

1. Python program to add two Matrices

```
In [2]: X = [[1,2,3],
            [2,5,6],
            [3,8,9]]

Y = [[9,1,7],
      [6,2,4],
      [3,2,1]]

result = [[0,0,0],
          [0,0,0],
          [0,0,0]]

for i in range(len(X)):
    for j in range(len(X[0])):
        result[i][j] = X[i][j] + Y[i][j]

for r in result:
    print(r)

[10, 3, 10]
[8, 7, 10]
[6, 10, 10]
```

2. Python program to multiply two matrices.

```
In [4]: A = [[1, 7, 3],
            [3, 5, 6],
            [2, 8, 9]]

B = [[5, 1, 1, 2],
      [6, 2, 3, 0],
      [4, 3, 9, 1]]

result = [[0, 0, 0, 0],
          [0, 0, 0, 0],
          [0, 0, 0, 0]]

for i in range(len(A)):
    for j in range(len(B[0])):
        for k in range(len(B)):
            result[i][j] += A[i][k] * B[k][j]

for r in result:
    print(r)

[59, 24, 49, 5]
[69, 31, 72, 12]
[94, 45, 107, 13]
```

3. Python program for Matrix Product

```
In [5]: def Multiply(A,B):
        result=[ [ 0,0,0],[0,0,0],[0,0,0] ]

        for i in range(len(A)):
            for j in range(len(B[0])):
                for k in range(len(B)):
                    result[i][j] += A[i][k] * B[k][j]

        for p in result:
            print(p)
        return 0

A = [ [ 1, 1, 3],[6, 7, 4], [8, 10, 11] ]
B = [[1, 5, 3],[2, 2, 5], [7, 4, 9] ]

print("Result: ")
Multiply(A,B)

Result:
[24, 19, 35]
[48, 60, 89]
[105, 104, 173]

Out[5]: 0
```

4. Adding and Subtracting Matrices in Python

```
In [6]: import numpy as np

A = np.array([[2, 3], [3, 4]])

B = np.array([[5, 8], [6, 7]])

print("Printing elements of first matrix")
print(A)
print("Printing elements of second matrix")
print(B)

print("Addition of two matrix")
print(np.add(A, B))

print("Subtraction of two matrix")
print(np.subtract(A, B))

Printing elements of first matrix
[[2 3]
 [3 4]]
Printing elements of second matrix
[[5 8]
 [6 7]]
Addition of two matrix
[[ 7 11]
 [ 9 11]]
Subtraction of two matrix
[[-3 -5]
 [-3 -3]]
```

5. Transpose a matrix in Single line in Python

```
In [7]: n = [[1,2],[3,4],[5,6]]
for row in n :
    print(row)
rez = [[n[j][i] for j in range(len(n))] for i in range(len(n[0]))]
print("\n")
for row in rez:
    print(row)

[1, 2]
[3, 4]
[5, 6]

[1, 3, 5]
[2, 4, 6]
```

6. Python | Matrix creation of n*n

```
In [10]: M = 3

print("The dimension : " + str(M))

res = [list(range(1 + M * i, 1 + M * (i + 1)))
        for i in range(M)]

print("The created matrix of N * N: " + str(res))

The dimension : 3
The created matrix of N * N: [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
```

7. Python | Get Kth Column of Matrix.

```
In [12]: test = [[4, 2, 6], [3, 1, 10], [7, 2, 5]]

print("The original list is : " + str(test))

K = 2

res = [sub[K] for sub in test]

print("The Kth column of matrix is : " + str(res))

The original list is : [[4, 2, 6], [3, 1, 10], [7, 2, 5]]
The Kth column of matrix is : [6, 10, 5]
```

8. Python – Vertical Concatenation in Matrix

```
In [14]: test = ["Sam", "great", ["is", "for"], ["good"]]

print("The original list : " + str(test))

res = []
N = 0
while N != len(test):
    temp = ''
    for idx in test:
        try: temp = temp + idx[N]
        except IndexError: pass
    res.append(temp)
    N = N + 1

res = [ele for ele in res if ele]

print("List after column Concatenation : " + str(res))

The original list : [['Sam', 'great'], ['is', 'for'], ['good']]
List after column Concatenation : ['Samisgood', 'greatfor']
```

9. Python program to check if a string is palindrome or not

```
In [19]: def Palindrome(s):
        return s == s[::-1]

s = "malayalam"
ans = Palindrome(s)

if ans:
    print("Yes")
else:
    print("No")

Yes
```

10. Python program to check whether the string is Symmetrical or Palindrome

```
In [20]: 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

In [ ]:
```