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**WEEKEND ACTIVITY ON DATA STRUCTURES**

1. Create a list of the 10 elements of four different types of Data Type like int, string, complex and float.

elements = ['once', 'upon', 'a\_time', 44, 'changed\_to', 44.00, 44.04, 4 + 4j, 'and', 0]

2. Create a list of size 5 and execute the slicing structure

docs = [4, 6, 8, 10, 12]

print(docs[:]) #prints [4, 6, 8, 10, 12]

print(docs[:2]) # prints [4, 6]

print(docs[2:]) # prints [8, 10, 12]

print(docs[-2:]) # prints [10, 12]

print(docs[1:4:2]) # prints [6, 10]

3. Create a list of given structure and run

**x=[100,200,300,400,500,[1,2,3,4,5,[10,20,30,40,50],6,7,8,9],600,700,800]**

* Access list [1, 2, 3, 4]
* Access list [600, 700]
* Access list [100, 300, 500, 600, 800]
* Access list [[800, 700, 600, [1, 2, 3, 4, 5, [10, 20, 30, 40, 50], 6, 7, 8, 9], 500, 400, 300, 200, 100]]
* Access list [10]
* Access list [ ]

x = [100, 200, 300, 400, 500, [1, 2, 3, 4, 5, [10, 20, 30, 40, 50], 6, 7, 8, 9], 600, 700, 800]

print(x[5][:4]) #returns [1, 2, 3, 4]

print(x[6:8]) #returns [600, 700]

print(x[::2]) #returns [100, 300, 500, 600, 800]

print(x[::-1]) #returns **[[800, 700, 600, [1, 2, 3, 4, 5, [10, 20, 30, 40, 50], 6, 7, 8, 9], 500, 400, 300, 200, 100]]**

print(x[5][5][0]) #returns [10]

print(list()) #returns []

4. Create a list of thousand number using range and xrange and see the difference between each other.

x = range(1000)

X = xrange(1000)

In python v3, there is no xrange() and range() resembles xrange() from python v2.

Range() returns the list of numbers while xrange() returns the object.

5. How Tuple is beneficial as compare to the list?

Once created, the elements in the Tuple can’t be changed hence is immutable. While List is mutable and the elements can be changed using indexing. Tuples are also faster to access and safer.

6. Write a program in Python to iterate through the list of numbers in the range of 1,100 and print the number which is divisible by 3 and a multiple of 2.

x = range(1,100)

print('\nNumber divisible by 3 and multiple of 2 are: \n' )

for i in x:

if i % 3 == 0 and i % 2 == 0:

print(i, end = ',')

7. Write a program in Python to reverse a string and print only the vowel alphabet if exist in the string with their index.

string = 'appleorpine'

vowel = 'AaEeIiOoUu'

print('Reverse value: ', string[::-1])

def check\_vowel(string, vowel):

for i in string:

if i in vowel:

print(i, end=', ')

print('index of ', i, ':', string.find(i))

check\_vowel(string, vowel)

8. Write a program in Python to iterate through the string “hello my name is abcde” and print the string which has even length of word.

string = 'hello my name is abcde'

print('string = ', string)

string = string.split()

print('Even words are: ')

for word in string:

if len(word) % 2 == 0:

print(word, end = ', ')

9. Write a program in python to print the pair of numbers whose sum is equal to result number that is let's say 8.

x = [1, 2, 3, 4, 5, 6, 7, 8, 9, -1]

result = 8

sums = []

def twoSum(x, result):

for i in range(0, len(x)):

for j in range(i + 1, len(x)):

if x[i] + x[j] == result:

sums.append([x[i], x[j]])

return sums

print(twoSum(x, result)) #returns [[1, 7], [2, 6], [3, 5], [9, -1]]

10. Write a program in Python to complete the following task:

* Create two different list as in even\_list and odd\_list
* Ask user to enter the number in the range of 1,50 and make sure if the entered number is even append it to the even\_list and if the entered number is odd append it to the odd list.
* Keep that in mind you can only add 5 items in each list
* Make sure once you entered the total 5 element calculate the sum of the list and return the maximum out of the list.

even\_list = []

odd\_list = []

while (len(even\_list) and len(odd\_list)) < 5:

number = int(input("Please enter a number between 1 to 50: "))

try:

if 0 < number < 50 and number % 2 == 0:

even\_list.append(number)

if 0 < number < 50 and not number % 2 == 0:

odd\_list.append(number)

print('Even list: ', even\_list)

print('Odd list: ', odd\_list)

except(TypeError, ValueError):

print("Please enter a number between 1 to 50: ")

print('Sum of even\_list: ', sum(even\_list))

print('Sum of odd\_list: ', sum(odd\_list))

print('Max of even\_list: ', max(even\_list))

print('Max of odd\_list: ', max(odd\_list))

11. Write a program to find out the occurrence of a specific word from an alphanumeric statement. **Example:** 12abcbacbaba34ab

**Output:** a=5 b=5 c=2 make sure you should avoid the numbers in you logic

x = '12abcbacbaba34ab'

xList = list(x)

unique\_list = set(xList)

for i in unique\_list:

if i.isalpha():

print(i, '= ', x.count(i))

12. Generate and print another tuple whose values are even numbers in the given tuple (1,2,3,4,5,6,7,8,9,10).

tuple1 = (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

li = list()

for i in tuple1:

if i % 2 == 0:

li.append(i)

print('even\_tuple: ',tuple(li))