UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO

FACULTAD DE INGENIERÍA

ESTRUCTURA DE DATOS Y ALGORITMOS I

Examen: Curso python

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Datos generados aleatoriamente como prueba

```
>>>
========== RESTART: C:\Users\mildr\Desktop\Moreno_Razo_Laura_E
56
0.8
53
0.6
69
0.5
10
0.2
43
0.4
55
0.3
68
0.8
28
0.6
8
0.8
26
0.3
24
0.8
26
0.5
5
0.6
41
0.1
61
0.8
88
0.9
43
0.7
73
0.5
68
0.7
```

Cálculo del semaforo y promedio de edad de personas infectadas

```
1.0
78
0.1
38
0.6
84
0.5
43
0.5
79
0.8
43
0.3
36
0.4
6
0.5

Estamos en semáforo amarillo

El promedio de edad de personas con COVID es: 50.7

                        Gracias por usar el programa

['56,0.8\n', '53,0.6\n', '69,0.5\n', '10,0.2\n', '43,0.4\n', '55,0.3\n', '68,0.8
\n', '28,0.6\n', '8,0.8\n', '26,0.3\n', '24,0.8\n', '26,0.5\n', '5,0.6\n', '41,0
.1\n', '61,0.8\n', '88,0.9\n', '43,0.7\n', '73,0.5\n', '68,0.7\n', '55,0.6\n', '
64,0.7\n', '67,0.3\n', '38,0.6\n', '49,0.7\n', '85,0.1\n', '40,0.1\n', '33,0.9\n
', '63,0.8\n', '9,0.6\n', '29,0.7\n', '76,0.9\n', '64,0.7\n', '14,0.2\n', '82,0.
5\n', '83,0.2\n', '5,0.6\n', '5,0.4\n', '16,1.0\n', '57,0.1\n', '30,1.0\n', '21,
0.4\n', '24,0.7\n', '46,0.4\n', '21,0.8\n', '18,0.4\n', '28,0.9\n', '56,0.0\n',
'35,0.4\n', '19,0.6\n', '86,1.0\n', '22,0.5\n', '71,1.0\n', '45,0.0\n', '28,1.0\
n', '82,0.9\n', '20,0.2\n', '13,0.7\n', '72,0.2\n', '31,0.5\n', '15,0.6\n', '29,
0.5\n', '49,0.2\n', '64,0.4\n', '57,0.2\n', '48,0.8\n', '25,0.1\n', '27,0.6\n',
'83,0.9\n', '18,0.6\n', '26,0.9\n', '66,0.3\n', '72,0.3\n', '23,0.5\n', '72,0.4\
n', '12,0.3\n', '20,0.9\n', '45,0.2\n', '69,0.2\n', '81,0.4\n', '18,0.1\n', '22,
0.3\n', '57,0.2\n', '87,0.6\n', '40,0.5\n', '20,0.2\n', '48,0.9\n', '21,0.7\n',
'34,0.3\n', '76,0.3\n', '26,0.5\n', '69,0.8\n', '56,1.0\n', '78,0.1\n', '38,0.6\
n', '84,0.5\n', '43,0.5\n', '79,0.8\n', '43,0.3\n', '36,0.4\n', '6,0.5\n']
56,0.8
```

Lista impresa y documento con datos guardados

```
n', '82,0.9\n', '20,0.2\n', '13,0.7\n', '72,0.2\n', '31,0.5\n', '15,0.6\n', '29,
0.5\n', '49,0.2\n', '64,0.4\n', '57,0.2\n', '48,0.8\n', '25,0.1\n', '27,0.6\n',
'83,0.9\n', '18,0.6\n', '26,0.9\n', '66,0.3\n', '72,0.3\n', '23,0.5\n', '72,0.4\
n', '12,0.3\n', '20,0.9\n', '45,0.2\n', '69,0.2\n', '81,0.4\n', '18,0.1\n', '22,
0.3\n', '57,0.2\n', '87,0.6\n', '40,0.5\n', '20,0.2\n', '48,0.9\n', '21,0.7\n',
'34,0.3\n', '76,0.3\n', '26,0.5\n', '69,0.8\n', '56,1.0\n', '78,0.1\n', '38,0.6\
n', '84,0.5\n', '43,0.5\n', '79,0.8\n', '43,0.3\n', '36,0.4\n', '6,0.5\n']
56,0.8
53,0.6
69,0.5
10,0.2
43,0.4
55,0.3
68,0.8
28,0.6
8,0.8
26,0.3
24,0.8
26,0.5
5,0.6
41,0.1
61,0.8
88,0.9
43,0.7
73,0.5
68,0.7
55,0.6
64,0.7
67,0.3
38,0.6
49,0.7
85,0.1
40,0.1
33,0.9
63,0.8
9,0.6
29,0.7
76,0.9
64,0.7
14,0.2
```

```
49,0.2
64,0.4
57,0.2
48,0.8
25,0.1
27,0.6
83,0.9
18,0.6
26,0.9
66,0.3
72,0.3
23,0.5
72,0.4
12,0.3
20,0.9
45,0.2
69,0.2
81,0.4
18,0.1
22,0.3
57,0.2
87,0.6
40,0.5
20,0.2
48,0.9
21,0.7
34,0.3
76,0.3
26,0.5
69,0.8
56,1.0
78,0.1
38,0.6
84,0.5
43,0.5
79,0.8
43,0.3
36,0.4
6,0.5
```

Código fuente

```
import random
datos=[]
r=0
scovid=0
ncovid=0
for i in range (100):
    #Para facilitar las pruebas se generaron datos aleatorios con la libreria random
    edad= random.randint(5,90)
    print (edad)
    #edad= input("Ingresa la edad: ") instruccion si se quiere introducir datos reales
    indicador= round(random.random (),1)
    print(indicador)
    #indicador=float(input("Ingresa el indicador entre 0 y 1: ")) instruccion si se quiere introducir datos reales
    reg=str(edad)+ ','+ str(indicador)+ '\n'
    datos.append(reg)

    if indicador< 0.8:
        ncovid+=1

    else:
        r= r + int(edad) #Acumulador de edad de infectados
        scovid+=1


#Calculo de semáforo
if scovid==0:
    print ("Estamos en semáforo verde\n")
elif 1<=scovid<=30:
    print ("\nEstamos en semáforo amarillo\n")

elif 31<=scovid<=70:
    print ("Estamos en semáforo naranja\n")

elif 71<=scovid<=100:
    print ("Estamos en semáforo rojo\n")
else:
    print ("Error\n")

#Calculo de promedio de edad en infectados
r= r/scovid
print ("El promedio de edad de personas con COVID es: "+ str(round(r,1))+"\n" )

print ("\t\t\tGracias por usar el programa\n")
print (datos)#Imprimir lista
```

```
    else:
        r= r + int(edad) #Acumulador de edad de infectados
        scovid+=1


#Calculo de semáforo
if scovid==0:
    print ("Estamos en semáforo verde\n")
elif 1<=scovid<=30:
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elif 31<=scovid<=70:
    print ("Estamos en semáforo naranja\n")

elif 71<=scovid<=100:
    print ("Estamos en semáforo rojo\n")
else:
    print ("Error\n")

#Calculo de promedio de edad en infectados
r= r/scovid
print ("El promedio de edad de personas con COVID es: "+ str(round(r,1))+"\n" )

print ("\t\t\tGracias por usar el programa\n")
print (datos)#Imprimir lista


#Guardar datos en archivo excel
a=open("covid.csv","a")
a.writelines(datos)
a.close()

#Abrir el archivo con los datos en modo lectura
with open('covid.csv', 'r') as fichero:
    for linea in fichero:
        print(linea, end='')


''' Existe un fallo en estas instrucciones,ya que no muestran el archivo
a=open('covid.csv','r')
contenido=a.read()
a.close()
print(contenido)
'''
```