# Assignment - 8 (NumPy)

1. Create a null vector of size 10
2. How to find the memory size of an array
3. Create a null vector of size 10 but the fifth value which is 1
4. Create a vector with values ranging from 15 to 45
5. Reverse a vector (The first element becomes last)
6. Write a NumPy program to add, subtract, multiply, divide arguments element-wise
7. Write a NumPy program to round elements of the array to the nearest integer
8. Write a NumPy program to get the floor and ceiling values of the elements of a NumPy array
9. Write a NumPy program to calculate mean across dimensions, in a 2D NumPy array.
10. Write a NumPy program to convert angles from degrees to radians for all elements in a given array.
11. Write a NumPy program to compute e^x, element-wise of a given array
12. Create a 3x3 matrix with values ranging from 0 to 8

    [[0 1 2]

    [3 4 5]

    [6 7 8]]
13. How to reverse the columns of a 2D array?

    ([[2, 1, 0],

    [5, 4, 3],

    [8, 7, 6]])
14. How to reverse the rows of a 2D array?

    [[6, 7, 8],

    [3, 4, 5],

    [0, 1, 2]]
15. Find indices of non-zero elements from [1,2,0,0,4,0]
16. Write a NumPy program to compute the determinant of an array.
17. Write a NumPy program to compute the inverse of a given matrix
18. Create a random vector of size 30 and find the mean value
19. How to extract all numbers between a given range from a NumPy array?
20. Create a 3x3x3 array with random values
21. Create a 10x10 array with random values and find the minimum and maximum values
22. Create a 2d array with 1 on the border and 0 inside

    [[1. 1. 1. 1. 1. 1. 1. 1. 1. 1.]

[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
[1. 1. 1. 1. 1. 1. 1. 1. 1. 1.]]

23. Create a 5x5 matrix with values 1,2,3,4 just below the diagonal
24. Create a 3x3 identity matrix
25. Create a 8x8 matrix and fill it with a checkerboard pattern

[[0 1 0 1 0 1 0 1]
[1 0 1 0 1 0 1 0]
[0 1 0 1 0 1 0 1]
[1 0 1 0 1 0 1 0]
[0 1 0 1 0 1 0 1]
[1 0 1 0 1 0 1 0]
[0 1 0 1 0 1 0 1]
[1 0 1 0 1 0 1 0]]

26. Multiply a 5x3 matrix by a 3x2 matrix (real matrix product)
27. Given a 1D array, negate all elements which are between 3 and 8, in place
28. How to round away from zero a float array?
29. How to find common values between the two arrays?
30. Create a vector of size 10 with values ranging from 0 to 1, both excluded
31. Create a random vector of size 10 and sort it
32. Create a 5x5 matrix with row values ranging from 0 to 4

[[0. 1. 2. 3. 4.]
[0. 1. 2. 3. 4.]
[0. 1. 2. 3. 4.]
[0. 1. 2. 3. 4.]
[0. 1. 2. 3. 4.]]

33. Consider two random arrays A and B, check if they are equal
34. Create a random vector of size 10 and replace the maximum value by 0
35. How to convert a float (32 bits) array into an integer (32 bits) in place?
36. What is the equivalent of enumerate for NumPy arrays?
37. How to sort an array by the nth column?

38. How to swap two rows of an array?
39. How to compute the mean of a NumPy array?
40. How to compute the median of a NumPy array?
41. How to compute the standard deviation of a NumPy array?
42. How to compute the mode of a NumPy array?
43. How to print only 3 decimal places in a python NumPy array?
44. Write a NumPy program to compute the inverse of a given matrix
45. Write a NumPy program to compute the covariance matrix of two given arrays
46. How to find the most frequent value in a NumPy array?
47. How to convert 1D array to 3D array?
48. How to convert 4D array to 2D array?
49. Create a Numpy array filled with all zeros
50. Find the number of rows and columns of a given matrix using NumPy