PYTHON ASSIGNMENT

MATRIX EXERCISE

Assigning subsequent rows to matrix first row element

In [6]:
```
my_list=[[1,2,3],[4,5,6],[7,8,9],[10,11,12]]
print("my list :"+str(my_list))
result={my_list[0][val] : my_list[val+1] for val in range(len(my_list)-1)}
print("The matrix : " +str(result))
```
```
my list :[[1, 2, 3], [4, 5, 6], [7, 8, 9], [10, 11, 12]]
The matrix : {1: [4, 5, 6], 2: [7, 8, 9], 3: [10, 11, 12]}
```

Adding matrics and subtracting matrics

In [19]:
```
import numpy as np
A = np.array([[10,5],[9,9]])
B = np.array([[4,4],[5,6]])
print("elments in A")
print(A)
print("elments in B")
print(B)
print("addition of two matrix")
print(np.add(A,B))
print("subtraction of two matrics")
print(np.subtract(A,B))
```
```
elments in A
[[10  5]
 [ 9  9]]
elments in B
[[4 4]
 [5 6]]
addition of two matrix
[[14  9]
 [14 15]]
subtraction of two matrics
[[6 1]
 [4 3]]
```

FUNCTION

how to get list of parameter name from a function in python

In [32]:
```
def fun(a, b, c):
    return a**b**c
import inspect
print(inspect.signature(fun))
```
```
(a, b, c)
```

another way!

In [30]:
```
def myfun(a,b,c,d=89,s=34):
    pass
f1=myfun
f1.__code__.co_varnames
#f1.__code__.co_argcount
```
Out[30]:
```
('a', 'b', 'c', 'd', 's')
```

How to Print Multiple Arguments in Python?

In [40]:
```
def books(book_name,year):
    print("BOOKS DETAILS : " , book_name + ',' + year)
books("Harry potter" , "1984")
books("Ruskin bond" , "1896")
books("mark twain" , "1985")
```
```
BOOKS DETAILS :  Harry potter,1984
BOOKS DETAILS :  Ruskin bond,1896
BOOKS DETAILS :  mark twain,1985
```

DICTIONARY EXCERCISE

sort python Dictionaries by key or value

In [55]:
```
def diction():

    key = {}
    key[2] = 23
    key[1] = 78
    key[5] = 56
    key[6] = 295
    key[10] = 27
    print("key", key)
    print("keys and values sorted")

    for i in sorted(key):
        print((i, key[i]), end=" ")

def main():
    diction()
if __name__ == "__main__":
    main()
```
```
key {2: 23, 1: 78, 5: 56, 6: 295, 10: 27}
keys and values sorted
(1, 78) (2, 23) (5, 56) (6, 295) (10, 27)
```

python dictionary with keys having multiple inputs

In [59]:
```
my_dict = {}

a, b, c = 50, 126, 80
my_dict[a, b, c] = a + b - c

a, b, c = 52, 54, 11
my_dict[a, b, c] = a + b - c

print("The dictionary are :")
print(my_dict)
```
```
The dictionary are :
{(50, 126, 80): 96, (52, 54, 11): 95}
```

TUPLES

Python program to Find the size of a Tuple

In [60]:
```
tup1= ("hema","arthi", 1, 3)
tup2= ("Python", "Language")
tup3= ((1,"Java"), (2, "Python"), (3, "C"))

#print size
print("Size of tuple1: ", tup1.__sizeof__(), "bytes")
print("Size of tuple2: ", tup2.__sizeof__(), "bytes")
print("Size of tuple3: ", tup3.__sizeof__(), "bytes")
```
```
Size of tuple1:  56 bytes
Size of tuple2:  40 bytes
Size of tuple3:  48 bytes
```

Python – Maximum and Minimum K elements in Tuple

In [66]:
```
my_tuple = (17, 255, 396, 90, 60, 88)

print("The tuple is : ")
print(my_tuple)

K = 2
print("The value of K has been initialized to ")
print(K)
my_result = []
my_tuple = list(my_tuple)
temp = sorted(my_tuple)

for idx, val in enumerate(temp):
   if idx < K or idx >= len(temp) - K:
      my_result.append(val)
my_result = tuple(my_result)

print("The result is : " )
print(my_result)
```
```
The tuple is :
(17, 255, 396, 90, 60, 88)
The value of K has been initialized to
2
The result is :
(17, 60, 255, 396)
```

Way to remove i'th character from string in python

In [68]:
```
test_str = "GeeksForGeeks"
print ("The original string is : " + test_str)
z = str(input("Which character you want to remove ?"))
new_str = test_str.replace(z, '', 1)
print ("The string after removal of i'th character(works) : " + new_str)
```
```
The original string is : GeeksForGeeks
Which character you want to remove ?e
The string after removal of i'th character(works) : GeksForGeeks
```

Reverse words in a given string in python

In [71]:
```
string = str(input("Enter a string value :"))
s = string.split()[::-1]
l = []
for i in s:
    l.append(i)
print(" ".join(l))
```
```
Enter a string value :hi this is python
python is this hi
```

Python program to check whether the string is Symmetrical or Palindrome

In [72]:
```
string = 'amaama'
half = int(len(string) / 2)

if len(string) % 2 == 0:
    first_str = string[:half]
    second_str = string[half:]
else:
    first_str = string[:half]
    second_str = string[half+1:]

if first_str == second_str:
    print(string, 'string is symmertical')
else:
    print(string, 'string is not symmertical')

if first_str == second_str[::-1]:
    print(string, 'string is palindrome')
else:
    print(string, 'string is not palindrome')
```
```
amaama string is symmertical
amaama string is palindrome
```

Minimum of two numbers in python

In [73]:
```
a=[]
n=int(input("Enter number of elements:"))
for i in range(1,n+1):
    b=int(input("Enter element:"))
    a.append(b)
a.sort()
print("The smallest element is:",a[n-(n-1)])
print("Second smallest element is:",a[n-(n-2)])
```
```
Enter number of elements:4
Enter element:12
Enter element:124
Enter element:15
Enter element:12
The smallest element is: 12
Second smallest element is: 15
```

Maximum of two numbers in python

In [74]:
```
a=[]
n=int(input("Enter number of elements:"))
for i in range(1,n+1):
    b=int(input("Enter element:"))
    a.append(b)
a.sort()
print("First largest element is:",a[n-1])
print("Second largest element is:",a[n-2])
```
```
Enter number of elements:4
Enter element:45
Enter element:455
Enter element:65
Enter element:45
First largest element is: 455
Second largest element is: 65
```

Ways to find length of list

In [77]:
```
List = []
n_5 = int(input("Enter no of array elements :"))
for i in range(n_5):
    n_6 = int(input())
    List.append(n_6)
len(List)
```
```
Enter no of array elements :4
5
7
8
9
```
Out[77]:
```
4
```

Python program to swap two elements in a list

In [76]:
```
def swapPositions(list, pos1, pos2):

    list[pos1], list[pos2] = list[pos2], list[pos1]
    return list

List = []
n_5 = int(input("Enter no of array elements :"))
for i in range(n_5):
    n_6 = int(input())
    List.append(n_6)
pos1, pos2  = 1, 3

print(swapPositions(List, pos1-1, pos2-1))
```
```
Enter no of array elements :5
4
5
6
1
5
[6, 5, 4, 1, 5]
```

Python program to incherchange first and last elements in a list

In [78]:
```
def swapList(newList):
    size = len(newList)
    temp_1 = newList[0]
    newList[0] = newList[size - 1]
    newList[size - 1] = temp_1
    return newList

n_4 = int(input("Enter an integer :"))
newList = []
for i in range(n_4):
    c = int(input())
    newList.append(c)
print(swapList(newList))
```
```
Enter an integer :4
7
8
9
5
[5, 8, 9, 7]
```

Write a program to check if the given number is a palindrome number

In [79]:
```
n_3 = int(input("Enter number:"))
temp = n_3
rev = 0
while(n_3>0):
    dig = n_3 %10
    rev = rev*10+dig
    n_3 = n_3//10
if(temp == rev):
    print("The number is a palindrome!")
else:
    print("The number isn't a palindrome!")
```
```
Enter number:121
The number is a palindrome!
```

Print the following pattern

1 2 2 3 3 3 4 4 4 4 5 5 5 5 5

In [80]:
```
rows = 6
for i in range(rows):
    for j in range(i):
        print(i, end=' ')
    print('')
```
```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

Iterate the given list of numbers and print only those numbers which are divisible by 5

In [81]:
```
x = []
n_1 = int(input("Enter no. of list elements"))
for i in range(n_1):
    x_1 = int(input())
    x.append(x_1)
x_2 = []
def div_5(x):
   print("Given list",x)
   for i in x:
       if i%5 == 0:
          x_2.append(i)
div_5(x)
print("The list is",x_2)
```
```
Enter no. of list elements4
4
5
7
8
Given list [4, 5, 7, 8]
The list is [5]
```

Write a program to remove characters from a string starting from zero up to n and return a new string.

In [82]:
```
str_1 = str(input("Enter string values"))
print ("The original string is : " + str_1)
n = int(input("Enter the position of the string to remove"))
new_str = str_1[:(n-1)] +  str_1[n:]
print ("The string after removal of i'th character : " + new_str)
```
```
Enter string values45781457
The original string is : 45781457
Enter the position of the string to remove5
The string after removal of i'th character : 4578457
```

Write a function called show_stars(rows). If rows are 5, it should print the following: * **

In [84]:
```
m = int(input("Enter an integer:"))
for i in range(0,m):
    for j in range(0, i+1):
        print("*", end='')
    print("\r")
```
```
Enter an integer:5
*
**
***
****
*****
```

check if the number is an Armstrong number or not

In [85]:
```
n = int(input("Enter a integer value:"))
sum = 0
temp = n
while temp>0:
    dig = temp % 10
    sum += dig **3
    temp //= 10

if sum == n:
    print("The number is armstrong number")
else:
    print("It is not a armstrong number")
```
```
Enter a integer value:123
It is not a armstrong number
```

Find the size of a Set in Python

In [2]:
```
import sys

Set1 = {"A", 1, "B", 2, "C", 3}
Set2 = {"raj1", "Raju", "raj2", "Nikhil", "raj3", "Deepanshu"}
Set3 = {(1, "Lion"), ( 2, "Tiger"), (3, "Fox")}

print("Size of Set1: " + str(Set1.__sizeof__()) + "bytes")
print("Size of Set2: " + str(Set2.__sizeof__()) + "bytes")
print("Size of Set3: " + str(Set3.__sizeof__()) + "bytes")
```
```
Size of Set1: 456bytes
Size of Set2: 456bytes
Size of Set3: 200bytes
```

Iterate over a set in Python

In [5]:
```
test = set("hihello")

for val in test:
    print(val)
```
```
o
e
i
l
h
```

In [ ]:

In [ ]: