

Assignment T3_T4

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

```
l1 = [2j,1,3,4.5,0.6,"shivani",1+2j,"patel",9,9.0]
print(l1)
```

Output = [2j, 1, 3, 4.5, 0.6, 'shivani', (1+2j), 'patel', 9, 9.0]

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

```
l = [43,4.5,6,"training",5,8,9]
print(l[2])
print(l[-1])
print(l[1:3])
print(l[1:6:2])
```

Output = 6

9

[4.5, 6]

[4.5, 'training', 8]

3. Write a program to get the sum and multiply of all the items in a given list.

```
from functools import reduce

l = [1,2,3,4]
total = sum(l)
print(total)

k = reduce ((lambda x, y: x* y),l)
print(k)
```

Output = sum is: 10
multiple items is: 24

4. Find the largest and smallest number from a given list.

```
l = [1,2,3,4,5,6,7,8,9,10]
smallest = min(l)
largest = max(l)
print("smallest number is:", smallest)
print("largest number is: ", largest)
```

Output = smallest number is: 1
largest number is: 10

5. Create a new list which contains the specified numbers after removing the even numbers from a predefined list.

```
li = [1,2,3,4,5,6,7,8,9]
li = [ x for x in li if x % 2 == 0]
print(li)
```

Output = [2, 4, 6, 8]

6. Create a list of elements such that it contains the squares of the first and last 5 elements between 1 and 30 (both included).

```
l = list()
for i in range(1,31):
    l.append(i ** 2)
print(l[:5])
print(l[-5:])
```

Output =

[1, 4, 9, 16, 25]

[676, 729, 784, 841, 900]

7. Write a program to replace the last element in a list with another list.

Sample input: [1,3,5,7,9,10], [2,4,6,8]

Expected output: [1,3,5,7,9,2,4,6,8]

```
l1 =[1,3,5,7,9,10]
l2 = [2,4,6,8]
l1[-1:] = l2
print(l1)
```

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

8. Create a new dictionary by concatenating the following two dictionaries:

Sample input: a={1:10,2:20} b={3:30,4:40}

Expected output: {1:10,2:20,3:30,4:40}

```
a = {1:10,2:20}
b= {3:30,4:40}
c= {}

for d in (a,b):c.update(d)
print(c)
```

Output = {1: 10, 2: 20, 3: 30, 4: 40}

9. Create a dictionary that contain numbers in the form($x:x*x$) where x takes all the values between 1 and n (both 1 and n included).

Sample input: $n=5$

Expected output: {1:1, 2:4, 3:9, 4:16, 5:25}

```
n = int (input("enter the number:"))
d = dict()

for x in range (1,n+1):
    d[x] = x* x
print(d)
```

Output =

enter the number:7

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49}

10. Write a program which accepts a sequence of comma-separated numbers from console and generates a list and a tuple which contains every number in the form of a string.

Sample input: 34,67,55,33,12,98

Expected output: ['34','67','55','33','12','98'] ('34','67','55','33','12','98')

```
x = input("enter the number")
```

```
list = x.split(",")
tuple = tuple(list)
print("list:",list)
print("Tuple",tuple)
```

Output = enter the number 34,67,55,33,12,98

list: [' 34', '67', '55', '33', '12', '98']

Tuple (' 34', '67', '55', '33', '12', '98')

1. Write a program to reverse a string.

Sample input: "1234abcd"

Expected output: "dcba4321"

```
x =("1234abcd")
string = x[::-1]
print(string)
```

Output =

dcba4321

2. Write a function that accepts a string and prints the number of uppercase letters and lowercase letters.

Sample input: "abcSdefPghijQkl"

Expected Output: No. of Uppercase characters : 3 No. of Lower case Characters : 12

```
x = ("abcSdefPghijQkl")
d = {"Upper_case":0,"Lower_case":0}
for i in x:
    if i.isupper():
        d["Upper_case"]+=1
    elif i.islower():
        d["Lower_case"]+=1
    else:
        pass
print(d["Lower_case"])
print(d["Upper_case"])
```

Output = 12

3

3. Create a function that takes a list and returns a new list with unique elements of the first list.

```
def unique_list(l):
    x = []
    for a in l:
        if a not in x:
            x.append(a)
    return x
print(unique_list([1,2,3,3,3,4,5]))
```

Output =

[1, 2, 3, 4, 5]

4. Write a program that accepts a hyphen-separated sequence of words as input and prints the words in a hyphen-separated sequence after sorting them alphabetically.

```
x = 'green-red-white-black'
x = (x.split('-'))
x.sort()
x=('-' .join(x))
print(x)
```

Output = black-green-red-white

5. Write a program that accepts a sequence of lines as input and prints the lines after making all characters in the sentence capitalized.

Sample input: Hello world Practice makes man perfect

Expected output: HELLO WORLD PRACTICE MAKES MAN PERFECT

```
print("How many sequence of lines? , for example 2, 6, or 9.")
number_lines = int(input())
print("Write your lines you wanna capitalize.")
list_lines = []
for i in range(number_lines):
    lines = input()
    list_lines.append(lines)
print()
for lines in list_lines:
    print(lines.upper())
```

Output = How many sequences of lines? , for example 2, 6, or 9.

2

Write your lines you wanna capitalize.

hello world

HELLO WORLD

6. Define a function that can receive two integral numbers in string form and compute their sum and print it in the console.

```
def cal(a,b):  
    s = int(a)+int(b)  
    return s  
  
num1 = 10  
num2= 20  
  
sum = cal(num1,num2)  
print("sum",sum)
```

Output = sum 30

7. Define a function that can accept two strings as input and print the string with the maximum length in the console. If two strings have the same length, then the function should print both the strings line by line.

```
def function():  
    x = input("enter the string")  
    y = input("enter the string")  
  
    count1 =0  
    count2 =0  
  
    for i in x:  
        count1 = count1 + 1  
    for i in y:  
        count2 = count2 + 1  
  
    if (count1 < count2 ):
```



```

        print("large string: ")

    elif(count1 == count2):
        print("both string are same line: " )
    else:
        print("large string is: ")

function()

```

**Output = enter the string hello world
enter the string hello world
both string are same line:**

8. Define a function which can generate and print a tuple where the values are square of numbers between 1 and 20 (both 1 and 20 included).

```

l = range(0,21)
f = list (map(lambda num: num ** 2 , l))
print(f)

```

**Output =
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400]**

9. Write a function called showNumbers that takes a parameter called limit. It should print all the numbers between 0 and limit with a label to identify the even and odd numbers.

Sample input: show Numbers(3) (where limit=3)

Expected output:

0 EVEN
1 ODD
2 EVEN
3 ODD

```
def shownumber(limit):  
  
    for i in range(0, limit):  
  
        if i==0:  
            print(i,end=" ")  
            print("EVEN")  
  
        elif i%2==0:  
            print(i,end=" ")  
            print("EVEN")  
  
        else:  
            print(i,end=" ")  
  
            print("ODD")  
  
print(shownumber(4))
```

**Output = 0 EVEN
1 ODD
2 EVEN
3 ODD
None**

10. Write a program which uses filter() to make a list whose elements are even numbers between 1 and 20 (both included)

```
l = range(1,20)
f = list(filter(lambda num: num % 2 == 0, l))
print(f)
```

Output = [2, 4, 6, 8, 10, 12, 14, 16, 18]

11. Write a program which uses map() and filter() to make a list whose elements are squares of even numbers in [1,2,3,4,5,6,7,8,9,10].
Hints: Use filter() to filter even elements of the given list Use map() to generate a list of squares of the numbers in the filtered list. Use lambda() to define anonymous functions.

```
l=[1,2,3,4,5,6,7,8,9,10]

f = list(filter(lambda num: num %2 ==0,l))
q = list(map(lambda num: num % 2 ,f))

print(f)
print(q)
```

**Output = [2, 4, 6, 8, 10]
[0, 0, 0, 0, 0]**

12. Write a function to compute 5/0 and use try/except to catch the exceptions

```
def divide(x,y):  
    try:  
        result = x //y  
    except ZeroDivisionError:  
        print("sorry ! you are dividing by zero ")  
  
divide(5,0)
```

Output = sorry ! you are dividing by zero

13. Flatten the list [1,2,3,4,5,6,7] into 1234567 using reduce().

```
from functools import reduce  
  
r = reduce(lambda a,d: 10*a+d, [1,2,3,4,5,6,7,], 0)  
  
print(r)
```

**Output =
1234567**

14. Write a program in Python to find the values which are not divisible by 3 but are a multiple of 7.
Make sure to use only higher order functions.

```
nl=[]  
for x in range(1,100):  
    if (x%7==0) and (x%5==0):  
        nl.append(str(x))  
print (' ','.join(nl))
```

Output = 35,70

15. Write a program in Python to multiply the elements of a list by itself using a traditional function and pass the function to map() to complete the operation.

```
def multiplication (n):  
    return n * n  
  
numbers = (1,2,3,4,5)  
result = map (multiplication, numbers)  
print(list(result))
```

Output = [1, 4, 9, 16, 25]

16. What is the output of the following codes:

(i) def foo():

try:

return 1

finally:

return 2

k = foo()

print(k)

Output = 2

(ii) def a():

try:

f(x, 4)

finally:

print('after f')

print('after f?')

a()

Output = error f is not defined