BRAC UNIVERSITY
Department of Computer Science and Engineering

Examination: Midterm | **Semester**: Spring 2024
Duration: 70 Minutes | CSE 111: Programming Language II | **Full Marks**: 20
No. of Questions: 3 | **No. of Pages**: 2

Name: (Please write in CAPITAL LETTERS)	ID:	Section:

A

✓ Use the back **part** of the answer script for rough work. **No washroom breaks.**
✓ At the end of the exam, put the question **paper** inside the answer script and **return both**.

Question 1: CO1 [4 Points]

Design the "**Laptop**" class with required properties to produce the given output for the provided driver code.

```
#Write your code here

L1 = Laptop("HP", "Intel Core i5")
print(L1.details())
print("======================")
L2 = Laptop("ASUS", "Intel Core i7", 16)
print(L2.details())
```

Output:

```
Brand Name: HP
Specs: ['i5', '8 GB Ram']
======================
Brand Name: ASUS
Specs: ['i7', '16 GB Ram']
```

Question 2: CO2 [4 Points]

```
1  class MidA:
2    def __init__(self):
3        self.x = -2
4        self.y = 1
5        self.sum = 9
6    def methodA(self, p):
7        self.y = self.sum + self.x
8        self.sum = p[1] * len(p)
9        self.y = self.sum + self.methodB(self, p)
10       self.x = p[0] + p[-1] + self.y
11       print(self.x, self.y, self.sum)
12   def methodB(self, t, r= [1, 2]):
13       y = 3
14       t.x = self.x + self.sum
15       t.sum = t.x + t.y + y
16       print(t.x, t.y, t.sum)
17       return r[1]
```

Illustrate the output of the following statements:

```
a = MidA()
a.methodA((8,5,4,7,3))
```

Output [Answer on question paper]

		33
		33

Question 3: CO1 [12 Points]

Design the **"MetroRail"** class such with necessary properties so that the given output is produced for the following driver code.

[**Hints**:

- A metro will stop at stations starting from 1 to total stations. So if the total number of stations for a metro line is 3, the metro will stop at station 1, station 2 and station 3. The metro will not go beyond station 3.
- Your **board_passenger()** method should work for any **even** number of arguments passed to it. The arguments will always be in the following format:

  (passenger name, destination station number)
- A passenger cannot board the metro if his/her desired destination does not fall under the valid station list of that specific metro.
- **reach_next_station()** method means the metro has reached the next station in the sequence of stations. You might consider keeping an instance variable to keep track of the current station of the metro. All the passengers destined to get off the metro at this station should leave the metro and should be removed from the current passenger's list. Maintaining a dictionary to keep records of the passengers in the metro might be a wise thing to do.
- The syntax to delete an entry from the dictionary is as follows:

  del(dictionary_name[key])
- In the given output section, the last line showing **"EMPTY METRO. NOT NEED TO PRINT IT"** is for you to understand that there are no passengers left in the metro. You **DO NOT** need to print it in your code.]
- For simplicity, assume that a passenger will never try to go to a station that has already passed. For example, a passenger boarding the metro at station 3 will never go to station 2 or 1.

#Write your code here

```
metro1 = MetroRail("MRT Line 1", 4)
print("1======================")
metro1.board_passenger("Alice", 3,"Bob", 3)
print("2======================")
metro1.reach_next_station()
print("3======================")
metro1.board_passenger("Harry", 4)
print("4======================")
metro1.board_passenger("John", 4)
print("5======================")
metro1.reach_next_station()
print("6======================")
metro1.board_passenger("Charlie", 6)
print("7======================")
metro1.reach_next_station()
```

Output:

```
MRT Line 1 has total 4 stations.
1======================
Alice, welcome to MRT Line 1.
Bob, welcome to MRT Line 1.
2======================
The train has arrived at station 2.
No passengers to get down.
Current passenger list:
Station 3: ['Alice', 'Bob']
3======================
Harry, welcome to MRT Line 1.
4======================
John, welcome to MRT Line 1.
5======================
The train has arrived at station 3.
Following passengers please get down:
Alice, Bob
Current passenger list:
Station 4: ['Harry', 'John']
6======================
Sorry Charlie, the metro does not go to 6.
7======================
The train has arrived at station 4.
Following passengers please get down:
Harry, John
Current passenger list: (EMPTY METRO. NOT NEED TO PRINT IT)
```