10		
0	Exit			

CART

1	Rice	60	5	300
2	Oil	60	2	120
3	Chips	10	5	50

TOTAL : 470

Enter Item Number : 0

BILL

1	Rice	60	5	300
2	Oil	60	2	120
3	Chips	10	5	50

TOTAL : 470

Press ENTER to continue

RETAIL BILLING MACHINE

1.Billing
2.Add items
3.Remove Items
0.Exit
Enter your choice : 0

Bye.......

Press ENTER to continue

Explanation of Coad

Methods Under a Class are assigned to do the above specified working and A Dictionary is used for the Bill. A cart is enabled at the billing and the products in the cart can be managed and changed and the bill is outputted at the end.

Student Grading

Aim

To Write a Program for Student Grader

Explanation

For a Student Grading software a for a Student, Student name and Marks on Subjects are taken as Input and Grade is calculated and is printed

Program

```python
def Grader(marks):
    if(marks>=90):
        return("A")
    elif(marks>=80 and marks<90):
        return("B")
    elif(marks>=70 and marks<80):
        return("C")
    elif(marks>=60 and marks<70):
        return("D")
    else:
        return("F")

n = int(input("Enter Number of Students : "))

table = []

for i in range(n):
```

```python
        table.append([])
        print("\nStudent ",i+1)
        table[i].append(i+1)
        name = input("Enter Student Name : ")
        table[i].append(name)
        for j in range(1,6):
            mark = float(input(f"Enter Subject {j}
marks : "))
            table[i].append(mark)
        table[i].append(sum(table[i][2:]))
        table[i].append(table[i][-1]/5)
        #print(int(table[i][-1]))
        table[i].append(Grader(int(table[i][-1])))

print('\n'*3)
print("MARKS AND GRADES\n\n")
print("Sno\tName\tsub1\tsub2\tsub3\tsub4\tsub5\tTot
al\tAverage\tGrade")
for row in table:
    for i in row:
        print(i,end='\t')
    print()
```

Output

Enter Number of Students : 3

Student 1
Enter Student Name : John
Enter Subject 1 marks : 80
Enter Subject 2 marks : 90
Enter Subject 3 marks : 70
Enter Subject 4 marks : 95
Enter Subject 5 marks : 96

Student 2
Enter Student Name : Mary
Enter Subject 1 marks : 79
Enter Subject 2 marks : 87
Enter Subject 3 marks : 98
Enter Subject 4 marks : 87
Enter Subject 5 marks : 93

Student 3
Enter Student Name : Jose
Enter Subject 1 marks : 78
Enter Subject 2 marks : 93
Enter Subject 3 marks : 45
Enter Subject 4 marks : 66
Enter Subject 5 marks : 88

MARKS AND GRADES

Sno	Name	sub1	sub2	sub3	sub4	sub5	Total	Average	Grade
1	John	80.0	90.0	70.0	95.0	96.0	431.0	86.2	B
2	Mary	79.0	87.0	98.0	87.0	93.0	444.0	88.8	B
3	Jose	78.0	93.0	45.0	66.0	88.0	370.0	74.0	C

Explanation of the Coad

This Program Gets all student information as Inputs stores them in a Nested list computes total and average and stores them in the same list Uses a function to compute the Grade and Finally Prints them