

## XII CS QUESTION BANK FOR BRIGHT STUDENTS CHAPTER WISE SET-II

### CLASS XII COMPUTE SCIENCE (QUESTION BANK - MLL)

#### CHAPTER -1 PYTHON REVISION TOUR -I

Q.1 State some features of Python.

Ans: - Python is a language which is **Easy to use, it is Expressive, Cross Platform and an Open Source Language.**

Q.2 What is a python variable? Identify the variables that are invalid and state the reason

Class, do, while, 4d, a+

Ans: - **A variable in python is a container to store data values.**

- a) **do, while** are invalid because they are python keyword
- b) **4d** is invalid because the name can't be started with a digit.
- c) **a+** is also not valid as no special symbol can be used in name except underscore. ( \_ )

Q.3 What is None?

Ans: - None keyword is **used to define a null value or no value at all. None cannot be 0 or empty string or False.**

Eg: - **var = None**

**print(var)**

The above code will print None.

Q.4 How strings are represented in Python?

Ans: - Strings in Python are array of bytes representing Unicode characters. There are three ways to represent a string data in python –

1) **Single Line Strings**

Eg: - **Str1= 'I Start Learning PYTHON'**

2) **Multiline strings**

Eg: - **Str2= "Initially I am scaring from Python Language\**

**But Now Working in Python become Easy for me."**

**Str3= "'It is an easy**

**Language'"**

Q.5 What are the various mutable and immutable data types in Python?

Ans: - The **data types which are changeable called Mutable** Data Type, and those **which are not changeable called immutable** data types.

Mutable Data types of Python are: - **list, dictionary, set**

Immutable Data Types are: - **int, float, complex, string, tuple**

Q.6 What is the use of indentation in Python. Explain.

Ans: - **Indentation helps to show the beginning and ending of a block.**

Eg: - **X=10**  
**Y=20**  
**if (X>Y):**  
**print('Greater No is ',X)**  
**else:**  
**print('Greater No is ',Y)**

Q.7 Predict the output

```
for i in range( 1, 10, 3):  
    print(i)
```

Ans: - **1**  
**4**  
**7**

Q.8 Rewrite the code after correcting errors: -

```
if N=>0  
    print(odd)  
else  
    Print("even")
```

Ans: - **if N=>0:**  
**print("odd")**  
**else:**  
**print("even")**

Q.9 What problem occurs with the following code

```
X=40
While X< 50 :
    print(X)
```

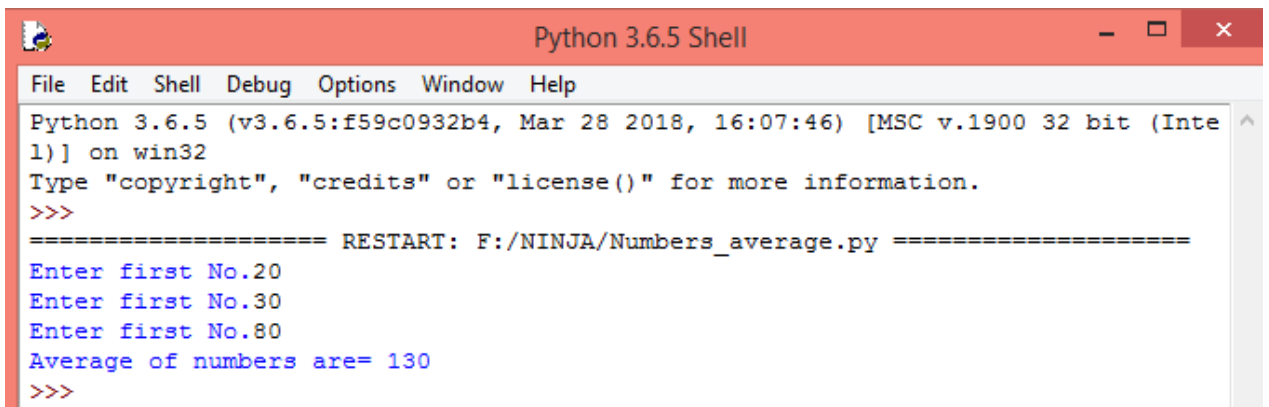
Ans: - **The given code does not have the incrementing value of X, thus the loop becomes endless.**

Q.10 Write a program to find average of three numbers.

Ans: -

```
n1=int(input('Enter first No.))
n2=int(input('Enter first No.))
n3=int(input('Enter first No.))
avg=n1+n2+n3
print('Average of numbers are=',avg)
```

**Output: -**



```
Python 3.6.5 Shell
File Edit Shell Debug Options Window Help
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: F:/NINJA/Numbers_average.py =====
Enter first No.20
Enter first No.30
Enter first No.80
Average of numbers are= 130
>>>
```

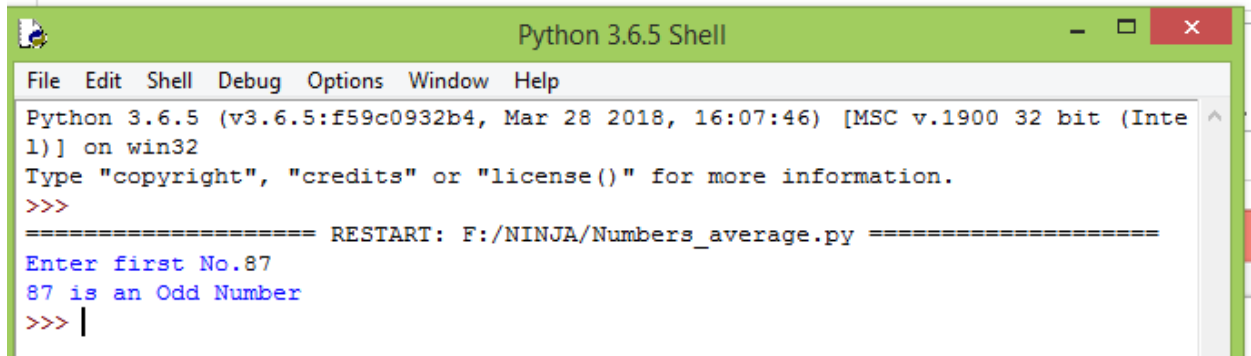
Q.11 Write a program to check if a number is odd or even.

Ans: -

```
x=int(input('Enter first No.))
if (x%2==0):
    print(x, ' is an Even Number')
else:
```

```
print(x, 'is an Odd Number')
```

**Output: -**

A screenshot of a Python 3.6.5 Shell window. The window title is "Python 3.6.5 Shell". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The main text area shows the following content:

```
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: F:/NINJA/Numbers_average.py =====
Enter first No.87
87 is an Odd Number
>>> |
```

Q.12 Write a program to print numbers from 1 to 10 and 10 to 1

Ans: -

```
x=int(input('Enter 1 or 10'))
```

```
if x==1:
```

```
    for x in range(1,11):
```

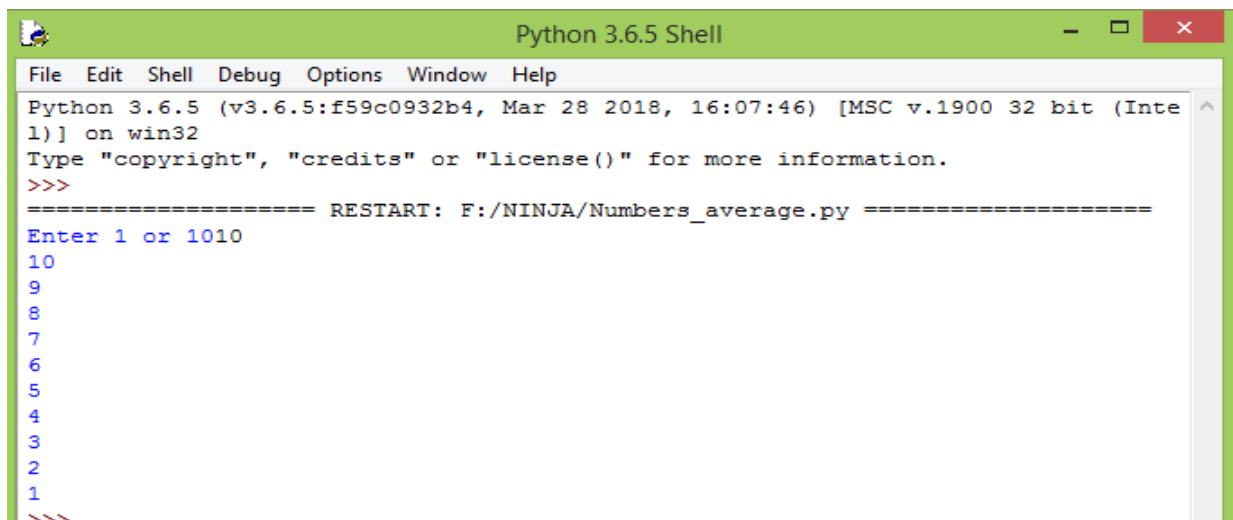
```
        print(x)
```

```
else:
```

```
    for x in range(10,0,-1):
```

```
        print(x)
```

**Output: -**

A screenshot of a Python 3.6.5 Shell window. The window title is "Python 3.6.5 Shell". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The main text area shows the following content:

```
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: F:/NINJA/Numbers_average.py =====
Enter 1 or 1010
10
9
8
7
6
5
4
3
2
1
>>>
```

\*\*\*

## CHAPTER -2 PYTHON REVISION TOUR -II

1. What is a string slice? How is it useful?

Ans: **A sub part or a slice of a string**, say *s*, can be obtained using *s*[*n*:*m*] where *n* and *m* are integers. Python returns all the character at indices *n*, *n*+1, *n*+2 ... ***m*-1**

e.g. **'Well done' [1:4] will give 'ell' here index starts from 0.**

2. How are list different from strings when both are sequences?

Ans: The list and string are different in following ways:

**(i) The lists are mutable sequence while string are immutable.**

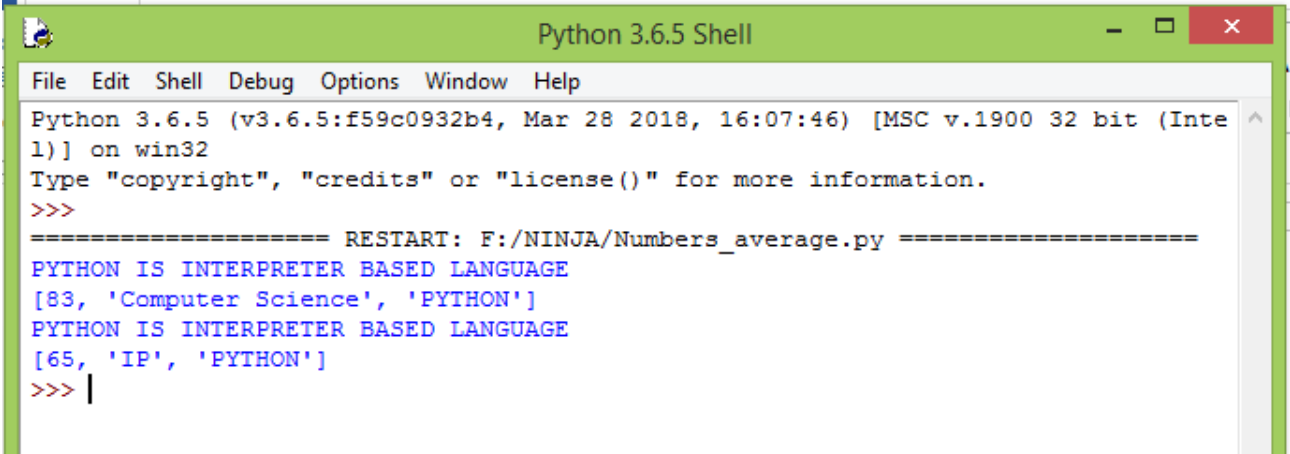
(ii) String store single type of elements – all characters while list can store element belonging to different types.

Eg: -

```
S="PYTHON IS INTERPRETER BASED LANGUAGE"  
L=[83, 'Computer Science', 'PYTHON']  
print(S)  
print(L)
```

**#S[2]='K' # This statement generate error as String is immutable.**

```
print(S)  
L[0]=65  
L[1]='IP'  
print(L)
```



```
Python 3.6.5 Shell  
File Edit Shell Debug Options Window Help  
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32  
Type "copyright", "credits" or "license()" for more information.  
>>>  
===== RESTART: F:/NINJA/Numbers_average.py =====  
PYTHON IS INTERPRETER BASED LANGUAGE  
[83, 'Computer Science', 'PYTHON']  
PYTHON IS INTERPRETER BASED LANGUAGE  
[65, 'IP', 'PYTHON']  
>>> |
```

3. What will be the output of the following code snippet?

```
values = []  
for i in range (1,4):
```

```
values.append(i)
print(values)
```

Ans: **[1]**  
**[1,2]**  
**[1,2,3]**

4. Find the error in following code. State the reason of the error.

```
aLst = { 'a':1 , ' b':2, 'c':3 }
print (aLst['a','b'])
```

Ans: The above code will produce **KeyError**, the reason being that **there is no key** same as the list **['a','b']**

**in dictionary aLst.**

5. How are dictionaries different from list?

Ans: **List are ordered collection and Dictionary are unordered collection of elements.**

\* \* \*

### Chapter – 3 Working with Functions

Q.1) Define a function?

**Ans: - It is a sub program that perform some task on the data and return a value.**

Q.2) Write a python function that takes two numbers and find their product.

Ans: - **def PRODUCT(X,Y):**

**return (X\*Y)**

Q.3) Write a python function that takes two numbers and print the smaller number. Also write how to call this function.

Ans: - **def SMALER(A,B):**

**if(A<B):**

**print("Smaller No – ", A)**

**else:**

**print("Smaller No – ", B)**

**a=int(input("Enter a number:"))**

**b=int(input("Enter another number:"))**

**SMALLER(a,b)**

Q.4) How many values a python function can return? Explain how?

Ans: Python function can return **more than one** values.

**def square\_and\_cube(X):**

**return X\*X, X\*X\*X, X\*X\*X\*X**

**a=3**

**x,y,z=square\_and\_cube(a)**

**print(x,y)**

Q.5) Rewrite the correct code after removing the errors: -

**def SI(p, t=2, r):**

**return (p\*r\*t)/100**

Ans: - **def SI(p, r, t=2):**

**return(p\*r\*t) /100**

Q.6) Write a small python function that receive two numbers and return their sum, product, difference and multiplication and modulo division.

Ans: - **def ARITHMATIC\_OPERTAIONS(a,b):**

**return a+b, a\*b, a-b, a/b, a%b**

**calling of function: -**

a,b,c,d,e=ARITHMATIC\_OPERTAIONS(3,4)

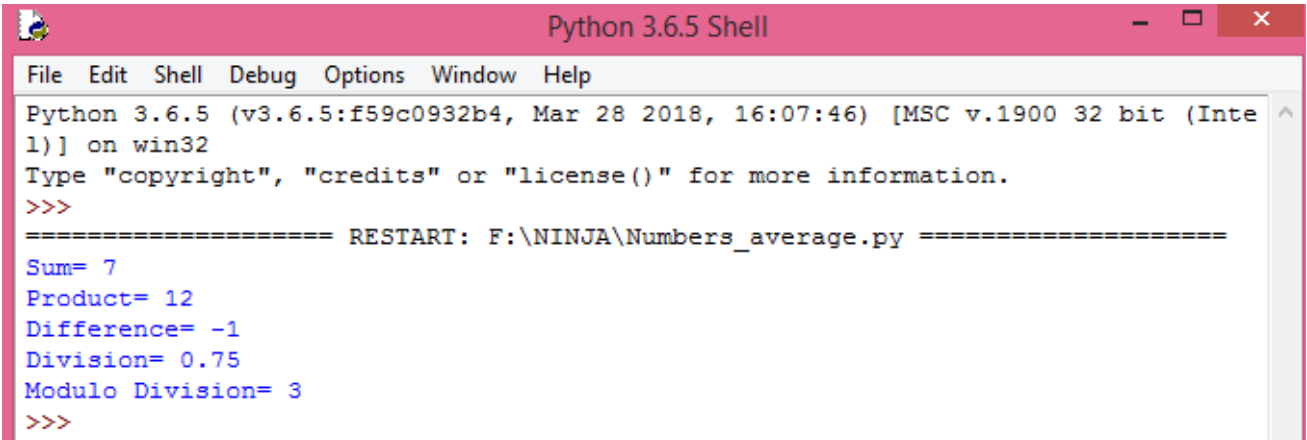
print('Sum=',a)

print('Product=',b)

print('Difference=',c)

print('Division=',d)

print('Modulo Division=',e)



```
Python 3.6.5 Shell
File Edit Shell Debug Options Window Help
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: F:\NINJA\Numbers_average.py =====
Sum= 7
Product= 12
Difference= -1
Division= 0.75
Modulo Division= 3
>>>
```

Q.7) What is scope of a variable?

Ans: - **Part of program within which a name is legal and accessible is called scope of the variable.**

Q.8) Explain two types of variable scope with example.

Ans – **Global Scope – A name declared in top level segment of a program is said to have global scope and it is accessible inside whole programme.**

**Local Scope – A name declared in a function body is said to have local scope and it can be used only within this function.**

**A=0                    # global scope**



```
def fun1():  
    B=0 # local scope  
    print(B)  
print(A)
```

Q.9) Consider the following function headers. Identify the correct statement: -

- |                              |                            |
|------------------------------|----------------------------|
| 1) def correct(a=1,b=2,c):   | 2) def correct(a=1,b,c=3): |
| c) def correct(a=1,b=2,c=3): | 4) def correct(a=1,b,c):   |

**Ans: - c) def correct(a=1,b=2,c=3)**

Q.10) Find the output of the following code: -

Ans: - def CALLME(n1=1,n2=2):

```
    n1=n1*n2  
    n2+=2  
    print(n1,n2)
```

```
CALLME()  
CALLME(2,1)  
CALLME(3)
```

Ans: - **2 4**

**2 3**

**6 4**

**\* \* \***

## Chapter-4 Python Library

Q.1) What is Libraries in Python and How many types of main library use in Python?

Ans: -A Library is a **collection of modules** that together **caters to specific types of needs** or applications. **Like NumPy library of Python caters to scientific computing needs.**

Q.2) How we can import library in Python program?

Ans: - We can import a library in python program with the help of **import** command.

Eg: - **import random**

**import pandas as pd**

Q.3) Give the basic structure of user defined function.

Ans: - def <Function\_name>(arguments):

Statements

Eg: - **def MEAN(x,y):**

**Z=(x+y)/2**

**Print(Z)**

Q.4) Create a function in Python to calculate and return Area of rectangle when user enters length and bredth.

Ans: - **def AREA(a,b):**

**Return(a\*b)**

Q.5) What is module in Python?

**Ans: - A module is a file with .py extension that contains variables, class definitions, statements and functions related to a particular task.**

Q.6) Write the features of a module.

Ans: - **1) Modules can be reused in other programmes**

**2) It is independent group of code and data**

Q.7) Create a package Arithmetic Operations(named AO) contain sum, product and difference of two numbers and use it in your main programme.

Ans: - **def ADD(X,Y):**

```

        return (X+Y)

def PRODUCT(X,Y):

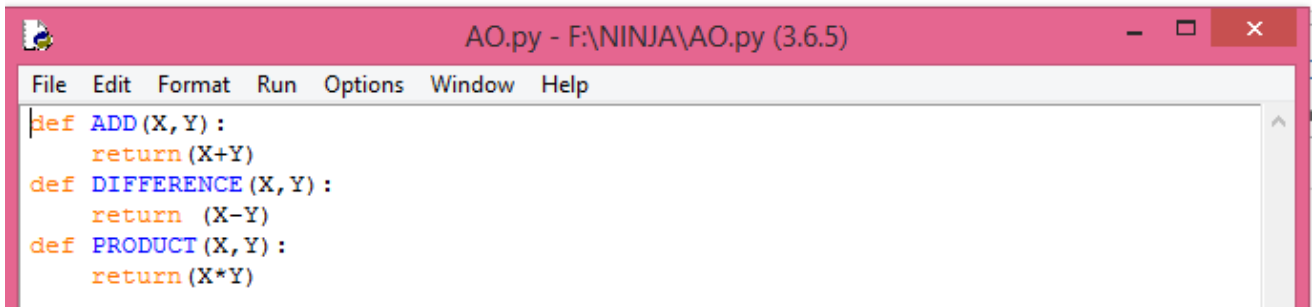
    return(X*Y)

def DIFFERENCE(X,Y):

    return(X-Y)

```

Now lets save this file as **AO.py** then our module is created now.



```

AO.py - F:\NINJA\AO.py (3.6.5)
File Edit Format Run Options Window Help
def ADD(X, Y):
    return(X+Y)
def DIFFERENCE(X, Y):
    return(X-Y)
def PRODUCT(X, Y):
    return(X*Y)

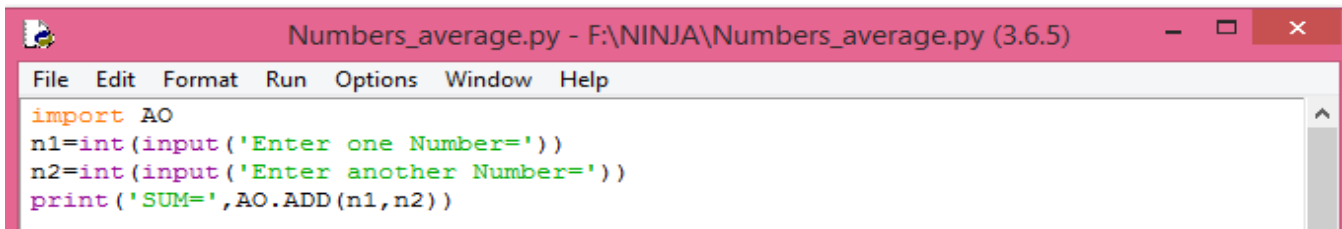
```

Now we are creating our main python file: -

```

import AO
n1=int(input('Enter a Number'))
n2=int(input('Enter another Number'))
print('Sum = ', AO.ADD(n1,n2))
print('Difference=',AO.DIFFERENCE(n1,n2))
print('Product=',AO.PRODUCT(n1,n2))

```

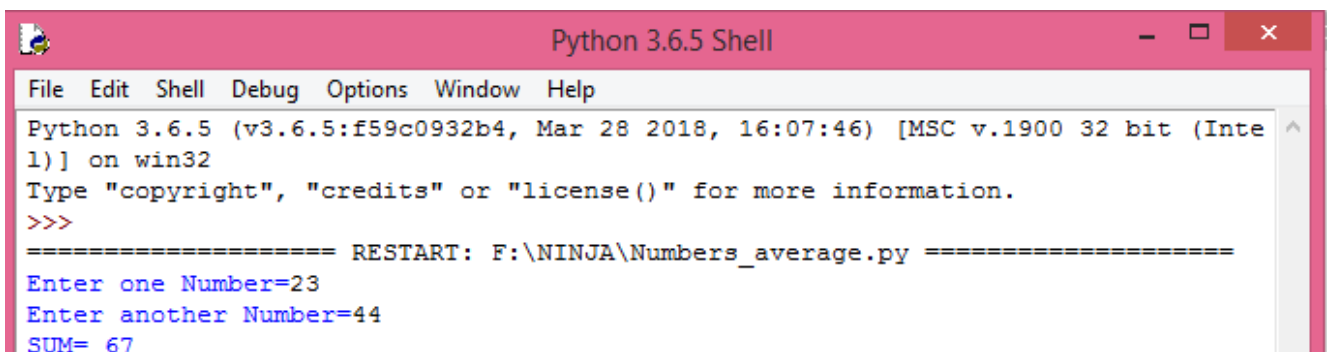


```

Numbers_average.py - F:\NINJA\Numbers_average.py (3.6.5)
File Edit Format Run Options Window Help
import AO
n1=int(input('Enter one Number='))
n2=int(input('Enter another Number='))
print('SUM=', AO.ADD(n1, n2))

```

**Output: -**



```

Python 3.6.5 Shell
File Edit Shell Debug Options Window Help
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: F:\NINJA\Numbers_average.py =====
Enter one Number=23
Enter another Number=44
SUM= 67

```

## **Chapter-5 File Handling**

### **Q.1 What is a data file in python?**

Ans: A bunch of bytes / data stores on some storage device referred by the filename.

### **Q.2 Differentiate between a text file and a binary file.**

Ans: A text file stores data as ASCII/UNICODE characters where as a binary file stores data in binary format (as it is stored in memory). Internal conversion is required in text file and hence slower but binary file does not need any translation and faster.

### **Q.3 What is the significance of a file object or a file handle?**

Ans: A file object or file handle establishes a link or a reference to a file

### **Q.4 What is the use of flush( )?**

Ans: Forcefully write data from buffer to file.

### **Q.5 Name the methods used for reading and writing data from text file.**

Ans: read( ), readline( ), readlines( ) for reading data from file and write( ), writelines( ) to write data to a file

### **Q.6 What are the various file opening modes?**

r – read only, w – write only, a – append

rb – read in binary mode, wb – write in binary mode, ab – append in binary mode

r+ , rb+ : read and write, w+ , wb+ , a+ , ab+ : write/append and read

### **Q.7 What is the significance of close( )?**

Ans: When a file is closed data from buffer gets written onto the file on the disk and link from file is removed. It ensures that data is saved in the file.

### **Q8. Write a python code to write some text to a file Lines.txt.**

```
Ans: # writing data to file
      f=open('Lines.txt','w')
      s=input('Enter text ')
      f.write(s)
      f.close( )
```

**Q.9 Write a python code to find the size of the file in bytes, number of lines and number of words.**

```
# reading data from a file and find size, lines, words
f=open('Lines.txt','r')
str=f.read( )
size=len(str)
print('size of file n bytes',size)
f.seek(0)
L=f.readlines( )
word=L.split( )
print('Number of lines ',len(L))
print('Number of words ',len(word))
f.close( )
```

**Q.10. What does *stdin*, *stdout* represent?**

Ans : *stdin* represent standard input device and *stdout* represent standard output device which are represented as files.

\* \* \*

## **CHAPTER -6 RECURSION**

Q.1 What is recursion in Python?

Ans: Recursion is the process of defining something in terms of itself. We know that in Python, a function can call other functions. It is even possible for the function to call itself. These types of construct are termed as recursive functions.

Q.2 What are the advantage and disadvantage of recursion?

Ans: Advantages of Recursion:

- 1) Recursive functions make the code look clean and elegant.
- 2) A complex task can be broken down into simpler sub-problems using recursion.
- 3) Sequence generation is easier with recursion than using some nested iteration.

Disadvantages of Recursion:

1. Sometimes the logic behind recursion is hard to follow through.
2. Recursive calls are expensive (inefficient) as they take up a lot of memory and time.
3. Recursive functions are hard to debug.

Q.3) Write recursive code to compute the factorial of an integer.

Ans:

```
def calc_factorial(x):  
  
    if x == 1:  
        return 1  
    else:  
        return (x * calc_factorial(x-1))  
  
num = 4  
print("The factorial of", num, "is", calc_factorial(num))
```

Q.4) Write program to find the H.C.F of two input number

Ans:

```
def computeHCF(x, y):  
    if x > y:  
        smaller = y  
    else:  
        smaller = x
```

```
for i in range(1, smaller+1):
    if((x % i == 0) and (y % i == 0)):
        hcf = i

return hcf
```

```
num1 = 54
num2 = 24
print("The H.C.F. of", num1,"and", num2,"is", computeHCF(num1, num2))
```

Q.5) Write Python program to find the sum of natural numbers up to n using recursive function.

Ans:

```
def recur_sum(n):
    if n <= 1:
        return n
    else:
        return n + recur_sum(n-1)
num = 16
if num < 0:
    print("Enter a positive number")
else:
    print("The sum is",recur_sum(num))
```

\* \* \*

## Chapter-7 Idea of Algorithmic Efficiency

### **Q.1 What is an Algorithm?**

Ans: An Algorithm is a step by step process of solving any problem.

### **Q.2 What do you mean by complexity of an algorithm? How it is measured?**

Ans: Complexity is a measure of efficiency of algorithm. It can be measured in terms of time required to execute an algorithm and/or memory space required for execution of an algorithm

### **Q.3 What factors determine the complexity of an algorithm?**

Ans. The factors determining complexity of an algorithm are Time for execution and Memory space required during execution.

### **Q4. How we determine time complexity of an algorithm?**

Ans: We determine the time complexity as the number of elementary instruction that it executes with respect to some given input size.

### **Q.5 What are - best case & worst case?**

Ans: Best case means best possible performance (say minimum time required) of an algorithm. It indicates the optimal time of performance of any algorithm.

Worst case means the worst possible performance (say maximum possible time required) of an algorithm. It provides an upper bound on running time.

Example : for a binary search the best case for an input size of N is when it is sorted

and the worst case is when it is unsorted.

### **Q.6 What does Big-O notation indicate?**

Ans: Big-O notation indicates an algorithm's growth rate which in turn determines the algorithm's performance with increase in the input size.

### **Q7. Give the meaning of O(1), O(N), O(log N)**

Ans: O(1) means an algorithms requires a constant time for its execution e.g. pushing an element at the top of a stack

O(N) means an algorithm takes at most N time (or steps) for an input size of N e.g. searching an element in an array

O(N<sup>2</sup>) means an algorithm takes at most N<sup>2</sup> time (steps) for an input of size N e.g. Sorting an array using bubble sort



**Q8. What is a Dominant term?**

Ans: As the input size grows it affects the efficiency of an algorithm. While describing the growth rate, the term that affect the most on algorithm's performance is called dominant term.

Example : if in an algorithm there are terms with growth rate  $O(N^2)$  and  $O(N)$  then the dominant term is  $O(N^2)$

**Q9. Compare the efficiency of linear and binary search algorithms.**

Efficiency of binary search is better than that of linear search algorithm when the array is sorted as the growth rate of binary search is  $O(\log N)$  which is much smaller than that of linear search  $O(N)$ .

**Q10. State some external factors that may affect an algorithm's efficiency.**

Ans: Size of input, Speed of the computer, Compiler that is used etc.

\* \* \*

## CHAPTER -8 Visualization with Pyplot

Q.1 What is visualization of Data? How to use Pyplot for it?

Ans. Data visualization is the discipline of trying to understand data by placing it in a visual context so that patterns, trends and correlations that might not otherwise be detected can be exposed.

# ----- file: myplot.py -----

```
import matplotlib.pyplot as plt

import numpy as np

x = np.linspace(0, 10, 100)

plt.plot(x, np.sin(x))

plt.plot(x, np.cos(x))

plt.show()
```

Q.2 Which packages of Python is use to draw 2-D graphics?

Ans. Matplotlib is a Python library developed by John Hunter et al. for drawing 2D graphics. It takes the advantages of the numerical calculation modules Numeric and Numarray in Python, and clones many functions in Matlab to help users obtain high-quality 2D graphics easily. Matplotlib can draw a variety of forms of graphics including usual line graphs, histograms, pie charts, scatter plots and error bars, etc

Q.3 Which function is to be use for draw a line in Pyplot Python? Give example.

Ans. import numpy as np  
x = np.linspace(0,10)  
y = x\*\*2  
p1 = [1,20]  
p2 = [6,70]  
plt.plot(x, y)  
newline(p1,p2)  
plt.show()

Q.4 How can we charge the Line Colors, Width and Style in Pyplot.

Ans. # Plot the distribution of numpy data  
plt.hist(exp\_data, bins=21, align='left', color='b',  
edgecolor='red',  
linewidth=1)

Q.5 Difference between Line and Bar Chart in Pyplot..

Ans. A line chart or line graph is a type of chart which displays information as a series of data points called 'markers' connected by straight line segments. Line graphs are usually used to find relationship between two data sets on different axis; for instance X, Y.

A bar chart or bar graph is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally.

\* \* \*

## CHAPTER -9 Data Structures : Linear Lists

### **Q.1 What do you mean by Data Structure?**

Ans: Data Structure means organization of data. A data structure has well defined operations or behavior.

### **Q2. How is Data Structure different from Data Type?**

Data Structure provides information regarding organization of data where as Data Type provides information regarding the domain of values and operations that can be perform on data

### **Q3. Define - Stack, Queue, Tree.**

Stack – A stack is a linear list also known as LIFO list with the special property that items can be added or removed from only one end called the top.

Queue – A queue is a linear list also known as FIFO list with the special property that items can be added added at one end and removed from the other.

Tree – A non-linear hierarchical organization of data as nodes and links between them where the topmost node called *root* and bottom most nodes called *leaves*.

### **Q4. Name some linear and non-linear data structures**

Linear Data Structures – Lists, Arrays, Stack, Queue

Non Linear Data Structures – Trees, Graphs

### **Q5. Name some operations commonly performed on data structures?**

Ans: Traversal, Insertion, Deletion, Searching, Sorting, Merging etc.

### **Q6. What is a list?**

Ans: A list is a mutable sequence of data elements indexed by their position. A list is represented using [ ] . e.g L=[10,20,30]

### **Q7. What is traversing? Write python code to traverse a list.**

Ans: Traversing means accessing or visiting or processing each element of any data structure.

```
#List traversal
L=[10,20,30,40,50]
for x in L :
    print(x)
```

### **Q8. Name the methods used for inserting and deleting elements from a list.**

Various methods for inserting elements in a list are - insert(), append(), extend() and methods used for deleting items from a list are – pop() , remove(), clear()

**Q9. Predict the output with respect to the list L=[40,20,30,10,50]**

- (a) print(L)
- (b) print(len(L))
- (c) L.pop() ; print(L)
- (d) L.append(70); print(L)
- (e) L.sort(); print(L)

**Q10. What is List Comprehension? Explain with an example.**

Ans: A concise description of a list, shorthand for list creation.

E.g. L=[x for x in range(1,10,2)]

\* \* \*

## CHAPTER -10 DATA STRUCTURE – II : STACK AND QUEUE

1. What is data structure and why do we need it?

Ans: Data structure is a particular way of storing and organizing information in a computer so that it can be retrieved and used most productively. Different kinds of data structures are meant for different kinds of applications, and some are highly specialized to specific tasks.

2. what is a stack ? what basic operation can be performed on them?

Ans: A **stack** is a collection of objects that supports fast last-in, first-out (LIFO) semantics for inserts and deletes.

Basic operation are:

- a) Push – insertion of element
- b) Pop – deletion of an element
- c) Peek- viewing topmost element without removing
- d) Display- view all the element

3. What is queue explain with example?

Ans:

A Queue is a linear structure which follows a particular order in which the operations are performed. The order is First In First Out (FIFO). A good example of a queue is any queue of consumers for a resource where the consumer that came first is served first. The difference between stacks and queues is in removing.

4. What are Application of Stack?

Ans:

1. Expression Evolution
2. Expression conversion
  1. Infix to Postfix
  2. Infix to Prefix
  3. Postfix to Infix
  4. Prefix to Infix
3. Parsing
4. Simulation of recursion

\* \* \*

## Chapter – 11 Computer Networks – I

Q.1) Differentiate between Client and Server

**Ans: - Client – It is a host computer that requests for some services from a server.**

**Server – It is a computer that responds to the request of the client.**

Q.2) How many types of Networks are there?

**Ans: - PAN – Personal Area Network**

**LAN – Local Area Network**

**MAN – Metropolitan Area Network**

**WAN – Wide Area Network**

Q.3) Differentiate between LAN and WAN?

**Ans: - LAN: -**

**1) Spread over a small area. 2) Less setup cost 3) It is usually a single network**

**WAN: -**

**2) Spread over a very large area. 2) High setup cost 3) It is usually a network of many networks.**

Q.4) What is P2P network?

**Ans: - They are home networks used in a small companies since they are inexpensive and easy to install, but they are limited in scope and are difficult to secure.**

Q.5) What are the three wired types of network?

**Ans: - 1) Twisted pair cable 2) Coaxial Cable 3) Fibre Optic**

Q.6) Name any 3 wireless computer networks.

**Ans: - 1) Microwave 2) Radio wave 3) Satellite**

Q.7) Explain the use of the following terms: NIC, MAC address, WiFi Card, Hub, switch, bridge, router, gateway, access point

**Ans: - NIC – Network interface card attached to each of the workstation and the server, and helps the workstation to establish the all-important connection with the network.**

**MAC Address – The NIC manufacturer assigns a unique physical address to each NIC card, which is known as MAC address. It's a 6 byte address separated by colon**

Eg: 10:B5:03:63:2E:FC

**WiFi card** – It is either an internal or external Local are network adapter with a built-in wireless radio and antenna.

**Hub** – It is a networking device having multiple ports that are used for connecting multiple computers.

**Switch** – It is a device that segment a big network into small subnets so that it prevent traffic overload in a network.

**Bridge** – It is a device that helps to link two networks together. Bridge can handle with same protocols.

**Router** – A router is a network device that forward data from one network to another. It can handle different protocols.

**Gateway** – It is a network device that connects dissimilar networks. It establishes an intelligent connection between a local network and external network with completely different structure.

**Access Point** – It is also called wireless access point(WAP) which is a hardware device that establishes connection of computing devices on Wireless LAN with a fixed wire network.

Q.8) What do you know about cloud? How many types of clouds are there?

**Ans: - Cloud is a generic term used for internet. Cloud refers to the collection of servers.**

Types of clouds: -

- 1) Private cloud
- 2) Public Cloud
- 3) Community Cloud
- 4) Hybrid Cloud

Q.9) What is IoT?

**Ans: - IoT( Internet of Things) is a phenomenon that connects the things to the internet over wired or wireless connections. le it connects a variety of devices to the Internet.**

Q.10) What are the different enabling technologies for IoT?

**Ans: - 1) RFID – Radio Frequency Identification – This technology uses radio waves to read and capture information stored on a tag, called RFID tag. RFID tag is a microchip attached to an antenna. It identifies the tracks the data of the “things”.**

- 2) **Sensors** – A device that can detect changes in an environment. It helps to collect data about the status of the “Things”.
- 3) **Smart Technologies** – Smart technologies include additional functionalities to take action and have other processing capabilities as per the requirements.
- 4) **Software** – It is also important in the success of a technology as it provide the reusable solutions for connecting taking actions and solving issue that occurs.



**5) Efficient Network connectivity – IoT is formed through interconnection of device to Internet.**

**\* \* \***

## **Chapter -12 Networking –II**

Q.1 What is Network?

Ans: It is a group of interconnected computers which allow sharing of resources.

Q.2 Explain terms

a. Amplitude

Ans. Amplitude modulation (AM) is a modulation technique used in electronic communication, most commonly for transmitting information via a radio carrier wave.

b. Collision

Ans. In a half duplex Ethernet network, a collision is the result of two devices on the same Ethernet network attempting to transmit data at exactly the same time. The network detects the “collision” of the two transmitted packets and discards them both.

c. CSMA-

Ans. Code Division Multiple Access

d. Error Detection

Ans. In networking, error detection refers to the techniques used to detect noise or other impairments introduced into data while it is transmitted from source to destination. Error detection ensures reliable delivery of data across vulnerable networks.

e. Checksum

Ans. A checksum is a value that represents the number of bits in a transmission message and is used by IT professionals to detect high-level errors within data transmissions. Prior to transmission, every piece of data or file can be assigned a checksum value after running a cryptographic hash function.

Q. 3 Define the use of following with expands

a. Router –

Ans. A router is a networking device that forwards data packets between computer networks. Routers perform the traffic directing functions on the Internet. Data sent through the internet, such as a web page or email, is in the form of data packets

b. TCT/IP-

Ans. Transmission control protocol/Internet protocol, TCP/IP is a set of rules (protocols) governing communications among all computers on the Internet. More specifically, TCP/IP

dictates how information should be packaged (turned into bundles of information called packets), sent, and received, as well as how to get to its destination.

c. URL

Ans. A Uniform Resource Locator, colloquially termed a web address, is a reference to a web resource that specifies its location on a computer network and a mechanism for retrieving it. A URL is a specific type of Uniform Resource Identifier, although many people use the two terms interchangeably.

d. DNS

Ans. The Domain Name System (DNS) is the phonebook of the Internet. Humans access information online through domain names, like nytimes.com or espn.com. Web browsers interact through Internet Protocol (IP) addresses. DNS translates domain names to IP addresses so browsers can load Internet resources.

Q.4 Why we use Ipv4 and Ipv6? Also specify the difference between them.

Ans. The Internet Protocol version 4 (Ipv4) is a protocol for use on packet-switched Link Layer networks (e.g. Ethernet). Ipv4 provides an addressing capability of approximately 4.3 billion addresses. The Internet Protocol version 6 (Ipv6) is more advanced and has better features compared to Ipv4.

Q.5 Write the name Networks commands and why they use for any two?

Ans. **Ipconfig**- Ipconfig is a Console Command which can be issued to the Command Line Interpreter (or command prompt) to display the network settings currently assigned to any or all network adapters in the machine. This command can be utilised to verify a network connection as well as to verify your network settings.

ping - Helps in determining TCP/IP Networks IP address as well as determine issues with the network and assists in resolving them.

\* \* \*

## **CHAPTER -13 SQL**

### **Q.1 State two advantages of using Databases.**

Ans: Databases help in reducing Data Duplication i.e. Data Redundancy and controls Data Inconsistency.

### **Q2. Name some popular relational database management systems.**

Ans: Oracle, MYSQL, Sqlite, MS-Access etc

### **Q.3 Define – Relation, Tuple, Degree, Cardinality**

Ans: A **Relation** is logically related data organized in the form of tables.

**Tuple** indicates a row in a relation.

**Degree** indicates the number of Columns.

**Cardinality** indicates the number of Columns.

### **Q4. What is Data Dictionary?**

Ans: Data Dictionary contains data about data or metadata. It represents structure or schema of a database?

### **Q5. Name some data types in MySQL**

Ans: Char, Varchar, Int, Decimal, Date, Time etc.

### **Q6. Differentiate between Char and Varchar.**

Ans: Char means fixed length character data and Varchar means variable length character data. E.g. For the data "Computer" Char(30) reserves constant space for 30 characters whereas Varchar(30) reserves space for only 8 characters.

### **Q.7 What is a Primary Key?**

Ans: A Primary Key is a set of one or more attributes (columns) of a relation used to uniquely identify the records in it.

### **Q.8 What is a Foreign Key? What is its use?**

Ans: A Foreign key is a non-key attribute of one relation whose values are derived from the primary key of some other relation. It is used to join two / more relations and extract data from them.

Q.9 Write SQL statements to do the following

(a) Create a table Result with two columns Roll and Name with Roll as primary key

```
CREATE TABLE Result  
(Roll INT PRIMARY KEY, Name Varchar(30))
```

(b) Add a column Marks to Result table

```
ALTER TABLE Result  
ADD (Marks DECIMAL(10,2))
```

€ Insert a record with values 1, "Raj", 75.5

```
INSERT INTO Result  
VALUES(1,"Raj",75.5)
```

(d) Show the structure of Result table

```
DESCRIBE Result
```

€ Display the records in ascending order of name

```
SELECT * FROM Result  
ORDER BY Name
```

(f) Display records having marks > 70

```
SELECT * FROM Result  
WHERE Marks > 70
```

(g) Update marks of "Raj" to 80

```
UPDATE Result  
SET Marks = 80  
WHERE Name="Raj"
```

**Q10. What are the various Integrity Constraints?**

Ans: Various Integrity Constraints are –

NOT NULL – Ensures value for the column is not left unassigned

UNIQUE – ensures that all values in a column are distinct or no two rows can have the same values for a column having UNIQUE constraint

CHECK – Ensures that values for a particular column satisfy the specified condition

DEFAULT – Ensures that the default value is assumed if value for the column is not specified

PRIMARY KEY – Automatically applies UNIQUE and NOT NULL for uniquely identifying rows / records in a table

\* \* \*

## **CHAPTER -14 MORE ON SQL**

1. What is ORDER BY CLAUSE in SQL?

**Ans: The ORDER BY statement in sql is used to sort the fetched data in either ascending or descending according to one or more columns.**

**By default ORDER BY sorts the data in ascending order. We can use the keyword DESC to sort the data in descending order and the keyword ASC to sort in ascending order.**

**Syntax of all ways of using ORDER BY is shown below:**

```
SELECT * FROM table_name ORDER BY column_name ASC|DESC
```

2. what is Aggregate function in MYSQL?

**Ans: Aggregate Functions are all about Performing calculations on multiple rows Of a single column of a table And returning a single value.**

**The ISO standard defines five (5) aggregate functions namely;**

- 1) COUNT**
- 2) SUM**
- 3) AVG**
- 4) MIN**
- 5) MAX**

3. What is group by clause in MYSQL?

**Ans: The GROUP BY clause groups a set of rows into a set of summary rows by values of columns or expressions. The GROUP BY clause returns one row for each group. In other words, it reduces the number of rows in the result set.**

**The GROUP BY clause is an optional clause of the SELECT statement. The following illustrates the GROUP BY clause syntax:**

```
SELECT  
    c1, c2,..., cn, aggregate_function(ci)  
FROM  
    table  
WHERE  
    where_conditions  
GROUP BY c1 , c2,...,cn;
```

4. Consider the following tables DRESS and MATERIAL. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

Table : DRESS

DCODE	DESCRIPTION	PRICE	MCODE	LAUNCHDATE
10001	FORMAL SHIRT	1250	M001	12-JAN-08
10020	FROCK	750	M004	09-SEP-07
10012	INFORMAL SHIRT	1450	M002	06-JUN-08
10019	EVENING GOWN	850	M003	06-JUN-08
10090	TULIP SKIRT	850	M002	31-MAR-07
10023	PENCIL SKIRT	1250	M003	19-DEC-08
10089	SLACKS	850	M003	20-OCT-08
10007	FORMAL PANT	1450	M001	09-MAR-08
10009	INFORMAL PANT	1400	M002	20-OCT-08
10024	BABY TOP	650	M003	07-APR-08

Table : MATERIAL

MCODE	TYPE
M001	TERELENE
M002	COTTON
M004	POLYESTER
M003	SILK

- (i) To display DCODE and DESCRIPTION of an each dress in ascending order of DCODE.
- (ii) To display the details of all the dresses which have LAUNCHDATE in between 05-DEC-07 and 20-JUN-08 (inclusive of both the dates).
- (iii) To display the average PRICE of all the dresses which are made up of material with MCODE as M003.
- (vi) To display material wise highest and lowest price of dresses from DRESS table.  
(Display MCODE of each dress along with highest and lowest price)
- (v) SELECT SUM (PRICE) FROM DRESS WHERE MCODE='M001';
- (vi) SELECT DESCRIPTION, TYPE FROM DRESS, MATERIAL WHERE DRESS. DCODE=MATERIAL. MCODE AND DRESS. PRICE>=1250;
- (vii) SELECT MAX(MCODE) FROM MATERIAL;
- (viii) SELECT COUNT(DISTINCT PRICE) FROM DRESS



Ans: -

- (i) SELECT GCODE, DESCRIPTION FROM GARMENT ORDER BY GCODE DESC;
- (ii) SELECT \* FROM GARMENT WHERE READYMADE BETWEEN (08-DEC-07, 16-JUN-08);
- (iii) SELECT AVG(PRINCE) FROM GARMENTG, FABRIC F WHERE G. FCODE= F.CODE AND F. FCODE = FO3;
- (iv) SELECT F. FCODE, GPRICE FROM GARMENT G, FABRIC F  
GROUP BY F. FCODE ORDER BY G. PRICE DESC;
- (v) 1600
  
- (vi) 

DESCRIPTION	TYPE
INFORMAL SHIRT	COTTON
INFORMAL PANT	COTTON
FORMAL	PANT POLYSTER
- (vii) MAX () selects Numeric value not alphanumeric value. So, its error.
- (viii) 7

5. What is the difference between WHERE and HAVING clauses?

Ans: The WHERE clause is used to filter rows from a results.

```
SELECT COUNT(SalesOrderID) FROM Sales.SalesOrderDetail
```

This query will return 121,317 as the count, whereas, the query

```
SELECT COUNT(SalesOrderID) FROM Sales.SalesOrderDetail WHERE UnitPrice > 200
```

Returns 48,159 as the count. This is because the WHERE clause filters out the 73,158 SalesOrderDetails whose UnitPrice is less than or equal to 200 from the results.

HAVING Clause

The HAVING clause is used to filter values in a GROUP BY. You can use them to filter out groups such as

```
SELECT SalesOrderID, SUM(UnitPrice * OrderQty) AS TotalPrice
```

```
FROM Sales.SalesOrderDetail
```

```
GROUP BY SalesOrderID
```

```
HAVING SalesOrderID > 50000
```

\* \* \*

## **Chapter – 15 Creating a Django based Basic Web Application**

Q.1) What is Django?

Ans: - Django is a web framework used with Python to develop Dynamic Websites. Here web framework is actually a software tool that helps to build and run Dynamic websites and web – enabled applications.

Q.2) How a web works?

Ans: - A Web works in the form of Client -Server architecture. Web browser acts as a client programme and the web server interacts as the server.

Q.3) Which protocol widely used by the clients of web ie web browsers?

Ans: - Mostly web browsers work with Hyper Text Transfer Protocols (HTTP)

Q.4) Explain the working of HTTP GET and HTTP POST request?

Ans: - HTTP GET : - Whenever a web client has to display a webpage it calls the HTTP GET request and send the URL of the webpage. The server receives the GET request and respond by sending HTML of the URL, if available; but if the URL is not existing it sends error 404.

HTTP POST : - An HTTP POST request is a way to send data to the server using HTML forms over web.

Q.5) Write the characteristics of Django?

Ans: - 1) Django is Python based free and Open Source web application framework.

2) Django is powerful server-side web framework used by many developers as it is versatile, Portable and Secure.

Q.6) What do you know about Virtualenv?

Ans: - Virtualenv is a useful tool which creates isolated Python Environment that take care of interdependencies and let us develop different applications in isolation.

Each isolated environment has different set of libraries unlike a common global set of libraries.

Q.7) Differentiate between a project and an app?

Ans: - A project refers to an entire application. There can be multiple apps in a project.

Whereas, an app is a submodule which take cares of one part of the project.

Q.8) Write the use of the following files: -

admin.py, apps.py, models.py, tests.py, views.py, migrations/

Ans: - 1) admin.py – It is a configuration file for the build in Django Admin app

- 2) apps.py - It is a configuration file for the app itself
- 3) models.py - It is the file where we will define the database models.
- 4) tests.py – This file is for our app-specific tests
- 5) views.py – This file is for resolving http request/response for our web app
- 6) migrations/ - This folder keeps track of changes in models.py file and updates database accordingly.

Q.9) Explain MVC Project Architecture.

Ans: - MVC ie Model, View Controller Architecture.

Here Model is the lowest level of pattern responsible for maintain data.

View is responsible for displaying all or a portion of data to the user.

Controller is the software code that controls the interaction between the Model and View.

Q.10) Explain MVT Project Architecture of Django.

Ans: - MVT is Model, View Template architecture which is slightly different from MVC. In fact the main difference between the two patterns is that Django itself takes care of the controller part (Software code) and leaving us with the template. The template is a HTML file mixed with Django Template Language (DTL).

The develop provides the model, the view and the template then just maps it to a URL and Django does the magic to serve it to the user.

\* \* \*

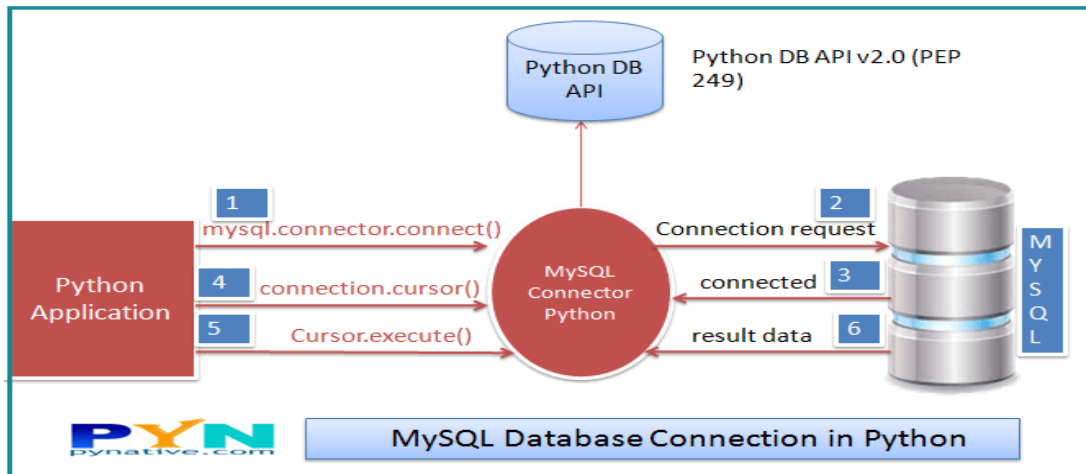
## Chapter -16 Data Base Connectivity

Q.1 What is database.

Ans. The database is a collection of organized information that can easily be used, managed, update, and they are classified according to their organizational approach.

Q.2 write the steps of connectivity between SQL and Python

Ans.



Q.3 What is result set? Explain with example.

Ans. Fetching rows or columns from result sets in Python. The fetch functions in the `ibm_db` API can iterate through the result set. If your result set includes columns that contain large data (such as BLOB or CLOB data), you can retrieve the data on a column-by-column basis to avoid large memory usage.

Q.4 Use of functions in connectivity - INSERT, READ, UPDATE, DELETE, ROLLBACK

Environment Variables	Description
INSERT	It is an SQL statement used to create a record into a table.
READ	Fetches useful information from the database.
UPDATE	It is used update those available or already existing record(s).
DELETE	It is used to delete records from the database.

Ans.

ROLLBACK	It works like "undo", which reverts all the changes that you have made.
----------	---

Q.5 Write code for database connectivity

Ans. # importing the module

```
import MySQLdb
# opening a database connection
    db = MySQLdb.connect ("localhost","testprog","stud","PYDB")
# define a cursor object
    cursor = conn.cursor
# drop table if exists
    Cursor.execute("IF STUDENT TABLE EXISTS DROP IT")
# query
    sql = "CREATE TABLE STUDENT (NAME CHAR(30) NOT NULL, CLASS CHAR(5), AGE
    INT, GENDER CHAR(8), MARKS INT"
# execute query
    cursor.execute(sql)
# close object
    cursor.close()
# close connection
    conn.close()
```

\* \* \*

## Chapter – 17 Society, Law and Ethics

Q.1) which of the following can be termed as intellectual property – Washing Machine, Music Composition, Mixer Grinder, Email account

Ans: - Music Composition, Email Account

Q.2) In a multi national company Mr. A steals Mr. B's intellectual work and representing it as A's own work without citing the source of information, which kind of act this activity be termed as?

Ans: Plagiarism

Q.3) Give any two examples of Digital Property.

Ans: - 1) Online personal account such as email, communication account, social media account, shopping accounts, online storage accounts

2) Intellectual Property including copyright material, trademarks, patents and any software or code that a programmer may have written and own etc.

Q.4) Expand the following terms: - OSS, FSF, OSI, W3C, FLOSS, GNU, GPL, LGPL

Ans: - OSS – Open Source Software

FSF – Free Software Foundation

OSI - Open Source Initiatives

W3C – World Wide Web Consortium

FLOSS – Free Libre Open Source Software

GNU – GNU's Not Unix

GPL - General Public License

LGPL – Lesser General Public License

Q.5) Differentiate between Public Domain Software and Proprietary Software with . example.

Ans: - **Public Domain Software:** -

1) It is free and can be used without restriction

2) It is outside the scope of copyright and licensing.

**Proprietary Software:** -

1) It is neither free nor available for public

2) It has a proper license and user has to buy that license in order to use it.

Q.6) How you can check weather a website is safe or not?

Ans: - A Safe website has a pad lock sigh that shows safe connection to the website. A safe website url stars with https:// and not with http://

Q.7) What do you know about cyber/digital forensics?

Ans: - Cyber/Digital Forensics refers to methods used for Interpretation of computer media for digital evidence. It is a process that interprets electronic data for use in a court of law. The goal of the process is to preserve any evidence in its original form while performing a structural investigation by collecting, identifying and validating the digital information for the purpose of reconstructing past events.

Q.8) What is cyber law and IT Act?

Ans: - Cyber Law refers to all legal and regulatory aspects of Internet and the world wide web. It is important as it touches almost all aspects of transactions and activities related to Internet, www and cyber space.

In India the cyber law is enforced through IT act whose purpose is to provide legal recognition to electronic commerce, focus on information security etc.

Q.9) Explain some major benefits of ICT in the Business World.

Ans: - 1) Secure Transaction – Fund transfer at anywhere in the world with a greater security is one of the major benefits of ICT in the Business World.

2) Global Market – Nowadays with ICT a small business can be done from any part of the world.

3) Net Banking – With Online or Internet Banking a lots of payments can be done online through a bank account at the convenient place like home/office.

4) Ease and Availability – ICT made Everything easy and available through mobile banking, ATM cards, Internet Banking facilities like the movement of money from customer to merchant.

Q.10) What is e-waste? What are the benefits of e-waste Recycling?

Ans: - e-waste/e-scrap/Electronic waste/WEEE(Waste Electrical and Electronic Equipment) describes discarded electrical or electronic devices like discarded computers, office electronic equipment, entertainment devices, mobiles etc.

e-waste recycling allows for recovery of valuable precious metals, Protects public health and water quality, Saves landfill space etc.

Q.11) What is Identity theft?

Ans: - Theft of personal information so that to gain access of personal information of victim(Some body) and later use victim's personal information to commit fraud.

Q.12) How a user of cyber world can safe personal information online?

Ans: - A user can protect his/her personal information by the following ways: -

- 1) Use of Unique Ids to protect personal account and devices.
- 2) Apply Bio-metric protection to safe the personal information.

Q.13) How we can resolve gender issues as far as school level computer science education is concern?

Ans: - 1) Girls should be motivated by different programmes to take up CS as one of the subjects to make career in it.

2) Ads play a vital role in the whole life style of a girl thus ads will be designed so well and female role models should be projected under those Ads who encourage girls to take up subjects like CS.

3) Girls should be encouraged in computer practical classes to handle the devices and find out the problems and their solutions related to hardware part.

Q.14) List some disability issues faced in the teaching/using computers with respect to specially abled students.

Ans: - 1) Unavailability of Teachers Materials/Aids

3) Lack of Special Needs Teachers

4) Lack of Supporting Curriculum

Q.15) What are the possible solutions to deal with disability issues in a school?

Ans: - 1) Teaching Materials / aids should be available to cater the needs of special needs of students.

2) Sufficient No. of specially Trained Teachers should be available who can take care of these students.

3) School must follow the inclusive curriculum so that especially abled student doesn't feel himself/herself in a disadvantageous group.

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