Fundamentals of AI & ML

Monsoon Semester V 2021-22

Lab - 2

Date: 23 September 2021

Topic: Linear Algebra

AIM

a. Write a python program to Add Two Matrices.
b. Write a python program to Transpose a Matrix.

THEORY

Matrix addition is the operation of adding two matrices by adding the corresponding entries together.

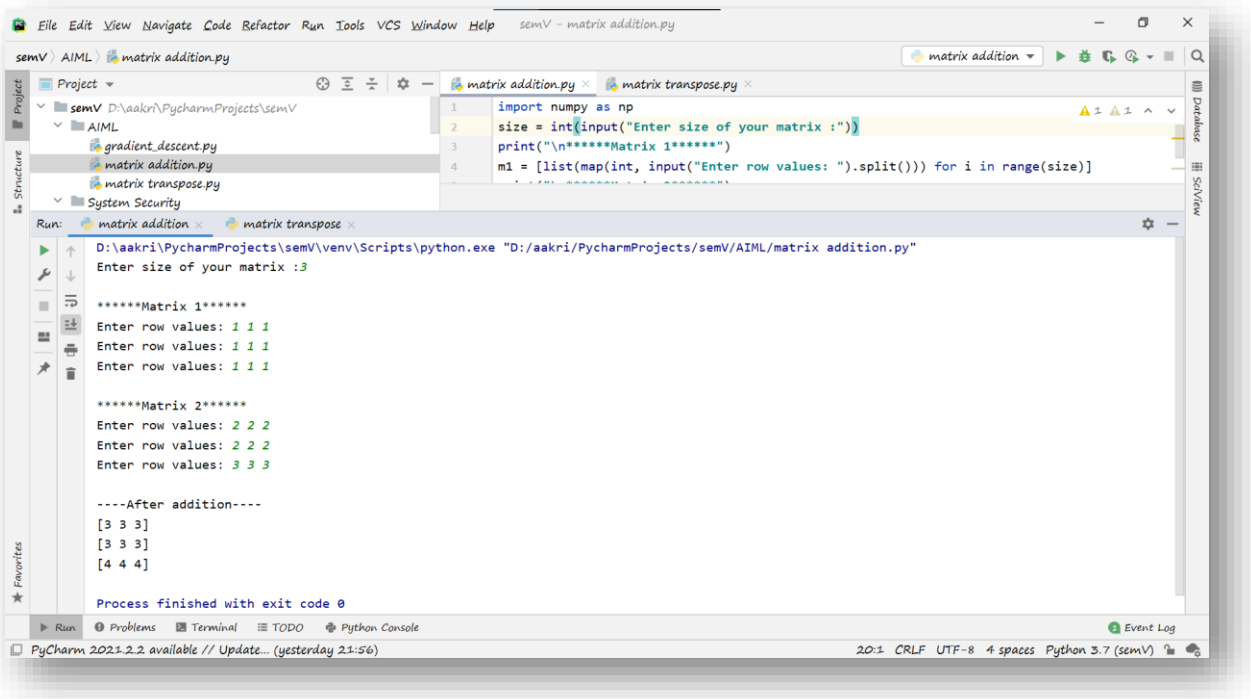
The transpose of a matrix is **obtained by changing its rows into columns and its columns into rows**. A rectangular array of numbers or functions that are arranged in the form of rows and columns is called a matrix. ... And this new matrix is denoted as A^T, which is the transpose of the given matrix A.

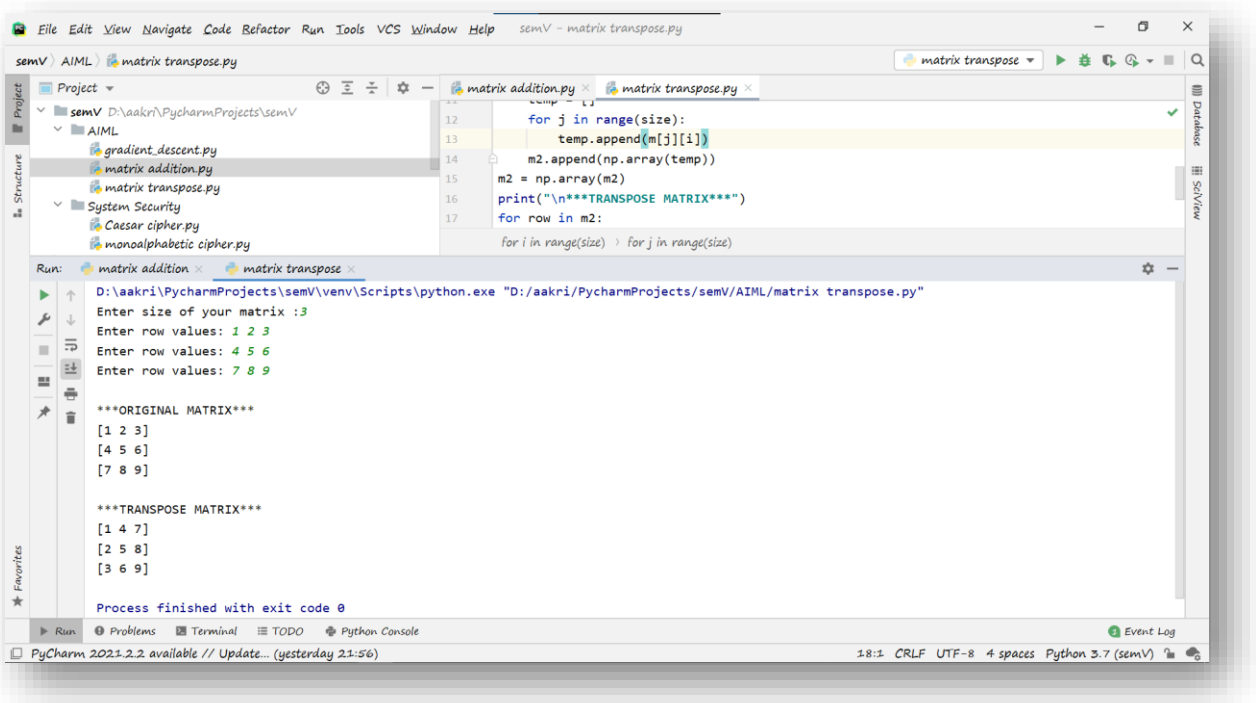
PROGRAM CODE

```
# Program to add two matrices using nested loop

import numpy as np
size = int(input("Enter size of your matrix :"))
print("\n******Matrix 1******")
m1 = [list(map(int, input("Enter row values: ").split())) for i in
range(size)]
print("\n******Matrix 2******")
m2 = [list(map(int, input("Enter row values: ").split())) for i in
range(size)]
m1 = np.array(m1)
m2 = np.array(m2)
m3 = []
for i in range(size):
    temp = []
    for j in range(size):
        temp.append(m1[i][j]+m2[i][j])
    m3.append(np.array(temp))
m3 = np.array(m3)
print("\n----After addition----")
```

```
for row in m3:
    print(row)


# Program to find transpose of a matrix

import numpy as np
size = int(input("Enter size of your matrix :"))
mat = [list(map(int, input("Enter row values: ").split())) for i in
range(size)]
m = np.array(mat)  # NUMPY ARRAY
print("\n***ORIGINAL MATRIX***")
for row in m:
    print(row)
m2 = []
for i in range(size):
    temp = []
    for j in range(size):
        temp.append(m[j][i])
    m2.append(np.array(temp))
m2 = np.array(m2)
print("\n***TRANSPOSE MATRIX***")
for row in m2:
    print(row)
```

OUTPUT





CONCLUSION

Matrix addition and transpose was performed using Python.