```python

# PPL Lab Assignment 4, PG43 Jaynam Modi, G3

# Write a Python Program to input a Numpy Array and print it's transpose and find out whether it is Symmetric or not.

import numpy as np


def printmatrix( arr ):
    for i in range(arr.shape[0]):
        for j in range(arr.shape[1]):
            print("    ", arr[i][j], end = "")
        print("\n")

def issymetric( arr ):
    flag = True
    t = arr.transpose()
    for i in range(arr.shape[0]):
        for j in range(arr.shape[1]):
            if arr[i][j] != t[i][j]:
                flag = False
    return flag


i, j = (int(a) for a in input(" > Enter dimensions of the Array : ").split(" ") if a != "")
inpar = np.array([int(x) for x in input(" > Enter Elements of {} × {} matrix : ".format(i, j)).split(" ") if x != ""]).reshape((i, j))

print(" > Stored Array : \n")
printmatrix(inpar)

transar = inpar.transpose()

print(" > Transpose of the Array : \n")
printmatrix(transar)

if issymetric(inpar):
    print(" > The given Array is symmetric.")
else:
    print(" > The given Array is NOT symmetric.")


# PRACTICE PROBLEMS.

# 1. Python program to Add two matrices.

def addMatrix(x, y):
    sumMatrix = x + y
    return sumMatrix

# 2. Python program to multiply two matrices.

def productMatrix(x, y):
    return numpy.matmul(x, y)

# 3. Python program to find row-wise maximum element of matrix.

def maxElementInRow(arr):
    for x in range(arr.shape[0]):
        m = arr[x][0]
        for y in range(arr.shape[1]):
            if arr[x][y] > m:
                m = arr[x][y]
        print(" > Greatest element in Row {} is : {}".format(x+1, m))

```

```
u0_a362@localhost:~$ cd github/assignments/PPL7
u0_a362@localhost:~/github/assignments/PPL$ python ppl_assignment_4.py
 > Enter dimensions of the Array : 3 3
 > Enter Elements of 3 × 3 matrix : 1 2 3 2 1 4 3 4 3
 > Stored Array :

    1     2     3

    2     1     4

    3     4     3

 > Transpose of the Array :

    1     2     3

    2     1     4

    3     4     3

 > The given Array is symmetric.
```