

## 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 matrices and subtracting matrices

```
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 matrices")
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 matrices  
[[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","arathi", 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
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 3 3 3 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
3 3
4 4 4
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", "Rajuu", "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 [ ]:
```