Open in Colab
(https://colab.research.google.com/github/unt-iialab/INFO5731_Spring2020/blob/master/In_class_exercise/In_class_exercise_01.ipynb)

The first In-class-exercise (09/07/2022, 40 points in total)

(1) Write a Python program to calculate the length of a string. (4 points)

In [20]:
```
#write your answer here
String = input("Enter a string: ")
count=len(String)
print("Length of given string is:", count)
```

```
Enter a string: Nimisha
Length of given string is: 7
```

(2) Write a Python program to count the number of characters in a string. (4 points)

Sample String : 'google.com‘,

Expected Result : {'o': 3, 'g': 2, '.': 1, 'e': 1, 'l': 1, 'm': 1, 'c': 1}

In [17]:
```
# write your answer here
String = input("Enter String: ")
Dict = {}
for i in String:
    Dict[i]= String.count(i)
Sort_Dict= dict(reversed(sorted(Dict.items(), key=lambda i:i[1])))
print(Sort_Dict)
```

```
Enter String: google.com
{'o': 3, 'g': 2, 'm': 1, 'c': 1, '.': 1, 'e': 1, 'l': 1}
```

(3) Write a Python program to sum all the items in a list. (4 points)

In [1]:
```
# write your answer here
List= list(map(int,input("Enter items in the list seperated by Space: ").split("
print("Sum of all items in given list: ", sum(List))
```

```
Enter items in the list seperated by Space: 1 2 3
Sum of all items in given list:  6
```

(4) Write a Python program to get a string from a given string where all occurrences of its first char have been changed to '$', except the first char itself. (4 points)

Sample String : 'restart‘,

Expected Result : 'resta$t'

In [3]:
```
# write your answer here
String= input("Enter String: ")
print("Expected Result: ", String[0]+String[1:].replace(String[0],"$"))
```

```
Enter String: restart
Expected Result:  resta$t
```

(5) Write a program with python which could accept two parameter a and b to calculate and output the result of S, where

$S = 3.14 * (1 + a/b)^3$ (4 points)

In [18]:
```
# write your answer here
a= int(input("enter value of a:"))
b= int(input("enter value of b:"))
S= 3.14*((1+a/b)**3)
print("Result of S is:",S)
```

```
enter value of a:1
enter value of b:2
Result of S is: 10.5975
```

(6) Write a Python program to concatenate following dictionaries to create a new one. (4 points)

Sample Dictionary : dic1={1:10, 2:20}, dic2={3:30, 4:40}, dic3={5:50,6:60},

Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

In [21]:
```
# write your answer here
dic1={1:10, 2:20}
dic2={3:30, 4:40}
dic3={5:50,6:60}
dic4={}
for items in (dic1, dic2, dic3): dic4.update(items)
print(dic4)
```

```
{1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}
```

(7) Write a Python program to check whether an element exists within a tuple. (4 points)

In [25]:
```
# write your answer here
Tuple = ("n","i","m","i","s","h","a")
Input = input("Enter a character = ")
print(Input in Tuple)
```

```
Enter a character = s
True
```

(8) Write a Python program to find maximum and the minimum value in a set. (4 points)

In [4]:
```
# write your answer here
Set= set(map(int,input("Enter elements: ").split(" ")))
print(Set)
min_value=min(Set)
max_value=max(Set)
print("minimum value in the list is:",min_value)
print("maximum value in the list is:",max_value)
```

```
Enter elements: 1 2 2 1 4
{1, 2, 4}
minimum value in the list is: 1
maximum value in the list is: 4
```

(9) Write a Python program to randomly divide the students in this class into six groups for term projects, each group should have at least 4 students but no more than 6 students (including 6). Here is the students list: (4 points)

studnet_list =
['ja0964','sa1198','sb1357','vb0218','sc1229','kg0569','kg0470','sg1297','bg0320','fh0141','jl1252','sk1
'ak0956','sk1390','sk1458','sk1313','ak0934','vm0377','nm0618','sm1640','sm1907','gn0108','pr0353',
'av0659','nv0234','hy0232']

In [4]:
```
# write your answer here
import random
student_list = ['ja0964','sa1198','sb1357','vb0218','sc1229','kg0569','kg0470','s
#print(len(student_list))
random.shuffle(student_list)
Groups=[]
NumberOfGroups=6
for i in range(0,NumberOfGroups):
    Groups.append(student_list[i::NumberOfGroups])
print(Groups)
```

```
[['ak0956', 'sm1907', 'ak0934', 'dr0609', 'sm1640'], ['fh0141', 'nv0234', 'av06
59', 'aos0040', 'sk1390'], ['nm0618', 'ja0964', 'hy0232', 'sk1386', 'vm0377'],
['ds0814', 'bg0320', 'vb0218', 'sc1229', 'sa1198'], ['sg1297', 'sk1458', 'ms150
0', 'sk1313', 'kg0470'], ['gn0108', 'kg0569', 'jl1252', 'sb1357', 'pr0353']]
```

(10) Write a Python program to find the duplicate elements in a given array of integers. Return -1 If there are no such elements. (4 points)

In [13]:
```
# write your answer here
Array_length= int(input("Enter size of Array: "))
Array=[]
for i in range(0,Array_length):
    Array.append(int(input("Enter element :")))
Set=set(Array)
Result=[]
for i in Set:
    if(Array.count(i)>1):
        Result.append(i)
if(len(Result)==0):
    print("-1")
else:
    print("Duplicate Integers",Result)
```

```
Enter size of Array: 4
Enter element :1
Enter element :2
Enter element :2
Enter element :3
Duplicate Integers [2]
```

(11) Write a Python program to select all the Sundays of a specified year. (4 extra points)

In [6]:
```
# write your answer here
from datetime import date, timedelta

def SundaysInYear(year):
       Date = date(year, 1, 1)
       Date += timedelta(days = 6 - Date.weekday())
       while Date.year == year:
          yield Date
          Date += timedelta(days = 7)

for i in SundaysInYear(int(input("Enter year: "))):
   print(i)
```

```
Enter year: 2020
2020-01-05
2020-01-12
2020-01-19
2020-01-26
2020-02-02
2020-02-09
2020-02-16
2020-02-23
2020-03-01
2020-03-08
2020-03-15
2020-03-22
2020-03-29
2020-04-05
2020-04-12
2020-04-19
2020-04-26
2020-05-03
2020-05-10
2020-05-17
2020-05-24
2020-05-31
2020-06-07
2020-06-14
2020-06-21
2020-06-28
2020-07-05
2020-07-12
2020-07-19
2020-07-26
2020-08-02
2020-08-09
2020-08-16
2020-08-23
2020-08-30
2020-09-06
2020-09-13
2020-09-20
2020-09-27
2020-10-04
2020-10-11
```

```
2020-10-18
2020-10-25
2020-11-01
2020-11-08
2020-11-15
2020-11-22
2020-11-29
2020-12-06
2020-12-13
2020-12-20
2020-12-27
```

In [ ]: