Lab2

September 28, 2017

```
In [2]: evens = [0,2,4,6,8]
        print("Evens are:", evens)
        print("First and last elements are:", evens[0], evens[-1])

Evens are: [0, 2, 4, 6, 8]
First and last elements are: 0 8
```

```
In [3]: evens.append(12)
        evens.append(10)
        print("Evens are:", evens)
        evens.sort()
        print("Evens are:", evens)
        del evens[0]
        print("Evens are:", evens)

Evens are: [0, 2, 4, 6, 8, 12, 10]
Evens are: [0, 2, 4, 6, 8, 10, 12]
Evens are: [2, 4, 6, 8, 10, 12]
```

```
In [4]: evens.reverse()
        print("Evens are:", evens)
        evens[-1]=0
        print("Evens are:", evens)
        evens[5]=2
        print("Evens are:", evens)

Evens are: [12, 10, 8, 6, 4, 2]
Evens are: [12, 10, 8, 6, 4, 0]
Evens are: [12, 10, 8, 6, 4, 2]
```

```
In [5]: my_string='geog479'
        my_list=[]
        for char in my_string:
            my_list.append(char)
        print(my_list)
```

```
['g', 'e', 'o', 'g', '4', '7', '9']
```

```
In [6]: def f(v1,v2,v3):
            print ("v1=",v1)
            print ("v2=",v2)
            print ("v3=",v3)
        f(1,2,3)
        f(3,9,10)
        f(2,13,4)
        f(6,7,8)
```

```
v1= 1
v2= 2
v3= 3
v1= 3
v2= 9
v3= 10
v1= 2
v2= 13
v3= 4
v1= 6
v2= 7
v3= 8
```

```
In [7]: def greeting(first,last):
            print("Hello",first,last)
            print("It is nice to meet you.")

        def greetingstring(first,last):
            string="Hello {!s} {!s}, How are you?".format(first,last)
            return string
```

```
In [8]: greeting("Bob","Smith")
        print()
        print(greetingstring("Bob","Smith"))
```

```
Hello Bob Smith
It is nice to meet you.

Hello Bob Smith, How are you?
```

```
In [9]: a = 5
        b = 10
        def swap(a, b):
            temp = a
            a = b
```

```
            b = temp
        swap(a, b)
        print(a, b)
```

```
5 10
```

```
In [10]: a = 5
         b = 10
         2
         def swap(a, b):
             temp = a
             a = b
             b = temp
             return a,b
         (a,b)=swap(a, b)
         print(a, b)
```

```
10 5
```

```
In [13]: def numbers(one,two=2,three=5,four=4):
             print(one,two,three,four)
         numbers(3)
```

```
3 2 5 4
```

```
In [14]: def display(a=1, b=2, c=3):
             print('a:', a, 'b:', b, 'c:', c)

         print('no parameters:')
         display()
         print('one parameter:')
         display(11)
         print('two parameters:')
         display(11, 22)
         print('Three parameters:')
         display(11, 22,33)
```

```
no parameters:
a: 1 b: 2 c: 3
one parameter:
a: 11 b: 2 c: 3
two parameters:
a: 11 b: 22 c: 3
Three parameters:
a: 11 b: 22 c: 33
```

```
In [15]: array=[10, 20, 25, 50, 5, 0, 50]
         import numpy
         def rescale(input_array):
             L = numpy.min(input_array)
             H = numpy.max(input_array)
             output_array = (input_array - L) / (H - L)
             return output_array
         out =rescale(array)
         print(out)
```

```
[ 0.2  0.4  0.5  1.   0.1  0.   1. ]
```

```
In [16]: def numbers (one,two=2,three=3,four=4):
             n=str(one)+str(two)+str(three)+str(four)
             return n

         def func(a, b=3, c=6):
             print('a: ', a, 'b: ', b, 'c:', c)

         func(-1, 2)
```

```
a:  -1 b:  2 c: 6
```

```
In [17]: row0=[1,2,1,2]
         row1=[3,4,3,4]
         row2=[1,2,1,2]
         row3=[3,4,3,4]
         print("row3[0]=",row3[0])
         print("row3[1]=",row3[1])
         print("row3[2]=",row3[2])
         print("row3[3]=",row3[3])
```

```
row3[0]= 3
row3[1]= 4
row3[2]= 3
row3[3]= 4
```

```
In [18]: raster=[[1,2,1,2],
                 [3,4,3,4],
                 [1,2,1,2],
                 [3,4,3,4]]
         print("raster[3][0]=",raster[3][0])
         print("raster[3][1]=",raster[3][1])
         print("raster[3][2]=",raster[3][2])
         print("raster[3][3]=",raster[3][3])
```

```
raster[3][0]= 3
raster[3][1]= 4
raster[3][2]= 3
raster[3][3]= 4
```

```
In [20]: for row in raster:
             print("row=",row)
```

```
row= [1, 2, 1, 2]
row= [3, 4, 3, 4]
row= [1, 2, 1, 2]
row= [3, 4, 3, 4]
```

```
In [21]: for row in raster:
             for element in row:
                 print("element=",element)
```

```
element= 1
element= 2
element= 1
element= 2
element= 3
element= 4
element= 3
element= 4
element= 1
element= 2
element= 1
element= 2
element= 3
element= 4
element= 3
element= 4
```

```
In [22]: for r in range(0,4):
             for c in range(0,4):
                 print("raster[",r,"][",c,"]=",raster[r][c])
```

```
raster[ 0 ][ 0 ]= 1
raster[ 0 ][ 1 ]= 2
raster[ 0 ][ 2 ]= 1
raster[ 0 ][ 3 ]= 2
raster[ 1 ][ 0 ]= 3
raster[ 1 ][ 1 ]= 4
raster[ 1 ][ 2 ]= 3
raster[ 1 ][ 3 ]= 4
```

```
raster[ 2 ][ 0 ]= 1
raster[ 2 ][ 1 ]= 2
raster[ 2 ][ 2 ]= 1
raster[ 2 ][ 3 ]= 2
raster[ 3 ][ 0 ]= 3
raster[ 3 ][ 1 ]= 4
raster[ 3 ][ 2 ]= 3
raster[ 3 ][ 3 ]= 4
```

```
In [23]: for r in range(0,len(raster)):
             for c in range(0,len(raster[0])):
                 print("raster[",r,"][",c,"]=",raster[r][c])
```

```
raster[ 0 ][ 0 ]= 1
raster[ 0 ][ 1 ]= 2
raster[ 0 ][ 2 ]= 1
raster[ 0 ][ 3 ]= 2
raster[ 1 ][ 0 ]= 3
raster[ 1 ][ 1 ]= 4
raster[ 1 ][ 2 ]= 3
raster[ 1 ][ 3 ]= 4
raster[ 2 ][ 0 ]= 1
raster[ 2 ][ 1 ]= 2
raster[ 2 ][ 2 ]= 1
raster[ 2 ][ 3 ]= 2
raster[ 3 ][ 0 ]= 3
raster[ 3 ][ 1 ]= 4
raster[ 3 ][ 2 ]= 3
raster[ 3 ][ 3 ]= 4
```

```
In [32]: # Student code
         sum = 0
         for row in raster:
             for element in row:
                   sum = sum + element

         print("Sum =",sum)
```

```
Sum = 40
```

```
In [31]: #Student code
         n = len(raster)*len(raster[0])
         avg = sum/n
         print("There are",n,"elements")
         print("The average value is",avg)
```

```
There are 16 elements
The average value is 2.5
```

```
In [33]: mydict = { 'x': 41.1, 'y': -81.3, 'v': 10 }
         print (mydict.keys()) # Print all keys
         print (mydict['x']) # Print value for this key
```

```
dict_keys(['v', 'y', 'x'])
41.1
```

```
In [ ]:
```