Course Title: Programming Language II
Course Code: CSE 111
Lab Assignment no: 3

Question 1

Write a class that for running the following codes:
[You are not allowed to change the code below]

```
#Write your class code here
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]

```python
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
```

Question 6

Design the **Player** class so that the code gives the expected output.
[You are not allowed to change the code below]

```
# Write Your Class Code Here
player1 = Player()
player1.name = "Ronaldo"
player1.jersy_number = 9
player1.position = "Striker"
print("Name of the Player:", player1.name)
print("Jersey Number of player:", player1.jersy_number)
print("Position of player:", player1.position)
print("==========================")
player2 = Player()
player2.name = "Neuer"
player2.jersy_number = 1
player2.position = "Goal Keeper"
print("Name of the player:", player2.name)
print("Jersey Number of player:", player2.jersy_number)
print("Position of player:", player2.position)
```

Output:

Name of the Player: Ronaldo
Jersy Number of player: 9
Position of player: Striker
==========================
Name of the player: Neuer
Jersy Number of player: 1
Position of player: Goal Keeper

Question 7

Design the **<u>Country</u>** class so that the code gives the expected output.

```python
# Write your Class Code here
country = Country()
print('Name:',country.name)
print('Continent:',country.continent)
print('Capital:',country.capital)
print('Fifa Ranking:',country.fifa_ranking)
print('==================')
country.name = "Belgium"
country.continent = "Europe"
country.capital = "Brussels"
country.fifa_ranking = 1
print('Name:',country.name)
print('Continent:',country.continent)
print('Capital:',country.capital)
print('Fifa Ranking:',country.fifa_ranking)
```

Output:

```
Name: Bangladesh
Continent: Asia
Capital: Dhaka
Fifa Ranking: 187
==================
Name: Belgium
Continent: Europe
Capital: Brussels
Fifa Ranking: 1
```

Question 8

Write the DemonSlayer class so that the code gives the expected output.

```
# Write your Class Code here
tanjiro = DemonSlayer("Tanjiro", "Water Breathing", 10, 10)
print('Name:',tanjiro.name)
print('Fighting Style:',tanjiro.style)
print(f'Knows {tanjiro.number_of_technique} technique(s) and has
killed {tanjiro.kill} demon(s)')
print('==================')
zenitsu = DemonSlayer("Zenitsu", "Thunder Breathing", 1, 4)
print('Name:',zenitsu.name)
print('Fighting Style:',zenitsu.style)
print(f'Knows {zenitsu.number_of_technique} technique(s) and has
killed {zenitsu.kill} demon(s)')
print('==================')
inosuke = DemonSlayer("Inosuke", "Beast Breathing", 5, 7)
print('Name:',inosuke.name)
print('Fighting Style:',inosuke.style)
print(f'Knows {inosuke.number_of_technique} technique(s) and has
killed {inosuke.kill} demon(s)')
print('==================')
print(f'{tanjiro.name}, {zenitsu.name}, {inosuke.name} knows
total {tanjiro.number_of_technique + zenitsu.number_of_technique
+ inosuke.number_of_technique} techniques')
print(f'They have killed total {tanjiro.kill + zenitsu.kill +
inosuke.kill} demons')
```

Output:

```
Name: Tanjiro
Fighting Style: Water Breathing
Knows 10 technique(s) and has killed 10 demon(s)
==================
Name: Zenitsu
Fighting Style: Thunder Breathing
Knows 1 technique(s) and has killed 4 demon(s)
==================
Name: Inosuke
```

Fighting Style: Beast Breathing
Knows 5 technique(s) and has killed 7 demon(s)
====================
Tanjiro, Zenitsu, Inosuke knows total 16 techniques
They have killed total 21 demons