Inspiring Excellence

Course Title: Programming Language II
Course Code: CSE 111
Semester: Summer 2020
Lab 4 Assignment
Topic: Intro to OOP

Question 1

Write a class that for running the following codes:

[You are not allowed to change the code below]

```
data_type1 = DataType('Integer', 1234)
print(data_type1.name)
print(data_type1.value)
print('====================')
data_type2 = DataType('String', 'Hello')
print(data_type2.name)
print(data_type2.value)
print('====================')
data_type3 = DataType('Float', 4.0)
print(data_type3.name)
print(data_type3.value)
```

Output:

```
Integer
1234
====================
String
Hello
====================
Float
4.0
```

Subtasks:

1. Create a class named DataType with the required constructor.
2. Assign name and values in constructor according to the output.

Question 2

Design a class called **Flower** with the instance variables so that after executing the following line of code the desired result shown in the output box will be printed.

[You are not allowed to change the code below]

```
#Write your class code here
 flower1 = Flower();
flower1.name="Rose"
flower1.color="Red"
flower1.num_of_petal=6
print("Name of this flower:", flower1.name)
print("Color of this flower:",flower1.color)
print("Number of petal:",flower1.num_of_petal)
print("====================")
flower2 = Flower()
flower2.name="Orchid"
flower2.color="Purple"
flower2.num_of_petal=4
print("Name of this flower:",flower2.name)
print("Color of this flower:",flower2.color)
print ("Number of petal:",flower2. num_of_petal)

#Write the code for subtask 2 and 3 here
```

Output:

Name of this flower: Rose
Color of this flower: Red
Number of petal: 6
==========
Name of this flower: Orchid
Color of this flower: Purple
Number of petal: 4

Subtask:

1) Design the class Flower with default constructor to get the above output.
2) At the end of the given code, also print the address of flower1 and flower2 objects.
3) Do they point to the same address? Print ('they are same' or 'they are different') at the very end to answer this question.

Question 3

A class has been designed for this question. Solve the questions to get the desired result as shown in the output box.

[You are not allowed to change the code below]

```
class Wadiya():
 def __init__(self):
   self.name = 'Aladeen'
   self.designation = 'President Prime Minister Admiral General'
   self.num_of_wife = 100
   self.dictator = True
```

#Write your code for subtask 1, 2, 3 and 4 here

Output:

Part 1:
Name of President: Aladeen
Designation: President Prime Minister Admiral General
Number of wife: 100
Is he/she a dictator: True
Part 2:
Name of President: Donald Trump
Designation: President
Number of wife: 1
Is he/she a dictator: False

Subtask:
1) Create an object named wadiya.

2) Use the object to print the values as shown in part 1 (Also print the sentence Part 1:)
3) Use the same object to change and print the values in part 2(Also print the sentence Part 2:)
4) Did changing the instance variable values using the same object, affect the previous values of Part 1? (Print ‘previous information lost’ or ‘No, changing had no effect on previous value’)

Question 4

Design a class Joker with parameterized constructor so that the following line of code prints the result shown in the output box.

[You are not allowed to change the code below]

```
#Write your class code here

j1 = Joker('Heath Ledger', 'Mind Game', False)
print(j1.name)
print(j1.power)
print(j1.is_he_psycho)
print("====================")
j2 = Joker('Joaquin Phoenix', 'Laughing out Loud', True)
print(j2.name)
print(j2.power)
print(j2.is_he_psycho)
print("====================")
if j1 == j2:
    print('same')
else:
    print('different')
j2.name = 'Heath Ledger'
if j1.name == j2.name:
    print('same')
else:
    print('different')
```

```
#Write your code for 2,3 here
```

Output:

```
Heath Ledger
Mind Game
False
====================
Joaquin Phoenix
Laughing out Loud
True
====================
different
same
```

Subtask:
1) Design the class using a parameterized constructor.
2) The first if/else block prints the output as ‘different’, but why? Explain your answer and print your explanation at the very end.
3) The second if/else block prints the output as ‘same’, but why? Explain your answer and print your explanation at the very end.

Question 5

Design a class called **Pokemon** using a parameterized constructor so that after executing the following line of code the desired result shown in the output box will be printed. First object along with print has been done for you, you also need to create other objects and print accordingly to get the output correctly.

[You are not allowed to change the code below]

```
#Write your code for class here

team_pika = Pokemon('pikachu', 'charmander', 90, 60, 10)
print('=======Team 1=======')
print('Pokemon 1:',team_pika.pokemon1_name,
team_pika.pokemon1_power)
```

```
print('Pokemon 2:',team_pika.pokemon2_name,
team_pika.pokemon2_power)
pika_combined_power = (team_pika.pokemon1_power +
team_pika.pokemon2_power) * team_pika.damage_rate
print('Combined Power:', pika_combined_power)
#Write your code for subtask 2,3,4 here
```

Output:

```
=======Team 1=======
Pokemon 1: pikachu 90
Pokemon 2: charmander 60
Combined Power: 1500
=======Team 2=======
Pokemon 1: bulbasaur 80
Pokemon 2: squirtle 70
Combined Power: 1350
```

Subtask:

1) Design the Pokemon class using a parameterized constructor. The 5 values that are being passed through the constructor are pokemon 1 name, pokemon 2 name, pokemon 1 power, pokemon 2 power, damage rate respectively.
After designing the class, if you run the above code the details in Team 1 will be printed.
2) Create an object named team_bulb and pass the value ‘bulbasaur’, ‘squirtle’, 80, 70, 9 respectively.
3) Use print statements accordingly to print the desired result of Team 2.

Note: Power is always being calculated using the instance variables. Example:

```
(team_pika.pokemon1_power + team_pika.pokemon2_power) *
team_pika.damage_rate
```