Lab Exercise 3:

Open jupyter notebook "Lab Exercise 4.ipynb" and go through the following steps:

1. Using numpy arrays and slicing operations (:), define and print the following A, B, and C matrix:

$$A = \begin{bmatrix} 5 & 2 & 3 \\ 6 & 1 & 3 \\ 2 & 4 & 1 \end{bmatrix}, \qquad B = \begin{bmatrix} 5 & 2 & 3 \\ 6 & 1 & 3 \\ 2 & 4 & 1 \end{bmatrix}, \qquad C = \begin{bmatrix} 5 & 2 & 3 \\ 6 & 1 & 3 \\ 2 & 4 & 1 \end{bmatrix}$$

2. Define D matrix using numpy:

$$D = \begin{bmatrix} 4 & -7 & 4 \\ 5 & 6 & -1 \\ -4 & 2 & 5 \end{bmatrix}$$

3. Use numpy *matmul* to calculate AD and also DA. Are they equal?

4. Manually calculate the determinant and inverse of B. Use numpy to calculate the same entities and confirm that your manual calculation agrees with your results from the jupyter notebook.

5. Use numpy to calculate the inverse of D. Confirm that DD^{-1} and $D^{-1}D$ both are 3-by-3 identity matrices. Do you have any observations?