

Python Exercises for Homework-1

- Do not provide your name on the assignment.
- Convert your python assignment to a pdf and submit with your mathematical part.

In []:

```
# Import what you need
```

Question 1 Use or modify the code provided for image manipulation in Module 1 for the following.

- (A) Create a single image as a collage of at least 10 cartoon characters of your choice.
- (B) Read any image and display it after flipping horizontally. Left becomes right.
- (C) Read any image and display it after flipping vertically. Top becomes bottom.

In []:

Question 2 Use the python code provided in Module 2 for the following

(A) Modify the code to write a function for finding inverse. Use this to find the inverse of the following. Show the output.

In []:

```
# Your code here
A = np.array([[1,1,4],
              [3,2,4],
              [1,1,6]],dtype=float)
```

(B) Modify the code to write a function for finding determinant of a general square matrix. Show the output for the matrix A given in part (A).

In []:

```
# Your code here
```

(C) Modify the code so that it also allows row swaps. Solve the following system by using this.

$$\begin{bmatrix} 0 & 1 & 2 \\ 5 & -2 & 6 \\ 3 & 1 & -2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 3 \\ 9 \\ 2 \end{bmatrix}$$

In []: