# Assignment 1

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* **Set 1**

**### Question 1** : Unique element in the list

mylist = [7, 7, 7, 5, 7, 7, 7, 7]  
  
num\_1 = mylist[0]  
count\_num1 = 1  
count\_num2 = 0  
for i in range(len(mylist) - 1):  
 if num\_1 == mylist[i + 1]:  
 count\_num1 += 1  
 else:  
 count\_num2 += 1  
 num\_2 = mylist[i + 1]  
  
print("The unique element in the list is :", end=" ")  
if count\_num1 > count\_num2:  
 print(num\_2)  
else:  
 print(num\_1)

**### Question 2** : The element close to mean of the list

List1 = [92, 58, 9, 25, 86, 42, 65, 48, 99]  
  
sum = 0  
for i in range(len(List1) - 1):  
 sum += List1[i]  
 for j in range(len(List1) - 1):  
 if List1[j] > List1[j + 1]:  
 num = List1[j]  
 List1[j] = List1[j + 1]  
 List1[j + 1] = num  
  
length\_of\_list = len(List1)  
sum += List1[length\_of\_list - 1]  
  
mean = sum / len(List1)  
num = int(len(List1)/ 2)  
if len(List1) % 2 == 1:  
 if (List1[num+1] - mean) < (mean - List1[num]):  
 num += 1  
  
print("The element close to the mean of the list :", List1[num])

**### Question 3** : The average speed, with distance travelled for fixed time intervals

distance = [0, 0.1, 0.25, 0.45, 0.55, 0.7, 0.9, 1.0]  
sum = 0.0  
time = 0  
for i in range(len(distance)):  
 sum += distance[i]  
 time += i  
  
print("The average speed is :", sum/time)

**### Question 4** : Number of people in a bus

num\_onboard = [10, 20, 35, 15, 8, 13]  
num\_alight = [0, 5, 17, 22, 12, 14]  
  
num\_onboarding = 0  
num\_alighting = 0  
num\_of\_people = 0  
for i in range(len(num\_onboard)):  
 num\_onboarding += num\_onboard[i]  
 num\_alighting += num\_alight[i]  
 num\_of\_people = num\_onboarding - num\_alighting  
  
print("Total number of people in the bus :", num\_of\_people)

**### Question 5** : The missing number in the modified list

list\_original = [5, 8, 6, 1, 10, 21]  
list\_modified = [8, 5, 10, 6, 21]  
  
flag = 0  
for i in range(len(list\_original)):  
 for j in range(len(list\_modified)):  
 if list\_original[i] == list\_modified[j]:  
 flag = 1  
 break  
 else:  
 flag = 0  
 if flag == 0:  
 num\_missing = list\_original[i]  
  
print("The missing element in the modified list is :", num\_missing)

**### Question 6** : Difference between two lowest numbers

List2 = [25, 27, 89, 56, 45, 32]

for i in range(len(List2) - 1):  
 for j in range(len(List2) - 1):  
 if List2[j] > List2[j + 1]:  
 num = List2[j]  
 List2[j] = List2[j + 1]  
 List2[j + 1] = num  
  
print("The difference between the two lowest number is :", List2[1] - List2[0])

**### Question 7** : Number of elements in the list smaller than the mean

List3 = [92, 58, 9, 25, 86, 42, 65, 48, 99]  
  
sum = 0  
count = 0  
for i in range(len(List1)):  
 sum += List3[i]  
mean = sum / len(List1)  
for i in range(len(List3)):  
 if List3[i]<mean:  
 count += 1  
  
print("The number of elements in the list smaller than the mean is :", count)

* Set 2:

**### Question 1** : Malformed time string

time = "5:70:65"  
  
hour, minute, second = time.split(':')  
hour = int(hour)  
minute = int(minute)  
second = int(second)  
  
if second >= 60:  
 second -= 60  
 minute += 1  
if minute >= 60:  
 minute -= 60  
 hour += 1  
if hour >= 24:  
 hour -= 24  
  
time\_correct = str(hour)+":"+str(minute)+":"+str(second)  
print("The corrected time string is :", time\_correct)

**### Question 2** : Correct to malformed date string

date = "29/2/2021"  
  
dd, mm, yyyy = date.split("/")  
  
dd = int(dd)  
mm = int(mm)  
yyyy = int(yyyy)  
if dd > 31 and (mm == 1 or mm == 3 or mm == 5 or mm == 7 or mm == 8 or mm == 10 or mm == 12):  
 dd -= 31  
 mm += 1  
if dd > 30 and (mm == 4 or mm == 6 or mm == 9 or mm == 11):  
 dd -= 30  
 mm += 1  
if dd >= 29 and mm == 2:  
 if yyyy % 4 == 0:  
 if yyyy % 100 == 0:  
 if yyyy % 400 == 0:  
 flag = 1  
 else:  
 flag = -1  
 else:  
 flag = 1  
 else:  
 flag = -1  
 if flag == 1 and dd == 30:  
 dd -= 29  
 mm += 1  
 elif flag == -1 and dd == 29:  
 dd -= 28  
 mm += 1  
if mm > 12:  
 yyyy += 1  
  
print("Corrected date :", dd,"/", mm, "/", yyyy)

**### Question 3** : Conversion of IP address from "a.b.c.d" to integer and vice versa

IP\_address = "245.52.10.48"  
numbers = IP\_address.split(".")  
print(numbers)  
n1 = int(numbers[0])  
n2 = int(numbers[1])  
n3 = int(numbers[2])  
n4 = int(numbers[3])  
ip\_to\_int = (n1 \* (256 \*\* 3)) + (n2 \* (256 \*\* 2)) + (n3 \* (256 \*\* 1)) + (n4 \* (256 \*\* 0))  
print("Integer value of IP adress is :", ip\_to\_int)  
  
ip\_int = 4113828400  
i1 = int(ip\_int / 256\*\*3) % 256  
i2 = int(ip\_int / 256\*\*2) % 256  
i3 = int(ip\_int / 256) % 256  
i4 = ip\_int % 256  
  
ip = str(i1) + "."+ str(i2) + "."+ str(i3) + "."+ str(i4)  
print("IP address of given integer value :", ip)

**### Question 4** : Check whether the given string is an isogram

String1 = "Anagha"  
  
alphabet\_list = [0] \* 26  
for i in range(len(String1)):  
 c = String1[i].upper()  
 value = ord(c) - 65  
 count = alphabet\_list[value] + 1  
 alphabet\_list.insert(value, count)  
  
for alpha\_count in alphabet\_list:  
 if alpha\_count > 1:  
 flag = 0  
 break  
 else:  
 flag = 1  
  
if flag == 0:  
 print(String1, "is \"NOT AN ISOGRAM\"")  
else:  
 print(String1, " is an \"ISOGRAM\"")

**### Question 5** : Find the Mexican wave

String1 = "string"  
Mexican\_wave = []  
for i in range(len(String1)):  
 String2 = ""  
 for j in range(len(String1)):  
 if i == j:  
 character = String1[j].upper()  
 else:  
 character = String1[j]  
 String2 += character  
 Mexican\_wave.append(String2)  
print("Mexican wave string is :", Mexican\_wave)

**### Question 6** : Find the largest by deleting a single digit

number = 984768  
  
number = str(number)  
minimum\_num = number[0]  
position\_num = 0  
largest\_num = ""

for i in range(len(number)-1):  
 if number[i+1] < minimum\_num:  
 minimum\_num = number[i+1]  
 position\_num = i+1  
for i in range(len(number)):  
 if position\_num == i:  
 continue  
 largest\_num += number[i]  
  
print("The largest number possible after deleting a single digit :", largest\_num)

**### Question 7** : The largest number by shuffling the digits

number = 984768  
  
number1 = str(number)  
number2 = list(number1)  
largest = ""  
for i in range(len(number2) - 1):  
 for j in range(len(number2) - 1):  
 if number2[j] < number2[j + 1]:  
 temp = number2[j]  
 number2[j] = number2[j + 1]  
 number2[j + 1] = temp  
  
for i in range(len(number2)):  
 largest += number2[i]  
print("The largest number after shuffling the digits :", largest)

**### Question 8** : Compute the word frequency in a given message

String1 = "The frequency is the number of occurrence"  
  
word\_list = String1.split(" ")  
frequency\_list = []  
i = 0  
for word in word\_list:  
 word = word.lower()  
 count = 0  
 for word1 in word\_list:  
 word1 = word1.lower()  
 if word == word1:  
 count += 1  
 frequency\_list.append(count)  
 i += 1  
  
print("the word list and the associated frequency of the word")  
print(word\_list)  
print(frequency\_list)

**### Question 9** : RGB to hex conversion and vice versa

**## RGB to hex**  
rgb = (255, 0, 255)  
  
rgb\_hex = ""  
for value in rgb:  
 temp1 = int(value/16)  
 temp2 = value % 16  
 if temp1 >= 10 :  
 if temp1 == 10:  
 character1 = 'a'  
 elif temp1 == 11:  
 character1 = 'b'  
 elif temp1 == 12:  
 character1 = 'c'  
 elif temp1 == 13:  
 character1 = 'd'  
 elif temp1 == 14:  
 character1 = 'e'  
 else:  
 character1 = 'f'  
 else:  
 character1 = str(temp1)  
 if temp2 >= 10 :  
 if temp2 == 10:  
 character2 = 'a'  
 elif temp2 == 11:  
 character2 = 'b'  
 elif temp2 == 12:  
 character2 = 'c'  
 elif temp2 == 13:  
 character2 = 'd'  
 elif temp2 == 14:  
 character2 = 'e'  
 else:  
 character2 = 'f'  
 else:  
 character2 = str(temp1)  
 rgb\_hex += character1 + character2  
  
print("Hex value of the given RGB pair :", rgb\_hex)

**## hex to RGB**

hex\_value = "fb200f"  
value = []  
integer\_rgb = []  
value.append(hex\_value[0: 2])  
value.append(hex\_value[2: 4])  
value.append(hex\_value[4: 6])  
  
for num in value:  
 if num[1] == 'f':  
 temp\_value1 = 15  
 elif num[1] == 'e':  
 temp\_value1 = 14  
 elif num[1] == 'd':  
 temp\_value1 = 13  
 elif num[1] == 'c':  
 temp\_value1 = 12  
 elif num[1] == 'b':  
 temp\_value1 = 11  
 elif num[1] == 'a':  
 temp\_value1 = 10  
 else:  
 temp\_value1 = int(num[1])  
 if num[0] == 'f':  
 temp\_value2 = 15  
 elif num[0] == 'e':  
 temp\_value2 = 14  
 elif num[0] == 'd':  
 temp\_value2 = 13  
 elif num[0] == 'c':  
 temp\_value2 = 12  
 elif num[0] == 'b':  
 temp\_value2 = 11  
 elif num[0] == 'a':  
 temp\_value2 = 10  
 else:  
 temp\_value2 = int(num[0])  
 rgb\_integer\_value = temp\_value2 \* 16 + temp\_value1  
 integer\_rgb.append(rgb\_integer\_value)  
  
print("The integer value of rgb hex %s :" %hex\_value , end = ' ')  
print(integer\_rgb)

**### Question 10** : Generating accumulated strings

String1 = "abcd"  
String2 = ""  
temp\_string = ""  
for i in range(len(String1)):  
 c = String1[i].upper()  
 temp\_string = c + String1[i] \* i  
 String2 += (temp\_string)  
 if i < len(String1) - 1 :  
 String2 += "-"

print("Accumulated String :", String2)