

**Course Title: Programming Language II**

**Course Code: CSE 111**

**Lab Assignment no: 4**

**Task 1**

Write a class called **Customer** with the required constructor and methods to get the following output.

**Subtasks:**

1. Create a class called Customer.

2. Create the required constructor.

3. Create a method called **greet** that works if no arguments are passed or if one argument is passed. *(Hint: You may need to use the keyword NONE)*

4. Create a method called **purchase** that can take as many arguments as the user wants to give.

**[You are not allowed to change the code below]**

| ***# Write your codes for subtasks 1-4 here.***  customer\_1 = Customer("Sam")  customer\_1.greet()  customer\_1.purchase("chips", "chocolate", "orange juice") print("-----------------------------")  customer\_2 = Customer("David")  customer\_2.greet("David")  customer\_2.purchase("orange juice") | ***OUTPUT:***  Hello!  Sam, you purchased 3 item(s): chips  chocolate  orange juice  -----------------------------  Hello David!  David, you purchased 1 item(s): orange juice |
| --- | --- |

**Task 2**

The Giant Panda Protection and Research Center in the Sichuan province of southwest China, actually employs a category of workers known as panda nannies. The primary responsibility is to play with adorable panda cubs and name them, determine gender, keep track of their age and hours they sleep. So being a programmer panda nanny, you will create a code that will do all these works for you.

1. Create a class named **Panda** and also write the constructor.

2. Access the instance attributes and print them in the given format.

3. Call instance methods to keep track of their daily hours of sleep.

4. Suppose consulting with other panda nannies you have set some criteria based on which you will make their diet plans. The criteria are:

\*\* Mixed Veggies for pandas having 3 to 5 hours (included) of sleep daily.

\*\* Eggplant & Tofu for pandas having 6 to 8 hours (included) of sleep daily.

\*\* Broccoli Chicken for pandas having 9 to 11 hours (included) of sleep daily. \*\* Lastly if no arguments are passed then just give it bamboo leaves.

Now handle this problem modifying the method designed to keep track of their daily hours of sleep and determine diet plan using method overloading.

**[You are not allowed to change the code below]**

| ***#Write your code here for subtasks 1-4.***  panda1 = Panda("Kunfu","Male", 5)  panda2=Panda("Pan Pan","Female",3)  panda3=Panda("Ming Ming","Female",8)  print("{} is a {} Panda Bear who is {} years  old".format(panda1.name,panda1.gender,panda1.age))  print("{} is a {} Panda Bear who is {} years  old".format(panda2.name,panda2.gender,panda2.age))  print("{} is a {} Panda Bear who is {} years  old".format(panda3.name,panda3.gender,panda3.age)) print("===========================") print(panda2.sleep(10))  print(panda1.sleep(4))  print(panda3.sleep()) | ***OUTPUT:***  Kunfu is a Male Panda Bear who is 5 years old  Pan Pan is a Female Panda Bear who is 3 years old  Ming Ming is a Female Panda Bear who is 8 years old  ===========================  Pan Pan sleeps 10 hours daily and should have Broccoli Chicken  Kunfu sleeps 4 hours daily and should have Mixed Veggies  Ming Ming's duration is unknown thus should have only bamboo leaves |
| --- | --- |

**Task 3**

Analyze the given code below to write **Cat** class to get the output as shown. Hints:

• *Remember, the constructor is a special method. Here, you have to deal with constructor overloading which is similar to method overloading.*

• *You may need to use the keyword None*

• *Your class should have 2 variables*

**[You are not allowed to change the code below]**

| ***#Write your code here***  c1 = Cat()  c2 = Cat("Black")  c3 = Cat("Brown", "jumping") c4 = Cat("Red", "purring") c1.printCat()  c2.printCat()  c3.printCat()  c4.printCat()  c1.changeColor("Blue") c3.changeColor("Purple") c1.printCat()  c3.printCat() | ***OUTPUT***  White cat is sitting Black cat is sitting Brown cat is jumping Red cat is purring Blue cat is sitting  Purple cat is jumping |
| --- | --- |

**Task 4**

**Implement** the design of the **Student** class so that the following output is produced:

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  s1 = Student()  s1.quizcalc(10)  print('--------------------------------') s1.printdetail()  s2 = Student('Harry')  s2.quizcalc(10,8)  print('--------------------------------') s2.printdetail()  s3 = Student('Hermione')  s3.quizcalc(10,9,10)  print('--------------------------------') s3.printdetail() | --------------------------------  Hello default student  Your average quiz score is 3.3333333333333335 --------------------------------  Hello Harry  Your average quiz score is 6.0  --------------------------------  Hello Hermione  Your average quiz score is 9.666666666666666 |

**Task 5**

Design the **Student** class such a way so that the following code provides the expected output.

**Hint:**

• Write the constructor with appropriate default value for arguments.

• Write the dailyEffort() method with appropriate argument.

• Write the prinDetails() method. For printing suggestions check the following instructions.

➢ If hour <= 2 print 'Suggestion: Should give more effort!'

➢ If hour <= 4 print 'Suggestion: Keep up the good work!'

➢ Else print 'Suggestion: Excellent! Now motivate others.'

**[You are not allowed to change the code below]**

| ***# Write your code here.***  harry = Student('Harry Potter', 123)  harry.dailyEffort(3)  harry.printDetails()  print('========================')  john = Student("John Wick", 456, "BBA") john.dailyEffort(2)  john.printDetails()  print('========================')  naruto = Student("Naruto Uzumaki", 777, "Ninja") naruto.dailyEffort(6)  naruto.printDetails() | ***OUTPUT:***  Name: Harry Potter  ID: 123  Department: CSE  Daily Effort: 3 hour(s)  Suggestion: Keep up the good work! ========================  Name: John Wick  ID: 456  Department: BBA  Daily Effort: 2 hour(s)  Suggestion: Should give more effort! ========================  Name: Naruto Uzumaki  ID: 777  Department: Ninja  Daily Effort: 6 hour(s)  Suggestion: Excellent! Now motivate others. |
| --- | --- |

**Task 6**

Implement the design of the **Patient** class so that the following output is produced: **[You are not allowed to change the code below]**

| ***# Write your code here.***  p1 = Patient(“Thomas”, 23)  p1.add\_Symptom(“Headache”)  p2 = Patient(“Carol”, 20)  p2.add\_Symptom(“Vomiting”, “Coughing”)  p3 = Patient(“Mike”, 25)  p3.add\_Symptom(“Fever”, “Headache”, “Coughing”) print("=========================")  p1.printPatientDetail()  print("=========================")  p2.printPatientDetail()  print("=========================")  p3.printPatientDetail() | ***OUTPUT:***  ========================= Name: Thomas  Age: 23  Symptoms: Headache  ========================= Name: Carol  Age: 20  Symptoms: Vomiting, Coughing  ========================= Name: Mike  Age: 25  Symptoms: Fever, Headache, Coughing |
| --- | --- |

**Task 7**

Design the **Match** class such a way so that the following code provides the expected

| ***# Write your code here.***  match1 = Match("Rangpur Riders-Cumilla Victorians") print("=========================")  match1.add\_run(4)  match1.add\_run(6)  match1.add\_over(1)  print(match1.print\_scoreboard())  print("=========================")  match1.add\_over(5)  print("=========================")  match1.add\_wicket(1)  print(match1.print\_scoreboard()) | ***OUTPUT:***  5..4..3..2..1.. Play !!!  ============================ Batting Team: Rangpur Riders  Bowling Team: Cumilla Victorians  Total Runs: 10 Wickets: 0 Overs: 1  ============================ Warning! Cannot add 5 over/s (5 over match) ============================ Batting Team: Rangpur Riders  Bowling Team: Cumilla Victorians  Total Runs: 10 Wickets: 1 Overs: 1 |
| --- | --- |

**Task 8**

Design the **ParcelKoro** class such a way so that the following code provides the expected output.

**Hint**: total\_fee = (total\_weight \* 20) + location\_charge.

**Note:** For the method calculate fee: if the delivery location is not given, the location\_charge will be 50 taka or else 100 taka. Also, while calculating total fee, if the product weight is 0 the total\_fee should also be 0.

**Assume** only these 3 ways you can create an object of a class.

**[You are not allowed to change the code below]**

| ***# Write your code here.***  print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")  p1 = ParcelKoro()  p1.calculateFee()  p1.printDetails()  print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")  p2 = ParcelKoro('Bob The Builder')  p2.calculateFee()  p2.printDetails()  print("----------------------------")  p2.product\_weight = 15  p2.calculateFee()  p2.printDetails(  print("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*")  p3 = ParcelKoro('Dora The Explorer', 10) p3.calculateFee('Dhanmondi')  p3.printDetails() | ***OUTPUT:***  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Customer Name: No name set  Product Weight: 0  Total fee: 0  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Customer Name: Bob The Builder  Product Weight: 0  Total fee: 0  ----------------------------  Customer Name: Bob The Builder  Product Weight: 15  Total fee: 350  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Customer Name: Dora The Explorer Product Weight: 10  Total fee: 300 |
| --- | --- |

**Task 9**

**Implement** the design of the **Batsman** class so that the following output is produced: **Hint**: Batting strike rate (s/r) = runsScored / ballsFaced x 100.

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  b1 = Batsman(6101, 7380)  b1.printCareerStatistics()  print("============================") b2 = Batsman("Liton Das", 678, 773) b2.printCareerStatistics()  print("----------------------------")  print(b2.battingStrikeRate())  print("============================") b1.setName("Shakib Al Hasan")  b1.printCareerStatistics()  print("----------------------------")  print(b1.battingStrikeRate()) | Name: New Batsman  Runs Scored: 6101 , Balls Faced: 7380 ============================ Name: Liton Das  Runs Scored: 678 , Balls Faced: 773 ----------------------------  87.71021992238033  ============================ Name: Shakib Al Hasan  Runs Scored: 6101 , Balls Faced: 7380 ----------------------------  82.66937669376694 |

**Task 10**

**Implement** the design of the **EPL\_Team** class so that the following output is produced:

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  manu = EPL\_Team('Manchester United', 'Glory Glory Man United') chelsea = EPL\_Team('Chelsea')  print('===================')  print(manu.showClubInfo())  print('##################')  manu.increaseTitle()  print(manu.showClubInfo())  print('===================')  print(chelsea.showClubInfo())  chelsea.changeSong('Keep the blue flag flying high') print(chelsea.showClubInfo()) | ===================  Name: Manchester United  Song: Glory Glory Man United  Total No of title: 0  ##################  Name: Manchester United  Song: Glory Glory Man United  Total No of title: 1  ===================  Name: Chelsea  Song: No Slogan  Total No of title: 0  Name: Chelsea  Song: Keep the blue flag flying high Total No of title: 0 |

**Task 11**

**Implement** the design of the **Author** class so that the following output is produced:

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  auth1 = Author('Humayun Ahmed')  auth1.addBooks('Deyal', 'Megher Opor Bari')  auth1.printDetails()  print(‘===================’)  auth2 = Author()  print(auth2.name)  auth2.changeName('Mario Puzo')  auth2.addBooks('The Godfather', 'Omerta', 'The Sicilian') print(‘===================’)  auth2.printDetails()  print(‘===================’)  auth3 = Author('Paolo Coelho', 'The Alchemist', 'The Fifth Mountain') auth3.printDetails() | Author Name: Humayun Ahmed --------  List of Books:  Deyal  Megher Opor Bari  ===================  Default  ===================  Author Name: Mario Puzo --------  List of Books:  The Godfather  Omerta  The Sicilian  ===================  Author Name: Paolo Coelho --------  List of Books:  The Alchemist  The Fifth Mountain |

**Task 12**

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

**Implement** the design of the **TaxiLagbe** class so that the following output is produced:

**Hint:**

1. Each taxi can carry maximum 4 passengers

2. addPassenger() method takes the last name of the passenger and ticket fare for that person in an underscore (-) separated string.

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  # Do not change the following lines of code.  taxi1 = TaxiLagbe('1010-01', 'Dhaka')  print('-------------------------------')  taxi1.addPassenger('Walker\_100', 'Wood\_200') taxi1.addPassenger('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')  taxi2.addPassenger('Parker\_215')  print('-------------------------------')  taxi2.printDetails() | --------------------------------------  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 cover only 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 cover only 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 cover only Khulna area.  Total passengers: 2  Passenger lists:  Ronald, Parker  Total collected fare: 330 Taka |

**Task 13**

**Implement** the design of the **Account** class so that the following output is produced:

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  a1 = Account()  print(a1.details())  print("------------------------")  a1.name = "Oliver"  a1.balance = 10000.0  print(a1.details())  print("------------------------")  a2 = Account("Liam")  print(a2.details())  print("------------------------")  a3 = Account("Noah",400)  print(a3.details())  print("------------------------")  a1.withdraw(6930)  print("------------------------")  a2.withdraw(600)  print("------------------------")  a1.withdraw(6929) | Default Account  0.0  ------------------------  Oliver  10000.0  ------------------------  Liam  0.0  ------------------------  Noah  400.0  ------------------------  Sorry, Withdraw unsuccessful! The account balance after deducting withdraw amount is equal to or less than minimum.  ------------------------  Sorry, Withdraw unsuccessful! The account balance after deducting withdraw amount is equal to or less than minimum.  ------------------------  Withdraw successful! New balance is: 3071.0 |

**Task 14**

**Implement** the design of the **StudentDatabase** class so that the following output is produced:

GPA = Sum of (Grade Points \* Credits)/ Credits attempted

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  # Do not change the following lines of code.  s1 = StudentDatabase('Pietro', '10101222')  s1.calculateGPA(['CSE230: 4.0', 'CSE220: 4.0', 'MAT110: 4.0'], 'Summer2020')  s1.calculateGPA(['CSE250: 3.7', 'CSE330: 4.0'], 'Summer2021') print(f'Grades for {s1.name}\n{s1.grades}')  print('------------------------------------------------------')  s1.printDetails()  s2 = StudentDatabase('Wanda', '10103332')  s2.calculateGPA(['CSE111: 3.7', 'CSE260: 3.7', 'ENG101: 4.0'], 'Summer2022')  print('------------------------------------------------------')  print(f'Grades for {s2.name}\n{s2.grades}')  print('------------------------------------------------------')  s2.printDetails() | Grades for Pietro  {'Summer2020': {('CSE230', 'CSE220', 'MAT110'): 4.0}, 'Summer2021':  {('CSE250', 'CSE330'): 3.85}}  ----------------------------------------------- Name: Pietro  ID: 10101222  Courses taken in Summer2020:  CSE230  CSE220  MAT110  GPA: 4.0  Courses taken in Summer2021:  CSE250  CSE330  GPA: 3.85  ----------------------------------------------- Grades for Wanda  {'Summer2022': {('CSE111', 'CSE260', 'ENG101'): 3.8}}  ----------------------------------------------- Name: Wanda  ID: 10103332  Courses taken in Summer2022:  CSE111  CSE260  ENG101  GPA: 3.8 |

**Task 15**

| **1** | **class FinalT6A:** |
| --- | --- |
| **2** | **def \_\_init\_\_(self, x, p):** |
| **3** | **self.temp, self.sum, self.y = 4, 0, 1** |
| **4** | **self.temp += 1** |
| **5** | **self.y = self.temp - p** |
| **6** | **self.sum = self.temp + x** |
| **7** | **print(x, self.y, self.sum)** |
| **8** | **def methodA(self):** |
| **9** | **x = 0** |
| **10** | **y = 0** |
| **11** | **y = y + self.y** |
| **12** | **x = self.y + 2 + self.temp** |
| **13** | **self.sum = x + y + self.methodB(self.temp, y)** |
| **14** | **print(x, y, self.sum)** |
| **15** | **def methodB(self, temp, n):** |
| **16** | **x = 0** |
| **17** | **temp += 1** |
| **18** | **self.y = self.y + temp** |
| **19** | **x = x + 3 + n** |
| **20** | **self.sum = self.sum + x + self.y** |
| **21** | **print(x, self.y, self.sum)** |
| **22** | **return self.sum** |

| **What is the output of the following code sequence?**  **q1 = FinalT6A(2,1)**  **q1.methodA()**  **q1.methodA()** | **x** | **y** | **sum** |
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**Task 16**

| **1** | **class Quiz3A:** |
| --- | --- |
| **2** | **def \_\_init\_\_(self, k = None):** |
| **3** | **self.temp, self.sum, self.y = 4, 0, 0** |
| **4** | **if k != None:** |
| **5** | **self.temp += 1** |
| **6** | **self.temp = self.temp** |
| **7** | **self.sum = self.temp + k** |
| **8** | **self.y = self.sum - 1** |
| **9** | **else:** |
| **10** | **self.y = self.temp - 1** |
| **11** | **self.sum = self.temp + 1** |
| **12** | **self.temp += 2** |
| **13** | **def methodB(self, m, n):** |
| **14** | **x = 0** |
| **15** | **self.temp += 1** |
| **16** | **self.y = self.y + m + (self.temp)** |
| **17** | **x = x + 2 + n** |
| **18** | **self.sum = self.sum + x + self.y** |
| **19** | **print(x, self.y, self.sum)** |
| **20** | **return self.sum** |

| **What is the output of the following code sequence?**  **a1 = Quiz3A()**  **a1.methodB(1,2)**  **a2 = Quiz3A(3)**  **a2.methodB(2,4)**  **a1.methodB(2,1)**  **a2.methodB(1,3)** | **x** | **y** | **sum** |
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**Task 17**

| **1** | **class Test5:** |
| --- | --- |
| **2** | **def \_\_init\_\_(self):** |
| **3** | **self.sum = 0** |
| **4** | **self.y = 0** |
| **5** | **def methodA(self):** |
| **6** | **x=y=k=0** |
| **7** | **msg = [5]** |
| **8** | **while (k < 2):** |
| **9** | **y += msg[0]** |
| **10** | **x = y + self.methodB(msg, k)** |
| **11** | **self.sum = x + y + msg[0]** |
| **12** | **print(x ," " , y, " " , self.sum)** |
| **13** | **k+=1** |
| **14** | **def methodB(self, mg2, mg1):** |
| **15** | **x = 0** |
| **16** | **self.y += mg2[0]** |
| **17** | **x = x + 3 + mg1** |
| **18** | **self.sum += x + self.y** |
| **19** | **mg2[0] = self.y + mg1** |
| **20** | **mg1 += x + 2** |
| **21** | **print(x , " " ,self.y, " " , self.sum)** |
| **22** | **return mg1** |

| **What is the output of the following code**  **sequence?**  **t1 = Test5()**  **t1.methodA()**  **t1.methodA()**  **t1.methodA()** | **x** | **y** | **sum** |
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**Task 18**

| **1** | **class Test4:** |
| --- | --- |
| **2** | **def \_\_init\_\_(self):** |
| **3** | **self.sum, self.y = 0, 0** |
| **4** | **def methodA(self):** |
| **5** | **x, y = 0, 0** |
| **6** | **msg = [0]** |
| **7** | **msg[0] = 5** |
| **8** | **y = y + self.methodB(msg[0])** |
| **9** | **x = y + self.methodB(msg, msg[0])** |
| **10** | **self.sum = x + y + msg[0]** |
| **11** | **print(x, y, self.sum)** |
| **12** | **def methodB(self, \*args):** |
| **13** | **if len(args) == 1:** |
| **14** | **mg1 = args[0]** |
| **15** | **x, y = 0, 0** |
| **16** | **y = y + mg1** |
| **17** | **x = x + 33 + mg1** |
| **18** | **self.sum = self.sum + x + y** |
| **19** | **self.y = mg1 + x + 2** |
| **20** | **print(x, y, self.sum)** |
| **21** | **return y** |
| **22** | **else:** |
| **23** | **mg2, mg1 = args** |
| **24** | **x = 0** |
| **25** | **self.y = self.y + mg2[0]** |
| **26** | **x = x + 33 + mg1** |
| **27** | **self.sum = self.sum + x + self.y** |
| **28** | **mg2[0] = self.y + mg1** |
| **29** | **mg1 = mg1 + x + 2** |
| **30** | **print(x, self.y, self.sum)** |
| **31** | **return self.sum** |

| **t3 = Test4()**  **t3.methodA()**  **t3.methodA()**  **t3.methodA()**  **t3.methodA()** | **x** | **y** | **sum** |
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**Task 19**

| **1** | **class msgClass:** |
| --- | --- |
| **2** | **def \_\_init\_\_(self):** |
| **3** | **self.content = 0** |
| **4** | **class Q5:** |
| **5** | **def \_\_init\_\_(self):** |
| **6** | **self.sum = 1** |
| **7** | **self.x = 2** |
| **8** | **self.y = 3** |
| **9** | **def methodA(self):** |
| **10** | **x, y = 1, 1** |
| **11** | **msg = []** |
| **12** | **myMsg = msgClass()** |
| **13** | **myMsg.content = self.x** |
| **14** | **msg.append(myMsg)** |
| **15** | **msg[0].content = self.y + myMsg.content** |
| **16** | **self.y = self.y + self.methodB(msg[0])** |
| **17** | **y = self.methodB(msg[0]) + self.y** |
| **18** | **x = y + self.methodB(msg[0], msg)** |
| **19** | **self.sum = x + y + msg[0].content** |
| **20** | **print(x," ", y," ", self.sum)** |
| **21** | **def methodB(self, mg1, mg2 = None):** |
| **22** | **if mg2 == None:** |
| **23** | **x, y = 5, 6** |
| **24** | **y = self.sum + mg1.content** |
| **25** | **self.y = y + mg1.content** |
| **26** | **x = self.x + 7 +mg1.content** |
| **27** | **self.sum = self.sum + x + y** |
| **28** | **self.x = mg1.content + x +8** |
| **29** | **print(x, " ", y," ", self.sum)** |
| **30** | **return y** |

| **31** | **else:** |
| --- | --- |
| **32** | **x = 1** |
| **33** | **self.y += mg2[0].content** |
| **34** | **mg2[0].content = self.y + mg1.content** |
| **35** | **x = x + 4 + mg1.content** |
| **36** | **self.sum += x + self.y** |
| **37** | **mg1.content = self.sum - mg2[0].content** |
| **38** | **print(self.x, " ",self.y," ", self.sum)** |
| **39** | **return self.sum** |

| **What is the output of the following code**  **sequence?**  **q = Q5()**  **q.methodA()** | **x** | **y** | **sum** |
| --- | --- | --- | --- |
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**Practice Task (20 - 25) Ungraded**

**Task 20**

Design a **Student** class so that the following output is produced upon executing the following code

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  **# Do not change the following lines of code.**  s1 = Student()  print(“=========================”) s2 = Student(“Carol”)  print(“=========================”) s3 = Student(“Jon”, “EEE”)  print(“=========================”) s1.update\_name(“Bob”)  s1.update\_department(“CSE”)  s2.update\_department(“BBA”)  s1.enroll(“CSE110”, “MAT110”, “ENG091”) s2.enroll(“BUS101”)  s3.enroll(“MAT110”, “PHY111”)  print(“###########################”) s1.printDetail()  print(“=========================”) s2.printDetail()  print(“=========================”) s3.printDetail() | Student name and department need to be set =========================  Department for Carol needs to be set  =========================  Jon is from EEE department  =========================  ###########################  Name: Bob  Department: CSE  Bob enrolled in 3 course(s):  CSE110, MAT110, ENG091  =========================  Name: Carol  Department: BBA  Carol enrolled in 1 course(s):  BUS101  =========================  Name: Jon  Department: EEE  Jon enrolled in 2 course(s):  MAT110, PHY111 |

**Task 21**

Design a **Student** class so that the following output is produced upon executing the following code:

[Hint: Each course has 3.0 credit hours. You must take at least 9.0 and at most 12.0 credit hours]

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  **# Do not change the following lines of code.** s1 = Student(“Alice”,“20103012”,“CSE”) s2 = Student(“Bob”, “18301254”,“EEE”) s3 = Student(“Carol”, “17101238”,“CSE”) print(“##########################”) print(s1.details())  print(“##########################”) print(s2.details())  print(“##########################”) s1.advise(“CSE110”, “MAT110”, “PHY111”) print(“##########################”) s2.advise(“BUS101”, “MAT120”)  print(“##########################”) s3.advise(“MAT110”, “PHY111”, “ENG102”, “CSE111”, “CSE230”) | ##########################  Name: Alice  ID: 20103012  Department: CSE  ##########################  Name: Bob  ID: 18301254  Department: EEE  ##########################  Alice, you have taken 9.0 credits.  List of courses: CSE110, MAT110, PHY111 Status: Ok  ##########################  Bob, you have taken 6.0 credits.  List of courses: BUS101, MAT120  Status: You have to take at least 1 more course. ##########################  Carol, you have taken 15.0 credits.  List of courses: MAT110, PHY111, ENG102, CSE111, CSE230  Status: You have to drop at least 1 course. |

**Task 22**

Write the **Hotel** class with the required methods to give the following output as shown.

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  **# Do not change the following lines of code.** h = Hotel("Lakeshore")  h.addStuff( "Adam", 26)  print("=================================") print(h.getStuffById(1))  print("=================================") h.addGuest(“Carol”,35,”123”)  print("=================================") print(h.getGuestById(1))  print("=================================") h.addGuest("Diana", 32, “431”)  print("=================================") print(h.getGuestById(2))  print("=================================") h.allStaffs()  print("=================================") h.allGuest() | Staff With ID 1 is added  ================================= Staff ID: 1  Name: Adam  Age: 26  Phone no.: 000  ================================= Guest With ID 1 is created  ================================= Guest ID: 1  Name: Carol  Age: 35  Phone no.: 123  ================================= Guest With ID 2 is created  ================================= Guest ID: 2  Name: Dianal  Age: 32  Phone no.: 431  ================================= All Staffs:  Number of Staff: 1  Staff ID: 1 Name: Adam Age: 26 Phone no: 000 ================================= All Guest:  Number of Guest: 2  Guest ID: 1 Name: Carol Age: 35 Phone no.: 123 Guest ID: 2 Name: Dianal Age: 32 Phone no.: 431 |

**Task 23**

Write the **Author** class with the required methods to give the following outputs as shown.

| **Driver Code** | **Output** |
| --- | --- |
| ***# 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("=================================") | ================================= 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  ================================= |

**Task 24**

**Implement** the design of the **Hospital, Doctor and Patient** class so that the following output is produced:

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  **# Do not change the following lines of code.** h = Hospital("Evercare")  d1 = Doctor("1d","Doctor", "Samar Kumar", "Neurologist") h.addDoctor(d1)  print("=================================") print(h.getDoctorByID("1d"))  print("=================================") p1 = Patient("1p","Patient", "Kashem Ahmed", 35, 12345) h.addPatient(p1)  print("=================================") print(h.getPatientByID("1p"))  print("=================================") p2 = Patient ("2p","Patient", "Tanina Haque", 26, 33456) h.addPatient(p2)  print("=================================") print(h.getPatientByID("2p"))  print("=================================") h.allDoctors()  h.allPatients() | ================================= Doctor's ID: 1d  Name: Samar Kumar  Speciality: Neurologist  ================================= ================================= Patient's ID: 1p  Name: Kashem Ahmed  Age: 35  Phone no.: 12345  ================================= ================================= Patient's ID: 2p  Name: Tanina Haque  Age: 26  Phone no.: 33456  ================================= All Doctors:  Number of Doctors: 1  {'1d': ['Samar Kumar', 'Neurologist']}  All Patients:  Number of Patients: 2  {'1p': ['Kashem Ahmed', 35, 12345], '2p': ['Tanina  Haque', 26, 33456]} |

**Task 25**

Design the **Vaccine** and **Person** class so that the following expected output is

generated.

[N.B: Students will get vaccines on a priority basis. So, age for students doesn’t matter**]**

| **Driver Code** | **Output** |
| --- | --- |
| ***# Write your code here***  astra = Vaccine("AstraZeneca", "UK", 60) modr = Vaccine("Moderna", "UK", 30)  sin = Vaccine("Sinopharm", "China", 30)  p1 = Person("Bob", 21, "Student")  print("=================================") p1.pushVaccine(astra)  print("=================================") p1.showDetail()  print("=================================") p1.pushVaccine(sin, "2nd Dose")  print("=================================") p1.pushVaccine(astra, "2nd Dose")  print("=================================") p1.showDetail()  print("=================================") p2 = Person("Carol", 23, "Actor")  print("=================================") p2.pushVaccine(sin)  print("=================================") p3 = Person("David", 34)  print("=================================") p3.pushVaccine(modr)  print("=================================") p3.showDetail()  print("=================================") p3.pushVaccine(modr, "2nd Dose") | ================================= 1st dose done for Bob  ================================= Name: Bob Age: 21 Type: Student  Vaccine name: AstraZeneca  1st dose: Given  2nd dose: Please come after 60 days  ================================= Sorry Bob, you can’t take 2 different vaccines ================================= 2nd dose done for Bob  ================================= Name: Bob Age: 21 Type: Student  Vaccine name: AstraZeneca  1st dose: Given  2nd dose: Given  ================================= ================================= Sorry Carol, Minimum age for taking vaccines is 25 years now.  ================================= ================================= 1st dose done for David  ================================= Name: David Age: 34 Type: General Citizen Vaccine name: Moderna  1st dose: Given  2nd dose: Please come after 30 days  ================================= 2nd dose done for David |