MODULE 4

1. Define a class employee in python using constructor to initialize empid, name and salary data of

instances. Write methods to display employee details and to count number of employees.

```
class Employee:
'Common base class for all employees'
empCount = 0
        def __init__(self, name, salary):
                self.name = name
                self.salary = salary
                 Employee.empCount += 1
        def displayCount(self):
                 print ("Total Employee %d" % Employee.empCount )
        def displayEmployee(self):
                  print( "Name : ", self.name, ", Salary: ", self.salary )
emp1 = Employee("Ashwini", 150000) #created first objects with its data emp2 =
Employee("Malhar", 160000) #created first objects with its data emp1.displayEmployee()
emp2.displayEmployee()
print ("Total Employee %d" % Employee.empCount )

#executing the program output will be
Name :Ashwini,Salary: 150000
Name : malhar , Salary: 160000
Total Employee 2
```

2. Define attribute, constructor, destructor, namespace & scope for object oriented programming in python. [05]

- Attribute: A variable that is part of a class.
- • Constructor: An optional specially named method __init__ () that is called at the moment when a class is being used to construct an object. Usually this is used to set up initial values for the object.
- • Destructor: An optional specially named method __del__() that is called at the moment just before an object is destroyed. Destructors are rarely used.
- • namespace: A namespace is a mapping from names to objects. Namespaces are created at different moments and have different lifetimes. The namespace containing the built- in names is created when the Python interpreter starts up, and is never deleted. The global namespace for a module is created when the module definition is read in; normally, module namespaces also last until the interpreter quits.

• Scope: A scope is a textual region of a Python program where a namespace is directly accessible. “Directly accessible” here means that an unqualified reference to a name attempts to find the name in the namespace.

3. Create a student class and initialize it with name and roll number. Design methods to:

1. i) Display to display all information of the student
2. ii) setAge to assign age of student
3. iii) setMarks to assign marks of student

Ans:

```
#student class
class student:
def __init__(self, roll,name):
#to initialize roll and name
        self.roll=roll
        self.name=name
def display(self): # i. to display student's information
        print(self.roll,self.name,self.age,self.marks)
def setAge(self): # ii. to set age of the student
        self.age=int(input("Enter age : "))
def setMarks(self): # iii. to set marks of the student
        self.marks=int(input("Enter marks : "))
s1=student(111,"Madhuri") #creating objects
s2=student(222,"Tara")
#calling methods
s1.setAge()
s1.setMarks()
s2.setAge()
s2.setMarks()
s1.display()
 s2.display()
```

4. Using datetime module write a program that gets the current date & prints the day of the week.

Ans:

```
#To display day of week of current/given date
import datetime
dayofweek = datetime.datetime.today().strftime("%A")
print("The day of week of today is:",dayofweek)
#for any given date
year=int(input("Enter year : "))
month=int(input("Enter month : "))
dt=int(input("Enter date : "))
dayofweek = datetime.date(year,month,dt).strftime("%A")
print("The day of week of the date",dt,month,year,"is",dayofweek)
```

5. What are polymorphic functions. Explain with a snippet code.

Ans:

Polymorphism in OOPs: Functions having the same name but perform different tasks based on type and number of arguments (function signature).
Function name is same “area” to find area of different shapes (rectangle,circle,..etc) of the shape class. Area of rectangle requires two arguments(length and width) and area of circle requires one argument only i.e. radius.

The function call recognizes with its signature

#: polymorphic function-Code

```
class shape:
        def area(self,length,width):
                length=self.length
               width=self.width
                print("Area of rectangle is",length*width,"square unit.")
        def area(self,rad,dummy=0): r=rad
                print("Area of circle is",3.14*r*r,"square unit.")
rectangle=shape()
circle=shape()
rectangle.area(7,5)
circle.area(8.5)


#output
('Area of circle is', 153.86, 'square unit.')
('Area of circle is', 226.865, 'square unit.')
```

6.What does the keyword self in python mean? Explain with an example.
Ans:
Python decided to do methods in a way that makes the instance to which the method belongs be passed automatically, but not received automatically: the first parameter of methods is the instance
the method is called on. *self* refers to the object which calls the method.
self can be used with __init__() to initialize the object and with other methods also. Data of the object
is accessed by self as self.data
self refers to the newly created object; in other class methods, it refers to the instance whose method
was called. However self is not a reserved keyword in python it's just a strong convention

```
class student:
        def __init__(self, roll,name): #to initialize roll and name
                self.roll=roll
                self.name=name

        def display(self): # i. to display student's information
                print(self.roll,self.name,self.age,self.marks)
```

7. Show using a python code how __init__ method is invoked when an object is initiated. Explain its working.

Ans:

__init__ () method is like constructor of C++ and Java language. It is used to initialize the object's data.

__init__() method is invoked automatically(implicitly) as the object is declared in memory. The instantiation operation ("calling" a class object) creates an empty object. Many classes like to create objects with instances customized to a specific initial state. Therefore a class may define a special method named __init__(), like this:

```
def __init__(self):
self.data = []
```

working of __init__()

```
#_init__() method
 class c1:
def __init__(self,data1,data2): #will be called automatically when object is created
                self.data1=data1
                self.data2=data2
                print("Hi I'm constructing the object.")
                print("data1=",self.data1,"data2=",self.data2)
ob1=c1(10,20)
ob2=c1(40,50)
```

```
#Output:
Hi I'm constructing the object.
('data1=', 10, 'data2=', 20)
Hi I'm constructing the object.
('data1=', 40, 'data2=', 50)
```

Q 8 c. Explain __str__method with a Python Program.
Ans:

• This method returns thestringrepresentation of the object. This method is called when print() or str() function is invoked on an object.

This method must return the String object. If we don’t implement __str__() function for a class, then built-in object implementation is used that actually calls __repr__() function. __str__ () is a built-in function that computes the "informal" string representations of an object

```
# __str__ method

class professor:
        name=""
         salary=0
        def __init__(self,pname,sal):
                self.name=pname
                self.salary=sal
        def __str__(self):
                return 'Professor(%s, %i)' % (self.name,self.salary) #here format specifier %
        for string %d for integer
p1=professor("Ashwini",60000)
print(p1.__str__())

#Output
Professor(Ashwini, 60000)
```

Module 5:

1. How will you extract only text from below pdf document using pypdf2module explain with python code

Ans

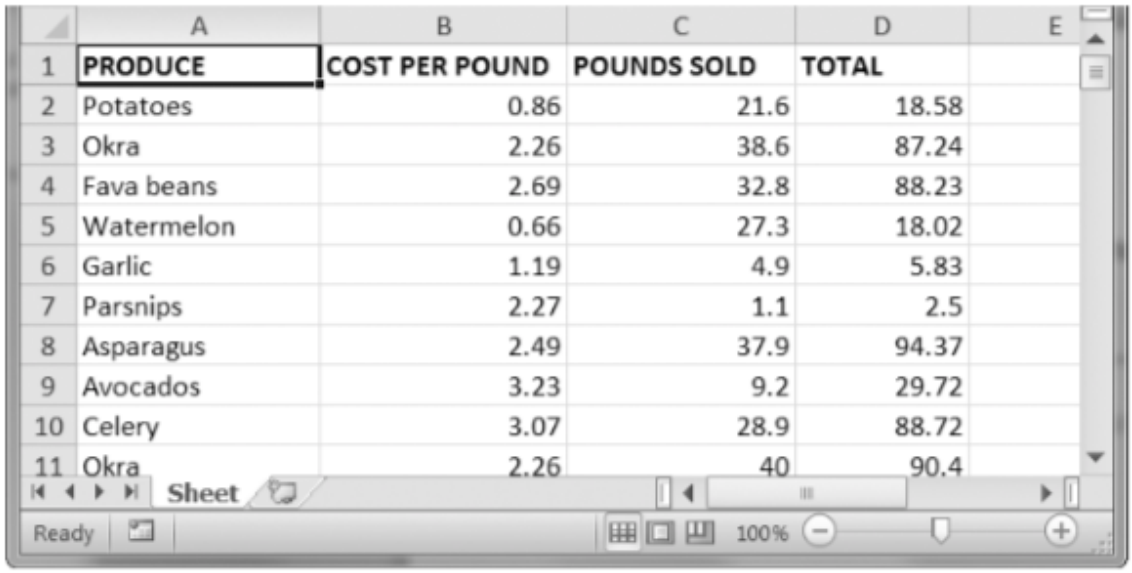
```
>>> import PyPDF2
>>> pdfFileObj = open('meetingminutes.pdf', 'rb')
 >>> pdfReader = PyPDF2.PdfFileReader(pdfFileObj)
>>> pdfReader.numPages
19
v>>> pageObj = pdfReader.getPage(0)
>>> pageObj.extractText()
```

2. Design a project(Python Code) which will combine Selected Pages from many Pdfs files(refer Project: combining Select Pages from many Pdfs page no 303) write all steps

3. Project write a program to update cells in a spreadsheet of produce sales. Your program will look through the spreadsheet, find spe- cific kinds of produce, and update their prices by performing fallowing steps

   Step 1: Set Up a Data Structure with the Update Information
   Step 2: Check All Rows and Update Incorrect Prices

   To ans Refer Project: updating a Spreadsheet page no 279 of text book.



	A	B	C	D	E
1	PRODUCE	COST PER POUND	POUNDS SOLD	TOTAL	
2	Potatoes	0.86	21.6	18.58	
3	Okra	2.26	38.6	87.24	
4	Fava beans	2.69	32.8	88.23	
5	Watermelon	0.66	27.3	18.02	
6	Garlic	1.19	4.9	5.83	
7	Parsnips	2.27	1.1	2.5	
8	Asparagus	2.49	37.9	94.37	
9	Avocados	3.23	9.2	29.72	
10	Celery	3.07	28.9	88.72	
11	Okra	2.26	40	90.4	

A spreadsheet of produce sales

For below questions refer practice questions from textbook (Ch 12,13,14)

4. Compare and contrast some features that Excel spreadsheets have and CSV spread- sheets don't have?
5. What do you pass to csv.reader() and csv.writer() to create Reader and Writer objects?
6. What function takes a string of JSON data and returns a Python data structure?
7. What function takes a Python data structure and returns a string of JSON data?
8. What does the openpyxl.load_workbook() function return?
9. What modes do File objects for reader and Writer objects need to be opened in?
10. What method takes a list argument and writes it to a CSV file?
11. What do the delimiter and lineterminator keyword arguments do?
12. What does the get_sheet_names() workbook method return?
13. How would you retrieve the Worksheet object for a sheet named 'Sheet1'?
14. How would you retrieve the Worksheet object for the workbook's active sheet?
15. How would you retrieve the value in the cell C5?
16. How would you set the value in the cell C5 to "Hello"?
17. How would you retrieve the cell's row and column as integers?
18. What do the get_highest_column() and get_highest_row() sheet methods return, and what is the data type of these return values?
19. If you needed to get the integer index for column 'M', what function would you need to call?
20. If you needed to get the string name for column 14, what function would you need to call?
21. How can you retrieve a tuple of all the Cell objects from A1 to F1?
22. How would you save the workbook to the filename *example.xlsx*?
23. How do you set a formula in a cell?
24. If you want to retrieve the result of a cell's formula instead of the cell's formula itself, what must you do first?
25. How would you set the height of row 5 to 100?