J. BASKARAN M.Sc., B.Ed. (C.S)
jbaskaran89@gmail.com
Puducherry.

J. ILAKKIA M.Sc., M.Phil., B.Ed. (C.S)
jilakkia@gmail.com
Puducherry.

10. PYTHON CLASSES AND OBJECTS

Section – A

Choose the best answer **(1 Mark)**

1. Which of the following are the key features of an Object Oriented Programming language?

(a) Constructor and Classes (b) Constructor and Object

(c) Classes and Objects (d) Constructor and Destructor

2. Functions defined inside a class:

(a) Functions (b) Module **(c) Methods** (d) section

3. Class members are accessed through which operator?

(a) & **(b) .** (c) # (d) %

4. Which of the following method is automatically executed when an object is created?

(a) __object__( ) (b) __del__( ) (c) __func__( ) **(d) __init__( )**

5. A private class variable is prefixed with

(a) __ (b) && (c) ## (d) **

6. Which of the following method is used as destructor?

(a) __init__( ) (b) __dest__( ) (c) __rem__( ) **(d) __del__( )**

7. Which of the following class declaration is correct?

(a) class class_name (b) class class_name<> **(c) class class_name:** (d) class class_name[ ]

8. Which of the following is the output of the following program?

```
class Student:
def __init__(self, name):
self.name=name
S=Student("Tamil")
```

(a) Error **(b) Tamil** (c) name (d) self

9. Which of the following is the private class variable?

(a) __num (b) ##num (c) $$num (d) &&num

10. The process of creating an object is called as:

(a) Constructor (b) Destructor (c) Initialize **(d) Instantiation**

Section-B

Answer the following questions **(2 Marks)**

1. What is class?

- Class is the main building block in Python.
- Class is a template for the object.
- Object is a collection of data and function that act on those data.
- Objects are also called as instances of a class or class variable.

2. What is instantiation?

- The process of creating object is called as "Class Instantiation".

Syntax:

Object_name = class_name( )

3. What is the output of the following program?

```
class Sample:
   __num=10
   def disp(self):
      print(self.__num)
S=Sample()
S.disp()
print(S.__num)
```

OUTPUT:

```
>>>
10
line 7, in <module>
   print(S.__num)
AttributeError: 'Sample' object has no attribute '__num'
>>>
```

4. How will you create constructor in Python?

- **"init"** is a special function begin and end with double underscore in Python act as a Constructor.
- Constructor function will automatically executed when an object of a class is created.

General format:

```
def __init__(self, [args ……..]):
<statements>
```

5. What is the purpose of Destructor?

- Destructor is also a special method gets executed automatically when an object exit from the scope.
- In Python, __del__( ) method is used as destructor.

General format:

```
def __del__(self):
<statements>
```

Section-C

Answer the following questions **(3 Marks)**

1. What are class members? How do you define it?

- Variables defined inside a class are called as "Class Variable" and functions are called as "Methods".
- Class variable and methods are together known as members of the class.
- The class members should be accessed through objects or instance of class.
- A class can be defined anywhere in a Python program.
- **SYNTAX FOR DEFINING A CLASS:**

```
class class_name:
    statement_1
    statement_2
    ……..
    ……..
    statement_n
```

2. Write a class with two private class variables and print the sum using a method.

CODE:

```
class Sample:
  def __init__(self,n1,n2):
    self.__n1=n1
    self.__n2=n2
  def sum(self):
    print("Class Variable 1:",self.__n1)
```

```
        print("Class Variable 2:",self.__n2)
        print("Sum:",self.__n1 + self.__n2)
S=Sample(5,10)
S.sum()
```

OUTPUT:

```
>>>
Class Variable 1: 5
Class Variable 2: 10
Sum: 15
>>>
```

3. Find the error in the following program to get the given output?

ERROR CODE:

```
class Fruits:
def __init__(self, f1, f2):
self.f1=f1
self.f2=f2
def display(self):
print("Fruit 1 = %s, Fruit 2 = %s" %(self.f1, self.f2))
F = Fruits ('Apple', 'Mango')
del F.display
F.display()
```

OUTPUT:

Fruit 1 = Apple, Fruit 2 = Mango

ERROR:

```
line 8, in <module>
   del F.display
AttributeError: display
```

CORRECT CODE:

```
class Fruits:
    def __init__(self, f1, f2):
        self.f1=f1
        self.f2=f2
    def display(self):
        print("Fruit 1 = %s, Fruit 2 = %s" %(self.f1, self.f2))
F = Fruits ('Apple','Mango')
F.display()
```

OUTPUT:

Fruit 1 = Apple, Fruit 2 = Mango

4. What is the output of the following program?

CODE:

```
class Greeting:
def __init__(self, name):
self.__name = name
def display(self):
print("Good Morning ", self.__name)
obj=Greeting('Bindu Madhavan')
obj.display()
```

Output:

```
>>>
Good Morning  Bindu Madhavan
>>>
```

5. How do define constructor and destructor in Python?

CONSTRUCTOR:

- **"init"** is a special function begin and end with double underscore in Python act as a Constructor.
- Constructor function will automatically executed when an object of a class is created.

General format of constructor:

```
def __init__(self, [args ……..]):
<statements>
```

DESTRUCTOR:

- Destructor is also a special method gets executed automatically when an object exit from the scope.
- In Python, __del__( ) method is used as destructor.

General format of destructor:

```
def __del__(self):
<statements>
```

Section - D

Answer the following questions: **(5 Marks)**

1. Write a menu driven program to add or delete stationary items. You should use dictionary to store items and the brand.

CODE:

```
stationary={}
print("\n1. Add Item \n2.Delete item \n3.Exit")
ch=int(input("\nEnter your choice: "))
while(ch==1)or(ch==2):
   if(ch==1):
      n=int(input("\nEnter the Number of Items to be added in the Dictionary: "))
      for i in range(n):
         item=input("\nEnter an Item Name: ")
         brand=input("\nEnter the Brand Name: ")
         stationary[item]=brand
      print(stationary)
```

```
    elif(ch==2):
        ritem=input("\nEnter the item to be removed from the Dictionary: ")
        stationary.pop(ritem)
        print(stationary)
    ch=int(input("\nEnter your choice: "))
```

OUTPUT:

```
>>>
===== RESTART: C:/Users/SANJANASRI.SANJANASRI-PC/Desktop/Python/menu.py =====

1. Add Item
2.Delete item
3.Exit

Enter your choice: 1

Enter the Number of Items to be added in the Dictionary: 2

Enter an Item Name: Pen

Enter the Brand Name: Rorito

Enter an Item Name: Pencil

Enter the Brand Name: Camlin
{'Pen': 'Rorito', 'Pencil': 'Camlin'}

Enter your choice: 2

Enter the item to be removed from the Dictionary: Pen
{'Pencil': 'Camlin'}

Enter your choice: 3
>>>
```

PREPARED BY

J. BASKARAN M.Sc., B.Ed. (C.S)
jbaskaran89@gmail.com

J. ILAKKIA M.Sc., M.Phil., B.Ed. (C.S)
jilakkia@gmail.com