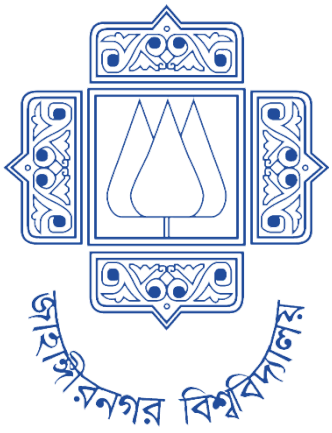
Institute of Information Technology (IIT)

Jahangirnagar University



Lab Report: 03

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Lab Report # Day 03

Example 1:

To sum up all the elements in a list.

Clause:

```
s=0
b = [9, 5, 2, 10, 4]
l=len(b)
for i in range(0, l):
    s = s + b[i]
print('sum of all the elements in the given list : ',s)
```

Result :

```
In [140]: print('sum of all the elements in the given list : ',s)

          sum of all the elements in the given list :  30
```

Example 2:

To find the largest, smallest, second largest, and second smallest elements in a list.

Clause:

```
b = [9, 5, 2, 10, 4, 11, 1]
l=len(b)
b.sort()
print("Largest element is:", b[l-1])
 print("Smallest element is:", b[0])
 print("Second Largest element is:", b[l-2])
 print("Second Smallest element is:", b[1])
```

Result :

```
In [40]: print("Largest element is:", b[l-1])
         print("Smallest element is:", b[0])
         print("Second Largest element is:", b[l-2])
         print("Second Smallest element is:", b[1])

         Largest element is: 11
         Smallest element is: 1
         Second Largest element is: 10
         Second Smallest element is: 2
```

Example 3:

To count the number of occurrences of each character in a string

Clause:

```
print('please enter the string : ')
x=input()
y= set(x)
for i in y:
    count=0
    for j in x:
        if j == i:
          count += 1
    print("Count of character '{}' is {}".format(i, count))
```

Result :

```
In [41]: print('please enter the string : ')
         x=input()

         please enter the string :
         My home district is Patuakhali.
```

```
Count of character 'k' is 1
Count of character '.' is 1
Count of character 'y' is 1
Count of character 'm' is 1
Count of character 'd' is 1
Count of character 'P' is 1
Count of character 't' is 3
Count of character 'l' is 1
Count of character 'a' is 3
Count of character 'u' is 1
Count of character 'o' is 1
Count of character 'e' is 1
Count of character 'h' is 2
Count of character 'M' is 1
Count of character 'c' is 1
Count of character 's' is 2
Count of character 'r' is 1
Count of character ' ' is 4
Count of character 'i' is 4
```

Example 4:

To create a tuple with elements from a list and print it.

Clause:

```
b = [9, 5, 2, 10, 4, 11, 1, 12]
t = tuple(b)
t
```

Result :

```
In [56]: t

Out[56]: (9, 5, 2, 10, 4, 11, 1, 12)
```

Example 5:

Take a list of numbers as input and returns the largest sum of non-adjacent numbers.

Clause:

```
def largest_sum_non_adjacent(a):
    if not a:
        return 0

    n = len(a)
    if n == 1:
        return a[0]

    p = [0] * n
    p[0] = a[0]
    p[1] = max(a[0], a[1])

    for i in range(2, n):
        p[i] = max(p[i - 1], p[i - 2] + a[i])

    return p[n - 1]
a = [1, 2, 3, 1, 5, 6, 7]
r = largest_sum_non_adjacent(a)
print('The largest sum of non-adjacent numbers in the list is',r)
```

Result :

```
In [147]: print('The largest sum of non-adjacent numbers in the list is',r)

          The largest sum of non-adjacent numbers in the list is 16
```

Example 6:

To remove duplicates from a list and return the resultant list.

Clause:

```
b = [1,2,5,5,1,2,3,4,3,4]
k = set()
u = []
for i in b:
    if i not in k:
        u.append(i)
        k.add(i)
print('The given list is ',b)
print('The resultant list is ',k)
```

Result:

```
In [157]: print('The given list is ',b)
          print('The resultant list is ',k)

          The given list is  [1, 2, 5, 5, 1, 2, 3, 4, 3, 4]
          The resultant list is  {1, 2, 3, 4, 5}
```

Example 7:

To find the common elements between two lists and return the resultant list.

Clause:

```
def common(a, b):
    p = set(a)
    q = set(b)

    if (p & q):
        print(p & q)
    else:
        print("No common elements")
a = [1, 2, 3, 4, 5, 6,17,8]
b = [5, 6, 7, 8, 9]
print('The resultant list is :')
common(a, b)
```

Result:

```
In [164]: print('The resultant list is :')
          common(a, b)

          The resultant list is :
          {8, 5, 6}
```

Example 8:

To find the first n Fibonacci numbers using recursion

Clause:

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

print('please enter the number of the elements : ')
l=int(input())

if l <= 0:
   print("Plese enter a positive integer")
else:
   print("The first {}th Fibonacci series is : " .format(l))
   for i in range(l):
      print(f(i))
```

Result:

```
please enter the number of the elements :
12
The first 12th Fibonacci series is :
0
1
1
2
3
5
8
13
21
34
55
89
```

Example 9:

To replace all occurrences of a substring in a string.

Clause:

```
print('please enter the string : ')
x=input()
y = x.replace("t", "□")
print(y)
```

Result:

```
please enter the string :
My home district is Barishal.
My home disIricI is Barishal.
```

Example 10:

To add a key-value pair to a dictionary.

Clause:

```
StudentInfo = {"Tamim": 1970, "Bushra" : 1965 , "Sabina" : 1984}
print('Given list is ',StudentInfo)
StudentInfo.update( {'Promi' : 1986} )
print('Update list is ',StudentInfo)
```

Result:

```
Given list is  {'Tamim': 1970, 'Bushra': 1965, 'Sabina': 1984}
Update list is  {'Tamim': 1970, 'Bushra': 1965, 'Sabina': 1984, 'Promi': 1986}
```

Example 11:

To remove a key from a dictionary.

Clause:

```
StudentInfo = {"Tamim": 1970, "Smrity": 1987,"Promi": 1986,"Bushra" : 1965 , "Sabina" : 1984}
print('Given list is ',StudentInfo)
del StudentInfo["Bushra"]
del StudentInfo["Sabina"]
print('Update list is ',StudentInfo)
```

Result:

```
Given list is  {'Tamim': 1970, 'Smrity': 1987, 'Promi': 1986, 'Bushra': 1965, 'Sabina': 1984}
Update list is  {'Tamim': 1970, 'Smrity': 1987, 'Promi': 1986}
```

Example 12:

To reverse a list of numbers.

Clause:

```
c = [1,2,3,5,6,10, 9,32,11, 15]
print("Given list is ", c)
c.reverse()
print("Reversed list is ", c)
```

Result:

```
Given list is  [1, 2, 3, 5, 6, 10, 9, 32, 11, 15]
Reversed list is  [15, 11, 32, 9, 10, 6, 5, 3, 2, 1]
```

Example 13:

To find and print the key with the maximum value in a dictionary.

Clause:

```
def tamim(d):
  return max(d, key = d.get), min(d, key = d.get)
marks = {'Bangla': 80,'English': 81,'Math': 97,'ICT': 90}

print("given dictionary elements: ")
print(marks)
print("The key of the maximum and minimum value of the given dictionary: ")
print(tamim(marks))
```

Result:

```
given dictionary elements:
{'Bangla': 80, 'English': 81, 'Math': 97, 'ICT': 90}
The key of the maximum and minimum value of the given dictionary:
('Math', 'Bangla')
```

Example 14:

To merge two dictionaries and create a new dictionary.

Clause:

```
m1 = {'Bangla': 80,'English': 82,'Math': 97,'ICT': 98}
m2 = {'Physics': 87,'Chemistry': 81,'Biology': 80,'ICT': 90}
m= {**m1,**m2}
print("new dictionary is ",m)
```

Result:

```
In [174]: print("new dictionary is ",m)
          new dictionary is  {'Bangla': 80, 'English': 82, 'Math': 97, 'ICT': 90, 'Physics': 87, 'Chemistry': 81, 'Biology': 80}
```

Example 15:

To sort based on a specific key 'age' in each dictionary.

Clause:

```
student = [
    {'name': 'Bushra', 'age': 28},
    {'name': 'Tamim', 'age': 24},
    {'name': 'Prachi', 'age': 32},
    {'name': 'Taimur', 'age': 21}
]
sorted_s = sorted(student, key=lambda x: x['age'])
print(sorted_s)
```

Result:

```
In [177]: print(sorted_s)
          [{'name': 'Taimur', 'age': 21}, {'name': 'Tamim', 'age': 24}, {'name': 'Bushra', 'age': 28}, {'name': 'Prachi', 'age': 32}]

In [ ]:
```