BRAC
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Inspiring Excellence

Course Code:	**CSE111**
Course Title:	**Programming Language II**
Lab No:	**09**
Topic:	**OOP (Class variable and class method)**
Number of tasks:	**5**

Task 1

We know that Nike is opening their official outlets in Bangladesh. So let's construct a NikeBangladesh class so that they can keep track of their inventory and sales here,

Hint:
productSold()/restockProducts(): takes in a dictionary with product name and quantity, and updates the instance and class variables accordingly

Driver Code	Output

print("xxxxxxxxxxxxxx1xxxxxxxxxxxxxxxx")
NikeBangladesh.status()
dhaka = NikeBangladesh("Dhaka Banani")
chittagong = NikeBangladesh("Chittagong GEC")
print("xxxxxxxxxxxxxx2xxxxxxxxxxxxxxxx")
dhaka.details()
print("xxxxxxxxxxxxxx3xxxxxxxxxxxxxxxx")
chittagong.details()
print("xxxxxxxxxxxxxx4xxxxxxxxxxxxxxxx")
dhaka.restockProducts(
{"Air Jordan":1200,"Cortez":200,"Zoom Kobe":200})
chittagong.restockProducts(
{"Air Jordan":1000,"Cortez":250,"Zoom Kobe":100})
print("xxxxxxxxxxxxxx5xxxxxxxxxxxxxxxx")
NikeBangladesh.status()
print("xxxxxxxxxxxxxx6xxxxxxxxxxxxxxxx")
dhaka.productSold({"Air Jordan":760,"Cortez":90})
chittagong.productSold({"Air Jordan":520,"Zoom Kobe":70})
print("xxxxxxxxxxxxxx7xxxxxxxxxxxxxxxx")
NikeBangladesh.status()
	xxxxxxxxxxxxxx1xxxxxxxxxxxxxxxx
	Nike Bangladesh Status:
	Branches Opened: []
	Currently Stocked
	{'Air Jordan': 0, 'Cortez': 0, 'Zoom Kobe': 0}
	Sold: 0
	xxxxxxxxxxxxxx2xxxxxxxxxxxxxxxx
	Nike Dhaka Banani outlet:
	Products Currently Stocked:
	{'Air Jordan': 0, 'Cortez': 0, 'Zoom Kobe': 0}
	Sold: 0
	xxxxxxxxxxxxxx3xxxxxxxxxxxxxxxx
	Nike Chittagong GEC outlet:
	Products Currently Stocked:
	{'Air Jordan': 0, 'Cortez': 0, 'Zoom Kobe': 0}
	Sold: 0
	xxxxxxxxxxxxxx4xxxxxxxxxxxxxxxx
	xxxxxxxxxxxxxx5xxxxxxxxxxxxxxxx
	Nike Bangladesh Status:
	Branches Opened: ['Dhaka Banani', 'Chittagong GEC']
	Currently Stocked
	{'Air Jordan': 2200, 'Cortez': 450, 'Zoom Kobe': 300}
	Sold: 0
	xxxxxxxxxxxxxx6xxxxxxxxxxxxxxxx
	xxxxxxxxxxxxxx7xxxxxxxxxxxxxxxx
	Nike Bangladesh Status:
	Branches Opened: ['Dhaka Banani', 'Chittagong GEC']
	Currently Stocked
	{'Air Jordan': 920, 'Cortez': 360, 'Zoom Kobe': 230}
	Sold: 1440

Task 2

Write the **Player** class so that the given code provides the expected output.

[You are not allowed to change the code below]

```
# Write your code here

print("Total number of players:", Player.total)
print("---------------------------")
p1 = Player()
p1.set_name("Neymar")
p1.set_team("Brazil")
print(p1.player_detail())
print('========================')
Player.info()
print("---------------------------")
p2 = Player("Ronaldo")
p2.set_number(7)
p2.set_team("Portugal")
print(p2.player_detail())
print('========================')
Player.info()
print("---------------------------")
p3 = Player("Messi")
p3.set_team("Argentina")
print(p3.player_detail())
print('========================')
Player.info()
print("---------------------------")
p4 = Player("Mbappe", 10, "France")
print(p4.player_detail())
print('========================')
Player.info()
```

Output:

```
Total number of players: 0
---------------------------
Player Name: Neymar
Jersey Number: 10
Country: Brazil
========================
Total number of players: 1
Players enlisted so far: Neymar
---------------------------
Player Name: Ronaldo
Jersey Number: 7
Country: Portugal
========================
Total number of players: 2
Players enlisted so far: Neymar, Ronaldo
---------------------------
Player Name: Messi
Jersey Number: 10
Country: Argentina
========================
Total number of players: 3
Players enlisted so far: Neymar, Ronaldo, Messi
---------------------------
Player Name: Mbappe
Jersey Number: 10
Country: France
========================
Total number of players: 4
Players enlisted so far: Neymar, Ronaldo, Messi,
Mbappe
```

Task 3

Write the **SultansDine** class so that the given code provides the expected output.

[You are not allowed to change the code below]

```
# Write your code here

SultansDine.details()
print('##########################')
dhanmondi = SultansDine('Dhanmondi')
dhanmondi.sellQuantity(25)
dhanmondi.branchInformation()
print('---------------------------------------')
SultansDine.details()

print('=========================')

baily_road = SultansDine('Baily Road')
baily_road.sellQuantity(15)
baily_road.branchInformation()
print('---------------------------------------')
SultansDine.details()

print('=========================')

gulshan = SultansDine('Gulshan')
gulshan.sellQuantity(9)
gulshan.branchInformation()
print('---------------------------------------')
SultansDine.details()
```

Output:

```
Total Number of branch(s): 0
Total Sell: 0 Taka
################################
Branch Name: Dhanmondi
Branch Sell: 10000 Taka
----------------------------------------
Total Number of branch(s): 1
Total Sell: 10000 Taka
Branch Name: Dhanmondi, Branch Sell: 10000 Taka
Branch consists of total sell's: 100.00%
=================================
Branch Name: Baily Road
Branch Sell: 5250 Taka
----------------------------------------
Total Number of branch(s): 2
Total Sell: 15250 Taka
Branch Name: Dhanmondi, Branch Sell: 10000 Taka
Branch consists of total sell's: 65.57%
Branch Name: Baily Road, Branch Sell: 5250 Taka
Branch consists of total sell's: 34.43%
=================================
Branch Name: Gulshan
Branch Sell: 2700 Taka
----------------------------------------
Total Number of branch(s): 3
Total Sell: 17950 Taka
Branch Name: Dhanmondi, Branch Sell: 10000 Taka
Branch consists of total sell's: 55.71%
Branch Name: Baily Road, Branch Sell: 5250 Taka
Branch consists of total sell's: 29.25%
Branch Name: Gulshan, Branch Sell: 2700 Taka
Branch consists of total sell's: 15.04%
```

Subtaks:

1. Create **SultansDine** class
2. Create 2 class variable and 1 class list
3. Create 1 class method
4. Calculation of branch sell is given below

    a. If sellQuantity < 10:
        i. Branch_sell = quantity * 300
    b. Else if sellQuantity < 20:
        i. Branch_sell = quantity * 350
    c. Else
        i. Branch_sell = quantity * 400

5. Calculation of branch's sell percentage = (branch's sell / total sell) * 100

Task 4

```python
class FinalT6A:
    temp = 3
    def __init__(self, x, p):
        self.sum, self.y = 0, 2
        FinalT6A.temp += 3
        self.y = self.temp - p
        self.sum = self.temp + x
        print(x, self.y, self.sum)
    def methodA(self):
        x, y = 0, 0
        y = y + self.y
        x = self.y + 2 + self.temp
        self.sum = x + y + self.methodB(self.temp, y)
        print(x, y, self.sum)
    def methodB(self, temp, n):
        x = 0
        FinalT6A.temp += 1
        self.y = self.y + (FinalT6A.temp)
        FinalT6A.temp -= 1
        x = x + 2 + n
        self.sum = self.sum + x + self.y
        print(x, self.y, self.sum)
        return self.sum
```

q1 = FinalT6A(2,1)
q1.methodA()
q1.methodA()
	x	y	sum

Task 5

```python
class msgClass:
    def __init__(self):
        self.content = 0

class Quiz3:
    x = 0
    def __init__(self, k = None):
        self.sum, self.y = 0, 0
        if k is None:
            self.sum = 5
            Quiz3.x = 2
            self.y = 2
        else:
            self.sum = self.sum + k
            self.y = 3
            Quiz3.x += 2
    def methodA(self):
        x = 1
        y = 1
        msg = [None]
        myMsg = msgClass()
        myMsg.content = Quiz3.x
        msg[0] = myMsg
        msg[0].content = self.y + myMsg.content
        self.y = self.y + self.methodB(msg[0])
        y = self.methodB(msg[0]) + self.y
        x = y + self.methodB(msg, msg[0])
        self.sum = x + y + msg[0].content
        print(x, y, self.sum)
    def methodB(self, *args):
        if len(args) == 2:
            mg2, mg1 = args
            x = 2
            self.y = self.y + mg2[0].content
            mg2[0].content = self.y + mg1.content
            x = x + 2 + mg1.content
            self.sum = self.sum + x + self.y
            mg1.content = self.sum - mg2[0].content
            print(Quiz3.x, self.y, self.sum)
            return self.sum

        elif len(args) == 1:
            mg1, = args
            x = 1
            y = 2
            y = self.sum + mg1.content
            self.y = y + mg1.content
            x = Quiz3.x + 5 + mg1.content
            self.sum = self.sum + x + y
            Quiz3.x = mg1.content + x + 3
            print(x, y, self.sum)
            return y
```

<table>
<tr><td rowspan="5">a1 = Quiz3()
a2 = Quiz3(5)
msg = msgClass()
a1.methodA()
a2.methodB(msg)</td><td>x</td><td>y</td><td>sum</td></tr>
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