Institute of Information Technology (IIT)

Jahangirnagar University

Lab Report 03

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Lab Report # Day 03

Task 01:

Write a Python program to find the sum of all the elements in a list.

Code:

```
list = [11, 5, 17, 18, 23]
total=0;
for ele in range(0, len(list)):
    total = total + list[ele]
print("Sum of all elements in given list: ", total)
```

Output:

```
Sum of all elements in given list:  74
```

Task 02:

Write a Python program to find the largest, smallest, second largest, and second smallest elements in a list.

Code:

```
my_list=[12, 45, 1, 40, 31, 10, 8, 6, 4]
Largest = find_len(my_list)
def find_len(my_list):
    length = len(my_list)
    my_list.sort()
    print("Largest element is:", my_list[length-1])
    print("Smallest element is:", my_list[0])
    print("Second Largest element is:", my_list[length-2])
    print("Second Smallest element is:", my_list[1])
```

Output:

```
Largest element is: 45
Smallest element is: 1
Second Largest element is: 40
Second Smallest element is: 4
```

Task 03:

Write a Python program to count the number of occurrences of each character in a string.

Code:

```
stri = "hello world"
out = {x : stri.count(x) for x in set(stri )}
print ("Occurrence of all characters is :\n "+ str(out))
```

Output:

```
Occurrence of all characters is :
 {'e': 1, 'w': 1, 'h': 1, 'r': 1, 'o': 2, ' ': 1, 'd': 1, 'l': 3}
```

Task 04:

Write a Python program to create a tuple with elements from a list and print it.

Code:

```
list=[1,2,3,4]
def convert(list):
    return tuple(list)
print(convert(list))
```

Output:

```
(1, 2, 3, 4)
```

Task 05:

Write a Python function that takes a list of numbers as input and returns the largest sum of non-adjacent numbers.

Code:

```
class Solution:
  def solve(self, nums):
      if len(nums) <= 2:
          return max(nums)
      noTake = 0
      take = nums[0]
      for i in range(1, len(nums)):
          take, noTake = noTake + nums[i], max(noTake, take)
      return max(noTake, take)
```

```
ob = Solution()
nums = [3, 5, 7, 3, 6]
print(ob.solve(nums))
```

Output:

```
16
```

Task 06:

Write a Python program to remove duplicates from a list and return the resultant list.

Code:

```
a = [10,20,30,20,10,50,60,40,80,50,40]
dup = set()
items = []
for x in a:
    if x not in dup:
        items.append(x)
        dup.add(x)
print(dup)
```

Output:

```
{40, 10, 80, 50, 20, 60, 30}
```

Task 07:

Write a Python program to find the common elements between two lists and return the resultant list.

Code:

```
a = [1, 2, 3, 4, 5]
b = [5, 6, 7, 8, 9]
def common(a, b):
    x = set(a)
    y = set(b)

    if (x & y):
        print(x & y)
    else:
        print("No common elements")
```

common(a, b)

Output:

```
{5}
```

Task 08:

Write a Python program to find the first n Fibonacci numbers using recursion.

Code:

```
def recur(n):
   if n <= 1:
      return n
   else:
      return(recur(n-1) + recur(n-2))

n= 10
if n <= 0:
   print("invalid")
else:
   print("Fibonacci sequence:")
   for i in range(n):
      print(recur(i))
```

Output:

```
Fibonacci sequence:
0
1
1
2
3
5
8
13
21
34
```

Task 09:

Write a Python function to replace all occurrences of a substring in a string.

Code:

```
string = "replace all the string"
result = string.replace("i", "I")
result = string.replace("l", "L")
result = string.replace("e", "E")
print(result)
```

Output:

```
rEplacE all thE string
```

Task 10:

Write a function to add a key-value pair to a dictionary in Python.

Code:

```
Dict = {"India": 91, "UK" : 44 , "USA" : 1}
print(Dict)
Dict["Spain"]= 34
print ("After adding")
print(Dict)
```

Output:

```
{'India': 91, 'UK': 44, 'USA': 1}
After adding
{'India': 91, 'UK': 44, 'USA': 1, 'Spain': 34}
```

Task 11:

Write a function to remove a key from a dictionary.

Code:

```
Dict = {"India": 91, "UK" : 44 , "USA" : 1,"Spain":34}
del Dict["UK"]
print(Dict)
```

Output:

```
{'India': 91, 'USA': 1, 'Spain': 34}
```

Task 12:

Write a function to reverse a list of numbers.

Code:

```
arr = [10, 11, 12, 13, 14, 15]
arr.reverse()
print("Reverse:", arr)
```

Output:

```
Reverse: [15, 14, 13, 12, 11, 10]
```

Task 13:

Write a Python program to find and print the key with the maximum value in a dictionary.

Code:

```
Dict = {"India": 91, "UK" : 44 , "USA" : 1,"Spain":34}
key=max(Dict,key=Dict.get)
value=max(Dict.values())
print("Max Key:", key,"\n","Max value :",value)
```

Output:

```
Max Key: India
 Max value : 91
```

Task 14:

Write a Python program to merge two dictionaries and create a new dictionary.

Code:

```
dict1 = {1: 'a', 2: 'b'}
dict2 = {3: 'c', 4: 'd'}
print(dict1 | dict2)
```

Output:

```
{1: 'a', 2: 'b', 3: 'c', 4: 'd'}
```

Task 15:

Given a list of dictionaries, you want to sort them based on a specific key 'age' in each dictionary. Write a lambda function as the key parameter in the sorted() function to achieve this.

Code:

```
list = [{"name": "A", "age": 22},
        {"name": "B", "age": 233},
        {"name": "C", "age": 19},
        {"name": "D", "age": 2334},
        {"name": "E", "age": 20}]
print("sorting by age: ")
print(sorted(list, key=lambda i: i['age']))
```

Output:

```
sorting by age:
[{'name': 'C', 'age': 19}, {'name': 'E', 'age': 20}, {'name': 'A', 'age': 22}, {'name': 'B', 'age': 233}, {'name': 'D', 'age':
2334}]
```