



Inspiring Excellence

Course Code:	CSE111
Course Title:	Programming Language II
Classwork No:	04
Topic:	OOP (Instance method and overloading)
Number of Tasks:	7

## Task 1

Design the **Customer** class with the necessary properties so that the following output is produced.

[Hint:

- If the visitor's age is greater than 10, then the ticket price is 100 taka. Otherwise, 50 taka.
- A customer can't buy more than 3 tickets.]

Driver Code	Given Output
<pre>print('1-----') customer1 = Customer() print('2-----') customer1.buyTicket('Bob', 23) customer1.buyTicket('Henry', 7) customer1.buyTicket('Alexa', 30) customer1.buyTicket('Jonas', 43) print('3-----') customer1.showDetails() print('4-----') customer2 = Customer() print('5-----') customer2.buyTicket('Harry', 60) customer2.buyTicket('Tomas', 28) print('6-----') customer2.showDetails()</pre>	<pre>1----- Welcome to ABC Memorial Park 2----- Successfully purchased a ticket for Bob! Successfully purchased a ticket for Henry! Successfully purchased a ticket for Alexa! You can't buy more than 3 tickets 3----- Amount of tickets: 3 Total price: 250 Taka 4----- Welcome to ABC Memorial Park 5----- Successfully purchased a ticket for Harry! Successfully purchased a ticket for Tomas! 6----- Amount of tickets: 2 Total price: 200 Taka</pre>

## Task 2

You are given a string containing a sentence. Your task is to implement the **SentenceAnalyzer** class with constructor overloading and method overloading to analyze the given sentence.

Driver Code	Given Output
<pre>analyzer1 = SentenceAnalyzer()  analyzer1.set_sentence("That's an easy one") print("1-----") analyzer1.get_word_count() print("2-----") analyzer2 = SentenceAnalyzer("Like I said it's easy")  print("3-----") analyzer2.get_word_count()  print("4-----") analyzer2.get_word_count(4) print("5-----") analyzer1.get_word_count(5)</pre>	<pre>1----- Number of words in the sentence: 4 2----- 3----- Number of words in the sentence: 5 4----- Number of words with 4 characters in the sentence: 4 5----- Number of words with 5 characters in the sentence: 0</pre>

### Task 3

Design the **Student** class with the necessary properties so that the given output is produced for the provided driver code. Use constructor overloading and method overloading where necessary.

**Hint:**

- *A student having cgpa  $\geq 3.5$  and credit  $> 10$  is eligible for scholarship.*
  - *A student having cgpa  $> 3.7$  is eligible for Merit based scholarship*
  - *A student with cgpa  $\geq 3.5$  but  $< 3.7$  is eligible for Need-based scholarship.*

Driver Code	Given Output
<pre>print('-----') std1 = Student("Alif", 3.99, 12) print('-----') std1.checkScholarshipEligibility() print('-----') std1.showDetails() print('-----') std2 = Student("Mim", 3.4) std3 = Student("Henry", 3.5, 15, "BBA") print('-----') std2.checkScholarshipEligibility() print('-----') std3.checkScholarshipEligibility() print('-----') std2.showDetails() print('-----') std3.showDetails() print('-----') std4 = Student("Bob", 4, 6, "CSE") print('-----') std4.checkScholarshipEligibility() print('-----') std4.showDetails()</pre>	<pre>----- ----- Alif is eligible for Merit-based scholarship. ----- Name: Alif Department: CSE CGPA: 3.99 Number of Credits: 12 Scholarship Status: Merit-based scholarship ----- ----- Mim is not eligible for scholarship. ----- Henry is eligible for Need-based scholarship. ----- Name: Mim Department: CSE CGPA: 3.4 Number of Credits: 9 Scholarship Status: No scholarship ----- Name: Henry Department: BBA CGPA: 3.5 Number of Credits: 15 Scholarship Status: Need-based scholarship ----- ----- Bob is not eligible for scholarship. ----- Name: Bob Department: CSE CGPA: 4 Number of Credits: 6 Scholarship Status: No scholarship</pre>

### Task 4

Write the **Author** class with the required properties so that the given output is produced for the provided driver code:

Driver Code	Output
<pre># Write your code here  # Do not change the following lines of code. a1 = Author() print("=====") a1.addBook("Ice", "Science Fiction") print("=====") a1.setName("Anna Kavan") a1.addBook("Ice", "Science Fiction") a1.printDetail() print("=====") a2 = Author("Humayun Ahmed") a2.addBook("Onnobhubon", "Science Fiction") a2.addBook("Megher Upor Bari", "Horror") print("=====") a2.printDetail() a2.addBook("Ireena", "Science Fiction") print("=====") a2.printDetail() print("=====")</pre>	<pre>===== A book can not be added without author name ===== Number of Book(s): 1 Author Name: Anna Kavan Science Fiction: Ice ===== ===== Number of Book(s): 2 Author Name: Humayun Ahmed Science Fiction: Onnobhubon Horror: Megher Upor Bari ===== Number of Book(s): 3 Author Name: Humayun Ahmed Science Fiction: Onnobhubon, Ireena Horror: Megher Upor Bari =====</pre>

## Task 5

Using the **TaxiLagbe** app, users can share a single taxi with multiple people.

**Implement** the design of the **TaxiLagbe** class with the necessary properties so that the given output is produced for the provided driver code:

**[Hint:**

1. Each taxi can carry a maximum of 4 passengers
2. The addPassenger() method takes the last name of the passenger and ticket fare for that person in an underscore (\_) -separated string.]

Driver Code	Output
<pre># Write your code here  # Do not change the following lines of code. taxi1 = TaxiLagbe('1010-01', 'Dhaka') print('-----') taxi1.addPassenger('Walker_100', 'Wood_200','Matt_100') taxi1.addPassenger('Wilson_105') print('-----') taxi1.printDetails() print('-----') taxi1.addPassenger('Karen_200') print('-----') taxi1.printDetails() print('-----') taxi2 = TaxiLagbe('1010-02', 'Khulna') taxi2.addPassenger('Ronald_115', 'Parker_215') print('-----') taxi2.printDetails()</pre>	<pre>----- Dear Walker! Welcome to TaxiLagbe. Dear Wood! Welcome to TaxiLagbe. Dear Matt! Welcome to TaxiLagbe. Dear Wilson! Welcome to TaxiLagbe. -----  Trip info for Taxi number: 1010-01 This taxi can only cover the Dhaka area. Total passengers: 4 Passenger lists: Walker, Wood, Matt, Wilson Total collected fare: 505 Taka -----  Taxi Full! No more passengers can be added. -----  Trip info for Taxi number: 1010-01 This taxi can only cover the Dhaka area. Total passengers: 4 Passenger lists: Walker, Wood, Matt, Wilson Total collected fare: 505 Taka -----  Dear Ronald! Welcome to TaxiLagbe. Dear Parker! Welcome to TaxiLagbe. -----  Trip info for Taxi number: 1010-02 This taxi can only cover the Khulna area. Total passengers: 2 Passenger lists: Ronald, Parker Total collected fare: 330 Taka</pre>

## Task 6

1	<code>class Scope:</code>
2	<code>    def __init__(self):</code>
3	<code>        self.x, self.y = 1, 100</code>
4	<code>    def met1(self):</code>
5	<code>        x = 3</code>
6	<code>        x = self.x + 1</code>
7	<code>        self.y = self.y + self.x + 1</code>
8	<code>        x = self.y + self.met2() + self.y</code>
9	<code>        print(x, self.y)</code>
10	<code>    def met2(self):</code>
11	<code>        y = 0</code>
12	<code>        print(self.x, y)</code>
13	<code>        self.x = self.x + y</code>
14	<code>        self.y = self.y + 200</code>
15	<code>        return self.x + y</code>

Write the output of the following code:  q2 = Scope() q2.met1() q2.met2() q2.met1() q2.met2()	x	y

## Task 7

1	<code>class Test3:</code>
2	<code>    def __init__(self):</code>
3	<code>        self.sum, self.y = 0, 0</code>
4	<code>    def methodA(self):</code>
5	<code>        x, y = 2, 3</code>
6	<code>        msg = [0]</code>
7	<code>        msg[0] = 3</code>
8	<code>        y = self.y + msg[0]</code>
9	<code>        self.methodB(msg, msg[0])</code>
10	<code>        x = self.y + msg[0]</code>
11	<code>        self.sum = x + y + msg[0]</code>
12	<code>        print(x, y, self.sum)</code>
13	<code>    def methodB(self, mg2, mg1):</code>
14	<code>        x = 0</code>
15	<code>        self.y = self.y + mg2[0]</code>
16	<code>        x = x + 33 + mg1</code>
17	<code>        self.sum = self.sum + x + self.y</code>
18	<code>        mg2[0] = self.y + mg1</code>
19	<code>        mg1 = mg1 + x + 2</code>
20	<code>        print(x, self.y, self.sum)</code>

Write the output of the following code:  t3 = Test3() t3.methodA() t3.methodA() t3.methodA() t3.methodA()	x	y	sum