Inspiring Excellence

Course Title: Programming Language II
Course Code: CSE 111
Semester: Summer 2020
Lab 6 Assignment

Question 1

Suppose your little sibling wants your help to check his math homework. He is done with his homework but wants you to see if all his results are correct. Since the student with all correct results gets 3 stars. However, you want your brother to check this on his own. So, you design a calculator for him in python. You could have given your scientific calculator but you wanted to give him a basic calculator and also wanted to see if you can even design one.

Subtasks:

1. Create a class called Calculator.
2. Your class shall have 1 constructor and 4 methods, namely add, subtract, multiply and divide.
3. Now, create an object of your class. After creating an object, it should print “Let’s Calculate!” .
4. Then take 3 inputs from the user: first value, operator, second value
5. Now based on the given operator, call the required method and print the result.

Sample Input:

1

+

2

Sample Output:

Let’s Calculate!

Value 1: 1

Operator: +

Value 2: 2

Result: 3

Question 2

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.	***OUTPUT:***
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")	Hello! Sam, you purchased 3 item(s): chips chocolate orange juice ---------- Hello David! David, you purchased 1 item(s): orange juice

Question 3

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.	**OUTPUT**
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(panda2.sleep(10)) print(panda1.sleep(4)) print(panda3.sleep())	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

Question 4

Analyze the given code below to write your 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	***OUTPUT***
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()	White cat is sitting Black cat is sitting Brown cat is jumping Red cat is purring Blue cat is sitting Purple cat is jumping

Question 5

[You are not allowed to change the code below]

Design a “Vehicle” class. A vehicle assumes that the whole world is a 2-dimensional graph paper. It maintains its x and y coordinates (both are integers). Any new object created of the Vehicle class will always start at the coordinates (0,0).

It must have methods to move up, down, left, right and a print_position() method for printing the current coordinate.

Note: All moves are 1 step. That means a single call to any move method changes the value of either x or y or both by 1.

# Write your class here	**OUTPUT**
car = Vehicle() car.print_position() car.moveUp() car.print_position() car.moveLeft() car.print_position() car.moveDown() car.print_position() car.moveRight()	(0,0) (0,1) (-1,1) (-1,0)