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**First Section**

**Q1 In a given list of elements, all elements are equal except the one. Write a code to find the odd man out (Stray number)**

**Code:**

mylist=["hii","hii","hii","hii","hii","zzz","hii"]

mylist.sort()

k=len(mylist)

for i in range(k):

if mylist[0]==mylist[1]:

print("the odd one is " + mylist[k-1])

break

else:

print("the odd one is " + mylist[0])

break

**Q2 In a given list of elements, find the elements which is close to its mean.**

**Code:**

sum=0

mylist=[10, 20, 15, 17, 13, 7]

for i in range(len(mylist)):

sum=sum+mylist[i] #sum=82

average=sum/len(mylist) #average=13.66666666

ref=abs(mylist[0]-average)

for i in range(len(mylist)):

if ref>abs((mylist[i]-average)):

ref=abs((mylist[i]-average))

near=mylist[i]

print(near)

**Q3 Find the average speed of vehicle, given the distance travelled for fixed time intervals, e.g. [0, 0.1,0.25, 0.45, 0.55, 0.7, 0.9, 1.0]**

**Code:**

distance=[0, 4, 6, 7, 3, 5, 8, 3] #Kilometer

time=[0, 0.1, 0.25, 0.45, 0.55, 0.7, 0.9, 1.0] #hour

#average speed= total distance/total time

total\_distance,total\_time=0,0

for i in range(len(distance)):

total\_distance=total\_distance+distance[i]

total\_time=total\_time+time[i]

average\_speed=total\_distance/total\_time

print(average\_speed) #km/hr

**Q4 Find the no. of people in a bus, given the data of people on boarding & alighting at each station.**

**Code:**

onboard=[20, 30, 22, 36, 40]

alight=[0, 15, 30, 15, 25, 17]

total\_onboard,total\_alight=0,0

for i in range(len(onboard)):

total\_onboard=total\_onboard+onboard[i]

total\_alight=total\_alight+alight[i]

no\_of\_people\_in\_bus=total\_onboard-total\_alight

print(no\_of\_people\_in\_bus)

**Q5 Find the missing number given the original list and modified one**

**Code:**

og\_list=[5,3,55,74,65,12]

mod\_list=[74,12,3,5,65]

og\_list.sort()

mod\_list.sort()

for i in range(len(mod\_list)):

if og\_list[i]!=mod\_list[i]:

print(og\_list[i])

break

elif og\_list[len(mod\_list)-1]==mod\_list[len(mod\_list)-1]:

print(og\_list[len(mod\_list)])

break

**Q6 Find the difference between two lowest numbers in the list**

**Code:**

my\_list=[-2, 10, 9, 12, 4]

my\_list.sort()

sum\_of\_min2=my\_list[0]+my\_list[1]

print(sum\_of\_min2)

**Q7 In a given list, count no. of elements smaller than their mean**

**Code:**

sum=0

mylist=[10, 20, 15, 17, 13, 7]

for i in range(len(mylist)):

sum=sum+mylist[i] #sum=82

average=sum/len(mylist) #average=13.66666666

count=0

for i in range(len(mylist)):

if mylist[i]<average:

count=count+1

print(count)

**Second Section**

**Q1 Correct the malformed time string for e.g. "5:70:65 to "6:11:05**

**Code:**

time="5:70:65"

hours=int(time[0])

minutes=int(time[2:4])

seconds=int(time[5:7])

if seconds>60:

seconds=seconds%60

minutes=minutes+1

if minutes>60:

minutes=minutes%60

hours=hours+1

if minutes<10 and seconds>10:

print(str(hours)+":0"+str(minutes)+":"+str(seconds))

elif minutes>10 and seconds<10:

print(str(hours)+":"+str(minutes)+":0"+str(seconds))

elif minutes>10 and seconds>10:

print(str(hours)+":"+str(minutes)+":"+str(seconds))

elif minutes<10 and seconds<10:

print(str(hours)+":0"+str(minutes)+":0"+str(seconds))

elif minutes==0 and seconds==00:

print(str(hours)+":00:00")

elif minutes==0 and seconds>10:

print(str(hours)+":00:"+str(seconds))

elif minutes==0 and seconds<10:

print(str(hours)+":00:0"+str(seconds))

elif minutes>10 and seconds==0:

print(str(hours)+":"+str(minutes)+":00")

elif minutes<10 and seconds==0:

print(str(hours)+":0"+str(minutes)+":00")

**Q2 Correct the malformed date string, for e.g. 45/8/2018" to "14/9/2018"**

**Code:**

date="45/08/2018"

dd=int(date[0:2])

mm=int(date[3:5])

yyyy=int(date[6:10])

if mm==1 or mm==3 or mm==5 or mm==7 or mm==8 or mm==10 or mm==12:

if dd>31:

dd=dd%31

mm=mm+1

elif mm==2 and yyyy%4==0:

if dd>28:

dd=dd%28

mm=mm+1

elif mm==2 and yyyy%4!=0:

if dd>29:

dd=dd%29

mm=mm+1

else:

if dd>30:

dd=dd%30

mm=mm+1

print(str(dd)+"/"+str(mm)+"/"+str(yyyy))

**Q3 Convert ip address from “a.b.c.d” format into integer and vice versa**

**Code:**

ip1\_alpha="a.c.u.g"

num=['1','2','3','4','5','6','7','8','9','10','11','12','13','14','15','16','17',

'18','19','20','21','22','23','24','25','26']

char=['a','b','c','d','e','f','g','h','i','j','k','l','m','n','o','p','q','r','s',

't','u','v','w','x','y','z']

first=ip1\_alpha[0]

second=ip1\_alpha[2]

third=ip1\_alpha[4]

fourth=ip1\_alpha[6]

for i in range(len(num)):

if char[i]==first:

f\_c=num[i]

elif char[i]==second:

s\_c=num[i]

elif char[i]==third:

t\_c=num[i]

elif char[i]==fourth:

fo\_c=num[i]

print(f\_c+"."+s\_c+"."+t\_c+"."+fo\_c)

ip2\_num="5.25.9.11"

first=ip2\_num[0]

second=ip2\_num[2:4]

third=ip2\_num[5]

fourth=ip2\_num[7:9]

for i in range(len(num)):

if num[i]==first:

f\_n=char[i]

elif num[i]==second:

s\_n=char[i]

elif num[i]==third:

t\_n=char[i]

elif num[i]==fourth:

fo\_n=char[i]

print(f\_n+"."+s\_n+"."+t\_n+"."+fo\_n)

**Q4 Check whether given string is isogram or not**

**Code:**

string=str(input("Enter the string : "))

count=-len(string)

for i in range(len(string)):

for j in range(len(string)):

if string[i]==string[j]:

count=count+1

if count>0:

print("The string is Isogram")

else:

print("The string is not Isogram")

**Q5 Given a string, find the Mexican wave**

**Code:**

cap=['A','B','C','D','E','F','G','H','I','J','K','L','M','N','O','P','Q','R','S',

'T','U','V','W','X','Y','Z']

char=['a','b','c','d','e','f','g','h','i','j','k','l','m','n','o','p','q','r','s',

't','u','v','w','x','y','z']

string = "arun"

sec\_string=[]

mex\_wave=[]

for i in string:

for j in range(len(num)):

if i==char[j]:

sec\_string.append(cap[j])

for i in range(len(string)):

temp=list(string)

temp[i]=sec\_string[i]

temp=''.join(temp)

mex\_wave.append(temp)

print(mex\_wave)

**Q6 Given a number, find the largest number by deleting single digit (order of digits will remain same)**

**Code:**

num=int(input("enter number: "))

large=0

for i in range(len(str(num))):

rem=num%10

num=num/10

if rem>large:

large=rem

print(int(large))

**Q7 Given a number, find the largest number by shuffling the digits**

**Code:**

num=input("enter number: ")

large=num[0]

for i in range(len(num)):

if num[i]>large:

large=num[i]

print(large)

**Q8 Compute the word frequency in given message**

**Code:**

string = 'arun deep dhwanil arun arun dhwanil'

string=string.split()

sec\_string=[]

for i in string:

if i not in sec\_string:

sec\_string.append(i)

for i in range(0,len(sec\_string)):

print("frequency of", sec\_string[i] , "is :" , string.count(sec\_string[i]))

**Q9 RGB to Hex conversion and vise versa, e.g. (255,0,255) into OXFFOOFF**

**Code:**

RGB=(255,0,255)

Hex=['0','1','2','3','4','5','6','7','8','9','A','B','C','D','E','F']

num=['0','1','2','3','4','5','6','7','8','9','10','11','12','13','14','15']

R1=int(RGB[0]/16)

R2=RGB[0]%16

G1=int(RGB[1]/16)

G2=RGB[1]%16

B1=int(RGB[2]/16)

B2=RGB[2]%16

print("RGB2Hex : 0x"+Hex[R1]+Hex[R2]+Hex[G1]+Hex[G2]+Hex[B1]+Hex[B2])

Hexa="0xFF00FF"

H1=Hexa[2]

H2=Hexa[3]

H3=Hexa[4]

H4=Hexa[5]

H5=Hexa[6]

H6=Hexa[7]

for i in range(len(Hex)):

if H1==Hex[i]:

H1n=int(num[i])

if H2==Hex[i]:

H2n=int(num[i])

if H3==Hex[i]:

H3n=int(num[i])

if H4==Hex[i]:

H4n=int(num[i])

if H5==Hex[i]:

H5n=int(num[i])

if H6==Hex[i]:

H6n=int(num[i])

hexr=str((H1n\*16)+H2n)

hexg=str((H3n\*16)+H4n)

hexb=str((H5n\*16)+H6n)

print("Hex2RGB : (" + hexr +"," + hexg +","+ hexb+")")

**Q10 Generate accumulated strings, e.g. abcd 🡺 Aa-Bb Ccc-Dddd**

**Code:**

num=['1','2','3','4','5','6','7','8','9','10','11','12','13','14','15','16','17',

'18','19','20','21','22','23','24','25','26']

char=['a','b','c','d','e','f','g','h','i','j','k','l','m','n','o','p','q','r','s',

't','u','v','w','x','y','z']

cap=['A','B','C','D','E','F','G','H','I','J','K','L','M','N','O','P','Q','R','S',

'T','U','V','W','X','Y','Z']

str="arun"

for i in str:

for j in range(26):

if i==char[j]:

print(cap[j]+char[j]\*(j)+"-",end='')