



Adamson University  
College of Engineering  
Computer Engineering Department



Experiment No. # 8

## **Inverse and Transposition of Matrix**

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Schedule: M 7:00 – 10:00

Submitted to: Engr. Maria Rizette Sayo

### **Objective**

1. Be familiar with matrices and their relation to linear equations.
2. Perform basic matrix operations.
3. Program and translate matrix in inverse and its transposition using Python.

### **Algorithm**

1. Type the main title of this activity as "Inverse and Matrix Transposition"
2. On your GitHub, create a repository name Linear Algebra 58013
3. On your Colab, name your activity as Python Exercise 8.ipynb and save a copy to your GitHub repository

### **Coding Activity 8**

#### *Inverse*

Inverse of a matrix is a reciprocal of the matrix

```
##Python codes to declare a matrix
import numpy as np
A = np.array ([[1,2,3],[4,5,6],[7,8,9]])
print(A)

A=np.array([[1,2],[4,7]])
B=(np.linalg.inv(A))
print(B)
```

Or you can code in this way:

```
import numpy as np
A = np.array([[1,2],[4,7]])
invA = (np.linalg.inv(A))
print(invA)
```

#### *Transpose of a Matrix*

```
#Python Program to Transpose a 4x4 Matrix A=([[6,1,1,3],[4,-2,5,1],[2,8,7,6],[3,1,9,7]])
A=np.array([[6,1,1,3],[4,-2,5,1],[2,8,7,6],[3,1,9,7]])
print(A)
B=(np.transpose(A))
print(B)
```



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Answers:

```
##Python codes to declare a matrix
import numpy as np
A = np.array ([[1,2,3],[4,5,6],[7,8,9]])
print(A)
```

```
A=np.array([[1,2],[4,7]])
B=(np.linalg.inv(A))
print(B)
```

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
[[-7.  2.]
 [ 4. -1.]]
```

```
import numpy as np
A = np.array([[1,2],[4,7]])
invA = (np.linalg.inv(A))
print(invA)
```

```
[[ -7.  2.]
 [  4. -1.]]
```



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```
#Python Program to Transpose a 4x4 Matrix A=([[6,1,1,3],[4,-2,5,1],[2,8,7,6],[3,1,9,7]])  
A=np.array([[6,1,1,3],[4,-2,5,1],[2,8,7,6],[3,1,9,7]])  
print(A)  
B=(np.transpose(A))  
print(B)
```

```
[[ 6  1  1  3]  
 [ 4 -2  5  1]  
 [ 2  8  7  6]  
 [ 3  1  9  7]]  
[[ 6  4  2  3]  
 [ 1 -2  8  1]  
 [ 1  5  7  9]  
 [ 3  1  6  7]]
```

GitHub Permalink:

[https://github.com/MNLLEMM/58013-Linear-Algebra/blob/054f71f894fddab1127d227598c47a61a2909329/Python\\_Exercise\\_8.ipynb](https://github.com/MNLLEMM/58013-Linear-Algebra/blob/054f71f894fddab1127d227598c47a61a2909329/Python_Exercise_8.ipynb)